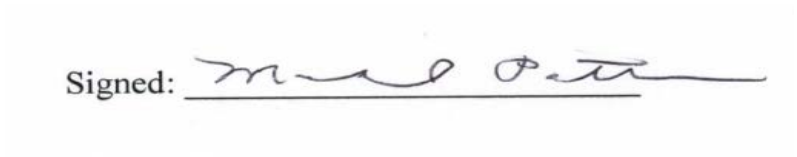
Upgrading to Advanced Life Support: Fact or Fiction

Michael Patterson

Burlington Fire Department, Burlington, Massachusetts

Certification Statement

I hereby 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 Burlington Fire Department has provided a basic life support (BLS) service to our community for the past 40 years. The problem is that the Burlington Fire Department has yet to determine the feasibility of upgrading to an advanced life support (ALS) service. The purpose of this research project is to determine if it would be feasible for the Burlington Fire Department to upgrade its current BLS service to an ALS service. The descriptive research method was used for this project because the data collected will reflect current information related to the subject matter. The following questions were researched in order to determining the feasibility of upgrading from a BLS service to an ALS service: (a) what is the primary reasons for fire departments to upgrade their BLS service to an ALS service; (b) what operational models are currently used by fire departments in order to provide an ALS service to their community; (c) what are the costs associated with implementing a fire department ALS service; (d) what roadblocks do fire departments commonly encounter when attempting to upgrade from a BLS service to an ALS service; (e) what approaches have been used by fire departments in order to gain the support of elected officials and the community during the implementation of an ALS program. In order to obtain results for the above research questions, personal interviews were conducted, a survey was sent to Massachusetts fire departments that provide an ALS service, and a survey was sent to members of the Burlington Fire Department. The results of this research revealed that the Burlington Fire Department should pursue upgrading its BLS service to an ALS service however, it is recognized that there is still much work to do. Based on the results of this project, a series of recommendations shall be presented that that will assist the Burlington Fire Department in upgrading its service to the ALS level within the next 24 to 30 months.

Table of Contents

Appendices

List of Tables

Upgrading to Advanced Life Support: Fact or Fiction

Providing advanced life support (ALS) is not a new concept to the fire service. Back in the mid 1960's Dr. Eugene Nagal, a physician at the University of Miami became interested in finding ways to combat pre hospital cardiac arrest. Dr. Nagal began working with firefighters and instructed them on what is commonly known today as cardio pulmonary resuscitation (CPR.) Dr. Nagal believed that firefighters could be taught advanced life support techniques and then apply those techniques in the field to save lives. Dr. Nagal and his associates began instructing a group of thirty firefighters on how to administer fluids and medications, how to defibrillate the heart, and how to intubate a patient. Dr. Nagal was so passionate about this program that he went before the city manager to seek approval for implementation of the program. Soon members of the Miami Fire Department began using electrocardiograms (EKGs) in the field and transmitting those EKGs to area hospitals. In June of 1969 the Miami Fire Department became the first fire department in the nation to revive a patient who was in cardiac arrest through defibrillation (City of Miami Department of Fire - Rescue, 2014). In 1971, James O. Page, a member of the Los Angeles County Fire Department began coordinating a countywide implementation of a paramedic rescue service which would be operated through the Los Angeles County Fire Department. Because of his expertise in emergency medical services (EMS), Page served as a technical consultant on the TV program Emergency (Barishansky, 2007).

As of May 19, 2015, The Massachusetts Executive Office of Health and Human Services (EOHHS) list 322 ambulance providers within the Commonwealth of Massachusetts. Of the 322 ambulance providers listed, 210 providers or 65 percent are operated by fire departments. Of the 210 fire departments that provide an ambulance service, 63 or 30 percent operate at the basic life support (BLS) level, 6 fire departments or 3 percent operate at the intermediate level, and 141

fire departments or 67 percent operate at the ALS level (Massachusetts Executive Office of Health in Human Services [EOHHS], 2015). The Burlington Fire Department currently operates two BLS transport ambulances. Each ambulance is staffed by two firefighters who are trained to the emergency medical technician basic level (EMT-B). ALS is provided to our community by a private ambulance company named Armstrong Ambulance Services which is headquartered in Arlington, Massachusetts. The topic of who should provide ALS to the Town of Burlington has been discussed internally within the town for many years. A 2000 fire department study conducted by MMA Consulting Group, Inc. placed a high priority on hiring firefighter/paramedics in order to augment the current system in place (MMA Consulting Group, Inc., 2000). The town acknowledged this recommendation but took no action.

Today, we are witnessing a significant increase in call volume for the fire department. Much of the increases in call volume are directly related to emergency medical services. We are also witnessing our community grow at a rapid pace especially on the commercial side. Traditional office parks are being redeveloped into multi purpose developments which include a large residential component. This anticipated increase in call volume has led to staffing discussions between the fire department and town management. The topic of hiring firefighter/paramedics in order to increase staffing levels will be at the forefront of these discussions. Another area of concern for our department is that the operational model of our ALS provider has changed. As will be discussed in the background and significance section of this paper, these operational changes has led to gaps in ALS coverage for our community as well as an increase in response times when ALS units respond to our community.

When the discussions occur between the fire department and town officials regarding increasing staffing levels, the hiring of firefighter/paramedics will be a controversial topic. The Burlington

Fire Department will need to present compelling evidence of how the hiring of firefighter/paramedics will be a benefit to the community both operationally and financially. The above statement can be tied directly into this projects problem statement. The problem is that the Burlington Fire Department currently provides a BLS service to our community and has yet to determine the feasibility of upgrading to an ALS service. The purpose of this project is to determine if it would be feasible for the Burlington Fire Department to upgrade its current BLS service to an ALS service. The descriptive research method will be used for this project because the data collected will reflect current information related to the subject matter. In order to complete this project a literature review will be conducted, interviews with fire chief's will be conducted, and separate surveys will be sent out to both fire chief's and members of the Burlington Fire Department. The information gathered will assist in answering the following five research questions: (a) what are the primary reasons for fire departments to upgrade their BLS service to an ALS service; (b) what operational models are currently used by fire departments in order to provide an ALS service to their community; (c) what are the costs associated with implementing a fire department ALS service; (d) what roadblocks do fire departments commonly encounter when attempting to upgrade from a BLS service to an ALS service; (e) what approaches have been used by fire departments in order to gain the support of elected officials and the community during the implementation of an ALS program. Once all information and data pertaining to the five research questions is gathered it shall be analyzed. A series of recommendations shall then be presented based on the information obtained.

Background and Significance

The Burlington Fire Department is a career, full time, fire department. The department is comprised of 65 personnel that include 57 uniformed members. Of our 57 uniformed members,

55 are trained to the EMT-B level and one member is trained to the paramedic level (EMT-P). The total operating budget for the Burlington Fire Department for Fiscal Year 2016 is listed at 6,695,626. Salaries and overtime account for 6,099,086 of the total operating budget ("Budget 2016," 2015). "The mission of the Burlington Fire Department is to protect and preserve life and property in the community through code enforcement, public programs and education, and incident response to fire, medical, and other emergencies" (Town of Burlington, 2014, p. 30). The Town of Burlington is a suburban community that is located 13 miles northwest of the City of Boston, Massachusetts. Burlington is approximately 11.88 square miles in area and has a total population of 25,008 as of January 1, 2015 (Town of Burlington, 2014). Two major highways run through Burlington, Interstate 95 and Route Three. Because of its location off of two major highways, Burlington is an attractive location for business. Burlington Town Administrator John Petrin estimates that the daytime population in Burlington surges to 150,000 thanks to occupancies such as the Burlington Mall and the Lahey Hospital. "We are a city by day and a town by night" states Petrin (Pecci, 2015, para. 4). Currently in Burlington two major redevelopment projects are underway. Nordblom Development Company has built 300,000 square feet of retail space along with six restaurants in the Northwest Park and is currently constructing 300 residential units. An additional 300 residential units, a hotel, and a luxury automobile dealership are also planned to be developed within the Northwest Park (Biagiotti, 2015). National Development has begun redeveloping the New England Executive Park. A 170 room hotel, retail space, restaurants, and more office space are currently being developed within the park (Laidler, 2014). It is anticipated that these two redevelopment projects will have a major impact on public safety. An increase in call volume for both police and fire is expected. A 2006 Project Informational Packet that was prepared by Northwest Park and presented to

Town Meeting in January 2007 stated that Nordblom's proposed development would require an additional four firefighter positions and the need for one additional ambulance (Northwest Park, n.d.). As of today, additional staffing for the Burlington Fire Department has not been implemented.

The Burlington Fire Department operates out of two fire stations. Fire Headquarters is located at 21 Center Street and Station Two is located at 114 Terrace Hall Avenue. A command car, two engines, a tower/ladder, and two BLS ambulances are run out of headquarters. A single engine company is run out of station two. Each of our department's four shifts is comprised of 13 firefighting personnel. Minimum manning for our department is set at 11 personnel. When our department operates at the minimum staffing level of 11, eight personnel are assigned to headquarters and three personnel are assigned to station two. Because of these staffing levels, the Burlington Fire Department does not permanently staff its two BLS ambulances. The crew of Ambulance One (A1) is also assigned to the second engine out of headquarters and the crew of Ambulance Two (A2) is assigned to the tower/ladder. When a fire alarm is received on the headquarters side of town, the second engine out of headquarters and the tower/ladder responds leaving the Burlington Fire Department with no available ambulance to respond to medical emergencies within our community.

All emergency 911 calls are received by the Burlington Police Department who serves as the town's public safety answering point (PSAP). Calls that are related to fire or EMS are immediately transferred to the Burlington Fire Department where a civilian fire dispatcher takes the call. The Burlington Fire Department is the town's designated emergency medical dispatch (EMD) provider. If a call is received for a medical emergency, the fire dispatcher will follow EMD protocol and dispatch the appropriate apparatus. The Town of Burlington currently

operates a two-tiered EMS system. Once receiving a call for a medical emergency, our fire dispatcher will dispatch our BLS ambulance that is staffed by two firefighters who are trained to the EMT-B level and the closest engine company. Our engine companies are also staffed by firefighters who are trained to the EMT-B level. If the medical emergency requires ALS, the fire dispatcher will contact our ALS provider's dispatch center and request an ALS unit. Armstrong Ambulance provides ALS coverage for the Town of Burlington. Armstrong Ambulance is headquartered in Arlington, Massachusetts, but operates a satellite station in Burlington. An agreement between the Town of Burlington and Armstrong Ambulance Service, Inc. states that Armstrong agrees to provide ALS service to the Town and shall be available 24 hours a day, seven days a week. Once the call is received by Armstrong, an ALS unit shall arrive on scene within 11 minutes and 59 seconds 90 percent of the time. The primary ALS vehicle for the Town shall be staffed with two registered paramedics with a minimum combined experience of 36 months. In the event the primary ALS vehicle is committed at another call, Armstrong may provide a backup ALS unit that does not meet the experience criteria listed above (*Armstrong ALS Agreement*, n.d.).

In the introduction of this paper it was stated that the operational model of our ALS provider has changed that has led to gaps in ALS coverage as well as increased response times. In order to fully understand how the ALS system has evolved over the years, it is important to take a look back at the history of the program. In 1981, the North Suburban Emergency Medical Consortium was formed. This consortium included the following four local hospitals, Lahey Clinic, Choate Hospital, Winchester Hospital, and Symmes Hospital. The consortium was tasked with the planning and implementation of an ALS program for their regional area (Stoman, 1983). After discussions with ten local communities within the consortiums service area,

including Burlington, three ALS models were presented. The first model included upgrading town BLS ambulances to the ALS level. The second model included a two-tiered system in which the town would continue to provide a BLS ambulance service while the hospitals would provide ALS in a bronco-style vehicle. The third model presented involved allowing private ambulance companies to bid for the ALS service while retaining the towns BLS ambulances. The consortiums plan was to choose the model by September 1983 and implement the plan within six months (Stroman, 1983). It was determined by the consortium that the second ALS model would be implemented. Lieutenant Mark Saia is the EMS Training Officer for the Burlington Fire Department. He is a former employee of Armstrong Ambulance who was very familiar with the development of the consortiums ALS program. M. Saia (personal communication, October 13, 2015) stated that North Suburban Paramedic One (NSP-1) an intercept ALS vehicle owned and operated by Lahey Clinic was created and staffed by two paramedics. This vehicle was responsible for providing ALS service to Burlington and its northern surrounding communities. Shortly thereafter, North Suburban Paramedic Two (NSP-2) was developed. NSP-2 was owned and operated by Armstrong Ambulance Service. This vehicle provided ALS service to communities located south of Burlington.

John E. Hinds is the Operations Manager for Dartmouth-Hichcock's Advanced Response Team (DHART). He was the former Director of NSP-1. Mr. Hinds stated that that after ten years Lahey Clinic began to re-evaluate NSP-1's program. By that time only two hospitals remained within the consortium, Lahey Clinic and Winchester Hospital. Lahey's Executive Vice President did not believe that the hospital should be in the ambulance business. Reimbursements from billing were decreasing and towns were asking for more money for providing patient transports (J. Hinds, personal communication, August 10, 2015). According to

M. Saia (personal communication, October 13, 2015) Lahey Clinic basically sold the remaining NSP-1 paramedics to Armstrong Ambulance. An amended agreement between the North Suburban Emergency Medical Consortium and Armstrong Ambulance stated that the two-tiered EMS system would remain in place in which the town BLS ambulances would respond to all calls and that Armstrong Ambulance would provide a minimum of two non-transporting ALS vehicles designated NSP-1 and NSP-2 for all calls requiring ALS service (North Suburban Emergency Medical Consortium and Armstrong Ambulance Company, 1993).

In December of 2000, the Chief Executive Officer (CEO) of Armstrong Ambulance sent an urgent fax to all cities and towns located within the consortium. The memo stated that effective January 1, 2001 the existing agreement between Armstrong and the consortium towns would be voided due to Armstrong's inability to bill Medicare (Connor, 2000). A follow up memo from Armstrong's CEO stated that Armstrong Ambulance would continue to provide ALS services to consortium communities until March 2, 2001. The memo further stated that Armstrong shall no longer compensate the communities who provide a transport ambulance. The memo concluded with a request from the CEO asking for consortium communities to contact Armstrong should they wish to continue using Armstrong Ambulance as an ALS provider (Connor, 2001).

In February of 2014, the ALS operational model of Armstrong Ambulance changed. Paramedic One (P-1), Armstrong's non-transporting intercept vehicle that operates out of Burlington is now staffed and in-service everyday from 0700 to 1900. An ALS transport ambulance is also housed and staffed in Burlington during this same time period. At 1900, the crew of the ALS transport ambulance is sent home and the crew from P-1 is moved over to the transport ALS ambulance (M. Saia, personal communication, February 28, 2014). Since this

change, the Burlington Fire Department has been tracking ALS responses into our community. We have asked our personnel to inform fire administration and the EMS training officer when ALS dispatching issues occur. What we have found is that there have been a number of instances when Armstrong ALS is not available to respond. An example of this comes from an email from Fire Dispatcher Elaine Carpenter, "I called Armstrong for an ALS unit on Tuesday, September 8th at 1159 for the report of a person stung by multiple bees with a reaction. They did not have a unit available" (E. Carpenter, personal communication, September 8, 2015). We have also found that Armstrong ALS units are being dispatched from several communities away. An example of this comes from an email from Firefighter/EMT Jason Hughes, "Last night we responded to Memorial School for a patient with very significant blood loss. P-1 was unavailable so P2 was dispatched from Arlington. Because of the condition of the patient and P-2's location we left the scene and cancelled P-2 (J. Hughes, personal communication, March 20, 2015). Because of our concerns with Armstrong ALS units not being available, fire administration and the EMS training officer met with the CEO of Armstrong Ambulance Richard Raymond in July 2015. During this meeting, Raymond informed us that Armstrong Dispatchers would contact other ALS providers if no Armstrong ALS units were available to respond to Burlington. Raymond also informed us that Armstrong Ambulance would now be providing inter-hospital transports for the Lahey Health Network (R. Raymond, personal communication, July 9, 2015). The Lahey Health Network is comprised of the Lahey Hospital in Burlington, Winchester Hospital, Beverly Hospital, and the Addison Gilbert Hospital in Gloucester (Dayal McCluskey, 2014).

In summary, the Town of Burlington is growing at a rapid rate. Because of this growth both the fire department and town management are exploring the possibilities of expanding

staffing levels. Over the years, we have witnessed significant changes to our EMS system. Our ALS provider has transitioned from a hospital based ALS program to a private ambulance company provider. Because of changes to the Medicare system this private ambulance provider threatened to discontinue ALS service to the Town of Burlington. We have witnessed an ALS operational model change by our private ambulance provider which has led to gaps in ALS coverage and increased response times. It is our belief that the agreement between Armstrong Ambulance and the Lahey Health Network will negatively impact ALS availability and response times to our community. This is a critical time for the Burlington Fire Department. Should increased staffing levels include the hiring of firefighter/paramedics? Now is the time for the Burlington Fire Department to determine the feasibility of upgrading its BLS service to an ALS service.

This researcher attended the Executive Leadership (R125) course at the National Fire Academy as part of the Executive Fire Officer Program in April 2015. One of the topics of the course that we covered that is closely related to my research project can be found in Unit 8 Influence and Persuasion of the student manual. If it is determined that the Burlington Fire should pursue upgrading its BLS service to an ALS service, the leadership of the department will have to strongly influence both internal stakeholders as well as external stakeholders. Two influence styles can be used by the leadership of the department. Participation and trust can be used for internal stakeholders. The thoughts and views or our members are of primary importance. It is better to let our members be part of the process and allow them to contribute rather than forcing them to buy into a new program. Logical persuasion can be used for external stakeholders. The leadership of the department needs to get their facts straight which include a cost benefit analysis when attempting to implement a new program. How is this program going

to benefit the community and how much is it going to cost. These questions are of particular importance to our elected officials who must approve new programs (United States Fire Administration [USFA], 2014). This research project is closely related to one of the United States Fire Administrations (USFA) five goals. The mission of Goal Three is to enhance the fire and emergency services' capability for response to and recovery from all hazards (United States Fire Administration [USFA], 2014, p. 12).

Literature Review

The purpose of a literature review is to summarize the findings of others who have published research related to this projects problem statement. Findings related to this projects research questions should be included in the literature review (United States Fire Administration [USFA], 2010). For this research project the literature review will focus on why fire departments upgrade to the ALS level, what ALS operational models are being used, what are the costs associated with implementing ALS, what roadblocks are encountered along the way, and how do departments gain the support of local officials.

The Massachusetts Office of Emergency Medical Services lists five types of responders in their pre-hospital statewide treatment protocols. These treatment protocols represent the standard of patient care in the Commonwealth of Massachusetts. The five types of responders are; first responder, emergency medical technician (EMT), emergency medical technician-intermediate (EMT-I), advanced emergency medical technician (AEMT), and paramedic. First responders provide patient care at the lowest level and paramedics provide patient care at the highest level (Massachusetts Office of Emergency Medical Services [OEMS], 2014). According to the American Heart Association, a strong chain of survival can improve the chances of survival and recovery for patients of heart attack and other medical emergencies. The American

Heart Association lists five links in the adult out-of hospital chain of survival, they are as follows; immediate recognition of cardiac arrest and activation of the emergency response system, early CPR with an emphasis on chest compressions, rapid defibrillation, effective advanced life support, and integrated post-cardiac arrest care (American Heart Association, n.d). The National Highway Traffic Safety Administration (NHTSA) identifies the minimum psychomotor skills that are required of a paramedic. These skills are broken down into three categories; airway and breathing, pharmacological interventions, and medical/cardiac care. The skills listed under airway and breathing include perform endotracheal intubation, perform percutaneous cricothyrotomy, decrease the pleural space, and perform gastric decompression. Skills listed under pharmacological interventions include insert an intraosseous cannula, enteral and parenteral administration of approved prescription medications, access indwelling catheters and implanted central IV ports for fluid and medication administration, administer medications by IV infusion, and maintain an infusion of blood or blood products. The skills listed under medical/cardiac care include perform cardioversion, manual defibrillation, and transcutaneous pacing (The National Highway Traffic Safety Administration [NHTSA], 2007).

Sachs (1997) believes that EMS is a key tool in enhancing customer service in a fire department. When looking to the future, expansion into ALS is critically important. Sachs warns that expansion to ALS must be carefully planned before it is carried out. A fire service-based EMS tool kit created in a cooperative effort between the International Association of Fire Chiefs (IAFC), the International Association of Firefighters (IAFF), the Metropolitan Fire Chiefs Association, the Congressional Fire Service Institute (CFSI), and the International Fire Service Training Association (IFSTA) provides information related to fire-service based EMS in general. Several “Talking Points” are listed within this tool box. These talking points can be used in

discussions with both fire department personnel and non fire department personnel such as the public and elected officials. Some of the key talking points include, fire departments are geographically placed throughout a community to minimize response times. Pre-hospital emergency response is an essential function provided by the fire service. Of the 200 most populated communities in the United States, the fire department provides EMS response in 97% of these communities. Fire departments provide ALS response in 90% of the 30 most populated United States cities and counties. Fire serviced-based EMS brings treatment immediately to the patient even if the patient is trapped in a building fire or automobile accident. EMS response, treatment, and transportation are seamless for a fire-based service; one department is responsible for the continuity of patient care (International Association of Fire Chiefs [IAFC], 2014).

In Massachusetts, two communities in close proximity to Burlington have rolled out ALS programs. In Belmont, Massachusetts, the Board of Selectmen approved Chief David Frizzell's ALS plan which was set to begin in July 2013. Chief Frizell stated that the citizens of Belmont will receive quicker and greater care from a fire based ALS service and that financially the town would benefit from an increase in ambulance service fees. As a result of these fees it was anticipated that a new ambulance could be purchased in five years without requiring funds through the capital budget. A private ambulance company had been providing ALS service to the Town of Belmont. The Belmont Board of Selectman had been hesitant to approve the ALS program due to high start up costs (Tucker, 2013). In Watertown, Massachusetts, Chief Mario Orangio believes that having his department operate at the paramedic level is a quality of life issue. Watertown currently uses Armstrong Ambulance that is based in Waltham, MA as its ALS provider. Orangio believes that a Watertown ALS ambulance will provide improved ALS response times. Chief Orangio stated that the added costs of running an ALS program will be

covered in part by ambulance billing rather than having to pay the private ambulance company. Watertown Fire Department will hire four firefighter/paramedics as a result of being awarded a SAFER Grant from FEMA (Breitrose, 2014).

The next section of the literature review looks at ALS staffing models. The Massachusetts Department of Public Health (DPH) is defined under Chapter 105 of the Code of Massachusetts Regulations (CMR). Section 170.000 discusses the establishment of a statewide, community based EMS system. Section 170.305(C)(2) details ALS staffing. When a Class I, II, or V ambulance transports a patient receiving care at the paramedic level of ALS, the ambulance must be staffed with a minimum of two EMTs, at least one of whom is certified at the paramedic level, provided that the conditions set forth in 105 CMR 170.305(C)(2)(a) through (f) are met. These conditions are as follows; (a) the ambulances dispatching entity must implement EMD in accordance with State 911 Department standards; (b) the ambulance service must implement criteria, approved by its affiliate hospital medical director and in accordance with the administrative requirements of the DPH, for determining those EMS calls when two paramedics would be required to provide appropriate care, based on the patient's medical condition and acuity; (c) the ambulance service must implement a procedure to ensure a second paramedic is immediately dispatched if the EMTs determine appropriate care of the patient's medical condition and needs require a second paramedic; (d) the ambulance service must provide appropriate training in accordance with the administrative requirements of the DPH; (e) the ambulance service in conjunction with its affiliate hospital medical director and in accordance with the administrative requirements of the DPH, must establish minimum experience levels and skill competencies for each of its employees working in a paramedic/basic or paramedic/advanced staffing configuration; (f) The ambulance service must ensure that all

paramedic-level responses staffed by EMTs who work in a paramedic/basic and paramedic/advanced staffing configurations are reviewed through a quality assurance/quality improvement (QA/QI) program under the services affiliation agreement. For ambulance transports of patients receiving care at the paramedic level where these conditions are not met, the ambulance must be staffed with two EMTs, both of whom are certified at the paramedic level (Commonwealth of Massachusetts, n.d.).

Chapter four of the National Fire Protection Association's (NFPA) 1710 Standard states that fire departments shall provide service objectives including specific time objectives for each service component. The following time objectives shall be established for EMS response; (1) once receiving an alarm, the PSAP shall transfer the alarm within 30 seconds to a communications center 95% of the time. The fire department shall have an alarm processing time of not more than 60 seconds for at least 90% of the alarms and not more than 90 seconds for at least 99% of the alarms; (2) fire department shall have a 60 second turnout time for EMS response; (3) a fire department unit with first responders and automatic external defibrillation (AED) or a higher level capacity shall arrive at the emergency medical incident in four minutes or less: (4) an ALS unit shall arrive at the emergency medical incident in eight minutes or less provided that this ALS service is provided by the fire department and that this fire department also provided a first responder with AED or a BLS unit within four minutes (National Fire Protection Agency [NFPA], 2010).

The Handbook for EMS Medical Directors defines a multiple-role EMS agency as an agency that will cross train their personnel to provide multiple services. An example of a multiple-role EMS agency is a fire department. In a fire department, medical response is provided by department personnel that are trained to the first responder level, EMT level, or

paramedic level. This type of agency makes use of an existing transportation infrastructure and personnel who are trained to respond to emergencies. The Handbook further defines types of response service. The two types of response service are single-tier and tiered. A single–tier agency provides initial response and transport at a single level of care. This level of care could be at the BLS level or the ALS level. A tiered agency may have first responders provide care at the BLS level and then have paramedic ambulances arrive and provide patient care at the ALS level. Tiered agencies will use a variation of response vehicles. These may include sports utility vehicles (SUVs), fire apparatus, and ambulances (United States Fire Administration [USFA], 2012). A white paper commissioned by the Emergency Medical Services Authority (EMSA) who serves Oklahoma City and Tulsa, Oklahoma, believes the tiered approach is most efficient and cost-effective. This system requires an effective dispatch system in which call takers dispatch the appropriate resources. If a patient is unstable, the closest BLS unit and ALS unit shall be dispatched. If the nature of the call is unclear, a BLS unit should be sent. If the patient is critical, the BLS unit can initiate care and call for an ALS unit. This system allows ALS units to actually assess, treat, and transport those that require ALS (Blackwell, Clawson, Eckstein, Miramonti, & Wang, 2011).

A questionnaire that was sent to 140 past and present Executive Fire Officer Students asked how ALS units are staffed. Of the 55 respondents, 18.4% reported that all personnel assigned to an ALS unit are paramedic certified. Eighty-one percent of those that responded stated that their ALS units were staffed by paramedics and EMTs. A similar questionnaire was sent to 17 fire departments located in Pinellas County, Florida. Ten questionnaires were completed. Ten percent of the respondents reported staffing their ALS units with paramedics while 90% staff their ALS units with paramedics and EMTs (Stefancic, n.d.).

In a Journal of Emergency Medical Services (JEMS) article, the topic of using rapid-response vehicles (RRV) in place of large fire apparatus during response to medical emergencies was discussed. The Los Angeles County Fire Department delivers ALS services through the usage of quick-response squad vehicles. If a patient requires ALS, the paramedic can treat the patient and accompany that patient to the hospital in an ambulance. If no ALS service is required, the paramedic returns to service. Another concept that is discussed is to staff ALS resources during peak service demands (Baker, n.d.)

The next section of the literature review looks at costs associated with ALS. The National EMS Advisory Council (NEMSAC) recognizes that EMS faces many financial challenges. In order to be compensated by Medicare, Medicaid, and insurance companies for its services, ambulance agencies must transport patients to an emergency room. EMS providers often provide services that are not eligible for compensation because a patient is not transported to the emergency room. An automobile accident in which no patients are transported is an example of this. NEMSAC identifies that a large percentage of EMS related costs are used to maintain a readiness and the ability to respond in a timely and effective manner. These costs include staffing, training, equipment costs and supplies, as well as administrative costs (The National EMS Advisory Council [NEMSAC], 2012). The United States Fire Administration (USFA) highlights a variety of funding mechanisms that are available to municipalities in order to provide services to its residents. The most common source of funding for municipalities is obtained through taxation. These taxes include property tax, sales tax, excise tax, and income tax. Property tax is one of the most common sources of municipal funding. A levy is established at a set rate per dollar of assessed property value. Sales tax is another source of revenue for municipalities. Sales taxes are only paid by the consumer when purchasing a product. Excise

taxes are similar to sales tax in that the consumer pays the tax after purchasing selective products. Income tax is assessed on wages and earnings of the individual. Other taxes that can be a source of municipal funding include real estate transfer tax and utility user tax (United States Fire Administration [USFA], 2012). Sachs (1997) states that because municipalities are reluctant to raise taxes to support new programs, other sources of revenue need to be looked at. One way to increase revenues is through user fees. In a Boston Globe article, North Andover Fire Chief Andrew Melnikas stated that because of reductions in state local aid and federal Medicare reimbursements, as well as the rising cost of fuel, he had to raise ambulance rates. Melnikas stated that fees from his two ambulances generated 830,000 in revenues for the town. These revenues were placed into the town's general operating fund where the money could be distributed to both the municipality and the schools (Conti, 2011). In Amherst, Massachusetts, ambulance fees were also increased. In a memo to the Board of Selectman, Town Manager John Mustante wrote that the increased fees would cover the rising costs of medical equipment as well as increases to the fire department operating budget due to the hiring of eight firefighter/EMTs (Lederman, 2014).

Another funding mechanism that is available to municipalities is the use of an enterprise fund. Fire departments that operate enterprise funds can bill insurance companies for ambulance transports and related expenses. The revenues generated through billing can pay for the operating and maintenance costs of the service including salaries of the personnel (USFA, 2012). In Massachusetts, an enterprise fund gives communities the flexibility to account separately for all financial activities associated with the municipal service. The revenues and expenses of the service are segregated into a fund with financial statements separate from all other government activities (Massachusetts Department of Revenue, 2008). In a 2010 cost of service study, the

Port Angeles Fire Department, whose service is supported through an enterprise fund, listed the following line items under total Medic 1 expenses; paramedic salaries, paramedic benefits, program supplies, professional and contract services, travel and training, dispatching services, equipment services, other services and charges, defibrillator replacement, and bad debt. They also listed revenue projections for Medic 1. These items include; CPR/first aid classes, Medic 1 monthly fee, Medic 1 transport charges, Medic 1 write-offs, personal reimbursement, miscellaneous revenue, general fund transfer, Medic 1 reserve (Port Angeles Fire Department, 2010).

Another source of funding EMS is through grant programs (USFA, 2012). The Staffing for Adequate Fire and Emergency Response Grants (SAFER) was created to enhance fire department staffing, response, and operational standards (Federal Emergency Management Agency [FEMA], n.d.).

Art Hsieh, a fire and emergency medical expert states that training and equipment can be costly, he estimates that it could cost 25,000 to 30,000 to upgrade an engine company to the ALS level. Training paramedics and providing continuing education is also costly. He states that firefighters in other parts of the country have received five to 15 percent wage increases for being paramedics as well as being compensated for continued education. Hsieh believes that fire department ALS programs are costly and those costs are usually transferred to the taxpayers (Van Dyke, 2014).

The next section of the literature review looks at potential roadblocks to ALS implementation. A study conducted in Ontario, Canada from 1994 to 2002 evaluated the benefit of providing rapid defibrillation and pre-hospital advanced cardiovascular life support (ACLS) for cardiac arrest patients as well as the benefit of providing ALS to patients with traumatic injuries and other

critical illnesses. The study involved more than 25,000 patients (Stiell et al., 1998). The results of the study revealed that ALS programs showed no improvements in survival rates when compared to basic life support with rapid defibrillation. A far more significant factor in improving survival rates were witnesses of the cardiac arrest performing CPR and emergency personnel administering rapid defibrillation (Stiell, 2005). In a New York Times article, when discussing a number of ALS studies, Aaron Carroll, a professor of pediatrics at Indiana University School of Medicine, stated that ALS did not seem to provide any benefits in these studies and often resulted in worse outcomes. He stated that some believe that BLS measures work fine and that ALS may actually slow things down in the field resulting in a delay in getting the patient to the hospital (Carroll, 2015). In a HealthDay article, Dr. Michael Callaham, an emergency medicine specialist at the University of California, San Francisco states, "We know that high-quality CPR, basic airway management, and rapid defibrillation matter. There are studies that show that ALS doesn't matter. You don't have better survival. So, you are just doing more things and it takes more time" (Reinberg, 2014, para. 16).

The political climate of a community may also present a roadblock. In Saugus, Massachusetts, an ambulance study committee recommended that the town pursue operating a fire department BLS ambulance service. The plan called for the purchase of an ambulance and the establishment of an ambulance enterprise account in order to fund the service. The ambulance committee believed that a fire department ambulance service would enhance the department, add manpower, and generate revenue outside of the tax levy. The ambulance committee believed that revenues obtained would help offset the salaries of eight firefighter positions that were recently hired through a SAFER grant once the grant expires. The Saugus Finance Committee voted to indefinitely postpone all warrant articles related to development of

the program. The finance committee believed that the costs associated with implementing the ambulance service would exceed the operating cost and that the program would require funding through the general fund (Gaffney, 2015). In Natick, Massachusetts, town officials looked into the possibilities of the privatization of the fire departments ALS program in a way to save the town money. A preliminary report compiled by the assistant town administrator illustrated that the expenses needed to run the service exceeded the revenues coming in. The preliminary report also looked at a comparison of Natick's ambulance service to those services being provided in other nearby communities (McKee, 2009). In a follow up article, Natick Selectman Joshua Ostroff stated "during difficult economic times, it is the obligation of elected officials to explore all possible avenues to save money and improve municipal services" (Butler, 2010, para. 1). Natick Town Administrator Martha White stated that her assistant town administrator's report also included options which included a public/private partnership, a private ambulance service providing the service, or keeping the current system in place (Butler, 2010).

Collective Bargaining Agreements (CBA) may also present roadblocks. In Watertown, Massachusetts, firefighters have been working without a CBA for six years. Town Council had rejected an independent arbitration award. During this period, Watertown Fire Chief Mario Orangio has been trying to implement an ALS program within the department. When asked by Town Council what else do you need in order to move ahead with the ALS program, Orangio stated, "If I could speak candidly, bargaining a contract agreement with the union. There are a lot of changes to working conditions that would need to be negotiated into the CBA" (Breitrose, 2015, para. 4).

The hiring of firefighter/paramedics has also been a problem for many Massachusetts fire departments. In Scituate, Massachusetts, Fire Chief John Murphy has been trying to fill two

firefighter/paramedic positions. He has been able to fill one position but has been having trouble filling the other position. As of April 2015, 5,612 total candidates were listed on the state's civil service firefighter list, only 323 of the candidates were listed as paramedics (Simpson, 2015). The retention of firefighter/paramedics has also been a problem for fire departments. In Charleston, WV, since 2004, 27 firefighter/paramedics have left the department to take other jobs. Union officials claim that that the opportunity to pursue higher wages, better benefits, and a smaller workload may be to blame. In the past year the city stopped compensating current firefighter/paramedics for attending paramedic programs (Fan, 2015). In Winchester, Massachusetts, Town Meeting approved the fire department operating budget which included a new wage structure that was developed specifically to retain firefighter/paramedics. "The change in pay structure is intended to address the retention of firefighters, who tend to leave the town service after a couple of years" states Peter Cheimets, a member of Winchester's Personnel Board (LaMond, 2015, para. 14).

Another potential roadblock involves the current ALS provider speaking out against the proposed change. In Andover, Massachusetts, Fire Chief Mike Mansfield presented an ALS proposal to his Board of Selectman. At that same meeting Lawrence General Hospital's ALS Director Paul Brennan spoke out against the change. Brennan was concerned about the impact that a fire department based ALS program would have on the residents of Andover. Brennan spoke on the importance of experience in terms of patient interaction in regard to better patient outcomes. He pointed out that hospital paramedics respond to thousands of ALS calls in numerous communities and that they have a high success rate with intubations. He worries about the success rate of a fire department ALS service in which fire department personnel may only perform a limited number of intubations (Luca, 2013).

The final section of the literature review looks at approaches used to gain the support of elected officials and the community. Compton (2014), states that poor relationships between fire chiefs and union officials hamper the ability of an organization to address difficult challenges. Those departments in which management and unions work well together usually enjoy more success in a variety of avenues. Management and union officials should develop a strong working relationship that allows them to plan together and solve problems together. This type of a relationship will benefit the organization as a whole. In a separate article, Compton (2010) warns that anytime a decision affecting service delivery and/or safety is made by those outside of the organization such as consultants or elected officials, there is a possibility that management and union leaders will need to collectively develop a joint strategy in order to positively influence the decision makers. If a strong working relationship does not exist between management and union officials the department becomes vulnerable to decisions being made by those outside the organization which could have a negative impact on both the organization and its members.

The traditional approach to labor and management relations focused primarily on individual rights. This approach did not place an emphasis on the overlapping interests of both parties. The cooperative approach to labor and management relations attempts to focus on the overlapping interests of both parties. A cooperative approach leads to consensus solutions. The key to this approach is having both parties commit to this process and to put any negative history behind. Kenley recommends the use of labor/management committees. In this type of structure, the fire chief will need to "relinquish some level of autonomy in an effort to build organizational relationships" (Kenley, 2014, p. 3).

Compton (2014) states that that every resource that is located within a fire department comes as a result of a positive vote from elected officials. Because of this, it is important that fire chiefs build strong working relationships with their elected officials. These relationships should be built on professionalism and the ability to communicate with one another in order to make the department successful. Grady (2014), highlights the importance of building new relationships with elected officials and strengthening those relationships over time. These efforts will lead to mutual understanding, respect, and cooperation. In a 2013 survey taken by metropolitan fire chiefs from across the country, an issue identified by the chiefs pertained to communicating with elected officials. The chief's stance on this issue stated; "educate the people who fund us and the general public about the complete role of the fire department and firefighters" (Compton, 2014, para. 3).

The National Volunteer Fire Council (NVFC) lists five key tools that should be considered in order to effectively communicate with elected officials. These five key tools include; make sure that communication is kept simple and concise, don't raise questions that you can't answer, address the who, what, where, when, and why, whenever possible work to build consensus, and utilize the resources and assistance of the NVFC staff and state association partners (National Volunteer Fire Council [NVFC], 2009). Warren (2014) believes that all stakeholders should be heard. Opinions from stakeholders are valid and should not be simply dismissed. The views of the stakeholders should be respected by members of the fire service. Disagreements between stakeholders and members of the fire service should be anticipated but those disagreements should lead to respectful discussions. When members of the fire service and stakeholders work jointly to solve problems, everyone succeeds.

Having an understanding of what elected officials look for can assist in building positive relationships. All elected officials want to see their communities succeed. Fire service leaders should ask elected officials to identify their public safety goals and then work with them to achieve those goals. Fire service leaders should be held accountable and be transparent when working with elected officials. Fire service leaders should not make statements that catch elected officials off guard and they should not withhold information from elected officials. Fire service leaders should practice fiscal responsibility. Spending money wisely and searching for ways for the service to be more efficient is very important. Fire service leaders should market their department and highlight what it is the fire department does. They should also highlight the needs of the department, and most importantly, highlight why the department needs it. Finally, elected officials will turn to the fire service leader to help plan for the future (International Association of Fire Chiefs [IAFF], 2013).

In order to keep elected officials and the public informed, fire service leaders should consider hosting public meetings. Allowing attendees the opportunity to provide feedback will assist in building support and stopping potential problems. Anticipate potential questions before the public meeting, if a question is asked that you can't answer, inform that person you will get back to them. Before the meeting, fire service leaders should meet with union officials and develop key talking points. Fire service leaders should bring two or three other fire service personnel with them to large meetings. Finally community data should be presented at the meeting that clearly illustrates the need (IAFF, 2013).

In summary, the findings and observations of others had a significant influence on how I plan to move forward with this project. The literature review provided more than enough available information that pertained to each of my five research questions. As a result of

conducting the literature review I was able to gain a clear picture of what type of questions needed to be asked through surveys and interviews in order to address each specific research question. Information collected on this subject matter will assist me in making a series of recommendations to both my department and elected officials. What I have also gained is a better understanding for what it will take to implement some of these recommendations. Like the American Heart Associations chain of survival, the ability to implement an ALS program within the Burlington Fire Department will only occur if all of the stakeholders involved which includes fire administration, the firefighters union, and elected officials work closely together. If one group of stakeholders does not support the program it is bound to fail.

Procedures

The descriptive research method was used for this project in order to determine if it would be feasible for the Burlington Fire Department to upgrade its current BLS service to an ALS service. In order to collect data for this project, both interviews and surveys were conducted that were directly related to this projects five research questions. Prior to conducting interviews, this researcher developed a questionnaire that was comprised of 13 questions. These 13 questions were created based upon this projects literature review (see Appendix A). This researcher chose to interview four local fire chiefs whose departments had upgraded their BLS service to an ALS service. The four fire chiefs were also chosen based on how long their departments had been operating at the ALS level. On Wednesday, September 23, 2015, Chief Gregory Burns of the Reading MA Fire Department was interviewed at Reading Fire Headquarters. Chief Burns was selected because his department was one of the first fire departments in our immediate area to upgrade to the ALS level (see Appendix B). On Thursday, September 24, 2015, Chief Chris Leary of the Melrose Fire Department was interviewed at

Melrose Fire Headquarters. Chief Leary was selected because his department recently implemented a BLS ambulance program then shortly thereafter, upgraded to an ALS service (see Appendix C). On Friday, September 25, 2015, Chief David Grunes of the Bedford MA Fire Department was interviewed at Bedford Fire Headquarters. Chief Grunes was selected because his department within the past month upgraded its BLS service to an ALS service (see Appendix D). On Monday, September 28, 2015, Retired Westford MA Fire Chief Richard Rochon was interviewed at Panerra Bread which is located in Chelmsford, MA. Chief Rochon was selected because his departments ALS program has been in existence for several years (see Appendix E). Each of the four fire chiefs were asked to respond to the same 13 questions. Question one is directly related to this projects first research question; what was the primary reason behind your fire department upgrading from a BLS service to an ALS service. Questions two and three are directly related to this projects second research question; describe your department's current ALS model, has your departments operational model changed since it was first implemented. Questions five through nine are directly related to this projects third research question; how many firefighter/medics does your department currently employ, describe the costs associated with implementing your ALS service, was increasing department staffing part of your ALS plan, how do firefighter/medics maintain their certification level and is there a cost associated, and does the benefit of providing an ALS service to your community justify the costs of the program. Questions four, and 10 through 12 are directly related to this projects fourth research question; did your department request a selective certification civil service list and if so, how satisfied are you with this process, what roadblocks were encountered when you attempted to upgrade your service from the BLS level to the ALS level, if roadblocks were encountered, how did you overcome them, has retention of firefighter/medics been a problem for your department.

Question 13 is directly related to this projects fifth research question; what approaches did you use in order to successfully gain the support of both your elected officials and town citizens in order to implement your ALS plan.

Two separate surveys were conducted for this project. Both surveys were created using the website Survey Monkey. The website for Survey Money can be found at www.surveymonkey.com. The purpose of the first survey was to gather information pertaining to this researchers five research questions from Massachusetts fire departments that currently provide an ALS service to their communities. Based on information obtained through the literature review, 27 survey questions were developed. Questions one through three pertain specifically to the demographics of those departments that responded to the survey. Questions four and five are directly related to this projects first research question; prior to your department delivering an ALS service, who provided ALS to your community, list the primary reason your department upgraded to an ALS service. Questions six though 11 are directly related to this projects second research question; who provides patient transports in your community, if your department provides transports, describe your operational model, does your department staff ALS engine companies, how many paramedics are typically assigned to your ALS engine company, will a paramedic assigned to an engine accompany the patient to the hospital in a transport ambulance, who provides back-up ALS coverage for your community. Questions 12 through 19 are directly related to this projects third research question; what was your departments ALS start-up costs, what did your ALS start-up costs include, what is your departments ambulance billing rate as it pertains to Medicare, revenues obtained through patient billing are deposited into which account, how are members of your department who are certified paramedics compensated, list your paramedics percentage rate or stipend, does your department

have a full time EMS officer, if so, list the rank, did department staffing levels increase when your department upgraded to the ALS level. Questions 20 through 24 are directly related to this projects fourth research question; where your initial attempts to upgrade to the ALS level met with any resistance from the following internal and external stakeholders, how long did it take to implement your ALS program once the framework of the program was developed, if your department requested a selective service list for paramedics, how satisfied were you of the quality of the candidates, when hiring firefighter/paramedics, did lack of paramedic experience become an issue, has retention of firefighter/paramedics been a problem for your department. Questions 25 through 27 are directly related to this projects fifth research question; was any ALS studies conducted by or for your department prior to implementation, was an ALS committee formed in your community prior to implementation, if so, what was the makeup of the committee, did your EMS committee make formal presentations to the following. The survey entitled Advanced Life Support Survey (see Appendix F) was sent to 141 Massachusetts fire departments. This researcher obtained the Massachusetts ambulance service list from www.mass.gov which lists every fire department that provides a paramedic level service. This list included the email address of each fire chief or EMS officer. On September 9, 2015, this researcher emailed a survey along with a request to each of the 141 fire departments (see Appendix G). That same day, eight emails were sent back to this researcher stating that the email was undeliverable. Later that day, this researcher made the corrective changes to the eight email addresses and resent the request (see Appendix H). As of September 21, 2015, this researcher had received 39 responses to the Advanced Life Support Survey. Because of the low number of responses, this researcher sent a follow-up email to each of the 141 fire departments (see Appendix I). As a result of the follow-up request, 29 more surveys were completed for a

total number of 68 completed surveys. Three fire chiefs also sent me a direct email stating that their department did not provide an ALS service.

The purpose of the second survey was to gather information pertaining to three of this researchers five research questions from members of the Burlington Fire Department. This survey would also be used to gauge the interest of our membership toward the possibly of upgrading to the ALS level. Based on information obtained through the literature review, nine survey questions were developed. Questions one through five are directly related to this projects first research question; are you satisfied with our current two tiered EMS system in which the fire department provides a transport BLS ambulance and a private ambulance company provides the ALS service, how would you rate the overall service provided by our current ALS provider, what concerns do you have with our current ALS provider, do you believe the Burlington Fire Department should pursue upgrading its current BLS service to an ALS service, the primary reason the Burlington Fire Department should pursue upgrading to the ALS level is. Questions six and seven are directly related to this projects fourth research question, what roadblocks would you anticipate being encountered if the fire department attempted to upgrade to the ALS level, if firefighter/paramedics are hired by the fire department are you concerned about the following. Questions eight and nine are directly related to this projects fifth research question; should an ALS study be conducted for the Town of Burlington and if so, who shall conduct that study, should an ALS committee be formed within the town, if so, what should be the make-up of that committee. On September 18, 2015, a survey entitled Fire Department Advanced Life Support Survey (see Appendix J) was emailed to 57 uniformed members of the Burlington Fire Department (see Appendix K). As of October 1, 2015, this researcher had received 28 responses to the Fire Department Advanced Life Support Survey. Because of the low number of responses,

this researcher sent a follow-up email to each of the departments 57 members (see Appendix L). As a result of the follow-up request, nine more surveys were completed for a total number of 37 completed surveys.

Two limitations have been identified by this researcher. First the 95 percent confidence level for each survey was not attained. One hundred and forty one Advanced Life Support surveys were sent out to fire departments that provide an ALS service; only 68 surveys were completed and returned. Three fire chiefs did send emails stating their department did not provide ALS. Fifty seven Fire Department Advanced Life Support surveys were sent out to members of the Burlington Fire Department; only 37 surveys were completed and returned. The second limitation noted is that only fire departments that operate at the ALS level were interviewed or sent a survey. Fire Departments that operate at the BLS level may have had valuable information pertaining to upgrading to the ALS level that could have been used in this project, but they were never asked by this researcher.

Results

The purpose of this research project is to determine if it would be feasible for the Burlington Fire Department to upgrade its current BLS service to an ALS service. In order for this researcher to determine if this purpose statement is possible, five research questions were developed. Research question one asks what are the primary reasons for fire departments to upgrade their BLS service to an ALS service. Four local fire chiefs whose departments had upgraded to the ALS level were interviewed and asked this specific question. Reading Fire Chief Gregory Burns stated that his town began looking at providing an ALS service back in the late 1980's. This was brought upon by their current ALS provider being forced to restructure their rate fees. Reading began to question if their current ALS service would continue to be

provided. Because of this, the firefighters union began exploring ALS. Several meetings were held between union firefighters and local officials of the communities that this change would impact. The concept of staffing a fire-based ALS intercept truck was discussed. This concept never got off the ground. When Greg became the Chief of the Reading Fire Department his town manager asked him to implement an ALS plan. According to Chief Burns; "the bottom line was to provide better patient care" (G. Burns, personal communication, September 23, 2015). Melrose Fire Chief Chris Leary stated the primary reason for his department to upgrade to ALS was to "enhance our service." ALS service was provided by a private ambulance intercept truck. Melrose Fire Department had been awarded two SAFER grants. In order to maintain the eight firefighter positions, "Melrose got back into the ambulance business." Chief Leary stated that Melrose was paying the private ALS provider approximately 16 to 20 thousand a month for ALS services (C. Leary, personal communication, September 25, 2015). Bedford Fire Chief David Grunes stated that "Bedford did not want to be dependent on a private ambulance company for ALS services." He stated that Bedford had used three ALS providers over a ten year period. Emerson Hospital first provided an ALS service however they changed their ALS model and location. Bedford then used two private ambulance companies to provide an ALS service. These two companies also moved locations. These changes had an impact on ALS response times into Bedford. Grunes stated, "We struggled to get them here." Another issue that the Bedford Fire Department had was swinging the ambulance crew to the ladder truck on alarm or fire calls leaving the department without an ambulance. Grunes stated that about fifty percent of their ambulance calls were at the ALS level, "Bedford was concerned with the continuity of care being provided to its residents" (D. Grunes, personal communication, September 25, 2015). Retired Westford Fire Chief Richard Rochon also experienced a similar situation as Bedford.

Westford's primary ALS provider was Emerson Hospital. Emerson was dissolving their ALS program. Another hospital based ALS program which was run out of Lowell also provided ALS coverage to Westford. Because Westford was located at the far end of each provider's service area, ALS response times to Westford were over 15 minutes. "We wanted to provide a higher level of care to our citizens in a shorter period of time" (R. Rochon, personal communication, September 28, 2015).

Sixty eight fire departments that provide an ALS service in Massachusetts responded to this researchers Advanced Life Support Survey. Survey questions four and five are directly related to this projects first research question.

Q4. Prior to your department delivering an ALS service, who provided ALS to your community?

One respondent skipped this question. 24 respondents or 35.82% answered other. The responses listed under other include; ALS started with fire department (8), no previous ALS (6), mutual aid fire departments (3), hospital and private (2), private and mutual aid fire departments (1), private non-profit (1), private with no contract (1), hospital (1), and not sure (1). 21 respondents or 31.34% answered hospital based paramedics. 20 respondents or 29.85% answered private ambulance company. Two respondents or 2.99% answered regional based paramedics.

Q5. The primary reason your department upgraded to the ALS service includes?

Table 1

Reasons for Upgrading to ALS

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Not satisfied with previous ALS provider	15.00% 9	18.33% 11	41.67% 25	18.33% 11	6.67% 4
Previous ALS service no longer provided	16.95% 10	16.95% 10	32.20% 19	13.56% 8	20.34% 12
Improved overall patient care	84.62% 55	9.23% 6	4.62% 3	0.00% 0	1.54% 1
Improve ALS response times	87.50% 56	10.94% 7	1.56% 1	0.00% 0	0.00% 0
Increase department staffing levels	33.87% 21	24.19% 15	30.65% 19	6.45% 4	4.84% 3
Increase revenues through billing	37.50% 24	46.88% 30	12.50% 8	3.13% 2	0.00% 0

Thirty seven members of the Burlington Fire Department responded to this researcher's Fire Department Advanced Life Support Survey. Survey questions one through five are directly related to this projects first research question.

Q1. Are you satisfied with our current two tiered EMS system in which the fire department provides a transport BLS ambulance and a private ambulance company provides the ALS service?

16 respondents or 43.24% answered they are not satisfied. 11 respondents or 29.73% answered they are moderately satisfied. 8 respondents or 21.62% answered they are slightly satisfied. 2 respondents or 5.41% answered they are fully satisfied.

Q2. How would you rate the overall service provided by our current ALS provider.

20 respondents or 54.05% answered fair. 16 respondents or 43.24% answered good. 1 respondent or 2.70% answered poor.

Q3. What concerns do you have regarding our current ALS provider?

Table 2

Concerns Regarding Current ALS Provider

	Very Concerned	Concerned	Slightly Concerned	Not Concerned
Operational Model	13.89%	50.00	19.44%	11.44%
	5	18	7	4
Availability	32.43%	35.14%	27.03%	5.41%
	12	13	10	2
Response Times	32.43%	21.62%	40.54%	5.41%
	12	8	15	16
Patient Care	2.70%	18.92%	35.14%	43.24%
	1	7	13	16
Communications	5.41%	27.03%	43.24%	24.32%
	2	10	16	9

Q4. Do you believe the Burlington Fire Department should pursue upgrading its current BLS service to an ALS service?

34 respondents or 91.89% answered yes. 3 respondents or 8.11% answered no.

Q5. The primary reason the Burlington Fire Department should pursue upgrading to the ALS level is?

Table 3

Primary Reason for Upgrading To ALS Level

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Not satisfied with current ALS provider	8.33% 3	38.89% 14	33.33% 12	19.44% 7	0.00% 0
Improve ALS availability	67.57% 25	24.32% 9	5.41% 2	2.70% 1	0.00% 0
Improve ALS response times	62.16% 23	29.73% 11	5.41% 2	2.70% 1	0.00%
Improve overall patient care	40.54 14	21.62% 8	24.32% 9	13.51% 5	0.00% 0
Increase department staffing levels	62.16% 23	27.03% 10	5.41% 2	5.41% 2	0.00% 0
Increase revenues through billing	67.57% 25	13.51% 5	8.11% 3	8.11% 3	2.70% 1

Research question two asks what operational models are currently used by fire departments in order to provide an ALS service to their community. Four local fire chiefs whose departments had upgraded to the ALS level were asked two specific questions directly related to this research question. Each chief was asked to describe his department's current ALS model. Chief Gregory Burns of the Reading Fire Department stated that his department staffs one primary ambulance 24/7 with two firefighter/medics. Reading's engine companies are Class 5 ambulances that are also equipped with ALS equipment. Reading has two fire stations and medics are usually assigned to every apparatus. If a Reading paramedic unit is not available they

will contact a private ambulance company or use a mutual aid fire department for ALS (G. Burns, personal communication, September 23, 2015). Chief Chris Leary states that Melrose staffs one ambulance 24/7 with two firefighter/medics. Chief Leary stated his department did not want to staff their ambulance at the paramedic/basic level. He felt that this would be a decrease in patient care. He believed that having two medics working together with equal training was important especially when administering medications. Leary reported that structural firefighting gear and SCBA are also stored in his ambulance. A private ambulance company provides back-up ALS service when a Melrose unit is unavailable (C. Leary, personal communication, September 24, 2015). Chief David Grunes states that Bedford currently staffs two of their department's four shifts with firefighter/medics. Their goal is to staff two firefighter/medics on an ambulance. However, if a firefighter/medic position goes unfilled, Bedford will drop to the paramedic/basic level. When this occurs, a private ambulance company will be called to provide ALS (D. Grunes, personal communication, September 25, 2015). Retired Westford Chief Richard Rochon states that his primary ambulance is staffed by two firefighter/medics. A second ambulance is staffed by firefighter/EMTs who are also assigned to an engine company. If Westford has no ALS unit available they will contact either a private ambulance company or a hospital based ALS provider (R. Rochon, personal communication, September 28, 2015).

The second question the chiefs were asked was has your department's operational model changed since ALS was first implemented. Chief Burns stated that in 2003, Reading had eight firefighter/medics. Six of those medics were new medics. Reading took all existing personnel who were assigned to the ambulance off the ambulance and replaced them with the new firefighter/medics. This was problematic for his department (G. Burns, personal communication,

September 25, 2015). Chief Leary stated that Melrose started their ALS program with 10 firefighter/medics. Three shifts operated at the ALS level and one shift operated at the BLS level. A private ambulance company would provide ALS coverage when the department operated at the BLS level. Once Melrose had 12 firefighter/medics all four shifts operated at the ALS level. Chief Leary's goal is to staff ALS engine companies (C. Leary, personal communication, September 24, 2015). Chief Grunes of the Bedford Fire Department was not asked this question because his program just was implemented within the past month. Retired Westford Chief Richard Rochon stated that Westford started their ALS program during the day shift with only two firefighter/medics. Between early buyouts and retirements their paramedic staffing levels increased rapidly within two years (R. Rochon, personal communication, September 28, 2015).

Sixty eight fire departments that provide an ALS service in Massachusetts responded to this researchers Advanced Life Support Survey. Survey questions six through 11 are directly related to this projects second research question.

Q6. Who provides patient transports in your community?

65 respondents or 95.59% answered the fire department. 2 respondents or 2.94% answered a private ambulance company. 1 respondent or 1.47% answered city or town EMS.

Q7. If your department provides patient transports, describe your operational model.

2 respondents skipped this question. 40 respondents or 60.61% answered ambulance staffed by two paramedics. 26 respondents or 39.39% answered ambulance staffed by one paramedic and one EMT-Basic.

Q8. Does your department staff ALS engine companies?

1 respondent skipped this question. 44 respondents or 65.67% answered no. 23 respondents or 34.33% stated yes.

Q9. How many paramedics are typically assigned to your ALS engine company?

7 respondents skipped this question. 33 respondents or 54.10% answered none. 18 respondents or 29.51% answered one. 7 respondents or 11.48% answered two. 3 respondents or 4.92% answered three.

Q10. Will a paramedic assigned to an engine accompany the patient to the hospital in a transport ambulance?

10 respondents skipped this question. 30 respondents or 51.72% answered yes. 28 respondents or 48.28% answered no.

Q11. Who provides back-up ALS coverage for your community?

56 respondents or 82.35% answered a neighboring fire department. 12 respondents or 17.65% answered a private ambulance company.

Research question three asks what are the costs associated with implementing a fire department ALS service. Four local fire chiefs whose department upgraded to the ALS level were asked five specific questions related to this research question. Each chief was asked how many firefighter/medics does your department currently employ? Chief Burns stated that Reading has 24 members that are paramedics out of a total of 46. Reading's CBA states that the members shall maintain certification throughout their career (G. Burns, personal communication, September 23, 2015). Chief Leary stated that Melrose has 21 firefighter/medics. The prior fire chief offered the entire department the opportunity to take the paramedic course, only three members were interested (C. Leary, personal communication, September 24, 2015). Chief

Grunes states that his department has four firefighter/medics. One firefighter medic is currently going to the Massachusetts Firefighting Academy (D. Grunes, personal communication, September 25, 2015). Retired Westford Chief Rochon stated that when he retired, Westford had 12 firefighter/medics. When the program started he only had two firefighter/medics (R. Rochon, personal communication, September 28, 2015).

The four local chief's were asked to describe the costs associated with implementing their ALS service. Chief Burns stated that Readings costs included a 12 lead monitor, medications, licensing fees, and a refrigerator for storing medicine. Chief Burns stated that his 2014 budget included 47,000 for supplies, 20,000 for licenses and fees, and 6,000 for the medical director. Reading also pays for all firefighter/medics continuing education and the backfilling of their positions (G. Burns, personal communication, September 23, 2015). Melrose Chief Chris Leary stated that a bond was required for 65,000 in order to purchase equipment. This included a monitor and maintenance contract for 34,000. A Lucas chest compressor, a RAD 57, and two ALS kits were purchased. Chief Leary stated that an ambulance enterprise fund covers all costs. The enterprise fund covers the salaries of eight firefighter/medics as well as 120,000 for overtime. The training of firefighter/medics requires backfilling (C. Leary, personal communication, September 24, 2015). Chief Grunes of Bedford stated that four firefighter/medics were hired. The cost for labor alone was 332,000. Grunes stated that his department's overtime account was increased 17,000 to allow for medic training. 21,000 were allotted for medication and equipment. Chief Grunes is a strong believer in the ambulance enterprise account. He worked very closely with the town's financial department in creating the account (D. Grunes, personal communication, September 25, 2015). Prior to developing Westford's ALS program Retired Chief Rochon stated that Westford's ambulance service was

funded through private donations. Through this fund an ambulance and equipment were purchased. Westford never billed for their ambulance service. Because of declining donations, an ambulance enterprise account was established. This budget matched the fire department operating budget. Rochon stated that the salaries of eight firefighter/medics were included within the enterprise account. Rochon also stated that the heart monitor is the biggest expense, averaging between 20,000 and 40,000. Chief Rochon estimated a total equipment cost of approximately 90,000 to 100,000 (R. Rochon, personal communication, September 28, 2015).

The four chief's were asked if increasing department staffing was part of your ALS program. Reading Chief Burns stated that two additional firefighters were hired through a town wide override vote. This increase in manning brought all four shifts up to 11 personnel (G. Burns, personal communication, September 23, 2015). In Melrose, two SAFER Grants were awarded. Each grant was for four firefighters. "The ways to maintain those positions were to operate an ambulance service" (C. Leary, personal communication, September 24, 2015). When asked about increasing staffing levels through an ALS plan, Bedford Chief Grunes stated, "Yes, I can't think of any other way to do it." Chief Grunes looked at manning based on statistical demand. As a result of increasing each shift to six personnel, an additional piece of apparatus would be staffed on weekdays and weekends (D. Grunes, personal communication, September 25, 2015). Retired Westford Chief Rochon requested eight additional positions. He recommended increasing staffing during the day then reassigning those members to a substation at night. Because of a number of vacancies, Westford's ALS plan ramped up within two and a half years (R. Rochon, personal communication, September 28, 2015).

The four chief's were asked how their firefighter/medics maintain their certification level and is there a cost associated. In Reading, Chief Burns stated, "we pay for it all" (G. Burns,

personal communication, September 23, 2015). In Melrose, Chief Leary states that costs include both in-house training as well as outside training. Firefighter/medics are paid overtime for training or are given the day off. Chief Leary stated, "The more medics that are on the department, the greater the cost for maintaining certifications" (C. Leary, personal communication, September 24, 2015). In Bedford, Chief Grunes stated that medics will get compensated when sent out for training, EMT-Basics will not. Grunes stated that "this could be problematic" (D. Grunes, personal communication, September 25, 2015). In Westford, Retired Chief Rochon stated that initially firefighter/medics were responsible to maintain their own certification. He stated that the initial medic stipend covered education. Rochon stressed the importance of having an in-house member available to train the medics. He gave the example of an outside training company who charged 20,000 for assisting in maintaining certifications (R. Rochon, personal communication, September 28, 2015).

The final question asked to the four chief's pertaining to the third research question is in your opinion does the benefit of providing an ALS service to your community justify the cost of the program? Chief Burns stated "no doubt, the community is very proud of our program and a great deal of satisfaction is felt by the membership when they provide an ALS service. As a result, the town supported the ALS engine and ladder company" (G. Burns, personal communication, September 23, 2015). Chief Leary believes that the service justifies the cost. "Members of the Melrose Fire Department serve dual purposes as firefighter/medics. They provide an enhanced service to the community." Leary also stated that his department has hit its projected financial mark every year (C. Leary, personal communication, September 24, 2015). Chief Grunes stated that Bedford had a huge service gap when his ladder truck was out of the building. "Bedford now has a dedicated staffed ambulance at a higher level of care with no

additional impact on the tax levy." Grunes stated that the program was funded on the decrease of ALS costs to the private ambulance provider and an increase in ambulance revenues through ambulance fees. Chief Grunes spoke of the first day his department operated at the ALS level. A cardiac arrest occurred on a basketball court. A Bedford engine arrived first followed by the ambulance. Grunes stated "you had six guys wearing the same uniform and there was a natural flow to the call." Members of the community that witnessed the event called the Chief Grunes and praised the department (D. Grunes, personal communication, September 25, 2015). Retired Westford Chief Rochon stated "the service is superior; there are no delivery gaps in patient care. We have seen lives saved as a result of this service" (R. Rochon, personal communication, September 28, 2015).

Sixty eight fire departments that provide an ALS service in Massachusetts responded to this researchers Advanced Life Support Survey. Survey questions 12 through 19 are directly related to this projects third research question.

Q12. What were your department's ALS start-up costs?

6 respondents skipped this question. 37 respondents or 60.00% listed a dollar amount. 23 respondents or 37.00% answered unknown. 1 respondent or .02% answered significant. 1 respondent or .02% answered through budget. The lowest dollar figure listed was 20,000. The highest dollar figure was listed at 800,000. The total amount of dollars listed was 6,584,000. 6,584,000 divided by 37 respondent's averages out to 177,945.94.

Table 4

Fire Department ALS Start-Up Costs

Dollar Amount	Total Responses	Response Percentage
20,000 -100,000	17	46%
101,000 – 150,000	4	11%
151,000 – 200,000	7	19%
201,000 – 250,000	1	3%
251,000 – 300,000	4	11%
400,000 – 450,000	1	3%
451,000 – 500,000	1	3%
501,000 – 600,000	1	3%
700,000 – 800,000	1	3%

Note. Based on 37 respondents

Q13. Did your departments ALS start-up costs include?

Table 5

Specific ALS Start-Up Costs

	Agree	Disagree	Other
Firefighter/medic Base Salary	76.92%	23.08%	0.00%
and Benefits	50	15	0
Ambulance Purchase	27.42%	72.58%	0.00%
	17	45	0
ALS Medical Equipment	98.46%	0.00%	1.54%
	64	0	1
ALS Medications	89.23%	10.77%	0.00%
	58	7	0
Continuing Education Costs	61.90%	38.10%	0.00%
	39	24	0
Ambulance Maintenance Costs	41.67%	58.33%	0.00%
	25	35	0
License/Certification Costs	87.69%	12.31%	0.00%
	57	8	0

Q14. Your ambulance billing rates are based on the current Medicare rate plus?

4 respondents skipped this question. 19 respondents or 29.69% answered 200%. 13 respondents or 20.31% answered 150%. 12 respondents or 18.75% answered other. The responses listed under other include; based on cost of proving the service (5), based on average rates determined by billing company (2), industry comparison (1), 200% (1), 225% (1), and a set ALS rate of 2,100 plus 28 dollars per mile. 8 respondents or 12.50% answered 50%. 7 respondents or 10.94% answered 100%. 4 respondents or 6.25% answered 300%. 1 respondent or 1.56% answered 250%.

Q15. Revenues obtained through patient billing are deposited into?

41 respondents or 60.29% answered ambulance enterprise account. 24 respondents or 35.29% answered city/town's general fund. 3 respondents or 4.41% answered both the ambulance enterprise account and the general fund.

Q16. Members of your department who are certified paramedics receive;

3 respondents skipped this question. 39 respondents or 60.00% answered a percentage rate increase on base salary. 24 respondents or 36.92% answered an annual stipend. 2 respondents or 3.08% answered a semi-annual stipend.

Q17. Please list your paramedics' percentage rate increase or stipend.

7 respondents skipped this question. 30 respondents or 49.18% answered percentage rate increase. 28 respondents or 45.90% answered stipend. 2 respondents or 3.27% answered up a grade. 1 respondent or 1.63% answered hourly rate. The lowest percentage rate was 5.00%. The highest percentage rate was 25.00%. The average percentage rate increase was 13.30%. The lowest stipend was 1,500. The highest stipend was 8,700. The average stipend was 5,189.

Table 6

Paramedic Percentage Rate Increase and Stipends

Percentage Rate Increase Base Salary	Number of Respondents	Respondent Average	Stipends (Dollar Amount)	Number of Respondents	Respondent Average
0 – 5%	1	3%	**1,500 – 2000**	3	11%
6 – 10%	8	27%	**2001 – 3000**	1	4%
11 – 15%	13	43%	**3001 – 4000**	0	0%
16 – 20%	5	17%	**4001 – 5000**	12	43%
21 -25%	3	10%	**5001 – 6000**	5	18%
			6001 – 7000	3	11%
			7001 – 8000	3	11%
			8001 – 9000	1	4%

Q18. Does your department have a full time EMS officer, if so; list the rank of your EMS officer.

1 respondent skipped the question. 27 respondents or 40.30% answered they have no full time EMS officer. 12 respondents or 17.91% answered Lieutenant. 11 respondents or 16.42% answered Firefighter. 7 respondents or 10.45% answered Captain. 7 respondents or 10.45% answered Deputy Fire Chief. 3 respondents or 4.48% answered Assistant Fire Chief.

Q19. Did your department staffing levels increase when your department upgraded to the ALS level?

1 respondent skipped the question. 41 respondents or 61.19% answered yes. 26 respondents or 38.81% stated no.

Research question four asks what roadblocks fire departments commonly encounter when attempting to upgrade from a BLS service to an ALS service. Four local fire chiefs whose departments upgraded to the ALS level were asked four specific questions related to this research question. Each chief was asked if their department requested a selective certification civil service list and if so, how satisfied were you with this process. Chief Greg Burns of the Reading Fire Department stated that the civil service process has been great for Reading. At the time, only six or seven resident's names appeared on the civil service list. Since the hiring of firefighter/medics only non-residents have been hired. Reading used the selective service list to hire six firefighter/medics (G. Burns, personal communication, September 23, 2015). Melrose Fire Chief Chris Leary stated that guys are taking the paramedic program to get hired by fire departments. Leary stated that once the individual is hired, they have very little interest in working on the ambulance. Chief Leary stated that more non-residents are being hired. Chief Leary also stated that he was competing with other fire departments for the same individuals whose name appeared on the civil service list (C. Leary, personal communication, September 24, 2015). Bedford Fire Chief Grunes has been trying to hire four firefighter/medics since December 1, 2014 when the latest civil service list was established. Grunes stated that over 40 fire departments had requested a medic list. Chief Grunes was concerned that Bedford may be seen "as being on the bottom of the list" because these paramedics had options. Grunes felt that he had to sell Bedford to the candidates. Chief Grunes was not satisfied with the civil service process or the candidates (D. Grunes, personal communication, September 25, 2015). Westford Fire Department is a non-civil service community. Retired Chief Richard Rochon stated that Westford developed their own hiring process which included a written test, interview, and

practical exams in which their medical control affiliate was directly involved (R. Rochon, personal communication, September 28, 2015).

The four chief's were asked what roadblocks were encountered when you attempted to upgrade your service from the BLS level to the ALS level. Chief Burns stated that some internal roadblocks existed. Chief Burns stated that fathers currently on the job wanted to see their sons on the job. He also stated that his members were very concerned that existing firefighters would be laid off before firefighter/medics (G. Burns, personal communication, September 23, 2015). Melrose Chief Leary stated than no roadblocks were encountered. He stated that an ALS committee was formed and that the Chief, Mayor, and Aldermen supported the plan (C. Leary, personal communication, September 24, 2015). Chief Grunes stated that there was skepticism of the business plan by one of his selectman and the entire finance committee. Grunes stated that the focus was not on patient care. "They wanted hard numbers, not emotion." Chief Grunes stated that a current roadblock that he is facing is that ambulance revenues from a Veteran's Administrative Hospital that is located in Bedford have declined by 90% due to a change in insurance (D. Grunes, personal communication, September 25, 2015). Retired Chief Rochon spoke of both internal and external issues. Internally it was the unknown; Westford was going to be one of the first department's in the area to run ALS. Westford's EMS officer wanted all 12 firefighter/medics at once in order to start the program. Rochon stated that both Emerson and Lowell ALS came out against the plan (R. Rochon, personal communication, September 28, 2015).

Each chief was then asked if roadblocks were encountered, how you overcame them. Chief Burns stated that the rank and file was supportive of the ALS program. The union executive board brought a strong package back to the membership that was supported (G. Burns,

personal communication, September 23, 2015). Chief Leary stated that the department, union, and the city worked together. He stated that their private ambulance ALS provider assisted with the process (C. Leary, personal communication, September 24, 2015). Bedford Fire Chief Grunes stated that the roadblocks were overcome through education. He stated the first person that needed to be convinced was the town manager. Grunes stated that 16 meetings were held over a four month period. Presentations were given by the finance director and members of the union. Grunes stated "you must have an answer for every question" (D. Grunes, personal communication, September 25, 2015). Retired Westford Chief Rochon stated that there needs to be a tremendous amount of communication. "The union must participate in the process." Rochon advised to negotiate as much as you can in the first contract. Externally, Rochon stated it was all about educating the public. "How would an ALS program benefit the community?" Rochon recommends creating a business plan to show how revenues will offset costs (R. Rochon, personal communication, September 28, 2015).

The final question asked to the chief's pertaining to this research question was has the retention of firefighter/medics been a problem for your department? Chief Burns stated that Reading has not had anybody leave. He mentioned that several requests have been made from firefighter/medics in other communities to lateral to Reading. (G. Burns, personal communication, September 23, 2015). Melrose has had a couple of firefighter/medics leave but Chief Leary stated "it is a two-way street." Melrose has hired firefighter/medics that have transferred in from other fire departments (C. Leary, personal communication, September 24, 2015). Because their program is so new, Chief Grunes has not experienced any retention issues (D. Grunes, personal communication, September 25, 2015). Retired Chief Rochon stated that retention has been a problem but he believes this issue can be dealt with. He stated that

firefighter/medics do look at other department's contracts. He believes how a department pays for education is important. "Some department's pay for education, some do not" (R. Rochon, personal communication, September 28, 2015).

Sixty eight fire departments that provide an ALS service in Massachusetts responded to this researchers Advanced Life Support Survey. Survey questions 20 through 24 are directly related to this projects fourth research question.

Q20. Were your initial attempts to upgrade to the ALS level met with any resistance from the following internal and external stakeholders?

2 respondents skipped the question.

Table 7

Resistance from Internal and External Stakeholders

	Resistive	Moderately Resistive	Slightly Resistive	Not Resistive	No Response
Mayor/Town	4.83%	8.06%	11.29%	69.35%	6.45%
Administrator	3	5	7	43	4
City Counsel	7.69%	7.69%	18.46%	63.08	4.62%
Selectman	5	5	12	41	3
Finance Committee	4.76%	11.11%	20.63%	58.73%	4.76%
	3	7	13	37	3
Town Meeting	1.85%	3.70%	7.41%	72.22%	14.81%
	1	2	4	39	8
Firefighter Union	5.00%	6.67%	8.33%	73.33%	6.67%
	3	4	5	44	4
Non Union	2.04%	2.04%	6.12%	65.31%	24.49%
Firefighter's	1	1	3	32	12
Private Ambulance	9.62%	9.62%	1.92%	57.69%	21.15%
Company	5	5	1	30	11

Q21. How long did it take to implement your ALS program after the framework of the program was developed?

1 respondent skipped the question. 30 respondents or 44.78% answered one year. 27 respondents or 40.30% answered two years. 7 respondents or 10.45% answered three years. 1 respondent or 1.49% answered four years. 2 respondents or 2.99% answered five years.

Q22. If your department requested a Human Resources Division Selective Certification List for EMT paramedics, how satisfied were you of the quality of the candidates?

5 respondents skipped the question. 32 respondents or 50.79% did not request a selective certification list. 14 respondents or 22.22% answered satisfied. 9 respondents or 14.29% answered not satisfied. 8 respondents or 12.70% answered very satisfied.

Q23. When hiring firefighter/paramedics did lack of paramedic experience ever become an issue?

30 respondents or 44.12% answered on occasion. 20 respondents or 29.41% answered no. 18 respondents or 26.47% answered yes.

Q24. Has retention of firefighter/paramedics been a problem for your department?

1 respondent skipped the question. 47 respondents or 70.15% answered no. 20 respondents or 29.85% answered yes.

Thirty seven members of the Burlington Fire Department responded to this researcher's Fire Department Advanced Life Support Survey. Survey questions six and seven are directly related to this projects fourth research question.

Q6. What roadblocks would you anticipate being encountered if the fire department attempted to upgrade to the ALS level?

Table 8

Anticipated Local Roadblocks to the ALS Level

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Fire Administration	5.71	14.29%	31.57%	48.57%	0.00%
	2	5	11	17	0
Town	10.81%	32.43%	27.03%	27.03%	2.70%
Administrator	4	12	10	10	1
Board of Selectman	11.11%	50.00%	22.22%	11.11%	5.56%
	4	18	8	4	2
Ways and Means	35.14%	32.43%	29.73%	2.70%	0.00%
Committee	13	12	11	1	0
Town Meeting	18.92%	45.95%	29.73%	5.41%	0.00%
	7	17	11	2	0
Collective	24.32%	24.32%	35.14%	16.22%	0.00%
Bargaining	9	9	13	6	0
Agreement					
Civil Service	10.81%	13.51%	54.05%	18.92%	2.70%
	4	5	20	7	1
Current ALS	22.22%	33.33%	19.44%	25.00%	0.00%
Provider	8	12	7	9	0
OEMS	0.00%	8.33%	55.56%	36.11%	0.00%
	0	3	20	13	0
Affiliate Hospital	2.78%	11.11%	41.67%	30.56%	13.89%
	1	4	15	11	5

Q7. If firefighter/paramedics are hired by the fire department are you concerned about the following?

Table 9

Fire Department Concerns

	Very Concerned	Concerned	Slightly Concerned	Not Concerned
Lack of Experienced	16.22%	35.14%	21.62%	27.03%
Paramedics	6	13	8	10
Retention of	16.22%	29.73%	24.32%	29.73%
Firefighter/Paramedics	6	11	9	11
Working Relationships	27.03%	35.14%	21.62%	16.22%
between	10	13	8	6
Firefighter/Paramedics				
and Firefighter/EMTs				
Maintaining Skills and	21.62%	27.03%	18.92%	32.43%
Certifications	8	10	7	12
Operating Model	10.81%	35.14%	35.14%	18.92%
	4	13	13	7

Research question five asks what approaches have been used by fire departments in order to gain the support of elected officials and the community during the implementation of an ALS program. Four local fire chief's whose department upgraded to the ALS level were asked this specific question. Reading Fire Chief Greg Burns stated that his department stressed the quicker ALS is provided to the patient the better it is. "A three minute ALS response time is better than a 12 minute response time." Chief Burns stated that the community gets to know his firefighter/paramedics. Because of a close relationship with a Reading family, the fire department stocks a medication specifically for one local boy. Chief Burns stated that the town breaks even financially with the ALS program but the increased level of care is huge. Burns stated that Reading's Town Manager would support the program if the cost of providing the

service was reasonable. Burns stated that working with the union was huge. "Everybody had to be on board, the guys benefited by upgrading to the ALS level" (G. Burns, personal communication, September 23, 2015). Melrose Fire Chief Chris Leary stated that an internal ALS committee was formed. The former chief got the full support of the Mayor. Leary stated that without being awarded the SAFER Grant the ambulance plan would not have worked. Chief Leary stated the department set out what it intended to do. The union voted unanimously for the plan (C. Leary, personal communication, September 24, 2015). Bedford Fire Chief David Grunes stated you need to focus on the elected and appointed officials. "Show respect to elected officials and answer all of their questions." Chief Grunes did not want the elected officials to feel like they were being backdoored during the process. Chief Grunes stated that Bedford held three meetings. The first meeting was based on what services the fire department currently provided. The second meeting was based on fire department needs. The third meeting was based on addressing those needs. Chief Grunes stated that "not a whole lot of emotion was involved during these meetings. Each presentation had a white shirt and a blue shirt in attendance. There needs to be buy in from the rank and file." Chief Grunes stated that he closely worked with the finance director and together they developed a business plan. Bedford also hired a facilitator to assist during the process (D. Grunes, personal communication, September 25, 2015). Retired Westford Chief Richard Rochon stated his department highlighted the fact that the hospital ALS program was changing. Westford was able to show the response times for both hospital ALS providers. Chief Rochon stated a business plan was developed in which it was shown how the service would be upgraded and how revenues would be generated. Westford conducted a number of presentations for their elected officials. Members of the fire department and the financial director presented information at these meetings. Westford also

brought in other fire chief's to speak about their successful ALS programs (R. Rochon, personal communication, September 28, 2015).

Sixty eight fire departments that provide an ALS service in Massachusetts responded to this researchers Advanced Life Support Survey. Survey questions 25 through 27 are directly related to this projects fifth research question.

Q25. Were any ALS studies conducted by or for your department prior to implementation?

32 respondents or 47.06% answered an internal fire department study was conducted. 32 respondents or 47.06% answered no ALS study was conducted. 3 respondents or 4.41% answered that both an internal fire department study and an external consulting firm study was conducted. 1 respondent or 1.47% answered an external consulting firm study was conducted.

Q26. Was an ALS committee formed in your community prior to implementation? If so, what was the makeup of the committee?

6 respondents skipped the question.

Table 10

ALS Committee Make-up

	Yes	No	No Response
No Committee Formed	42.88%	55.10%	2.04
	21	27	1
Fire Administration	86.84	13.16%	0.00%
	33	5	0
Firefighters	79.49%	20.51%	0.00%
	31	8	0
Elected Town Officials	55.17%	44.83%	0.00%
	16	13	0
Citizens	38.46%	61.54%	0.00%
	10	16	0
Local Business	16.67%	83.33%	0.00%
	4	20	0

Q27. Did your ALS committee make formal presentations to the following?

7 respondents skipped the question

Table 11

ALS Committee Formal Presentations

	Yes	No	No Response
No Committee Formed	42.55%	55.32%	2.13%
	20	26	1
City Counsel/Selectman	78.38%	21.62%	0.00%
	29	8	0
Finance Committee	55.88%	44.12%	0.00%
	19	15	0
Town Meeting	50.00%	50.00%	0.00%
	15	15	0
Citizens	43.75%	56.25%	0.00%
	14	18	0

Thirty seven members of the Burlington Fire Department responded to this researcher's Fire Department Advanced Life Support Survey. Survey questions eight and nine are directly related to this projects fifth research question.

Q8. Should an ALS study be conducted for the Town of Burlington? If so, who shall conduct that study?

16 respondents or 43.24% answered both an internal fire department study and an external consulting firm study should be conducted. 9 respondents or 24.32% answered an internal fire department study should be conducted. 8 respondents or 21.62% answered that no ALS study should be conducted. 4 respondents or 10.81% answered an external consulting firm study should be conducted.

Q9. Should an ALS committee be formed within the town? If so, what should be the makeup of that committee?

Table 12

Town ALS Committee

	Agree	Neutral	Disagree	No Response
Fire Administration	80.00%	17.14%	2.86%	0.00%
	28	6	1	0
Firefighters	91.43%	8.57%	0.00%	0.00%
	32	3	0	0
Elected Officials	44.12%	20.59%	35.29%	0.00%
	15	7	12	0
Citizens	21.21%	36.36%	42.42%	0.00%
	7	12	14	0
Local Business	11.76%	29.41%	58.82%	0.00%
	4	10	20	0
Current ALS Provider	22.22%	33.33%	19.44%	25.00%
	8	12	7	9
OEMS	0.00%	8.33%	55.56%	36.11%
	0	3	20	13
Affiliate Hospital	2.78%	11.11%	41.67%	44.44%
	1	4	15	16
No ALS Committee	18.18%	13.64%	68.18%	0.00%
	4	3	15	0

Discussion

The discussion section of this research project compares the results and findings of my research to the findings of others which are located in the literature review section of this project. Research question one asked what are the primary reasons for fire departments to upgrade their BLS service to an ALS service. Four local fire chiefs whose departments had upgraded to the ALS level were asked this specific question. Chief Gregory Burns of the Reading Fire

Department stated that his department began exploring providing an ALS service to their community as the result of their current ALS provider being forced to restructure their rate fees. Chief Burns began to question if their current ALS service would continue to be provided. According to Chief Burns, the primary reason that Reading looked to upgrade their BLS service to an ALS service was "to provide better patient care" (G. Burns, personal communication, September 23, 2015). In Melrose, Chief Chris Leary stated the main reason his department upgraded to the ALS level was to "enhance our service." Melrose had been awarded two SAFER Grants and in order to maintain eight firefighter positions, "Melrose got back into the ambulance business" (C. Leary, personal communication, September 25, 2015). Bedford and Westford Fire Departments upgraded to the ALS level for similar reasons. Bedford Fire Chief David Grunes stated that "Bedford did not want to be dependent on a private ambulance company for ALS services." Bedford had used three ALS providers over a ten year period. Changes to those providers' operational models and location had an impact on ALS response times into Bedford. Grunes stated "We struggled to get them here." Chief Grunes also stated that prior to going ALS his ambulance crew was assigned to the ladder truck. When the ladder truck responded to an alarm of fire his department was left without ambulance coverage. Grunes stated that "Bedford was concerned with the continuity of care being provided to its residents" (D. Grunes, personal communication, September 25, 2015). Retired Westford Fire Chief Richard Rochon stated that his primary ALS provider Emerson Hospital was dissolving their ALS program. A second hospital based ALS program also provided ALS coverage to Westford. Rochon stated that because Westford was located at the far end of each provider's service area, ALS response times to Westford were over 15 minutes. Rochon stated "We wanted to provide a higher level of care to our citizens in a shorter period of time (R. Rochon, personal

communication, September 28, 2015). In Belmont, Massachusetts, the Board of Selectman approved Chief David Frizzell's ALS plan which was set to begin in July 2013. Chief Frizzell stated that the citizens of Belmont will receive quicker and greater care from a fire based ALS service and financially the town would benefit from an increase in ambulance service fees (Tucker, 2013). In Watertown, Massachusetts, Chief Mario Orangio believes that having his department operate at the paramedic level is a quality of life issue. Orangio believes that a Watertown ALS ambulance will provide improved ALS response times. Orangio stated the added costs of running an ALS program will be covered in part by ambulance billing rather than having to pay the private ambulance company (Breitrose, 2014).

Sixty eight fire departments that provide an ALS service in Massachusetts responded to this researchers Advanced Life Support Survey. The departments were asked who provided an ALS service to your community prior to your department delivering the service. 35.82% of the respondents listed other. When asked to specify, the majority of the departments listed that ALS started with the fire department and secondly, no previous ALS service was available. 31.34% of the respondents listed hospital based paramedics and 29.85% answered private ambulance company. When asked to list the primary reason your departments upgraded to the ALS level 33.33% of the departments either strongly agreed or agreed with not satisfied with previous ALS provider, 41.67% were neutral, and 25.00% either disagreed or strongly disagreed with this statement. 33.90% of the departments either strongly agreed or agreed that their previous ALS service no longer was being provided, 32.20% were neutral and 33.90% disagreed or strongly disagreed with this statement. 93.85% of the departments either strongly agreed or agreed with improving overall patient care, 4.62% were neutral, and 1.54% disagreed or strongly disagreed with this statement. 98.44 of the departments either strongly agreed or agreed with improve ALS

response times, and 1.56% was neutral. 58.06% of the departments either strongly agreed or agreed with increasing department staffing levels, 30.65% were neutral, and 3.13% disagreed or strongly disagreed. 84.34% of the departments either strongly agreed or agreed with increased revenues through billing, 12.50% were neutral, and 3.13% disagreed or strongly disagreed (see Table 1).

The Massachusetts Office of Emergency Medical Services (OEMS) lists five types of responders in their statewide treatment protocols. These treatment protocols represent the standard of patient care in the Commonwealth of Massachusetts. First responders provide patient care at the lowest level and paramedics provide patient care at the highest level (OEMS, 2014). In addition, according to the American Heart Association, a strong chain of survival can improve the chances of survival and recovery for patients of heart attack and other medical emergencies. The American Heart Association lists five links in the adult out-of hospital chain of survival, they are as follows; immediate recognition of cardiac arrest and activation of the emergency response system, early CPR with an emphasis on chest compressions, rapid defibrillation, effective advanced life support, and integrated post-cardiac arrest care (American Heart Association, n.d). A fire service EMS tool created in a cooperative effort between the International Association of Fire Chiefs (IAFC), the International Association of Firefighters (IAFF), the Metropolitan Fire Chiefs Association, the Congressional Fire Service Institute (CFSI), and the International Fire Service Training Association (IFSTA) lists several talking points that can be used when discussing EMS with fire department personnel and the general public and elected officials. Some of these key talking points include; fire departments are geographically placed throughout a community to minimize response times, pre-hospital emergency response is an essential function provided by the fire service, fire based EMS brings

treatment immediately to the patient even if the patient is trapped in a building fire or automobile accident, and EMS response, treatment, and transportation are seamless for a fire based service. One department is responsible for the continuity of patient care (IAFC, 2014). As is evident by interviews conducted with local fire chiefs, information obtained through the literature review, and data collected through an Advanced Life Support Survey sent to fire departments that provide an ALS service, patient care, ALS response times, increased staffing, and increased revenues through billing are the primary reasons behind fire departments upgrading to the ALS level.

What is also critically important to this project is how the members of the Burlington Fire Department view our current ALS system. Is our membership satisfied with the current system in place and would they support any changes to that system. Thirty seven members of the Burlington Fire Department responded to this researcher's Fire Department Advanced Life Support Survey. Members of the Burlington Fire Department were asked if they were satisfied with our current tiered system in which the fire department provides a transport BLS ambulance and a private ambulance company provides the ALS service. 43.24% of the respondents answered that they are not satisfied, 29.73% answered they are moderately satisfied, 21.62% answered they are slightly satisfied, and 5.41% answered that they are fully satisfied. When asked to rate the overall service provided by our current ALS provider, 54.05% answered fair, 43.24% answered good, and 2.70% answered poor. When members of the Burlington Fire Department were asked what concerns they had regarding our current ALS provider, 63.89% responded they were either very concerned or concerned with the operational model of our ALS provider, 30.88% were either slightly concerned or not concerned with the operational model. 67.57% of the members were either very concerned or concerned with ALS availability, 32.44%

were either slightly concerned or not concerned. 54.05% of the members were either very concerned or concerned with response times, 40.54% were slightly concerned with response times. 78.38% of the members were either slightly concerned or not concerned with patient care, 21.62% were either very concerned or concerned about patient care. 67.56% of the members were either slightly concerned or not concerned with communications, 32.44% were either very concerned or concerned about communications (see Table 2). These numbers indicate members of the Burlington Fire Department are most concerned with the availability of our current ALS provider, the operational model of our current ALS provider, and the response times of our current ALS provider. Patient care was not a primary concern of our members.

The Fire Department Advanced Life Support Survey also asked the members of the Burlington Fire Department the primary reason why the department should pursue upgrading to the ALS level. 47.22% of the members strongly agreed or agreed with not satisfied with current ALS provider, 33.33% were neutral, 19.44% either disagreed or strongly disagreed. 91.89% of the members strongly agreed or agreed with improved ALS availability, 5.41% were neutral, and 2.70% either disagreed or strongly disagreed. 91.89% of the members strongly agreed or agreed with improving ALS response times, 5.41% were neutral, and 2.70% either disagreed or strongly disagreed. 62.16% of the members strongly agreed or agreed to improving patient care, 24.32% were neutral, and 13.51% either disagreed or strongly disagreed. 89.19% of the members either strongly agreed or agreed to increase department staffing levels, 5.41% were neutral, and 5.41% either disagreed or strongly disagreed. 81.08% of department members strongly agreed or agreed with increased revenues through billing, 8.11% were neutral, and 10.81% either disagreed or strongly disagreed (see Table 3). These numbers indicate members of the Burlington Fire Department believe the primary reasons for the department to pursue upgrading to the ALS level

include; improving ALS availability, improving ALS response times, increasing department staffing, and increase revenues through billing. 91.89% of the members of the Burlington Fire Department believe that the department should pursue upgrading its current BLS service to and ALS service.

Research question two asks what operational models are currently used by fire departments in order to provide an ALS service to their community. Four local fire chiefs whose departments had upgraded to the ALS level were asked this specific question. Chief Gregory Burns of the Reading Fire Department states that his department staffs their primary ambulance 24/7 with two firefighter/medics. Reading's engine companies are Class 5 ambulances that are also equipped with ALS equipment. If a Reading paramedic unit is not available they will contact a private ambulance company or use a mutual aid fire department (G. Burns, personal communication, September 23, 2015). Chief Chris Leary stated that Melrose Fire Department staffs one ambulance 24/7 with two firefighter/medics. Chief Leary stated that his department did not want to staff their ambulance at the paramedic/basic level. He felt that this would be a decrease in patient care. Leary stated that structural firefighting gear and SCBA are also stored in his ambulance. A private ambulance company provides back-up ALS service when a Melrose unit is unavailable (C. Leary, personal communication, September 24, 2015). Chief David Grunes states that Bedford currently staffs two of their department's four shifts with firefighter/medics. Their goal is to staff two firefighter/medics on an ambulance. However, if a firefighter/medic position goes unfilled, Bedford will drop to the paramedic/basic level. When this occurs, a private ambulance company will be called to provide ALS (D. Grunes, personal communication, September 25, 2015). Retired Westford Fire Chief Richard Rochon states that his primary ambulance is staffed by two firefighter/medics. If Westford has no ALS unit

available they will contact either a private ambulance company or a hospital based ALS provider (R. Rochon, personal communication, September 28, 2015). The Massachusetts Department of Public Health (DPH) is defined under Chapter 105 of the Code of Massachusetts Regulations (CMR). Section 170.000 discusses the establishment of a statewide community based EMS system. Section 170.305(C)(2) details staffing. When a Class I, II, or V ambulance transports a patient receiving care at the paramedic level of ALS, the ambulance must be staffed with a minimum of two EMTs, at least one of whom is certified at the paramedic level, provided that the conditions set forth in 105 CMR 170.305(C)(2)(a) through (f) are met. For ambulance transports of patients receiving care at the paramedic level where these conditions are not met, the ambulance must be staffed with two EMTs, both of whom are certified at the paramedic level (Commonwealth of Massachusetts, n.d.). The Handbook for EMS Medical Directors defines a multiple-role EMS agency as an agency that will cross train their personnel to provide multiple services. An example of a multiple-role EMS agency is a fire department. In a fire department, medical response is provided by department personnel that are trained to the first responder level, EMT level, or paramedic level. This type of agency makes use of an existing transportation infrastructure and personnel who are trained to respond to emergencies (USFA, 2012). Each of the four local fire chiefs interviewed utilize their personnel in multiple-roles. This is clearly evident in Melrose where structural firefighting gear is placed in the primary response ambulance. The ambulance will respond to both medical emergencies and structure fires.

The four local fire chiefs were also asked has your department's operational model changed since ALS was first implemented. Chief Burns stated that in 2003 Reading had eight firefighter/medics. Six of these firefighter/medics were new (G. Burns, personal communication,

September 25, 2015). Chief Leary of Melrose stated that their ALS program started with 10 firefighter/medics. Three shifts operated at the ALS level and one shift operated at the BLS level. A private ambulance company would provide ALS coverage when the department operated at the BLS level (C. Leary, personal communication, September 24, 2015). Because their program was just established, Chief Grunes of Bedford was not asked this question. Retired Westford Fire Chief Richard Rochon stated that Westford started their ALS program during the day shift with only two firefighter/medics (R. Rochon, personal communication, September 28, 2015). The goal of all the interviewed fire chiefs was to provide ALS services 24/7. It was clear that in order to reach this goal their individual ALS plans were implemented in a series of phases. Westford's example best illustrates this. The Handbook for EMS Medical Directors defines two types of response service. These two types include a single-tier and tiered. A single-tier agency provides initial response and transport at a single level of care. This level of care could be at the BLS level or the ALS level (USFA, 2012). The Reading Fire Department is an example of department that provides a single-tier response service. Both Readings ambulance and first due engine companies are equipped and staffed at the ALS level.

Sixty eight fire departments that provide an ALS service in Massachusetts responded to this researchers Advanced Life Support Survey. When asked who provides patient transports in your community, 95.59% answered the fire department. When asked to describe the operational model of your transport ambulance, 60.61% answered their ambulance is staffed by two paramedics, 39.39% answered their ambulance is staffed by one paramedic and one EMT-Basic. In a questionnaire that was responded to by 55 past and present Executive Fire Officer Students, 18.4% answered that all personnel assigned to an ALS unit are paramedic certified. Eighty one percent answered that their ALS units were staffed by both paramedics and EMTs (Stefancic,

n.d.). A similar questionnaire was answered by 10 Pinellas County, Florida fire departments. Ten percent of the respondents answered they staff their ALS units with paramedics while 90% staff their ALS units with both paramedics and EMTs (Stefancic, n.d.). These numbers illustrate that Massachusetts fire departments staff their ALS units with two paramedics at a much higher percentage than fire departments throughout the nation.

In this researcher's Advanced Life Support Survey fire departments were also asked if their department staff ALS engine companies, 65.67% answered no while 34.33 % answered yes. When asked how many paramedics are typically assigned to an ALS engine company, 29.51% answered one and 11.48% answered two. When asked if paramedics assigned to an engine company would accompany the patient to the hospital in a transport ambulance, 51.72% answered yes while 48.28% answered no. In a Journal of Emergency Medical Services (JEMS) article, the topic of using rapid response vehicles (RRV) in place of large fire apparatus during response to medical emergencies was discussed. The Los Angeles County Fire Department delivers ALS services through the usage of quick-response squad vehicles (Baker, n.d.). What this section shows is that there are various operational methods that can be utilized when delivering an ALS service to a community.

The final question that this researcher's Advanced Life Support Survey asks that is vitally important in terms of an ALS operational model is who provides back-up ALS coverage to your community. 82.35% answered a neighboring fire department while 17.65% answered a private ambulance company.

Research question three asks what are the costs associated with implementing a fire department ALS service. The National EMS Advisory Council (NEMSAC) recognizes that EMS faces many financial challenges. In order to be compensated by Medicare, Medicaid, and

insurance companies for its services, ambulance agencies must transport patients to an emergency room. NEMSAC identifies that a large percentage of EMS related costs are used to maintain a readiness and the ability to respond in a timely and effective manner. These costs include staffing, training, equipment and supplies, as well as administrative costs (NEMSAC, 2012). Four local fire chiefs whose department upgraded to the ALS level were asked five specific questions related to the costs of implementing a fire department ALS service. Because salaries represent the greatest cost to fire department operating budgets, the four chiefs were asked how many firefighter/medics your department currently employs. Chief Gregory Burns of the Reading Fire Department stated that 24 out of a total of 46 members are paramedics (G. Burns, personal communication, September 23, 2015). Chief Chris Leary of the Melrose Fire Department stated that his department currently has 21 firefighter/medics (C. Leary, personal communication, September 24, 2015). Chief David Grunes of the Bedford Fire Department states his department has four firefighter/medics and that a fifth firefighter/medic is currently going to the Massachusetts Firefighting Academy (D. Grunes, personal communication, September 25, 2015). When Westford Fire Chief Richard Rochon retired, his department had 12 firefighter/medics (R. Rochon, personal communication, September 28, 2015). The four local fire chiefs were asked specifically to describe the costs associated with implementing their ALS service. Reading Fire Chief Burns stated that the initial start up costs included equipment, medications, and licensing fees. He stated that his 2014 operating budget includes 47,000 for supplies, 20,000 for licenses and fees, and 6,000 for the medical director. Reading also pays for all firefighter/medic continuing education and the backfilling of their positions (G. Burns, personal communication, September 23, 2015). Melrose Fire Chief Chris Leary stated that a bond was required for 65,000 in order to purchase equipment. Chief Leary stated that an

ambulance enterprise fund covers all costs which include the salaries of eight firefighter/medics as well as 120,000 for overtime. The training of firefighter/medics also requires backfilling (C. Leary, personal communication, September 24, 2015). Chief David Grunes of Bedford stated that four firefighter/medics were hired. The cost of labor alone was 332,000. Grunes stated that his department's overtime account was increased 17,000 to allow for medic training. 21,000 were allotted for medication and equipment. Chief Grunes is a strong believer in the ambulance enterprise account (D. Grunes, personal communication, February 25, 2015). Retired Westford Fire Chief Richard Rochon stated that because of declining private donations to the department's ambulance fund, an ambulance enterprise account was established. The salaries of eight firefighter/medics were included within the enterprise account. Chief Rochon estimated a total equipment cost of approximately 90,000 to 100,000 (R. Rochon, personal communication, September 28, 2015).

The four local fire chiefs were asked if increasing department staffing was part of your ALS program. Reading Fire Chief Burns stated that two additional firefighters were hired through a town wide override vote (G. Burns, personal communication, September 23, 2015). In Melrose, two SAFER Grants were awarded. Each grant was for four firefighters. "The ways to maintain those positions were to operate an ambulance service" (C. Leary, personal communication, September 24, 2015). When asked about increasing staffing levels through an ALS plan, Bedford Fire Chief David Grunes stated "Yes, I can't think of any other way to do it." Chief Grunes looked at manning based on statistical demand. As a result of increasing staffing levels an additional piece of apparatus would be staffed on weekdays and weekends (D. Grunes, personal communication, September 25, 2015). Retired Westford Fire Chief Richard Rochon requested eight additional positions. He recommended increasing staffing during the day then

reassigning those members to a substation at night (R. Rochon, personal communication, September 28, 2015). The four local fire chiefs were also asked how their firefighter/medics maintain their certification level and is there a cost associated. In Reading, Chief Burns stated, "we pay for it all" (G. Burns, personal communication, September 23, 2015). In Melrose, Chief Leary states that costs include both in-house training as well as outside training. Melrose firefighters are paid overtime for training or are given the day off. "The more medics that are on the department, the greater the cost for maintaining certifications" (C. Leary, personal communication, September 24, 2015). In Bedford, Chief Grunes stated that medics will get compensated when sent out for training (D. Grunes, personal communication, September 25, 2015). In Westford, Retired Fire Chief Richard Rochon stated that initially firefighter/medics were responsible to maintain their own certification. Rochon stated that the initial medic stipend covered education. He stressed the importance of having an in-house member available to train the medics (R. Rochon, personal communication, September 28, 2015).

Sixty eight fire departments that provide an ALS service in Massachusetts responded to this researchers Advanced Life Support Survey. Each department was asked what were your department's ALS start-up costs? Sixty percent of the respondents listed a dollar amount, 37% answered unknown. The lowest dollar figure listed was 20,000. The highest dollar figure was listed at 800,000. The total amount of dollars listed was 6,584,000. 6,584,000 divided by the 37 respondents who listed a dollar amount averages out to 177,945.94 per department. Forty six percent of the 37 respondents who listed a dollar amount stated their ALS start-up costs were between 20,000 and 100,000. Nineteen percent of the 37 respondents who listed a dollar amount stated their ALS start-up costs were between 151,000 and 200,000 (see Table 4). The departments were also asked what was included as part of their ALS start-up costs. 98.46%

agreed that ALS medical equipment was part of their start-up costs. 89.46% agreed with ALS medications. 87.69% agreed with license and certification costs. 76.92% agreed that firefighter/medic base salary was included as a start-up cost. 61.90% agreed with continuing education costs. 41.67% agreed with ambulance maintenance costs. 27.42% agreed with the purchase of an ambulance as being part of their departments ALS start-up costs (see Table 5).

The above sections highlight the fact that significant costs are associated with upgrading a fire department to the ALS level. These costs include staffing, equipment, and training. The primary question that needs to be answered is can a municipality afford to provide an ALS service to their community. The United States Fire Administration (USFA) highlights a variety of funding mechanisms in order to provide services to its residents. The most common source of funding for municipalities is obtained through taxation. Property tax is one of the most common sources of municipal funding (USFA, 2012). Art Hsieh, a fire and emergency medical expert believes that fire department ALS programs are costly and those costs are usually transferred to the taxpayers (Van Dyke, 2014). Sachs (1997) states that because municipalities are reluctant to raise taxes to support new programs, other sources of revenue need to be looked at.

One way to increase ambulance revenues is through user fees. Sixty eight fire departments that provide an ALS service in Massachusetts responded to this researchers Advanced Life Support Survey. The departments were asked to list their ambulance billing rates based on the current Medicare rate. Fifty two respondents selected a listed percentage. Twelve respondents listed other. Of those 52 respondents that selected a listed percentage 19 answered 200%, 13 answered 150%, 8 answered 50%, seven answered 100%, four answered 300%, and one respondent answered 250%. The average ambulance billing rate of the 52 respondents based on the current Medicare rate was 159.62%. The departments were then asked where revenues

obtained through patient billing are deposited into. 60.29% of the respondents answered ambulance enterprise account. 35.29% answered the city or town's general fund. 4.41% answered both the ambulance enterprise account and the general fund. In a Boston Globe article, North Andover Fire Chief Andrew Melnikas stated that because of reductions in state local aid and federal Medicare reimbursements, as well as the rising costs of fuel, he had to raise ambulance rates. Melnikas stated that fees from his two ambulances generated 830,000 in revenues for the town. These revenues were placed into the town's general operating fund where the money could be distributed to both the municipality and the schools (Conti, 2011). In Amherst, Massachusetts, ambulance fees were also increased in order to cover the rising costs of medical equipment as well as increases to the fire department operating budget due to the hiring of eight firefighter/EMTs (Lederman, 2014).

Another funding mechanism that is available to municipalities is the use of an enterprise fund. Fire departments that operate enterprise funds can bill insurance companies for ambulance transports and related expenses. The revenues generated through billing can pay for the operating and maintenance costs of the service including salaries of the personnel (USFA, 2012). In Massachusetts, an enterprise fund gives communities the flexibility to account separately for all financial activities associated with the municipal service. The revenues and expenses of the service are segregated into a fund with financial statements separate from all other government activities (Massachusetts Department of Revenue, 2008). Three of the four local fire chiefs that this researcher interviewed utilize an ambulance enterprise account. In a 2010 cost of service study, the Port Angeles Fire Department, whose service is supported through an enterprise fund, listed the following line items under total Medic 1 expenses; paramedic salaries, paramedic benefits, program supplies, professional and contract services, travel and training, dispatching

services, equipment services, other services and charges, defibrillator replacement, and bad debt. The revenue projections for Medic 1 included; CPR/first aid classes, Medic 1 monthly fee, Medic 1 transport charges, Medic 1 write-offs, personal reimbursement, miscellaneous revenue, general fund transfer, Medic 1 reserve (Port Angeles Fire Department, 2010). The inclusion of a general fund transfer indicates that this program is not self sufficient and requires additional funding in order to provide the service to the community.

Because salaries represent the greatest expense of a fire departments operating budget it is important to analyze the costs associated with upgrading to an ALS level. Sixty eight fire departments that provide an ALS service in Massachusetts responded to this researchers Advanced Life Support Survey. The departments were asked how their certified paramedics are compensated. Sixty percent of those respondents answered that their paramedics receive a percentage rate increase on their base salary. 36.92% answered that their paramedics receive an annual stipend and 3.08% answered their paramedics receive a semi-annual stipend. The departments were asked to list their paramedic's percentage rate increase or stipend. 49.18% of those respondents that answered the question listed a percentage rate. 45.90% of those respondents that answered the question listed a stipend. The lowest percentage rate listed was 5.00%. The highest percentage rate listed was 25.00%. The average percentage rate of the 30 responses was 13.30%. The lowest stipend that was listed was 1,500. The highest stipend listed was 8,700. The average stipend of the 28 responses was 5,189 (see Table 6). Art Hsieh, a fire and emergency medical expert states that firefighters in other parts of the country have received five to 15 percent wage increases for being paramedics as well as being compensated for continuing education (Van Dyke, 2014). The fire departments were also asked if their department had a full time EMS officer. If so, what is the rank of the EMS officer? 40.30% of

the respondents answered they have no full time EMS officer. Forty respondents listed their EMS officers rank. 17.91% answered Lieutenant. 16.42% answered Firefighter, 10.45% answered Captain, 10.45% answered Deputy Fire Chief and 4.48% answered Assistant Fire Chief. The final question asked to fire departments was did your department staffing levels increase when your department upgraded to the ALS level. 61.19% of the respondents stated yes, 38.81% stated no.

In concluding research question three, four local fire chiefs were asked the question, in your opinion, does the benefit of providing an ALS service to your community justify the cost of the program. Reading Fire Chief Greg Burns stated "no doubt, the community is very proud of our program and a great deal of satisfaction is felt by the membership when they provide an ALS service. As a result, the town supported the ALS engine and ladder company" (G. Burns, personal communication, September 23, 2015). Chief Chris Leary of the Melrose Fire Department believes the service justifies the cost. "Members of the Melrose Fire Department serve dual purposes as firefighter/medics. They provide an enhanced service to the community." Chief Leary also stated that his department has hit its projected financial mark every year (C. Leary, personal communication, September 24, 2015). In Bedford, Chief David Grunes stated "Bedford now has a dedicated staffed ambulance at a higher level of care with no additional impact on the tax levy." Chief Grunes stated that the program was funded on the decrease of ALS costs to the private ambulance provider and an increase in ambulance revenues through ambulance fees (D. Grunes, personal communication, September 25, 2015). Retired Westford Fire Chief Richard Rochon states "the service is superior; there are no delivery gaps in patient care. We have seen lives saved as a result of this service" (R. Rochon, personal communication, September 28, 2015).

Research question four asks what roadblocks fire departments commonly encounter when attempting to upgrade from a BLS service to an ALS service. Four local fire chiefs whose departments upgraded from a BLS service to an ALS service where asked a question directly related to their hiring process. Each chief was asked if their department requested a selective certification civil service list and if so, how satisfied were they with this process. Chief Gregory Burns of the Reading Fire Department stated the civil service process has been great for Reading (G. Burns, personal communication, September 23, 2015). Melrose Fire Chief Chris Leary believes guys are taking the paramedic program to get hired by fire departments. Leary stated that once the individual is hired, they have very little interest in working on the ambulance. Chief Leary also stated that he was competing with other fire departments for the same individuals whose name appeared on the civil service list (C. Leary, personal communication, September 24, 2015). Bedford Fire Chief David Grunes has been trying to hire four firefighter/medics since December 1, 2014 when the civil service list was established. Grunes was concerned the Bedford may be seen "as being on the bottom of the list" because paramedics had options. Grunes felt he had to sell Bedford to the candidates. Chief Grunes was not satisfied with the civil service process or the candidates (D. Grunes, personal communication, September 25, 2015). Retired Westford Fire Chief Richard Rochon worked in a non-civil service community. Westford developed their own hiring process which included a written test, interview, and a practical exam in which their medical control affiliate was directly involved (R. Rochon, personal communication, September 28, 2015). The hiring of firefighter/paramedics has also been a problem in other Massachusetts communities. In Scituate, Massachusetts, Fire Chief John Murphy has been trying to fill two firefighter/paramedic positions. He has been able to fill one position but has been having trouble filling the other. As of April 2015, 5,612 total

candidates were listed on the state's civil service firefighter list, only 323 of the candidates were listed as paramedics (Simpson, 2015).

The four local fire chief's where asked what roadblocks were encountered when you attempted to upgrade your service from the BLS level to the ALS level. Reading Fire Chief Greg Burns stated that some internal roadblocks existed. Chief Burns stated that fathers currently on the job wanted to see their sons on the job. Chief Burns also stated that his members were concerned that existing firefighters would be laid off before firefighter/medics (G. Burns, personal communication, September 23, 2015). Melrose Fire Chief Chris Leary stated that no roadblocks were encountered (C. Leary, personal communication, September 24, 2015). Bedford Fire Chief David Grunes stated there was skepticism of the business plan by one of the selectman and the entire finance committee. Grunes stated that the focus was not on patient care. "They wanted hard numbers, not emotion" (D. Grunes, personal communication, September 25, 2015). Retired Westford Fire Chief Richard Rochon spoke of both internal and external issues. Internally it was the unknown; Westford was going to be one of the first fire departments in the area to run ALS. Internally, Westford's EMS officer wanted all 12 firefighter/medics at once in order to start the program. Chief Rochon also stated that both Emerson and Lowell ALS came out against the plan (R. Rochon, personal communication, September 28, 2015). Internal roadblocks have also occurred in other Massachusetts communities. In Watertown, Massachusetts, firefighters had been working without a collective bargaining agreement for six years. During this time period, Watertown Fire Chief Mario Orangio has been trying to implement an ALS program within the department. When asked by Town Council what else do you need in order to move ahead with the ALS program, Orangio stated, "If I could speak candidly, bargaining a contract agreement with the union. There are a lot of changes to working

conditions that would need to be negotiated into the collective bargaining agreement" (Breitrose, 2014, para. 4). External roadblocks have also occurred in other Massachusetts communities. In Saugus, Massachusetts an ambulance study committee recommended that the town pursue operating a fire department BLS ambulance service. The committee believed that a fire department ambulance would enhance the department, add manpower, and generate revenue outside the tax levy. The ambulance committee believed that revenues obtained would help offset the salaries of eight firefighter positions that were hired through a SAFER Grant once the grant expires. The Saugus Finance Committee voted to indefinitely postpone all warrant articles related to the development of the program. The finance committee believed that the costs associated with implementing the ambulance service would exceed the operating cost and the program would require funding through the general fund (Gaffney, 2015). In Natick, Massachusetts, town officials looked into the possibility of the privatization of the fire departments ALS program in a way to save the town money (McKee, 2009). Natick Selectman Joshua Ostroff stated "during difficult economic times, it is the obligation of elected officials to explore all possible avenues to save money and improve municipal services" (Butler, 2010, para. 1).

The four local fire chief's were asked if roadblocks were encountered, how you overcame them. Reading Fire Chief Gregory Burns stated that the rank and file was supportive of the ALS program. The union brought a strong package back to the membership that was supported (G. Burns, personal communication, September 23, 2015). Melrose Fire Chief Chris Leary stated that the department, union, and city worked together. Their private ambulance ALS provider also assisted with the process (C. Leary, personal communication, September 24, 2015). Bedford Fire Chief David Grunes stated that the roadblocks were overcome through education.

Grunes stated that the first person that needed to be convinced was the town manager. Chief Grunes stated that 16 meetings were held over a four month period. Presentations were given by the finance director and members of the union. Chief Grunes stated "you must have an answer for every question" (D. Grunes, personal communication, September 25, 2015). Retired Westford Fire Chief Richard Rochon stated there needs to be a tremendous amount of communication. "The union must participate in the process." Externally Rochon stated it was all about educating the public. "How would an ALS program benefit the community?" Chief Rochon recommended creating a business plan to show how revenues will offset costs (R. Rochon, personal communication, September 28, 2015).

The retention of firefighter/medics is a concern among many fire departments. Because of this the local fire chief's were asked if the retention of firefighter/medics has been a problem for your department. Reading Fire Chief Gregory Burns stated that Reading has not had anybody leave. He mentioned that several requests have been made from firefighter/medics in other communities to lateral to Reading (G. Burns, personal communication, September 23, 2015). Melrose Fire Chief Chris Leary stated that he has had a couple of firefighter/medics leave but also stated that "it is a two-way street." Melrose has hired firefighter/medics that have transferred in from other departments (C. Leary, personal communication, September 24, 2015). Because their program is so new, Bedford has not experienced any retention issues (D. Grunes, personal communication, September 25, 2015). Retired Westford Fire Chief Rochon stated that retention has been a problem but he believes the issue can be dealt with. He stated that firefighter/medics do look at other department's contracts. How a department pays for education is important. "Some department's pay for education, some do not" (R. Rochon, personal communication, September 28, 2015). The retention of firefighter/medics is not unique to just

Massachusetts. In Charleston, WV, since 2004, 27 firefighter/medics have left the department to take other jobs. Union officials claim that the opportunity to pursue higher wages, better benefits, and a smaller workload may be to blame. In the past year the city stopped compensating current firefighter/medics for attending paramedic programs (Fan, 2015). In Winchester, Massachusetts, Town Meeting approved the fire department operating budget which includes a new wage structure that was developed specifically to retain firefighter/paramedics. "The change in pay structure is intended to address the retention of firefighters, who tend to leave the town service after a couple of years" states Peter Cheimets, a member of Winchester's Personnel Board (LaMond, 2015, para. 14).

Sixty eight fire departments that provide an ALS service in Massachusetts responded to this researchers Advanced Life Support Survey. The departments were asked were your initial attempts to upgrade to the ALS level met with any resistance from the following internal and external stakeholders. 80.64% of the departments that responded stated that the mayor or town administrator was not resistive or slightly resistive. 81.54% of the departments that responded stated that the city counsel or board of selectman was not resistive or slightly resistive. 79.36% of the departments that responded stated that the finance committee was not resistive or slightly resistive. 79.63% of the departments that responded stated that town meeting was not resistive or slightly resistive. 81.66% of the departments that responded stated that union firefighters were not resistive or slightly resistive. 71.43% of the departments that responded stated that non-union firefighters were not resistive or slightly resistive. 59.61% of the departments that responded stated that private ambulance companies were not resistive or slightly resistive (see Table 7). These numbers indicate that Massachusetts fire departments that provide an ALS service to their communities were successful in getting both their membership and elected

officials to buy into the ALS program. The only listed stakeholder that provided any form of resistance was the private ambulance companies. In Andover, Massachusetts, Fire Chief Mike Mansfield presented an ALS proposal to his Board of Selectman. At that same meeting Lawrence General Hospital's ALS Director Paul Brennan spoke out against the change. Brennan was concerned about the impact that a fire department based ALS program would have on the residents of Andover. Brennan spoke on the importance of experience in terms of patient interaction in regard to better patient outcomes (Luca, 2013).

Another potential roadblock that may be encountered by fire departments comes from the medical community. A study conducted in Ontario, Canada from 1994 to 2002 revealed that ALS programs showed no improvements in survival rates when compared to basic life support with rapid defibrillation (Stiell, 2005). In a New York Times article, Aaron Carroll, a professor of pediatrics at Indiana University School of Medicine, stated that some believe that BLS measures work fine and that ALS may actually slow things down in the field resulting in getting the patient to the hospital (Carroll, 2015). In a HealthDay article, Dr. Michael Callaham, an emergency medicine specialist at the University of California, San Francisco states, "We know that high-quality CPR, basic airway management, and rapid defibrillation matter. There are studies that show that ALS doesn't matter. You don't have better survival. So, you are just doing more things and it takes more time (Reinberg, 2014, para. 16).

Massachusetts fire departments that provide an ALS service were asked how long it took to implement your ALS program after the framework of the program was developed. 44.78% of the departments answered one year. 40.30% of the departments answered two years. 10.45% of the departments answered three years. 1.49% of the departments answered four years. 2.99% of the departments answered five years. The average number of years it took all 67 departments to

implement their ALS program was 1.77 years. These numbers illustrate that upgrading to an ALS service takes time. The departments were asked if they requested a Human Resources Division Selective Certification list for paramedics how satisfied were you of the quality of the candidates. 50.79% of the departments that responded did not request a selective certification list. Of those departments that used a selective certification list 22.22% answered they were satisfied with the quality of candidates. 14.29% of the departments were not satisfied. 12.70% of the departments were very satisfied with the quality of candidates. The fact that more departments stated that they were not satisfied rather than very satisfied illustrates potential problems with the system. The statements of Melrose Fire Chief Chris Leary and Bedford Fire Chief Dave Grunes regarding the civil service hiring process confirm the above statement. The fire departments were asked when hiring firefighter/paramedics did lack or medic experience ever become an issue. 44.12% of the departments that responded answered on occasion. 29.41% of the departments that responded answered no. 26.47% of the departments that responded answered yes. These numbers indicate that the majority of fire departments that hire paramedics are concerned with their experience level. The fire departments were also asked if retention of firefighter/paramedics has been a problem for your department. 70.15% of the departments that responded answered no. 29.85% of the departments that responded stated yes. Melrose Fire Chief Chris Leary and Retired Westford Fire Chief Richard Rochon acknowledged that retention of firefighter/medics is a concern.

Members of the Burlington Fire Department were also asked what roadblocks you would anticipate being encountered if the fire department attempted to upgrade to the ALS level. Thirty seven members responded to this researcher's Fire Department Advanced Life Support Survey. 20% of the members strongly agreed or agreed that the fire administration could be a roadblock,

31.57% were neutral, and 48.57% disagree or strongly disagree with this statement. 43.24% of the members strongly agree or agree that the town administrator could be a roadblock, 27.03% were neutral, and 29.73% disagree or strongly disagree with this statement. 61.11% of the members strongly agree or agree that the Board of Selectman could be a roadblock, 22.22% were neutral, and 16.67% disagree or strongly disagree with this statement. 67.57% of the members strongly agree or agree that the Ways and Means Committee could be a roadblock. 29.73% were neutral, and 2.70% disagree or strongly disagree with this statement. 64.87% of the members strongly agree or agree that Town Meeting could be a roadblock, 29.73% were neutral, and 5.41% disagree or strongly disagree with this statement. 48.64% of the members strongly agree or agree that the collective bargaining agreement could be a roadblock, 35.14% were neutral, and 16.22% disagree or strongly disagree with this statement. 24.32% of the members strongly agree or agree that civil service could be a roadblock, 54.05% were neutral, and 21.62% disagree or strongly disagree with this statement. 55.55% of the members strongly agree or agree that the current ALS provider could be a roadblock, 19.44% were neutral, and 25.00% disagreed or strongly disagreed with this statement. 8.33% of the members strongly agreed or agreed that OEMS could be a roadblock, 55.56% were neutral, and 36.11% disagreed or strongly disagreed with this statement. 13.89% of the members strongly agreed or agreed that the affiliate hospital could be a roadblock, 41.67% were neutral, and 44.45% disagreed or strongly disagreed with this statement (see Table 8). These numbers indicate that the members of the Burlington Fire Department would anticipate the biggest roadblock to an ALS program would come from the political process. The largest roadblock would come from the Ways and Means Committee. This committee oversees all financial articles. Both Town Meeting and the Board of Selectman

must approve all financial articles. The members also see our current ALS provider as a potential roadblock.

Members of the department were also asked if firefighter/paramedics are hired by the fire department are you concerned about the following. 51.36% of the members that responded were very concerned or concerned with the lack of experienced paramedics. 48.65% of the members were slightly concerned or not concerned. 45.95% of the members were very concerned or concerned with retention of firefighter/paramedics. 54.05% of the members were slightly concerned or not concerned. 62.17 of the members were very concerned or concerned about the working relationship between firefighter/paramedics and firefighter/EMTs. 37.84% of the members were slightly concerned or not concerned. 48.65% of the members were very concerned or concerned with firefighter/paramedics maintaining their skills and certifications. 51.35% of the members were slightly concerned or not concerned. 45.95% of the members were very concerned or concerned with the ALS operating model. 54.06% of the members were slightly concerned or not concerned (see Table 9). What is clear from these numbers is the biggest concern the members of the Burlington Fire Department has relates to the working relationship between firefighter/paramedics and those firefighters that are not paramedics.

Research question five asks what approaches have been used by fire departments in order to gain the support of elected officials and the community during the implementation of an ALS program. Four local fire chief's whose department upgraded to the ALS level were asked this specific question. Reading Fire Chief Gregory Burns stated that his department stressed the quicker ALS is provided to the patient the better it is. "A three minute ALS response time is better than a 12 minute response time." Chief Burns stated that the town breaks even financially with the ALS program but the increased level of care is huge. Burns stated that Reading's Town

Manager would support the program is the cost of proving the service was reasonable. Burns also stated that working with the union was huge. "Everybody had to be on board. The guy's benefited by upgrading to the ALS level" (G. Burns, personal communication, September 23, 2015). Compton (2014), states that poor relationships between fire chiefs and union officials hamper the ability of the organization to address difficult challenges. Those departments in which management and unions work well together usually enjoy more success. Melrose Fire Chief Chris Leary stated that an internal ALS committee was formed. The former chief got the full support of the Mayor. Leary stated that without being awarded the SAFER Grant the ambulance plan would not have worked. Chief Leary stated that the union voted unanimously for the plan (C. Leary, personal communication, September 24, 2015). Compton (2104) also stated that management and union officials should develop a strong working relationship that allows them to plan together and solve problems together. This type of relationship will benefit the organization as a whole. Bedford Fire Chief David Grunes stated that you need to focus on the elected and appointed officials. "Show respect to elected officials and answer all of their questions." Chief Grunes did not want his elected officials to feel like they were being backdoored during the process. Chief Grunes stated that Bedford held a series of three meetings. The first meeting focused on what services the fire department currently provided. The second meeting focused on fire department needs. The third meeting was based on addressing those needs. Chief Grunes stated that "not a whole lot of emotion was involved during these meetings. Each presentation had a white shirt and a blue shirt in attendance. There needs to be buy in from the rank and file." Grunes stated that he worked very closely with the finance director and together they developed a business plan (D. Grunes, personal communication, September 25, 2015). Compton (2010) warns that anytime a decision affecting service delivery and/or safety is

made by those outside of the organization such as consultants or elected officials, there is the possibility that management and union leaders will need to collectively develop a joint strategy in order to positively influence the decision makers. Kenley (2014) states the cooperative approach to labor and management relations attempts to focus on the overlapping interests of both parties. A cooperative approach leads to consensus solutions. Grady (2014) highlights the importance of building new relationships with elected officials and strengthening those relationships overtime. These efforts will lead to mutual understanding, respect, and cooperation. A 2013 survey taken by metropolitan fire chiefs issued the following statement pertaining to communicating with elected officials, "educate the people who fund us and the general public about the complete role of the fire department and firefighters" (Compton, 2014, para. 3). Retired Westford Fire Chief Richard Rochon stated that his department highlighted the fact that the hospital ALS program was changing. Westford was able to show the response times of both their hospital ALS providers. Rochon stated that a business plan was developed in which it was shown how the service would be upgraded and how revenues would be generated. Chief Rochon stated that a number of presentations were conducted for their elected officials. Members of the fire department and the financial director presented information at these meetings. Westford also brought in outside fire chief's to speak about their successful ALS programs (R. Rochon, personal communication, September 28, 2015). The National Volunteer Fire Council (NVFC) lists five key tools that should be considered in order to effectively communicate with elected officials. These five key tools include; make sure that communication is kept simple and concise, don't raise questions that you can't answer, address the who, what, where, when, and why, whenever possible work to build consensus, and utilize the resources and assistance of the NVFC staff and state association partners (NVFC, 2009). Having an

understanding of what elected officials look for can assist in building positive relationships. All elected officials want to see their communities succeed. Fire service leaders should market their department and highlight what it is the fire department does. They should highlight the needs of the department, and most importantly, highlight why the department needs it. Elected officials will turn to the fire service leader to help them plan for the future (IAFF, 2013). The above sections highlight the importance of collaboration when attempting to implement a new program. It is clear that management will not be successful in implementing a new program without the support of the rank and file. It is also clear that in order to positively influence elected officials, both management and the union need to present a unified message.

In order to keep elected officials and the public informed, fire service leaders should consider hosting public meetings. Before the meeting, fire service leaders should meet with union officials and develop key talking points. Fire service leaders should bring two or three other fire service personnel with them to large meetings. Community data should be presented that clearly illustrates the need (IAFF, 2013). Warren (2014) believes that all stakeholders should be heard. Opinions from stakeholders are valid and should not be simply dismissed. The views of the stakeholders should be respected by members of the fire service. Disagreements between stakeholders and members of the fire service should be anticipated but those disagreements should lead to respectful discussions.

Sixty eight fire departments that provide an ALS service in Massachusetts responded to this researchers Advanced Life Support Survey. The departments were asked if any ALS studies were conducted by or for your department prior to implementing ALS. 47.06% of the departments that responded answered an internal fire department study was conducted. 47.06% of those departments that responded answered that no ALS study was conducted. 4.41% of those

departments that responded answered that both an internal fire department study and an external consulting firm study was conducted. 1.47% of those departments that responded answered that a external consulting firm study was conducted. The departments were asked if an ALS committee was formed in your community prior to implementation. If so, what was the makeup of the committee? 42.88% of the departments that responded answered that no ALS committee was formed. Of those departments that formed an ALS committee, the following stakeholders were part of the committee. 86.84% of the departments answered fire administration. 79.49% of the departments answered firefighters. 55.17% of the departments answered elected town officials. 38.46% of the departments answered citizens. 16.67% of the departments answered local business (see Table 10). These numbers indicate that if an ALS committee was formed, the committee was primarily comprised of fire administration and firefighters. A little over half of the committees included elected town officials. The departments were asked if their ALS committee made presentations to the following stakeholders. 42.55% of the departments that responded answered no ALS committee was formed. Of those departments that formed an ALS committee, presentations were given to the 78.38% of city counsels or board of selectmen. Presentations were given to 55.88% of finance committees. Presentations were given to 50.00% of town meetings. Presentations were given to 43.75% of citizens within the community (see Table 11). These numbers indicate that presentations were primarily given to city counsel members and board of selectman. Presentations were given to approximately half of the finance committees and town meetings.

Thirty seven members of the Burlington Fire Department responded to this researcher's Fire Department Advanced Life Support Survey. Members of the department were asked should an ALS study be conducted for the Town of Burlington. If so, who should conduct that study?

43.24% of the members that responded answered both an internal fire department study and an external consulting firm study. 24.32% of the members that responded answered an internal fire department study. 21.62% of the members that responded answered no ALS study should be conducted. 10.81% of the members that responded answered an external consulting firm study should be conducted. These numbers differ from those Massachusetts fire departments that upgraded to the ALS level. In these departments 47.06% of the departments conducted an internal fire department study and only 4.41% of the departments conducted both an internal fire department study and an external consulting firm study. Members of the Burlington Fire Department were also asked if an ALS committee should be formed within the town. If so, what should be the makeup of that committee? 18.18% of the members that responded believe that no ALS committee should be formed. 80.00% of the members that responded answered that the fire administration should be included. 91.43% of the members answered that the firefighters should be included. 44.12% of the members answered that elected officials should be included. 21.21% of the members answered that citizens should be included. 11.76% of the members answered that local business should be included. 22.22% of the members answered that our current ALS provider should be included. 2.78% of the members answered that our affiliate hospital should be included. 0.00% of the members answered OEMS (see Table 12). These numbers are similar to the makeup of ALS committees that were formed by Massachusetts fire departments that upgraded to the ALS level. The only significant difference was that more citizens were included in the ALS committees of those departments that upgraded to the ALS level.

Recommendations

The purpose of this research project was to determine if it would be feasible for the Burlington Fire Department to upgrade its current BLS service to an ALS service. In the introduction and background and significance sections of this research project it was highlighted that the Town of Burlington is rapidly growing which has lead to a significant increase in call volume for the department. Much of this increase in call volume is directly related to emergency medical services. Because of this new growth the fire department and town administration has begun to explore the possibilities of increasing fire department staffing levels. Over the course of the past several years the operational model of our ALS provider has changed. The ALS system has transitioned from a hospital based system to one that is operated through a private ambulance company. Most recently the operational model of the private ambulance company has changed. The non-transport intercept truck that provides ALS coverage to our community is now parked during the evening and night hours and the two paramedics previously assigned to the intercept truck have been reassigned to a transport ALS ambulance. Furthermore, the private ambulance company that provides ALS services to our community recently entered into an agreement with the Lahey Health Network in which they will provide patient transports between Lahey facilities. Because of these recent changes, the Burlington Fire Department has witnessed gaps in ALS coverage as the result of no ALS units being available to respond to our community. We have also witnessed increased ALS response times into our community. The answer to the question of whether the Burlington Fire Department should upgrade its BLS service to an ALS service should be fairly evident. The answer to this question is yes, we should upgrade our BLS service to an ALS service. However, it must also be recognized that the process required making this goal a reality may be difficult and will require considerable work. The information that was

obtained through this research project will greatly assist the Burlington Fire Department as it attempts to upgrade its BLS service to an ALS service. Based on the information obtained through research, the following recommendations shall be presented.

First and foremost, this researcher recommends that the administration of the Burlington Fire Department needs to meet with members of the Firefighters Local 2313 Executive Board to discuss upgrading to the ALS level. What has been clearly identified throughout this research project is that fire administration and union members need to work cohesively together in order to bring positive change to the department. If the union firefighters are not on board with upgrading to the ALS level, this change will not occur. The results section of this project has highlighted that over 90% of our firefighters believe that the department should pursue upgrading to the ALS level. Because of this, our firefighters need to be part of the planning process. Open lines of communication between the fire administration and the firefighters will be critical in order to implement this change. These discussions between the fire administration and the firefighters union should occur before the end of this calendar year.

This researcher recommends that the administration of the Burlington Fire Department and members of Local 2313 should meet with the town administrator and the town accountant to discuss upgrading to the ALS level. Without the support of the town administrator and the town accountant who is responsible for all financial matters in the town, upgrading to the ALS level will not be possible. Convincing the town accountant will be far more difficult. If all the stakeholders listed above believe that upgrading to the ALS level will be a benefit to the community as well as being cost effective, all parties should work closely together to make this happen. These discussions between the fire department and the town administration should also occur before the end of this calendar year.

The results section of this project has highlighted the fact the majority of fire departments upgrade to the ALS level in order to provide better patient care and to improve ALS response times within their communities. This researcher believes that providing better patient care and improving ALS response times are closely associated with one another. Because of this, it is recommended that the ALS response times of our private ambulance provider be analyzed. A three year analysis should be conducted. The response times of first arriving Burlington BLS units should also be analyzed. In order for our department to be successful in our attempt to upgrade to the ALS level we are going to have to clearly illustrate that our response times are far superior to those of our current ALS provider. When presenting information on improving ALS response times it is recommended that the geographical location of our two fire stations is discussed. Fire stations are placed in strategic locations within a community in order to provide protection and rapid response to its most populated areas. The availability of an ALS unit to respond to our community is a primary concern to members of our department. Like response times, in order for our department to be successful in our attempts to upgrade to the ALS level, this researcher recommends that we identify the number of times that an ALS unit has not been available to respond to our community. This is critical information that needs to be presented to our town's decision makers.

If it is determined that the Burlington Fire Department will upgrade to the ALS level, an operational model will need to be identified. The most common ALS operational model that is used by Massachusetts fire departments is to staff an ALS ambulance with two firefighter/paramedics. This model is utilized by the majority of those departments that neighbor the Town of Burlington. Therefore, it is recommended that if the Burlington Fire Department upgrades to the ALS level, our primary ambulance shall be staffed by two firefighter/paramedics.

This researcher strongly believes that two equally trained firefighter/paramedics that arrive on scene together will provide a higher quality service than that of a firefighter/paramedic and a firefighter/EMT.

While conducting research for this project, it became evident that several Massachusetts fire departments have phased in their ALS programs. It is recognized that it may take a small department like Burlington several years before eight to twelve firefighter/paramedics are hired. Because of this, this researcher recommends that we work with our affiliate hospital to phase in an ALS program for the Burlington Fire Department. If we were to phase in an ALS program this researcher recommends working with our current ALS provider to ensure that ALS coverage will remain available to the citizens of Burlington during this period of transition.

A long term recommendation for the Burlington Fire Department would include the staffing of ALS engine companies. Many Massachusetts fire departments now staff ALS engine companies. An ALS staffed engine company would ensure that the highest level of care would still be provided to the patient even when our ALS ambulance is unavailable for immediate response. A final long term recommendation regarding ALS operational models would include the Burlington Fire Department exploring the possibility of staffing ALS rapid response vehicles. Many fire departments throughout our nation are utilizing these smaller vehicles. This approach would reduce the wear and tear of our larger apparatus that frequently respond to medical emergencies.

The cost of providing an ALS service to a community is a major consideration. The question that must be asked is does the benefit of providing an ALS service to the community justify the cost of the program. In order to answer this question, this researcher recommends that the Burlington Fire Department work closely with the town accountant's office in order to

determine the actual costs of implementing an ALS program. Salaries and benefits for firefighter/paramedics will be the biggest expense. The cost of ALS equipment and supplies will need to be included as well as licensing and certification costs. The cost of continuing education and overtime will also need to be included.

One way to offset the costs of a municipal ambulance service is through the utilization of user fees. The insurance companies of patients that are transported to the hospital are billed based on the ambulance rate set by the municipality. In Massachusetts these rates are commonly based on the current Medicare rate. It is this researcher's recommendation that the Burlington Fire Department review its ambulance billing rates on an annual basis and make necessary adjustments if so required.

This researcher recommends that the Burlington Fire Department work with the town accountant's office and our third party billing company to determine how much revenue is being collected by the private ambulance company who provides an ALS service to our community. This researcher recommends that the past three years of ALS revenues be analyzed. This is a critical step toward the implementation of an ALS program. If the Burlington Fire Department were to collect additional revenues for providing an ALS service, these revenues would offset the operating costs of the program.

All ambulances fees that are collected by our third party billing company are direct deposited into the town's general fund. The majority of Massachusetts's fire department's who provide an ALS service deposit their revenues into an ambulance enterprise account. It is this researcher's recommendation that the Burlington Fire Department work with the town accountant's office to establish an ambulance enterprise account. The ambulance enterprise

account will be able to clearly show town officials all ALS expenses as well as all revenues being generated.

The majority of Massachusetts's fire department's that provide an ALS service to their communities have increased their fire department staffing levels. It is the recommendation of this researcher that the Burlington Fire Department increase staffing levels by nine positions over a three year period. For Fiscal Year 2016, it is recommended that an EMS officer position be created and included within the fire departments operating budget. For Fiscal Year 2017, four firefighter/paramedic positions shall be created and included within the fire departments operating budget. And in Fiscal Year 2018, four additional firefighter/paramedic positions shall be created and included within the fire departments operating budget. If approved, this researcher recommends that the additional eight firefighter/paramedics be permanently assigned to our primary ambulance that runs out of fire headquarters. These eight firefighter/paramedics will not be assigned to another fire apparatus. It is also the recommendation of this researcher that the Burlington Fire Department shall continue to apply for FEMA SAFER Grants. A number of local fire departments in our area have developed their ALS programs through SAFER Grants.

The Burlington Fire Department is a civil service fire department. All firefighters are hired off a certified firefighter civil service list. It is the recommendation of this researcher that the Burlington Fire Department request a selective certification list for individuals who are certified at the EMT/paramedic level. Throughout this research process it has become evident that the majority of firefighter/paramedics that are hired by neighboring fire departments are non residents. Based on this information, this researcher recommends that the Burlington Fire Department develop a firefighter recruiting program specifically for Burlington High School

students. This recruiting program shall detail the requirements of becoming a firefighter/paramedic.

The retention of firefighter/paramedics has been a problem for many fire departments. What has become clear through this research project is that certified paramedics on civil service lists can pick and choose which department they wish to join. Firefighter/paramedics that are currently employed also pay close attention to the collective bargaining agreements of other fire departments. Lateral transfers from one department to the next are not uncommon. In order to maintain firefighter/paramedics that become members of the Burlington Fire Department, this researcher recommends that Burlington Firefighter's Local 2313 and the town administrator agree to paramedic contractual language that is comparable to other Massachusetts fire departments that operate successful ALS programs. Compensation for continuing education and the backfilling of firefighter/paramedic shifts are of particular importance. This researcher strongly believes that existing Burlington Firefighters should be given the opportunity to become certified paramedics. It is this researcher's recommendation that paramedic contractual language should include the opportunity for two current firefighter/EMTs per year, to take a paramedic course in order to attain certification. This opportunity should be in effect for the first three years of the program.

Members of the Burlington Fire Department believe the biggest roadblock to implementing an ALS program comes from within the town's political process. They believe the Ways and Means Committee, Town Meeting, and the Board of Selectman will present the greatest challenge. In order to meet this challenge, this researcher recommends that an ALS committee be formed. This ALS committee should be comprised of fire administration, members of the firefighters union, and members of the town's financial team. This researcher

recommends that the ALS committee work together to develop an ALS business plan. This business plan shall illustrate how a Burlington Fire Department ALS service would benefit the citizens of our community. This business plan would include all expenses related to the delivery of an ALS service as well as all projected revenues. The business plan will need to clearly illustrate how revenues obtained through ambulance billing will offset the cost of the program.

Educating elected officials will be critical if a fire department ALS service is to be implemented. This researcher recommends that the ALS committee present its business plan to the Board of Selectman, Ways and Means Committee, and Town Meeting through a series of meetings. This researcher recommends that fire administration, union firefighters, and a member of the town's financial team be present for each presentation.

This researcher's final recommendation is that the Burlington Fire Department shall implement an ALS program within the next 24 to 30 months.

References

Agreement between the Town of Burlington and Armstrong Ambulance Service, INC. (n.d.). Arlington, MA.

American Heart Association. (n.d). Out-of-hospital chain of survival. Retrieved from http://cpr.heart.org/AHAECC/CPRAndECC/AboutCPRFirstAid/CPRFactsAndStats/UCM_475731_CPR-Chain-of-Survival.jsp

Baker, M. (n.d.). Replace big apparatus for better fire service EMS resource deployment. *JEMS, 39*. Retrieved from www.jems.com/articles/print/volume-39/issue-2/vehicle-ops/replace-big-apparatus-better-fire-servic.html

Barishansky, R. M. (2007, August 1). Founding fathers of EMS [Magazine]. *EMS World*. Retrieved from www.emsworld.com/article/10321743/founding-fathers-of-ems.

Biagiotti, M. (2015, June 11). Nordblom looking towards the future in Northwest Park. *Daily Times Chronicle: Burlington*. Retrieved from http://homenewsshere.com/daily_times_chronical/news/burlington/article_7f76foc-1050-11e5-a8c6-1b4fbd7a4c73.html?mode=print

Blackwell, T. H., Clawson, J. J., Eckstein, M. K., Miramonti, C., & Wang, H. E. (2011). *Emergency medical services evidence-based system design white paper for EMSA*. Retrieved from media.cygnus.com: media.cygnus.com/files/base/EMS/whitepaper/2015/02/LMIO-OUDEM_EMS_System_Design_White_Paper_FINAL_for_July_2011_Release.pdf

Breitrose, C. (2014, May 7). Fire Chief: Adding paramedics to department is a quality of life issue. *Watertown News*. Retrieved from http://www.watertownmanews.com/2014/05/07/fire-chief-adding-paramedics-to-department-is-a-quality-of-life-issue/

Breitrose, C. (2015, May 21). Fire Chief: Contract is biggest obstacle to advanced ambulance service. *Watertown News*. Retrieved from http://www.watertownmanews.com/2015/05/21/fire-chief-contract-is-biggest-obstacle-to-advanced-ambulance-service/

Burlington Fire Department Fiscal 2016 Operating Budget. (2015). In *Fire Department FY 2016 Operating Budget* Burlington, MA: Town of Burlington

Butler, B. (2010, January 5). Natick eyes privatization of ambulance service. *Worcester Business Journal Online*. Retrieved from http://wbjournal.com/apps/pbcs.dll/article?AID=/20100105/PRINTEDITION/301059998/natick-eyes-privatization-of-ambulance-service&template=printart

Carroll, A. E. (2015, January 12). Doing more for patients often does no good. *The New York Times*. Retrieved from http://www.nytimes.com/2015/01/13/upshot/doing-more-for-patients-often-does-no-good-html

City of Miami Department of Fire - Rescue. (2014). www.miamigov.com/Fire/pages/AboutUs/OurHistory.esp

Commonwealth of Massachusetts. (n.d.). *Department of Public Health Regulations* [Code of Massachusetts Regulations]. Retrieved from www.mass.gov: www.mass.gov/eohhs/docs/dph/regs/105cmr170.pdf

Compton, D. (2010, September 1). Collective influence and positive relationships. *Firehouse*. Retrieved from http://www.firehouse.com/article/10467104/collective-influence-and-positive-relationships

Compton, D. (2014, December 5). Fire politics: Increasing the fire department's influence. *Firehouse* . Retrieved from http://www.firehouse.com/article/10284179/fire-politics-increasing-the-fire-departments-influence

Compton, D. (2014, July 1). Politics and the fire service. *Firehouse*. Retrieved from http://www.firehouse.com/article/11487722/politics-and-the-fire-service

Connor, B. J. (2000, December 22). *Medicare billing change effective 1/1/01*. Armstrong Ambulance. Burlington, MA.

Connor, B. J. (2001, February 1). *Advanced life support service - extension to 3/2/01*. Armstrong Ambulance. Burlington, MA.

Conti, K. (2011, May 12). Ambulance rates rise to cover costs. *Boston Globe*. Retrieved from http://www.boston.com

Dayal McCluskey, P. (2014, June 1). Lahey's cost-aware network growing north of Boston. *Boston Globe*. Retrieved from www.bostonglobe.com/business/2014/05/31/growing-lahey-health-network-able-keep-costs-below-boston-medical-behemoths/KsEdeX64eHFgh

Fan, C. (2015, May 13). Charleston Fire Department having problems retaining paramedics. *WOWK 13 Charleston, Huntington WV News*. Retrieved from http://www.wowktv.com/story/29059377/charleston-fire-department-having-problems-retaining-paramedics

Federal Emergency Management Agency. (n.d.). Staffing for adequate fire and emergency response grants. Retrieved from https://www.fema.gov/staffing-adequate-fire-emergency-rersponse-grants

Gaffney, M. (2015, June 3). Saugus Fin Com recommends postponing ambulance articles. *The Patriot Ledger*. Retrieved from http://www.patriotledger.com/article/20150603/NEWS/150608958?template=printart

Grady, III, J. M. (2014, July 15). Building key relationships with elected community leaders. *International Association Of Fire Chiefs On Scene*. Retrieved from http://www.iafc.org/onScene/article.cfm?itemNumber=7783

International Association of Fire Chiefs. (2013). *Taking responsibility for a positive public perception*. Retrieved from www.iafc.org/files/1DEPTadmin/TakingResponsibility4PositivePublicPerception.pdf

International Association of Fire Chiefs. (2014). *Fire service-based ems electronic tool kit Resources for leaders*. Retrieved from www.fireengineering.com: www.fireengineering.com/content/dam/fe/online-articles/documents/2014/FS-BasedEMSToolKitFINALJanuary142014.pdf

Kenley, S. (2014). *A collaborative and positive approach to labor and management relationships*. Retrieved from Public Management Group: publiclawgroup.com/wp-content/uploads/2014/12/2014-11-12-pmg-White-Paper-Collaborative-Labor-Management.pdf

LaMond, C. (2015, May 5). Winchester Town Meeting approves budget, firefighter pay. *The Enterprise*. Retrieved from http://www.enterprisenews.com/article/20150505?NEWS/150508063/?template=printart

Laidler, J. (2014, May 8). Burlington office park seeks upgrade and expansion. *Boston Globe*. Retrieved from httpd://www.bostonglobe.com/metro/regionals/north/2014/05/07/burlington-office-park-seeks-upgrade-and-expansion/4hZfg46DLpUIOnlj3ALbkK/story

Lederman, D. (2014, February 1). Amherst ambulance fees to rise to cover increasing costs. *MassLive*. Retrieved from http://blog.masslive.com/breakingnews/print/.html?entry=/2014/02/amherst_ambulance_fees_to_rise.html

Luca, D. (2013, March 7). Fire Department wants to take over advanced ambulance services. *The Andover Townsman*. Retrieved from http://andovertownsman.com/news/local_nes/fire-dept-wants-to-take-over-advanced-ambulance-services/article_f89b326b-2640-5b19-b15e-ae748021a

MMA Consulting Group, Inc. (2000). *Study of the Burlington Fire Department*. Boston, MA: Author.

Massachusetts Department of Revenue. (2008). *Enterprise Funds G.L. c. 44 53F1/2*. Retrieved from www.mass.gov

Massachusetts Executive Office of Health in Human Services. (2015). *Massachusetts ambulance service list*. Retrieved from www.mass.gov/eohhs/docs/dph/emergency-services/ambulance-service-list.pdf

Massachusetts Office of Emergency Medical Services. (2014). Emergency medical services pre-hospital statewide treatment protocols. In *Emergency medical services pre-hospital statewide treatment protocols* (12.03). Retrieved from www.mass.gov/eohhs/docs/dph/emergency-services/treatment-protocols-12-03.pdf

McKee, M. (2009, August 18). Discussions planned on ambulance service. *Boston Globe*. Retrieved from http://www.boston.com/yourtown/news/natick/2009/08/discussions_planned_on_ambulan.html

National Fire Protection Agency. (2010). *NFPA 1710* [Standard]. Quincy, MA: Author.

National Volunteer Fire Council. (2009). *Guide to communicating with elected officials*. Retrieved from www.ncsfa.com/wp-content/uploads/2014/05/101128a.pdf

North Suburban Emergency Medical Consortium and Armstrong Ambulance Company. (1993). *Amended and restated agreement between North Suburban Emergency Medical Consortium and Armstrong Ambulance Company*. Burlington, MA: Author.

Northwest Park. (n.d.). *Project information packet Burlington Town Meeting*. Burlington, MA: Northwest Park.

Pecci, A. (2015, January/February). Destination: Burlington. *Northshore Magazine*. Retrieved from www.nshoremag.com/January-February-2015/Destination-Burlington/

Port Angeles Fire Department. (2010). *Port Angeles Fire Department Medic 1 cost of service study 2010 rate proposal*. Retrieved from https://wa-portangeles.civicplus.com/DocumentsCenter/View/129

Reinberg, S. (2014, November 24). More advanced emergency care may be worse for cardiac arrest victims: Study. *HealthDay*. Retrieved from http://consumerhealthday.com/general-health-information-16/emergencies-and-first-aid-news-227/more-advanced-emergency-care-may-be-worse-for-cardiac

Sachs, G. M. (1997, January 1). Expanding EMS: Upgrading from BLS to ALS. *Fire Engineering, 150*. Retrieved from www.fireengineering.com/articles/print/volume-150/issue-1/departments/fire-service-ems/expanding-ems-upgrading-from-bls-to-als.html

Simpson, N. (2015, May 1). Fire department demand for paramedics creating shortage. *The Patriot Ledger*. Retrieved from http://www.patriotledger.com/article/20150501/NEWS/150509381?template=printart

Stefancic, J. M. (n.d.). *ALS staffing analysis*. Retrieved from www.usfa.fema.gov: www.usfa.fema.gov/pdf/efop/efo47985.pdf

Stiell, I. G. (2005). *Ontario pre-hospital advanced life support (OPALS) study*. Retrieved from Canadian Health Services Research Foundation: www.cfhi-fcass.ca/migrated/pdf/researchreports/ogc/stiell-e.pdf

Stiell, I. G., Wells, G. A., Spaite, D. W., Lyver, M. B., Munkley, D. P., Field, B. J., ... DeMaio, V. J. (1998). *The Ontario prehospital advanced life support (OPALS) study: Rationale and methodology for cardiac arrest patients*. Retrieved from sendfirefighters.ca: sendfirefighters,ca/wp-content/uploads/2011/08/OPALS.pdf

Stoman, N. (1983, February). *Background development of North Suburban Emergency Medical Consortium*. Paper presented at the North Suburban Emergency Medical Consortium, Burlington, MA.

Stroman, N. (1983, June). *North Suburban Emergency Medical Consortium Liaison Committee Meeting*. Paper presented at the North Suburban Emergency Medical Consortium, Burlington, MA.

The National EMS Advisory Council. (2012). *EMS system performance-based funding and reimbursement model*. Retrieved from www.ems.gov/nemsac/FinanceCommitteeAdvisoryPerformance-BasedReimbursement-May2012.pdf

The National Highway Traffic Safety Administration. (2007). National ems scope of practice model. In *National ems scope of practice model* (DOT HS 810 657, pp. 27-28). Retrieved from hhttps://www.nremt.org/nremt/downloads/Scope%20of%20Practice.pdf

Town of Burlington. (2014). *Annual Report*. Burlington, MA: Town of Burlington.

Tucker, F. (2013, January 30). Belmont Fire to upgrade ambulance service. *Belmont Patch*. Retrieved from http:/patch.ocm/massachusetts/belmont/belmont-to-upgrade-ambulance-service

United States Fire Administration. (2010). Executive development (R123) Applied research self-study course guide (Q123). In *Executive development (R123) Applied research self-study course guide (Q123)* (pp. 23). Emmitsburg, MD: United States Fire Administration.

United States Fire Administration. (2012). *Funding alternatives for emergency medical and fire services*. Retrieved from https://www.usfa.fema.gov/downloads/pdf/publications/fa_331.pdf

United States Fire Administration. (2012). *Handbook for EMS Medical Directors*. Retrieved from www.usfa.fema.gov

United States Fire Administration. (2014). America's fire and emergency service leader strategic plan fiscal years 2014-2018. In *America's fire and emergency services leader strategic plan fiscal years 2014-2018*. Emmitsburg, MD: United States Fire Administration.

United States Fire Administration. (2014). Executive leadership EL- student manual. In *Executive leadership* (pp. SM 8-5-8-6). Emmitsburg, MD: United States Fire Administration.

Van Dyke, A. (2014, September 22). Topeka fire looking to expand medical response. *The Topeka Capital Journal*. Retrieved from http://cjonline.com

Warren, T. N. (2014, February 12). The drama of politics in the fire service. *Fire Engineering*. Retrieved from http://fireengineering.com/articles/2014/02/the-drama-of-politics-in-the-fire-service.html

Appendix A

Fire Chief ALS Questionnaire

1. What was the primary reason behind your fire department upgrading from a BLS service to an ALS service?
2. Describe your department's current ALS model?
3. Has your department's operational model changed since it was first implemented?
4. Did your department request a selective certification Civil Service List and if so how satisfied are you with this process?
5. How many firefighter/medics does your department currently employ?
6. Describe the costs associated with implementing your ALS service.
7. Has increasing department staffing part of your ALS plan?
8. How do your firefighter/medics maintain their certification level and is there a cost associated?
9. In your opinion does the benefit of providing an ALS service to your community justify the costs of the program?
10. What roadblocks were encountered when you attempted to upgrade your service from the BLS level to the ALS level?
11. If roadblocks were encountered, how did you overcome them?
12. Has retention of firefighter/medics been a problem for your department?
13. What approaches did you use in order to successfully gain the support of both your elected officials and town citizens in order to implement your ALS plan?

Appendix B

Fire Chief ALS Questionnaire
Chief Gregory Burns
Reading Fire Department
Wednesday September 23, 2015
Reading Fire Headquarters

1. **What was the primary reason behind your fire department upgrading from a BLS service to an ALS service?**

The bottom line was to provide better patient care. Because of declining revenues due to a change in Medicare in the late 1980's the Consortium/Armstrong Ambulance had to restructure their rate fees. Reading began to question if ALS service would continue to be provided. Reading switched over to Action Ambulance for ALS coverage. Because of the uncertainty, the Firefighter's Union began exploring ALS. ALS was the standard of care but the budget in Reading was tight. The Union held meetings with the members of the Consortium which included Town Managers and began talking about potential ALS delivery models. These discussions were based on off duty firefighters staffing an intercept truck. However, this concept never got off the ground. Because the Reading Town Manager was part of these meetings when Greg became chief the Town Manager asked him to implement an ALS plan. There were no issues with Action Ambulance.

2. **Describe your department's current ALS model?**

We staff one primary ambulance 24/7 with two firefighter/medics. Reading's second ambulance is not staffed, it is a reserve ambulance. Reading's engine companies are class 5 ambulances equipped with ALS equipment. Reading has two fire stations and medics are usually assigned to every apparatus. If Reading can not provide ALS, a private ambulance shall be dispatched. This includes Armstrong, NorthEast, and a third private ALS provider. North Reading Fire will also be called.

3. **Has your department's operational model changed since it was first implemented?**

In 2003, Reading had 8 firefighter/medics, six of which were new medics. Reading took all existing personnel off the ambulance and put the new medics on the ambulance. This was problematic for the department. This should have been considered prior to implementation. The ALS plan included training one existing member per year to the ALS level. Some members felt it was not fair that they were not given the opportunity to train to the ALS level. Budget times were difficult in Reading; there were vacancies in the department. The Town had to vote on a Proposition 2 ½ Override to increase department staffing by two members.

4. **Did your department request a selective certification Civil Service List and if so how satisfied are you with this process?**

Yes. Civil Service has been great for Reading. You can pick really good people. At the time only 6 or 7 resident's names appeared on the Civil Service List. Since the hiring of firefighter/medics it has been non-residents. Reading used the Selective Service List to hire six medics.

5. **How many firefighter/medics does your department currently employ?**

24 members are medics out of a total of 46 members. A firefighter/medic hired off a Selective Service List must maintain his certification. The CBA states that the member will maintain certification throughout his career.

6. **Describe the costs associated with implementing your ALS service**.

Costs associated included the 12 Lead monitor, medications, and licensing fees including a regional fee, and a Refrigerator for storing medicine. Last year (2014) 47K were spent for supplies, 20K for licenses and fees, and 6k for the medical director. Reading also pays for the firefighter/medics time and tuition for education including overtime and backfill. There is annual in-service training as well. Members of Reading are sent to Armstrong Ambulance and Pro Ambulance's simulation labs.

.

7. **Has increasing department staffing part of your ALS plan?**

We had to hire two additional firefighters through an Override vote. At the time two shifts had 11 members and two shifts had ten members. The minimum manning level was 9. The two additional firefighters brought each shift to 11 members. Minimum manning is now set at 10 during nights and weekends. The fire prevention officer who works days is counted toward the minimum manning.

8. **How do your firefighter/medics maintain their certification level and is there a cost associated?**

We pay for it all.

9. **In your opinion does the benefit of providing an ALS service to your community justify the costs of the program?**

Yes, no doubt. The community is very proud of our program. A great amount of satisfaction is felt by the membership when they provide an ALS service. As a result, the Town supported the ALS engine and ladder company.

10. **What roadblocks were encountered when you attempted to upgrade your service from the BLS level to the ALS level?**

Some internal roadblocks existed. There were two main reasons. First, father's wanted to see their son's on the job. Because of this, a couple of guys tried to sink the program. Secondly, members were concerned that existing firefighters would be laid off before the medics.

11. **If roadblocks were encountered, how did you overcome them?**

The rank and file was supportive of the ALS program. The vote passed unanimously. The Executive Board brought a strong package back to the membership that was supported.

12. **Has retention of firefighter/medics been a problem for your department?**

No. We have not had anybody leave. There have been multiple requests from firefighter/medics to lateral to Reading. A Wilmington firefighter who was a medic transferred over because he wanted to use his skills and he needed to affiliate with someone to maintain his certification.

13. What approaches did you use in order to successfully gain the support of both your elected officials and town citizens in order to implement your ALS plan?

Reading stressed the sooner ALS is provided to the patient the better. A three minute ALS response time is better than a 12 minute response time. Chief Burns stated his department gets to know our patients and that the patient's get to know the firefighter/medics. Chief Burns told me that Reading stocks a medication specifically for a local boy. The Fire Department can purchase the latest equipment ahead of the private provider. A fire department can control the staffing of an ambulance over the private. Chief Burns stated that financially the town breaks even but the level of care is a huge factor.

The Town Manager stated that for the service to be brought in the service had to be reasonable. If the model made sense he would pursue it. Meeting with the Union was huge. Everybody had to be on board. Negotiations need not be contentious. The guys benefited by upgrading to the ALS level. Chief Burns recommended underestimating initial revenue.

Appendix C

Fire Chief ALS Questionnaire
Chief Chris Leary
Melrose Fire Department
Thursday September 24, 2015
Melrose Fire Headquarters

1. **What was the primary reason behind your fire department upgrading from a BLS service to an ALS service?**

The primary reason was to enhance our service. ALS was provided by Cataldo Ambulance in an intercept truck. Melrose was awarded two SAFER Grants. In order to maintain the positions awarded through the grant Melrose made the decision to get back in the ambulance business. There were no real response issues or patient care issues with Cataldo. The City was paying out about 16 to 20 K a month to Cataldo for their services. The rate was 400 dollars per transport.

2. **Describe your department's current ALS model**?

Melrose staffs Rescue One 24/7 with two medics. They did not want to go the P/B route. Melrose felt this would be a decrease in patient care. It was important to them to have two medics working together with equal training when administering drugs. It was important to have an equal to bounce something off of. Melrose Rescue Two is a back-up that is not staffed. Cataldo Ambulance provides back-up ALS and BLS service. For called in structure fires Rescue One responds. Structural firefighting gear and SCBA are stored in the ambulance. Cataldo will then provide coverage.

3. **Has your department's operational model changed since it was first implemented?**

Melrose implemented their ALS program with 10 medics. At first three shifts were ALS and one shift was BLS. Cataldo would provide ALS services when the BLS shift worked. Once Melrose had 12 medics all four shifts provided an ALS service. They now have 21 firefighter/medics. Melrose has three fire stations. Their engine and ladder companies are not ALS companies. The goal is to staff ALS engine companies.

4. **Did your department request a selective certification Civil Service List and if so how satisfied are you with this process?**

Yes. Melrose has a solid employment hiring process in place. Chief Leary did state that guys are taking the paramedic program to get hired on a fire department. Once hired these same individuals have little interest in working on the ambulance. Chief Leary stated that more non-residents are hired and that half of the medics hired are working medics while half are not. Chief Leary also stated that cities and towns often compete over the same guys.

5. **How many firefighter/medics does your department currently employ?**

Melrose has 21 firefighter/medics. Chief O'Brien offered his entire department the opportunity to take the paramedic course. Only three members were interested. This included two officers.

6. **Describe the costs associated with implementing your ALS service.**

A bond was required for 65K in order to pay for equipment. This included a monitor and maintenance contract for 34K, a Lucas chest compressor, a RAD 57 for 5,400 and two ALS kits for 700 apiece. 4,700 were used for miscellaneous supplies and 2,800 were used for medications. An Ambulance Enterprise Fund covers all costs. Medics are required to attend eight hours of simulation lab training. This training results in backfilling positions.

EKG and Protocol training cost eight thousand dollars. One hundred percent of the revenues go into the Enterprise Account. Pro Ambulance does all the billing. 1,500 patients were transported a year. Melrose also receives 35K a year from Melrose/Wakefield Hallmark Health. The Enterprise Fund covers the salaries of eight firefighter/medics as well as 120K for overtime. Every year the billing rate is increased.

7. **Has increasing department staffing part of your ALS plan?**

Two SAFER Grants were awarded to Melrose. Each grant was for four guys. Melrose started with a BLS ambulance in May of 2011. The way to maintain the SAFER positions were to maintain the ambulance service.

8. **How do your firefighter/medics maintain their certification level and is there a cost associated?**

Both with in-house training and outside training. Pro conducts HALO training as well as ACLS and PALS training. The hospital conducts cardiac reviews. The guys are also required to take the 20 hour national courses. Firefighter/medics are paid overtime for training or are given the day off. The more medics that are on the department, the greater the cost for maintaining certifications.

9. **In your opinion does the benefit of providing an ALS service to your community justify the costs of the program?**

Yes, definitely. Members of the Melrose Fire Department serve duel purposes as firefighter/medics. They provide an enhanced service to the community. Members of the fire department know their patients. As far as cost benefit, the department has hit its projected financial mark every year. They were in the positive by 50K.

10. **What roadblocks were encountered when you attempted to upgrade your service from the BLS level to the ALS level?**

An ALS Committee was formed. The Chief, Union, Mayor, and Alderman supported the plan. Everybody bought into the plan.

11. **If roadblocks were encountered, how did you overcome them?**

The department, Union, and City worked together. Cataldo Ambulance even assisted. They pick up 25 runs per month backing up Melrose's ambulance.

12. **Has retention of firefighter/medics been a problem for your department?**

Melrose has had a couple of firefighters leave. But it is a "two way street." Melrose lost a medic to Cambridge but has brought in laterals from other departments. Other firefighters took the Civil Service exam in order to join the department. The Chief was not sure if there are any conditions in order to retain an employee.

13. **What approaches did you use in order to successfully gain the support of both your elected officials and town citizens in order to implement your ALS plan?**

An internal committee was formed. The former chief got the full support of the Mayor. Without being awarded the SAFE Grant the ambulance plan would not have happened. Financially the numbers have been right on target. The department set out what it intended to do. The plan was unanimously voted for. EMT-Basics were paid a 2,800 stipend while EMT-Ps received a 4,800 stipend. The stipend was on the low end according to Chief Leary. Salary is very important according to the chief.
Chief Leary did state that there was an us versus them problem, there is a divide.

Appendix D

Fire Chief ALS Questionnaire
Chief David Grunes
Bedford Fire Department
Friday September 25, 2015
Bedford Fire Headquarters

1. **What was the primary reason behind your fire department upgrading from a BLS service to an ALS service?**

Bedford did not want to dependent on a private ambulance company. Bedford used three private ALS providers over a ten year period. Emerson Hospital changed its ALS model and location which affected response times. Action Ambulance covered half of the Town. Action closed their Burlington headquarters. Armstrong Ambulance covered the other half of the town. Armstrong closed their Hanscom location as well which led to Bedford sharing Burlington's ALS truck. This had an impact on response times into Bedford. "We struggled to get them here." Bedford's operational model included two firefighter/EMT'S swinging between the ambulance and the ladder truck depending on the call. The model that was implemented included increasing shift manning levels to cover both the ambulance and the ladder.
Bedford was also concerned with the continuity of care to its residents. Fifty percent of their ambulance responses were at the ALS level.

2. **Describe your department's current ALS model?**

Bedford currently staffs two of their shifts at the ALS level. Their goal is to staff two firefighter/medics on their ambulance. Initially Bedford may drop to a medic/basic staff. When this occurs Armstrong Ambulance will be called for ALS. The goal of Bedford is to hire 12 firefighter/medics per staffed ambulance. Bedford also cross staffs a squad vehicle that responds to all medicals. Their primary engine responds to only fire calls.

3. **Has your department's operational model changed since it was first implemented?**

This question is not applicable as Bedford is just starting their ALS program.

4. **Did your department request a selective certification Civil Service List and if so how satisfied are you with this process?**

Yes. Bedford has been trying to hire four firefighter/medics since December 1, 2014 when the latest Civil Service list was established. Chief Grunes stated that over 40 fire departments asked for a medic list. Chief Grunes had a concern that Bedford may be seen as "being at the bottom of the list" because firefighter/medics had other options in order to be hired by a fire department. He mentioned Reading Fire Department as being the Cadilac. Grunes felt that he had to sell Bedford to the candidates. Chief Grunes was not satisfied with the candidates or the Civil Service process.

5. **How many firefighter/medics does your department currently employ?**

Bedford currently has four firefighter/medics. One firefighter/medic is going to the Massachusetts Firefighting Academy.

6. **Describe the costs associated with implementing your ALS service.**

Bedford hired four personnel. The cost for labor alone was 332,000. Bedford increased their overtime 17K to allow medics to complete training. 21K was allotted for medication and equipment. Chief Grunes is a strong believer in an Ambulance Enterprise Account. He worked very closely with Bedford's finance department. He stated that "fire

chiefs speak with emotion where financial people speak with numbers and facts." Bedford was paying 175K a year to Armstrong for ALS services, about 375 to 400 dollars per call.

7. **Has increasing department staffing part of your ALS plan?**

Yes. "I can't think of any other way to do it." Bedford's previous staffing level was a five man minimum with a six man maximum. They looked at their minimum manning based on statistical demand. An additional piece of apparatus would be staffed on weekdays and weekends.

8. **How do your firefighter/medics maintain their certification level and is there a cost associated?**

Armstrong Ambulance will provide training to firefighter medics. Medics will get compensated if sent out for training. EMT-Basics will not. This could be problematic. Bedford has rented Pro Ambulances simulation lab. Their contract with Lahey will provide six rounds per month. Armstrong will also provide six rounds per month.

9. **In your opinion does the benefit of providing an ALS service to your community justify the costs of the program?**

Yes, Bedford had a huge service gap when the ladder truck was out of the building. We now have a dedicated staffed ambulance at a higher level of care with no additional impact on the tax level. The program was funded on the decrease in ALS costs to Armstrong and an increase in ambulance revenues through ambulance fees.
Chief Grunes spoke of the first day of their ALS program in which a cardiac arrest occurred on a basketball court. The engine was first due followed by the ambulance one minute later. You had six guys wearing the same uniform and there was a natural flow to the call. Chief Grunes received positive feedback from members of the community that were present at the event.

10. **What roadblocks were encountered when you attempted to upgrade your service from the BLS level to the ALS level?**

There was skepticism in the business plan by one of the Selectman, and the entire finance committee. The focus was not on patient care. They wanted hard numbers, not emotion. A question was raised to Chief Grunes, "How many people are going to die if we don't do this?"
A current roadblock that Bedford is facing is that their projected numbers have been impacted by a 90 percent drop in ambulance revenues through billing for the Veteran's Administrative Hospital in Bedford.

11. **If roadblocks were encountered, how did you overcome them?**

Through education, the first person that you need to convince is your town manager. We had 16 meetings over a four month period. Presentations were given by the finance director and members of the union. "Have an answer for every question." The team approach must be used in order for buy in to occur.

12. **Has retention of firefighter/medics been a problem for your department?**

Not yet because their program has just begun. He did mention that since the program has gone live some Union issues have started.

13. **What approaches did you use in order to successfully gain the support of both your elected officials and town citizens in order to implement your ALS plan?**

Focus on elected and appointed officials. Show respect to elected officials and answer all of their questions. Remember that elected officials represent the citizens. Chief Grunes did not want the elected officials to feel backdoored during the process.
Bedford held three meetings. The first presentation was based on what services the fire department currently provides. The second presentation was based on fire department needs and the third presentation was what we could

do to address those needs. “Not a whole lot of emotion was involved. “Each presentation has a white shirt and a blue shirt in attendance. There needs to be buy in from the rank and file.”
A business plan was put together the chief and the finance director. A facilitator was hired during the process.

Appendix E

Fire Chief ALS Questionnaire
Retired Chief Richard Rochon
Westford Fire Department
Monday September 28, 2015
Panerra Bread
Chelmsford, MA

1. **What was the primary reason behind your fire department upgrading from a BLS service to an ALS service?**

The Primary ALS service out of Emerson Hospital was dissolving. Pro Ambulance was to fill the gap. Lowell Medics also covered half of Westford. Westford was located at the far end of both providers' service areas. Both providers' response times into Westford were high, over 15 minutes. Westford wanted to provide a higher level of care to its citizens in a shorter period of time. Westford was also experiencing an increase in multiple calls.

2. **Describe your department's current ALS model?**

Westford has three ambulances. Their primary ambulance is staffed by two firefighter/medics. Their second ambulance is cross staffed by firefighter /EMT's who also are also assigned to an engine. The third ambulance is in reserve and is put in service when one of their front line ambulances is taken out of service. Chief Rochon stated that if multiple calls came in an ALS ambulance may be diverted to the ALS call. If no Westford paramedic was available, Westford would rely on Pro Ambulance who runs out of Emerson or Lowell ALS.

3. **Has your department's operational model changed since it was first implemented?**

Chief Rochon stated that operational models are determined by the State. He highly recommended having a staffing plan. "By such and such date our department will have two medics on duty; by such and such of a date, we will have so many medics. Westford started their paramedic program during the day with only two medics. Between early buyouts and retirements their paramedic staffing increased rapidly within two years. The goal was to provide ALS coverage around the clock.

4. **Did your department request a selective certification Civil Service List and if so how satisfied are you with this process?**

Westford Fire is not a Civil Service Department. They developed their own hiring process which included a written test, interview, and practical exam in which medical control was involved in. He cautioned that you will find medics with prior drug issues. "You have to be concerned about who you hire as well as maintaining accountability of your drug stock." Chief Rochon stated that having the Union involved is key. Westford offered to send two current firefighters to school per 18 months followed by two more firefighters per 18 months. He was able to get four of his internal guys into schooling.

5. **How many firefighter/medics does your department currently employ?**

Before Chief Rochon retired Westford had 12 firefighter/medics. When the program started he had two, one of which was already on staff.

6. **Describe the costs associated with implementing your ALS service**.

Prior to going ALS Westford had an Ambulance Fund that was funded by private donations through a mass mailing effort. They were able to raise between 30-50K annually. However, those numbers began dropping off. The Ambulance Fund was able to purchase the ambulance and equipment. Westford also never billed for their service.

Because of declining donations Westford needed to find a funding mechanism for ambulance purchases. The Ambulance Enterprise Account was established. This budget matched the fire department operating budget. The salaries for eight medics were included. Chief Rochon stated that the ambulance budged should represent 20-25 percent of the department's total operating budget. He warned to be aware of both direct and indirect costs. The Town can include a charge for the time that others provide for ambulance related duties such as the Town Manager, Payroll, ect. He stated that the fire department should negotiate these costs.
Medicine and ALS equipment represent some of the costs. The heart monitor is the biggest expense. This piece of equipment costs between 20 and 40K. He recommended having a back-up monitor available which could be done through the provider's contract. He also mentioned costs related to storing ALS equipment and electrical ports and warmers in the ambulance. He estimated 90 to 100K for equipment.

7. **Has increasing department staffing part of your ALS plan?**

Yes, but the plan was more based on the number of vacant positions. Chief Rochon did request an additional eight positions. Chief Rochon discussed putting on additional staffing during the day and then assigning those members to a substation during the night. Chief Rochon stated that his plan ramped up with two and a half years.

8. **How do your firefighter/medics maintain their certification level and is there a cost associated?**

Firefighter/medics initially were responsible to maintain their certification. Westford did as much in house training as we could. The initial medic stipend covered education. The key is to have in house training and a member available to train the medics. This is a huge savings. Rochon spoke of an example of an outside trainer who charged 20K for his services.

9. **In your opinion does the benefit of providing an ALS service to your community justify the costs of the program?**

"Yes. It is so superior; there are no delivery gaps in patient care. We have seen lives saved as a result of this service."

10. **What roadblocks were encountered when you attempted to upgrade your service from the BLS level to the ALS level?**

Chief Rochon spoke of both internal and external factors. Internally it was the unknown factor. Did we have the credibility to make it work? ALS services were primarily based out of private companies and hospitals. Westford was going to be one of the first fire department's to run ALS. Westford's EMS guy at the time wanted all 12 medics at once. Externally did the program make sense? They looked at the numbers versus quality of care. Take a hard look at your payer rates. In Westford the Medicare rate was 23 to 27 percent. Look at your direct and indirect costs. The daytime population came into play for Westford. Both Emerson and Lowell EMS came out against the plan. There will be a financial impact on the privates if a fire department begins delivering the service.

11. **If roadblocks were encountered, how did you overcome them?**

Internally there need to be a tremendous amount of communication. The Union needed to participate in the process. Negotiate as much as you can in the first contract. Acknowledge you can address additional issues in the future. Consider a one year CBA over a three year agreement during implementation. Externally it was about educating the public. What would an ALS service provide to the community? Create a business plan to show how revenues will offset costs.

12. **Has retention of firefighter/medics been a problem for your department?**

Yes but it can be dealt with. The fire service is becoming transitional. Firefighter/medics may look at other contracts. Rochon stated that he believed medics could make more money in the private sector over the public sector mostly because of overtime opportunities. However benefits such as a pension need to be considered. How a department pays for education is important. Some departments pay for education some do not. Westford firefighter/medics make about 11/12 percent over base salary.

13. **What approaches did you use in order to successfully gain the support of both your elected officials and town citizens in order to implement your ALS plan?**

Westford highlighted the fact that Emerson's ALS program was changing. They were able to show ALS response times for both Emerson and Lowell ALS. A business plan was developed in which it was shown how service would be upgraded and revenues were discussed. Westford did a number of presentations to elected officials in which members of the department as well as the financial director presented. The financial director helped with the financial aspect of the plan. Because of the privates opposing the plan, Westford brought in fire chiefs to speak on their success with ALS.

Appendix F

1. Name of Community.

2. Type of Department

- ◯ Career Department
- ◯ Call Department
- ◯ Volunteer Department
- ◯ Combination Department

3. Human Resources.

- ◯ Civil Service Department
- ◯ Non Civil Service

4. Prior to your department delivering an ALS service, who provided ALS to your community.

- ◯ Private Ambulance Company
- ◯ Hospital Based Paramedics
- ◯ Regional Based Paramedics
- ◯ Other (please specify)

5. The primary reason your department upgraded to an ALS service include;

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Not satisfied with previous ALS provider	○	○	○	○	○
Previous ALS service no longer being provided	○	○	○	○	○
Improve overall patient care	○	○	○	○	○
Improve ALS response times	○	○	○	○	○
Increase department staffing levels	○	○	○	○	○
Increase revenues through billing	○	○	○	○	○

6. Who provides patient transports in your community.

- ○ Fire Department
- ○ City/Town EMS
- ○ Private Ambulance Company

7. If your department provides patient transports, describe your operational model.

- ○ Ambulance staffed by two paramedics
- ○ Ambulance staffed by one paramedic and one EMT-Basic
- ○ Ambulance staffed by two EMT-Basics

8. Does your department staff ALS engine companies.

- ○ Yes
- ○ No

9. How many paramedics are typically assigned to your ALS engine company.

- ○ None
- ○ One
- ○ Two
- ○ Three

10. Will a paramedic assigned to an engine accompany the patient to the hospital in a transport ambulance.

- ◯ Yes
- ◯ No

11. Who provides back-up ALS coverage for your community.

- ◯ Private Ambulance Company
- ◯ Hospital Based Paramedics
- ◯ Regional Based Paramedics
- ◯ Neighboring Fire Department

12. What was your department's ALS start-up costs.

13. Your Department's ALS start-up costs included;

	Agree			Disagree	
Firefighter/Paramedic Base Salaries and Benefits	◯	◯	◯	◯	◯
Ambulance Purchase	◯	◯	◯	◯	◯
ALS Medical Equipment	◯	◯	◯	◯	◯
ALS Medications	◯	◯	◯	◯	◯
Continuing Education Costs	◯	◯	◯	◯	◯
Ambulance Maintenance Costs	◯	◯	◯	◯	◯
Licence/Certification Costs	◯	◯	◯	◯	◯

Other (please specify)

14. Your department's ambulance billing rates are based on the current Medicare rate plus;

- ◯ 50%
- ◯ 100%
- ◯ 150%
- ◯ 200%
- ◯ 250%
- ◯ 300%
- ◯ Other (please specify)

15. Revenues obtained through patient billing are deposited into;

- ◯ Ambulance Enterprise Account
- ◯ City/Town's General Fund
- ◯ Both Ambulance Enterprise Account and the General Fund

16. Members of your department who are certified paramedics receive;

- ◯ A percentage rate increase on base salary
- ◯ Annual Stipend
- ◯ Semi-Annual Stipend

17. Please list your paramedics percentage rate increase or stipend.

18. Does your department have a full time EMS Officer. If so, list the rank of your EMS Officer.

- ◯ No full time EMS Officer
- ◯ Assistant Fire Chief
- ◯ Deputy Fire Chief
- ◯ Captain
- ◯ Lieutenant
- ◯ Firefighter

19. Did department staffing levels increase when your department upgraded to the ALS level.

- ◯ Yes
- ◯ No

20. Were your initial attempts to upgrade to the ALS level met with any resistance from the following internal and external stakeholders.

	Resistive	Moderately Resistive	Slightly Resistive	Not Resistive	
Mayor/Town Administrator	◯	◯	◯	◯	◯
City Counsel/Board of Selectman	◯	◯	◯	◯	◯
City/Town Finance Committee	◯	◯	◯	◯	◯
Representative Town Meeting	◯	◯	◯	◯	◯
Firefighter's Local Union	◯	◯	◯	◯	◯
Non Union Firefighters	◯	◯	◯	◯	◯
Private Ambulance Company	◯	◯	◯	◯	◯
Hospital Based Paramedics	◯	◯	◯	◯	◯
Regional Based Paramedics	◯	◯	◯	◯	◯

Other (please specify)

21. How long did it take to implement your ALS program after the framework of the program was developed.

- ◯ One Year
- ◯ Two Years
- ◯ Three Years
- ◯ Four Years
- ◯ Five Years
- ◯ Greater than Five Years

22. If your department requested a Human Resources Division Selective Certification List for EMT Paramedics, how satisfied were you of the quality of the candidates.

- ◯ Very Satisfied
- ◯ Satisfied
- ◯ Not Satisfied
- ◯ Did not request a selective certification list.

23. When hiring Firefighter/Paramedics, did lack of paramedic experience ever become an issue.

- ◯ Yes
- ◯ No
- ◯ On Occassion

24. Has retention of Firefighter/Paramedics been a problem for your department.

- ◯ Yes
- ◯ No

25. Were any ALS Studies conducted by/for your department prior to implementation.

- ◯ Internal Fire Department Study
- ◯ External Consulting Firm Study
- ◯ Both an internal fire department study and an external consulting firm study
- ◯ No ALS Study Conducted

26. Was an ALS Committee formed in your community prior to implementation. If so, what was the makeup of the committee.

	Yes	No			
No ALS Committee	◯	◯	◯	◯	◯
Fire Administration	◯	◯	◯	◯	◯
Firefighters	◯	◯	◯	◯	◯
Elected Town Officials	◯	◯	◯	◯	◯
Citizens	◯	◯	◯	◯	◯
Local Business	◯	◯	◯	◯	◯

Other (please specify)

27. Did your EMS Committee make formal presentations to the following;

	Yes	No			
No ALS Committee Formed	○	○	○	○	○
City Counsel/Board of Selectman	○	○	○	○	○
Finance Committee	○	○	○	○	○
Representative Town Meeting	○	○	○	○	○
Citizens of Community	○	○	○	○	○

Other (please specify)

Appendix G

Gmail by Google

Mike Patterson <mpatterson@burlington.org>

Applied Research Project

Mike Patterson <mpatterson@burlington.org> Wed, Sep 9, 2015 at 2:54 PM

To: jnuttall@abingtonma.gov, chief@acushnetfire.com, afdchief@agawam.ma.us, mathered@amesburyma.gov, 2w4paulr@gmail.com, krobie@ashlandmass.com, atholfd@verizon.net, chieflachance@cityofattleboro.us, scoleman@town.auburn.ma.us, rspurr@avonmass.org, firechief@ayer.ma.us, fpulsifer@barnstablefire.org, "Grunes, David" <dgrunes@bedfordma.gov>, tbock@belchertown.org, dfrizzell@belmont-ma.gov, berkleyfirechief@comcast.net, firechief@townofberlin.com, msweeney@townofblackstone.org, nsylvester@townofbourne.com, moran@town.brewster.ma.us, grogers@bridgewaterma.org, chief_martell@brookfieldfd.com, greardon@cambridgefire.org, "Doody, Charles E." <cdoody@town.canton.ma.us>, mwinn@commfiredistrict.com, dannear@verizon.net, charles.cloutier@townofcharlton.net, chief@chatham-ma.gov, jmclaughlin@clintonfire.net, chief@cohassetfire.org, colsen@cape.com, mdellner@town.dennis.ma.us, chiefroderick@aol.com, kvinson1@douglasma.org, dudleyfirechief@charter.net, Nord@town.duxbury.ma.us, firechief@ebfire.org, pandan146@charter.net, mfoley@eastham-ma.gov, dmottor@easthampton.org, kpartridge@easton.ma.us, shemeth@comcast.net, chief.francis@verizon.net, bfaunce@frfd.org, msullivan@falmouthfire.us, rhatfield@town.foxborough.ma.us, gmccarraher@franklin.ma.us, car1ffd@comcast.net, esmith@gloucester-ma.gov, Randerson@granbyfire.org, Jblanchard@hanoverfiredept.com, jthompson@hanson-ma.gov, n.clarke@harwichfire.com, chiefmjd@hingham-ma.com, ChiefMcfadden@holbrookfire.com, jchandler@holdenma.gov, tdaige@gmail.com, chief@hopkintonfd.org, firechief@hubbardstonma.us, crusso@town.hull.ma.us, hbrunelle@hyannisfire.org, rheath@kfdma.com, dhopkins@lakevillema.org, rdjpw@charter.net, jwilson@lexingtonma.gov, emadison@longmeadow.org, jmcdonald@lynnma.gov, mfeinberg@town.lynnfield.ma.us, firechief@manchester.ma.us, nboldrighini@mansfieldma.com, tjoyce@marionma.gov, admin@marshfieldfire.org, trullo@mashpeema.gov, Cleary@cityofmelrose.org, mbucchino@mendonpublicsafety.com, chief@midfire.com, monsonfdchief@comcast.net, rwhite@natickma.org, dcondon@needhamma.gov, bushnell@virtualnorfolk.org, tjoubert@nattleboro.com, wlwarnock@northreadingma.gov, bduggan@northamptonma.gov, gnestor@northbridgemass.org, schleicherp@nortonfire.com, areardon@norwellfire.org, tgreeley@norwoodma.gov, jrose@oakbluffsma.gov, fire@townoforange.org, tpike@orleansfd.com, sbemis@town.oxford.ma.us, chiefconte@hotmail.com, jneenan@pembrokefire.org, fire@town.pepperell.ma.us, jalexander@plainville.ma.us, chief@town.plympton.ma.us, fireinspector@town.princeton.ma.us, bfd85@byfield.com, jmathews@provincetown-ma.gov, richarddonovan@randolphfire.com, januse@raynhamfire.com, gburns@ci.reading.ma.us, sweigel@townofrochester.com, firechief@rockland-ma.gov, firechief@townofrutland.org, wcarrico@townofsandwich.net, jmurphy@scituatema.gov, mhealy@seekonkfd.com, jwright@townofsharon.org, ChiefJepson@somersetfire.org, kschenker@shdistrict1.org, firechief@town.southampton.ma.us, mdifronzo@southbridgemass.org, david.hurlbut@sterlingfd.net, tcarroll@stoughton-ma.gov, dzinther@town.sturbridge.ma.us, milesw@sudbury.ma.us, chief@topsfieldfire.com, mboynton@townsendpd.org, chief@trurofirerescue.org, agoodale@upton.ma.us, wkessler@uxbridge-ma.gov, tbailey@walpolefire.com, tcoulombe@townofware.com, dhoughton@wayland.ma.us, rich.pauley@wellfleet-ma.gov, jmanuca291@gmail.com, twelsh@westboylstonfire.org, lhunt@wbridgewater.com, smanchino@west-springfield.ma.us, nperron@town.westborough.ma.us, firechief@cityofwestfield.org, jtarg@westfordma.gov, firechief@westminster-ma.gov, Chieflegendre@westport-ma.gov, bscoble@townhall.westwood.ma.us, Timothy Grenno <tgrenno@whitman-ma.gov>, fnothe@wilbraham-ma.gov, wfd39c1@aol.com, jnash@winchester.us, jmcmorrow@fire.wrentham.ma.us, psimonian@yarmouth.ma.us, Mike Patterson <mpatterson@burlington.org>

My name is Michael Patterson. I am the Assistant Fire Chief for the Town of Burlington, Massachusetts. I am a forth year student of the National Fire Academy's Fire Officer Program. Year Four's course is entitled Executive Leadership (R0125.) Following each course an Applied Research Project (ARP) must be completed. The topic I chose to research for my final project is entitled Upgrading to ALS: Fact or Fiction. Currently the Burlington Fire Department provides a BLS ambulance service. We are exploring the possibility of upgrading to the ALS level.

To assist in my research, I have created a survey that will be forwarded to fire chief's whose department's currently provides an ALS service. I would greatly appreciate if you could take a moment to complete the attached survey.

Thank you for your assistance.

Michael Patterson
Assistant Fire Chief
Burlington Fire Department
781-270-1926
mpatterson@burlington.org

https://www.surveymonkey.com/r/6PJRW2K

Appendix H

Gmail by Google

Mike Patterson <mpatterson@burlington.org>

Applied Research Project

1 message

Mike Patterson <mpatterson@burlington.org> Wed, Sep 9, 2015 at 3:43 PM
To: jmaruca291@gmail.com, rmoran@town.brewster.ma.us, sboothby@ashlandfire.com, firechief@townofnewbury.org, jjanuse@raynhamfire.com, berkenbushk@amesburyma.gov, dnichols@northamptonma.gov, chief.francis@fairhavenfire.org

My name is Michael Patterson. I am the Assistant Fire Chief for the Town of Burlington, Massachusetts. I am a forth year student of the National Fire Academy's Fire Officer Program. Year Four's course is entitled Executive Leadership (R0125.) Following each course an Applied Research Project (ARP) must be completed. The topic I chose to research for my final project is entitled Upgrading to ALS: Fact or Fiction. Currently the Burlington Fire Department provides a BLS ambulance service. We are exploring the possibility of upgrading to the ALS level.

To assist in my research, I have created a survey that will be forwarded to fire chief's whose department's currently provides an ALS service. I would greatly appreciate if you could take a moment to complete the attached survey.

Thank you for your assistance.

Michael Patterson
Assistant Fire Chief
Burlington Fire Department
781-270-1926
mpatterson@burlington.org

https://www.surveymonkey.com/r/6PJRW2K

Appendix I

Gmail by Google

Mike Patterson <mpatterson@burlington.org>

Applied Research Paper Second Request

Mike Patterson <mpatterson@burlington.org> Mon, Sep 21, 2015 at 9:40 AM
To: Joseph Maruca <jmaruca291@gmail.com>, sboothby@ashlandfire.com, firechief@townofnewbury.org, jjanuse@raynhamfire.com, berkenbushk@amesburyma.gov, dnichols@northamptonma.gov, chief.francis@fairhavenfire.org, rmoran@town.brewster.ma.us, jnuttall@abingtonma.gov, chief@acushnetfire.com, afdchief@agawam.ma.us, mathered@amesburyma.gov, Paul Rekos <2w4paulr@gmail.com>, krobie@ashlandmass.com, Lester Lacki <atholfd@verizon.net>, chieflachance@cityofattleboro.us, scoleman@town.auburn.ma.us, Avon Fire <rspurr@avonmass.org>, firechief@ayer.ma.us, fpulsifer@barnstablefire.org, "Grunes, David" <dgrunes@bedfordma.gov>, tbock@belchertown.org, dfrizzell@belmont-ma.gov, berkleyfirechief@comcast.net, firechief@townofberlin.com, msweeney@townofblackstone.org, nsylvester@townofbourne.com, grogers@bridgewaterma.org, chief_martell@brookfieldfd.com, greardon@cambridgefire.org, "Doody, Charles E." <cdoody@town.canton.ma.us>, mwinn@commfiredistrict.com, dannear@verizon.net, charles.cloutier@townofcharlton.net, chief@chatham-ma.gov, John McLaughlin <jmclaughlin@clintonfire.net>, chief@cohassetfire.org, colsen@cape.com, mdellner@town.dennis.ma.us, chiefroderick@aol.com, kvinson1@douglasma.org, dudleyfirechief@charter.net, Nord@town.duxbury.ma.us, firechief@ebfire.org, "Sandy L." <pandan146@charter.net>, mfoley@eastham-ma.gov, David Mottor <dmottor@easthampton.org>, kpartridge@easton.ma.us, shemeth@comcast.net, bfaunce@frfd.org, msullivan@falmouthfire.us, rhatfield@town.foxborough.ma.us, gmccarraher@franklin.ma.us, car1ffd@comcast.net, esmith@gloucester-ma.gov, Randerson@granbyfire.org, Jblanchard@hanoverfiredept.com, jthompson@hanson-ma.gov, n.clarke@harwichfire.com, chiefmjd@hingham-ma.com, ChiefMcfadden@holbrookfire.com, jchandler@holdenma.gov, Thomas Daige <tdaige@gmail.com>, Kenny Clark <chief@hopkintonfd.org>, firechief@hubbardstonma.us, crusso@town.hull.ma.us, hbrunelle@hyannisfire.org, rheath@kfdma.com, dhopkins@lakevillema.org, rdjpw@charter.net, jwilson@lexingtonma.gov, emadison@longmeadow.org, jmcdonald@lynnma.gov, Michael Feinberg <mfeinberg@town.lynnfield.ma.us>, firechief@manchester.ma.us, nboldrighini@mansfieldma.com, tjoyce@marionma.gov, admin@marshfieldfire.org, trullo@mashpeema.gov, Cleary@cityofmelrose.org, mbucchino@mendonpublicsafety.com, chief@midfire.com, monsonfdchief@comcast.net, rwhite@natickma.org, Chief Condon <dcondon@needhamma.gov>, Coleman Bushnell <bushnell@virtualnorfolk.org>, tjoubert@nattleboro.com, wlwarnock@northreadingma.gov, bduggan@northamptonma.gov, gnestor@northbridgemass.org, schleicherp@nortonfire.com, areardon@norwellfire.org, tgreeley@norwoodma.gov, jrose@oakbluffsma.gov, fire@townoforange.org, tpike@orleansfd.com, sbemis@town.oxford.ma.us, chiefconte@hotmail.com, jneenan@pembrokefire.org, fire@town.pepperell.ma.us, Justin Alexander <jalexander@plainville.ma.us>, chief@town.plympton.ma.us, fireinspector@town.princeton.ma.us, bfd85@byfield.com, joyce mathews <jmathews@provincetown-ma.gov>, richarddonovan@randolphfire.com, gburns@ci.reading.ma.us, sweigel@townofrochester.com, Scott Duffey <firechief@rockland-ma.gov>, Brad Weber <firechief@townofrutland.org>, "Carrico, William" <wcarrico@townofsandwich.net>, jmurphy@scituatema.gov, michael healy <mhealy@seekonkfd.com>, jwright@townofsharon.org, ChiefJepson@somersetfire.org, kschenker@shdistrict1.org, mdifronzo@southbridgemass.org, david.hurlbut@sterlingfd.net, tcarroll@stoughton-ma.gov, dzinther@town.sturbridge.ma.us, milesw@sudbury.ma.us, chief@topsfieldfire.com, Mark Boynton <mboynton@townsendpd.org>, chief@trurofirerescue.org, agoodale@upton.ma.us, wkessler@uxbridge-ma.gov, Timothy Bailey <tbailey@walpolefire.com>, tcoulombe@townofware.com, dhoughton@wayland.ma.us, rich.pauley@wellfleet-ma.gov, twelsh@westboylstonfire.org, lhunt@wbridgewater.com, smanchino@west-springfield.ma.us, nperron@town.westborough.ma.us, firechief@cityofwestfield.org, jtarg@westfordma.gov, Timothy Grenno <tgrenno@whitman-ma.gov>, fnothe@wilbraham-ma.gov, firechief@westminster-ma.gov, Chieflegendre@westport-ma.gov, William Scoble <bscoble@townhall.westwood.ma.us>, Allen Lafrennie <wfd39c1@aol.com>, jnash@winchester.us, jmcmorrow@fire.wrentham.ma.us, psimonian@yarmouth.ma.us, firechief@townofsouthhampton.org

My name is Michael Patterson. I am the Assistant Fire Chief for the Town of Burlington, Massachusetts. I am a forth year student of the National Fire Academy's Fire Officer Program. Year Four's course is entitled Executive Leadership (R0125.) Following each course an Applied Research Project (ARP) must be completed. The topic I chose to research for my final project is entitled Upgrading to ALS: Fact or Fiction. Currently the Burlington Fire Department provides a BLS ambulance service. We are exploring the possibility of upgrading to the ALS level.

To assist in my research, I have created a survey that will be forwarded to fire chief's whose department's currently provides an ALS service. I would greatly appreciate if you could take a moment to complete the attached survey.

This is my second request for assistance. The initial response to my first survey was a little light. I would greatly appreciate if you could take a moment to complete the attached survey. I would also like to thank everybody that previously responded.

Thank you for your assistance.

Michael Patterson
Assistant Fire Chief
Burlington Fire Department
781-270-1926
mpatterson@burlington.org

https://www.surveymonkey.com/r/6PJRW2K

Appendix J

1. Are you satisfied with our current two tiered EMS system in which the fire department provides a transport BLS ambulance and a private ambulance company provides the ALS service.

- ◯ Fully Satisfied
- ◯ Moderately Satisfied
- ◯ Slightly Satisfied
- ◯ Not Satisfied

2. How would you rate the overall service provided by our current ALS provider. For example, patient care and response times.

- ◯ Excellent
- ◯ Good
- ◯ Fair
- ◯ Poor

3. What concerns do you have regarding our current ALS provider. .

	Very Concerned	Concerned	Slightly Concerned	Not Concerned	
Operational Model	◯	◯	◯	◯	◯
Availability	◯	◯	◯	◯	◯
Response Times	◯	◯	◯	◯	◯
Patient Care	◯	◯	◯	◯	◯
Communications	◯	◯	◯	◯	◯

Other (please specify)

4. Do you believe the Burlington Fire Department should pursue upgrading its current BLS service to an ALS service.

- ◯ Yes
- ◯ No

5. The primary reason the Burlington Fire Department should pursue upgrading to the ALS level is;

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Not satisfied with current ALS provider	○	○	○	○	○
Improve ALS availability	○	○	○	○	○
Improve ALS response times	○	○	○	○	○
Improve overall patient care	○	○	○	○	○
Increase department staffing levels	○	○	○	○	○
Increase revenues through billing	○	○	○	○	○

6. What roadblocks would you anticipate being encountered if the fire department attempted to upgrade to the ALS level.

	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Fire Administration	○	○	○	○	○
Town Administrator	○	○	○	○	○
Board of Selectman	○	○	○	○	○
Ways and Means Committee	○	○	○	○	○
Representative Town Meeting	○	○	○	○	○
Collective Bargaining Agreement	○	○	○	○	○
Human Resources Division/Civil Service	○	○	○	○	○
Current ALS Provider	○	○	○	○	○
OEMS	○	○	○	○	○
Affiliate Hospital	○	○	○	○	○

Other (please specify)

7. If Firefighter/Paramedics are hired by the fire department are you concerned about the following;

	Very Concerned	Concerned	Slightly Concerned	Not Concerned	
Lack of experienced paramedics	◯	◯	◯	◯	◯
Retention of firefighter/paramedics	◯	◯	◯	◯	◯
Working relationship between firefighter/paramedics and firefighter/EMT'S	◯	◯	◯	◯	◯
Maintaining Skills and Certifications	◯	◯	◯	◯	◯
Operational Model	◯	◯	◯	◯	◯

Other (please specify)

8. Should an ALS Study be conducted for the Town of Burlington and if so, who shall conduct that study.

◯ Internal Fire Department Study

◯ External Consulting Firm Study

◯ Both an internal fire department study and an external consulting firm study

◯ No ALS study should be conducted.

9. Should an ALS Committee be formed within the Town. If so, what should be the makeup of that committee.

	Agree	Neutral	Disagree		
Fire Administration	◯	◯	◯	◯	◯
Firefighters	◯	◯	◯	◯	◯
Elected Town Officials	◯	◯	◯	◯	◯
Local Citizens	◯	◯	◯	◯	◯
Local Business	◯	◯	◯	◯	◯
No ALS Committee should be formed	◯	◯	◯	◯	◯

Other (please specify)

Appendix K

Gmail by Google

Mike Patterson <mpatterson@burlington.org>

Applied Research Project

1 message

Mike Patterson <mpatterson@burlington.org> Fri, Sep 18, 2015 at 2:16 PM
To: John Corbett <jcorbett@burlington.org>, Rob paul <rpaul@burlington.org>, John Walthall <jwalthall@burlington.org>, Michael Bibbey <mbibbey@burlington.org>, Gerard Letendre <gletendre@burlington.org>, Mike Runyan <mrunyan@burlington.org>, Tim Hovasse <thovasse@burlington.org>, Todd Ficociello <tficociello@burlington.org>, Michael Gledhill <mgledhill@burlington.org>, Michael McLaughlin <mmclaughlin@burlington.org>, Eric Holey <eholey@burlington.org>, Tom MacLeod <tmacleod@burlington.org>, Paul O'Meara <pomeara@burlington.org>, Kevin Browne <kbrowne@burlington.org>, Steven McLean <smclean@burlington.org>, Mark Cedrone <mcedrone@burlington.org>, James Sherman <jsherman@burlington.org>, Gary Arbing <garbing@burlington.org>, Fred Williams <fwilliams@burlington.org>, Michael Fontannay <mfontannay@burlington.org>, James Hapenney <jhapenney@burlington.org>, Shaun Kenney <skenney@burlington.org>, Ernie Covino <ecovino@burlington.org>, Raymond Blenkhorn <rblenkhorn@burlington.org>, Mike Bennett <mbennett@burlington.org>, Brandon Gonzalez <bgonzalez@burlington.org>, Tim Browne <tbrowne@burlington.org>, Peter McAnespie <pmcanespie@burlington.org>, James Sorenson <jsorenson@burlington.org>, Gerard Hanafin <ghanafin@burlington.org>, Richard Hovasse <rhovasse@burlington.org>, Kurt Duprez <kduprez@burlington.org>, Kevin Pollicelli <kpollicelli@burlington.org>, nick Menkello <nmenkello@burlington.org>, William Toland <wtoland@burlington.org>, Brendan Micciche <bmicciche@burlington.org>, Paul Kadilak <pkadilak@burlington.org>, Craig Callahan <ccallahan@burlington.org>, Eric Fitzgerald <efitzgerald@burlington.org>, Scott Carpenter <scarpenter@burlington.org>, John Skinner <jskinner@burlington.org>, James Browne <jbrowne@burlington.org>, Len Sawyer <lsawyer@burlington.org>, Edgar McLean <emclean@burlington.org>, John Hanafin <jhanafin@burlington.org>, Cliff Comeau <ccomeau@burlington.org>, Sean Connors <sconnors@burlington.org>, David Angelo <dangelo@burlington.org>, Jeffrey Boucher <jboucher@burlington.org>, Jason Hughes <jhughes@burlington.org>, Sean Killilea <skillilea@burlington.org>, Kyle Browne <kylebrowne@burlington.org>, Steve Yetman <syetman@burlington.org>, Mike Hanafin <mhanafin@burlington.org>, Mark Saia <msaia@burlington.org>, Andy Connerty <aconnerty@burlington.org>, Mike Patterson <mpatterson@burlington.org>

Guys, as many of you know, I am a forth year student of the National Fire Academy's Fire Officer Program. Year Four's course is entitled Executive Leadership. Following each course an Applied Research Project (ARP) must be completed. The topic I chose to research for my final project is entitled Upgrading to ALS: Fact or Fiction.

To assist in my research I have created a survey that I am forwarding to you. I would greatly appreciate if you could take a moment to complete the attached survey. Your responses are strictly confidential. I only will know how many surveys are completed, not who completes the survey.

Thank you for your assistance.

Michael Patterson
Assistant Fire Chief
Burlington Fire Department

https://www.surveymonkey.com/r/YGNCSPY

Appendix L

Gmail by Google

Mike Patterson <mpatterson@burlington.org>

Survey Monkey

1 message

Mike Patterson <mpatterson@burlington.org> Thu, Oct 1, 2015 at 4:18 PM
To: fire-all@burlington.org

On September 18, 2015 I sent out a survey regarding our Advanced Life Support system. So far about half of the department has responded. I would like to thanks all that responded. For those who have not responded I would greatly appreciate if you could take a few minutes to complete the survey. As a reminder I have no idea who personally responds to the survey. I only know the number of surveys that are completed.
Thanks
MP