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I. EXECUTIVE SUMMARY

MMA Consulting Group, Inc. was employed by the Town of West Boylston to conduct a study of fire and emergency medical services. The study focused on development of a plan for improving emergency services in the Town. To conduct this review, two fire and rescue consultants conducted site visits to examine operations, conduct interviews, attend meetings and observe drills. The consultants reviewed fire suppression, emergency medical services, and other services provided by the Fire Department. In addition to site investigation, the consultants analyzed data provided by the Department, reviewed planning documents and various other documents, and conducted computer mapping.

In West Boylston, the delivery of fire protection and emergency medical services is provided by a combination fire department in which a small number of career personnel are supported by a larger group of on-call personnel. The Department is governed by a Board of Fire Engineers appointed by the Town Administrator. The Board of Fire Engineers selects one of its members to be the Chief Engineer, who directs the Department.

In our review of the Fire Department and its service delivery systems, we were impressed by the attitude and the skills of call and career personnel. It is clear that the Fire Department's combination fire department service delivery model provides cost-effective services.

Conducting a study of this type presents some unique challenges, since there are a number of practical and financial constraints which need to be taken into consideration. In West Boylston, analysis indicates that there are four important Town policy issues which need to be addressed to ensure that efficient and cost-effective fire and emergency medical services are delivered in the Town. The primary policy issues revolve around the following areas:

- *The Concept of a Combination Fire Department* - A combination fire department is composed of a small group of full-time career personnel supported by call, or volunteer, personnel. The consultants believe that this is the only practical and viable approach for the Town.

- *Fire Department Governance* - The current organizational arrangement with the Board of Fire Engineers as the governing board of the Department must be addressed. This framework is no longer appropriate for the organization and administrative structure of the Town.
- *Automatic Mutual Aid* - The size of the Department, its location and the risks within the Town require a systematic use of automatic mutual aid.
- *Role of the Fire Chief (Chief Engineer)* - The nature of the current organization requires the Fire Chief to spend a great deal of time responding to incidents. The Chief should respond to some emergencies, but the Fire Chief needs time to manage, plan and develop the capacity of the Fire Department.

There is an additional fire and rescue policy matter facing the Town (as well as surrounding towns). The close proximity of several towns' fire stations (Boylston, Clinton and Sterling) offers significant opportunities for functional consolidation (consolidation of service response, *not* departments). As we understand it, some efforts have been considered with little success to date; however, cooperative efforts offer great opportunities for West Boylston and its neighbors.

In summary, some of the specific major recommendations presented in this report include:

- The Board of Fire Engineers should be abolished and a Fire Chief should be appointed by the Town Administrator.
- The position of Fire Chief should be established with sufficient authority to manage and be held accountable for results. The position should be structured as a "strong" Chief.

- The Fire Chief should be employed by the Town on a contractual basis. The contract should provide typical contractual provisions, but should include a method of evaluating performance.
- The Board of Selectmen should adopt and support an enhanced combination fire department service delivery model.
- The Town of West Boylston should develop a systematic plan to increase the number of full-time firefighters/EMTs to supplement the call resources of the Department. It is recommended that, over the next three to four years, the Department increase its complement of personnel from three full-time personnel (one chief and two firefighter/EMS responders) to seven personnel (one chief and six firefighter/EMS responders).

POSITION	CURRENT	RECOMMENDED
Fire Chief	1	1
Firefighter/EMT-P	2	6
Total	3	7

- The Fire Department should initially staff the fire station with two fire/EMS responders Monday through Friday from 7:00 a.m. to 7:00 p.m. and then expand the program to seven days a week. This response strategy should continue to be supported by call personnel and the duty crew system.
- The Fire Chief should work aggressively with surrounding fire departments to develop an automatic mutual aid system.
- The Town and the Fire Department should develop a systematic call firefighter and EMT recruitment and retention effort. This effort should be designed to ensure that the current strong call system is maintained.
- The Fire Chief should formulate a set of response performance standards for fire calls to be adopted as service delivery goals. The

Chief should also set a specific timetable for the implementation of these performance standards and monitor these performance measures. These measures should be reviewed and endorsed by the Board of Selectmen.

- The Fire Chief's responsibility should be to manage and develop the Department, and while the Chief will be required to respond to many incidents, current practices require excessive response by the Fire Chief.
- The fire station should be expanded to allow for additional space and living quarters which can be used by call personnel.
- The Town should ensure that all dispatch personnel are trained in emergency dispatch and that an emergency dispatch system is implemented.
- The Police Department should continue to respond to emergency medical incidents as first responders.
- The major apparatus and equipment replacement program should be redesigned.

On the following pages, the major recommendations are listed in the order they are presented in this report, along with assigned priorities. The recommendations contained in this report have been categorized as follows:

Priority 1: Recommendations which should be implemented without delay since they may bear directly on safety of personnel and efficient operation of fire, rescue or emergency medical services in the Town of West Boylston.

Priority 2: Recommendations which are important to safety and the efficient provision of fire, rescue or emergency medical services in West Boylston and which should be implemented as soon as reasonable and practical.

Priority 3: Recommendations which can contribute to the continued improvement of fire, rescue or emergency medical services in West Boylston and should be implemented as soon as resources and operating conditions permit.

EXHIBIT I-1

RECOMMENDATION	PRIORITY
III-1 The Town of West Boylston should engage in discussions with neighboring towns (Boylston, Clinton and Sterling) to develop a plan which allows the long-term sharing of resources. The discussions among towns should be at both the department head level (fire chief) and at the elected and policy level (administrators and boards of selectmen).	2/3
III-2 The Department should develop an automatic mutual aid program for target hazards and specific emergency calls.	1
III-3 The West Boylston Fire Department should develop and formally adopt fire response performance standards to allow the Board of Selectmen and the Town Administrator to evaluate services.	2
III-4 The Fire Chief should monitor the achievement of performance standards.	2
IV-1 The Town should restructure the governance of the Fire Department and abolish the Board of Fire Engineers. The Fire Chief should be appointed by the Town Administrator in accordance with the Town's Special Act Charter.	1
IV-2 The Town should adopt a Fire Department management structure that places the Fire Chief clearly in command of the Department with the ability to manage and be held accountable for results.	1
IV-3 The Fire Chief should be employed on a contractual basis.	1
IV-4 The role of the West Boylston Fire Chief should be to manage, plan for and administer the Department.	1
IV-5 The Fire Chief should have resources available to allow for the employment of administrative support/office personnel.	1
IV-6 The Board of Selectmen should clearly articulate a policy of supporting and enhancing the combination fire department model now operating.	1
IV-7 Develop a three to five-year plan to increase the number of full-time firefighters/emergency medical technicians.	1
IV-8 Increase staffing in two phases. Phase I should focus on EMS coverage for Monday through Friday (7:00 a.m. to 7:00 p.m.) and Phase II should focus on Monday through Sunday (7:00 a.m. to 7:00 p.m.).	1
IV-9 The Fire Department should adopt a new comprehensive fire prevention and inspection service model.	2
V-1 The Fire Department should employ firefighters/paramedics to respond during the hours of 7:00 a.m. to 7:00 p.m.	1
V-2 The Town should explore the development of a regional emergency medical response system.	3

RECOMMENDATION	PRIORITY
V-3 The Fire Department should consider the expansion of its “on-duty” crew system to include a bunk-in program for evenings.	3
V-4 All dispatchers should be trained in emergency medical dispatch procedures and the EMD system should be implemented.	1/2
V-5 The Police Department should continue to respond to emergency medical incidents.	1
V-6 The West Boylston Fire Department should continue to provide emergency medical services.	1
VI-1 The Fire Chief, working with call personnel, should develop an action plan to increase the number of call personnel. The Department should have a small budget for recruitment.	1
VI-2 Consider the development of an incentive package of benefits to encourage an increase in the number of members and the retention of personnel.	2/3
VII-1 Plan for the reconstruction of the fire station and provide additional space for duty crew living quarters.	1/2
VII-2 Reposition apparatus.	2
VII-3 Revise the apparatus replacement plan.	2
VII-4 Review the ISO and NFPA equipment lists for aerial ladders and equip the heavy rescue as appropriate.	2

This report is organized into several chapters. This Executive Summary presents the major findings and recommendations in this report. Chapter II, *The Town of West Boylston and Fire and Rescue Services*, provides a description of the Town, the Fire Department and services provided. Chapter III, *Application of Response Principles, Benchmarks and Standards to West Boylston*, describes the standards and benchmarks used to evaluate fire and rescue systems. The chapter presents computer mapping and analyzes the response capability of the Town’s fire, rescue and emergency medical services. Chapter IV, *Organization and Staffing of the Fire Department*, presents recommendations relating to the governance, staffing and deployment of personnel. Chapter V, *Emergency Medical Services*, describes the basic framework of the system and discusses staffing and related matters. Chapter VI, *Recruitment and Retention of Call Personnel*, discusses the need for call personnel and recruitment and retention issues. Chapter VII, *Support Services, Facilities and Equipment*, makes several recommendations relating to facilities and apparatus which support fire and ambulance response. Chapter VIII, *Plan of Implementation*, lists each

recommendation with an assigned priority and presents an approach to implementing recommendations.

A variety of abbreviations are used in this report. The following list provides a reference.

ALS	Advanced Life Support
BLS	Basic Life Support
EMD	Emergency Medical Dispatching
EMS	Emergency Medical Services
EMT	Emergency Medical Technician
EMT-I	Emergency Medical Technician - Intermediate
EMT-P	Emergency Medical Technician - Paramedic
ISO	Insurance Services Office
NFPA	National Fire Protection Association

II. THE TOWN OF WEST BOYLSTON AND FIRE AND RESCUE SERVICES

BACKGROUND

West Boylston is located in central Massachusetts. It is bordered on the south by the City of Worcester and the Town of Shrewsbury; on the east by the Wachusett Reservoir and the Town of Boylston; on the west by the Town of Holden; and on the north by the Town of Sterling. West Boylston is one of 40 communities that make up the Central Massachusetts Regional Planning District, including its central city, Worcester.

Over the years, West Boylston has been a desirable suburban bedroom community whose residents primarily work in Worcester and surrounding areas. Major highway transportation improvements, including Interstate Routes 495 and I-190 have tended to integrate West Boylston into the growing area of influence of the Boston region. Other major roads contributing to West Boylston's accessibility include Routes 9, 12, 20, 110 and Route 140 which passes through the Town.

The Town encompasses a total area of 13.85 square miles. Of this, 12.9 square miles, or 93 percent, are considered dry land areas. The population is classified as having 6,174 persons living in households and 1,307 living in group quarters, institutions, etc. In the year 2000, there were 2,413 households counted; the average household size, therefore, was 2.56 persons. Owner-occupied housing represented 81.4 percent of all occupied units. Renters occupied 18.6 percent of the units. Census data and on-site observations indicate that West Boylston is a typical and stable bedroom suburban community.

The Town flourished in the nineteenth century as an industrial center and its history was significantly altered in 1896 when the Metropolitan District Commission (MDC) created the Wachusett Reservoir by damming the south branch of the Nashua River with attendant relocation of homes, factories, churches, schools and the local cemetery. In the interest of protecting the reservoir, the MDC has purchased watershed land and invested in sewerage facilities within the Town, somewhat altering the development potential of West Boylston. While a good basic infrastructure exists, potential developable land is

limited in quantity within the Town. Also, large lot zoning prohibits extensive new development.

West Boylston’s total population, according to the most recent 2000 U.S. Census, was 7,481. The Town has grown slowly but steadily over the years and the Regional Planning Commission’s expectation is that similar growth will continue at a very modest pace for the next 20 years. A planning report by the Central Massachusetts Regional Planning Commission (CMRPC) assumes moderate growth in West Boylston and surrounding towns through the year 2020. It should be noted that the Commission’s projections preceded the U.S. Census and are based on lower estimates for the year 2000 than the actual count that occurred, but the overall projected 20-year rate of increase of six percent is likely to be valid. The projections shown in the chart below should be adjusted to reflect the actual population; the 2020 figure probably can be reasonably justified at approximately 7,950 persons, for planning purposes. It is important to note that changes in population and demographics should be periodically reviewed, since such information helps a town plan for changes in service delivery needs.

**EXHIBIT II-1
CMRPC 20-YEAR POPULATION GROWTH PROJECTIONS**

	2000	2010	2020
West Boylston	6,965 *	7,209	7,392
Boylston	3,724	4,096	4,375
Holden	16,221	16,789	16,215
Princeton	3,570	3,891	4,125
Rutland	6,211	6,428	6,591
North Subregion	36,700	38,413	39,698

Source: Central Massachusetts Regional Planning Commission, *2020 Growth Strategy for Central Massachusetts*, February 10, 2000.

* 2000 census count was 7,481.

CMRPC BUILD-OUT PROJECTIONS

Using GIS tools and other methods, the CMRPC has estimated build-outs of its constituent towns based on various assumptions about development constraints, such as soils, slopes, zoning, etc. The findings for West Boylston are presented in the chart below. The data provide a picture of the future when the Town is “fully developed.” The estimates suggest the potential for

approximately 1,300 new single-family dwellings to be built in Town, with an additional population of more than 3,800 persons. The built-out population for West Boylston, thus, would theoretically reach approximately 11,300. Obviously, changes in zoning or other factors could change the results significantly.

**EXHIBIT II-2
CMRPC WEST BOYLSTON BUILD-OUT ESTIMATES**

Developable Land (Acres)	2,548
Number of Residential Lots	1,318
New Residential Dwellings	1,318
New Residents	3,823
New Comm./Ind. Floor Area (Square Feet)	3,523,066

Source: CMRPC, *Summary Build-Out Statistics*.

FINANCIAL BACKGROUND

The Town's projected Fiscal Year 2002 expenditures for operating and capital costs reported to the Massachusetts Department of Revenue were slightly more than \$16 million. Of these, 1.6 percent were for the Fire Department. The budget breakdown is shown below.

**EXHIBIT II-3
WEST BOYLSTON FY 2002 EXPENDITURES**

	OPERATING AND CAPITAL	PERCENTAGE
Police	\$757,139	4.7%
Fire	\$249,346	1.6%
Education	\$7,239,233	45.0%
Public Works	\$1,464,146	9.1%
All Other	\$6,365,045	39.6%
Total	\$16,074,909	100.0%

The tax rate for FY 2002 was \$16.20 per \$1,000 of assessed valuation. The rate is based on a levy of \$8,307,495 on \$512,808,273 of valuations. The average real estate tax for single-family properties was \$3,077. To generate \$16 million from revenue sources for the Town for fiscal 2002 required 53.1 percent to come from real estate taxes; 27.9 percent from State aid; 12.1 percent

from local receipts, such as fees, fines, etc., and seven percent from all other sources.

These growth and development data suggest that there will be a gradual increase in the demand for fire, rescue and emergency medical services. However, it appears that any growth will be at a pace that will enable the Fire Department to anticipate and plan for any increase in the demand for services.

ORGANIZATION OF FIRE AND RESCUE SERVICES

The Fire Department system of organization provides for the appointment of a five-member Board of Fire Engineers by the Town Administrator. The Board of Fire Engineers selects one of its members to serve as the Chief Engineer. The Chief Engineer (Fire Chief), serves both as a member of the Board and as the administrator and manager of the Fire Department.

The Fire Department employs the Fire Chief and two emergency medical technicians/firefighters. One full-time staff member is a Lieutenant/Paramedic and the other is an EMT-I, who is in the paramedic training process. These personnel augment a substantially call organization. There is one fire station, shared with the Police Department and the emergency dispatch facility.

Department personnel currently consist of a full-time Chief, two full-time firefighters/EMTs and approximately 42 to 44 call personnel. Of these call personnel, there are three Deputy Chiefs, one Captain, three Lieutenants, and six to eight emergency medical technicians who are not cross-trained as firefighters; the remainder are either firefighters or cross-trained firefighters/EMTs.

**EXHIBIT II-4
FIRE DEPARTMENT PERSONNEL RESOURCES**

RANK	NUMBER OF POSITIONS
Chief (full-time)	1
Deputy Chief (call)	3
Captain (call)	2
Lieutenant (call)	4
Firefighter (call)	34
Firefighter (full-	2
Total	46

The West Boylston Fire Department has a dedicated full-time staff and an impressive group of call personnel. Call personnel are motivated and willing to devote time to training and serving the Town. It is important to recognize, however, that the daytime response workload and other daytime duties, coupled with the inability of many call personnel to respond to calls during weekdays, has created a serious emergency response staffing problem. Actions are necessary to alleviate this response problem. Recommendations are presented in this report which are designed to ensure that emergency calls can be answered rapidly with appropriately trained and certified personnel.

The total number of Fire Department calls for service appears generally stable, with an increasing demand for emergency medical services and a decrease in fire calls.

**EXHIBIT II-5
FIRE DEPARTMENT CALLS FOR SERVICE 1998 - 2002**

YEAR	FIRE CALLS	EMERGENCY MEDICAL CALLS	TOTAL CALLS
1998	413	660	1,073
1999	357	547	904
2000	397	637	1,034
2001	412	651	1,063
2002 (11	367	771	1,138

The calls for service trend in West Boylston is similar to national trends, with fire calls remaining fairly steady, and medical calls increasing. In West Boylston, the increase in EMS calls is likely due to the percentage of older citizens. The exhibit below displays the ratio of advanced life support (ALS) alarms to basic life support (BLS) calls. The number of ALS calls is somewhat higher than expected, and is a reflection of local demographics. More ALS calls for service typically result in a higher ratio of “transport to the hospital” incidents.

**EXHIBIT II-6
GENERAL TYPES OF ALARMS AND EMS CALLS**

YEAR	FIRE	BLS	ALS	EMS (% OF TOTAL CALLS)
1998	413	660 (total)	---	660 (62%)
1999	357	361	186 (34% of EMS)	547 (61%)
2000	397	384	253 (40% of EMS)	637 (62%)
2001	412	366	291 (45% of EMS)	651 (61%)
2002 (11 months)	367	394	377 (49% of EMS)	771 (68%)

The Department's vehicle inventory is provided below. The Fire Department has the appropriate type of equipment and apparatus to meet the service demands of the Town.

**EXHIBIT II-7
FIRE DEPARTMENT EQUIPMENT INVENTORY**

Ambulance 1 (2002 Ford)	Engine 5 (1985 Ford)	Car 1 (1997 Ford Expedition)
Ambulance 2 (1995 Ford)	Ladder 2 (1998 Smeal Quint)	Car 2 (1981 Dodge pick-up)
Engine 1 (1982 Hahn)	Rescue 1 (1995 Ranger)	Boat & Trailer (1973)
Engine 3 (1991 KME)	Forestry 1 (1975 General)	Ice Rescue sled (1994)

III. APPLICATION OF RESPONSE PRINCIPLES, BENCHMARKS, AND STANDARDS TO WEST BOYLSTON

Evaluation of a town's fire and rescue services is achieved in several different manners. In this analysis, the organization and management framework of the Fire Department has been reviewed in the context of benchmarks and standards. It is important for public policy leaders to understand the basic response principles which influence fire and emergency medical responses.

STANDARDS, BENCHMARKS AND RESPONSE MEASURES

There are two underlying concepts to consider when evaluating fire and rescue services. The first is *capability*, the ability of a department to respond to an incident in a timely manner, and with sufficient responders and equipment to constitute an effective and safe initial attack. The second concept is *capacity*, the ability of the department to respond to a multiple alarm incident and handle simultaneous incidents.

Since the Town's department is a combination fire department, the applicable national standard is NFPA 1720, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments, 2001 Edition*.

EXHIBIT III-1

SELECTED SECTIONS OF NFPA 1720 RELATED TO CAPABILITY AND CAPACITY

4.1 FIRE SUPPRESSION ORGANIZATION

- 4.1.5 The fire department shall identify minimum staffing requirements to ensure that a sufficient number of members are available to operate safely and effectively.
- 4.1.7 * Standard response assignments and procedures, including mutual aid response and mutual aid agreements pre-determined by the location, and nature of the reported incident, shall regulate the dispatch of companies, response groups, and command officers to fires and other emergency incidents.
- 4.1.8 * The number and type of units assigned to respond to a reported incident shall be determined by either risk analysis and/or pre-fire planning.

4.2 FIRE SUPPRESSION OPERATIONS

4.2.1 * Incident Commander. One individual shall be assigned as the incident commander.

4.2.1.1 * The assumption and identification of command shall be communicated to all units responding to or involved at the incident scene.

4.2.1.2 The incident commander shall be responsible for the overall coordination and direction of all activities for the duration of the incident.

4.2.1.3 The incident commander shall ensure that a personnel accountability system is immediately utilized to rapidly account for all personnel at the incident scene.

4.2.1.4 The company officer/crew leader shall at all times be aware of the identity, location, and activity of each member assigned to the company.

4.2.1.5 Each member of the company shall be aware of the identity of the company officer/crew leader.

4.2.1.6 Orders addressed to individual members, particularly verbal orders and orders at incident scenes, shall be transmitted through the company officer.

4.2.2 INITIAL ATTACK

4.2.2.1 Upon assembling the necessary resources at the emergency scene, the fire department shall have the capability to safely initiate an initial attack within two minutes 90 percent of the time.

4.2.2.2 * Initial attack operations shall be organized to ensure that at least four members shall be assembled before initiating interior fire suppression operations at a working structural fire.

4.2.2.2.1 In the hazardous area, two individuals shall work as a team.

4.2.2.2.2 Outside the hazardous area, two individuals shall be present for assistance or rescue of the team operating in the hazardous area. One of the two individuals assigned outside the hazardous area shall be permitted to be engaged in other activities.

4.2.2.4 The fire department shall have the capability for sustained operations, including fire suppression; engagement in search and rescue, forcible entry, ventilation, and preservation of property; accountability for personnel; a dedicated rapid intervention crew (RIC); and provisions of support activities for those situations that are beyond the capability of the initial attack.

4.6 * SPECIAL OPERATIONS RESPONSE

- 4.6.1 Special operations shall be organized to ensure that the fire department's special operations capability includes sufficient personnel, equipment, and resources to efficiently, effectively, and safely deploy the initial arriving company and additional alarm assignments providing such services. The fire department shall be permitted to use established automatic mutual aid or mutual aid agreement to comply with the requirements of Section 4.6.
- 4.6.1.1 The provisions of this chapter shall apply to fire departments that are involved in the delivery of special operations response.
- 4.6.2 The fire department shall adopt a special operations response plan and standard operating procedures that specify the role and responsibilities of the fire department and the authorized functions of members responding to hazardous materials emergency incidents.

** Indicates additional information may be found in the NFPA 1720 Standards appendix.*

NFPA Standard 1720 applies to volunteer (call) fire departments, and is less specific than NFPA Standard 1710, which applies to career fire departments. NFPA Standard 1710 states that the first-due engine should arrive at an incident within 240 seconds travel time and/or the entire first alarm assignment of a minimum of 15 firefighters should arrive on scene within 480 seconds travel time.

STANDARDS AND GUIDELINES

To evaluate the level of service (for initial and subsequent response), it is important for fire service providers to balance the standards with practical and financial constraints. While containing costs is an important objective, the necessity to be able to save lives and property and the safety of emergency response personnel must be factored into the equation. This is a technical, as well as a political, task.

Emergency response requires a rapid initial response, then timely assembly of a full complement of personnel and equipment to attack the fire, and finally, sufficient reserve or additional resources to deal with any other emergencies that might arise at the same time, or subsequent to the initial emergency. In developing response capability objectives, there are many factors to consider.

Containment. Structure fires usually operate within a confined space. The risks associated with this can vary across the Town. In closely-developed, built-up areas with older structures, containment of the fire within the compartment of origin (that area separated from the remainder of the structure by construction) is critical. This means that the fire department must make every reasonable effort to interrupt the growth of fire before a condition called *flashover* occurs. At flashover, there is a rapid transition in fire behavior from localized burning to involvement of all the combustibles in the enclosure. At that time, the fire typically expands in six different directions: vertically through the ceiling, horizontally through the four walls, and even through openings in the floor. By then, all barriers to fire growth beyond the original compartment are under attack by extremely hot flame, smoke and gasses. These elements expand at approximately 50 times their volume per minute. At flashover, the probability of death or serious injury to occupants of the structure is significant. Obviously, life safety within the structure is a basic concern and, when there are nearby properties involved, the control of flashover becomes even more paramount as additional lives and property are jeopardized.

Comprehensive testing by the United States Institute of Standards and Technology has generally established that a fire within a typically furnished room will evolve into flashover within four to ten minutes of the event of open flame. At that time, temperatures at ceiling level will reach 1,500 degrees. Thus, fire department planning in the United States generally assumes approximately an eight-minute period before flashover.

Adding to the need to avoid flashover and contain the fire within the compartment of origin, there can also be a requirement to locate and remove threatened persons. Ideally, a fire department must receive notification of the fire, notify volunteers, don appropriate safety gear, mount the apparatus, travel to the scene of the fire, accomplish sufficient firefighting tasks to inhibit fire growth, and rescue occupants within approximately eight minutes of the event of flame. The tasks to be accomplished at the scene by the initial arriving units include search, rescue, ventilation, ladder placement, hose line deployment and other actions, all requiring immediate and simultaneous execution. Rapid and effective actions during the response are essential. Time constraints make achieving control of flashover extremely difficult in most volunteer fire departments.

Local Characteristics. Obviously, fire risks vary by neighborhood and need to be taken into account. Efforts to reduce risks through fire prevention, public education, automatic detection and reporting systems or suppression systems should always receive vigorous support. In newer construction (particularly commercial, industrial and institutional structures), where buildings may be required to have automatic detection and suppression systems, the fire risk can be less. The latter usually have suppression systems which reduce the unmeasured time between the start of a fire and when the fire is detected and reported, and automatically retard fire development.

Assuming the shortest possible response time for these processes, in most structure fires, the first-due company has very limited time to travel to the incident location and accomplish interruption of fire growth, perhaps no more than four to six minutes. Ideally, the locations of stations, thus, should ensure that travel times of four to six minutes can be accomplished in most of the response area surrounding the station so that the initial response can arrive in time to prevent flashover.

In summary, emerging planning standards suggest that an eight-minute, perhaps no more than ten-minute, total response time (dispatch, turn-out, and travel time) should be the technical goal for arrival at the scene of a structure fire. Each district, however, must evaluate the risks within its jurisdiction, and decide on the appropriate response standard.

ISO Rating Standards. The Insurance Services Office (ISO) has established some general station location standards, based on road-travel distances. The ISO Fire Suppression Rating Schedule states, in item #560, "Distribution of Companies: The built-upon area of the community should have a first-due engine company within 1.5 miles and a ladder-service company within 2.5 miles." In West Boylston, the computer mapping discussed in this report indicates that engine company coverage and ladder coverage is provided within the distance parameters in most of the Town.

Under the ISO “Grading Schedule,” evaluation of a community is enhanced by an effective automatic mutual aid system. In fact, the schedule allows credit to the community being rated for engine companies and ladder-service companies (coming from another political jurisdiction) that respond to the jurisdiction being rated. Engine and ladder companies will be credited and provide an offset, if there is a lack of needed companies within a jurisdiction. The credit earned for automatic-mutual aid companies depends on the communications facility and the dispatch of units to a city or town in a planned manner. Additionally, interdepartmental training is required several times a year. Other standards with respect to fireground communications are also required. In West Boylston and its surrounding towns, the implementation of an effective automatic mutual aid system would make it possible for each of the towns to receive ISO credit for automatic aid companies equivalent to 90 percent of the credit that a town would earn with its own companies. (See *Fire Suppression Rating Schedule Handbook*, 2002.)

National Fire Protection Association (NFPA). The *National Fire Protection Association (NFPA) Handbook* has indicated that first-due apparatus should be located within two miles of residential areas, within one and one-half miles of commercial areas and within one mile of locations where the required fire flow exceeds 5,000 gpm.

Distribution of Capacity. The basic principle for allocation of fire suppression forces is to distribute units throughout the service area to achieve approximately equal travel distances and response times to all locations. However, factors other than distance will influence response. For instance, weather conditions, the configuration of the roadway network, or traffic patterns may delay response. Taking these factors into account, each protection area must set its own realistic goal, such as reaching 80 or 90 percent of the incidents within an identified number of minutes.

Personnel and Apparatus Deployment Factors. For a working fire, the minimum apparatus should be two engines and one ladder. The *NFPA Handbook* recommends a minimum of 13 personnel, an incident commander, a rapid intervention team and a safety officer, for a residential structure working fire. This is supported by studies in Louisville, Phoenix and other areas, and is a commonly accepted, industry-wide standard.

OSHA Guideline. It is also important to consider the so-called “two in, two out” OSHA guideline that, except in extreme life-threatening situations to the occupants, four firefighters will be required at the scene of a structure fire before any two may enter.

In summary, the four emerging standards, or benchmarks which affect crew size desired for a fire call are:

- ▶ *OSHA requirements* for a minimum of four equipped personnel to be present before entry in a structure fire incident
- ▶ *OSHA requirements* for a rapid intervention team (RIT) to be present for safety reasons at working structure fires
- ▶ *OSHA and NFPA requirements* for a qualified incident commander and a qualified safety officer to be present at working incidents
- ▶ *Industry standards* to have a minimum number of firefighters and an incident commander present for a low-hazard structure fire, and at least two pumpers and a ladder truck, or similar vehicle.

EMS RESPONSE CONSIDERATIONS

Emergency medical response is often built around the need to respond rapidly to those in most need of medical support. For an ambulance company, or those fire departments that provide EMS first responder or ambulance support, there are important considerations, guidelines and standards. The survivability of a non-breathing person is a function of application of CPR, defibrillation, and advanced life support. Models exist to predict survivability. One commonly applied model is the Eisenberg Model, which estimates the probability of survival based on a system's ability to deliver the critical links in a timely manner. The functional equation is:

Survival rate = 67% minus 2.3% per minute without CPR
minus 1.1% without necessary defibrillation
minus 2.1% per minute without necessary Advanced Cardiac Life Support

The model suggests that one-third of all non breathing and/or cardiac arrest patients may die immediately, and that the remaining individuals'

probability of survival decreases by up to 5.5 percent for each subsequent minute; however, the decrease can be slowed by the application of various procedures (CPR, defibrillation, ACLS).

AHA Standard. Based on this equation, and their own observations and experiences, the American Heart Association recommends a maximum response time of four minutes for initiation of Basic Life Support (BLS) and eight minutes (eight minutes and 59 seconds) for initiation of ALS.

COMPUTER MAPPING: ISO COVERAGE AND RESPONSE COVERAGE

In order to analyze the coverage provided by the fire departments within West Boylston, the consultants developed a series of computer-generated maps. The process enables analysis of the Town's coverage from the point of view of ISO distance requirements and the running times from the station to its surrounding areas. The maps also illustrate the Town of West Boylston in relation to fire stations in other surrounding towns.

The maps in this report are based on digitized representations of streets and roads within the Town, as prepared for the United States Census Bureau (TIGER maps). The maps are generated for distances and times from the fire stations. For calculating travel times for fire units, an average speed of 28 miles per hour was assumed. For the ambulance response unit, an average speed of 30 miles per hour was assumed. These speeds were considered reasonable rates to represent various conditions of weather, traffic, time of day, season, etc. Naturally, there will be times when favorable (or unfavorable) conditions occur and this average can be easily exceeded (or reduced). The average is considered appropriate for general planning purposes. After applying average speeds to the streets, travel times from stations to their surrounding areas were calculated, color-coded by time interval, and mapped.

To conduct this analysis of the Town, several maps were developed.

Map 1, *Town of West Boylston Base Map*, shows the Town's road network with major streets identified by name. The location of the fire station and other features of the Town are shown.

Map 2, *Town of West Boylston Base Map with Surrounding Towns Distances*, shows West Boylston in relation to Sterling, Clinton and Boylston. The map also indicates the distances from the West Boylston fire station to Sterling, Clinton and Boylston fire stations. The distances are relatively short and strongly suggest that the four towns are geographically able to mutually support each other. The following chart summarizes distances between stations.

EXHIBIT III-2
DISTANCE BETWEEN WEST BOYLSTON FIRE STATION AND FIRE STATIONS IN
BOYLSTON, CLINTON AND STERLING

West Boylston Fire Station to	Boylston Fire Station	3.9 miles
West Boylston Fire Station to	Sterling Fire Station	5.0 miles
West Boylston Fire Station to	Clinton Fire Station	6.3 Miles

Map 3, *West Boylston Base Map with Home Addresses of Volunteers Sited*, is designed to illustrate the distribution of call personnel. In many instances, call personnel live some distance from the fire station, which indicates that the Department should not fully depend on call personnel responding from their homes to support a rapid response to an emergency incident. This suggests that in defined circumstances, the Department should establish a “bunk in” program, as a means of shortening response time. Under this approach, assigned call Department members, on a rotating basis, would “fill-in” or, on a crew basis, “bunk in” at the station. This would be in the evenings as determined by the Fire Chief. It is important to note that an “at-home, on-call” personnel program is a worthwhile program. However, with some call personnel assigned to the station in the evenings, a significantly faster response time is achieved.

Map 4, *Town of West Boylston ISO Distance Requirements*, illustrates response distances in ISO mileage segments of 0 miles to 1.5 miles, 1.5 miles to 2.5 miles and 2.5 miles to 5.0 miles. The red streets are within 1.5 miles of the station; the blue streets are within 1.5 to 2.5 miles of the fire station. The green streets show the streets more than 2.5 miles from the fire station. Note that most Town streets are within ISO engine company and ladder company distance parameters.

Map 5, *Town of West Boylston Running Time/Distances from the Station at an Average Speed of 28 mph*, illustrates the Department's response capability by indicating the area of the Town covered, as measured by street miles, from the fire station in defined time segments. The map indicates the area covered within two minutes travel, or running, time (red streets), between two and four minutes (blue streets), between four and six minutes (green streets), and six and eight minutes (orange streets). The map indicates that within two minutes running time, the Department can reach 19.0 percent of the streets within the Town; within four minutes, the Department reaches 56.3 percent of streets; within six minutes it reaches 92.7 percent of streets; and within eight minutes, 99.6 percent of streets may be reached.

Map 6, *Town of West Boylston Running Time/Distances by the Ambulance at an Average Speed of 30 mph*, presents ambulance coverage, measured by travel time from the ambulance station. Map 6 presents coverage in defined time increments, assuming a travel speed of 30 miles per hour. Map 6 shows EMS response coverage, assuming 30 miles per hour, within four minutes travel time and within eight minutes. This map indicates that from the West Boylston station, 63.0 percent of the street miles of the Town can be covered within four minutes; 97.2 percent of the streets can be covered within six minutes; 100 percent of streets can be reached within eight minutes. EMS response from the station provides a reasonable level of response, given the suburban nature of the Town.

Note: It is important to remember that Maps 5 and 6 show travel time from the fire station. Actual response time is greater. It should be assumed that, from a staffed fire station, two minutes are required to receive notification, don gear and leave the station and that national data indicate that the average volunteer response from receipt of a page to leaving the fire station can exceed five minutes.

Several important conclusions may be drawn from these maps:

- One fire station serves the Town in an acceptable manner. West Boylston is not large in square miles and has an elongated configuration, with the single response station in the middle of the north-south main travel route. The location of the station means that

the most dense street configuration in the southern part of the Town is somewhat distant from the fire-ambulance station. However, ISO credited the Fire Department with 67 of a possible 100 points for “coverage.” With dry streets and no traffic problems, most parts of the Town can be reached in six minutes or less, and with personnel on-duty at the station, overall response time can be shortened for at least the first-due vehicle

- The relatively close location of fire stations in Boylston, Clinton, Sterling and West Boylston strongly suggests that there is a potential to provide significant automatic mutual aid. The relatively short distances from the Boylston, Clinton and Sterling fire stations to parts of West Boylston is illustrated on Map 2. This demonstrates that automatic mutual aid from West Boylston to the other towns (or to West Boylston from the other towns) to structure fires would contribute to a strong mutually supportive response system. The use of automatic mutual aid also contributes to an improved ISO rating, since an automatic aid engine company whose station is less than five miles from the West Boylston border counts as though it were a West Boylston Fire Department vehicle.
- The Fire Department is able to provide engine company and ladder company support to most of the Town within ISO defined standards.

INSERT MAP 1

INSERT MAP 2

INSERT MAP 3

INSERT MAP 4

INSERT MAP 5

INSERT MAP 6

MUTUAL AID AND PERFORMANCE STANDARDS

The mapping indicates that the Town needs to capitalize on available resources within the area and develop an automatic mutual aid system. Such a system will provide the additional resources required during a major incident and will enhance safety of personnel at a major incident.

***RECOMMENDATION III-1:** The Town of West Boylston should engage in discussions with neighboring towns (Boylston, Clinton and Sterling) to develop a plan which allows the long-term sharing of resources. The discussions among towns should be at both the department head level (fire chief) and at the elected and policy level (administrators and boards of selectmen).*

Like many jurisdictions, the Town of West Boylston will continue to find it difficult to meet emerging standards and the expectations of the public. Moreover, the cost of providing fire and rescue services is a legitimate factor to consider in planning service delivery options. The Town should engage in discussions with other jurisdictions to determine if there are opportunities to develop and share resources. Sharing of resources should be viewed as functional consolidation, which means departments remain independent, but share specific resources. In West Boylston's situation, benefits could be achieved by working with nearby fire departments on a number of issues, including:

- office administrative/clerical support
- inspections and plan review
- technical rescue and haz mat
- training facility and equipment
- incident command (overhead) team
- regional advanced life support coverage (ALS) coverage
- regional large fire or EMS task force

***RECOMMENDATION III-2:** The Department should develop an automatic mutual aid program for target hazards and specific emergency calls.*

The development of a systematic automatic mutual aid system should be one of the Fire Chief's primary priorities. The Chief, working with chiefs in surrounding communities, should identify target hazards within each community. The departments should then establish communication and response protocols to ensure an automatic dispatch of units to those hazards. West Boylston has a number of target hazards, including nursing homes.

***RECOMMENDATION III-3:** The West Boylston Fire Department should develop and formally adopt fire response performance standards to allow the Board of Selectmen and the Town Administrator to evaluate services.*

The Fire Chief, working with a committee of full-time and call personnel, should establish a series of performance standards. The goal of the performance standards is to provide the Town of West Boylston with the timely response of a sufficient number of certified call firefighters to conduct safe and effective rescue and fire suppression at a residential fire. Note that NFPA Standard 1710 (for career departments) calls for the arrival of a "full first alarm assignment" of 15 personnel within nine minutes of sounding the station alarm to at least 90 percent of annual incidents. For the Town of West Boylston, the consultants recommend that this time be extended to 10 minutes from the pager alert for the arrival of a full call first alarm assignment, day or night. NFPA 1710 also calls for the arrival of four personnel and a pumper within four minutes travel time to at least 90 percent of the incidents.

Department performance standards relating to response capability may be set for structure fire calls, vehicle fire calls, wildland fires, technical rescue calls, hazardous materials incidents, and emergency medical calls. Typically, a 90 percent annual compliance rate is set.

The following factors would be the elements of a response capability performance standard:

- ▶ turn-out time (pager alert to first fire/rescue vehicle departing station)
- ▶ travel time (first unit out to arrival at the scene)
- ▶ minimum number of crew on first unit out for:
 - pumper to a structure fire
 - aerial to a structure fire

technical rescue
heavy rescue to a structure fire
wildland fire
EMS

- ▶ minimum number to be on-scene within a specified number of minutes (e.g., 10 minutes) of pager alert (first alarm assignment)
- ▶ maximum time for qualified Incident Commander to arrive on scene

The Fire Chief and the committee would establish the times and crew numbers which would then constitute the response capability performance standard. If deemed necessary by the Fire Chief, performance goals may be stated in more detail, outlining the build-up of suppression or technical rescue or hazardous materials mitigation resources within a time frame which recognizes travel distances and the volunteer nature of the department. In summary, response standards are intended to recognize:

- ▶ various response distances
- ▶ automatic mutual aid
- ▶ safe operational practices (including the “two in-two out” rule)
- ▶ incident command needs
- ▶ sufficient initial attack personnel
- ▶ interior certified firefighters

The following exhibit provides an example of a performance standard that the West Boylston Fire Department should consider. This example is intended to illustrate structure fire attack performance targets.

EXHIBIT III-3
PERFORMANCE STANDARD EXAMPLE: STRUCTURE FIRE

- ▶ immediate response by on-duty (daytime) personnel
- ▶ five-minute maximum time frame between pager alert and first-due pumper exiting station, day or night
- ▶ minimum of four qualified firefighters/officers responding on, or with, the first-due pumper
- ▶ maximum of nine minutes total response time from pager alert to curbside arrival of first-due pumper at the incident in the built-up areas of the town

- ▶ arrival at the scene of a qualified incident commander (fifth person on-scene) within ten minutes of pager alert in a built-up area
- ▶ arrival at the scene of an appropriate second-due vehicle with a minimum of two additional personnel within 12 minutes of pager alert
- ▶ arrival at the scene of at least five additional qualified firefighters and an appropriate vehicle within 15 minutes of the initial pager alert

These targets equate to a five-minute “get-out” time for four volunteers and a pumper, nine minutes total elapsed response time to the scene, 10 minutes elapsed time for an (additional) incident commander, 12 minutes elapsed time for a second vehicle and two additional personnel, and 15 minutes elapsed time for five additional personnel and a third vehicle. Total minimum response at 15 minutes post initial page alert is 12 personnel and three appropriate vehicles, some of which may be mutual aid assets.

RECOMMENDATION III-4: *The Fire Chief should monitor the achievement of performance standards.*

The value of these performance standards is that they measure operational response and capability. These measures identify areas requiring improvement.

IV. ORGANIZATION AND STAFFING OF THE FIRE DEPARTMENT

ORGANIZATION AND LEADERSHIP OF THE FIRE DEPARTMENT

The current the Fire Department operates under the direction of a Board of Fire Engineers appointed by the Town Administrator. The Board selects one of its members to serve as the Chief Engineer. While this type of structure is not unique to West Boylston, it creates administrative and policy-making difficulties for the Fire Chief, for the other four members of the Board, and for Town officials. The Chief Engineer has a rather unusual role as both a policy maker and an administrator.

Additionally, the Town's government administrative structure established by Chapter 23 of the Acts of 1995, designates a Town Administrator as the administrative officer responsible for the appointment of employees and department heads. The current Board of Fire Engineers framework is both outmoded by history and inconsistent with the basic organizational framework of the Town. Thus, the Board of Fire Engineers should be abolished and replaced with an administrative framework consistent with the Town's special act charter. The position of Chief Engineer would be abolished and the Town Administrator should appoint a Fire Chief.

RECOMMENDATION IV-1: The Town should restructure the governance of the Fire Department and abolish the Board of Fire Engineers. The Fire Chief should be appointed by the Town Administrator in accordance with the Town's Special Act Charter.

In Massachusetts, there are two Fire Department administrative structures in common usage. There are the so called "strong chief" and "weak chief" statutes. The terms "strong" and "weak" refer to the authority of the Fire Chief under G. L. c.49 §42 and 42A. It should also be noted that, under home rule charters and special act charters, there may be other variations in the administrative structures of fire departments.

Under the "weak" fire chief statute (G.L. c.48, §42A), which is similar to the law governing "weak" police chiefs, the fire department is under the direction of the selectmen. The selectmen appoint a fire chief and other fire

personnel and fix their compensation. Selectmen may make suitable regulations governing the fire department and personnel, and may remove the chief and other personnel at their pleasure, if they are not subject to civil service. The fire chief is in immediate control of town property used by the department, and of officers and other personnel, who must obey the orders of the chief. The fire chief is the forest warden.

Under the “strong” fire chief statute (G.L. c. 48, §42), the selectmen appoint a fire chief, who in turn appoints a deputy and other fire personnel. The fire chief may be removed by the selectmen for cause at any time, after a hearing. The fire chief may remove fire department personnel for cause at any time, after a hearing. Under this section, the chief has “full and absolute authority in the administration of the department,” and reports to the selectmen from time to time. The fire chief makes rules and regulations governing the department and fixes the compensation of permanent and call members of the fire department, subject to the approval of the selectmen. The appointment of a fire chief in any town of less than 5,000 population may be for a three-year period. The fire chief is the forest warden.

In West Boylston, it is recommended that the Fire Chief be appointed by the Town Administrator and generally have the responsibilities as provided by the “strong” chief statute. This is recommended, since the Fire Chief should have authority to manage and direct the Department, and should also have the resulting accountability for results and activities within the Department.

This structure places the Fire Chief in the same chain of command as other department heads and establishes a direct reporting relationship to the Town Administrator, who is the appointing officer. This approach reduces the possibility of conflicting policy directions.

RECOMMENDATION IV-2: The Town should adopt a Fire Department management structure that places the Fire Chief clearly in command of the Department with the ability to manage and be held accountable for results.

RECOMMENDATION IV-3: The Fire Chief should be employed on a contractual basis.

Under the proposed organizational arrangement, the Fire Chief should be employed on a contractual basis. The contract is likely to contain the following elements:

- ▶ Term of the contract
- ▶ Salary
- ▶ Security (severance clause)
- ▶ Vacation and sick leave
- ▶ Insurance related matters (health, life, long-term disability insurance)
- ▶ Deferred compensation
- ▶ Professional development and memberships

From the perspective of the Town, it would be important for the Town Administrator, in consultation with the Board of Selectmen, to develop a series of performance standards by which the performance of the Fire Chief could be measured. Some areas where performance measures could be developed include:

- ▶ Ability to manage the Department's budget and effectively bill for and collect revenue
- ▶ Development of a methodology to measure the effectiveness of responses to emergencies
- ▶ Development of an effective system to recruit and retain call personnel
- ▶ Development and management of an effective system of using call personnel to ensure sound service delivery and satisfaction of call personnel
- ▶ Working with surrounding jurisdictions to develop an automatic mutual aid system
- ▶ Development of other regional or interlocal service delivery strategies which support and improve service delivery

RECOMMENDATION IV-4: The role of the West Boylston Fire Chief should be to manage, plan for and administer the Department.

The Fire Chief has a number of management and administrative responsibilities. In West Boylston, one of the weaknesses of the current staffing framework is that the Fire Chief devotes a substantial amount of his time to

responding to calls for service. While it may be necessary at times for the Chief to respond to a call for service, the Chief's responses should generally be limited to incidents requiring supervision and command.

For the Fire Chief to be effective in this administrative and leadership role, several actions must be accomplished. First, there is a need to increase daytime weekday staffing (see below) and ensure that there is at least some office administrative support available for the Fire Chief.

***RECOMMENDATION IV-5:** The Fire Chief should have resources available to allow for the employment of administrative support/office personnel.*

The Fire Chief requires some office administrative/clerical support. The employment of a full-time individual is probably not necessary, but the Chief should have available, we estimate, three to four hours of assistance daily. This level of support might be achieved in several ways. One strategy would be for the Fire Chief to approach surrounding fire departments and attempt to develop a system to share an office support person. Another approach would be for the Chief to share the services of an employee with another Town department head.

COMMITMENT TO A COMBINATION DEPARTMENT

The Town of West Boylston Fire Department has several major response challenges relating to the delivery of adequate fire, rescue, and emergency medical protection. One primary challenge relates to the cost of service. A fully-staffed fire service and emergency medical service provider is at least theoretically feasible. However, the cost of a "career" department with adequate numbers of personnel would greatly exceed the current budget allocation of the Fire Department. The continuation and maintenance of the combination fire department system in the Town is essential. While some improvements in the response system are necessary, the current system offers a cost-effective model.

Maintenance of the current combination system will require contributing additional resources to the fire services. Increases in monies for personnel, recruitment and retention of call personnel, including retention incentives, are required. The commitment of resources required by the Town is addressed in various recommendations. However, one of the most significant actions the

Board of Selectmen should take is to clearly articulate that it is the desire and policy of the Board of Selectmen to maintain an effective combination fire department, with a small group of full-time career personnel supported by the call fire department personnel.

RECOMMENDATION IV-6: The Board of Selectmen should clearly articulate a policy of supporting and enhancing the combination fire department model now operating.

It is important that this policy supporting the combination fire and emergency medical response system be made an integrated part of the fire and rescue system. This can be achieved in several ways, including:

- An important performance objective of the Fire Chief should be to take necessary steps and actions to support the combination fire and rescue system by recruitment and retention efforts.
- The Department should develop a mission statement with the combination fire department philosophy integrated into the statement.
- The Board of Selectmen should adopt a multi-year plan to enhance the fire and rescue services of the Town.

STAFFING REQUIRED TO SUPPORT THE COMBINATION SYSTEM

There are several interrelated response challenges or issues in the Town of West Boylston. One of the primary objectives of the Fire Department is to respond to emergency medical, fire and other emergency calls quickly and with sufficiently trained and appropriately certified personnel. While there is a motivated call force, the number of daytime emergency responses and other daytime duties, coupled with the inability of most volunteers to participate during weekdays, has created a serious emergency response staffing problem. With three full-time personnel (including the Fire Chief) available, daytime resources can be depleted rapidly. Thus, to support the call system and alleviate this response weakness, the consultants recommend a policy strategy with three main efforts:

- Employ several additional personnel over a three to five-year period.
- Work closely with other fire departments to develop an automatic mutual aid system.
- Invest in a call firefighter/EMT recruitment and retention process.

RECOMMENDATION IV-7: Develop a three to five-year plan to increase the number of full-time firefighters/emergency medical technicians.

RECOMMENDATION IV-8: Increase staffing in two phases. Phase I should focus on EMS coverage for Monday through Friday (7:00 a.m. to 7:00 p.m.) and Phase II should focus on Monday through Sunday (7:00 a.m. to 7:00 p.m.).

Staffing recommendations are intended to strengthen emergency medical service response, as well as strengthen initial fire response capability. The two-phase approach to staffing will allow for a gradual increase in costs and ensure that personnel are skilled and capable of performing the job.

The staffing methodologies for Phase I and Phase II are presented below.

PHASE I - MONDAY THROUGH FRIDAY (7:00 A.M. TO 7:00 P.M.)

Under phase one of this staffing plan, the Fire Department should have two full-time, cross-trained firefighters/paramedics on duty 7:00 a.m. to 7:00 p.m., Monday through Friday. Currently, the employment of two personnel as fire/EMS responders does not ensure that this occurs.

The Phase I staffing plan requires the Town to provide 12 hours of coverage five days a week. Staffing for EMS response requires two persons; therefore, there are 120 hours per week to be filled, or 6,240 hours per year. The personnel required to cover 6,240 hours is calculated as follows:

7:00 a.m. to 7:00 p.m. = 12.0 hours x two responders = 120 hours/week
52 weeks x 120 hours = 6,240 hours of emergency responder time

Assuming a Firefighter/EMT-P works 40.0 hours per week or 2,080 hours per year, personnel will be available to work approximately 1,650 to 1,700 hours per year. Vacation time, sick leave, family leave, and continuing medical education (CME) require 300 to 400 hours annually, per employee. Assuming an employee is scheduled to work 2,080 hours per year, and we deduct anticipated time off (350 to 400 hours), an employee can be expected to work approximately 1,730 to 1,680 hours per year.

6,240 hours (required hours to be filled)/1,700 (estimated hours of work)
= 4.0 staff required (3.7 rounded to 4.0)

Note: This staffing model assumes 40 hours per week. Schedules of 42 hours per week (typical firefighter work schedule in Massachusetts) or 48 hours per week are also possible.

This analysis indicates that at least two additional personnel are required. However, with an increase of two personnel, there is little flexibility to address unexpected scheduling, training, injury on duty incidents or other events. An increase of three personnel provides greater flexibility.

**EXHIBIT IV-1
STAFFING MODEL PHASE 1
EMERGENCY RESPONSE MONDAY THROUGH FRIDAY (7:00 A.M. TO 7:00 P.M.)**

POSITION	CURRENT	PROPOSED INCREASE	TOTAL MINIMUM	TOTAL DESIRABLE
Fire Chief	1	-	1	1
Firefighter/EMT-P	2	2 (3)	4	5
Total	3	2 (3)	5	6

This staffing model presupposes a number of underlying assumptions:

- Personnel would provide EMS, fire and other emergency response services.
- Staff would not be assigned to non-emergency response duties, such as inspection.
- Staffing level does not account for simultaneous responses.

PHASE II - MONDAY THROUGH SUNDAY (7:00 A.M. TO 7:00 P.M.)

Phase II of the staffing plan would require the Fire Department to have two full-time, cross-trained firefighter paramedics on duty 7:00 a.m. to 7:00 p.m., Monday through Sunday.

Staffing for EMS response requires two persons. Since it is necessary to provide 12 hours of coverage seven days a week, there are 168 hours of work per week to be filled, or 8,736 hours per year. The personnel required to cover 8,736 hours is calculated as follows.

$$7:00 \text{ a.m. to } 7:00 \text{ p.m.} = 12.0 \text{ hours} \times \text{two responders} \times 7.0 \text{ days} = 168 \text{ hours/week}$$

$$52 \text{ weeks} \times 168 \text{ hours} = 8,736 \text{ hours of emergency responder time}$$

Assuming a Firefighter/EMT-P works 40.0 hours per week, or 2,080 hours per year, personnel will be available to work approximately 1,650 to 1,700 hours per year. Vacation time, sick leave, family leave, and continuing medical education (CME) require 300 to 400 hours annually, per employee. Assuming an employee is scheduled to work 2,080 hours per year, and we deduct anticipated time off (350 to 400 hours), an employee can be expected to work approximately 1,730 to 1,680 hours per year.

$$8,736 \text{ hours (required hours to be filled)} / 1,700 \text{ (estimated hours of work)} = 5.0 \text{ staff required (5.1 rounded to 5.0).}$$

Note: This staffing model assumes 40 hours per week. Schedules of 42 hours per week (typical firefighter work schedule in Massachusetts) or 48 hours per week are also possible.

**EXHIBIT IV-2
STAFFING MODEL PHASE II
EMERGENCY RESPONSE MONDAY THROUGH SUNDAY (7:00 A.M. TO 7:00 P.M.)**

POSITION	CURRENT	PROPOSED INCREASE	TOTAL MINIMUM	TOTAL DESIRABLE
Fire Chief	1	-	1	1
Firefighter/EMT-P	2	3 (4)	5	6
Total	3	3 (4)	6	7

This staffing model presupposes a number of underlying assumptions:

- Personnel would provide EMS, fire and other emergency response services.
- Staff would not be assigned to non-emergency response duties, such as inspection.
- Staffing level does not account for simultaneous responses.

In both staffing models, simultaneous response needs to be considered. The first step in examining this issue is for the Fire Department to review simultaneous response demand. A policy needs to be established to determine how *a simultaneous response* is to be defined. One possible model would be to have two call personnel paid an “hourly rate” to cover the station and take a simultaneous call when the regular on-duty crew of two is on a call estimated to make them unavailable for some pre-determined time. The actual need to call back a crew should be based on an evaluation of the historical data regarding number of simultaneous calls and average out-of-service time for EMS or fire responses. For example, if the ambulance is out of service for 20 minutes or less, the Department could have a policy which does not dictate a call-back strategy.

It should be noted also that a sound emergency medical dispatch system which screens calls and assesses the type of response required (advanced life support call or life-threatening, or a basic life support call) would also help determine the need for a call-back stand-by system.

A second approach to the simultaneous call is to maintain a daily on-call duty list in which certain personnel are available to respond to a simultaneous call if the duty crew is committed. This is similar to having an “at home” night duty crew.

The goal of the two staffing strategies is to provide the following service level:

- Staff the first-out ambulance with the on-duty, full-time crew.
- Staff the second-out ambulance with call personnel who would “stand-by” at the station during weekdays.
- Respond to fire alarms with the full-time on-duty crew, the Chief (if available), and call personnel.

It is important to note that the strategy of ensuring that there are at least two emergency responders on duty and available to respond to EMS and fire emergencies will enhance the safety of personnel in the case of a fire response. With at least two responders arriving at the scene of a fire incident, it is more likely that interior fire operations can begin sooner than the current deployment arrangement allows. To achieve the two-in/two-out safety standard (allowing for interior fire operation) requires the arrival of only two additional personnel, call responders or automatic mutual aid responders. Thus, the proposed deployment approach improves fire response. (See Chapter III of this report for a discussion of standards and safe response.)

ESTIMATED COST OF FULL-TIME PERSONNEL

Implementation of the staffing recommendations should be accomplished over a three or four year period. Assuming a full implementation of each phase of the recommendations, we have estimated the costs for personnel below. The cost information shows the annual pay range for a Firefighter/EMT-P (paramedic). The cost estimate is based on the hourly pay of \$12.14 x 40 hours per week x 52 weeks per year. An additional 30 percent is assigned to the cost of each position for direct costs of benefits.

**EXHIBIT IV-3
PROPOSED FIRE DEPARTMENT STAFFING INCREASES
FISCAL YEAR 2004 TO 2007 AND ESTIMATED COSTS**

	2004	2005	2006	2007	TOTAL
Firefighter	1	1	1	1	4
Cost Increase *	\$40,425 to \$55,567	\$40,425 to \$55,567	\$40,425 to \$55,567	\$40,425 to \$55,567	\$161,699 to \$221,269

* Estimates are presented in current dollars.

The Fire Chief provided consultants with a long-term staffing plan for the Fire Department. The plan outlined a 20-year model to increase staffing of the Fire Department. We have reproduced the staffing plan proposed by the Fire Chief in Exhibit IV-4.

**EXHIBIT IV-4
FIRE CHIEF'S STAFFING PLAN**

	APPROXIMATE YEARS			
	2000	2005	2010	2020
Chief	1	1	1	1
Full-time clerk	0	1	1	1
Full-time FF/EMT	2	4	8	18
Full-time Captain/EMT	0	0	2	3
Full-time Fire Prevention	0	0	1	1

It should be noted that the consultants generally agree with the Fire Chief about the initial years of the staffing plan, but it is our view that projecting staffing needs over a 20-year period should not be undertaken at this time for several reasons. First, the Town needs to aggressively support and maintain the call fire department. Secondly, the opportunities for regional and interlocal sharing are apparent and should be explored fully over the next five, or more, years. These actions would affect the nature of staffing needed in the future.

The consultants' staffing recommendations have not accounted for fire prevention, inspection, and plan review functions which are essential to the West Boylston Fire Department. Currently, the Fire Chief, or a full-time firefighter, is required to make inspections. This reduces the response capability of the Fire Department, given the limited staffing resources. Even with additional personnel, the Fire Department needs to develop a new service delivery model. The development of a comprehensive fire prevention and inspection program should be accomplished by adopting a regional inspection and prevention strategy or employing an individual on a part-time basis to support the inspection and plan review effort.

RECOMMENDATION IV-9: The Fire Department should adopt a new comprehensive fire prevention and inspection service model.

V. EMERGENCY MEDICAL SERVICES

In several earlier chapters in this report, the consultants have discussed emergency medical services as part of a total response strategy. Obviously, since emergency medical services is such a large proportion of the Fire Department's response workload, and a source of revenue, the management of emergency medical services is critical to the Department.

With limited full-time staffing, the Department has difficulty meeting the service demand. It is our understanding that the Chief is forced to work a large number of hours and respond frequently to requests for service, and other full-time EMS staff work a large number of hours. Use of a few staff members to cover the demand in the Town certainly indicates the dedication of personnel, but it also suggests that the emergency medical response system requires a new service delivery model.

The Fire Department has organized the delivery of emergency medical services to reflect its resources. The Department organizes the delivery of services in the following manner. Note below, we have assumed that there are two career EMT-Ps. (There is one EMT-P and one EMT-I, who is completing training to be an EMT-P.)

- *In general, Monday to Friday (6:00 a.m. to 7:00 p.m.)* - The Fire Department is staffed Monday to Friday (6:00 a.m. to 7:00 p.m.) with two career firefighters/EMS personnel, or a combination of career and call/part-time personnel. Currently, the full-time personnel have the following capabilities:
 - ▶ One Firefighter/EMT-P (Paramedic)
 - ▶ One Firefighter/EMT-I (Intermediate, completing EMT-P Training)
 - ▶ One Firefighter/EMT-D (Fire Chief)

- *Monday to Friday (6:00 a.m. to 10:00 a.m.)* - The one EMT-P is on-duty and the Fire Chief responds, when he is available.

- *Monday to Friday (10:00 a.m. to 3:00 p.m.)* - Two career emergency medical personnel are assigned to duty.
- *Monday to Friday (3:00 p.m. to 7:00 p.m.)* - There is one career person on-duty and the Chief responds on the ambulance, when available.
- *Monday to Friday (7:00 p.m. to 11:00 p.m.)* - Available call personnel respond.
- *Monday to Sunday (11:00 p.m. to 6:00 a.m.)* - One of the five “duty crews” responds from home to emergency medical incidents.
- *Saturday and Sunday (6:00 a.m. to 11:00 p.m.)* - Available call personnel respond.

Part-time call personnel are organized into five four-person “duty crews.” The crews rotate shift assignments. Three of the four duty crews have an EMT-P assigned. If a life-threatening event occurs when the crew without an EMT-P is responding, one of the “off-duty” EMT-Ps responds, if available.

Duty crews may organize their responses differently when on duty. For example, some crews have all members respond to the fire station and respond to the incident; some have one member respond to the station and the others respond to the location of the EMS incident.

It is important to recognize that the EMS system is supported by the Police Department. The police officers are trained to the first responder level and are supplied with automatic external defibrillators and respond to all EMS calls.

The following exhibit displays the organization of the emergency response system. The exhibit shows the day of the week, time of day and the response assignment.

EXHIBIT V-1
CURRENT FIRE DEPARTMENT DUTY-SHIFT/EMS RESPONSE STRATEGY *

<i>6 a.m. - 10 a.m.</i>	<i>10 a.m. - 3 p.m.</i>	<i>3 p.m. - 7 p.m.</i>	<i>7 p.m. - 11 p.m.</i>	<i>11 p.m. - 6 a.m.</i>
<i>Monday</i>				
1 EMT-P + Chief or available call personnel	2 EMT-Ps	1 EMT-P +Chief or available call personnel	available call personnel	EMS Duty Crew
<i>Tuesday</i>				
1 EMT-P + Chief or available call personnel	2 EMT-Ps	1 EMT-P 1 EMT-D (pt)	available call personnel	EMS Duty Crew
<i>Wednesday</i>				
1 EMT-P + Chief or available call personnel	2 EMT-Ps	1 EMT-P 1 EMT-D (pt)	available call personnel	EMS Duty Crew
<i>Thursday</i>				
1 EMT-P + Chief or available call personnel	2 EMT-Ps	1 EMT-P 1 EMT-D (pt)	available call personnel	EMS Duty Crew
<i>Friday</i>				
1 EMT-P + Chief or available call personnel	2 EMT-Ps	1 EMT-P + Chief or available call personnel	available call personnel	EMS Duty Crew
<i>Saturday</i>	available call personnel	available call personnel	available call personnel	EMS Duty Crew
<i>Sunday</i>	available call personnel	available call personnel	available call personnel	EMS Duty Crew

* Assumes two EMT-Ps. Currently, one EMT-I is in training to become an EMT-P.

Notwithstanding the response approach, the Fire Department has difficulty achieving timely response to EMS incidents. This response problem is, in large part, the result of limited full-time resources and the lack of availability of call personnel at certain times of the day. The following exhibit illustrates workload measured by action code categories. These data are organized by time blocks to illustrate the emergency workload distribution in the Fire Department. The heaviest activity is, as expected, during the daytime hours.

**EXHIBIT V-2
WORKLOAD BY TIME BLOCKS AND
DEFINED BY ACTION CODE ***

YEAR	11 P.M. - 7 A.M.	7 A.M. - 3 P.M.	3 P.M. - 11 P.M.	ACTION CODE TOTAL
1999	208	727	447	1,382
2000	249	792	454	1,495
2001	300	869	554	1,723
2002 (to 12/10)	313	881	519	1,713

* Department Action Taken: Response, Investigate, Ambulance, Standby, Test, Drill, etc.

In addition to the data shown in the exhibit above, the consultants examined the current response problems by reviewing a great deal of data, including the time calls were received, the total dispatch time and the total response time. Data was provided to the consultants by time only, not day of week. The consultants examined January, June and October 2002 data and for illustration purposes, the consultants have presented data which examines responses in detail for January 2002. The exhibit below displays 33 responses for January 2002, by time of day the call was received, the time *en route*, total dispatch time, time on-scene, and the total response. The data suggest that, during the hours of 6:00 a.m. to 7:00 p.m. (Monday to Friday), it is difficult for the Department to respond rapidly.

**EXHIBIT V-3
SAMPLE RESPONSE DISTRIBUTION (JANUARY 2002)
6:00 A.M. TO 7:00 P.M. - MONDAY TO FRIDAY**

TIME RECEIVED	TIME EN ROUTE	TOTAL DISPATCH TIME (MINUTES)	TIME ON SCENE	TOTAL RESPONSE TIME (MINUTES)
8:01	8:03	0.02	8:04	0.03
8:23	8:28	0.05	8:30	0.07
8:38	8:42	0.04	8:44	0.06
9:00	9:07	0.07	9:14	0.14
9:48	9:52	0.04	9:56	0.08
10:00	10:03	0.03	10:08	0.08
10:41	10:47	0.06	10:55	0.08
10:44	10:52	0.08	10:56	0.12
10:51	10:54	0.03	11:01	0.10
11:11	11:15	0.04	11:17	0.06
11:17	11:21	0.04	11:24	0.07

TIME RECEIVED	TIME EN ROUTE	TOTAL DISPATCH TIME (MINUTES)	TIME ON SCENE	TOTAL RESPONSE TIME (MINUTES)
11:29	11:34	0.05	11:41	0.12
12:00	12:02	0.02	12:04	0.04
12:41	12:43	0.02	12:46	0.05
1:09	1:10	0.01	1:13	0.04
1:39	1:43	0.04	1:47	0.08
1:34	1:59	0.05	2:04	0.10
1:58	2:01	0.03	2:03	0.05
1:59	2:04	0.05	2:05	0.06
3:02	3:05	0.03	3:09	0.07
3:11	3:17	0.06	3:19	0.08
3:15	3:18	0.03	3:21	0.06
3:47	3:49	0.02	3:52	0.05
4:16	4:24	0.08	4:28	0.12
4:22	4:23	0.01	4:50	0.26
4:28	4:34	0.06	4:38	0.10
4:46	4:48	0.02	4:50	0.04
4:49	4:52	0.03	4:54	0.05
5:05	5:13	0.08	5:16	0.11
5:23	5:29	0.06	5:31	0.08
6:11	6:18	0.07	6:20	0.09
6:42	6:45	0.03	6:49	0.07
6:53	6:56	0.03	7:00	0.07

These 33 sample responses are categorized into the number of responses within one minute increments in the exhibit below. The exhibit shows the time from dispatch until an acknowledged response, and the time from dispatch to arrival on scene. The data clearly show that responses are relatively long.

EXHIBIT V-4
SAMPLE RESPONSE DISTRIBUTION (JANUARY 2002)
6:00 A.M. TO 7:00 P.M. MONDAY TO FRIDAY

Time from Dispatch until Acknowledged Response

3 minutes	15 responses
4 minutes	5 response
5 minutes	4 responses
6 minutes	3 responses
7 minutes	2 response
8 minutes	4 responses
9 minutes	0 responses

Time from Dispatch to Arrival On-Scene

3 minutes	1 response
4 minutes	3 responses
5 minutes	4 responses
6 minutes	3 responses
7 minutes	5 responses
8 minutes	8 responses
9 minutes	1 response
10 minutes	3 responses
11 minutes	1 response
12 minutes	3 responses
13 minutes	0 responses
14 minutes	1 response

In addition to the two exhibits above, the consultants examined responses made by call personnel (including duty crews) for January, June and October 2002. As shown above, we have used January 2002 as illustrative of the responses made by the Department.

The exhibit below presents call response for the month of January 2002 on all days, including Saturday and Sunday, for the time period of 6:00 a.m. to 11:00 p.m., a total of 17 responses. As with the data shown above, total response times are relatively long.

**EXHIBIT V-5
CALL PERSONNEL RESPONSE JANUARY 2002 - 6:00 A.M. TO 11:00 P.M.**

TIME RECEIVED	TIME EN ROUTE	TOTAL DISPATCH TIME (MINUTES)	TIME ON SCENE	TOTAL RESPONSE TIME (MINUTES)
11:32	11:43	0.11	11:44	0.12
11:43	11:46	0.03	11:49	0.06
12:10	12:18	0.08	12:19	0.09
3:50	3:58	0.08	4:02	0.12
3:50	2:03	0.13	4:07	0.17
3:56	4:06	0.10	4:09	0.13
4:51	4:58	0.07	5:09	0.18
5:01	5:07	0.06	5:10	0.09
5:25	5:35	0.10	5:40	0.15
5:40	5:47	0.07	5.5	0.10
5:48	5:58	0.10	6:02	0.14
8:22	8:28	0.06	8:30	0.08
8:33	8:43	0.10	8:47	0.14
8:43	8:48	0.05	8:50	0.07
9:27	9:28	0.01	9:32	0.05
10:02	10:12	0.10	10:14	0.12
10:41	10:52	0.11	10:56	0.15

As noted above, we also examined the on-duty crew responses. For January 2002, there were only four responses. The data show relatively long response times, since personnel are responding from home. These data are consistent with the other months examined.

EXHIBIT V-6
CALL PERSONNEL RESPONSE - JANUARY 2002
11:00 P.M. TO 6:00 A.M.

TIME RECEIVED	TIME EN ROUTE	TOTAL DISPATCH TIME (MINUTES)	TIME ON SCENE	TOTAL RESPONSE TIME (MINUTES)
1:18	1:27	0.09	1:28	0.1
2:15	2:25	0.10	2:27	0.12
2:54	3:01	0.07	3:08	0.14
5:33	5:43	0.10	5:46	0.13
6:24	6:33	0.09	6:35	0.11

It should be noted that, in the exhibits above, the relatively long total response time may be a function of slow acknowledgment by the responding group, delay in dispatch, or delay in entering dispatch data.

Exhibits V-2 through V-6 strongly suggest that the response system within the Town requires some strengthening. These data support the concept of employing a small group of full-time firefighters/paramedics to respond to emergencies, particularly during the general time period of 7:00 a.m. to 7:00 p.m., as we have recommended in Chapter IV of this report.

***RECOMMENDATION V-1:** The Fire Department should employ firefighters/paramedics to respond during the hours of 7:00 a.m. to 7:00 p.m.*

The data and the consultants' observations also suggest that the Town of West Boylston and its surrounding jurisdictions should explore the viability of developing an integrated emergency medical response system. This system could take many forms. While it may take a great deal of discussion over a number of years, the relative proximity of towns and their fire stations suggest that a regional advanced life support system should be considered.

***RECOMMENDATION V-2:** The Town should explore the development of a regional emergency medical response system.*

Once the Fire Department improves and expands its fire station, the Department should implement a program, organized in a similar manner to its current “on-duty” crew system. The new program would provide for call personnel to be assigned to work in the fire station or stay overnight in the station. The Fire Chief should determine on what days this plan should be operational. Implementing this program would improve response time and support the combination Fire/EMS Department concept.

***RECOMMENDATION V-3:** The Fire Department should consider the expansion of its “on-duty” crew system to include a bunk-in program for evenings.*

It is important to note that the effectiveness of the response system depends on developing and maintaining an effective call department. The on-duty crew system requires the development of a well-trained and professionally certified group of personnel.

***RECOMMENDATION V-4:** All dispatchers should be trained in emergency medical dispatch procedures and the EMD system should be implemented.*

Emergency medical dispatch (EMD) is a system which allows a dispatcher, using a series of carefully constructed questions, to establish the severity of a particular call. EMD allows for more effective dispatching and very rapid call prioritizing. In West Boylston, some personnel are trained, others are not, and an EMD system is not implemented. EMD would assist in providing more rapid response when an ALS call is identified. While it is desirable to have two dispatchers on-duty when EMD is used, it is possible to operate a system with one dispatcher.

***RECOMMENDATION V-5:** The Police Department should continue to respond to emergency medical incidents.*

The use of the Police Department to support the emergency medical system is a desirable practice and should be encouraged and continued.

EMERGENCY MEDICAL SERVICES - TOWN OR PRIVATE PROVIDER

The consultants were asked to address the question of the impact of privatization of emergency medical services. It has been suggested by several parties that the Fire Department should only provide fire suppression related services and the Department should be composed of only call fire personnel, or call personnel with a full-time Fire Chief. Emergency medical services would be provided by a private emergency medical services provider under this approach. The primary reason given for this approach is that it would ultimately be less costly for the Town. We have assumed in Chapter III of this report that the Town of West Boylston and the Fire Department would continue to provide emergency medical services.

In assessing the decision to privatize emergency medical services in West Boylston, several policy decisions regarding desired services must be made. Several factors should be considered in making these policy decisions, including:

- *Response Level/Level of Service Desired* - The first decision in this analysis requires the Town to determine if it wishes to provide Basic Life Support (BLS) Services or Advanced Life Support (ALS) Services.
- *ALS Level Services Available* - The West Boylston Fire Department has moved to, or is attempting to move to, providing ALS services.
- *EMS Response Standards* - Desirable response measures and standards (see Chapter III of this report) indicate that a system should deliver BLS within four minutes and ALS within eight minutes.
- *Fire Station Location/Response Capacity* - As shown by the mapping, the fire station is well located to serve the Town. The mapping further indicates that a unit responding from the fire station is able to reach 60 percent of the Town within four minutes travel time and 97.2 percent of the Town within six minutes.
- *Daytime Staffing Demands* - Under the current Fire Department staffing/deployment model, it is difficult to meet response measures

or standards because of limited daytime personnel and other duties assigned to personnel.

- *Police Department Support* - The Police Department supports the EMS system by equipping each vehicle with an AED.
- *Cross-Trained Personnel* - Current full-time and many call personnel are cross-trained firefighters/EMTs. These personnel are able to respond to both fire and emergency medical incidents.

In this report (Chapter IV), recommendations are made to increase staffing over several years. The increased staffing will enable the Department to deliver emergency medical services effectively and provide an initial fire response capability.

To assess the viability of delivering emergency medical response using a private EMS provider, the following assumptions are made:

- The Town of West Boylston would desire an emergency medical services response at the ALS level 24 hours a day, 365 days a year. Based on this assumption, there are two possible private provider models:
 - ▶ *Private Model 1* - A private provider would deliver all EMS coverage 24 hours a day, 365 days a year.
 - ▶ *Private Model 2* - A private provider would staff the busiest times of day, and cover the 12 hours from 6:00 a.m. to 6:00 p.m. daily, with Fire Department call personnel providing evening coverage from 6:00 p.m to 6:00 a.m.
- The Town of West Boylston would desire to deliver BLS and ALS services within the acceptable standards for 90 percent of incidents.
- The private EMS provider would be based in or close to West Boylston and would meet the response time standards established.

POTENTIAL REVENUE AND PRIVATE SERVICE MODELS

For a private provider to deliver emergency medical services, there must be sufficient revenue to cover costs and realize a profit. At the same time, a town such as West Boylston, would desire a certain level of service, in part measured by response time. The issue for a private provider is whether the number of transports is sufficient to generate enough revenue to cover costs. If the revenue is not sufficient, the Town will be asked to contribute additional monies to meet the needed revenue goals of the private ambulance provider. Moreover, if more resources (personnel and equipment) need to be committed to a town, the cost of the services for a private provider will increase; thus, the revenue needed from that town will increase. If a town is not concerned with requiring that specific response time standards or benchmarks be met, the cost of services provided would be less; if a town wishes to achieve benchmark response standards, the cost would be higher.

From July 2001 to June 2002, the West Boylston Fire Department collected \$254,119 in ambulance receipts. The following exhibit displays a table prepared by the Fire Chief. The table shows the amount billed, the amount and percent allowed, the amount collected, the amount written off, balance due and collection costs. Approximately 77 percent of the gross billings are collected which is, in our experience, a very good collection rate.

EXHIBIT V-7**AMBULANCE RECEIPTS - JULY 2001 TO JUNE 2002 ***

	<i>Runs Billed</i>	<i>Amount Billed</i>	<i>Amount Allowed</i>		<i>Amount Collected</i>		<i>Dollars Written Off</i>		<i>Balance Due</i>	<i>Comstar Fee</i>
July 2001	42	24,098	21,761	90%	19,491	90%	262	1.2%	2,008	567
August	40	23,480	20,073	85%	18,921	94%	0	0.0%	1,152	540
September	51	29,499	26,431	90%	24,617	93%	158	0.6%	1,656	689
October	43	23,497	21,597	92%	19,147	89%	143	0.7%	2,307	581
November	52	29,114	26,028	89%	23,844	92%	1,249	4.8%	935	702
December	55	29,867	26,144	88%	25,043	96%	184	0.7%	917	743
January 2002	56	31,925	28,015	88%	24,130	86%	804	2.9%	3,081	756
February	43	27,714	24,668	89%	23,162	94%	1,086	4.4%	420	581
March	47	24,412	22,196	91%	21,515	97%	118	0.5%	563	635
April	38	23,311	20,606	88%	14,494	70%	0	0.0%	6,112	513
May	38	25,344	22,053	87%	16,325	74%	859	3.9%	4,869	513
June	56	36,820	33,204	90%	23,430	71%	0	0.0%	9,774	756
Total	561	329,081	292,776	89%	254,119	87%	4,863	1.7%	33,794	7,574

* Fire Department memorandum

The average cost recovery for an ambulance transport was approximately \$453 per transport ($\$254,119/561 = \453). The amount collected by the Department reflects a fairly good collection rate and is certainly reasonable. It is important to recognize that these data represent transports. A significant number of runs do not require transport. Nationally, approximately 70 percent of emergency medical service responses result in a transport.

Revenue of \$254,119 would not have been sufficient for a private provider to staff an EMS unit 24 hours a day, 365 days a year within the Town. Personnel costs alone, not including overhead, profit and other costs, would far exceed revenue generated in the last year. Moreover, the approximately \$250,000 in revenue would be insufficient to pay for the cost of staffing an EMS unit 12 hours per day, seven days a week.

A regional consortium of several towns, for example, West Boylston, Boylston, Clinton and Sterling, would offer a more desirable service delivery area for an emergency medical service provider, since there would be a larger volume of potential transports and thus, more potential revenue.

In the case of West Boylston, it is very possible to develop an integrated fire/emergency medical response system using a combination of full-time and volunteer personnel. The weakness in the current response system is in large part a daytime response problem. Employing full-time personnel during the daytime hours would strengthen both emergency medical services and fire response services.

As the mapping in Chapter III indicates (see Map 6), a Fire Department ambulance responding from the fire station, assuming an average speed of 30 miles per hour, could reach 60 percent of the Town within four minutes travel time and 97.2 percent of the Town within six minutes. This gives the Fire Department significant capability to provide effective emergency medical services.

In summary, it is the consultants' opinion that the Town of West Boylston should continue to have the Fire Department provide emergency medical services. There are several primary reasons for this recommendation. First, with several additional personnel, the Department could provide effective emergency

medical services to the Town within excellent time parameters, and at the same time significantly improve its initial fire attack and rescue capability. Revenues from billing (assuming the current and anticipated transport volume) would not be sufficient to enable a private provider to design a response system meeting the response times possible for the Town's Fire Department without a substantial contribution from the Town. Moreover, the Town should continue to draw on the call resources which have served it well, and not develop a system which diminishes the need for call personnel.

***RECOMMENDATION V-6:** The West Boylston Fire Department should continue to provide emergency medical services.*

It has been suggested that the Town should participate in non-emergency ambulance transports, as a possible means of generating additional revenue. The consultants believe that the Department should continue to focus on achieving emergency response goals; providing non-emergency transports would detract from the Department's primary mission of providing emergency services.

VI. RECRUITMENT AND RETENTION OF CALL PERSONNEL

The success of a combination fire department can be measured by its ability to attract and maintain a strong membership of call personnel. The Town currently has a well-qualified and trained group of emergency responders. As we have indicated in this report, the health of the emergency response system in West Boylston requires an increase in the full-time workforce for firefighters/EMS personnel and a highly skilled group of call personnel.

It is incumbent on the Town and the Fire Chief to recognize the important and significant contribution made by call personnel. The Town Administrator, when negotiating performance objectives with the Fire Chief, should ensure that the Chief has goals and objectives concerned with recruiting and retaining call members of the Department.

RECOMMENDATION VI-1: The Fire Chief, working with call personnel, should develop an action plan to increase the number of call personnel. The Department should have a small budget for recruitment.

The continued success of the Town's combination fire and EMS system will be, in part, a function of the ability of the Department to maintain and increase the number of call personnel. The Fire Chief should make the development of a recruitment and retention plan a priority. The Town could support efforts through a Town-wide outreach effort and the Department could target specific segments of the population. Additionally, some incentives for call personnel should be considered.

Part of the effort should be directed at identifying persons who would be valuable to the Department as call personnel and who may be available during the weekends and evenings, or even Monday through Friday, 7:00 a.m. to 7:00 p.m. This plan should be developed within the next six months and should include:

A specific analysis of call staffing needs. This should include the type of skills needed and the number of personnel required. It should be noted that some volunteers may be interested in serving as firefighters, others as EMTs, others as firefighters/EMTs.

- Identification of possible recruitment actions which can be taken in the short-term and long-term.
- A small budget for recruitment efforts should be provided. The Town should be prepared to invest financial resources in a recruitment and retention effort. An initial budget of approximately \$2,000 should be established to begin the program. Detailed examples of recruiting programs are available from the National Volunteer Fire Council and the National Fire Administration.

A recruitment program should be implemented with the following characteristics:

- committee of several call personnel and the Fire Chief
- recruiting banners, posters, signs
- a telephone number for interested persons to call
- individual commitment of current call personnel, especially officers, to follow up on inquiries from potential call personnel
- document describing the Department, call personnel responsibilities, obligations, duties, and benefits
- orientation program for recruits and their families
- department mentor assigned to each recruit

Retention studies indicate that the following factors help to retain call personnel and volunteers:

- fair, equitable, and task-oriented leadership
- a diverse membership
- reasonable expectations of member time and effort
- safe and healthy conditions
- pride in the department, vehicles, operating procedures and response record

- interesting and relevant training
- enjoyable activities for members' families
- a range of social activities, scheduled often and involving little or no work by members
- minimum of tasks involving fund raising, construction, and other "non-fire" related work
- station facilities (computers, tools, etc.) for member use
- a strong feeling of "family," respect, and noticeable mutual support
- minimum of sub-groups, gossip, hurtful behavior, and infighting
- frequent department and community recognition
- favorable media coverage
- a full range of tangible benefits

***RECOMMENDATION VI-2:** Consider the development of an incentive package of benefits to encourage an increase in the number of members and the retention of personnel.*

An effective recruitment and retention program should offer a range of benefits to meet the needs of a diverse base of call personnel. Each call member may be motivated by different concerns; thus, a retention and recruitment effort which develops a range of benefits is often the most appropriate mechanism to put in place. Under a menu benefit structure, each person meeting appropriate activity and membership standards would be entitled to a certain dollar level of benefits. Each person would select from an approved list of benefits.

In addition to a payment for response, other benefits could be selected from an approved "menu" list, with a stated total amount of dollars assigned to each member who has met the stated requirements the preceding year:

- allowances for gasoline, car mileage, etc.
- health club membership
- child day care
- education/training costs
- non-fire related education costs
- computer/Internet fees
- uniform allowance

- professional magazine subscriptions, text books
- professional development
- field trips
- instructor training
- exchange visits with other departments

While an actual list is best developed through a survey of call personnel, legal consultation is necessary in establishing any incentive program, to ensure compliance with tax laws.

VII. SUPPORT SERVICES, FACILITIES AND EQUIPMENT

FIRE STATION

The Department has one station which it shares with the Police Department and the Town's emergency communication and dispatch center. Computer mapping indicates that the Town is effectively served with one station in its current location. The facility is well located for fire and ambulance response, but is not large enough to meet the needs of the Department.

Various expansion plans are being considered; the plan to move the communications center and provide additional space for the Fire Department appears suitable. However, additional planning is necessary and the consultants believe that there are several issues to be considered relative to the building. It is recommended that the Town consider:

- Constructing a one or, preferably, two-story rear addition to the north half of the apparatus area of the station, eliminating the “drive through.”
- Extending the addition in the rear of the building as far as the set-back line and using this space for on-duty crew living quarters, bunks, kitchen, locker room, etc.

RECOMMENDATION VII-1: Plan for the reconstruction of the fire station and provide additional space for duty crew living quarters.

The Department should also position apparatus as follows (when facing the station):

- The two ambulances in the right bay (#1)
- The quint in bay #2
- An engine in front and the heavy rescue behind it in bay #3
- An engine in front and the tanker behind it in bay #4

RECOMMENDATION VII-2: Reposition apparatus.

APPARATUS AND EQUIPMENT

The existing types of apparatus are appropriate for the needs of the Town. The apparatus inventory and the Department's anticipated equipment life is shown in the exhibit below.

**EXHIBIT VII-1
APPARATUS AND PROJECTED LIFE (ESTABLISHED BY THE FIRE DEPARTMENT)**

VEHICLE	ANTICIPATED EQUIPMENT LIFE (YEARS) *	PROJECTED REPLACEMENT
Ambulance 1 (2002 Ford)	10	2012
Ambulance 2 (1995 Ford)	10	2005
Engine 1 (1982 Hahn)	25	2007
Engine 3 (1991 KME)	25	2016
Engine 5 (1985 Ford)	25	2010
Ladder 2 (1998 Smeal Quint)	25	2023
Rescue 1 (1995 Ranger)	25	2020
Forestry 1 (1975 General)	15	2009
Car 1 (1997 Ford Expedition)	8	2005
Car 2 (1981 Dodge pick-up)	15	immediate
Boat & Trailer (1973)	30	2003
Ice Rescue Sled (1994)	20	2014

* Assigned by the Fire Department.

The anticipated equipment life cycle for pumpers and ambulances appears too long. For example, the 1982 pumper (in poor condition, at best) should be replaced before 2007. Generally, a 25-year life expectancy for a pumper, and a ten-year life expectancy for an active ambulance is optimistic. Our experience has shown that a 20-year life expectancy for a pumper and a seven-year life expectancy for an ambulance are more reasonable.

RECOMMENDATION VII-3: Revise the apparatus replacement plan.

The vehicle replacement plan should be reexamined and suitable reserve funds should be accumulated. However, consideration may be given to a lease-

purchase plan, if a large enough reserve fund is not available, or if bonding is not desirable

The equipment on the Department's emergency response units is appropriate. However, the Department should consider an adjustment in the equipment on the heavy rescue truck. Additional ISO credit could be achieved if the rescue truck is equipped as a "reserve ladder service truck." This credit can be granted even though the rescue does not have an aerial ladder. To plan for the additional needed equipment, the Department should review ISO and NFPA equipment lists for aerial ladders to identify the specific equipment required.

It should be noted that equipping the rescue will provide more flexibility at fires when the aerial ladder is not dispatched.

RECOMMENDATION VII-4: Review the ISO and NFPA equipment lists for aerial ladders and equip the heavy rescue as appropriate.

VIII. PLAN OF IMPLEMENTATION

This report provides several major recommendations which represent a plan for the future development of the fire, rescue, and emergency medical services in the Town of West Boylston. Many of the recommendations relate to staffing, development of performance standards and automatic mutual aid procedures.

PLAN OF ACTION

The Town of West Boylston should adopt a plan of action to implement the major recommendations in the next several years. The following guidelines identify general phases of action and major tasks.

It is important to note that prior to any action, Town officials should review the recommendations in the study and discuss their implementation. Ideally, these discussions should have some coverage in the media, to inform the public of the concerns and issues involved in the provision of emergency services. Town officials may wish to circulate copies of the report's *Executive Summary* to members of the department and ensure the availability of information.

ORGANIZATION AND STAFFING PLAN

There are a number of initial steps which should be taken before the implementation of recommendations. It is important to develop an organizational framework to ensure the implementation of appropriate recommendations.

Some actions which should be undertaken immediately include:

- *Abolish the Board of Fire Engineers* - It is important that the chain of command and the leadership structure of the Fire Department be addressed as soon as possible. Long-term planning issues, such as developing a systematic recruitment and retention effort, can only be accomplished if a sound leadership model is in place.

- *Appoint a Fire Chief upon abolition of the Board of Fire Engineers* - It is difficult to make progress unless the administrative leader of the Fire Department is in place to carry out recommendations.

- *Agree on a Staffing Plan* - The Board of Selectmen and the Town Administrator need to agree on the long-term staffing plan for the Department. It is important that the Town begin the staffing process as soon as possible, since it is important that the Fire Chief has sufficient time to manage and plan for the Department's future. One additional emergency responder assigned to work weekdays, along with other personnel, would provide some relief for the Fire Chief.

OPERATIONAL PRACTICES

There are several operational changes suggested in this report, but two of the most critical operational support matters which should be addressed as soon as possible are the development of automatic mutual aid and the implementation of an emergency dispatch system.

- *Start the Automatic Mutual Aid System* - The Fire Chief should immediately begin the process of working with surrounding towns to develop an automatic mutual aid system for target hazards. This requires identification of hazards, development of shared response and dispatch protocols, written agreements, joint training and planning.

- *Emergency Medical Dispatching* - The Fire Chief, Police Chief and Town Administrator should begin the process of implementing an emergency medical dispatch system. A sound EMD system will allow the Fire Department, as well as the Police Department, to anticipate the type of response that is required for a specific incident. This will allow the Fire Department to vary response protocols for life-threatening and non-life threatening incidents.

LONG-TERM PLANNING CONCERNS

There are several long-term planning concerns that the Town needs to address. Several matters are concerned with equipment and facilities and one major concern should be with the viability of more cooperation (in addition to automatic mutual aid) with surrounding communities.

ROLE OF THE FIRE CHIEF

The role of the Fire Chief should be altered to reflect the planning and management needs of the Town and the Fire Department. The role can only be changed if there are some additional resources which provide time for the Fire Chief to perform planning-related activities. Some of the major responsibilities of the Chief which need to be accomplished are:

- Create the automatic mutual aid system.
- Develop a recruitment and retention program for call personnel.
- Develop a long-term strategic plan and work with surrounding communities to develop a system for sharing resources.
- Monitor systematically the nature of emergency response, including the timeliness and quality of response.

PRIORITY OF RECOMMENDATIONS

While we consider all the recommendations contained in this report to be important, this section is intended to place the recommendations into a framework which provides a sequential methodology of implementation. The recommendations contained in this report have been categorized as follows:

Priority 1: Recommendations which should be implemented without delay since they may bear directly on safety of personnel and efficient operation of fire, rescue or emergency medical services in the Town of West Boylston.

Priority 2: Recommendations which are important to safety and the efficient provision of fire, rescue or emergency medical services in West Boylston and which should be implemented as soon as reasonable and practical.

Priority 3: Recommendations which can contribute to the continued improvement of fire, rescue or emergency medical services in West Boylston and which should be implemented as soon as resources and operating conditions permit.

EXHIBIT VIII-1
PRIORITY OF RECOMMENDATIONS

RECOMMENDATION	COMMENT	PRIORITY
III-1 The Town of West Boylston should engage in discussions with neighboring towns (Boylston, Clinton and Sterling) to develop a plan which allows the long-term sharing of resources. The discussions among towns should be at both the department head level (fire chief) and at the elected and policy level (administrators and boards of selectmen).	Long-term health of the emergency response system requires these discussions.	2/3
III-2 The Department should develop an automatic mutual aid program for target hazards and specific emergency calls.	This should be a high priority activity of the Fire Chief.	1
III-3 The West Boylston Fire Department should develop and formally adopt fire response performance standards to allow the Board of Selectmen and the Town Administrator to evaluate services.	The Fire Chief, in conjunction with Department personnel, should develop these standards.	2
III-4 The Fire Chief should monitor the achievement of performance standards.	This is a valuable management tool.	2
IV-1 The Town should restructure the governance of the Fire Department and abolish the Board of Fire Engineers. The Fire Chief should be appointed by the Town Administrator in accordance with the Town's Special Act Charter.	Implementation will clarify policy development and future planning.	1
IV-2 The Town should adopt a Fire Department management structure that places the Fire Chief clearly in command of the Department with the ability to manage and be held accountable for results.		1
IV-3 The Fire Chief should be employed on a contractual basis.		1
IV-4 The role of the West Boylston Fire Chief should be to manage, plan for and administer the Department.	The Fire Chief needs more time to manage the Department.	1
IV-5 The Fire Chief should have resources available to allow for the employment of administrative support/office personnel.	Support services are necessary for effective administration.	1

RECOMMENDATION	COMMENT	PRIORITY
IV-6 The Board of Selectmen should clearly articulate a policy of supporting and enhancing the combination fire department model now operating.	This one of the most important steps which the Selectmen can take.	1
IV-7 Develop a three to five-year plan to increase the number of full-time firefighters/emergency medical technicians.	We have suggested that one new FF/EMT-P be added each year.	1
IV-8 Increase staffing in two phases. Phase I should focus on EMS coverage for Monday through Friday (7:00 a.m. to 7:00 p.m.) and Phase II should focus on Monday through Sunday (7:00 a.m. to 7:00 p.m.).		1
IV-9 The Fire Department should adopt a new comprehensive fire prevention and inspection service model.	Part-time personnel or regional strategies are appropriate to address this need.	2
V-1 The Fire Department should employ firefighters/paramedics to respond during the hours of 7:00 a.m. to 7:00 p.m.		1
V-2 The Town should explore the development of a regional emergency medical response system.	This is a long-term objective to consider.	3
V-3 The Fire Department should consider the expansion of its "on-duty" crew system to include a bunk in program for evenings.	Should be implemented as station rehabilitation occurs.	3
V-4 All dispatchers should be trained in emergency medical dispatch procedures and the EMD system should be implemented.	This will improve response to life-threatening incidents.	1/2
V-5 The Police Department should continue to respond to emergency medical incidents.	Integration of emergency response personnel is a sound policy.	1
V-6 The West Boylston Fire Department should continue to provide emergency medical services.		1

RECOMMENDATION	COMMENT	PRIORITY
VI-1 The Fire Chief, working with call personnel, should develop an action plan to increase the number of call personnel. The Department should have a small budget for recruitment.	This should be a priority of the Fire Chief.	1
VI-2 Consider the development of an incentive package of benefits to encourage an increase in the number of members and the retention of personnel.	This needs to be carefully considered.	2/3
VII-1 Plan for the reconstruction of the Fire station and provide additional space for duty crew living quarters.		1/2
VII-2 Reposition apparatus.		2
VII-3 Revise the apparatus replacement plan.	This has cost implications, but requires consideration.	2
VII-4 Review the ISO and NFPA equipment lists for aerial ladders and equip the heavy rescue as appropriate.		2