

EAST GREENWICH, RHODE ISLAND

FIRE DEPARTMENT MANAGEMENT STUDY

DRAFT REPORT

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MMA CONSULTING GROUP, INC.
41 WEST STREET
BOSTON, MASSACHUSETTS 02111

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I. EXECUTIVE SUMMARY

This *Fire Department Management Study* was conducted by MMA Consulting Group, Inc. The study examines the management, operations, organization, service delivery, and planning capability of the East Greenwich Fire Department. This report is designed to develop a plan to improve the organization, operations, and management of the Department. The primary focus of this report is the future of service delivery.

Many of the recommendations in this report relate to the development of a stronger administrative and organizational structure for the Department. Many of the weaknesses identified by the consultants are not the product of one person or group of persons, but developed over a long period of time as a result of the relatively rapid expansion in the size of the East Greenwich Fire Department. The Department's field staffing grew from 20 firefighters in 2001 to 36 personnel in 2006, an 80 percent increase. The Department's administrative infrastructure has not developed to correspond to the growth of the Fire Department. Developing the administrative capability of the Department and establishing a more defined system of accountability for Department operations should be a priority of the Board of Commissioners and the Fire Chief. Some recommendations may be controversial, but all recommendations are concerned with building the management and planning capability of the Fire Department. Some of the major findings are:

- The increase in the number of personnel in the Fire Department requires the Board of Commissioners and the Fire Chief to implement organization and command changes within the Fire Department.
- The current organization structure could result in the development of four independent shifts, or groups, of personnel rather than one unified Department.
- There is a need to strengthen the management functions of the Fire Department and develop systems to ensure that company personnel are accountable for activities within the Fire Department.
- There is a need to improve internal communication.

- The Department has begun the development of a systematic professional development strategy which should be expanded to include supervisory and management capacity building.
- The comprehensive fire prevention and inspection program requires additional support.
- The Department's use of uniformed firefighters as dispatchers needs to be reconsidered.
- The emergency medical system should be strengthened by developing an improved quality assurance program.
- The Department does not have a comprehensive set of standard operating guidelines or procedures (SOGs or SOPs).
- The Department lacks a systematic process to develop and use management information to evaluate administrative and operational activities.

Recommendations in this report cover a wide range of topics and relate to organization, management, human resources, deployment, emergency communications, and emergency medical services. Some of the primary recommendations resulting from this analysis are summarized below.

FIRE DEPARTMENT REORGANIZATION RECOMMENDATIONS

- The Fire Department should be reorganized. Two organizational models are viable.
 - ▶ *Alternative #1* - Establish two divisions within the Fire Department: a Division of Operations and a Division of Administration and Support Services. Each division should be commanded by a Deputy Fire Chief. The Deputy Chief for the Division of Operations should command all field personnel (Groups A, B, C, and D). The Deputy Chief for the Division of Administration and Support Services should be responsible for finance and administration, the office of the Fire Marshal, training, communications, and quality assurance. This is the preferred alternative.

- ▶ *Alternative #2* – Redesign the function of the Deputy Fire Chief. The Deputy Chief should command fire department emergency operations. Establish a position of Fire Captain to oversee communications, training, and quality assurance. The Fire Marshal should report directly to the Fire Chief, and the Chief should retain direct responsibility for finance and administration.
- The Fire Department should strengthen its administrative capability before employing additional personnel.

FIRE DEPARTMENT MANAGEMENT RECOMMENDATIONS

- The Board of Commissioners should negotiate specific goals and objectives with the Fire Chief. Some important goals and objectives include:
 - ▶ Develop a process to revise Standard Operating Guidelines (SOGS) or Standard Operating Procedures (SOPS).
 - ▶ Review incident command procedures and ensure that all operations personnel are aware of their roles. Appropriate training should be accomplished within the next 12 months.
 - ▶ Conduct a thorough safety review of operations and support functions. This should be accomplished within the next 12 months.
- The Department should establish a series of standing committees for Standard Operating Procedures, Rules and Regulations, Safety, Training, Special Operations, Equipment/Apparatus, EMS, and Incident Management.
- The Department should develop management information reports and collect important operational and administrative data to assist in decision-making.
- The Fire District should transfer tax billing and collection to the Town of East Greenwich.

- The role of the Tax Clerk should eventually be altered to assist the Fire Marshal in scheduling, coordinating work, and maintaining records.
- The Fire Chief should work with surrounding jurisdictions to develop an automatic aid system for serious incidents.

HUMAN RESOURCES MANAGEMENT RECOMMENDATIONS

The Fire Department should develop a stronger system of human resources management.

- The Fire Department should establish specific training and education requirements for each supervisory and management rank in the Department.
- The Fire Department should improve the promotional process for the selection of company officers.
- The Fire Department should develop a more aggressive outreach program for recruitment of potential candidates for the position of Firefighter/EMT-C.
- The Fire Chief should develop a performance appraisal process for evaluating the performance of officers.

EMERGENCY MEDICAL SERVICES RECOMMENDATIONS

- The District should implement an emergency medical dispatch system.
- The District should immediately develop a plan to have all dispatchers trained and certified in Emergency Medical Dispatch (EMD) procedures and re-certified according to national standards.
- The District should develop a quality assurance program to measure its performance and take corrective actions, if necessary.
- The fire companies should have an expanded role in fire inspections.
- Fire company officers should be certified fire inspectors.
- Fire company officers should have a larger role in training activities.

- Fire company officers should be encouraged to chair internal standing and *ad hoc* committees.

EMERGENCY COMMUNICATIONS RECOMMENDATIONS

- The Fire District should employ civilian dispatchers and assign firefighters to emergency response duties.
- The Fire District should explore the feasibility of integrating its emergency communications functions with the Town of East Greenwich.
- The consolidated emergency communication center should implement an emergency medical dispatch system.
- The Fire District should gradually redesign the fire alarm (master and street box) system and introduce new technology. The alarm system should be consolidated within the consolidated emergency communication center.

RECOMMENDATIONS RELATING TO LONG-TERM STRATEGIC OR REGIONAL INITIATIVES

- The Fire District should review its long-term plan for fire station location and consider developing a two-station response model, rather than a three-station response model.
- The East Greenwich Fire Department and the East Greenwich Police Department should work with other public safety agencies to develop a regional emergency communication system.
- The Fire Chief should work with fire departments in the area to establish an automatic aid system, a regional a Rapid Intervention Team (RIT), and a regional Incident Management Team (IMT).

SUMMARY OF STAFFING AND ORGANIZATIONAL RECOMMENDATIONS

The following exhibits illustrate the impact of the major recommendations in this report. Exhibit I-1 displays operational staffing and Exhibits I-2 and I-3 display the proposed organizational alternatives in graphic form.

**EXHIBIT I-1
CURRENT AND PROPOSED STAFFING**

POSITION TITLE	CURRENT POSITIONS	PROPOSED ORGANIZATION ALTERNATIVE 1	PROPOSED ORGANIZATION ALTERNATIVE 2
Fire Chief	1	1	1
Deputy Chief	1	2	1
Fire Marshal	1	1	1
Captain	2	2	3
Lieutenant	10	10	10
Firefighter/EMT-C	24	24	24
Director of Communications	1	0	0
Total	40	40	40

**EXHIBIT I-2
EAST GREENWICH FIRE DISTRICT
PROPOSED ORGANIZATION (ALTERNATIVE #1)**

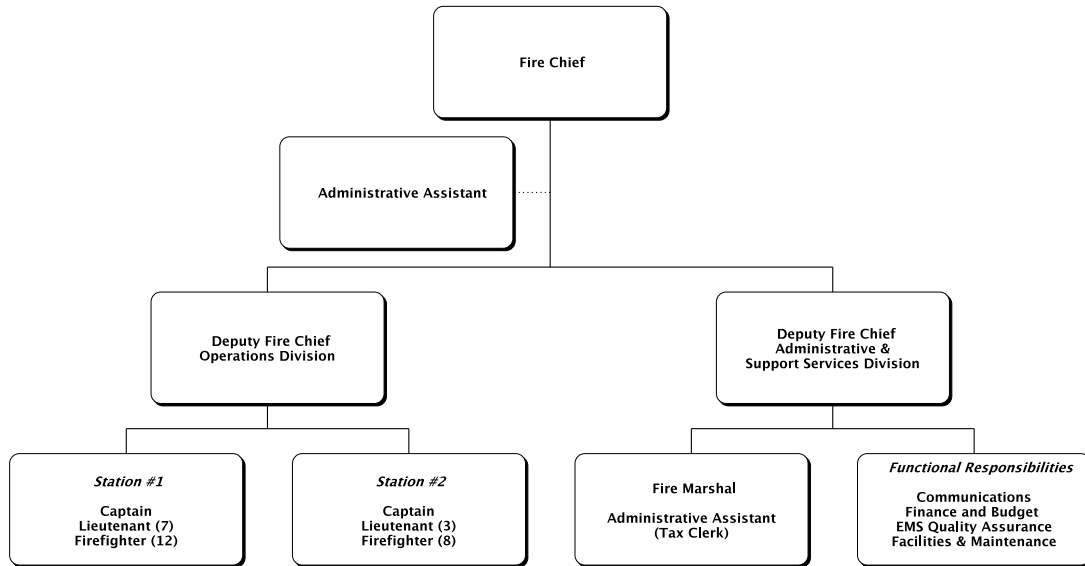
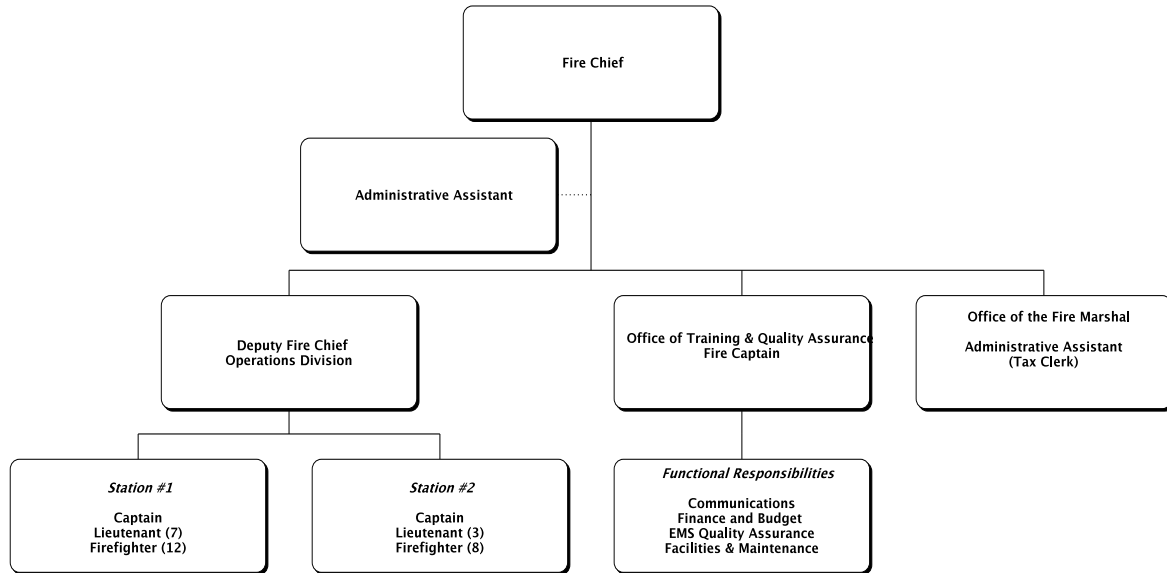


EXHIBIT I-3
EAST GREENWICH FIRE DISTRICT
PROPOSED ORGANIZATION (ALTERNATIVE #2)



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

Priority 1: Recommendations which directly affect the safety of personnel or the public, or establish the framework for other recommendations. These recommendations should be addressed immediately.

Priority 2: Recommendations which should be implemented without delay, since they may bear directly on safety, productivity, cost and efficient operation of fire, rescue or emergency medical services in East Greenwich.

Priority 3: Recommendations which are important to the efficient provision of fire, rescue or emergency medical services in East Greenwich. These recommendations should be implemented as soon as reasonable and practical.

Priority 4: Recommendations which can contribute to the continued improvement of fire, rescue or emergency medical services in East Greenwich. These recommendations should be implemented as soon as resources and operating conditions permit.

EXHIBIT I-4
LIST OF RECOMMENDATIONS

	RECOMMENDATION	PRIORITY
III-1	The Fire Department should be reorganized.	1
III-2 (ALTERNATIVE #1)	The Fire Department should be composed of two operating divisions: an Operations Division and an Administration and Support Services Division.	1
III-3 (ALTERNATIVE #1)	The Operations Division and the Administration and Support Services Division should be commanded by Deputy Fire Chiefs.	1
III-4 (ALTERNATIVE #2)	The Fire Department should be composed of three operating units: an Operations Division, a training and quality assurance unit, and the Office of the Fire Marshal.	2
III-5 (ALTERNATIVE #2)	The Operations Division should be commanded by a Deputy Chief, the training and quality assurance units should be directed by a Fire Captain and the Office of the Fire Marshal should be directed by the Fire Marshal. Each of these unit commanders should report to the Fire Chief.	2
III-6	The Board of Fire Commissioners should review the proposed organization models and determine the approach to follow.	1
IV-1	The Board of Fire Commissioners should negotiate performance objectives with the Fire Chief.	1
IV-2	The Fire Chief should immediately appoint a committee composed of all ranks of the Department, charged with developing new Standard Operating Guidelines (SOGs) and Standard Operating Procedures (SOPs).	2
IV-3	The SOGs and SOPs should be developed, circulated, revised, and finally promulgated within the next 12 to 15 months.	2
IV-4	The Fire Chief should schedule periodic staff meetings with company officers.	2
IV-5	The Fire Chief should schedule and preside over an annual meeting of all officers and an annual meeting for all members of the Department.	3
IV-6	The Fire Chief should develop a committee structure within the Fire Department.	3
IV-7	The East Greenwich Fire District should work with surrounding fire and rescue agencies to maximize available resources.	1
IV-8	The Fire Chief, with the assistance of staff, should develop regular management information reports. The reports should be circulated to the Commissioners and throughout the Department.	4
IV-9	The Fire District should develop education and training standards for officers.	3
IV-10	The Fire Department should develop a performance appraisal process for fire officers.	3
IV-11	The Fire Department should include Assessment Centers as part of its promotional processes.	4
IV-12	The Fire Department should develop a more aggressive outreach program for recruitment of potential candidates for the position of firefighter.	2
IV-13	The Fire District should propose to the Town that it assume responsibility for selected administrative tasks.	1

V-1	The Fire Department should consider additional fire station relocation strategies.	3/4
V-2	The Fire Department should develop a system of automatic aid with surrounding fire and rescue departments.	1
VI-1	The management of the Fire Department should systematically monitor the staffing factor of the Fire Department, as one measure of productivity and accountability.	4
VI-2	Policy leaders of the District should adopt a Fire Department staffing policy which encourages continuous improvement, in a cost effective manner, while ensuring the safety of personnel.	1
VI-3	Establish a methodology for implementing automatic mutual aid between the East Greenwich Fire Department and other fire departments.	1
VI-4	Establish a Rapid Intervention Team (RIT) program by working with regional fire departments.	1
VI-5	Ensure that the Department's recall system is operational.	1
VI-6	Establish a duty chief rotation system so that a chief officer is available to respond to an emergency at all times of the day.	1/2
VI-7	The Fire Department should work to develop a regional Incident Management Team (IMT).	1
VII-1 (ALTERNATIVE #1)	The Fire District should engage in a discussion with the Town of East Greenwich in an effort to integrate District dispatching into the Town's dispatch system.	1
VII-2 (ALTERNATIVE #2)	The Fire Department should employ civilian dispatchers and reassign firefighters to fire and rescue operations.	3
VII-3	The District should implement an emergency medical dispatch system.	3
VII-4	The District should establish a quality assurance review process for EMS service delivery and the EMS dispatch process.	2
VII-5	The quality assurance committee should meet quarterly to review a random selection of EMS dispatches.	2
VII-6	The District should require that at least one company officer per shift be trained and certified to the Fire Inspector I level.	2
VII-7	The District should have access to a Fire Protection Engineer to assist in the review of technical or unusual development plans.	2
VII-8	The District should develop a comprehensive public education program which focuses on the community at large.	4
VIII-1	The District should require all company officers be trained to the Fire Instructor I level, with the capability of instructing personnel from a defined lesson plan.	2
VIII-2	The Department should develop and implement a basic skill refresher training program, followed by NIMS training.	1
VIII-3	The Deputy Chief should develop a program to evaluate training provided to personnel. Individual and company training levels can be measured at company drills.	2
VIII-4	The Department should provide an opportunity for Fire Officer 1 and 2 training courses.	3
VIII-5	The Fire Department should establish a safety committee.	1

VIII-6	The Fire Chief should direct personnel to conduct a systematic review of compliance with NFPA Standard 1500.	1
VIII-7	The Fire Chief should order the development of specific maintenance records.	2
VIII-8	As part of the recommended safety review, the Fire Chief should ensure that appropriate documentation systems are developed.	2
IX-1	The Fire Chief should develop a systematic process to meet with members of the Fire Department to discuss problems and concerns.	3
IX-2	The Board of Fire Commissioners, the Fire Chief, and the Deputy Fire Chief should review the survey and determine if specific actions are necessary.	1

REPORT ORGANIZATION

The report is organized into several chapters. This *Executive Summary* presents the major findings and recommendations. Chapter II, *Introduction*, provides a description of the project's scope of services and a brief description of the East Greenwich Fire Department. Chapter III, *Organization of the Fire Department*, describes the current organization and recommends a new organization for the Fire Department. Chapter IV, *Fire Department Management and Human Resources*, provides a range of recommendations relating to internal communication, management, and human resources. Chapter V, *Fire Station Location and Response Evaluation*, presents computer mapping, analyzes the response capability of the Town's fire and rescue services, and recommends a new station configuration. Chapter VI, *Staffing and Standards*, focuses on Department staffing and links station location with deployment. Chapter VII, *Emergency Communications, Emergency Medical Services, and Prevention*, reviews the current deployment and response system and proposes a new response system. Chapter VIII, *Training and Safety*, discusses training and related matters. Chapter IX, *Fire Department Attitude Survey*, presents the results of a survey of firefighters. *Chapter X, Plan of Implementation*, lists each recommendation with an assigned priority and presents an approach to implementing recommendations. Two appendices are included in this report.

II. INTRODUCTION

SCOPE OF THE STUDY

This *Fire Department Management Study* was conducted by MMA Consulting Group, Inc., in accordance with the Fire District's *Request for Proposals*. The study required consultants to evaluate the use of resources, identify strengths and weaknesses within the Department, and develop recommendations and implementation strategies for those recommendations. A number of specific areas were examined, including the current deployment of personnel and apparatus, the level of Department services in relation to state and national standards, management, organizational structure, staffing, scheduling, response capability, productivity of units, utilization of the Department's resources, equipment and technology, and training.

To conduct this assignment, several consultants conducted field work and site investigation. Two additional consultants conducted computer mapping, analyzed data, and gathered comparable information. Consultants visited fire stations, interviewed command and supervisory personnel, examined equipment and discussed operational and administrative procedures. Consultants interviewed selected District officials, the Emergency Medical Services Medical Director, and union officials. Employees were also provided with a written survey which was returned directly to our office.

THE EAST GREENWICH FIRE DEPARTMENT

The East Greenwich Fire Department provides a full array of fire, emergency medical, inspection and other rescue services. At the time of this study, the Department employed a Chief of Department, one Deputy Fire Chief, one Fire Marshal, a Director of Communications, two Fire Captains, 10 Fire Lieutenants and 24 Firefighters. The Department employs an Administrative Assistant and a Tax Clerk. The following exhibit displays the current number of uniformed and civilian positions in the Fire Department.

EXHIBIT II-1
PERSONNEL EMPLOYED BY THE EAST GREENWICH FIRE DISTRICT

POSITION TITLE	CURRENT
Fire Chief	1
Deputy Fire Chief	1
Fire Marshal	1
Director of Communications	1
Captain	2
Lieutenant	10
Firefighter	24
Administrative Assistant	1
Tax Clerk	1
Total	42

The Department deploys two engines, one ladder, and two ambulances. Emergency response services are provided from two fire stations:

- ▶ Headquarters (Main Street)
- ▶ Station #2 (Frenchtown Road)

It is important to note that until 2002, the East Greenwich Fire Department had an operations or line force of 20 firefighters. The Department deployed up to five personnel on each shift, three personnel at headquarters and two personnel at Station #2. At that time, there were five personnel assigned to each group; currently, there are nine personnel assigned to each group, an 80 percent increase in personnel assigned to fire and rescue operations.

EXHIBIT II-2
FIRE DEPARTMENT OPERATIONS STAFFING HISTORY

	2001	2002 (SPRING)	2002 (FALL)	2006 (SPRING)
Personnel per group	5	6	8	9
Total operations personnel	20	24	32	36

The Fire Department responds to approximately 2,100 calls for service annually. On the following pages, several exhibits are presented. Exhibit II-2, *Calls for Service*, shows the total number of calls for service for 10 years. The average number of calls for service was 2,038 during the period reviewed.

Exhibit II-3 shows responses made from the each of the two fire stations during the last 10 years. Exhibit II-4 shows responses made to Potowomut/Bay Ridge.

EXHIBIT II-3
CALLS FOR SERVICE: 1996 THROUGH 2005

YEAR	TOTAL CALLS FOR SERVICE	RESPONSES FROM STATION #1	RESPONSES FROM STATION #2
1996	1,914	1,339	575
1997	1,921	1,303	618
1998	1,922	1,408	670
1999	2,004	1,460	706
2000	1,806	1,479	836
2001	2,254	1,617	1,012
2002	2,072	1,333	739
2003	2,106	1,476	630
2004	2,178	1,389	789
2005	2,508	1,539	969
Median	2,038	1,434	723
Mean (Average)	2,069	1,434	754

EXHIBIT II-4
CALLS FOR SERVICE BY CATEGORY
& CALLS TO POTOWOMUT/BAY RIDGE

YEAR	FIRE	RESCUE	SERVICE	TOTAL	POTOWOMUT/BAY RIDGE CALLS
1996	478	1,337	99	1,914	244
1997	521	1,306	94	1,921	210
1998	471	1,355	96	1,922	148
1999	498	1,443	63	2,004	163
2000	522	1,209	75	1,806	195
2001	524	1,580	150	2,254	218
2002	554	1,478	40	2,072	237
2003	567	1,451	88	2,106	193
2004	521	1,571	86	2,178	219
2005	743	1,600	165	2,508	214
Average	540	1,433	96	2,069	204
Median	522	1,447	91	2,038	212

The emergency medical service calls are a subset of rescue calls, representing 90 to 98 percent of all rescue calls for service. EMS calls make up approximately 60 to 70 percent of all calls for service. The following two exhibits display calls for EMS for the last four years. This first exhibit shows the total calls for EMS and the second exhibit shows EMS calls on a monthly basis.

EXHIBIT II-5
EMERGENCY MEDICAL CALLS FOR SERVICE 2002 THROUGH 2005

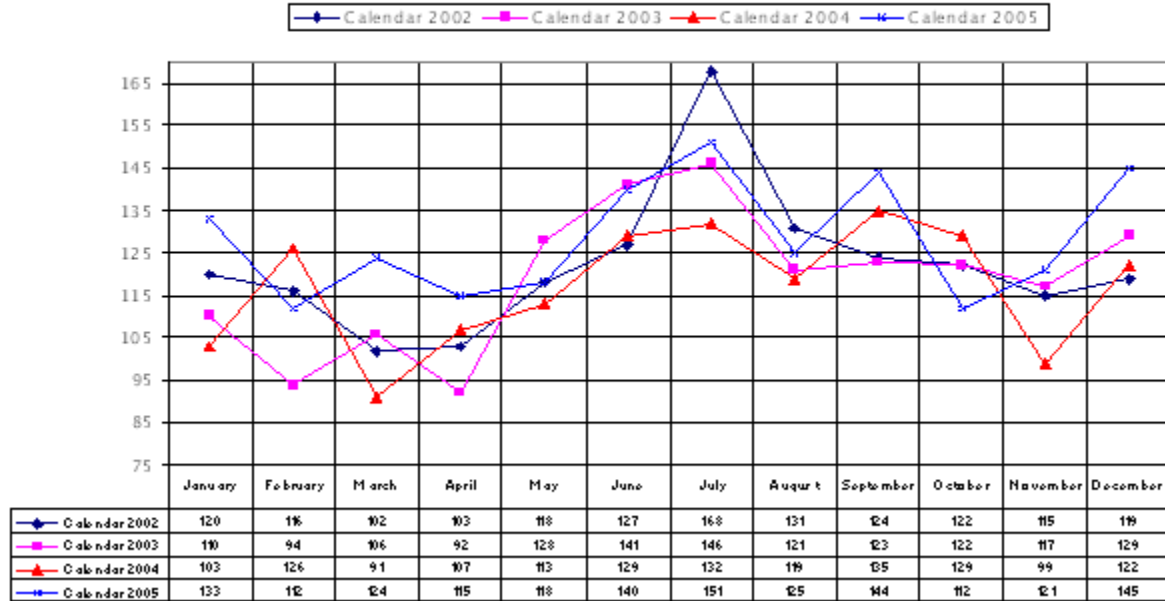
YEAR	EMS CALLS FOR SERVICE
2002	1,465
2003	1,429
2004	1,405
2005	1,540

EXHIBIT II-6
EMERGENCY MEDICAL CALLS FOR SERVICE 2002 THROUGH 2005
MONTHLY SERVICE DEMAND

MONTH	CALENDAR 2002	CALENDAR 2003	CALENDAR 2004	CALENDAR 2005
January	120	110	103	133
February	116	94	126	112
March	102	106	91	124
April	103	92	107	115
May	118	128	113	118
June	127	141	129	140
July	168	146	132	151
August	131	121	119	125
September	124	123	135	144
October	122	122	129	112
November	115	117	99	121
December	119	129	122	145
Total	1,465	1,429	1,405	1,540

The number of emergency medical calls for service displayed in the exhibit above is graphically displayed in Exhibit II-7. The exhibit shows the peak period demands for service.

**EXHIBIT II-7
EMS CALLS FOR SERVICE MONTHLY
2002 THROUGH 2005**



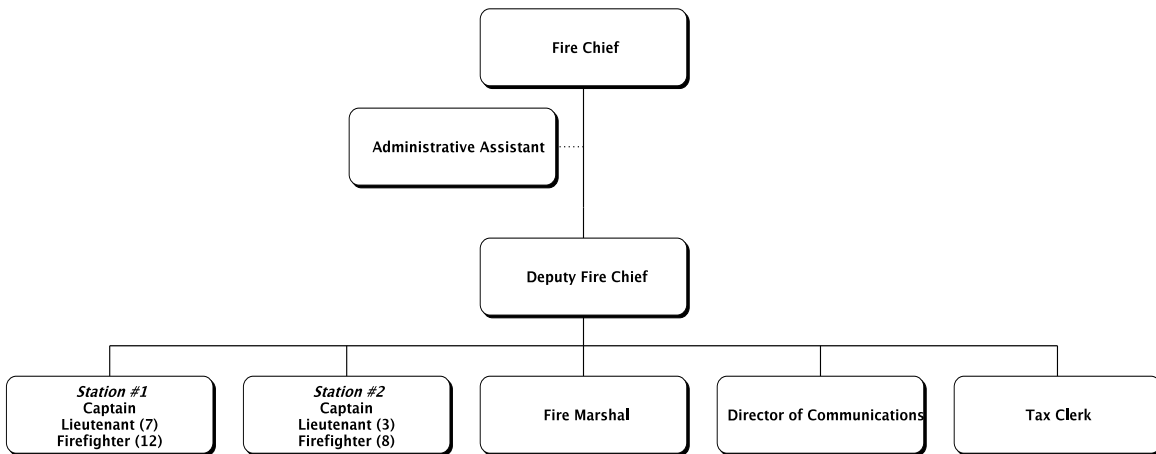
III. ORGANIZATION OF THE FIRE DEPARTMENT

CURRENT ORGANIZATION OF THE EAST GREENWICH FIRE DEPARTMENT

The current organization and staffing of the Fire Department provides for a Chief of Department, one Deputy Fire Chief, two Fire Captains, 10 Fire Lieutenants, and 24 Firefighters. The Department also employs a Fire Marshal, a Director of Communications, an Administrative Assistant, and a Tax Clerk. An organization chart of the District is displayed as Exhibit III-1.

EXHIBIT III-1

EAST GREENWICH FIRE DISTRICT CURRENT DEPARTMENT ORGANIZATION



Under the current organizational structure, the Fire Chief has a large number of staff and operational personnel reporting to him through the Deputy Chief. Essentially, officers on the shifts, the Fire Marshal, the Director of Communications, the Administrative Assistant, and the Tax Clerk report to the Chief. While the position of Deputy Chief was established to serve as a training officer, responsible for organizing training, the Deputy Chief has developed into a position with a broader administrative role.

The following exhibit displays the current number of uniformed positions in the Fire Department assigned to fire companies.

EXHIBIT III-2
PERSONNEL ASSIGNED TO FIRE COMPANIES

POSITION TITLE	CURRENT POSITIONS
Captain	2
Lieutenant	10
Firefighter	24
Total	36

The Fire Department works a typical fire department schedule assigning personnel to one of four groups (Group A, B, C or D). The number of personnel assigned to each group is shown in the exhibit below. Nine personnel are assigned to work on any shift; however, due to vacations and other authorized leave, there are typically eight or fewer personnel on duty.

EXHIBIT III-3
PERSONNEL ASSIGNED TO FIRE COMPANIES

Group	A	B	C	D	Total
Captain	1		1		2
Lieutenant	2	3	2	3	10
Firefighter	6	6	6	6	24
Total	9	9	9	9	36

The Fire Department deploys five personnel to Station #1 (Headquarters) on a typical day. Two personnel (one officer and one firefighter) are assigned to the engine and two firefighters are assigned to the ladder and ambulance. One firefighter is assigned to work as the dispatcher. When all the current trainees are available for work, the Fire Department will deploy one officer and two firefighters at Station #2. The Department plans to maintain three personnel at Station #2, but if the Department fall short of personnel at Station #1, it will redeploy one of the firefighters from Station #2 to Station #1.

EXHIBIT III-4
TYPICAL DAILY DEPLOYMENT OF PERSONNEL AND UNITS

STATION	NUMBER OF PERSONNEL	APPARATUS
Station #1	5	Engine (1 officer & 1 firefighter) Ladder/Ambulance (1 officer & 1 firefighter staff both units) Dispatch (1 firefighter)
Station #2	3	Engine (1 officer & 2 firefighters) Ambulance
Total	8 *	

* Number of personnel may vary due to authorized leave.

The current organization structure of the Department has a number of weaknesses.

- A large number staff and operations personnel report directly to the Fire Chief.
- The Deputy Fire Chief provides some staff support, as directed by the Chief, but the role of the Deputy Chief is not yet fully developed.
- The current organization results in four platoons which operate independently.
- The current organization requires the Fire Chief to assume too many responsibilities. While the Fire Chief is ultimately accountable for all Department activities, the current structure does not encourage delegation of responsibilities.

FIRE DEPARTMENT REORGANIZATION

To improve accountability and effectiveness, the East Greenwich Fire Department should be reorganized. Two possible organizational models for the District to consider are described below. Alternative #1 is the more appropriate alternative.

REORGANIZATION ALTERNATIVE #1

The Fire Department would be composed of two operating divisions.

- *Operations Division* – The Division should be responsible for:
 - ▶ Delivery of fire suppression services
 - ▶ Delivery of rescue services, or Emergency Medical Services
 - ▶ Special operations
 - ▶ Support of fire prevention and inspection efforts

- *Administration and Support Services Division* – The Division should be responsible for:
 - ▶ Fire prevention and inspection services
 - ▶ Emergency communications
 - ▶ Emergency medical services quality assurance efforts
 - ▶ Facilities management
 - ▶ Apparatus and equipment maintenance
 - ▶ Financial management

- The Operations Division and the Administration and Support Services Division should be commanded by Deputy Chiefs.

The Operations Division Deputy Chief would directly supervise each shift, or group, of firefighters (Groups A, B, C, and D). The Administration and Support Services Division Deputy Chief would supervise the Fire Marshal and the Director of Communications. The Deputy Chief would also oversee fire department emergency communications, training, and financial management. The Administration and Support Services Division Deputy Chief would be responsible for coordinating the emergency medical quality assurance programs, emergency medical dispatch, and related emergency medical services activities.

As a new communication system is implemented, the position of Director of Communications will be not be needed. Thus, the total number of positions in the Department will not change with the creation of an additional Deputy Chief position, since another position will be abolished.

REORGANIZATION ALTERNATIVE #2

Under Alternative #2, the Fire Department would be composed of three operating units.

- *Operations Division* – The Division should be responsible for:
 - ▶ Delivery of fire suppression services
 - ▶ Delivery of rescue services, or Emergency Medical Services
 - ▶ Special operations
 - ▶ Support of fire prevention and inspection efforts
- Office of the Fire Marshal
- Office of Training and Quality Assurance

Under this organizational model, the Deputy Chief would direct the field forces of the Department, a Fire Captain would direct training and quality assurance efforts, and the Fire Marshal would oversee prevention and inspection functions.

RECOMMENDATION III-1: The Fire Department should be reorganized.

RECOMMENDATION III-2 (ALTERNATIVE #1): The Fire Department should be composed of two operating divisions: an Operations Division and an Administration and Support Services Division.

RECOMMENDATION III-3 (ALTERNATIVE #1): The Operations Division and the Administration and Support Services Division should be commanded by Deputy Fire Chiefs.

RECOMMENDATION III-4 (ALTERNATIVE #2): The Fire Department should be composed of three operating units: an Operations Division, a training and quality assurance unit, and the Office of the Fire Marshal.

RECOMMENDATION III-5 (ALTERNATIVE #2): The Operations Division should be commanded by a Deputy Chief, the training and quality assurance units should be directed by a Fire Captain and the Office of

the Fire Marshal should be directed by the Fire Marshal. Each of these unit commanders should report to the Fire Chief.

The following exhibit presents the current and proposed officer complement of the East Greenwich Fire Department.

**EXHIBIT III-5
CURRENT AND PROPOSED STAFFING OF THE FIRE DEPARTMENT**

POSITION TITLE	CURRENT POSITIONS	PROPOSED ORGANIZATION ALTERNATIVE 1	PROPOSED ORGANIZATION ALTERNATIVE 2
Fire Chief	1	1	1
Deputy Chief	1	2	1
Fire Marshal	1	1	1
Captain	2	2	3
Lieutenant	10	10	10
Firefighter/EMT-C	24	24	24
Director of Communications	1	0	0
Administrative Assistant	1	1	1
Tax Clerk	1	1	1
Total	42	42	42

Below are two exhibits which graphically illustrate organizational alternatives to be considered by the Board of Fire Commissioners.

EXHIBIT III-6

EAST GREENWICH FIRE DISTRICT
PROPOSED ORGANIZATION (ALTERNATIVE #1)

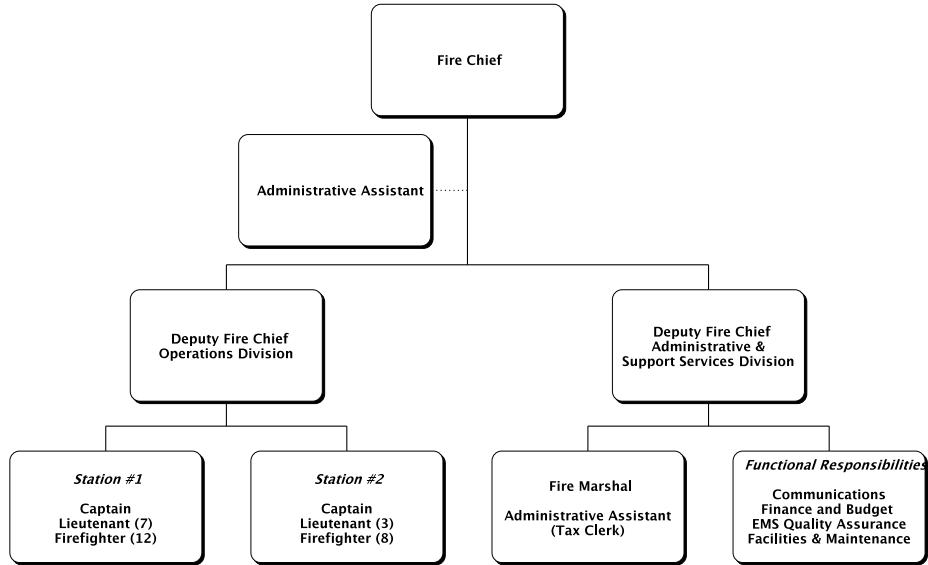
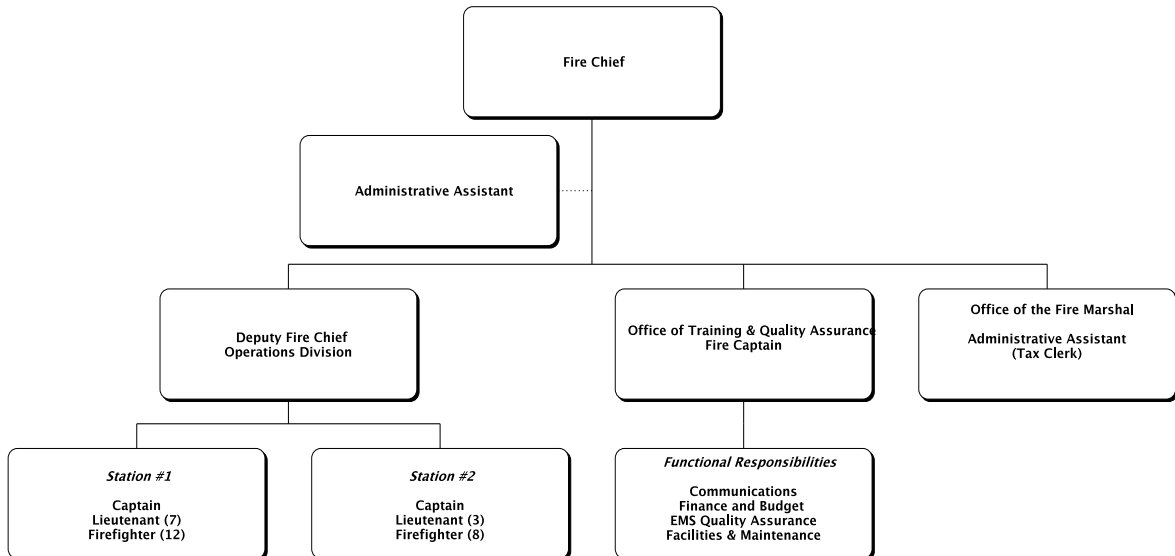


EXHIBIT III-7

EAST GREENWICH FIRE DISTRICT
PROPOSED ORGANIZATION (ALTERNATIVE #2)



Currently, the Fire Chief is the center of administrative activity and all decision-making flows from the office of the Chief. Most staff and company officers report to the Fire Chief directly, or through the Deputy Chief. The proposed organization (Alternative #1) assigns a great deal of daily administrative and decision-making activities to the Deputy Fire Chiefs. The Fire Chief would have more opportunity to evaluate activities of the Department, plan for the future, and evaluate the use of resources.

The Board of Fire Commissioners should review the proposed organizational models and select the most appropriate approach to follow. The consultants believe that the most appropriate organizational model is presented in Alternative #1; however, Alternative #2 is a viable model to consider.

If the Commissioners decide to reorganize the Department, the Commissioners and the Fire Chief should clearly define the proposed organization in writing and notify personnel of the proposed change and the implementation process and timetable for implementation. We assume that if the most desirable alternative is selected, the current Deputy Chief would be assigned to oversee one of the proposed divisions. The Fire Chief would have to develop qualifications for the new Deputy Chief position, and develop a process for selecting the new Deputy Chief. With the selection of Alternative #1, the Chief would also have to communicate to all personnel within the Department the role and responsibility of each Deputy Chief.

***RECOMMENDATION III-6:** The Board of Fire Commissioners should review the proposed organization models and determine the approach to follow.*

IV. FIRE DEPARTMENT MANAGEMENT AND HUMAN RESOURCES

Officers in the East Greenwich Fire Department spend most of their time reacting to events that have occurred and little time planning for the future. This is due, in part, to the unpredictable nature of the work of a Fire Department. The Board of Commissioners and the Fire Department have begun the process of developing a long-term vision for Department's future. The systematic increase in staffing has been part of the long-term vision.

ROLE OF THE FIRE CHIEF

The role of the Fire Chief in the East Greenwich Fire Department is expanding. Until relatively recently, the Fire Chief managed a small organization of 20 emergency responders and several administrative employees. However, the Department now has more than 40 employees. As a result, the administrative role of the Chief has expanded, with more human resources, financial management and planning concerns. The types of skills and abilities to perform effectively as a chief have also changed. A chief must have operational, human resource, financial management, and planning skills. The core competencies of the Fire Chief should include:

**EXHIBIT IV-1
CORE COMPETENCIES FOR THE POSITION OF FIRE CHIEF**

AREAS OF RESPONSIBILITY	TYPES OF EXPERIENCE, SKILLS & ABILITIES
Fire & EMS operations	Experience managing fire and rescue operations Experience applying safety principles associated with emergency operations Experience with the application of incident command Skill in evaluating emergency management performance
Human Resources Management	Experience and skill commanding and supervising personnel Experience working with labor unions Ability to motivate personnel and measure performance Ability to apply policies and procedures fairly
Planning	Ability to anticipate demands and plan for operational and administrative changes Ability to work with other fire and rescue agencies and other government agencies to integrate operations and maximize resources

Financial Management	Ability to develop and administer budgets Ability to manage costs and manage overtime effectively Ability to schedule and plan for major expenditures
Communication	Experience and ability to effectively communicate with commissioners, the public, and fire department personnel Ability to advocate for the department

With the growth of the Fire Department and the changing role of the Fire Chief, the Board of Fire Commissioners should annually negotiate performance objectives with the Fire Chief. Performance objectives should be reasonable, related to performance, measurable, and have a timetable for completion. Some areas where Commissioners and the Fire Chief may negotiate performance objectives are listed below.

- The development and implementation of new Standard Operating Procedures for the Fire Department.
- The development of a training process which ensures that all members of the Department are fully aware of incident command practices and that the role of each fire officer is clearly defined in the incident command system.
- The completion of a safety review of Fire Department operations to measure compliance with NFPA 1500, Health and Safety Standards.
- The development of a new emergency communications model which may result in the consolidation of the emergency communication systems of the Fire District and the Town.
- The development of standard management information reports which document operations and administrative activities.
- The development of a regional support system and the creation of an automatic aid system, a regional Rapid Intervention Team (RIT), and a regional Incident Management Team (IMT).

- The development of a quality assurance program for Emergency Medical Services provided by the District.

It would be difficult for the Chief to implement all changes recommended in this report at one time. However, the objectives negotiated with the Fire Chief should reflect the priorities of the Board. We suggest that the Commissioners consider developing initial objectives relating to important firefighter safety issues, such as ensuring that there is an operational incident command system, developing Standard Operating Procedures, and reviewing safety practices within the Department.

To complete many of the objectives, the Fire Chief must organize priorities and delegate responsibilities to officers within the Department. For example, if one of the Chief's objectives is "to ensure that all personnel fully understand and are trained in incident command by April 2007," the Chief will have to assess, with the assistance of the Deputy Chief and Captains, the current procedures of the Department, and direct the Deputy Chief, with the assistance of other personnel, to organize the appropriate training.

***RECOMMENDATION IV-1:** The Board of Fire Commissioners should negotiate performance objectives with the Fire Chief.*

INTERNAL COMMUNICATION

Internal communication is concerned with the methods by which information is circulated in the Department. Methods of internal communication are both formal and informal. Written policies and procedures and staff meetings are both examples of methods of communication.

The Department does not have a comprehensive set of policies and procedures relating to selection of personnel, promotion of personnel, disciplinary action, fiscal accountability, and other Standard Operating Procedures (SOPs) or Standard Operating Guidelines (SOGs). In general, there are few procedures which document activities of the Department, including tracking of responses, maintenance and test records, training records and related documentation.

One method to improve communication within the Department is to develop a comprehensive set of SOPs or SOGs, and department rules and regulations. SOPs

or SOGs are intended to clearly define how operations are to be conducted. These guidelines should cover emergency and non-emergency operations and describe procedures. Rules and regulations are concerned with the type of behavior and standards of conduct that are expected.

The development of these guidelines is extremely important. The Fire Chief should ensure that the key SOGs are developed, distributed throughout the Department, and fully understood by all parties. It is critical that the process of developing the SOGs be a participatory process and include all ranks within the Department. The Standard Operating Guidelines Committee of the Fire Department (recommended below) should assume the task of preparing the guidelines. The guidelines should be developed, circulated, revised, and adopted by the Board of Commissioners within the next 12 to 15 months.

RECOMMENDATION IV-2: The Fire Chief should immediately appoint a committee composed of all ranks of the Department, charged with developing new Standard Operating Guidelines (SOGs) and Standard Operating Procedures (SOPs).

RECOMMENDATION IV-3: The SOGs and SOPs should be developed, circulated, revised, and finally promulgated within the next 12 to 15 months.

In addition to the need for formal written methods of communication, it is apparent from interviews and from the Survey of Employees that there is the perception of a lack of communication within the organization. This lack of internal communication should be addressed by the development of regularly scheduled staff meetings for officers and a requirement that officers share information from these meetings with all personnel. Staff meetings should be designed by the Fire Chief to provide information and to hear concerns. The Chief may have to schedule several meetings to cover the various shifts. As a supplement to staff meetings, the Chief should draft summaries of staff meetings and circulate the summaries throughout the Department. On an annual basis, the Chief and the Deputy Chiefs should hold a full Department meeting to provide employees with the opportunity to raise issues and discuss concerns.

The Department should develop an e-mail system and require personnel to check e-mail once or twice during each shift. It should become routine to share important Department news, information, training opportunities, administrative concerns, reports of incidents, periodic statistical reports, and post incident reports by means of e-mail communication. The more personnel know about the organization, the better prepared they are to perform their own assignments.

RECOMMENDATION IV-4: The Fire Chief should schedule periodic staff meetings with company officers.

RECOMMENDATION IV-5: The Fire Chief should schedule and preside over an annual meeting of all officers and an annual meeting for all members of the Department.

The Fire Department should take advantage of its skilled work force by encouraging participation in the decision-making process. One of the most effective approaches to encourage communication within a public safety organization is to develop a series of standing committees and *ad hoc* committees to assist with Department projects. We suggest that the Department consider developing a number of committees to help address several operational problems. While there are a number of possible committees, we suggest the following:

- ▶ Standard Operating Guidelines or Procedures and Rules and Regulations Committee
- ▶ Safety Committee
- ▶ Training Committee
- ▶ Equipment/Apparatus Committee
- ▶ EMS Committee

The Fire Chief should draft a mission statement for each committee and provide guidance regarding limitations and the scope of authority of each committee. For example, it is critical that the Department develop a safety committee to assess compliance with NFPA 1500, *Health and Safety Standards*. The committee should be charged with developing a process to evaluate safety and then develop a systematic plan to improve conditions.

When establishing each of the committees, the Fire Chief should define the role of the committee and assign a company officer to coordinate the committee and its work. It is recommended that the Department, if it is reorganized, assign the Deputy Chief for the Administration and Support Services Division the role of coordinating committee activities.

RECOMMENDATION IV-6: The Fire Chief should develop a committee structure within the Fire Department.

INTERLOCAL COOPERATION AND REGIONAL SUPPORT

The East Greenwich Fire District has a relatively small fire and rescue department, with limited resources. Thus, it would be valuable for District to work with other fire and rescue agencies to develop regional or shared approaches to service delivery. In other sections of this report, we have suggested several possible regional approaches.

RECOMMENDATION IV-7: The East Greenwich Fire District should work with surrounding fire and rescue agencies to maximize available resources.

MANAGEMENT INFORMATION

Currently, the Fire Department does not generate information which could assist in planning and management efforts. The Department should develop a range of management reports, including:

- *Financial reports* – These reports should detail expenditures and revenues.
- *Operational reports* – These reports should include data on calls for service. The data should outline trends, such as type of calls and other important information (i.e., calls by time of day, day of week). In addition, the Department should develop routine reports on response time (average and time distribution reports).
- *Monthly management reports* – The Fire Chief should generate monthly reports for distribution to the Commission and throughout the

Department which detail activities and present statistical summaries of activities.

Reports should be designed to be circulated throughout the organization so that officers will be fully aware of events within the Department. The circulation of reports and data is another effective means of internal communication.

RECOMMENDATION IV-8: The Fire Chief, with the assistance of staff, should develop regular management information reports. The reports should be circulated to the Commissioners and throughout the Department.

HUMAN RESOURCES MANAGEMENT

TRAINING AND EDUCATION

The job requirements, training and education requirements of fire and rescue positions have been increasing for many years. The technical nature of equipment, the emergency medical responder skills required to perform the work, and the changing methods of operations require continuous training and education. Recognizing this need, the Department has begun developing a comprehensive training program. In addition to training programs concerned with emergency operations and safety, the East Greenwich Fire District should consider the development of specific training and education requirements for company and chief officer positions.

Requirements should be realistic, job related, and reflect the changing nature of service delivery. We recommend that the District consider the following scale of education and training.

EXHIBIT IV-2
RECOMMENDED TRAINING AND EDUCATION LEVELS FOR EAST GREENWICH FIRE OFFICERS

POSITION	RECOMMENDED MINIMUM QUALIFICATIONS	REQUIRED QUALIFICATIONS
Fire Chief	Bachelor's Degree and other advanced education desirable	Executive Fire Officer Program EMT-C Fire Officer III
Deputy Chief	Associate's Degree	Fire Officer II Fire Instructor I (or greater) EMT-C
Fire Captain	Associate's Degree	Fire Officer II Fire Instructor I EMT-C
Lieutenant	High School and demonstrated advanced academic training (15 credits)	Fire Officer I Fire Instructor I EMT-C

***RECOMMENDATION IV-9:** The Fire District should develop education and training standards for officers.*

PERFORMANCE APPRAISAL

Currently, there is no systematic method for evaluating the performance of officers and other personnel within the Fire Department. Working with company and chief officers, the Fire Chief should develop a performance appraisal process for evaluating the performance of chief officers and, eventually, company officers. The appraisal process should be job related. Officers should be evaluated on factors, such as:

- ▶ Application of technical knowledge
- ▶ Supervisory ability
- ▶ Application of safety principles

***RECOMMENDATION IV-10:** The Fire Department should develop a performance appraisal process for fire officers.*

RECRUITMENT AND PROMOTIONAL PROCESSES

The promotional process within the Fire Department should be strengthened to test the administrative, supervisory and tactical capabilities of personnel. A

promotional process should consist of several elements, such as a written test, an assessment center, and a review of past performance. The written examination should be used to test knowledge; the assessment center should be used to assess a candidate's performance in a series of situations; past work history should be used as a measure of an employee's reliability and judgment.

An Assessment Center is a process to test and evaluate the leadership, administrative, management, and tactical skills of personnel, such as fire officers. In an Assessment Center, candidates participate in a series of exercises and are then evaluated on their *performance* in each exercise, using a series of predetermined criteria, called competencies. Those who evaluate the candidates' performance, the assessors, should not know the candidates, nor have prior knowledge about the candidates. The Assessment Center process and method have a long history of research and documentation to support the underlying framework. Thus, to conduct a valid Assessment Center, it is important that the consultant follow the *Guidelines and Ethical Considerations for Assessment Center Operations*, endorsed by the 28th International Congress on Assessment Center Methods (2000).

An Assessment Center for a company officer in East Greenwich could take several forms, but should include a tactical exercise, a supervisory exercise and one or two other exercises. A Fire Captain's exercises are likely to include more administrative exercises.

As we understand the recruitment process in the Fire District, the District follows traditional methods of advertising. The District also relies on "word of mouth" and outreach by current employees. It is recommended that the Fire Department, in any future recruitment efforts, engage in an aggressive outreach program to generate a pool of minority and female job candidates.

RECOMMENDATION IV-11: The Fire Department should include Assessment Centers as part of its promotional processes.

RECOMMENDATION IV-12: The Fire Department should develop a more aggressive outreach program for recruitment of potential candidates for the position of firefighter.

ADMINISTRATIVE SUPPORT

The Fire District employs a Tax Clerk who is responsible for a range of billing and collection activities. The District should work with the Town to transfer these administrative responsibilities to the Town. While the consultants have been informed that this may require clarification of several legal issues, the transfer of this function would allow the District to assign the incumbent employee to other important support work within the Fire Department. For example, the Office of the Fire Marshal should have administrative support to help schedule appointments and manage the record keeping within the office.

Currently, the Fire District collects more than \$200,000 annually in rescue (Emergency Medical Services) billings. The District uses a commercial vendor, with expertise in emergency medical billing processes, who charges a fee of six percent. It has been our experience that outside billing agencies are effective in billing for services and collecting revenue. These companies are aware of changes in laws and regulations which affect emergency medical services, and have substantial expertise in the field. It is generally our view that outsourcing EMS billing and collection services is a sound policy and we would recommend that the current system be continued. We suggest that the East Greenwich Fire District develop a monthly report showing EMS billing and collection activity.

RECOMMENDATION IV-13: The Fire District should propose to the Town that it assume responsibility for selected administrative tasks.

V. FIRE STATION LOCATION AND RESPONSE EVALUATION

Fire station location, staffing, and the ability to respond rapidly are interrelated. Exhibit V-1, *Typical Daily Deployment of Personnel and Units*, shows the station number, number of responders typically working at each station, and apparatus responding from each station.

EXHIBIT V-1
TYPICAL DAILY DEPLOYMENT OF PERSONNEL AND UNITS

STATION	NUMBER OF PERSONNEL	APPARATUS
Station #1	5	1 Engine 1 Ladder 1 Rescue
Station #2	3	1 Engine 1 Rescue
Total		5

To assess the deployment of personnel, it is necessary to evaluate fire station location. To conduct this assessment, the consultants reviewed maps of the Town, examined transportation networks, conducted site visits to each station, reviewed data and conducted computer mapping. The computer mapping allows a review of alternative strategies and approaches to service delivery. The computer mapping also allows us to evaluate the current emergency medical services deployment plan and consider alternative approaches. In addition, we have examined the proposed station location model considered by the East Greenwich Fire Department. This proposed station configuration increases the number of fire stations from two to three, with the placement of a third fire station in the 1400 block of South County Trail.

For purposes of our analysis, we have adopted the benchmarks presented in NFPA 1710 as measures of performance. (See Appendix A for a detailed description of the standard.) The standard presents response time measures and staffing goals and also stipulates that these response time performance objectives should be achieved in at least 90 percent of the incidents. In summary, the response time standards are:

Fire Suppression Incident – Four minutes (240 seconds) or less for the arrival of the first arriving engine company at a fire suppression incident and/or eight minutes (480 seconds) or less for the deployment of a full first-alarm assignment at a fire suppression incident. * **

Emergency Medical Incident – Four minutes (240 seconds) or less for the arrival of a unit with first responder (or higher) level capability at an emergency medical incident. Eight minutes (480 seconds) or less for the arrival of an advanced life support unit at an emergency medical incident, where this service is provided by the fire department. * **

* *These response time performance objectives should be achieved not less than 90 percent of the time.*

** *These NFPA Standard 1710 time lines do not include dispatch and turn-out time. One additional minute is allowed for dispatch and one minute is added for turn-out time, for a total of two minutes.*

MAPPING METHODOLOGY

Response coverage provided by the existing fire stations in East Greenwich was analyzed using the consultant's computer mapping capabilities. The model analyzes the travel distances that can be attained by apparatus from each fire station responding to its surrounding area within a given time, assuming defined average response speeds. Color coded maps are designed to illustrate the parts of the District that can be reached within defined time ranges. Maps 1, 3 and 5 display travel time response in two-minute increments: zero to two minutes or less, two to four minutes, four to six minutes, six to eight minutes, and more than eight minutes travel time from a fire station. Maps 2, 4, and 6 display travel time response in one-minute increments from zero to seven minutes.

The mapping methodology consists of the following steps:

- Prepare a digitized base map representation of the East Greenwich street and highway network.
- Locate the fire stations to be analyzed with respect to that network.

- Assign an average speed of 25 miles per hour to reflect reasonable response expectations.
- Generate color-coded maps indicating travel times from the fire stations in one-minute increments to the borders of the community.

The street network is based on TIGER files from the United States Census Bureau. The resulting digitized street network was used in the computer mapping analysis to determine travel times to various points in the Town from the fire stations. In order to do this, the longitude and latitude of the fire station locations were established and inserted on the digitized street network and speed assignments were made.

On all streets, a conservative average speed of 25 miles per hour was used in order to take into account many limiting factors, such as time of day, season of the year, weather, traffic, etc. It is quite possible that speeds higher than these could occur, under favorable traffic and road conditions. However, our experience with suburban towns suggests that, given the road configuration, stop lights and other features in the Town of East Greenwich, an average speed could range from 22 to 27 miles per hour.

The following six maps are presented in this chapter.

**EXHIBIT V-2
LIST OF MAPS**

Map 1	Travel Time from Two Existing Stations (2.0 minute increments)
Map 2	Two Existing Stations – Less than 7.0 Minutes (1.0 minute increments)
Map 3	Travel Time from Three Stations (2.0 minute increments)
Map 4	Three Stations – Less than 7.0 Minutes (1.0 minute increments)
Map 5	Travel Time from Station #2 and Location X (2.0 minute increments)
Map 6	Station #2 and Location Z – Less than 7.0 Minutes (1.0 minute increments)

The maps only depict over-the-road travel, or running, times. Two minutes for notification, dispatch, and turn-out time should be added to these times for an estimate of total response time. This will provide for a conservative estimate of

response capability. Benchmarks and standards generally allow one minute or less for dispatching and one minute or less for turn-out time. For example, a four-minute travel time response represents only part of the response time to an incident. It is necessary to add two minutes to the travel time to establish the total response time.

COMPUTER MAPS

The following exhibit describes the color key depicted on the maps.

**EXHIBIT V-3
MAPS 1, 3, AND 5 COLOR KEY**

COLOR	TRAVEL TIME
Blue	Two minutes or less (zero to 2.0 minutes)
Blue-green	More than two minutes, but less than four minutes (2.0 minutes to 4.0 minutes)
Light green	More than four minutes, but less than six minutes (4.0 to 6.0 minutes)
Tan	More than six minutes, but less than eight minutes (6.0 minutes to 8.0 minutes)
Pink	More than eight minutes, but less than ten minutes (8.0 minutes to 10.0 minutes)

**EXHIBIT V-4
MAPS 2, 4, AND 6 COLOR KEY**

COLOR	TRAVEL TIME
Blue	One minute or less (zero to 1.0 minute)
Blue-green	More than one minute, but less than two minutes (1.0 minute to 2.0 minutes)
Green	More than two minutes, but less than three minutes (2.0 to 3.0 minutes)
Light green	More than three minutes, but less than four minutes (3.0 minutes to 4.0 minutes)
Yellow	More than four minutes, but less than five minutes (4.0 minutes to 5.0 minutes)
Tan	More than five minutes, but less than six minutes (5.0 minutes to 6.0 minutes)
Pink	More than six minutes, but less than seven minutes (6.0 minutes to 7.0 minutes)

Map 1, Travel Time from Two Existing Stations (2.0 minute increments), shows the travel times from both stations to various parts of the Town. It is interesting to note that within four minutes travel time, or six minutes total response time, a responding unit can travel over approximately 45 percent of the road network and serve 49 percent of the residential population. Within six minutes, the Department can respond to approximately 65 percent of the resident population. This is relatively good response coverage, given the road network of the Town and its total square miles.

Station #1, or Headquarters, is positioned near the border of the Town, reflecting the historic population center of the Town. If the District was reconfiguring all fire stations at one time, it is likely that stations would not be situated close to the borders, but in locations which would allow 360 degrees of effective response throughout the Town.

Map 2, Two Existing Stations - Less than 7.0 Minutes (1.0-minute increments), displays the impact of the location of the East Greenwich fire stations in one-minute increments.

Map 3, Travel Time from Three Stations (2.0-minute increments), shows the two current fire stations and a proposed station on South County Trail. The coverage is an improvement over the current configuration. The identification of a third station on this map, Station X (Location X), reflects a plan prepared by the Fire Department last year. Location X reflects a general location in the approximate location proposed by the Fire Department. (See exhibits displaying response statistics below).

Map 4, Three Stations - Less than 7.0 Minutes (1.0-minute increments), shows coverage in one-minute increments, with the addition of the station on South County Trail, identified as Station X.

Map 5, Travel Time from Station #2 and Location Z (2.0-minute increments), combines the response from Station #2 and a proposed Station Z (Location Z) (general location shown). On this map, the consultants have revised the current two-station configuration and suggested a theoretical two-station configuration. The map displays a relocated Station #1 (Location Z) in a general location. (A

specific site was not selected.) Other locations within the general area would, if analyzed, show the same results as Location Z.

Map 6, Station 2 and Location Z - Less than 7.0 Minutes (1.0-minute increments), combines the response from Station #2 and a proposed relocated Station #1, shown as Location Z.

The exhibits below convert the mapping information into statistical measures. These exhibits present three measures:

- *Area covered* (square miles) by first-due responding units in one-minute time increments.
- *Street miles covered* by first-due responding units in one-minute time increments.
- *Residential population covered* by first-due responding units in one-minute time increments.

It should be noted that our mapping information displays 127.38 miles of streets in the Town of East Greenwich; this includes public roadways, private roadways and, in some cases, long driveways. In addition, the population data is derived from the 2000 U.S. Census, which estimated a population of 12,948. The road mileage and population data are derived from the TIGER mapping files, allowing us to link mapping information with population and road mileage data.

Exhibit V-5, *Response Capability from Two Existing Fire Stations - Area, Street Miles and Population Covered (within each time segment)*, presents the travel time data associated with Map 1 and Map 2 and displays the coverage provided with a response from each station at the same time. The data presented show area covered, street miles covered, and population reached in one-minute time increments. The data show the coverage achieved within each one-minute time increment. For example, 6.4 percent of road miles are covered within one minute, but within two minutes, an additional 10.5 percent of road miles are covered.

Exhibit V-6, *Response Capability from Two Existing Stations - Area, Street Miles, and Population Covered (cumulative response)*, displays the cumulative area,

street miles and population covered in each time increment. For example, the Fire Department can respond to 16.9 percent of the road miles in the District within two minutes; within six minutes travel time, fire units cover 89.9 percent of roads.

EXHIBIT V-5
RESPONSE CAPABILITY FROM TWO EXISTING FIRE STATIONS
AREA, STREET MILES, AND POPULATION COVERED (WITHIN EACH TIME SEGMENT)

	AREA (SQ. MILES)	PERCENT	STREET MILES	PERCENT	2000 POPULATION	PERCENT
1 minute or less	0.48	2.9%	8.15	6.4%	911	7.0%
1 to 2 minutes	1.22	7.4%	13.41	10.5%	1,694	13.1%
2 to 3 minutes	1.85	11.2%	13.32	10.5%	1,654	12.8%
3 to 4 minutes	2.68	16.2%	22.24	17.5%	2,189	16.9%
4 to 5 minutes	2.92	17.6%	21.03	16.5%	1,957	15.1%
5 to 6 minutes	2.66	16.0%	19.42	15.2%	1,810	14.0%
6 to 7 minutes	2.17	13.1%	15.64	12.3%	1,305	10.1%
More than 7 minutes	2.61	15.7%	14.17	11.1%	1,428	11.0%
Total	16.59	100%	127.38	100.0%	12,948	100.0%

EXHIBIT V-6
RESPONSE CAPABILITY FROM TWO EXISTING FIRE STATIONS
AREA, STREET MILES, AND POPULATION COVERED (CUMULATIVE RESPONSE)

	AREA (SQ. MILES)	PERCENT	STREET MILES	PERCENT	2000 POPULATION	PERCENT
1 minute or less	0.48	2.9%	8.15	6.4%	911	7.0%
1 to 2 minutes	1.7	10.2%	21.56	16.9%	2,605	20.1%
2 to 3 minutes	3.55	21.4%	34.88	27.4%	4,259	32.9%
3 to 4 minutes	6.23	37.6%	57.12	44.8%	6,448	49.8%
4 to 5 minutes	9.15	55.2%	78.15	61.4%	8,405	64.9%
5 to 6 minutes	11.81	71.2%	97.57	76.6%	10,215	78.9%
6 to 7 minutes	13.98	84.3%	113.21	88.9%	11,520	89.0%
More than 7 minutes	2.61	15.7%	14.17	11.1%	1,428	11.0%
Total	16.59	100.0%	127.38	100.0%	12,948	100.0%

FIRE STATION LOCATION CONFIGURATIONS

Last year, the Fire District proposed the addition of a third fire station. Fire Department officials reviewed several alternatives and suggested a location on South County Trail. In part this location was suggested because of the lack of available land in the District and the anticipated growth within the District was occurring in the general area of South County Trail. Maps 3 and 4 show the impact of this three-station configuration model.

The exhibits below show the data associated with the proposed alternative. Exhibit V-7, *Response Capability from a Theoretical Three Fire Station Configuration - Area, Street Miles, and Population Covered (within each time segment)*, can be compared with Exhibit V-5, which displays current response capability. Exhibit V-8, *Response Capability from a Theoretical Three Fire Station Configuration - Area, Street Miles, and Population Covered (cumulative response)*, should be compared with Exhibit V-6, which displays current response capability in a cumulative manner.

EXHIBIT V-7

**RESPONSE CAPABILITY FROM A THEORETICAL THREE FIRE STATION CONFIGURATION
AREA, STREET MILES, AND POPULATION COVERED (WITHIN EACH TIME SEGMENT)**

	AREA (SQ. MILES)	PERCENT	STREET MILES	PERCENT	2000 POPULATION	PERCENT
1 minute or less	0.6	3.6%	8.9	7.0%	939	7.3%
1 to 2 minutes	1.61	9.7%	16.5	13.0%	1,842	14.2%
2 to 3 minutes	2.75	16.6%	19.8	15.5%	2,107	16.3%
3 to 4 minutes	3.51	21.2%	31.18	24.5%	2,771	21.4%
4 to 5 minutes	3.53	21.3%	26.7	21.0%	2,542	19.6%
5 to 6 minutes	2.28	13.7%	13.89	10.9%	1,457	11.3%
6 to 7 minutes	1.24	7.5%	5.76	4.5%	660	5.1%
More than 7 minutes	1.07	6.4%	4.65	3.7%	630	4.9%
Total	16.59	100.0%	127.38	100.0%	12,948	100.0%

EXHIBIT V-8

**RESPONSE CAPABILITY FROM A THEORETICAL THREE FIRE STATION CONFIGURATION
AREA, STREET MILES, AND POPULATION COVERED (CUMULATIVE RESPONSE)**

	AREA (SQ. MILES)	PERCENT	STREET MILES	PERCENT	2000 POPULATION	PERCENT
1 minute or less	0.6	3.6%	8.9	7.0%	939	7.3%
1 to 2 minutes	2.21	13.3%	25.4	19.9%	2,781	21.5%
2 to 3 minutes	4.96	29.9%	45.2	35.5%	4,888	37.8%
3 to 4 minutes	8.47	51.1%	76	60.0%	7,659	59.2%
4 to 5 minutes	12	72.3%	103	80.9%	10,201	78.8%
5 to 6 minutes	14.28	86.1%	117	91.8%	11,658	90.0%
6 to 7 minutes	15.52	93.6%	123	96.3%	12,318	95.1%
More than 7 minutes	1.07	6.4%	5	3.7%	630	4.9%
Total	16.59	100.0%	127	100.0%	12,948	100.0%

While the consultants are aware that there is limited land available in the Town for a site for a fire station and it would not be realistic to take land by eminent domain, we have conducted an analysis of a theoretical fire station

alternative with two fire stations, assuming that Station #2 remains in service and Station #1, Headquarters, is relocated. We have identified a general location, Location Z, for purposes of illustration. The result of the analysis is not substantially altered by adjusting the location several hundred yards in any direction.

We have considered this two-station configuration to illustrate the impact of other possible fire station configuration plans. The weakness of a three-station configuration is that it would be difficult for the Department to efficiently staff three stations. The consultants consider the strength of fire and rescue crews a critical part of any reconfiguration plan. The consultants generally recommend large crew sizes in fewer locations, rather than many locations with fire crews.

The following exhibits display data generated from Maps 5 and 6.

EXHIBIT V-9

RESPONSE CAPABILITY FROM A THEORETICAL TWO FIRE STATION CONFIGURATION (STATION #2 & LOCATION Z) AREA, STREET MILES, AND POPULATION COVERED (WITHIN EACH TIME SEGMENT)

	AREA (SQ. MILES)	PERCENT	STREET MILES	PERCENT	2000 POPULATION	PERCENT
1 minute or less	0.61	3.7%	5.86	4.6%	623	4.8%
1 to 2 minutes	1.74	10.5%	20.43	16.0%	1,801	13.9%
2 to 3 minutes	2.75	16.6%	24.53	19.3%	2,309	17.8%
3 to 4 minutes	4.05	24.4%	32.02	25.1%	3,432	26.5%
4 to 5 minutes	2.45	14.8%	19.48	15.3%	2,033	15.7%
5 to 6 minutes	2.07	12.5%	10.66	8.4%	1,241	9.6%
6 to 7 minutes	1.37	8.3%	5.94	4.7%	652	5.0%
More than 7 minutes	1.55	9.3%	8.46	6.6%	857	6.6%
Total	16.59	100.0%	127.38	100.0%	12,948	100.0%

EXHIBIT V-10
RESPONSE CAPABILITY FROM THEORETICAL TWO FIRE STATION CONFIGURATION
(STATION #2 & LOCATION Z)
AREA, STREET MILES, AND POPULATION COVERED (CUMULATIVE RESPONSE)

	AREA (SQ. MILES)	PERCENT	STREET MILES	PERCENT	2000 POPULATION	PERCENT
1 minute or less	0.61	3.7%	5.86	4.6%	623	4.8%
1 to 2 minutes	2.35	14.2%	26.29	20.6%	2,424	18.7%
2 to 3 minutes	5.1	30.7%	5082	39.9%	4,733	36.6%
3 to 4 minutes	9.15	55.2%	82.84	65.0%	8,165	63.1%
4 to 5 minutes	11.6	69.9%	102.32	80.3%	10,198	78.8%
5 to 6 minutes	13.67	82.4%	112.98	88.7%	11,439	88.3%
6 to 7 minutes	15.04	90.7%	118.92	93.4%	12,091	93.4%
More than 7 minutes	1.55	9.3%	8.46	6.6%	857	6.6%
Total	16.59	100.0%	127.38	100.0%	12,948	100.0%

The following exhibit shows the impact of the current station location configuration, the proposed three fire station configuration, and a theoretical two-station configuration. The exhibit shows travel time at 4.0 and 6.0 minute intervals. A three-station alternative is better than the current two station configuration, as measured by area, population, and street miles covered. However, the theoretical two-station alternative, using Location Z, results in coverage which is similar to the three-station model at the four and six minute measures.

EXHIBIT V-11
TWO EXISTING FIRE STATION CONFIGURATION
COMPARED TO A THEORETICAL THREE FIRE STATION CONFIGURATION
AND A THEORETICAL TWO FIRE STATION CONFIGURATION (RELOCATION OF STATION #1)

	CURRENT TWO-STATION CONFIGURATION		PROPOSED THREE-STATION CONFIGURATION		THEORETICAL TWO-STATION CONFIGURATION	
	Actual	Percent	Actual	Percent	Actual	Percent
4.0 Minutes Travel Time						
Area (Square Miles)	6.2	37.6%	8.5	51.1%	9.2	55.2%
Street Miles	57.1	44.8%	76.4	60.0%	82.8	65.0%
Population	6,448	49.8%	7,659	59.2%	8,165	63.1%
6.0 Minutes Travel Time						
Area (Square Miles)	11.8	71.2%	14.3	86.1%	13.7	82.4%
Street Miles	97.6	76.6%	117.0	91.8%	113.0	88.7%
Population	10,215	78.9%	11,658	90.0%	11,439	88.3%

The mapping analysis suggests a number of conclusions:

- The Fire Department is generally able to receive the same level of fire and EMS coverage from a three fire station configuration as from the current two-station configuration, if two stations were appropriately located.
- The addition of a third fire station improves response capability to some degree but, without substantial staff increases, this would create small crew sizes.
- The geography indicates that the Fire Department should develop a system of automatic aid with other fire and rescue agencies. The automatic aid should be predicated upon identified risks and long response times.
- The Fire Department has been careful to develop increasingly strong response crews in its two fire stations. Should the Department add a small number of additional personnel in the near future, it should deploy personnel at the two existing stations.

RECOMMENDATION V-1: The Fire Department should consider additional fire station relocation strategies.

RECOMMENDATION V-2: The Fire Department should develop a system of automatic aid with surrounding fire and rescue departments.

Maps 1 to 6 are shown on the following pages.

(INSERT MAP 1)

(INSERT MAP 2)

(INSERT MAP 3)

(INSERT MAP 4)

(INSERT MAP 5)

(INSERT MAP 6)

FIRE STATION LOCATION CONSIDERATIONS

When considering fire station locations, it is important to recognize that there are several basic siting factors to consider. Whenever possible, fire station location and design should incorporate the basic features listed below.

It should be noted that if District officials evaluated the proposed fire station location at South County Trail according to the factors listed below, the stations would not measure up to the some of the expectations set forth in these criteria. However, it is critical to note that there are many mitigating factors which affect the location of stations, such as available resources to pay for a facility and the availability of land. The location of a new fire station is often a result of compromises which reflect local circumstances.

Below we have listed general fire station location factors.

- A fire station should be situated in or near areas of need.
- A fire station should be located on or near good multi-directional response routes.
- A fire station should be situated to allow for the exit of safety apparatus onto streets.
- A fire station should be appropriate for the neighborhood.
- A fire station should be large enough for all anticipated uses and have sufficient space to accommodate future expansion.
- A fire station should be sited on a lot which allows for building expansion, a ramp of sufficient length, off-street parking, and room to maneuver apparatus.
- A fire station should have drive-through bays.
- A fire station should have adequate office space, crew living quarters, classroom, study and resource space, storage, work space, and exercise facilities.

Any new fire station should comply with the safety provisions of Chapter 9 of NFPA Standard 1500, *Standard on Occupational Safety and Health Program*, and Chapter 3 of NFPA 1581, *Standard on Fire Department Infection Control Program*. Fire stations should also comply with the appropriate sections of these firefighter safety standards. The basic requirements of these standards are:

- Smoke and carbon monoxide detectors are required.
- Living areas are required to be separated from apparatus storage areas to prevent exposure to diesel exhaust emissions.
- Facilities must be provided for cleaning, disinfection, and disposal of protective clothing, protective equipment, and medical supplies.
- Kitchens, sleeping areas, and bathrooms must be provided.

VI. STAFFING AND STANDARDS

STAFFING FACTOR

The Department deploys personnel from two fire stations, and staffs several front-line fire units, or companies (two engine companies and one ladder company), and two ambulances. The two ambulances are crossed staffed. Most Department personnel are assigned to the direct delivery of services. The Fire Department uses a four-platoon/group system. Firefighters are assigned to one of four groups. The Department has an authorized strength of nine positions assigned to each of the four groups. The following exhibit displays the assignment of personnel to groups.

**EXHIBIT VI-1
PERSONNEL ASSIGNED TO FIRE COMPANIES**

Group	A	B	C	D	Total
Captain	1		1		2
Lieutenant	2	3	2	3	10
Firefighter	6	6	6	6	24
Total	9	9	9	9	36

The number of personnel needed for fire and EMS operations depends on the number of personnel assigned on a daily basis to meet response objectives and the “staffing factor,” often called a multiplier, which defines how many personnel are required to keep one full-time firefighter on-duty around the clock, 24 hours per day, 365 days per year. The current work schedule results in personnel working an average of 42 hours per week. The staffing factor, or multiplier, is one management measure of productivity, since it measures the number of hours worked in relation to the hours scheduled to work and the availability of personnel. The staffing factor can be significantly affected by negotiated labor agreements which establish vacation and other leave practices.

In East Greenwich, it is difficult to calculate a true staffing factor because the Department has expanded rapidly and patterns of authorized leave have not been fully established. Many personnel are relatively junior and are entitled to limited time off. As the work force gains seniority, the time off granted to

personnel increases. Based on our experience, it requires approximately 4.8 to 5.2 personnel to fill one position 24 hours per day, 365 days per year, in a fire department. In other words, it requires approximately 1.2 to 1.3 personnel to fill one position. Ideally, a staffing factor is designed to minimize overtime.

The consultants believe that, as the workforce becomes stable, the Department should begin evaluating its staffing factor. Below we have provided a general approach to evaluating the staffing factor.

Determining the staffing factor requires the adoption of several underlying assumptions concerning the number of hours that firefighters work.

- ▶ There are 8,760 hours in a year ($365 \times 24 \text{ hours} = 8,760$).
- ▶ A work week of 42 hours = 2,184 hours per year (42×52).

To assess the Department's staffing factor, records of authorized leaves, such as vacation leave, sick leave, personal health leave, bereavement leave, injury leave, and union leave must be reviewed. The staffing factor is determined by the following calculation:

Total leave divided by number of incumbents assigned to fire operations – The total amount of leave for all categories (vacation, sick, personal, bereavement, union, and injury) is divided by the number of incumbents. This results in the total average leave taken.

Off-duty tours of duty x number of hours in each shift – The number of off-duty tours of duty is multiplied by the number of hours for each shift, which results in the total number of off-duty hours.

Total hours scheduled to be worked minus total hours off duty – The total number of hours off-duty is subtracted from the total number of hours scheduled to be worked each year, which results in the actual hours worked.

Total hours scheduled to be worked divided by actual hours worked – The total hours scheduled to be worked is divided by the actual hours worked. The result is a staffing factor, such as 1.2, which indicates the number of

personnel it takes to fill one position on one shift 24 hours a day, 365 days a year.

RECOMMENDATION VI-1: The management of the Fire Department should systematically monitor the staffing factor of the Fire Department, as one measure of productivity and accountability.

STAFFING AND EMERGING STANDARDS

There has been a national debate about staffing and response time standards for municipal fire departments. The debate has resulted in the development of National Fire Protection Standard 1710, which is applicable to full-time, career fire departments. (See Appendix A for a detailed description of the standard.) Chapter V (computer mapping) discusses the response time standards. This chapter will discuss the staffing standards presented in NFPA Standard 1710. In summary, NFPA Standard 1710 provides that:

- Each fire company must have an officer. (East Greenwich has assigned an officer to each company.)
- Engine companies must be staffed with a minimum of four firefighters. (East Greenwich staffs engine companies with three personnel; one engine company cross staffs, using personnel as ambulance responders.)
- Ladder companies must be staffed with a minimum of four firefighters. (East Greenwich staffs the ladder with two personnel who cross staff an ambulance.)
- A minimum of 15 firefighters, including an incident commander, must be present for a low-hazard structure fire, as well as two pumpers and a ladder truck, or similar vehicle.

NFPA Standards do not have the force of law; however, the NFPA 1710 Standard has framed the fire department staffing issue and the response time issue. As a practical matter, few communities in New England with a population similar to East Greenwich can achieve these measures. It is important to maximize and link all available resources to achieve progress toward meeting NFPA Standards

In the planning, evaluation and design of a fire or emergency medical service system, a major consideration is the initial and subsequent response level capability to which the fire and emergency medical service responders should subscribe. As a policy matter, response capability objectives should be established by the District, with due consideration of practical constraints and financial resources. While containing costs is an important objective, response capabilities and the safety of emergency response personnel must receive every consideration in the equation. Below are listed the four emerging standards, or benchmarks, which affect crew size, response times, firefighter safety and response time.

1. *OSHA requirements* for a minimum of four equipped personnel to be present before entry in a structure fire incident
2. *OSHA requirements* for a rapid intervention team (RIT) to be present for safety reasons at working structure fires
3. *OSHA and NFPA requirements* for a qualified incident commander and a qualified safety officer to be present at working incidents
4. *NFPA 1710 and industry standards* to have a minimum of 15 firefighters, including an incident commander, present for a low-hazard structure fire, and at least two pumpers and a ladder truck, or similar vehicle

Since it is difficult for a Fire District such as East Greenwich to achieve the emerging standards and benchmarks without support from surrounding jurisdictions, District officials should establish operating objectives for the delivery of fire and emergency medical services to guide decision-making. The primary operating objectives should be:

1. To maintain, and make every effort to continually improve, the current level of fire suppression, rescue, emergency medical and other capabilities of the Fire Department.
2. To administer and operate the Department in a cost-effective manner.

3. To provide these services while ensuring the welfare and safety of firefighter personnel.
4. To work with surrounding fire and rescue agencies to develop regional response solutions.

RECOMMENDATION VI-2: Policy leaders of the District should adopt a Fire Department staffing policy which encourages continuous improvement, in a cost effective manner, while ensuring the safety of personnel.

PROGRESS TOWARD MEETING STANDARDS

While it may be difficult for any one suburban town, such as East Greenwich, to meet the developing fire and rescue standards, there are several approaches, suggested below, which will likely help the District to make progress toward achieving these standards. These approaches are:

- Develop an automatic mutual aid system.
- Develop a regional Rapid Intervention Team (RIT).
- Develop a consolidated District/Town emergency communication system.
- Develop an effective call back system.
- Develop a duty chief system.
- Develop a Regional Incident Management Team (IMT).

AUTOMATIC AID (AUTOMATIC MUTUAL AID)

To support its emergency response capability, the East Greenwich Fire District should work with surrounding fire and rescue agencies to develop an automatic aid system. Under an automatic aid system, units from an adjoining fire district, or city or town fire department, will automatically respond to incidents, because the mutual aid units are closer than the “home” unit’s station or because specialized vehicles are needed. This type of “closest unit response” is essential to get appropriate aid to the scene as quickly as possible, as well as to deliver additional emergency responders to a large incident requiring more personnel than East Greenwich has available. It is an approved, useful methodology which should function under the following conditions:

1. agreements among departments
2. identification of the exact areas and addresses to be serviced
3. adjustment of dispatch running cards at the dispatch center
4. immediate notification of the home department of an alarm
5. pre-agreements for incident command
6. standardization of equipment and tactics
7. joint pre-planning of target hazards
8. joint training
9. annual review of incidents
10. annual reaffirmation of agreement

RECOMMENDATION VI-3: Establish a methodology for implementing automatic mutual aid between the East Greenwich Fire Department and other fire departments.

RAPID INTERVENTION TEAM (RIT)

The Department does not have a Rapid Intervention Team (RIT) program. An RIT is a national safety program whose objective is to improve firefighter safety and prevent the loss of life or serious injury to firefighters. An RIT is a designated firefighting team or crew activated for firefighter rescue purposes during firefighting operations. This RIT is placed on stand-by for the sole purpose of being immediately ready to rescue a trapped or injured firefighter who is unable to provide for himself or herself during firefighting operations. Since the East Greenwich Fire Department does not have the resources to develop its own RIT, we recommend that the Department work to establish a regional RIT.

RECOMMENDATION VI-4: Establish a Rapid Intervention Team (RIT) program by working with regional fire departments.

PERSONNEL CALLBACK SYSTEM

The Fire Department has a system which recalls personnel in the event of a very serious incident. Since there have been few large-scale incidents, the recall system has not been activated frequently. Careful consideration should be given to the organization of the recall system to ensure that sufficient personnel are available for a major incident.

RECOMMENDATION VI-5: Ensure that the Department's recall system is operational.

DUTY CHIEF SYSTEM

In an earlier chapter of this report, the consultants recommended the creation of a second Deputy Fire Chief position. When this position is established, the Fire Department should institute a duty chief system under which the two Deputy Chiefs and the Fire Chief are required to be available during off-hours for a major emergency. The system should be designed to rotate responsibility from week to week, or some other time period.

RECOMMENDATION VI-6: Establish a duty chief rotation system so that a chief officer is available to respond to an emergency at all times of the day.

INCIDENT MANAGEMENT TEAM (IMT)

The Department has not provided for a formal Incident Management Team (IMT) for emergency operations. IMTs function under the Incident Command System (ICS) as a trained management group. IMTs are established from within a department or from a group of departments. East Greenwich does not have the resources needed to establish its own IMT, but should participate in a regional IMT.

IMT members should be trained and proficient in the command and general staff functions of the Incident Command System, as required under the National Incident Management System (NIMS). Under NIMS, the adoption of a formal ICS-IMT system is mandatory. The NIMS has established national standards for compliance by fire departments. Fire departments were required to adopt a formal ICS-IMT concept by 2005. An incident command system is designed to allow a department, or group of departments, to effectively combat natural and man-made disasters.

An IMT typically consists of an incident commander and other staff positions (e.g., operations, logistics, planning, and others), each with a defined role. It is recommended that a regional IMT be established with members from the various fire departments. The IMTs would be a mutual aid resource. The Fire Chief

should work with the fire departments in the region to establish and organize these teams.

RECOMMENDATION VI-7: The Fire Department should work to develop a regional Incident Management Team (IMT).

VII. EMERGENCY COMMUNICATIONS, EMERGENCY MEDICAL SERVICES, AND PREVENTION

EMERGENCY COMMUNICATIONS

ALTERNATIVE EMERGENCY COMMUNICATION APPROACHES

Communication and information is critical to all emergency response agencies. Currently, an East Greenwich firefighter is assigned to dispatching duties. Dispatch functions are more complex than is often acknowledged. Each call requires the dispatcher to apply a protocol to a particular situation and make an immediate judgement (usually with limited supervisory review) about the type of response required. As we understand it, some personnel are trained in emergency medical dispatch (a method of prioritizing calls for service), but emergency medical dispatching is not implemented.

Given the relatively small number of emergency responders in the East Greenwich Fire Department, the assignment of a Firefighter/EMT-C to dispatch operations is a poor utilization of resources. There are three possible approaches to organizing emergency communications:

- *Option 1* - Continue to operate an independent fire communication/dispatch system (current situation).

Under this approach, there would be no change in the current arrangement. A firefighter would continue to dispatch personnel. This is not the most desirable alternative, since a firefighter continues to provide dispatch services.

- *Option 2* - Operate an independent fire communication/dispatch system (current situation), but employ civilian dispatchers.

Under this approach, the District would continue to dispatch its fire and rescue units, but it would not be necessary for a firefighter to provide dispatch services. Firefighters would be reassigned to fire and rescue operations. Civilians would be employed to provide dispatch services.

- *Option 3* - Integrate the Fire District's communications system with the East Greenwich Police Department communication system. Under this model, a communications department would be established in the Police Department.

The integrated communications system would have responsibility for dispatching fire, EMS, and police units. This approach should be considered at this time because the Police Department is planning to construct a new police station. Under this approach, the Fire District would enter into an agreement with the Town of East Greenwich to provide dispatching services. The agreement should provide for:

- ▶ The employment of one EMS/Fire Dispatcher on each shift
- ▶ The training of all dispatchers in the application of fire and rescue protocols
- ▶ The training of all dispatchers in the application of emergency medical dispatching
- ▶ The development of a management and supervisory structure which satisfies the needs of both the Police Department and the Fire Department
- ▶ The development of a system of quality assurance to measure performance and address needed improvements

An integrated dispatch system requires personnel to have considerable familiarity with the different types of calls for service and the resources and capabilities of each responding emergency department. Thus, a central dispatch service requires comprehensive training relevant to the mission, capabilities and functions of each department. In order to run smoothly, well-defined and tested procedures and an effective quality control system that covers significant operational functions of each responding department are required.

If a consolidated communication system is established, it would be essential that a Deputy Fire Chief be assigned to coordinate the development of an effective communication process. The coordination role should start during the construction process for the new police facility and continue once the system is operation. Fire

and police personnel should be required to establish a user committee to ensure training is appropriate and any problems which arise can be solved.

- *Option 4* - Integrate the fire and EMS dispatching into a regional communication system. Under this approach, one regional organization provides fire and EMS dispatch services for a number of organizations. Alternatively, a regional system could include all fire, police and EMS communications.

While a regional dispatch system is highly desirable, it would take many years to establish and such a system does not address the short-term needs of the Fire District. With a regional system, several fire departments in the region would establish a new response system. Emergency dispatch would be centralized in one regional dispatch center. In this system, fire and EMS response would be unified, and the closest units available would be deployed to an emergency. Departments would continue to maintain separate identities, but operations would be integrated to maximize resources. The operational consolidation approach increases the likelihood that sufficient resources will be available in an emergency.

Based on the available options presented to the Fire District, the consultants recommend that the Fire District enter into discussions with the Town of East Greenwich to consolidate fire and rescue dispatching with the police dispatching system. The Town is currently in the design stage of the new police station; thus, any proposal regarding dispatching should be discussed with the Town as soon as possible.

RECOMMENDATION VII-1 (ALTERNATIVE #1): *The Fire District should engage in a discussion with the Town of East Greenwich in an effort to integrate District dispatching into the Town's dispatch system.*

RECOMMENDATION VII-2 (ALTERNATIVE #2): *The Fire Department should employ civilian dispatchers and reassign firefighters to fire and rescue operations.*

Creation of a consolidated dispatch system will not eliminate the need for redundant dispatch systems. If a new police facility is constructed and a

consolidated dispatch center is established, the District should maintain some dispatch capability in the Fire Department as a back-up system in the event of a system failure.

STAFFING THE COMMUNICATIONS CENTER

Dispatch centers should be staffed with civilian personnel. Civilians would be employed and trained specifically as dispatchers and would not have additional emergency response duties.

If the dispatch system is consolidated, as recommended, it would be necessary to have at least one fire/EMS dispatcher on duty at all times. If the District established an independent dispatch center with civilian personnel, it would require the District to employ at least four to five full-time, and several part-time, personnel. Ideally, it would be better to employ four full-time personnel and five to six part-time dispatchers.

It will be necessary for the communications center to operate 24 hours a day, 365 days a year. This means it is necessary to fill 8,760 hours of dispatch time (365 x 24 hours = 8,760). Assuming personnel work conventional shifts of eight hours and 40 hours per week (2,080 hours per year), more than four personnel (4.2 persons) are required to fill the 8,760 hours. However, it is also necessary to account for authorized time off for employees. In reality, a typical employee assigned to work 40 hours per week generally works 1,700 to 1,800 hours annually. In the exhibit below, we have estimated the work hours for dispatch personnel:

EXHIBIT VII-I
DISPATCHER WORK HOURS

Total hours scheduled	2,080
Time off	
Holidays (12 days x 8.0 hours)	96
Vacation (10 days x 8.0 hours)	80
Sick (5 days x 8.0 hours)	40
Personal (2 days x 8.0 hours)	16
Training (5 days x 8.0 hours)	40
Estimated hours off-duty	272
Estimated hours worked	1,808

For the purposes of illustration, we have estimated the cost of a civilian dispatcher in the Fire Department. Currently, the Town of East Greenwich pays dispatchers approximately \$33,000 per year at the maximum of the pay range. Thus, assuming that the five dispatchers are employed at the rate of \$33,000 with direct cost of benefits at 30 percent of salary, it will cost approximately \$214,500 to employ five civilian dispatchers (five dispatchers @\$33,000 = \$165,000 + \$49,500 (benefits @30 percent of salary) = \$214,500).

EMERGENCY MEDICAL SERVICES

The Fire Department responds to approximately 1,400 to 1,500 requests for Emergency Medical Services. There is a rescue unit located at each station to allow for EMS response with transport capability. The District also has two Advanced Life Support(ALS) engine companies; an ALS engine company is assigned to each station. Thus, there are four vehicles that carry required ALS equipment and operate under a standard set of medical protocols and standing medical orders. All firefighters are required to be Emergency Medical Technicians–Cardiac (EMT–C). To maintain certification, personnel are required to complete an EMT–C 36–hour refresher course, along with CPR and AED refresher courses every three years. Currently, the Department provides refresher training on each shift. This training is coordinated by one firefighter as a “collateral” duty.

An EMS call for service results in the deployment of the nearest rescue unit with two personnel and the closest engine company with two personnel. (One responder is typically an officer.) Once the patient is treated and prepared for transport, one Firefighter/EMT–C from the engine company accompanies the rescue personnel, leaving the engine company with only one firefighter, the driver. When an EMS response is required in the first–due area of Station #2, an engine company is dispatched from Station #1 to assist in the response. The effect of this is to diminish the capability of the entire District.

Patients may be transported to one of three different hospitals. Transport time can vary from 20 minutes to well over an hour, leaving a rescue unit and engine company out of service. Traffic, time of day, and weather conditions all affect travel to, and turn around time from, the receiving hospital. This further affects response capabilities within the District when a unit(s) is out of service.

There is no formal call-screening system (emergency medical dispatch system). Thus, no distinction is made between an advanced life support (ALS) call (life-threatening call for service) and a basic life support (BLS) call (non-life threatening call for service). Since all firefighters are EMT-Cs, some personnel, when working as dispatchers, may be able to assess the seriousness of a particular call for service.

An emergency medical dispatch system is a medically approved system used by a dispatch center to dispatch appropriate aid to medical emergencies. Emergency medical dispatch consists of a process of caller interrogation, pre-arrival instructions, and procedures to match an assessment of the need for service with an appropriate response. Generally, 60 percent of EMS requests are determined to require a BLS response, while 40 percent of EMS requests are determined to require an ALS response. An EMD system will allow the Fire Department to deploy rescue and engine companies in a more effective manner.

The Fire Department does not have an Emergency Medical Services quality assurance program. There is no statistical analysis of the number of Basic Life Support and Advanced Life Support calls for service. There is no feedback system from the three hospitals on the quality of patient treatment provided by the Department, patient survivability rates, and other quality of care issues.

Medical supervision for the East Greenwich EMS system is essential. The Department should ensure that there is appropriate supervision, and that quality assurance procedures are in place, along with a continuing medical education program to ensure that high quality skills are maintained by personnel. The Fire Department should work with representatives of local hospitals to develop an appropriate quality assurance program. This program could include case reviews and other appropriate reviews.

It is important to note that a quality assurance program should extend to review of dispatch operations. Continuous evaluation of dispatching of EMS is an essential part of the pre-hospital care system. The purpose of this quality assurance process is to continuously improve performance.

A quality assurance dispatch committee should be established to monitor EMS dispatch performance. This committee would be of particular importance if

police and fire communications are consolidated. Under the consolidated dispatch model, the committee should be composed of police and fire personnel. The purpose of the committee would be to review performance, discuss weaknesses in system performance, suggest training, and identify other improvements. The committee should meet quarterly to review a random selection of EMS dispatches to evaluate procedures and response.

RECOMMENDATION VII-3: The District should implement an emergency medical dispatch system.

RECOMMENDATION VII-4: The District should establish a quality assurance review process for EMS service delivery and the EMS dispatch process.

RECOMMENDATION VII-5: The quality assurance committee should meet quarterly to review a random selection of EMS dispatches.

The implementation of an emergency medical dispatch system can be difficult, since it dramatically changes the way in which dispatchers perform their work. Each dispatch action is subject to review and evaluation, which can be stressful to employees. However, an EMD system is an essential part of an emergency medical response system, without which resources and needed care cannot be effectively delivered.

COMPREHENSIVE FIRE PREVENTION PROGRAM

The fire prevention and code enforcement program is managed by the Fire Marshal. The Fire Marshal, has limited support, and has a heavy workload which includes performing numerous state-mandated inspections on a range of occupancies. The Fire Marshal devotes the majority of time to conducting:

- ▶ required plan review and site plan review
- ▶ required inspections of all commercial occupancies
- ▶ required inspections of all public assembly occupancies
- ▶ required inspections of schools and nursing homes/assisted care facilities
- ▶ required smoke detector inspections

It appears that the Fire Marshal works long hours and, in our judgment, the workload is greater than one person can reasonably perform. Ideally, the Fire Marshal should get additional support from fire companies. However, in Rhode Island, it is necessary for any person assigned to perform inspections to become a Certified Fire Inspector. There are few fire company members certified as inspectors; as a result, no fire companies are available to assist with inspections. The State Fire Marshal's Office operates a training and testing process to certify personnel.

Currently, fire companies have a limited, or no, role in the inspection process and, while they conduct some preplanning activities, the preplanning process is not fully coordinated. In addition, there is no process to train personnel in the collection and organization of materials for the preplanning process.

Fire companies must become active in the fire inspection and preplanning process. It is recommended that the Department develop a program to train and certify a minimum of one company officer per shift to the Fire Inspector I level. This would enable a fire company to support the Fire Marshal and conduct fire inspections. This would reduce some of the workload in the Fire Marshal's office. The District may wish to consider employing, on an hourly basis, a Fire Protection Engineer to assist the Fire Marshal by conducting engineering reviews, as necessary.

RECOMMENDATION VII-6: The District should require that at least one company officer per shift be trained and certified to the Fire Inspector I level.

RECOMMENDATION VII-7: The District should have access to a Fire Protection Engineer to assist in the review of technical or unusual development plans.

The Fire Marshal has not had the opportunity to develop a formalized public education program. Currently, the program is limited to having school children visit the fire station and having the Fire Marshal visit the school. Ideally, the Fire Marshal (once there is relief from the inspection workload) should develop a community-based fire prevention program. There are a number of prevention programs which have been developed for use by local Fire Marshals. For example, the NFPA has several prevention programs which can be adopted.

RECOMMENDATION VII-8: *The District should develop a comprehensive public education program which focuses on the community at large.*

In addition to these recommendations, we have recommended earlier in this report that certain administrative functions should be transferred to the Town of East Greenwich. If certain administrative functions are transferred to the Town, the duties of the Tax Clerk should be redefined. The incumbent should be assigned to assist in other administrative support activities, including assisting the Fire Marshal in scheduling and records maintenance.

VIII. TRAINING AND SAFETY

TRAINING IN THE EAST GREENWICH FIRE DEPARTMENT

Training is a critical element to ensure the effectiveness and readiness of an emergency response agency. In East Greenwich, the Board of Fire Commissioners and Fire Chief have recognized the need for an organized approach to training within the District. This recognition resulted in the employment of a Deputy Chief with responsibility for developing and managing a training program. Since the position was created approximately one year ago, there appears to have been substantial progress in the development of a training program. The scope of training required in East Greenwich is considerable. There is always a need for refresher training in basic fire and rescue techniques, required continuing education (e.g., EMS re-certification), special operations training, supervisory training, and safety training.

Five personnel have recently completed recruit training and have been assigned to fire companies. The training of the recruits was the responsibility of the Deputy Chief. The Deputy had little help with the recruit training effort, except from those personnel who assisted as part of their “collateral duties.” The recruit curriculum utilizes the International Fire Service Training Association (IFSTA) *Essentials of Firefighting*. As we understand the recruit training program in the District, the program is in accordance with NFPA Standard 1001, the *National Professional Fire Service Qualification Standards*. Recruits are trained at the Firefighter II level. This recruit class was fortunate, since recruits had “live fire training” exercises.

The training officer should not only provide training directly, but more importantly, should ensure that key employees within the Fire Department are capable of developing and delivering a training program. The Deputy Chief should develop the training program and ensure that company officers are able to provide training.

The Deputy Chief, in addition to training duties, is responsible for a range of administrative responsibilities to support the Fire Chief. The Deputy was also heavily involved with the training of the five new firefighters. The Deputy Chief is unable to delegate training to others, due to contractual issues and a lack of

certified personnel within the Department to whom training work can be delegated. To ensure that all companies are effectively trained, all fire officers should be required to be certified at the Fire Instructor 1 level. Company officers should be able to conduct a training from a standardized lesson plan as part of a Department basic training program.

As the Department's training program is formalized, the Deputy Chief should develop and distribute a monthly training package to company officers, so that they can plan their training efforts. Each officer would be required to perform specific training in accordance with the defined plan and training schedule. The Deputy Chief should develop a process to evaluate training and the skill levels of each company

There are several categories of training which must be considered by the Fire Department, including basic skills training and middle management/supervisory training. Basic skills training focuses on structural firefighting operations and is taught in recruit training. However, the Fire Department does not have an ongoing basic skills training program to ensure the maintenance of skills. Basic skills training is repetitive, but is essential since application of those skills is rarely required. Ensuring that firefighters have the necessary firefighting skills is an integral part of meeting the intent of NFPA 1710.

In East Greenwich, there are few structural fires. As a result, there are limited opportunities to apply skills. To maintain skill levels, the Deputy Chief should develop a plan for fire suppression training. The program should be designed so that all fire officers can use lesson plans to train personnel. A part of this training effort should incorporate a quarterly performance evaluation program in which the Deputy Chief can evaluate the quality of instruction. The program should focus on basic skills to ensure continuity between shifts and operational capabilities at the incident scene. In addition, the Deputy Chief should incorporate basic NIMS training for all personnel. Advanced NIMS training should be provided to all officers in the Department. The training should be evaluated during the course of the field training and at company drills. The Deputy should evaluate the quality of the training based on how well the company performs.

RECOMMENDATION VIII-1: The District should require all company officers be trained to the Fire Instructor I level, with the capability of instructing personnel from a defined lesson plan.

RECOMMENDATION VIII-2: The Department should develop and implement a basic skill refresher training program, followed by NIMS training.

RECOMMENDATION VIII-3: The Deputy Chief should develop a program to evaluate training provided to personnel. Individual and company training levels can be measured at company drills.

There is currently no training program or career path for those wishing to become officers. Some firefighters have participated in the state-sponsored fire instructor course and have become certified instructors. These personnel, however, do not participate in the District's training program. Some of the company fire officers have been trained as well, but they do not, nor are they expected to, perform shift training for their individual shifts.

Fire Officer 1 and 2 courses should be made available for those firefighters and officers wishing to complete those courses. Future promotional opportunities should be contingent upon personnel meeting specified training and certification levels.

It should be noted that few firefighters in East Greenwich have participated in National Fire Academy (NFA) field or resident training courses. NFA courses are free and provide a defined professional development program for those in the fire and emergency medical services industry

RECOMMENDATION VIII-4: The Department should provide an opportunity for Fire Officer 1 and 2 training courses.

FIREFIGHTER SAFETY

The health and safety of firefighters are critical factors to be considered in all fire department operations. In other sections of this report, we have discussed issues that relate to the safety of firefighters. In the East Greenwich Fire

Department, there are several matters requiring attention. Interviews with personnel suggest that many firefighters do not understand all of the specifics of NFPA Standard 1500, *Standard on Fire Service Occupational Safety and Health*. In addition, the Fire Department does not have a safety committee. Safety committees are designed to review safety concerns and identify safety problems.

It appeared to the consultants that there were several violations of NFPA Standard 1500. For example, the work area and storage area for SCBA were dirty and quarterly air testing has not been completed or documented. Maintenance and tests records on individual SCBA units appear to be lacking.

To address possible safety concerns, the Fire Chief should establish a safety committee to begin the examination of safety related issues. In addition, the Fire Chief should assign the committee the responsibility for conducting a systematic review of compliance with NFPA Standard 1500.

RECOMMENDATION VIII-5: The Fire Department should establish a safety committee.

RECOMMENDATION VIII-6: The Fire Chief should direct personnel to conduct a systematic review of compliance with NFPA Standard 1500.

It is important to note that the Department has addressed important health and safety concerns. For example, the Department has an aggressive program of annual medical evaluation/examination.

Apparatus maintenance is the responsibility of a firefighter who performs that function as a collateral duty assignment. While apparatus appear to meet NFPA Standard 1901, there is a lack of maintenance records, including annual pump service test or hose test records. It should also be noted that there are no specific qualifications or certifications required for the personnel designated to perform apparatus maintenance.

RECOMMENDATION VIII-7: The Fire Chief should order the development of specific maintenance records.

During the course of field work, the consultants conducted a general inspection of personal protective ensembles (PPE). It appears that the PPE meet NFPA 1971 Standards and most PPE had a Personal Alert Safety System (PASS) alarm on the turnout coat. However, the consultants were unable to determine if the PASS alarms meet NFPA standards. There was no documented PPE inspection program or specified cleaning and repair program.

***RECOMMENDATION VIII-8:** As part of the recommended safety review, the Fire Chief should ensure that appropriate documentation systems are developed.*

IX. FIRE DEPARTMENT ATTITUDE SURVEY

Fire Department employees were given the opportunity to anonymously respond to an attitude survey. In this chapter, the results of the attitude survey of members of the Department are presented. The purpose of the survey of Fire Department employees was to gather information concerning firefighters' views of the work they perform, the services they provide and the support they receive. It is important to recognize the attitudes and opinions of employees as one indicator of the health of an organization.

SURVEY DESIGN

The Fire Department survey form is composed of several parts. Sections I through IV ask respondents to evaluate each of a series of statements, using a five point scale. The fifth section asks respondents about their future plans with the organization. At the end of the survey, respondents are given the opportunity to give short narrative answers to four general questions.

The consultants provided the Fire Department with approximately 34 survey forms which were distributed in the Fire Department. The surveys were distributed to firefighters on each shift. The consultants received 22 responses.

COMPILATION OF SURVEY RESULTS

The following charts provide a compilation of all responses received. In the compilation of survey results, every effort has been made to be accurate. In some instances, e.g., when individual questions were not answered, two responses were given to a question, or a response was not legible, responses had to be excluded from the compilation. For purposes of the analysis in this section, all percentages have been rounded to the nearest whole number.

Questions 1 through 15 (Section I) ask members for opinions on practices and procedures, as well as their degree of personal satisfaction as a member of the Department. Exhibit IX-1 presents each of the statements/questions in Section I and summarizes the responses.

EXHIBIT IX-1
RESPONSES TO QUESTIONS 1 THROUGH 15

I. Please indicate in the box before each statement the response that best describes your opinion on each of the following statements. Use the following scale.

		Number & Percent	4 Strongly Agree	3 Agree	2 Disagree	1 Strongly Disagree	0 No Opinion
1	I receive adequate direction and support from my supervisor.	No.	6	8	3	4	1
		%	27%	36%	14%	18%	5%
2	I receive adequate training for my job.	No.	1	10	8	3	0
		%	5%	45%	36%	14%	0.0%
3	My work is goal oriented.	No.	1	15	2	3	1
		%	5%	68%	9%	14%	5%
4	The Fire Chief is clearly concerned about the needs of employees.	No.	4	6	5	7	0
		%	18%	27%	23%	32%	0%
5	In my job, I feel like a member of a team, not just an individual employee.	No.	4	7	4	7	0
		%	18%	32%	18%	32%	0.0%
6	Discipline in the Fire Department is handled in a fair and consistent manner.	No.	1	3	4	13	1
		%	5%	14%	18%	59%	5%
7	We have a good working relationship with other Town departments.	No.	6	14	1	0	1
		%	27%	64%	5%	0%	5%
8	The citizens of East Greenwich appreciate the work of our department on their behalf.	No.	2	16	1	1	2
		%	9%	73%	5%	5%	9%
9	Fire prevention is an important part of my job.	No.	4	12	2	1	3
		%	18%	55%	9%	5%	14%
10	Promotions in this department are based on merit and qualifications, rather than on favoritism and personal influence.	No.	1	9	4	4	4
		%	5%	41%	18%	18%	18%
11	The East Greenwich Fire Department is a progressive agency.	No.	0	8	7	5	2
		%	0%	36%	32%	23%	9%
12	Good performance is recognized and rewarded in this department.	No.	0	5	7	9	1
		%	0%	23%	32%	41%	5%
13	My work is governed by clear standards of performance.	No.	1	5	6	8	2
		%	5%	23%	27%	36%	9%

		Number & Percent	4 Strongly Agree	3 Agree	2 Disagree	1 Strongly Disagree	0 No Opinion
14	Safety is emphasized and enforced.	No.	3	12	6	1	0
		%	14%	55%	27%	5%	0%
15	I enjoy my work.	No.	12	8	1	1	0
		%	55%	36%	5%	5%	0%

The following summarizes the results of questions 1 through 15.

- ▶ 91% enjoy their work.
- ▶ 82% believe that the citizens of the Town appreciate their work.
- ▶ 55% feel they are members of a team.
- ▶ 73% believe that prevention is part of their job.
- ▶ 69% believe that safety is emphasized and enforced.
- ▶ 46% believe that promotions are based on merit.
- ▶ 45% believe that the Fire Chief is clearly concerned about the needs of employees.
- ▶ 76% do not believe that discipline is fairly and consistently administered.
- ▶ 50% do not believe that they receive adequate training.
- ▶ 55% do not believe the Department is a progressive organization.
- ▶ 73% do not believe that performance is recognized or rewarded.
- ▶ 63% do not agree that there are clear standards governing their work.

These results show that a very high proportion of employees enjoy the work, feel that they are member of a team, and feel that they are appreciated by the public; these are very positive measures of job satisfaction and morale. However, a large number of personnel believe that the Department is not a progressive organization, do not believe that good performance is recognized, do not believe that discipline is fair and consistent, and do not believe training is adequate.

Exhibit IX-2 presents the responses to questions 16 through 29 (Section II). The questions in this section ask respondents to rate a variety of services provided by the Department.

EXHIBIT IX-2
RESPONSES TO QUESTIONS 16 THROUGH 29

II. Please rate your department on each item listed below. Use the following scale.

		Number & Percent	5 Excellent	4 Very Good	3 Good	2 Fair	1 Poor
16	Incident command	No.	0	6	6	5	3
		%	0%	27%	27%	23%	14%
17	Prevention & public education	No.	0	5	6	7	4
		%	0%	23%	27%	32%	18%
18	Customer service attitude	No.	0	4	8	6	4
		%	0%	18%	36%	27%	18%
19	Pre-planning	No.	0	3	3	9	6
		%	0%	14%	14%	41%	27%
20	Technical rescue	No.	0	0	5	8	8
		%	0%	0%	23%	36%	36%
21	Haz Mat response	No.	0	1	2	8	10
		%	0%	5%	9%	36%	45%
22	Public service calls	No.	2	9	8	2	0
		%	9%	41%	36%	9%	0%
23	Emergency Medical Services	No.	4	9	6	1	1
		%	18%	41%	27%	5%	5%
24	Rapid Intervention Team	No.	0	0	4	7	10
		%	0%	0%	18%	32%	45%
25	Dispatch & emergency communications	No.	0	2	10	6	3
		%	0%	9%	45%	27%	14%
26	Fireground operations	No.	0	4	8	4	5
		%	0%	18%	36%	18%	23%
27	Natural disaster response	No.	0	3	3	10	5
		%	0%	14%	14%	45%	23%
28	Multiple casualty incidents	No.	0	1	10	3	6
		%	0%	5%	45%	14%	27%
29	Bio-chem incidents	No.	0	0	1	8	11
		%	0%	0%	5%	36%	50%

The responses indicate that, generally, personnel are critical of the Department's capabilities. Respondents provided a very positive response in only two categories. Department performance in Emergency Medical Services is considered excellent, or very good, by most members (59 percent of respondents), and public service calls are considered excellent or very good by 50 percent of respondents. Respondents appear to be critical of the Department's capability in a number of other areas, such as incident command, prevention and public education, pre-planning, fire ground operations, and other areas.

A significant number of members (50 percent) rate the Department's performance only good to fair on incident command, and 54 percent rate the Department's performance only good to fair on fire ground operations. In addition, 55 percent of members believe pre-planning is only fair to good, and 59 percent report prevention and public education as fair to good. Responses suggest that there is a need for more training in the predominantly technical areas of technical rescue, rapid intervention, multiple casualty, bio-chemical and natural disasters. It is significant to note that only 27 percent of members evaluate incident command as very good (no respondents indicate that incident command is excellent); 14 percent of respondents believe that incident command is poor.

- ▶ 59% rate Emergency Medical Services as excellent or very good (18% excellent and 41% very good).
- ▶ 59% rate the Department's responses to public service calls as good or very good.
- ▶ 54% rate the Department's customer service attitude as good or very good (18% very good and 36% good).
- ▶ 54% evaluate incident command as very good or good (27% very good and 27% good).
- ▶ 54% evaluate fire ground operations as good or very good (18% very good and 36% good).
- ▶ 68% rate the Department's pre-planning as fair or poor.
- ▶ 72% rate technical rescue as fair or poor.
- ▶ 81% rate haz-mat response as fair or poor.
- ▶ 50% rate the rapid intervention effort as fair or poor.
- ▶ 86% believe that the Department's capability in a bio-chemical incident is fair or poor.

Exhibit IX-3, *Responses to Questions 30 through 49*, presents responses to Section III of the survey. The questions generally seek information on the degree of employee satisfaction with various support items and functions generally thought to contribute significantly to the morale of members.

**EXHIBIT IX-3
RESPONSES TO QUESTIONS 30 THROUGH 49**

III. Please indicate your opinion about each item listed below. Use the following scale.

		Number & Percent	4 Very Satisfied	3 Satisfied	2 Dissatisfied	1 Very Dissatisfied	0 No Opinion
30	Equipment	No.	1	10	11	04	0
		%	5%	45%	50%	0%	0%
31	Vehicle types	No.	1	8	10	2	0
		%	5%	36%	45%	9%	0%
32	Vehicle maintenance	No.	1	12	8	0	0
		%	5%	55%	36%	0%	0%
33	Rules and regulations	No.	1	7	6	6	0
		%	5	32%	27%	27%	0%
34	Discipline	No.	1	4	4	12	1
		%	5%	18%	18%	55%	5%
35	Internal communications	No.	0	6	2	13	1
		%	0%	27%	9%	59%	5%
36	Provisions for health & safety	No.	1	13	6	0	1
		%	5%	59%	27%	0%	5%
37	Staff support services	No.	2	11	5	3	1
		%	9%	50%	23%	14%	5%
38	Encouragement to be innovative	No.	0	11	6	3	1
		%	0%	50%	27%	14%	5%
39	Mutual aid	No.	5	14	1	0	0
		%	23%	64%	5%	0%	0%
40	Fringe benefits	No.	7	14	1	0	0
		%	32%	64%	5%	0%	0%

		Number & Percent	4 Very Satisfied	3 Satisfied	2 Dissatisfied	1 Very Dissatisfied	0 No Opinion
41	Stations and facilities	No.	1	14	4	3	0
		%	5%	64%	18%	14%	0%
42	Training programs	No.	2	7	7	5	0
		%	9%	32%	32%	23%	0%
43	Training facilities	No.	0	8	8	5	0
		%	0%	36%	36%	23%	0%
44	Safety at incidents	No.	1	17	1	2	0
		%	5%	77%	5%	9%	0%
45	Promotional procedures	No.	1	6	9	4	1
		%	5%	27%	41%	18%	5%
46	Standard Operating Guidelines	No.	1	10	5	5	0
		%	5%	45%	23%	23%	0%
47	Supervision & management	No.	2	5	7	7	1
		%	9%	23%	32%	32%	5%
48	Training & education opportunities	No.	1	8	7	5	0
		%	5%	36%	32%	23%	0%
49	Support from the Commissioners	No.	0	1	8	11	2
		%	0%	5%	36%	50%	9%

Responses to survey questions 30 through 49 provide member opinions regarding support and related functions. Opinions were often mixed. For example, while many respondents are satisfied with equipment, facilities and stations, and staff support services, many respondents are not satisfied with the same elements.

- ▶ 50% are very satisfied or satisfied with equipment, while 50% are dissatisfied.
- ▶ 41% are very satisfied or satisfied with vehicle type, while 54% are dissatisfied or very dissatisfied.
- ▶ 41% are very satisfied or satisfied with training programs, and 55% are dissatisfied or very dissatisfied.
- ▶ 37% are very satisfied or satisfied with rules and regulations; 54% are dissatisfied or very dissatisfied.

- ▶ 27% are satisfied with internal communications; 68% are not satisfied (9% are dissatisfied and 59% are very dissatisfied).

It is interesting to note that a clear majority of personnel are very satisfied or satisfied with fringe benefits (96%), safety at incidents (82%), and mutual aid (87%). However, 86% are dissatisfied or very dissatisfied with support from the Commissioners; 64% are dissatisfied or very dissatisfied with supervision and management; 59% are dissatisfied with promotional procedures.

There are three fairly distinct areas from which employees derive job and career satisfaction:

task orientation, which relates directly to those survey items having to do with the preparation for, and actual response to, emergency incidents

interaction orientation, which relates directly to those survey items having to do with management, supervision, fairness, respect, and team operations

self orientation, which relates directly to those survey items having to do with the individual's general satisfaction

Attention to these three areas and to the issues and concerns brought up by the attitude survey is of vital importance in further improving performance of the Department, job satisfaction, retention of personnel and customer service.

Section IV of the survey (questions 50 through 56) focuses on individuals' relationships with supervisors, peers and personnel in other Town departments. Members were asked to evaluate how satisfied they are with these relationships.

EXHIBIT IX-4
RESPONSES TO QUESTIONS 50 THROUGH 56

IV. Please indicate below how you feel about your relationship with each of the following persons or groups. Use the following scale.

		Number & Percent	5 Very Satisfied	4 Satisfied	3 Dissatisfied	2 Very Dissatisfied	1 No Opinion
50	Relationship with your immediate supervisor.	No.	11	5	2	2	2
		%	50%	23%	9%	9%	9%
51	Relationship with the Deputy Fire Chief.	No.	8	8	4	2	0
		%	36%	36%	18%	9%	0%
52	Relationship with the Fire Chief.	No.	7	6	5	4	0
		%	32%	27%	23%	18%	0%
53	Relationship with fellow firefighters	No.	7	8	6	1	0
		%	32%	36%	27%	9%	0%
54	Relationship with Town residents as you perform your job.	No.	4	14	3	0	1
		%	18%	64%	14%	0%	5%
55	Relationship with Board of Fire Commissioners.	No.	0	1	12	7	2
		%	0%	5%	55%	32%	9%
56	Relationships with other Fire Departments or emergency service personnel with whom you may need to work.	No.	1	21	0	0	0
		%	5	95%	0%	0%	0%

Questions 50 through 56 present the views of respondents regarding relationships. Personnel show a fairly high level of satisfaction with their relationships with their immediate supervisors, the Fire Chief, fellow firefighters, and Town residents.

- ▶ 73% express satisfaction in their relationship with their immediate supervisor.
- ▶ 59% are satisfied with their relationship with the Fire Chief.
- ▶ 72% are satisfied with their relationship with the Deputy Fire Chief.
- ▶ 68% believe their relationships with fellow firefighters are satisfactory.

- ▶ 82% of respondents are satisfied with their relationships with Town residents as they perform their jobs.
- ▶ 5% of respondents are satisfied with their relationship with the Board of Fire Commissioners.
- ▶ 100% of respondents are satisfied with relationships with Town personnel with whom they may need to work.

The remaining portion of the survey solicited narrative responses to four questions. For purposes of this Draft Report, we have not provided a summary of the answers to the narrative questions. However, the focus of the narrative responses related to the need for more personnel, a need for internal communication, a need to change some operational policies, a need to revise SOGs and SOPs, and the need for more training.

IMPLICATIONS OF THE SURVEY AND EMPLOYEE OPINIONS

The survey suggests that there is a clear need to improve internal communications. In addition, the survey provides an evaluation of the services provided by the District, by the actual providers of the service. The opinions of personnel should be carefully considered, since they provide guidance for the development of training programs and the assessments of strengths and weaknesses.

RECOMMENDATION IX-1: The Fire Chief should develop a systematic process to meet with members of the Fire Department to discuss problems and concerns.

RECOMMENDATION IX-2: The Board of Fire Commissioners, the Fire Chief, and the Deputy Fire Chief should review the survey and determine if specific actions are necessary.

X. PLAN OF IMPLEMENTATION

The recommendations in this report cover a range of matters; however, the primary recommendations relate to the organization of the Department and the changing needs of the Department. In the Plan of Action outlined below, the consultants have presented an approach to implementing recommendations.

PLAN OF ACTION

The East Greenwich Fire District should adopt a plan of action to implement the major recommendations in the next several years. An important element of this plan of action is for the District to establish a process to review and implement recommendations. The Board of Fire Commissioners should play an important role in the study implementation process and should be responsible for working with the Fire Chief to develop a series of major implementation goals and objectives.

While there are a number of important policy and administrative decisions to consider, the most important policy decisions which need to be discussed are:

- The reorganization of the Fire Department and the establishment of two Deputy Fire Chief positions.
- The development of a new system of emergency communications.
- The development of a comprehensive set of SOPs and SOGs.
- The exploration and implementation of regional systems, such as automatic mutual aid.
- The negotiation of goals and objectives by the Board of Fire Commissioners and the Fire Chief to establish priorities and guidelines.

**EXHIBIT X-1
POLICY DECISIONS**

POLICY DECISION	FACTS TO CONSIDER	RESPONSIBILITY
Reorganization of the Fire Department	Effectiveness of the organization Accountability of personnel Internal communications Future of the Department	Board of Fire Commissioners
Consolidation of emergency communications	Effectiveness of the current system Effective use of personnel Ability to establish an effective arrangement with the Town	Board of Fire Commissioners & Fire Chief
Revision of the Fire Department's SOPs and SOGs	Application of industry practices Formal practices throughout the Department	Fire Chief
Negotiation of goals and objectives	Establishment of priorities Time line for implementation of objectives	Board of Fire Commissioners & Fire Chief

GOALS & OBJECTIVES FOR THE FIRE CHIEF

Once it is determined which recommendations should be implemented, the Board of Commissioners should negotiate specific goals and objectives with the Fire Chief. These goals and objectives should be reasonable, but should have definite time lines for achieving a particular objective.

FIRE DEPARTMENT REORGANIZATION

To reorganize the Fire Department, the District must undertake several actions:

- *Establish an additional Deputy Fire Chief position.* Reorganization of the Department is contingent upon establishing the appropriate positions.
- *Select the Deputy Chief.* The Fire Chief and the Board of Commissioners must determine whether the Deputy Chief should be selected from within the Department or selected by means of an open competitive process.

- *Reorganize the Fire Department.* The Fire Chief should draft a memorandum, subject to the approval of the Board of Fire Commissioners which describes the proposed reorganization of the Fire Department. The memorandum should be distributed to all personnel. The memorandum should include several key features:
 - ▶ the organization structure of the Department
 - ▶ a written description of the authority and responsibilities of the Deputy Fire Chiefs
 - ▶ a description of the process for selecting the new Deputy Fire Chief
 - ▶ the establishment of a date for the reorganization to become effective

INTERNAL COMMUNICATIONS

The Fire Chief should implement several recommendations relating to internal communications during the next three months. The Fire Chief should:

- *Establish the recommended committee structure.* The Fire Department should create the standing Department committees recommended in the report.
- *Make the development of Standing Operating Guidelines a priority.* The Fire Chief should make the development of SOGs a priority of the Fire Department.
- *Establish a task force to review the Fire Department Management Study.* The Fire Chief should establish a task force to review the *Fire Department Management Study* to establish what actions can be taken within a reasonable time.

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 for implementation. The recommendations contained in this report have been assigned priorities. The recommendations have been categorized as follows:

Priority 1: Recommendations which directly affect the safety of personnel or the public, or establish the framework for other recommendations. These recommendations should be addressed immediately.

Priority 2: Recommendations which should be implemented without delay, since they may bear directly on safety, productivity, cost and efficient operation of fire, rescue or emergency medical services in East Greenwich.

Priority 3: Recommendations which are important to the efficient provision of fire, rescue or emergency medical services in East Greenwich. These recommendations should be implemented as soon as reasonable and practical.

Priority 4: Recommendations which can contribute to the continued improvement of fire, rescue or emergency medical services in East Greenwich. These recommendations should be implemented as soon as resources and operating conditions permit.

EXHIBIT X-2 LIST OF RECOMMENDATIONS

	RECOMMENDATION	PRIORITY
III-1	The Fire Department should be reorganized.	1
III-2 (ALTERNATIVE #1)	The Fire Department should be composed of two operating divisions: an Operations Division and an Administration and Support Services Division.	1
III-3 (ALTERNATIVE #1)	The Operations Division and the Administration and Support Services Division should be commanded by Deputy Fire Chiefs.	1
III-4 (ALTERNATIVE #2)	The Fire Department should be composed of three operating units: an Operations Division, a training and quality assurance unit, and the Office of the Fire Marshal.	2
III-5 (ALTERNATIVE #2)	The Operations Division should be commanded by a Deputy Chief, the training and quality assurance units should be directed by a Fire Captain and the Office of the Fire Marshal should be directed by the Fire Marshal. Each of these unit commanders should report to the Fire Chief.	2
III-6	The Board of Fire Commissioners should review the proposed organization models and determine the approach to follow.	1
IV-1	The Board of Fire Commissioners should negotiate performance objectives with the Fire Chief.	1
IV-2	The Fire Chief should immediately appoint a committee composed of all ranks of the Department, charged with developing new Standard Operating Guidelines (SOGs) and Standard Operating Procedures (SOPs).	2
IV-3	The SOGs and SOPs should be developed, circulated, revised, and finally promulgated within the next 12 to 15 months.	2
IV-4	The Fire Chief should schedule periodic staff meetings with company officers.	2
IV-5	The Fire Chief should schedule and preside over an annual meeting of all officers and an annual meeting for all members of the Department.	3

IV-6	The Fire Chief should develop a committee structure within the Fire Department.	3
IV-7	The East Greenwich Fire District should work with surrounding fire and rescue agencies to maximize available resources.	1
IV-8	The Fire Chief, with the assistance of staff, should develop regular management information reports. The reports should be circulated to the Commissioners and throughout the Department.	4
IV-9	The Fire District should develop education and training standards for officers.	3
IV-10	The Fire Department should develop a performance appraisal process for fire officers.	3
IV-11	The Fire Department should include Assessment Centers as part of its promotional processes.	4
IV-12	The Fire Department should develop a more aggressive outreach program for recruitment of potential candidates for the position of firefighter.	2
IV-13	The Fire District should propose to the Town that it assume responsibility for selected administrative tasks.	1
V-1	The Fire Department should consider additional fire station relocation strategies.	3/4
V-2	The Fire Department should develop a system of automatic aid with surrounding fire and rescue departments.	1
VI-1	The management of the Fire Department should systematically monitor the staffing factor of the Fire Department, as one measure of productivity and accountability.	4
VI-2	Policy leaders of the District should adopt a Fire Department staffing policy which encourages continuous improvement, in a cost effective manner, while ensuring the safety of personnel.	1
VI-3	Establish a methodology for implementing automatic mutual aid between the East Greenwich Fire Department and other fire departments.	1
VI-4	Establish a Rapid Intervention Team (RIT) program by working with regional fire departments.	1
VI-5	Ensure that the Department's recall system is operational.	1
VI-6	Establish a duty chief rotation system so that a chief officer is available to respond to an emergency at all times of the day.	1/2
VI-7	The Fire Department should work to develop a regional Incident Management Team (IMT).	1
VII-1 (ALTERNATIVE #1)	The Fire District should engage in a discussion with the Town of East Greenwich in an effort to integrate District dispatching into the Town's dispatch system.	1
VII-2 (ALTERNATIVE #2)	The Fire Department should employ civilian dispatchers and reassign firefighters to fire and rescue operations.	3
VII-3	The District should implement an emergency medical dispatch system.	3
VII-4	The District should establish a quality assurance review process for EMS service delivery and the EMS dispatch process.	2
VII-5	The quality assurance committee should meet quarterly to review a random selection of EMS dispatches.	2

VII-6	The District should require that at least one company officer per shift be trained and certified to the Fire Inspector I level.	2
VII-7	The District should have access to a Fire Protection Engineer to assist in the review of technical or unusual development plans.	2
VII-8	The District should develop a comprehensive public education program which focuses on the community at large.	4
VIII-1	The District should require all company officers be trained to the Fire Instructor I level, with the capability of instructing personnel from a defined lesson plan.	2
VIII-2	The Department should develop and implement a basic skill refresher training program, followed by NIMS training.	1
VIII-3	The Deputy Chief should develop a program to evaluate training provided to personnel. Individual and company training levels can be measured at company drills.	2
VIII-4	The Department should provide an opportunity for Fire Officer 1 and 2 training courses.	3
VIII-5	The Fire Department should establish a safety committee.	1
VIII-6	The Fire Chief should direct personnel to conduct a systematic review of compliance with NFPA Standard 1500.	1
VIII-7	The Fire Chief should order the development of specific maintenance records.	2
VIII-8	As part of the recommended safety review, the Fire Chief should ensure that appropriate documentation systems are developed.	2
IX-1	The Fire Chief should develop a systematic process to meet with members of the Fire Department to discuss problems and concerns.	3
IX-2	The Board of Fire Commissioners, the Fire Chief, and the Deputy Fire Chief should review the survey and determine if specific actions are necessary.	1

APPENDIX A

STANDARDS, BENCHMARKS AND RESPONSE PARAMETERS

This appendix describes the standards and benchmarks used to design fire or emergency medical service systems. Meeting benchmarks and standards is difficult for a small career fire department, such as East Greenwich. An approach toward making progress in achieving standards is to maximize the available regional resources. Below are listed the four emerging standards, or benchmarks, which affect crew size, response times, firefighter safety and response time.

1. *OSHA requirements* for a minimum of four equipped personnel to be present before entry in a structure fire incident
2. *OSHA requirements* for a rapid intervention team (RIT) to be present for safety reasons at working structure fires
3. *OSHA and NFPA requirements* for a qualified incident commander and a qualified safety officer to be present at working incidents
4. *NFPA 1710 and industry standards* to have a minimum of 15 firefighters, including an incident commander, present for a low-hazard structure fire, and at least two pumpers and a ladder truck, or similar vehicle.

DEVELOPING RESPONSE CAPABILITY OBJECTIVES

Response capabilities should consider both rapid response and, in the case of fire emergencies, a sufficient number of firefighters to attack the fire. Response time policy, or objectives, must also accommodate variations in fire danger. It is important to consider subsequent responses occurring after the initial response and the possibility of simultaneous emergency events, such as fire, rescue, haz-mat and EMS incidents, occurring during or after the initial incident. A number of measures and standards are considered by fire and rescue agencies when developing response capability objectives. These major measures and standards are described in detail later in the text.

STANDARDS AND FACTORS USED TO DEVELOP RESPONSE CAPABILITY OBJECTIVES

Containment of a Fire/Flashover	Distribution of Capacity (fire station location)
Local Characteristics of the Town	AMA EMS Response Considerations & Standards
Sequence of Emergency Response	AHA Standards for Cardiac Response
Insurance Services Office (ISO) Measures/Standards	“Two In, Two Out” OSHA Safety Rule
NFPA Standard 1710	

The concepts summarized in the exhibit above provide a frame of reference for many of the recommendations in this report.

Containment. In structure fire instances, there are several important factors to weigh. First is the behavior of fire within a confined space. The risks associated with this can vary across the Town. In closely developed, built-up, areas it is imperative to consistently contain a fire within the compartment of origin (that area separated from the remainder of the structure by construction). This means that the fire department must interrupt the growth of fire before a condition called “flashover” occurs. At flashover, there is a rapid transition in fire behavior from localized burning of fuel, 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 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. United States fire department planning generally assumes approximately an eight-minute period before flashover.

Under these circumstances, and where lives and properties are in danger, in order to accomplish timely interruption of fire growth, contain the fire within the compartment of origin, and locate and remove threatened persons, rapid and effective response is essential. Fire companies must receive notification of the fire, 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.

Local Characteristics. When designing response time and response capability objectives, it is important to consider fire risks, how they vary by neighborhood, and the level of service needed. Risks are greatest in wood-frame and non-resistant residential dwelling units, which are normally without automatic detection and reporting systems or suppression systems. 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. It is important to recognize the significance of automatic suppression systems. In the following exhibit, data from the NFPA is reproduced indicating the effectiveness of sprinklers in residential occupancy structure fires.

**SPRINKLER FIRE PROTECTION STATISTICS – RESIDENTIAL STRUCTURE FIRES
1994–1998 (ANNUAL AVERAGES)**

	HOMES (APTS., 1 & 2 FAMILY)	ROOMING, BOARDING & LODGING HOUSES	HOTELS & MOTELS
Percent of fires in buildings with automatic suppression systems	2.1%	17.2%	34.5%
Deaths per 1,000 fires with no automatic suppression systems	9.5	13.4	8.5
Deaths per 1,000 fires with automatic suppression systems	2.2	0.0	0.0
Percent reduction in deaths per 1,000 fires when automatic suppression systems are present	76.6%	100%	100%

Source: The U.S. Fire Problem Overview Report, Marty Ahrens, NFPA, June 2001

The data indicates that there is a reduction in death when automatic suppression systems are present. While not shown above, NFPA data also demonstrate that there is a substantial reduction in the cost of fire damage when automatic suppression systems are in place.

Sequence of response. In bringing firefighters to the point of "fire interruption," required steps include:

- Notification of the fire companies
- Turnout of firefighters (donning safety gear, etc.) and dispatch
- Travel time
- Size-up and set-up at the scene

The time required to complete these procedures must be reduced to the shortest possible span through training, sound standard operating procedures, reasonable response times and other means. 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 should ensure that response 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.

Insurance Services Office (ISO). 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 District should have a first-due engine company within 1.5 miles and a ladder-service company within 2.5 miles.*

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 allow approximately equal travel distances and response times to all locations. In East Greenwich, the four active fire station locations, allow the dispatch of companies to effectively cover their individual response areas within reasonable time frames. 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 into account these factors, therefore, each protection area must set its own realistic goal, such as reaching 90 percent of the incidents within an identified number of minutes.

EMS Response Considerations. The benchmark for fire interruption is also important for emergency medical response purposes. Survivability for 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

This equation 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).

American Heart Association. The American Heart Association, in its *Statement on Chain of Survival*, describes a particular sequence of events which must occur rapidly to allow for people to survive sudden cardiac arrest. The chain of survival includes recognition of early warning signs, activation of the emergency medical system, basic cardiopulmonary resuscitation, defibrillation, intubation and intravenous administration of medications. Early defibrillation is identified as a critical link in the chain of survival. The Association supports rapid response and advocates establishing public access defibrillation (PAD) programs. For every minute without defibrillation, the odds of survival drop seven to 10 percent. A sudden cardiac arrest victim who isn't defibrillated within 8 to 10 minutes has very limited chance of survival.

"Two in, two out" 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.

NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS

For East Greenwich, the establishment of response standards and objectives will be influenced by National Fire Protection Standards. For example, for a low hazard working structure fire, the minimum apparatus should be two engines, one ladder and 15 firefighters, including an incident commander. The 15-person requirement for a residential structure working fire is specified in the NFPA handbook and is also based on studies in Louisville, Phoenix and other areas, and is a commonly accepted, industry-wide standard. Moreover, the recently adopted NFPA 1710 has become a significant benchmark to which the Fire Department should measure its performance.

NFPA 1710, *Standard for the Organization and Deployment for Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* (2001 edition), approved on August 2, 2001, sets forth requirements concerning the organization of fire suppression and fire-based EMS services, as well as staffing requirements and maximum response times to fire and EMS incidents. While NFPA standards do not have the weight of law unless imposed by the authority having jurisdiction (AHJ), or required by OSHA or the Code of Federal Regulations, standards typically are viewed by courts and other judgmental bodies as “industry standards.”

NFPA 1710 contains *minimum* requirements relating to the organization and deployment of fire suppression operations, emergency medical operations, and special operations for all career fire departments. The standard also specifies *minimum* criteria for addressing the effectiveness and efficiency of fire suppression operations, emergency medical services, and special operations delivery in protecting the public, and the occupational safety and health of fire department employees.

NFPA 1710 describes response time objectives and staffing requirements. While the standard presents response time measures (described below), it also stipulates that these response time performance objectives should be achieved in at least 90 percent of the incidents. The response time objectives and staffing requirements are summarized below.

NFPA RESPONSE TIME OBJECTIVES AND STAFFING

FIRE DEPARTMENT RESPONSE TIME OBJECTIVES

STANDARD	NFPA 1710 SECTION	COMMENT
Turn-out time shall be one minute (60 seconds) maximum.	Section 4.1.2.1.1 (1)	Turn-out time includes time from notification of a fire company to departure from the fire station.
Four minutes (240 seconds) or less for the arrival of the first arriving engine company at a fire suppression incident and/or eight minutes (480 seconds) or less for the deployment of a full first-alarm assignment at a fire suppression incident. *	Section 4.1.2.1.1 (2)	The four-minute and eight-minute time lines are travel time from station to the incident. Both the four-minute goal and the eight-minute goal are to be achieved, if the standard is to be met, except under unusual circumstances, when only the eight-minute requirement is to be met.

STANDARD	NFPA 1710 SECTION	COMMENT
Four minutes (240 seconds) or less for the arrival of a unit with first responder, or higher, level capability at an emergency medical incident. *	Section 4.1.2.1.1 (3)	The four-minute and eight-minute time lines are travel times from a station to the incident.
Eight minutes (480 seconds) or less for the arrival of an advanced life support unit at an emergency medical incident, where this service is provided by the fire department. *	Section 4.1.2.1.1 (4)	The four-minute and eight-minute time lines are travel times from a station to the incident.

* These response time performance objectives should be achieved not less than 90 percent of the time.

FIRE DEPARTMENT STAFFING REQUIREMENTS

STANDARD	NFPA 1710 SECTION	COMMENT
Each fire company must have an officer.	Section 5.2.1.2.2	Engine companies, ladder companies, and special service companies must be commanded by an officer. East Greenwich assigns an officer to each company.
A chief level officer must respond to all full alarms.	Section 5.2.1.2.3	A chief level officer would be a Deputy Chief. East Greenwich responds with a chief officer.
Engine companies must be staffed with a minimum of four firefighters.	Section 5.2.2.1.1	East Greenwich staffs with two or three firefighters.
Ladder companies must be staffed with a minimum of four.	Section 5.2.2.2.1	East Greenwich staffs generally staffs with two firefighters.
The initial full-alarm assignment shall consist of 14 individuals, or 15 if an aerial ladder has responded.	Section 5.2.3.2.2	East Greenwich is not able to provide 15 personnel on-scene for a full alarm assignment; use of automatic aid, and a call back system would help reach this measure.

NFPA 1710 also states that the number of on-duty fire suppression personnel in excess of 14 or 15 shall be comprised of the numbers necessary for firefighting performance *relative to the expected firefighting conditions*. These numbers shall be determined through task analyses which take the following factors into consideration:

- ▶ life hazard to the population protected
- ▶ provision of safe and effective firefighting performance conditions for the firefighters

- ▶ potential property loss
- ▶ nature, configuration, hazards, and internal protection of the properties involved
- ▶ types of fireground tactics and evolutions employed as standard procedure, type of apparatus used, and results expected to be obtained at the fire scene

Fire companies shall be staffed with a minimum of four on-duty personnel. In jurisdictions with tactical hazards, high hazard occupancies, high incident frequencies, geographical restrictions, or other pertinent factors, *as identified by the authority having jurisdiction*, these companies shall be staffed with a minimum of five or six on-duty personnel.

The explanatory text which accompanies NFPA 1710 provides insight regarding the basis for the response objectives of “... four minutes or less for the arrival of the first arriving engine company at a fire suppression incident and/or eight minutes or less for the deployment of a full first alarm assignment at a fire suppression incident.”

The explanatory text states that: “An early aggressive and offensive primary interior attack on a working fire, where feasible, is usually the most effective strategy to reduce loss of lives and property damage. At approximately 10 minutes into the fire sequence, the hypothetical room of origin flashes over. Extension outside the room begins at this point. Consequently, given that the progression of a structural fire to the point of flashover (i.e., the very rapid spreading of the fire due to the super heating of room contents and other combustibles) generally occurs in less than 10 minutes, two of the most important elements in limiting fire spread are the quick arrival of sufficient numbers of personnel and equipment to attack and extinguish the fire as close to the point of its origin as possible.” (*Annex A, Section A.5.2.1.2.1*)

NFPA 1710 AND POSSIBLE EQUIVALENCIES

NFPA 1710 does allow for the development of equivalencies to achieve the results envisioned in the standard. However, NFPA 1710 is essentially an “input” standard and depends on historical data and generally accepted information concerning fire spread and life safety to emphasize the community benefits of compliance.

Sources of additional information for standards and guidelines include www.nfpa.org, www.americanheart.org, www.iafc.org, cfai@cfainet.org, and www.astm.org.

APPENDIX B

EMERGING TRENDS AND BEST PRACTICES

Many emerging fire and rescue trends, best practices and general local government trends will continue to affect fire and rescue services. Fire departments have traditionally been measured in relation to defined standards and recognized industry practices.

The text of the report defines principles associated with fire and EMS response. In addition, there are other conditions and developments that are changing the operations and administration of the fire and rescue services, including:

- ▶ legislative, regulatory and industry standards
- ▶ emergency communications/regional system development
- ▶ emergency medical services
- ▶ operational consolidation (field operations consolidation)
- ▶ human resources
- ▶ risk management
- ▶ increased customer service focus
- ▶ increase in service delivery specialties
- ▶ technology and equipment
- ▶ accreditation

LEGISLATIVE, REGULATORY AND INDUSTRY STANDARDS

There are a number of legislative, regulatory and industry standards which are causing changes in local fire service organizations. Some of these standards have long histories, and some reflect fairly new initiatives. Proposed guidelines and standards emerge from committee processes. These technical committees review data, research and actual experience of fire and rescue agencies when establishing these standards.

The two primary agencies involved with establishing fire-related standards are the Insurance Services Office (ISO) and the National Fire Protection Association (NFPA).

ISO/CRS. The Insurance Services Office is a national nonprofit organization providing services to the property and casualty insurance industry. ISO has a nonprofit subsidiary corporation, Commercial Risk Services (CRS), which provides public protection surveys. The ISO Fire Suppression Rating Schedule evaluates municipal fire suppression capability using three major criteria: the fire alarm process (how a fire is reported and how a fire department receives a report); the fire department (apparatus, equipment, staffing, training, mutual aid, automatic mutual aid, pre-fire planning, training, etc.); and the water system (supply, water main capacity to deliver fire flow, distribution of hydrants, etc). These ISO criteria are very detailed and are assigned weights. For example, the schedule defines, in detail, the type of equipment an engine company should have. The outcome of an ISO evaluation is the assignment of a jurisdiction to one of ten Public Protection Classifications. (Class 1 is the highest possible rating and Class 10 is the lowest.) This classification system is used to establish rates associated with fire insurance coverage and has a significant impact on commercial and industrial insurance rates.

National Fire Protection Association. The NFPA develops many standards applicable to fire departments. Two of the more frequently discussed standards are NFPA 1500 (health and safety) and the controversial NFPA Standard 1710 (response time and staffing).

NFPA Standard 1500 (*Standard on Fire Department Occupational Safety and Health Program*) evolved to address the large number of fatalities and occupation related injuries in fire departments. NFPA 1500 covers a range of safety issues and has resulted in a number of other standards relating to fire department incident management, infectious disease control, medical requirements for firefighters, and creation of the fire department safety officer concept. (The safety officer has responsibilities related to incident management.)

NFPA Standard 1710, which as has been discussed in Appendix 1 of this report sets forth requirements concerning the organization of fire suppression and fire-based EMS services. The standard discusses staffing requirements and maximum response times to fire and EMS incidents.

NFPA Standard 1710 (applicable to career fire departments) was adopted along with Standard 1720 (applicable to volunteer departments) and Standard 1730 (applicable to combination departments, those departments operating with a combination of career and volunteer or call personnel).

There are many other NFPA standards which are used as guidelines by fire departments, for example: NFPA 1001, Standard on Fire Fighter Professional Qualifications, NFPA 1021 Standard for Fire Officer Professional Qualifications, and NFPA 1002 Standard for Fire Apparatus/Driver/Operator Professional Qualifications. There are also standards for protective clothing, breathing apparatus and other matters.

EMERGENCY COMMUNICATIONS/REGIONAL SYSTEM DEVELOPMENT

There are a number of developments within the area of emergency communication. The most obvious are technological. Emergency communications appear to have caused a significant change in fire and EMS operations.

One major communication development has been emergency medical dispatch (EMD). EMD systems establish a framework for screening EMS calls and classifying them by seriousness. As a result, EMD training programs have been developed. For example, East Greenwich has trained some of its dispatchers in EMD. EMD provides for call screening and allows dispatchers to give pre-arrival instructions. While these systems provide high quality service, they have had a direct impact on dispatch staffing. A dispatcher can be committed to a call for a substantial period of time, which often requires an increase in the number of dispatchers. However, there has been some movement to create consolidated fire and EMS communications systems around the country. There are numerous examples of such systems within the United States.

MMA Consulting Group, Inc. recently reviewed data in one region in which nine fire and EMS departments, having a volume of approximately 25,000 calls per year, employed at least one dispatcher on duty at all times. Thus, there were nine to 12 dispatchers on-duty (communities employed about 50 dispatchers in total). If communications were provided by one agency, a system employing about 20 personnel could effectively manage the call load and provide EMD dispatching.

The development of emergency communications (911 and E-911) has resulted in substantial call volume to emergency numbers for non-emergency calls. A number of jurisdictions in the United States are experimenting with the non-emergency service number 311. The objective of this effort is to reduce the number of non-emergency calls to 911.

EMERGENCY MEDICAL SERVICES

The provision of some level of emergency medical services by fire departments is a well-established practice. Services are provided in a number of ways. Some developments include:

EMD. Emergency medical dispatch procedures (see above) allow dispatchers to evaluate the seriousness of calls using a call screening process and to make differentiations between life-threatening and non-life-threatening calls. National data, as well as the consultants' experience, indicate that incoming calls can be categorized, in general as follows: 40 percent of calls are advanced life support calls (ALS, life-threatening calls), 50 percent are basic life support calls (BLS, non-life-threatening calls) and 10 percent are trauma calls.

Response Protocol Revisions. The practice of many fire departments has been to design EMS response systems in which a first responder engine company is deployed to each emergency medical service call. However, as systems have evolved, fire departments have been more discriminating in response policies. This is particularly true when emergency medical dispatch procedures are implemented. Many fire departments do not automatically deploy fire units to BLS calls; however, they automatically deploy units to ALS calls (life-threatening situations). This policy has been adopted by many agencies for a variety of reasons. If units are committed to BLS incidents, they are not available for ALS incidents. Committing fire companies excessively may not be a wise deployment choice.

Increasing EMS Training Level for Fire Companies. Some jurisdictions have established paramedic engine companies. These units may be strategically deployed to respond to fire and EMS (ALS) incidents in areas where ambulance response may be problematic, or to ALS calls prior to arrival of a more distant ambulance.

Use and Distribution of Defibrillators. The development of Automatic External Defibrillators (AEDs), which require a modest level of training, are typically placed on most fire apparatus, and increasingly in police vehicles. The use of defibrillators is essential, since the survivability for a non-breathing person is a function of application of CPR, defibrillation and advanced life support.

OPERATIONAL CONSOLIDATION (FIELD OPERATIONS CONSOLIDATION)

Under operational consolidation, fire departments remain separate, but operate in a combined manner for response purposes. Operational consolidation often evolves as communications are integrated and detailed standard response protocols are developed. Typically, this model may develop and operate effectively when jurisdictions have similar service levels. For example, East Greenwich, Framingham, Wellesley, Wayland, and other nearby towns have a similar level of service and staffing which lends viability to operational consolidation.

HUMAN RESOURCES

There are several evolving practices with respect to human resources management reflecting national trends. These trends include increasing entry qualifications, mandatory entry qualifications or condition of employment qualifications, and diversification of the work force.

Entry Qualifications. Entry qualifications for firefighting personnel has been increasing. Since much of the work of fire and rescue departments now requires more sophisticated training, not only for emergency medical services, but hazardous materials, bio-hazards, etc., many jurisdictions are beginning to require more competencies as a condition of employment.

Mandatory Qualifications for Employment and Conditions of Employment. Many fire and rescue departments are requiring, as a condition of employment, that personnel be trained to the emergency medical technician basic level (EMT-B) before employment, or even to the paramedic level (EMT-P). Other departments are requiring that personnel reach certain levels of training within specified time parameters.

Diversification of the Workforce. There has been a broad national effort to diversify the fire service to increase the number of women and minority firefighters and emergency medical personnel.

Promotional Examinations. Fire officer promotional process have been changing. Written exams have been the traditional approach used by fire and rescue department. Many departments are using other examination tools for selecting personnel. Typically, these new examination tools consist of oral panels or assessment centers. Assessment centers are processes in which candidates participate in a series of exercises evaluating leadership, supervisory, and management skills. These processes have been used for positions such as Fire Chief, Deputy Fire Chief, Fire Captain and Fire Lieutenant.

Advanced Academic and Professional Education and Training. Nationally, there are increasing numbers of firefighters with college degrees and advanced degrees. Some union organizations have sought the introduction of educational incentive programs which provide for pay increases, or fixed annual payments, for attainment of college degrees. In addition, many command personnel within fire departments are participating in programs at the National Fire Academy. The Executive Fire Officer (EFO) program is one of the most well-known programs and completion of the program is often regarded as a desirable qualification for promotion.

RISK MANAGEMENT

There are two types of risk management which are growing within fire and rescue organizations. Internal risk management is concerned with reducing accidents, injury and sickness on the job. As a result, there has been a rapid growth of health and wellness programs including the development of specific health programs (e.g., requiring specific inoculations, or in some states, prohibiting smoking). Risk management is also applied to the assessment of risk at an operations scene. For example, at a working fire, there should be a designated safety officer, who monitors operations and has authority (notwithstanding rank) to halt all operations if conditions warrant it.

CUSTOMER SERVICE FOCUS

Fire and rescue organizations are increasingly concerned with customer service. There are many examples, including the national program in which fire stations are identified as safe places for lost children and the provision of first aid. In addition to these traditional service functions, many fire departments are training personnel to identify other health, safety or social service related problems. Under these “connector services” programs, firefighters who come in contact with possible family situations or an aged person at risk report these observations to appropriate agencies.

INCREASE IN SERVICE DELIVERY SPECIALTIES

The development of technical rescue specialties within fire departments by means of regional resource sharing is growing. Particular areas of technical rescue include confined space, building collapse, trench rescue, industrial accidents, etc. The skills developed are generally a function of the characteristics of the community or the region.

TECHNOLOGY AND EQUIPMENT

Changes in technology, equipment and apparatus are having a significant impact on safety and operations. For example, use of thermal imaging devices, instruments measuring the stability of walls, improved protective clothing and uniforms, and breathing apparatus with radios built into masks are now common. More extensive use of computers in apparatus designed to provide information on buildings and hazards are also more common.

Apparatus are changing in several ways. Some fire suppression apparatus are becoming smaller and more specialized. At the same time, there is the generalization of equipment rather than specialization of equipment. Rapid intervention vehicles, such as rescue-pumpers, flying squads with pumps, ambulance-pumpers, combined hazardous materials and command post vehicles, combined lighting and air trucks and modern tanker-pumpers are increasingly common. Some departments have two or more specialized vehicles available for immediate use by responders, depending on the type of call. For example, a pumper crew may be able to select a pumper or a medical aide car, depending on whether the call is a fire call or an EMS call.

ACCREDITATION

The International Association of Fire Chiefs and the International City/County Management Association have created a Commission on Fire Accreditation. The Commission has established guidelines and standards and specifies a process for fire departments to achieve accreditation.