

**Management and Operations Study of the  
Fire Department**

**TOWN OF WATERTOWN, MASSACHUSETTS**

**matrix** #  
consulting group  
721 Colorado Avenue, Suite 101  
Palo Alto, CA 94303  
v.650.858.0507 f.650.858.0509

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# **1 INTRODUCTION AND EXECUTIVE SUMMARY**

This first chapter provides a summary of the process utilized by the Matrix Consulting Group to conduct this assignment, and provides an Executive Summary of our principal findings and recommendations.

## **1. INTRODUCTION**

The Matrix Consulting Group was retained by the Town of Watertown to conduct and develop a Public Safety Study of the Watertown Police and Fire Departments (WPD & WFD). The scope of services defined in the Town's original request for proposals was comprehensive and focused on the following broad topical areas in the Fire Department:

- Identify service needed for Watertown based on the characteristics of the community, statutory and regulatory requirements for response and delivery and comparison with current ability to fulfill the needs and expectations.
- Identify the public safety risks and prioritize the level of risk that must be covered based on the data and operations of the public safety departments. The type, frequency, distribution, response times, mutual aid and/or contractor provided services, staffing policies, reporting of emergency and routine responses to all services will be included.
- Define services performed by each department, any duplication of services, and services that are not currently provided, but are needed.
- Review the current centralized dispatch operation located in the new police station for Watertown emergency public safety services, including the current organization, management/supervision, training, schedule and data/technology required for each department. Comparison with other similar communities and the possible feasibility of consolidation with other departments will be included for consideration.
- Assess the current plan for deploying the required number of public safety officers and supervisors, along with vehicles/apparatus used and recommend cost effective alternatives based on the type of incident for each department.

Evaluate whether there are recommended changes to improve efficiency and delivery of service.

- Evaluate schedules for assigning required personnel, including appropriate staffing, supervisors, management, and support staff to respond from the initial call for routine and emergency service through to generating the incident report and findings, and any subsequent proceedings such as court appearance, legal action, or insurance resolution or inspection.
- Identify the required staffing levels to meet the needs of the community in the most cost effective and complete manner and examine the use of overtime and leave time for each department and in Watertown and comparable communities including operating costs, personnel impacts, and impact on delivery of service and work load.
- Evaluate feasible options for public safety service and delivery to determine whether services can be effectively shared with other public and/or private entities. Evaluate needs for service backups. Review the possibilities and cost implications of contracted services vs. staffing in each department.
- Evaluate current and planned vehicle / apparatus configuration/ acquisition / replacement, maintenance and assignment practices to determine whether the existing operations are the most cost effective implementation.
- Evaluation of Departmental policies and procedures and collective bargaining provisions that impact the efficient operations of the department and public safety service delivery. Review education and/or prevention training requirements, and funding allocation in comparison to other communities and standards. Include possible recommendations that may improve the current policies, procedures, training and delivery of services in the most cost effective manner.

The project was conducted during the second half of 2011 and early 2012 by the Matrix Consulting Group project team. To conduct the assignment, the members of the project team engaged in a variety of activities, including the following:

- Met with senior management staff in the Town.
- Interviewed members of the command staff in the Fire Department.
- Conducted one-on-one or small group interviews with staff in all functions.
- Collected data describing workload, finances, policies and procedures, accreditation, salaries and wages, benefits, use of leave and other key descriptive factors.

- Develop a descriptive profile of the Fire Department that was reviewed with staff. This has been included as an appendix to this document.
- Developed, distributed and reviewed a confidential employee questionnaire that was focused on assessing employee attitudes about service levels, staffing, equipment, training, management systems, internal communications and other key factors. The project team did not receive any responses to the employee survey from Fire Department staff.
- Compared the WFD to a series of best management practices and attempted to conduct a survey of benchmark communities to identify potential issues for further study in the course of this project. <sup>1</sup> This has also been included as an appendix to this document.

The final step in this process has been the development of this final report. The following section provides a summary of the project team's key findings and recommendations.

## **2. EXECUTIVE SUMMARY**

While management studies, such as this one, must concentrate on the possibilities for improvement it is also important to note key positives found by the project team:

- Likewise, the management team strives to work closely together and in an organized fashion – all assignments are documented and published so that responsibilities and assignments are clear.
- The Department has worked to maximize the efficiency of their operation given the personnel provided by developing a deployment plan under various staffing levels.
- The Chief has worked to ensure that there is consistency across all four shifts in terms of staffing, deployment and service delivery.
- The station network and unit deployment provide good coverage of the entire Town. The mutual aid system available in the Metro-Boston area is an excellent asset for providing additional staffing.

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<sup>1</sup> Only a single community responded to the benchmark survey, the Town of Belmont.

- The Department operates an engine-company inspection program in an effort to provide additional support in the area of fire prevention.
- Fire apparatus maintenance is provided by an on-duty Firefighter, a cost-effective approach but one that may be difficult to replicate once the individual retires.
- The Department makes regular use of the incident command system (NIMS) providing for safe and effective incident management.
- The Department developed a Standard of Cover document identifying issues and capabilities within the Town. This document was completed in 2008 and should, according to the Center for Public Safety Excellence, be completed every five years.

The following chart provides a summary of the key recommendations found in the final report. Additional information relating to each recommendation can be found in the body of this document.

Finding	Recommendation	Fiscal Impact
<p>A review of the organizational structure of the Fire Department shows that it is flat, with all key functions and operations reporting to the Chief. The agency is challenged, at times, by the lack of a second staff position not included in the bargaining unit. There is a Staff Services position that could be considered as unnecessary as the functions handled by the position could be reallocated, possibly to a civilian analyst. Alternatively, the Town could consider converting the SSO Captain into an Assistant Chief.</p>	<p>Do not create an Assistant Chief position.</p> <p>Consider elimination of the Staff Services Officer (Captain) position.</p> <p>To assist the Chief and to cover the administrative work currently conducted by the SSO (Captain) the Fire Department should be authorized to create a Fire Management Analyst position (civilian).</p> <p>Eliminate one of two clerical positions in the Fire Department, consolidating functions in the remaining position.</p>	<p>None</p> <p>(\$109,000)</p> <p>\$80,000</p> <p>(\$45,000)</p>
<p>It is often challenging for supervisors to take necessary actions with respect to those they supervise if they are in the same bargaining unit.</p>	<p>Encourage the creation of a superior officers bargaining unit, similar to that found in the Police Department. This new unit should include Lieutenants and Captains. The Town should also work to take the Deputy Chiefs from the bargaining unit, making clear their role as part of the Fire Department management team.</p>	<p>None</p>

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Finding	Recommendation	Fiscal Impact
<p>Many key management systems are in place. However, there are gaps which include outdated policies, lack of data as an on-going management tool and so on.</p>	<p>Update the mission statements for the WFD. Update policies and procedures, including the development of a process by which policies can be reviewed annually. Expand involvement of staff in the review and updating of policies. Expand the use of data in decision-making and management on a daily basis.</p>	<p>None</p>
<p>While the Fire Department does an adequate job of focusing on skills training for fire / EMS there is little focus on management or supervision training.</p>	<p>Develop a training program for company officers that results in all of them being trained to the level of "Fire Officer I" per NFPA standards. Deputy Chiefs should be trained to the level of "Fire Officer 2" per the NFPA guidelines. Provide ongoing management training, including risk management, personnel management, employee assessment, training skills development, etc.</p> <p>Focus on providing company officers and command staff members with ongoing management and supervisory training. In addition to the Fire Officer training recommended previously, the Department should also provide company officers with training on educational methods, risk management and personnel management. The Civil Service is considering the possibility of granting experience points to those candidates who have obtained Fire Officer 1 and / or 2 – but at this point it still cannot be established as a prerequisite for a promotion.</p>	<p>\$50,000</p>
<p>Company officers (lieutenants and captains) do not take a leadership role in providing training.</p>	<p>Company officers should take a more active role in providing daily training to their assigned personnel. The Fire Department should investigate opportunities to utilize training available from MIIA.</p>	<p>None</p>
<p>Documentation of all training hours is a critical risk management tool.</p>	<p>Ensure that all training hours are being documented, including those conducted in-station.</p>	<p>None</p>
<p>The Fire Department does not currently conduct post-incident critiques of major incidents. This results in the loss of a major learning opportunity.</p>	<p>The WFD should assign Deputy Chiefs and other staff to develop post-incident reviews following all structure fires, any incident where there is a firefighter injury, technical rescue, etc.</p>	<p>None</p>

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Finding	Recommendation	Fiscal Impact
<p>Given recent occurrences in the broader fire / rescue community this is an opportune time to focus on accountability, risk management and other key management systems.</p>	<p>The Department needs to focus on organizational development and team building to focus attention on and improve, systems of accountability.</p>	<p>None</p>
<p>While there is an adequate training program in place, there is little focus on documenting personal or group performance.</p>	<p>Develop an employee appraisal approach that either focuses on the performance of the individual or on the performance of the company unit. This should be focused on improving training and preparedness of personnel.</p>	<p>None</p>
<p>As with many fire department, the WFD utilizes many informal methods to share information, to have meetings between the Chief and other officers and so on.</p>	<p>The Department needs to focus on organizational development and team building to focus attention on and improve, systems of accountability.</p>	<p>None</p>
<p>Policies and procedures are not all up to date and do not cover all key areas.</p>	<p>The Fire Department should develop a new, comprehensive, policy and procedures manual. The Department should first take steps to identify examples from Massachusetts to simplify their development. Second, a committee of staff from all ranks should be formed to ensure that the adaptation of policies and procedures to the Fire Department is done with appropriate focus on the needs of the community and the WFD.</p>	<p>None</p>
<p>There are no performance measures or targets in place for the Fire Department.</p>	<p>The Town and the Department should work collaboratively at developing and adopting community-wide standards of performance, including response times and acceptable levels of risk.</p> <p>The Department should implement a formal Management Information System that identifies and adopts critical performance indicators and tracks these on a daily basis.</p> <p>The Fire Department, in conjunction with the Town's administration and policy makers, should work to develop specific performance indicators for the WFD. The Department's financial management systems are adequate for ensuring that budgetary and overtime issues can be identified quickly. Once these are in place, simple management systems focused on tracking these indicators should be developed by the Department.</p>	<p>None</p> <p>Less than \$20,000</p>

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Finding	Recommendation	Fiscal Impact
<p>Risk management suggests that employees should be evaluated periodically for criminal and driving record changes.</p>	<p>Develop policies and procedures for conducting background checks examining both criminal and driving histories. These are done before new employees are hired, and should be done on an annual basis for existing employees.</p>	<p>\$10,000</p>
<p>The use of technology in the management and operations of the Fire Department is behind that of others in the industry and in the Town. A recent grant application for laptops in fire apparatus was not awarded.</p>	<p>The Fire Department should undertake several steps to enhance the utilization of information and analysis in support of decision making. The Department should also take steps to improve staff accountability, improve new-chief officer management training and the adoption of key performance measures to be regularly tracked.</p>	<p>Unknown</p>
<p>The Fire Department relies on a firefighter to serve as their primary vehicle mechanic. This individual is eligible to retire, and no plans have been made to replace him.</p>	<p>The Fire Department should work with other Town units to ensure continued in-house (i.e., in-Town) mechanics with the capability and certifications for working on fire apparatus. The current incumbent performs a wide range of key repairs including working on the pumps. These skills may be difficult to replicate among current staff, and so the Department and the Town should begin considering the budget implications of expanding their use of contractors to complete specialized repairs.</p>	<p>Unknown</p>
<p>The Fire Department has a fleet of vehicles appropriate to its mission. However, there is no program for replacing vehicles in place that has been adopted by the Town.</p>	<p>Make revisions to the vehicle and apparatus replacement plan that replaces an engine every 5 years, a ladder truck every 10 years and other vehicles every 7-9 years.</p>	<p>Capital Cost</p>
<p>For the future, the Town should consider removing the Chief's position from Civil Service to broaden the pool of potential applicants.</p>	<p>The Town of Watertown should remove the Fire Chief from Civil Service and should conduct a Commonwealth search when the next Chief is hired. Part of this process should include assessment centers, interviews, background checks and other methods for ascertaining the appropriateness of the candidate.</p>	<p>None</p>

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Finding	Recommendation	Fiscal Impact
<p>The Fire Department currently uses approximately 1.3 personnel per shift on overtime (with approximately ½ of shifts having no personnel on overtime at all). This is approximately 8% of shifts covered using overtime – well within the range expected to be found in well-managed public safety agencies.</p> <p>The current deployment plan for Operations does not allocate personnel to both Rescue units at all times – an issue given that 59% of the Department’s workload is EMS.</p>	<p>Deploy personnel so that Rescue 2 can be staffed at all times. Focus on staffing fire units at three personnel if at all possible. Both of these objectives are achieved by reducing staffing in Car 2 by utilizing the Firefighter assigned as the Deputy Chief’s driver to other functions. The project team believes that the appropriate target staffing for the Town is for there to be a minimum of 16 personnel on-duty – this allows for three engines, two ambulances, a ladder and a chief officer to be deployed at appropriate staffing levels.</p>	<p>None</p>
<p>Current response policies seem to over-dispatch units to certain call types.</p>	<p>The Fire Department should work to reduce the number of units dispatched on a number of call types. The implementation of a call triaging system, particularly for EMS calls, would potentially reduce the number of Fire Department vehicles routinely sent on calls. This should include increasing the number of calls to which only a single engine is dispatched.</p>	<p>Unknown</p>
<p>Current response times appear to exceed targeted levels, with emergency EMS calls taking longer than fire calls.</p>	<p>The Fire Department must work closely with the Police Department in order to begin tracking all necessary response time elements. Once these data are being captured, particular attention should be paid to the call processing time (in dispatch) and the turnout time (in the stations) – particularly for emergency calls.</p>	<p>None</p>
<p>Current policies allow for only four Officers to be on duty.</p>	<p>Work to maintain, through improved scheduling of time off, a target of five officers per shift. Continue current practice of using overtime to maintain a minimum of four officers per shift should continue under all but the direst financial situation. The Town should work to change the contract so that no more than two (2) officers can be off on scheduled leave per shift. The contractual language stating that “25% of the complement” can be off should be modified, as noted previously to allow fewer total personnel off and to distinguish between officers and firefighters, allowing only one officer off at a time if that will leave the Department with fewer than five (5) on duty.</p>	<p>None</p>

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Finding	Recommendation	Fiscal Impact
<p>The Fire Department’s personnel can be better utilized during their shifts doing things like training and conducting other tasks in support of their operations. Opportunities exist to shift workload to line companies, thereby increasing productivity.</p>	<p>The Fire Department should engage in at least one-hour of pre-planning activity per day per company. If this approach is taken, more than 700 pre-plans could be completed or updated on an annual basis. Initially, facilities should be broken down by first due<sup>2</sup> area, with some exceptions made to expand the scope of the less active companies. Consider adding a layer in the GIS for pre-planning so that the WPD and the WFD have access to these plans.</p>	<p>None</p>
<p>Deputy Chiefs are the primary management of operations in the Fire Department. EMS operations are the majority of the Department’s service provision, yet Deputy Chiefs do not respond to “routine” medical calls.</p>	<p>Deputy Chiefs should respond to all threat to life medical calls, and possibly to randomly assigned non-life threatening calls as well.</p>	<p>None</p>
<p>AED’s are a proven way of improving survivability from sudden cardiac arrest.</p>	<p>The Town should adopt an ordinance requiring the presence of AED’s in all medical establishments and places of public assembly. The Fire Department and the Town should work to assist with the placement of these critical devices in locations that cannot afford the full cost of one through a grant program. Furthermore, their location should be added into the CAD system so those near the victim of a heart attack can be directed to one while awaiting the arrival of EMS personnel. The cost of the AED’s should be borne by the provider.</p>	<p>None</p>

<sup>2</sup> The ‘first due’ area is an engine company’s primary area of responsibility – a geographic area of the Town that is centered around the station from which the engine (or other unit) responds. This results from the typically static deployment model used by most fire / rescue agencies, including the WFD.

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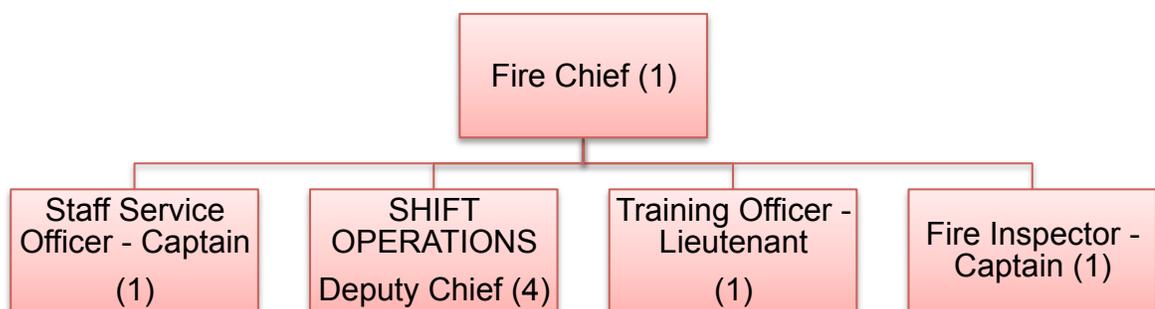
<b>Finding</b>	<b>Recommendation</b>	<b>Fiscal Impact</b>
<p>The Town needs more than one ambulance at times. A recommendation in this report is to shift staffing to ensure that Rescue 2 is staffed at all times.</p>	<p>The project team recommends that the Fire Department and Town Manager seek to work with neighboring communities by offering them the services of Rescue 2 on a cost-sharing basis. Under this model, each community would keep the revenue associated with the calls run in their jurisdictions, and would pay a proportional cost of staffing the ambulance. For example, if one other community participated, the cost reduction to Watertown would be 50% the cost of staffing the ambulance – or approximately \$300,000.</p>	<p>(\$300,000)</p>
<p>The two departments have not developed a consistently effective approach to 'customer service' and problem resolution in emergency communications.</p>	<p>The two public safety departments should develop 'customer service' approaches to address and resolve problems in joint dispatching.</p>	<p>None</p>

## **2. ANALYSIS OF MANAGEMENT SYSTEMS AND ORGANIZATION**

This chapter focuses on the key management systems used to oversee operations and personnel as well as the organizational structure necessary to effectively and efficiently manage operations in the Fire Department.

### **1. THE CURRENT ORGANIZATIONAL STRUCTURE OF THE FIRE DEPARTMENT IS RELATIVELY FLAT WITH ALL FUNCTIONS REPORTING TO THE FIRE CHIEF.**

The Watertown Fire Department is managed by the Fire Chief and four Deputy Chiefs. Each of the Deputy Chiefs is responsible for managing one of four work groups as well as a number of ancillary functions (training, fire prevention, maintenance and others). The current organizational structure is depicted in the exhibit, below:



Note that the current organizational structure is relatively straightforward – with few positions dedicated to purely administrative functions. The Department has seen reductions in the area of public education and in Operations Division personnel.

## **2. EVALUATION OF ANY ORGANIZATIONAL STRUCTURE RELIES ON THE IDENTIFICATION OF FORMAL CRITERIA FOR ASSESSMENT.**

In order to evaluate the organizational structure of the Watertown Fire Department, the project team first had to identify the criteria by which the organization structure would be judged. The paragraphs, that follow, describe those criteria as well as describe what is meant by each of them:

- **Accountability and responsibility is clearly identified:** The organization must be consistent with the concept that clear lines of authority and decision making are essential for any organization to achieve excellence. Areas of responsibility are clearly delineated and points of accountability are readily identifiable.
- **Span of control or communication is optimal:** Effective organizations are structured so that lines of communication are identifiable and there are multiple reporting relationships, responsibility for communication and control are clearly identified and understood.
- **There are essential checks and balances in place where necessary:** As it relates to this project, checks and balances are necessary in the area of clinical performance review as opposed to operational performance review.
- **Structure is based on task requirements and work flow as opposed to specialized skills of individual members:** There is a tendency in some organizations to organize work patterns around the specific passions or skills of individual members. This results in high friction levels of most work processes and the relationships between group members and groups them.
- **Similar titled positions have similar responsibilities and levels of accountability:** The organization should be structured such that decision making authority and the ability of decisions to impact the organization in a strategic way are all found at similar levels of the hierarchy.
- **Support functions are logically grouped and do not, through this grouping, create additional layers of oversight:** Organizational structures should group support functions together, separated from operations, only when the scale and scope of the operation requires it.

The section, that follows, provides our analysis of the current organizational structure and opportunities for improvement.

**3. THE CURRENT ORGANIZATIONAL STRUCTURE MEETS THE CRITERIA FOR AN EFFECTIVE ORGANIZATION AND SHOULD BE LEFT UNCHANGED.**

The current organization of the Fire Department is along fairly typical lines, as shown, in the exhibit several pages prior. The exhibit, that follows, provides a graphical assessment of the current organizational structure. Note the “√” marks in a box indicate that the organizational unit meets that criteria described in the preceding section of the report:

<b>Organizational Unit</b>	<b>Authority</b>	<b>Span of Control</b>	<b>Checks and Balances</b>	<b>Based on Work Flow</b>	<b>Similar Titles / Similar Duties</b>	<b>Support Integrated into Ops</b>
Office of the Fire Chief	√	√	√	√	√	√
Operations	√	√	√	√	√	√
Fire Prevention / Training / Maintenance	√	√	√	√	√	√

The paragraphs that follow provide a summary of the project team’s findings and conclusions regarding the current organizational structure of the Fire Department:

- The Department is organized along traditional lines – with Deputy Chiefs and the Staff Service Officer (Captain) reporting to the Chief, with the Fire Inspector and Training Officer (who is also the EMS Coordinator) reporting to two Deputy Chiefs.
- Like many Massachusetts Fire Departments, the Chief is the sole employee who is not represented by one of the bargaining units. In this case, the Deputy Chiefs and all subordinate employees are all part of the same bargaining unit.
- The Chief has six direct reports including the four Deputy Chiefs, Staff Service Officer (Captain) and the Lead Clerk. This is within a reasonable levels of supervision, when the range of 6-9 direct reports are generally accepted as appropriate.

- The Captain role on the shift has been reduced from one per company (distributed across the shifts) to one per shift spread between Stations 2 and 3. Station 1 has a Captain assigned to this role, they serve as a back-up to the Deputy Chiefs on each shift, and then serve the same basic roles as the Lieutenants assigned to the engines.
- The Fire Department has, effectively, a single position assigned to staff roles for purposes of addressing research and development. This places a need for support roles on the part of the Deputy Chiefs and company officers assigned on the shifts – a common solution in Fire Departments.
- Company Officers do not currently have significant support roles assigned. The Fire Department should assign support functions to all Lieutenants and Captains. The Department has effectively distributed administrative responsibilities to the four Deputy Chiefs.

The project team considered two alternatives:

- Creation of an Assistant Chief position.
- Elimination of the Staff Services Officer (Captain) position.

The table, below, provides a summary of the benefits and challenges from making these changes:

<b>Alternative</b>	<b>Benefits</b>	<b>Challenges</b>
Create Assistant Chief Position	<ul style="list-style-type: none"> <li>• Provide for a second position outside the bargaining unit.</li> <li>• Ensure clear chain of command in the absence of the Chief.</li> </ul>	<ul style="list-style-type: none"> <li>• Additional cost from either conversion of an existing position or creation of a new position.</li> </ul>
Eliminate Staff Services Officer (Captain) Position	<ul style="list-style-type: none"> <li>• Reduction in personnel costs in the Fire Department – approximately \$109,000 in salaries and benefits.</li> <li>• Shifting of administrative duties to the Deputy Chiefs and other company officers would build on current approach of distributed administrative functions.</li> </ul>	<ul style="list-style-type: none"> <li>• Elimination of the position would also eliminate the single-position focus for administrative functions, research, etc.</li> </ul>

Other issues identified by the project team while examining the organization structure and its impacts on the operations of the Watertown Fire Department is that of the distinction between line, supervisors and management in the Fire Department. The project team offers the following observations:

- The Fire Chief is the only sworn member of the Fire Department who is not in the bargaining unit.
- Lieutenants, Captains and the Deputy Chiefs are in the same bargaining unit as the line Firefighters. This can pose a challenge for supervisors when they need to discipline or otherwise direct the line employees.

The Fire Department, the bargaining unit and the Town should work together to address these issues – by removing the Deputy Chiefs from the union overall and by creating a separate superior officers unit, similar to that found in the Police Department, for the Lieutenants and Captains in the Fire Department.

The project team also examined the roles and responsibilities of the two support positions found in the Fire Department. One is assigned to the Chief's Office and the other in support of Fire Prevention. The project team believes that these two positions could be merged into a single full-time position if the position of a management analyst is added to the Fire Department as discussed later in this chapter. In this capacity, the remaining lead clerk position could continue providing administrative support to the Chief while scheduling and performing data entry for Fire Prevention. This position consolidation could also be supported by taking the following steps:

- Making increased use of in-field data entry by the Fire Inspector.
- Hiring a management analyst in the Fire Department (discussed in a later section).

Taking these steps will allow administrative, research, scheduling and other tasks to continue to be shared between two positions – however, one will be trained to provide a higher level of service including analytical and research support for the Chief and other members of the command staff. This makes the addition of the management analyst position more cost effective.

**Recommendation: The Fire Department’s organizational structure is appropriate given the nature of the missions assigned to the Department. Fire Prevention is equally high in the organization with Suppression and Training.**

**Recommendation: The Fire Department and Town should consider eliminating the Staff Services Officer (Captain) position for annual savings of \$109,000.**

**Recommendation: Town, Fire Department and bargaining unit should work to create a new superior officers unit for Lieutenants and Captains. The Deputy Chiefs should be separated from the union altogether to improve management and supervisory capabilities in the Department.**

**Recommendation: Eliminate one of the two clerical support positions in the Fire Department, merging the roles and responsibilities of the two functions. This would result in annual savings of \$45,000.**

**4. THE FIRE DEPARTMENT WOULD BENEFIT FROM THE CREATION OF A NEW MANAGEMENT ANALYST POSITION TO SUPPORT THE USE OF DATA IN DECISION MAKING.**

This section addresses the key management and information systems that should be in place within a modern Fire agency such as the Watertown Fire Department. The project team examined key management systems relating in the Department. These systems are critical to ensuring that the Department operates both effectively and efficiently. The key elements of a successful management system for a Fire agency include the following:

- **Formal Interaction** – Does the management team interact in formal meetings (set times, regular schedule, with agendas, etc.)? Are different groups of managers brought together to focus on key issues, to communicate general issues, to work on budget information, etc.?

- **Utilization of Data in Decision Making** – Does the Department make use of the data collected from calls, quality assurance reviews, inspections, etc. to make informed decisions? Are analytical methods regularly employed to make decisions regarding deployment, budgetary expenditures, etc.? Is there a culture of making decisions using analysis rather than anecdotal information? Are there sufficient staff resources to support analytical decision-making?
- **Accountability Mechanisms** – Is there a mechanism in place by which staff can be held accountable for assignments made? Do these systems provide for accountability the same way throughout the organization?
- **Formal Policies, Procedures and Protocols** – Are key policies, procedures and protocols formally documented? Are they regularly reviewed and updated? Does the review of these key documents involve a broadly based group? Are policies and procedures widely available to all staff? Are staff held accountable for compliance? Is there a formal “professional standards” function within the Department?
- **Management Training** – Does the Town and the Department provide formal training to officers as they are promoted and as part of their continuing education? Do officers receive advanced tactical training, risk management training, personnel policy updates, etc.?
- **Utilization of Technology** – Does the Fire Department make maximum use of technology to enhance effectiveness and efficiency? Are current investments being used effectively? Has the Department planned to adopt technology in the future that will enhance services or management of services?

The project team has the following observations and findings regarding the management of the Fire Department:

- The WFD also makes use of ad hoc groups to address special projects.
- The project team found that the use of data by the Fire Department occurs sporadically if at all. Examples include the following:
  - Operations data is not analyzed by unit, station, and Department-wide etc. to monitor performance of individual units or officers.
  - Response time data are not tracked at a level of specificity that is required in modern fire / rescue management. These data are not regularly analyzed or evaluated at any level of the organization. The Town’s CAD software and dispatch personnel are capable of tracking data that are not

- currently being tracked (such as when the unit acknowledged receipt of the call, when the fire unit when en-route, etc.).
- Training is not, at present, being tracked by individual. There are repositories of training data in several places in the Department.
  - Deputy Chiefs and others are rarely expected to utilize formal methods for evaluating issues assigned outside of operations – for example, the decision to adopt a new piece of equipment or a new tactic is only undertaken following a formal research process.
  - There are no analysts to support the operations of the Fire Department. This means that senior staff are left to perform their own research, rely on less senior sworn staff to perform various analytical tasks, etc.
  - Extensive data are collected in various operational areas through the CAD / RMS system, training records, etc. However, many of these data cannot be easily accessed under current information systems.
  - There is not a particular culture of “analysis” within the Fire Department. The awareness that data can provide powerful – critical – information for Fire managers is growing nationally. Senior staff will need to be able to make a case for additional resources predicated on proof derived from analysis – rather than on anecdotal approaches that have historically been acceptable. This change will need to be developed and fostered by the command staff.
- The Fire Department does not have a systematic method for ensuring accountability for staff assignments or other routine tasks. The current approaches rely upon the institutional memory of the command staff as a group to ensure compliance by individuals. Given the complexity of the WFD, this approach can no longer be viewed as appropriate. The Town should obtain a software driven solution that allows assignments to be made and tracked and to allow progress on assignments to be followed. It is equally important that such a solution does not add excessively to the workload of the command staff.
  - The Fire Department does not currently maintain a “command college” for its Chiefs. Additional support for new chief-level officers would be appropriate – particularly focused on personnel, risk management and other key management skills not typically covered as part of company officer training. Most of the Chief Officers have been to the Chief Officer Training program at the state Fire Academy.
  - The Fire Department should begin to engage in a number of projects focused on enhancing the utilization of technology in the field and in the administration of the Department. The project team found the following examples:

- There are no computers in the fire response vehicles – an increasingly common tool found in progressive fire / rescue agencies.
- Personnel are not able to access critical records on-line from their vehicles, leaving personnel using hard-copy books for limited pre-incident plans.
- There are no GPS or mapping solutions being utilized by the Fire Department. This represents a lost opportunity in terms of improving response time management.

The project team recommends that the Fire Department undertake the following actions to make improvements in management and oversight:

- The Fire Department should develop an accountability system to ensure that all assignments are followed-up appropriately. A simple in-house system can be developed using common office programs until a more sophisticated system can be obtained. An electronic system is useful since issues can be sorted by due date, individual, status, etc. The tracking system should have (at minimum):
  - Assignment
  - Data assigned
  - Due date
  - Responsible Individual
- Key measures should be identified by the senior staff and tracked regularly. Examples might include:
  - Reflex time (overall, by station, by unit, by major call type)
  - Dispatch processing time
  - Drive time
  - Call concurrency
  - Response times by time of day, etc.
  - Number of inspections per inspector

- Begin a process of information systems enhancement in the Department – including consideration of contracting for a full needs assessment.
- Create a new analyst position, assigned to the Office of the Chief. This position, similar in training and background to crime analysts typically found in police agencies, should be a civilian who is trained as an analyst – familiar with spreadsheets, statistics, use of analytical tools including GIS. The time of this new position should be dedicated to both routine tasks (providing management reports focused on response performance, leave utilization, etc.) and to provide support to special projects undertaken by the command staff of the Department. This will be critical in supporting the Department if it is to move towards a culture which utilizes data for decision-making.

**Recommendation: The Fire Department should undertake several steps to enhance the utilization of information and analysis in support of decision-making. Included in these steps should be the creation of a new Fire Analyst position for a total cost of \$80,000 annually. The Department should also take steps to improve staff accountability, improve new-chief officer management training and the adoption of key performance measures to be regularly tracked.**

**5. THE FIRE DEPARTMENT CAN CONTINUE TO IMPROVE ON MANY BASIC MANAGEMENT SYSTEMS.**

The Watertown Fire Department represents a multi-million dollar investment on the part of the community and its taxpayers. For the investment, the community expects to receive effective and efficient fire, rescue and EMS services. In order to assure the community that these funds are well spent and that operations are being managed effectively, the Fire Department must have data-driven management systems in place. This is similar to a common practice in law enforcement agencies – CompStat – where command staff meet with one another and focus on management issues in the Department. These style meetings are most common in police departments, but are slowly being adopted by progressive fire departments nationwide. The focus of these meetings should be on service delivery indicators, issues where units / shifts are not meeting standards, etc. In general, management systems should be able to provide managers with insight into the following critical areas:

- Performance responding to emergencies.
- Training for both fire and EMS skills.
- Use of leave (sick, vacation, etc.).
- Budgetary performance.
- Overtime utilization by cause.
- Fire / EMS “run” reports and billing documentation.

The Matrix Consulting Group found that the Department’s key management systems vary in their utility and in the level of utilization by the command staff. Our findings are summarized, below:

- Systems that provide for financial reporting are present and are under the control of the Town. Systems are in place which enable the Department to monitor budgetary performance. These are linked to the Town’s financial management systems. The project team found that the Department reconciles its own performance against the budget in an on-going manner, enabling potential budgetary issues to be identified quickly.
- Systems are also in place that enable detailed tracking of the use of overtime, the use of leave, etc. – all key indicators on the utilization of personnel. The project team found that the Department maintains detailed accounting of all overtime utilized by reason.
- The Department does not consistently utilize available data to assess its own performance internally. The project team found that key data elements were not being captured by the dispatch process. These data would enable the Department to assess its own “reaction” time to calls for service – this can not be reliably done given the issues, found by the project team, with the data in the various reporting systems in the Fire and Police Departments. This can be done with the current systems, and should be implemented by consistently tracking the time stamp for ‘en-route’ which will allow drive time to be calculated and will allow reaction time to be calculated.
- There are few internally developed performance objectives for response, on-scene activities, etc. which are actively measured. Personnel are not held directly accountable for their individual performance.

**(1) The Fire Department Has Been Informally Managed in the Past.**

The matrix, which follows, provides a summary of our initial findings regarding management systems in the Fire Department:

<b>Issue</b>	<b>Evaluation</b>
How does the Fire Department plan, schedule and control the work to be done?	<ul style="list-style-type: none"> <li>Matrix Consulting Group found that the WFD has generally been informal with the way in which it plans, schedules and controls the non-emergency work to be done. The primary exception to this is the way in which the Department controls its field operations. In this case, the project team found that the WFD relies on documented incident command systems (how emergencies are managed in the field).</li> </ul>
Does the Department use regular meetings to formalize management?	<ul style="list-style-type: none"> <li>The Department has reintroduced the use of management team meetings to improve the management of the Department. These meetings occur regularly and involve all command staff personnel.</li> </ul>
How is long range planning accomplished in the Department? Are managers using information to assess operational issues?	<ul style="list-style-type: none"> <li>The project team found that there is no documented long range planning process for the WFD.</li> <li>Individuals may have planning as part of their responsibilities but this is typically limited to a specific area and is not part of an overall approach to planning and development.</li> <li>The project team found that information is used by some managers to assess some operational issues. However, we also found that the capabilities of the records management systems and the CAD were not being fully utilized.</li> </ul>
Are vertical or horizontal communications within the Department adequate?	<ul style="list-style-type: none"> <li>Internal communications within the WFD has historically been an issue of some concern.</li> </ul>
Are the Department's policy and procedure manuals/documents complete? Do major gaps exist relating to operations?	<ul style="list-style-type: none"> <li>The policies and procedures are incomplete and do not cover a wide range of key topics and operational issues. The Department's management team is aware of the lack of complete policies and procedures, and limited efforts have been made to address these challenges.</li> </ul>
Are policies and procedures consistently applied in the Department?	<ul style="list-style-type: none"> <li>The project team found that policies and procedures, as they exist today, are consistently applied in the Department and are used to consistently hold personnel accountable.</li> </ul>
How effective is the Department's approach to incident command?	<ul style="list-style-type: none"> <li>Generally, the Department functions with an effective incident command structure at all major events. One area that could be enhanced is the designation of a separate safety officer (person responsible for maintaining positive awareness of the location of each individual at the scene) for each major incident – a role that is handled in combination with other tasks currently.</li> </ul>

**TOWN OF WATERTOWN, MASSACHUSETTS**  
**Management and Operations Study of the Fire Department**

Issue	Evaluation
Are there accurate and timely measures of the performance of the Department?	<ul style="list-style-type: none"> <li>• The data exists with which the WFD could monitor its performance on a daily basis.</li> <li>• However, the project team found that data is not used to evaluate service delivery or performance on a regular basis (even when reports are generated regularly they do not appear to be used to impact operations regularly).</li> </ul>
Does the Department have systems in place to tie performance measurement and goals to each employee to make them accountable?	<ul style="list-style-type: none"> <li>• There is no such plan in place.</li> </ul>
What improvements are needed in records and financial management?	<ul style="list-style-type: none"> <li>• The project team identified no major issues in these areas.</li> </ul>
How are managers and supervisors trained and supported in the Department?	<ul style="list-style-type: none"> <li>• Managers and supervisors are provided with both internal and external training opportunities. However, there is no requirement that personnel receive training upon obtaining a new rank.</li> </ul>
Do the Town Manager and Town Council receive the information that they need to provide an on-going assessment of the performance of the Fire Department?	<ul style="list-style-type: none"> <li>• The WFD does not provide the Manager with weekly reports showing activity, response times, etc.</li> </ul>
Are there opportunities to improve public information?	<ul style="list-style-type: none"> <li>• The Fire Department could take steps to enhance public access to information and performance through publications, the Town website, etc.</li> </ul>

In general, the project team found that the Fire Department has been and continues to be somewhat informally managed. There is little use of available data as a management tool, few meetings of the command staff (this is changing) and little in the way of long range planning. The Department can be characterized as reactive rather than proactive in the way it addresses issues and challenges. Despite this, the project team found that the in-field delivery of services continues to be done at a high level.

**(2) The Fire Department Should Take Several Steps to Formalize Management of Operations and Administration.**

The Fire Department will benefit from improved efficiencies and effectiveness if it addresses the issues identified in the preceding sub-section. The Department has been working to increase the formality with which the Department is managed on a day-to-day and long-term basis. The project team believes that the Department should take the following actions:

- Develop a set of performance measures. This is a critical step in the process of improving the management of the Fire Department. Without a set of formal expectations, it is impossible to hold personnel accountable on a daily basis. The list, which follows, should be viewed as only the beginning of the development of such a set of performance measures:
  - **Suppression:**
    - Out the door to calls for service in less than 60 seconds.
    - First unit on-scene within four minutes.
    - Full response on-scene within eight minutes (all call types).
    - Minimum of two hours of training on at least 90% of shifts in a month.
    - All personnel involved in patient care in at least 15% of calls for their station in a given month.
  - **Fire Prevention:**
    - All target buildings receive an inspection within the annual turn-around time.
    - Inspectors conducting between 10 – 15 inspections per day per Inspector.
  - **Emergency Medical Services:**
    - All personnel operating under an active and current license coupled with a 100% success rate of renewing all licenses within the timeframe.

- All paramedics participate in at least 15% of calls for service handled by their station each month.
- Paramedics and EMT's are all being subject to quality assurance each month.
- **Training:**
  - Development of a training curriculum for in-service training. Courses maintained and updated as required by circumstances.
  - Personnel receiving training hours targeted in annual training plan.
  - Training at training center covers both EMS requirements and at least 40 hours per year in additional fire / rescue training.
- Develop a comprehensive master schedule for each year (this is addressed in detail in the following sub-section).
- Assign responsibilities for long term planning to various members of the command staff (including Deputy Chiefs). Each individual should be given a particular area of responsibility upon which to focus. Each staff person should be responsible for researching and bringing key issues to the attention of the other members of the command staff.
- As part of the weekly staff meetings, the various personnel should be responsible for reporting their progress as well as identifying areas where they need additional assistance. These meetings should be used to identify issues that may impact resource utilization, suppression crews, etc. This would include:
  - **Emergency Medical Services** would address issues of training, quality assurance, changing protocols, issues identified in the field, etc. This may also include issues such as alerts from local hospitals and public health agencies, etc.
  - **Fire Prevention** would report on their statistics from the preceding week / month. This should indicate which major properties have been inspected, any major issues identified in the course of the inspections for the week that the suppression crews should be aware of, upcoming fire prevention / education events that suppression should participate in, etc.
  - **Training** should review the upcoming training schedule, including what needs to happen with suppression personnel in terms of scheduling, rotating personnel into the Training Division, etc. This is also the

opportunity for all personnel to identify issues that should be focused on in upcoming training sessions.

- **Suppression / Operations** should review major incidents from the past week. This should also include identification of any areas that require additional review for quality assurance or issues identification.
- **Administration** should review the progress the Department is making in relation to the annual budget. This should include a re-cap of where the WFD is with its expenditures of overtime, training funds, operating costs, etc. Personnel with responsibility for various elements of the budget should be required to provide justifications to the command group as necessary.
- The Fire Chief should require weekly reports from each member of his command staff. These reports should identify major issuers, accomplishments, challenges, etc. Command staff members should focus on the use of data to support their summary of activities. These should also be compared to performance measures established by the Fire Department.

The objective of the Fire Department should be to formalize the way the activities and personnel are managed.

**(3) The Fire Department Should Engage in a Master Scheduling Exercise Each Year to Improve Coordination of Activities.**

The Fire Department does not currently engage in any process that could be described as long term planning. The project team has recommended that personnel in the command staff be assigned to take responsibility for tracking changes in various subject areas. The project team also believes that the Department would gain from an exercise in developing an annual schedule showing key activities and events. Such an exercise has the following benefits:

- Forces the Department to think through its year, to identify its key goals and objectives in a formal process.
- Allows personnel in various commands (such as Fire Prevention and Training) to ensure that their own schedule is meshed with the other requirements of the Department's operations.

- Identifies weeks in which there are major commitments to training, fire prevention, public education, inspections, pre-fire planning, etc. and allows shift officers and company officers to plan accordingly as well.
- Involves top command staff in setting priorities and makes those priorities clear to all personnel through the distribution of the annual planning schedule. This becomes a primary tool by which the Chief and others in the command staff can make clear to staff where the focus will be in the following year.
- Provides a check against which activities can be compared to assure that the Department is meeting its goals and objectives.

The project team has worked with departments that have successfully implemented this process. These departments typically set aside more than 80% of the year, leaving some flexibility to catch up or to do unanticipated activities. Activities that are typically covered in the plan include:

- Company training.
- EMS training.
- Pre-fire planning / engine company inspections.
- Hose testing / pump testing.
- Hydrant maintenance / testing (in agencies where this is a Fire Department responsibility).
- Public education / fire prevention activities (such as National Fire Prevention Week).
- Special hazards / special teams training days.

The project team recommends that the Fire Department adopt this approach to planning. This process can be run on either a fiscal or a calendar year. Each function in the Department should be asked to bring forward their plan for the year – this would allow the Chief and other members of the command staff to develop an annual plan. To be effective, the Chief must commit to managing using this plan – to limit the number of

events that are moved around on the plan, etc. This plan should be developed into an annual calendar that is then distributed to all personnel.

**6. THERE IS NO CLEARLY AND CONSISTENTLY ARTICULATED COMMON VISION, MISSION, GOALS OR OBJECTIVES FOR THE FIRE DEPARTMENT.**

A review of policy documents reveals that the Department does have a published Mission Statement. However, interviews with members of the Department reveal the following:

- The Mission Statement is not well understood, or even known, to many members of the organization. It is viewed as a “cookie cutter” Fire Department mission statement with little relevance to the Watertown Fire Department and the unique circumstances faced by the Department.
- There is an inability to communicate a common vision of organization.
- There are no established goals or objectives on either a quarterly or annual basis.
- There is a very limited understanding of the budget or the budgeting process beyond the Chief and Deputy Chief level of the organization.
- Financial controls appear to be limited to capping spending on the amount of any given line item in the budget. The management staff was unable to articulate procurement policy or limits of authority in expenditures.
- Other than entry level employees there are no formal or informal performance feedback or evaluation mechanisms.

These issues have resulted in a lack of organizational focus and confusion regarding organizational priorities. The lack of common goals also results in a certain lack of consistency in decision making and resource allocation.

**Recommendation: The Chief and Deputy Chiefs should review the Department’s mission statement. This should be done in conjunction with a broadly comprised working group. The primary focus should be on developing a mission statement that is relevant to the special issues facing the WFD.**

**7. THE TRAINING FUNCTION IN THE FIRE DEPARTMENT MUST BE ENHANCED AND SHOULD FOCUS MORE ON PROVIDING SUPPORT TO THE COMPANY OFFICERS.**

The Watertown Fire Department provides training to both new employees and continuing education to current employees. The focus of this training is on fire fighting and emergency medical services. The majority of training provided in the Fire Department is organized by the company officers in each of the three fire stations. The Fire Department also has a Training Officer who is also the EMS Coordinator. This is a 40-hour shift assignment (Monday – Friday) and the incumbents in the position may be there for months or years depending on the rate of turnover at the top ranks of the Fire Department.

A review of the training program shows that there are several major issues regarding the way in which training is provided by the Fire Department:

- The unpredictability and turnover in the Training Officer position is viewed as a major concern by line staff and managers.
- There are no performance measures or standards for performance for training or for basic skills.
- There are no “minimum standards” set for new employees to meet and to be continually maintained by current employees.
- The company officers do not receive coordinated support for in-station training.
- There are few opportunities for multiple companies to train together in either scenario based exercises or on technical issues.
- There is little or no formal training provided for supervisors, managers or executive staff.
- There are no post-incident critiques performed.

The current program is dependent on the creativity, motivation and preparation of the company officers who work on the daily training. The project team recommends

that the Fire Department take a number of steps to address these issues. These steps should include the following:

- The Fire Department should adopt a series of minimum standards for new and incumbent employees. These minimum standards should be made part of the process by which new employees either pass or fail their probationary period. These standards should continue to serve as the nucleus for in-station and multi-company training. Recommended standards include the following:
  - Area familiarization.
  - Vehicle familiarization.
  - Use of SCBA system.
  - Incident command and safety.
  - Use of ropes.
  - Use of ladders.
  - Use of hoses and streams.
  - Medical equipment.
  - Use of other tools and equipment.
  - Ventilation.
  - Emergency vehicle driver training.

These standards require the company officer assigned to the new employee to mentor the person to ensure their understanding of the minimum requirements. In addition, each minimum standard has a test that is administered to ensure their knowledge. This provides a formal methodology for assessing employee performance and enables the Fire Department and the Town to make more informed decisions.

- Develop a calendar-based system to support the company officers in their delivery of the training program. This would consist of the development of a series of key topics with supporting materials, pictures, reference guides, tests, suggested activities that would be provided to each fire station or on the internet for the Department. The key elements of the program are described, below:
  - The program would work by assigning a topic to a number (1-30).

- A notebook (hardcopy or virtual) would be provided to each station.
- Each topic would be covered when the date corresponds to its topic number.
- This would ensure consistency (each topic would be taught from the same set of materials – the “Watertown way”).
- The list of topics can be as narrow or broad as the Department desires. It can remain the same or can be changed quarterly or annually. Example topics include the following:
  - Ventilation
  - Construction
  - Hoses
  - Fire Streams
  - Communications
  - EMS
  - Overhaul
  - Salvage
  - Ground Ladders
  - Incident Command
  - Sprinklers
  - Hydrants
  - SCBA
  - Entry
  - Pumping
  - Safety
  - Streets
  - Policies
- The training program should be developed in accordance with NFPA 1410 – “Standard for Training for Initial Emergency Scene Operations.” This is a standard which focuses less on topical skills training (as above) but also provides for scenario based minimum standards for a fire agency. This approach can easily be adopted to encompass both training as well as performance assessment for the line crews. A number of specific minimum skills are defined in the document. One example of the types of minimum standards set forth in NFPA 1410 follows:
  - Forward-lay a hose 300 feet from a hydrant using a single supply line.
  - Advance a pair of attack lines 150 feet each from the engine.
  - Charge the lines so that the primary attack line can pump and maintain 100 gpm. The secondary (backup) line should be able to pump and maintain a flow of 200 gpm.
  - This task should be completed by a 4-person engine company in less than three (3) minutes.

- Crews should be tested annually (or more often) on their ability to meet these minimum qualifications. Those units that cannot meet these standards should be immediately scheduled for training supervised by the Training Officer.
- The Training Chief should also utilize the recommended standards from NFPA 1410 to develop and oversee multi-company training. This training should be done on at least a quarterly basis for all units. The Deputy Chief on-duty should be involved in the exercises and full incident command practices should be utilized in all exercises involving any fire or rescue and all events with three or more units on-scene.
- All personnel from the rank of Lieutenant and above should be provided with specific training to enable them to better oversee operations. The project team recommends that the Fire Department adopt an approach recommended NFPA 1021 “Standard for Fire Officer Professional Qualifications.” This standard sets forth requirements to achieve various classifications of Fire Officer 1 through Fire Officer 4. These are summarized, in the exhibit which follows:

<b>Fire Officer I</b>	<b>Fire Officer II</b>
<ul style="list-style-type: none"> <li>• Firefighter II</li> <li>• Minimum standard for department.</li> <li>• Familiar with budget process.</li> <li>• Departmental operating procedures.</li> <li>• Fire prevention and education.</li> <li>• Cultural diversity.</li> <li>• Methods of supervision.</li> <li>• Group dynamics.</li> <li>• Rights of management and bargaining unit.</li> <li>• Contractual language.</li> <li>• Ethics.</li> <li>• Fire related ordinances.</li> <li>• Basic writing and organizational skills.</li> </ul>	<ul style="list-style-type: none"> <li>• All from FO1</li> <li>• Ability to evaluate member performance.</li> <li>• Human resource policies of the city.</li> <li>• Communicate orally and in writing.</li> <li>• Preparing a project or divisional budget.</li> <li>• Purchasing laws and regulations.</li> <li>• Working with the press.</li> <li>• Incident command, health and safety.</li> </ul>
<b>Fire Officer III</b>	<b>Fire Officer IV</b>
<ul style="list-style-type: none"> <li>• All from FO 1 and FO 2.</li> <li>• Ability to research and analyze data.</li> <li>• Working with the public outside the agency.</li> <li>• Develop and oversee large budgets.</li> <li>• Ability to evaluate construction for issues.</li> </ul>	<ul style="list-style-type: none"> <li>• All from FO 1, FO 2 and FO 3.</li> <li>• Advanced training in personnel, administration, legal and other issues.</li> <li>• Advanced training in analysis and information management.</li> <li>• Training in long range planning and evaluation.</li> <li>• Major incident oversight.</li> <li>• Major incident planning.</li> </ul>

This exhibit does not exhaustively cover the text of the 25-page standard. However, it does show the sense of progression that is encouraged by this program. The Fire Department could either adopt the standard formally (by linking, for example, promotions to these various levels) or could design a program for new and existing officers. Many of the elements of these programs

can be provided by MIIA, the Town's Human Resources, Finance, Information Technology, Purchasing and other support departments. The Town should budget an additional \$50,000 in training funds to provide for outside training to management personnel.

The training program of the Fire Department should be enhanced to improve the consistency of training and to enhance the support of company officers. In addition, particular focus should be given to enhancing the training given to new employees and to management personnel. Specific steps that should be taken to enhance the delivery of management training include the following:

- Provide "grade appropriate" training to personnel in the Fire Department. Identify the training needs that are relevant to officers and provide this to them. Do not require officers who do not actively participate in line activities to spend time on line training.
- Access the programs made available at the Fire Academy and in the Town that focus on training mid-managers and senior managers to be more effective trainers. These classes focus on methods of instruction and identify the various ways in which people learn and retain information.
- Consider joint training exercises for managers in the Fire, Police and other Town departments. The focus should be on sharing training opportunities that have broad applicability. Town departments should focus on crosscutting training issues such as personnel, budget management, capital planning, etc. and provide these to personnel in all public safety agencies in the Town.

**Recommendation: The Fire Department needs to make several major changes in its training program. These include improving the continuity in the position of Training Officer, development of a standards-based training program, annual testing against these minimum standards, development of new hire training, and provision of management training. The Town should budget an additional \$50,000 to cover the cost of the management and supervisory training - much of which can be provided in-house for no additional cost.**

**8. DOCUMENTATION OF TRAINING HOURS IS A CRITICAL RISK MANAGEMENT FUNCTION THAT SHOULD BE ENHANCED IN THE DEPARTMENT.**

The Matrix Consulting Group next examined the level of training and the records support of the training function. The Fire Department is using a 'home-grown' product

for its in-house records keeping. This software supports a wide range of fire department functions including training but is difficult to use and is ill-documented. To address these possibilities the project team reviewed current practices with a particular focus on the way in which data are tracked and recorded. This review does show that there may be a gap in recording of information into the Department's software. The project team makes the following recommendations:

- Adopt as a formal standard, two hours per day at least 80% of all day shifts in each station for each company assigned.
- Link these in-station training requirements to the previously described training program.
- The Training Officer should tour each of the stations at least once per week to observe training in that station (randomly by appointment). These visits should be focused on reviewing the use of the materials provided to ensure consistency of training in the stations on key topics.
- The Deputy Chief of each work group should also tour each station at least once per week during the training block to observe and critique training. One of the primary roles of a successful company officer is to instill the proper techniques and approaches into the personnel assigned to his or her command. The Deputy Chief's cannot assess the capabilities of their company officers in this critical task without directly observing them.
- All training should be recorded by the Department. Training records are a key component of a successful risk management program.

These changes would result in enhancements to the current training approach and would make the entire Fire Department more accountable to the Town and Department for the training time.

**Recommendation: Adopt a formal training target of at least two (2) hours per day. The minimum threshold should be set at 80% compliance with this target. The records for all training completed should be entered daily into the Department's software. The Training Officer and shift Deputy Chief should each be touring the fire stations to observe training and to critique it when necessary.**

**9. THE WATERTOWN FIRE DEPARTMENT DOES NOT CONDUCT AFTER-ACTION OR POST-INCIDENT CRITIQUES. THIS RESULTS IN A LOST OPPORTUNITY FOR LEARNING AND SHARING INFORMATION.**

After-action reports (i.e., post incident critiques) should be conducted following all structure fires, vehicle extrications, multiple-casualty EMS runs and randomly selected “routine” calls. The project team found that the Watertown Fire Department does not conduct formal after-action debriefings follow major incidents such as structure fires or other significant responses. The use of such after-action reporting can lead to significant educational opportunities for staff at every level of the organization. Currently, no such effort is in place within the Fire Department, resulting in lost opportunities to learn from both successes and failures in the day-to-day operations of the Department. Furthermore, there is a lost opportunity to enhance the delivery of training in the Department, as such after-action assessments can prove to be a valuable element in a training needs assessment process.

These should be prepared with input from all personnel involved in the event and should be co-authored by the officer in charge and by one line firefighter assigned to the incident. This process is addressed in NFPA 1500. Focus should be given on the following types of issues:

- Incident Command - was it utilized effectively?
- Accountability - was it utilized, and were there issues?
- Scene Safety - issues that need to be addressed?
- Strategy Utilized - were there big-picture issues that need to be addressed or learned from?
- Tactical - were there issues or lessons to be learned from specific operational tactics?

These should be developed by the officer in charge and should be distributed to all personnel in the Fire Department.

**Recommendation: The Fire Department must work to immediately address the issues described in this section. Current approaches to these issues are not representative of best practices in the management of a fire / rescue agency. The Chief and Deputy Chiefs should be tasked with undertaking these recommendations initially, with future support provided by the Training Officer and other officers in the Department.**

**10. THERE IS NO FORMALIZED METHOD OF IDENTIFYING AND TRAINING MANAGERS AND LEADERS WITHIN THE FIRE DEPARTMENT.**

The current systems of training and employee development do not include any formalized process for identifying or developing management potential. This results in several organizational challenges:

- Once promoted, individuals are unclear as to the expectations of supervisors and managers within the organization.
- There are few incentives to promote to leadership ranks within the Department.
- There is little opportunity to model or observe effective management behaviors.
- By definition, promotional processes do not assess effective management skills, traits or abilities because they have not been defined by the organization.

As a result of these issues, there is a wide range of management abilities exhibited by personnel at supervisory levels of the organization. This also results in varying expectations of supervisory performance by senior management staff who come to expect varying levels of performance from various supervisors throughout the organization. Focus on these issues will be increasingly important in coming years given the anticipated turnover in staff within the Department.

One option to consider would be to utilize the joint IAFF / IAFC<sup>3</sup> Labor-Management Initiative. This program is designed to both enhance the management skills of Chief officers, but also to enhance their ability to work with bargaining unit leadership. These programs are, in fact, designed for the participation of both the Chiefs and the union leadership at the same time. Other programs are available, for free, from the Massachusetts State Fire Academy, including a program entitled: Chief Fire Officer Management Training Program. Three of the Chief Officers in the Fire Department have attended this program. The Fire Department will allow Chief Officers to attend and have historically paid to cover the cost of any missed shifts.

**Recommendation: Develop a training program for company officers that results in all of them being trained to the level of “Fire Officer I” per NFPA standards. Deputy Chiefs should be trained to the level of “Fire Officer 2” per the NFPA guidelines. Provide ongoing management training, including risk management, personnel management, employee assessment, training skills development, etc.**

#### **11. THE MANAGEMENT ENVIRONMENT SUFFERS FROM A HISTORY OF MINIMAL SUPPORT AND CONSISTENCY.**

The current Chief is alone as a non-union members. As a result, a management style has emerged that in some instances focuses on a higher level of detail than would be appropriate if the command staff areas of responsibility were clearly defined and staffed appropriately.

Management staff should receive comprehensive training to learn how to function as *managers*. This should happen when personnel are promoted from Firefighter to Lieutenant to Captain and again when they are promoted from Captain to Deputy Chief. Much of the training can be provided internally, but additional training can be provided by the Massachusetts Fire Academy – one such program is referenced in the preceding

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<sup>3</sup> IAFF = International Association of Fire Fighters / IAFC = International Association of Fire Chiefs.

sub-section of this report. As personnel are promoted their scope of responsibility expands beyond service delivery to the community to include supervision and management of the Fire Department and its personnel. Training should focus on the following issues:

- Basic supervisory skills.
- FMLA / FLSA issues
- Working with employees facing personal challenges at home.
- Basic human resources issues.
- Payroll and basic financial systems issues.

Deputy Chiefs are a key element in the command staff of the Fire Department.

Some overtime funds *must* be dedicated to ensuring that they can attend management team meetings on a regular basis.

**Recommendation: The Department needs to focus on organizational development and team building to focus attention on and improve, systems of accountability.**

## **12. EMPLOYEE EVALUATIONS SHOULD BE INSTITUTED IN THE FIRE DEPARTMENT.**

Evaluations of employee performance are limited to probationary periods of employment. This is generally recognized as a function of the civil service rules under which the Town operates.

The Department has adopted standardized company performance standards which are utilized to evaluate the ability to carry out specific fire ground tasks and related operations. However, there is no on-going mechanism for formalized employee feedback. The Fire Department, in consultation with Personnel Director and Town Attorney, should develop a basic employee appraisal system. These reviews should be

completed by the direct supervisor of each employee. The review should provide basic feedback for each employee so they understand how they are meeting or failing to meet Fire Department and Town expectations.

**Recommendation: Develop an employee appraisal approach that either focuses on the performance of the individual or on the performance of the company unit. This should be focused on improving training and preparedness of personnel.**

**13. THERE IS NO FORMALIZED MANAGEMENT DEVELOPMENT PLAN WITHIN THE FIRE DEPARTMENT.**

The Department has not developed clearly defined needs or expectations for leadership or management skills. Again, this is attributed to the civil service rules that bind the promotional processes. However, the lack of clearly defined expectations of supervisors and managers leads to on-going confusion and organizational dysfunction.

The Department has not developed either experiential or didactic methods of developing leaders internally. There is a limited ability for employees to attend the National Fire Academy or other professional training venues. However, the Department does not offer supervisory or management development training as an integral part of its personnel development system.

**Recommendation: Focus on providing company officers and command staff members with ongoing management and supervisory training. In addition to the Fire Officer training recommended previously, the Department should also provide company officers with training on educational methods, risk management and personnel management.**

**14. POLICIES AND PROCEDURES MUST BE UPDATED AND MADE TO COMPREHENSIVELY COVER OPERATIONS, SUPPORT AND OTHER FUNCTIONS.**

The Fire Department, as does any emergency operations department, operates under the direction provided by its policies and procedures. These documents can be issued by the Fire Chief under the authority granted to him by the MGL Chapter 48 /

Section 42. These documents, in conjunction with the contract between the Town of Watertown and its bargaining unit, represent the two locally derived documents that provide structure to the administration and operation of the Fire Department.

The current policies and procedures are limited in their scope and do not cover the comprehensive requirements of a modern fire / rescue department. The types of things included in the current document include the following:

- General Rules
- Fire Alarm
- Uniforms
- Training
- Radio Procedures
- Attack Procedures
- House Keeping
- Accountability and Discipline

There are not consistent dates on the specific policies contained in the document as to when they were reviewed and / or updated. The clear tracking of review and revision is instrumental to ensuring that all staff are able to identify the most up to date version of each policy or procedure. In addition, the project team found that the document has been updated solely by the Chief with little direct input from the Deputy Chiefs or other staff in the Department. The project team also found the following:

- The current policies and procedure do not cover a number of topics which are critical for the fire / rescue service delivery environment.
- The current policies and procedures are focused on a mixture of administrative and operational items with significant gaps in the document regarding topics such as emergency medical response, infection control, risk management, etc. A

detailed list, developed by the US Fire Administration, is provided later in this section of the report.

- The current policies include a number of intensely detailed passages followed by very general guidelines.

Policy creation is a rigorous and demanding process, especially if it is based entirely on local development efforts. Fortunately, a number of fire departments nationwide have developed policies that could form the basis for the comprehensive development of policies for the WFD. In addition, the Center for Public Safety Excellence or CPSE (formerly the Commission on Fire Accreditation International – or CFAI) has developed materials that could also support the Department’s policy initiative. We are not suggesting that documents from other sources be copied into a WFD format but that existing materials be used to help the Department structure its efforts. The Matrix Consulting Group project team recommends that the Department adopt the following process for completing this, as recommended by the US Fire Administration:

- Conduct a complete needs assessment of the policies and procedures of the Fire Department. Given the current state policies and procedures, it would likely be more practical to obtain an up-to-date policy from a neighboring community (or a model policy from the Commonwealth, if it is available). This needs assessment should take the following form:
  - Form a committee made up of at least one Deputy Chief, one or two Company Officers and one or two Firefighters to develop a needs assessment. Coordinated committees might be established on each shift. The Deputy Chief should serve as the facilitator of the committee.
  - The committees should focus on implementing sound policies and procedures, with the inclusion of NFPA 1500<sup>4</sup> safety standards wherever possible.
  - Identify any unique or unusual characteristics of the community. What are the major sources of risk? Are there unique demands for service placed on the Department? Who does it interact with frequently (police, water,

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<sup>4</sup> NFPA 1500 is a standard providing for safety of firefighters – it touches on a wide range of topics including personal protective gear, firefighter safety programs, etc.

- other fire departments)? Are there response impediments that need to be considered? Are there seasonal issues that need to be considered?
- Consider the current policies as well as any potential models from which the policies could be developed.
  - Do the policies that exist address the needs of the community and the Department? Are there major gaps in them or are they too specific?
  - Develop a list of policies and procedures that should be in place. Do the model policies address the issues relevant to the WFD? Are there major gaps in the policies?
  - Do post-incident reviews suggest major gaps that need to be addressed? Have there been changes in the law? Have any issues been identified during training? Has equipment been changed? Are there new apparatus that need to be considered?
  - Are there guidelines from professional and trade organizations that suggest policy or procedure approaches?
- Once the needs assessment has been done, the Fire Department can turn to the process of developing new policies or modifying existing ones. This process can be accomplished as follows:
    - Establish one or more teams for each section of the policy manual to handle specific editing and writing tasks.
    - Develop specific procedures for writing, sharing and editing proposed policies.
    - Develop a specific format for all policies and procedures.
    - Gather information and potential alternatives for each policy. Do not reinvent policies that already exist elsewhere.
    - Analyze the various alternatives and select the one which most closely matches the WFD approach to conducting fire and EMS operations.
    - Write the draft of the policy.
    - Review and test (if applicable) the proposed policy or procedure.
    - Ratify and approve the final version. Seek legal sign-off from the Town's attorney if this is recommended internally.

- The next step is to implement the policies and procedures. This is also a complicated process and involves the following:
  - Assessment of what is being implemented. Is this a total replacement or an annual update?
  - Provide notice to, and discuss policy changes with, personnel.
  - Assess training needs and develop training materials to ensure that all personnel are properly briefed and prepared to consistently implement the policies.
  - Track who has received new policies and who has been trained. Many agencies require employees to sign an acknowledgement receipt.
- The Department should have a process by which performance can be monitored to ensure that:
  - All policies are being followed.
  - All policies match the actual practices and that they meet the needs of the agency and community.
  - All policies are reviewed annually to ensure that they continue to be relevant. A process similar to the one described above should be used to review policies.

The preceding dot points describe a process by which policies can be developed, reviewed and implemented. The following points provide a list of standard operating guidelines the WFD should consider developing.

- Management and Administration
  - General Administration
    - Organizations
    - Facilities
    - Emergency Vehicles and Special Apparatus
    - Equipment and Supplies
    - Finance
    - Training, Education and Exercises
    - Information Management
  - Member Health and Assistance Programs

- Medical Screening / Health Assessment
  - Health and Wellness Promotion
  - Performance Evaluation Process
  - Post-Injury Rehabilitation
  - Employee Assistance
  - Facility Safety
  - Hazard Communication
- Organizational Planning and Preparedness
  - Strategic / Master Plan
  - SOP Development
  - Risk Management
  - Emergency Operations Planning
  - Mutual / Automatic Aid
- Prevention and Special Programs
  - Public Information and Education
    - Working with the Public
    - Working with the Media
    - Emergency Public Information
    - Public Education
    - Public Relations
  - Building Inspections and Code Enforcement
    - Authorities and Codes
    - Design and Plans Review
    - Residential Inspections
    - Commercial Inspections
    - Industrial Inspections
    - Code Enforcement
    - Record Keeping
  - Special Programs
    - Fire Cause and Arson Investigation
    - Hydrant Maintenance
    - Other Special Programs
- General Emergency Operations
  - Operating Emergency Vehicles

- Driving Emergency Vehicles
- Riding Emergency Vehicles
- Operating Special Apparatus
- Vehicle Accident Reporting and Investigation
- Use of Personal Vehicles
  
- Safety at Emergency Incidents
  - Applicable Standards
  - Risk Management Guidelines
  - Safety Officer
  - Protective Clothing and Equipment
  - Personnel Accountability System
  - Responder Exposure Control
  - Hearing Conservation
  - Operating in a Hostile Environment
  - Operating on Roadways
  - Incident Scene Rehabilitation
  - Medical Support
  - Incident Termination
  
- Communications
  - System Access
  - Definition of Alarms / Dispatch Protocols
  - General Procedures
  - Emergency Signals
  - Alternate Radio Frequencies
  - Mobile Data Terminals
  - Departmental Cell Phones and Pagers
  - Mutual Aid Companies
  - Situation / Status Reports
  - Use of Personal Cell Phones and Pagers
  
- Command and Control
  - Incident Command / Incident Management System
  - Mutual / Automatic Aid
  - Incident Scene Management
  - Staging
  - Transferring Command
  - Public Information
  - Record Keeping
  
- Special Operations

- Aircraft Operations
- Boat and Watercraft Operations
- Special Unit Operations
- Bomb / Hazardous Device Threats or Confirmed Incidents
- Terrorism Incidents
- Civil Disturbances
  
- Post-Incident Operations
  - Post-Incident Analysis
  - Post-Incident Recovery
  - Incident Record Keeping and Reporting
  - Injury / Exposure Reporting and Investigations
  - Critical Incident Stress Debriefing / Defusing
  
- Fire Suppression
  - Fire Suppression Risk Management
    - Required Use of Personal Protective Equipment
    - Rapid Intervention Team
    - Evacuation (Firefighters)
    - Air Monitoring
  
  - Company Operations
    - Incident Staffing
    - Water Supply
    - Tanker / Tender Operations
    - First-In Engine Operations
    - Second-In Engine Operations
    - Truck Company Operations
    - Rescue / Squad Company Operations
    - Special Units
  
  - Tactical / Strategic Guidelines
    - Incident Size-Up
    - Automatic Alarms
    - Offensive and Defensive Operations
    - Apparatus Placement
    - Forcible Entry / Gaining Access
    - Foam Operations
    - Ventilations
    - Hot / Cold Weather Conditions

- Sprinkler / Standpipe Operations
- Apartment / Condominium Operations
- Commercial Building Operations
- Salvage
- Overhaul
- Exposures
  
- Special Facilities / Target Hazards
  - High-Rise Operations
  - Clandestine Drug Labs
  - Correction Facility Operations
  - Industrial Facilities
  - Other Special Structures
  
- Special Fire Suppression Operations
  - Aircraft Firefighting Operations
  - Special Unit Operations
  - Wildfire Operations
  
- Emergency Medical Response
  - Emergency Medical Response Risk Management
    - Incident Infection Control
    - Protective Clothing and Equipment
    - Lifting / Moving Patients
    - Hostile Situations
  
  - Pre-Hospital EMS First Response
    - Delivery Model
    - Patient Care
    - Treatment Protocols
    - Medical Devices and Equipment
    - Biohazard and General Waste Disposal
    - Clothing / Equipment Decontamination
  
  - Patient Disposition and Transportation
    - Destination Guidelines
    - Method / Mode of Transport
    - Ambulance Operations
    - Helicopter Operations

- Management of EMS Operations
  - Re-Supply / Procurement of Supplies
  - System Inventory
  - Designation of Treatment Facilities
  - Data Collection and Reporting
  - Quality Improvement System
  - Research and Reporting
  - Standard of Care
  - Patient Care Reporting
  - Patient Documentation and Billing
  
- Special EMS Operations
  - Mass Gatherings
  - Hazardous Materials Team Medical Monitoring
  - EMS Operations at Hazmat Incidents
  - EMS Operations at Technical Rescue Incidents
  - EMS Operations During Disasters
  - EMS Operations in the Rehabilitation Area / Sector
  
- Hazardous Materials Response
  - Hazardous Materials Response Risk Management
    - Personal Protective Equipment
    - Hazardous Materials Personal Safety
    - Air Monitoring
  
  - First Responder Operations
    - Roles and Actions
    - General Response Procedures / Emergency Response Plan
    - Recognition and Identification
    - Notification
    - Site Management and Scene Setup
    - Emergency Decontamination
    - Defensive Actions
  
  - Special Hazmat Operations
    - Operating with Hazmat Teams
    - Public Protection Options
    - Environmental Restoration
  
- Technical Rescue

- Technical Rescue Risk Management
  - Personal Protective Equipment
  - Lock Out / Tag Out
  - Air Monitoring
  
- Rescue Operations
  - Scene Stabilization
  - Rescue Equipment
  - General Rescue Operations
  - Rescue Teams
  
- Special Rescue Operations
  - Ice Rescue
  - Water Rescue
  - Confined Space Rescue
  - Structural Collapse Rescue
  - Rope Rescue
  - Trench and Excavation Collapse
  - Aircraft Extrication
  
- Disaster Operations
  - Organizing for Disaster Situations
    - Disaster Management
    - EOC Organization
    - ICS / EOC Interface (NIMS)
    - Activation Levels
    - Personnel Assignments and Responsibilities
    - Personnel Notification Procedures / Call-In Procedures
    - Disaster Training
    - Disaster Preparation
  
  - Disaster Operations Risk Management
    - Personal Protective Equipment
    - Disaster Operations Personal Safety
    - Protection of Facilities and Equipment
    - Accountability of Personnel
    - Suspending Operations
    - Member Injuries and Fatalities

- Disaster Operations
  - Disaster Operations Center
  - Adjusted Levels of Response
  - Disaster Communications
  - Response Unit Routing and Placement
  - Damage Assessment
  - Specialized Equipment
  - Building Safety Evaluations
  - Community Emergency Response Teams
  - Mitigation Activities
  - Curtailing Disaster Operations

Successful and safe operations, as well as broader risk management strategies, are grounded in an agency's policies and procedures. The current policies and procedures do not provide a comprehensive basis from which the WFD can be effectively and efficiently operated.

**Recommendation:** The Fire Department should develop a new, comprehensive, policy and procedures manual. The Department should first take steps to identify examples from Massachusetts to simplify their development. Second, a committee of staff from all ranks should be formed to ensure that the adaptation of policies and procedures to the Fire Department is done with appropriate focus on the needs of the community and the WFD.

**15. THE USE OF DATA IN THE FIRE DEPARTMENT IS CLEARLY LACKING IN MANAGEMENT FOCUS AND UTILIZATION.**

The decision making process within the Fire Department appears to be incremental and event driven. There is little formal tracking of organizational performance, trend development, or organizational benchmarking or comparison. Evaluation of Department performance should be dependent on agreed upon and adopted standards of performance - yet these are not present in the current environment. This should include a wide range of issues including: financial performance, operational performance, the integration of GIS information into operations and planning and so on.

**Recommendation: The Department must adopt extensive use of data collected from all sources in order to enhance management control and service delivery.**

**16. THERE IS LITTLE EVIDENCE OF ADOPTED PERFORMANCE MEASURES THAT ARE EVALUATED ON A CONSISTENT BASIS UTILIZING DATA.**

Despite the technological infrastructure to support data needs, the existence of reliable and consistent data was a constant challenge in the development of this study.

The primary reasons for these challenges are as follows:

- There is little or no accountability for company officers to enter appropriate data outside of incident reporting responsibilities.
- There is little or no review of daily station reporting.
- In the absence of specific goals and objectives, there is no ability to provide a meaningful management context to any data supplied.
- The absence of adopted and recognized performance standards.

The decision making process within the Department appears to be based upon budgetary determinations and, outside of the budget process, driven almost entirely by events. The project team was unable to identify any formalized, organization wide planning process. This observation is confirmed by the organization's lack of defined goals and/or objectives.

The project team has identified several opportunities for improvement in the management systems of the Watertown Fire Department. These include:

- A lack of a meaningful management framework for the Department, including the development and establishment of an organizational mission, vision, goals and objectives.
- The lack of adopted community standards of performance for the Department.
- A clear absence of defined expectations for positions of management and supervision within the Department.

- A lack of a formalized system to identify and develop management and supervisory skills within the Department.
- The accountability and responsibility issues created by the peer-to-peer management model resulting from the ad hoc appointment of the Deputy Chiefs.

**Recommendation: The Town and the Department should work collaboratively at developing and adopting community-wide standards of performance, including response times and acceptable levels of risk.**

**Recommendation: The Department should implement a formal Management Information System that identifies and adopts critical performance indicators and tracks these on a daily basis.**

**17. THE FIRE DEPARTMENT SHOULD CONDUCT THOROUGH BACKGROUND CHECKS ON ALL NEW HIRES. CRIMINAL RECORDS CHECKS AND DRIVING RECORDS CHECKS SHOULD BE PERFORMED ANNUALLY. RANDOM DRUG TESTING SHOULD BE MADE A QUARTERLY EFFORT.**

The Fire Department currently conducts background checks on new hires. The historical practice has been to conduct a criminal records check on new applicants' based on their Massachusetts criminal history. The following points summarize our findings:

- Historically, criminal records and driving records checks have been made of new employees prior to an offer of employment being made.
- These checks have been limited to the Massachusetts records.
- No follow-up criminal or driving records checks are made of existing staff. This represents a potential liability and risk management gap in the Town's current approaches.
- Furthermore, no random drug or alcohol testing is conducted of Fire Department employees.

The project team recommends the following steps to be taken by the Town and the Fire Department:

- Institute a program by which new applicants are checked in both Massachusetts and national criminal history data bases.

- Check the driving history of all new applicants in, at minimum, Massachusetts and other New England states. This has been instituted town wide on all employees who drive a vehicle as part of their employment.
- Institute a program under which all Fire Department employees are subject to a criminal history in the national database and driving history in Massachusetts on an annual basis (either all on the same date, or on the anniversary date of their hire). The Town is currently checking the driver's record on all employees who drive a vehicle as part of their employment.
- Develop a program of quarterly random drug and alcohol tests – for all Fire Department personnel. A third party medical provider should be used to collect and test all samples.

The intention of all of these programs is to reduce risk and liability for the Town of Watertown. Given the several recent experiences in the Commonwealth Fire Departments, these approaches should both reduce the risks of reoccurrence of recent experiences.

**Recommendation: Develop policies and procedures for conducting background checks examining both criminal and driving histories. These should be done before new employees are hired, and should be done on an annual basis for existing employees.**

**18. ADOPTION OF TARGETED AND DETAILED PERFORMANCE MEASURES MUST HAPPEN FOR THE FIRE DEPARTMENT TO IMPROVE ITS SERVICE DELIVERY AND MANAGEMENT OVERSIGHT.**

Few performance measures are focused on service delivery – and therefore few are useful in terms of measuring performance contemporaneously. Performance measures should be easily understood and easily calculated. Suggested performance measures for the Fire Department should include the following:

- 911 call processing time (call answered to call dispatched): 1 minute or less 90% of the time.
- Emergency call reaction time (call dispatched to unit en-route): 1 minute or less 90% of the time.

- First unit drive time to emergency calls (unit en-route to unit on-scene): 5 minutes or less, 90% of the time (should include calls in the Town of Watertown only).
- Quality assurance score of 85% or better on 90% of emergency medical calls for service.

Other communities will also identify on-scene performance indicators, or measures which must be met in training. These may include:

- On-scene to charged line at the front door of a structure fire: three minutes or less 90% of the time.
- Water from hydrant to supply engine: two minutes or less 90% of the time.

The point of the performance measures is to identify the community's expectations in a quantifiable way, and to use the measurement of the Department's performance against these objectives to identify areas which may need improvement or additional resources.

**Recommendation:** The Fire Department, in conjunction with the Town's administration and policy makers, should work to develop specific performance indicators for the WFD. The Department's financial management systems are adequate for ensuring that budgetary and overtime issues can be identified quickly. Once these are in place, management systems focused on tracking these indicators should be developed by the Department.

**19. AS WITH THE PROJECT TEAM'S RECOMMENDATION FOR POLICE, FUTURE FIRE CHIEF RECRUITMENTS SHOULD BE EXPANDED TO INCLUDE OTHER COMMONWEALTH CANDIDATES IN ADDITION TO INTERNAL ONES.**

The Town of Watertown Fire Chief is a Civil Service position. In Watertown historically this has meant that the position has been selected from a list of local candidates who have passed a Civil Service exam. The Town Manager, as the appointing authority, must take one of the top three performers on the exam to fill the vacant position. This approach has several key implications that can negatively impact the Department and the Town:

- The Town Manager is limited to making a selection from those personnel who have taken the exam. These in general include those who work inside the Department.
- This approach limits the pool from which the Town Manager could otherwise recruit and select a Chief officer for the Department.

Civil Service regulations do not exclude external candidates from consideration for appointment. The project team believes that 'testing the market' for top management positions through Commonwealth recruitments would be an effective approach to ensure that the best fit of management skills for the Town was attained.

**Recommendation: The Town of Watertown should conduct a Commonwealth search when the next Fire Chief is hired.**

**20. OPPORTUNITIES SHOULD BE CONSIDERED FOR ADDRESSING FLEET MAINTENANCE IN THE FUTURE. THE TOWN SHOULD ALSO REVISE ITS REPLACEMENT PLAN FOR ALL FIRE / RESCUE VEHICLES.**

The Fire Department operates a front-line fleet which includes three engines (one in reserve), two ladders (one often is out of service), two rescues (one is often out of service) and one Deputy Chief car.

**(1) The Fire Department Needs to Plan for Replacing its Firefighter-Mechanic.**

The Fire Department provides for its own fleet maintenance within the Headquarters station. The following paragraphs summarize the current situation:

- The Department has a single mechanic, who is a firefighter on the line, who performs the full range of necessary repairs and maintenance alone. This presents a major safety concern for the Mechanic and a major risk management issue for the Town and Fire Department.
- The mechanic, who is eligible for retirement, would be difficult to replace internally.
- There is no dedicated maintenance bay for storage area for large parts and tires, presenting a major challenge for the Mechanic and necessitating the movement of parts / tires for maintenance.

- The pace of repairs can also be impacted by solo work – necessitating a number of work arounds, movement of equipment, etc.

The Town should consider the following solutions to these issues:

- Identify one or more heavy vehicle mechanics within the Town who can be trained to assist the current mechanic. These personnel should be brought up to speed in terms of skills and experience, as well as certifications, in order to reduce the potential impact when the incumbent retires.
- Continue with the current practice of sending heavy or specialized repairs to outside shops.
- Begin working with the incumbent to ascertain a likely timeframe for his retirement so that steps can be taken to ensure timely continued repairs of the fire apparatus.
- Consider contracting with the current incumbent for a transition period should his retirement taken effect before other staff are certified.

**Recommendation: The Fire Department should work with other Town units to ensure continued in-house (i.e., in-Town) mechanics with the capability and certifications for working on fire apparatus. The current incumbent performs a wide range of key repairs including working on the pumps. These skills may be difficult to replicate among current staff, and so the Department and the Town should begin considering the budget implications of expanding their use of contractors to complete specialized repairs.**

**(2) The Fire Department Should Develop a Revise Its Vehicle Replacement Plan in Order to Maintain the Fleet in Its Current Condition.**

As mentioned in the introduction to this section of the report, the Fire Department has the following fleet of vehicles providing front-line service:

<b>Unit</b>	<b>Model Year</b>
Engine 1	2011
Engine 2	2004
Engine 3	1994
Engine 4 (Reserve)	1994
Ladder 1	2005
Ladder 2	2007
Rescue 1	2008
Rescue 2	2003
Car 2	2010

The project team finds that the Watertown Fire Department is operating a small fleet dedicated to the delivery of critical services. The Fire Department has just been authorized to purchase a new engine (moving the current Engine 3 into reserve) and a new Rescue (which will shift the current Rescue 1 into reserve). Effectively managed fire / rescue departments and communities plan for the regular replacement of their rolling stock to ensure that operating costs stay low, maintenance costs are controlled and that the department is operating with modern, fuel efficient safe and effective equipment. The project team proposes the following replacement schedule:

- The four engines spend 15 years in front line service, and 5 years in reserve – resulting in an engine purchase every 5 years.
- The two ladders spend 10 years in front-line service and 10 years in reserve, resulting in a ladder purchase every 10 years.
- Before ambulances and the Chief car are replaced on a 9-year replacement cycle.

The resulting acquisition schedule (which reflect the recent approval of an engine and rescue replacement) is shown in the table, below:

<b>Year</b>	<b>Capital Item (Description)</b>	<b>Base Capital Cost</b>	<b>Annual Debt Service Impact</b>	<b>Rolling Debt Service Cost</b>
2012	Replace Engine 3 / Rescue 2	\$650,000	\$52,158	\$52,158
2013	<i>No Replacement</i>	\$0	\$0	\$52,158
2014	<i>No Replacement</i>	\$0	\$0	\$52,158
2015	<i>No Replacement</i>	\$0	\$0	\$52,158
2016	Replace Rescue 1	\$150,000	\$12,036	\$64,194
2017	Replace Engine 2	\$500,000	\$40,121	\$104,315
2018	Replace Car 2	\$60,000	\$4,815	\$109,130
2019	<i>No Replacement</i>	\$0	\$0	\$109,130
2020	<i>No Replacement</i>	\$0	\$0	\$109,130
2021	Replace Rescue 2	\$150,000	\$12,036	\$121,166
2022	Replace Engine 1	\$500,000	\$40,121	\$161,288
2023	<i>No Replacement</i>	\$0	\$0	\$161,288
2024	Replace Engine 1	\$500,000	\$40,121	\$201,409
2025	Replace Rescue 1	\$150,000	\$12,036	\$213,445
2026	Replace Ladder 1	\$1,300,000	\$104,315	\$317,761

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<b>Year</b>	<b>Capital Item (Description)</b>	<b>Base Capital Cost</b>	<b>Annual Debt Service Impact</b>	<b>Rolling Debt Service Cost</b>
2027	Replace Engine 3	\$500,000	\$40,121	\$357,882
2028	Replace Car 2	\$60,000	\$4,815	\$362,696
2029	<i>No Replacement</i>	\$0	\$0	\$362,696
2030	Replace Rescue 2	\$150,000	\$12,036	\$374,733
2031	<i>No Replacement</i>	\$0	\$0	\$374,733
2032	Replace Engine 2	\$500,000	\$40,121	\$414,854

The table above assumes that the cost of apparatus remains constant in current dollars, though the actual cost would increase with each purchase. We have also assumed that purchases would be made with the use of a 20-year bond financed at an interest rate of 5%.

### **3. ANALYSIS OF OPERATIONS**

This chapter is focused on the suppression and EMS operations and options facing the Town.

#### **1. THE TOWN OF WATERTOWN HAS NOT YET ADOPTED SERVICE LEVEL STANDARDS**

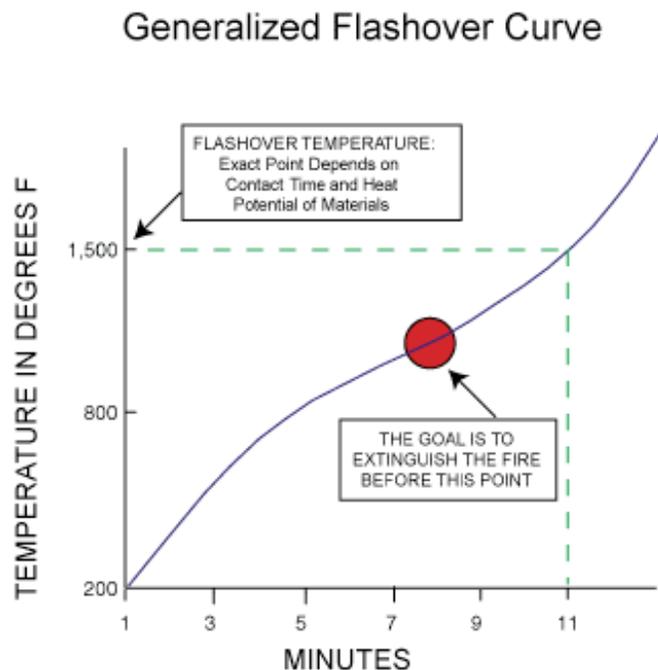
The adoption of performance standards for fire and EMS response is a critical first step in the evaluation of fire, rescue, and EMS service levels and staffing alternatives. While there are national standards that can be used to evaluate fire and EMS service delivery, each community must identify the key risks and necessary level of protection it needs based on its own unique circumstances. Once these performance standards are established a community can assess its performance and determine if current resources support the desired level of service.

##### **(1) Efforts to “Standardize” Service Level Objectives Are Based on Fire Growth Behavior and Research on Cardiac Arrest.**

Nationwide, a great deal of effort and research has been put into developing performance objectives for the delivery of fire and EMS services. This effort is critical for agencies making decisions about deployment and location of emergency resources. The objectives promoted for fire/rescue and EMS have their basis in research that has been conducted into two critical issues:

- What is the critical point in a fire’s “life” for gaining control of the blaze while minimizing the impact on the structure of origin and on those structures around it?
- What is the impact of the passage of time on survivability for victims of cardiac arrest?

The chart, that follows, shows a typical “flashover” curve for interior structure fires. The point in time represented by the occurrence of “flashover” is critical because it defines when all of the contents of a room become involved in the fire. This is also the point at which a fire typically shifts from “room and contents” to a “structure” fire – involving a wider area of the building and posing a potential risk to the structures surrounding the original location of the fire.



Note that this chart depicts a fire from the moment of inception – not from the moment that a fire is detected or reported. This demonstrates the criticality of early detection and fast reporting as well as rapid dispatch of responding units. This also shows the critical need for a rapid (and sufficiently staffed) initial response – by quickly initiating the attack on a fire, “flashover” can be averted. The points, below, describe the major changes that occur at a fire when “flashover” occurs:

- It is the end of time for effective search and rescue in a room involved in the fire. It means that likely death of any person trapped in the room – either civilian or firefighter.

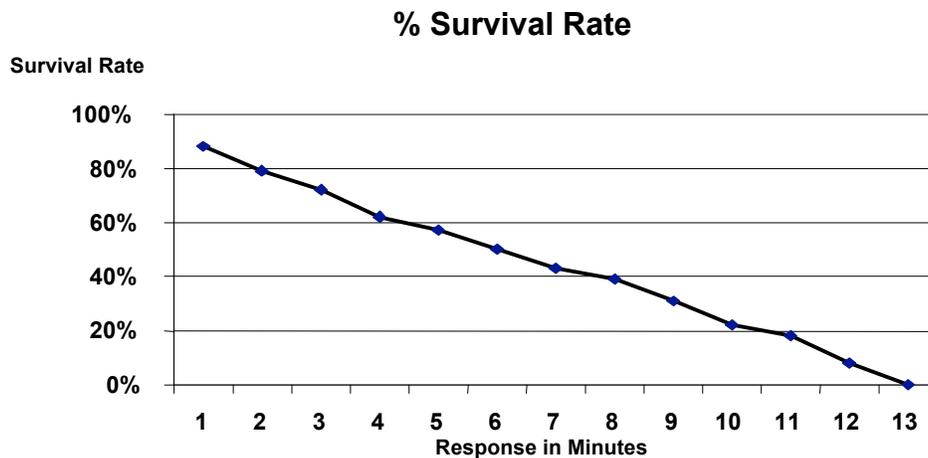
- After this point (flashover) in a fire is reached, portable extinguishers can no longer have a successful impact on controlling the blaze. Only larger hand-lines will have enough water supply to affect a fire after this point.
- The fire has reached the end of the “growth” phase and has entered the fully developed phase. During this phase, every combustible object is subject to the full impact of the fire.
- This also signals the changeover from “contents” to “structure” fire. This is also the beginning of collapse danger for the structure. Structural collapse begins to become a major risk at this point and reaches the highest point during the decay stage of the fire (after the fire has been extinguished).

It should be noted that not every fire will reach flashover – and that not every fire will “wait” for the 8-minute mark to reach flashover. A quickly responding fire crew can do things to prevent or delay the occurrence of flashover. These options include:

- Application of portable extinguisher or other “fast attack” methodology.
- Venting the room to allow hot gases to escape before they can cause the ignition of other materials in the room.
- Not venting a room – under some circumstances this will actually stifle a fire and prevent flashover from occurring.

Each of these techniques requires the rapid response of appropriately trained fire suppression resources that can safely initiate these actions. In the absence of automatic fire suppression systems, access to interior fires can again be limited by a safety requirement related to staffing levels. OSHA and related industry standards require the presence of at least 2-firefighters on the exterior of a building before entry can be made to a structure in which the environment has been contaminated by a fire. In the absence of a threat to life demanding immediate rescue, interior fire suppression operations are limited to the extent a fire service delivery system can staff to assure a minimum of 4-people actively involved in firefighting operations. The second issue to

consider is the delivery of emergency medical services. One of the primary factors in the design of emergency medical systems is the ability to deliver basic CPR and defibrillation to the victims of cardiac arrest. The chart, that follows, demonstrates the survivability of cardiac patients as related to time from onset:



This graph illustrates that the chances of survival of cardiac arrest diminish approximately 10% for each minute that passes before the initiation of CPR and/or defibrillation. These dynamics are the result of extensive studies of the survivability of patients suffering from cardiac arrest. While the demand for services in EMS is wide ranging, the survival rates for full-arrests are often utilized as benchmarks for response time standards as they are more readily evaluated because of the ease in defining patient outcomes (a patient either survives or does not). This research results in the recommended objective of provision of basic life support within 4-minutes of notification and the provision of advanced life support within 8 minutes of notification. The goal is to provide BLS within 6 minutes of the onset of the incident (including detection, dispatch and travel time) and ALS within 10 minutes. This is often used as the foundation for a

two-tier system where fire resources function as first responders with additional (ALS) assistance provided by responding ambulance units and personnel.

Additional recent research is beginning to show the impact and efficacy of rapid deployment of automatic defibrillators to cardiac arrests. This research – conducted in King County (WA), Houston (TX) and as part of the OPALS study in Ontario, Canada – shows that the AED can be the largest single contributor to the successful outcome of a cardiac arrest – particularly when accompanied by early delivery of CPR. It is also important to note that these medical research efforts have been focused on a small fraction of the emergency responses handled by typical EMS systems – non-cardiac events make up the large majority of EMS and total system responses and this research does not attempt to address the need for such rapid (and expensive) intervention on these events.

The results of these research efforts have been utilized by communities and first responders, often on their own with no single reference, to develop local response time and other performance objectives. However, there are now three major sources of information to which responders and local policy makers can refer when determining the most appropriate response objectives for their community:

- The Insurance Services Office (ISO) provides basic information regarding distances between fire stations. However, this “objective” does little to recognize the unique nature of every community’s road network, population, calls for service, call density, etc.
- The National Fire Protection Association (NFPA) promulgated a document entitled: “NFPA 1710: Objective for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments.” This document (NFPA 1710) was published in 2001 and generated a great deal of dialogue and debate – which is still on-going.

- The Center for Public Safety Excellence (formerly the Commission on Fire Accreditation International or CFAI) in its “Objectives of Coverage” manual places the responsibility for identifying “appropriate” response objectives on the locality. These objectives should be developed following a comprehensive exercise in which the risks and hazards in the community are compared to the likelihood of their occurrence.

While each of these efforts provides a reference point for communities to follow, only NFPA 1710 offers any specificity. It is important to note that the performance objectives (in terms of response times) provided in the NFPA 1710 document are derived from the basic research previously described. These include the following (all are taken from section 4.1.2.1.1 of NFPA 1710):

- One minute (60 seconds) for the processing of an incoming emergency phone call, including the completion of the dispatching of fire response units.
- “90 seconds for turnout time.” This is also called reflex time, reaction time, “out-the-chute” time, etc. This is the time that elapses between dispatch and when the units are actively responding.
- “Four minutes (240 seconds) or less for the arrival of the first arriving engine company at a fire suppression incident and / or 8 minutes (480 seconds) or less for the deployment of a full first-alarm assignment at a fire suppression 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.”
- In section 4.1.2.1.2, NFPA 1710 goes on to state: “The fire department shall establish a performance objective of not less than 90 percent for the achievement of each response time objective specified in 4.1.2.1.1”

It is important to note the “and / or” found in the initial response objective statement. This indicates that a system would meet the intent of the standard if it can reasonably plan to deliver either the single unit, 4-minute travel time standard, the first alarm, 8-minute travel time standard, or both. It should also be noted that it is implied

that the total time allotted is additive with each successive event. For example, a system which arrived on-scene in 6.5-minutes or less 90% of the time (from time of dispatch) would be in compliance – even if the turnout time was longer than 90 seconds (though that should clearly be improved).

It is also critical to note that these time objectives apply to emergency calls for service – there is nothing in NFPA 1710 (nor in any other objective) that suggests that communities cannot establish a differential response to calls for service determined to be non-emergency in nature. A second element of the NFPA 1710 performance objectives addresses unit and total response staffing. These objectives are described in NFPA 1710 as follows:

- Engine and truck companies should be staffed with a minimum of four personnel (sections 5.2.2.1.1 and 5.2.2.2).
- Section A.3.3.8 defines a company as either a single unit or multiple units, which operate together once they arrive on the fire ground.
- A total initial response is defined (in section 5.2.3.2.2) as having a total of 15 people (if an aerial is utilized) for 90% of calls. This is broken down as follows:
  - One (1) incident commander.
  - One (1) on the primary supply line and hydrant.
  - Four (4) to handle the primary and backup attack lines.
  - Two (2) operating in support of the attack lines, performing forcible entry.
  - Two (2) assigned to victim search and rescue.
  - Two (2) assigned to ventilation.
  - One (1) assigned to operate the aerial device.
  - Two (2) to establish an initial rapid intervention team.

- If an incident is determined to require additional resources, the fire department should have as an objective the ability to respond with:
- - Additional units as needed (through its own resources or via automatic and mutual aid).
  - Assignment of two (2) additional personnel to the rapid intervention team.
  - Assignment of one (1) as an incident safety officer.

It is interesting to note that the four person companies discussed in some areas of NFPA 1710 are not maintained in the description of primary tasks to be accomplished on the fire ground – recognition that the requirements of the response in the field are dynamic and do not fit neatly into size and shape of any particular response configuration. These objectives apply to the initial and follow-up response for reported structure fires. The document does not suggest that this response be mounted for all incidents. Most agencies in Massachusetts operate with three-person engine and truck companies.

**2. THE TOWN OF WATERTOWN SHOULD FORMALLY ADOPT LOCALLY DEFINED SERVICE LEVEL OBJECTIVES.**

The Watertown Fire Department includes a number of performance measures in its annual budget, including average response times to emergency calls for service. However, the Town and the Fire Department have not identified or formally adopted service level targets for initial response to emergency medical calls or fire incidents. While the project team believes the standards utilized in the following sections are appropriate for the Town, service level targets should be adopted only after careful consideration of local risks and the financial implications of maintaining those levels.

**Recommendation: The Town of Watertown should adopt the time performance objectives described in NFPA 1710 and related documents. This includes processing of emergency calls in less than one minute in dispatch, responding to**

the dispatch and having units en-route in less than 90 seconds and delivery of the first unit on-scene in less than four minutes of drive time – all for 90% of emergency calls.

**3. ANALYSIS OF THE RESPONSE SYSTEM IN WATERTOWN SHOWS THAT THE DEPARTMENT'S STATIONS ARE LOCATED APPROPRIATELY. A REVIEW OF RESPONSE TIMES SHOWS GAPS IN THE DATA AND A NEED TO FOCUS MORE MANAGEMENT ATTENTION ON THIS ISSUE**

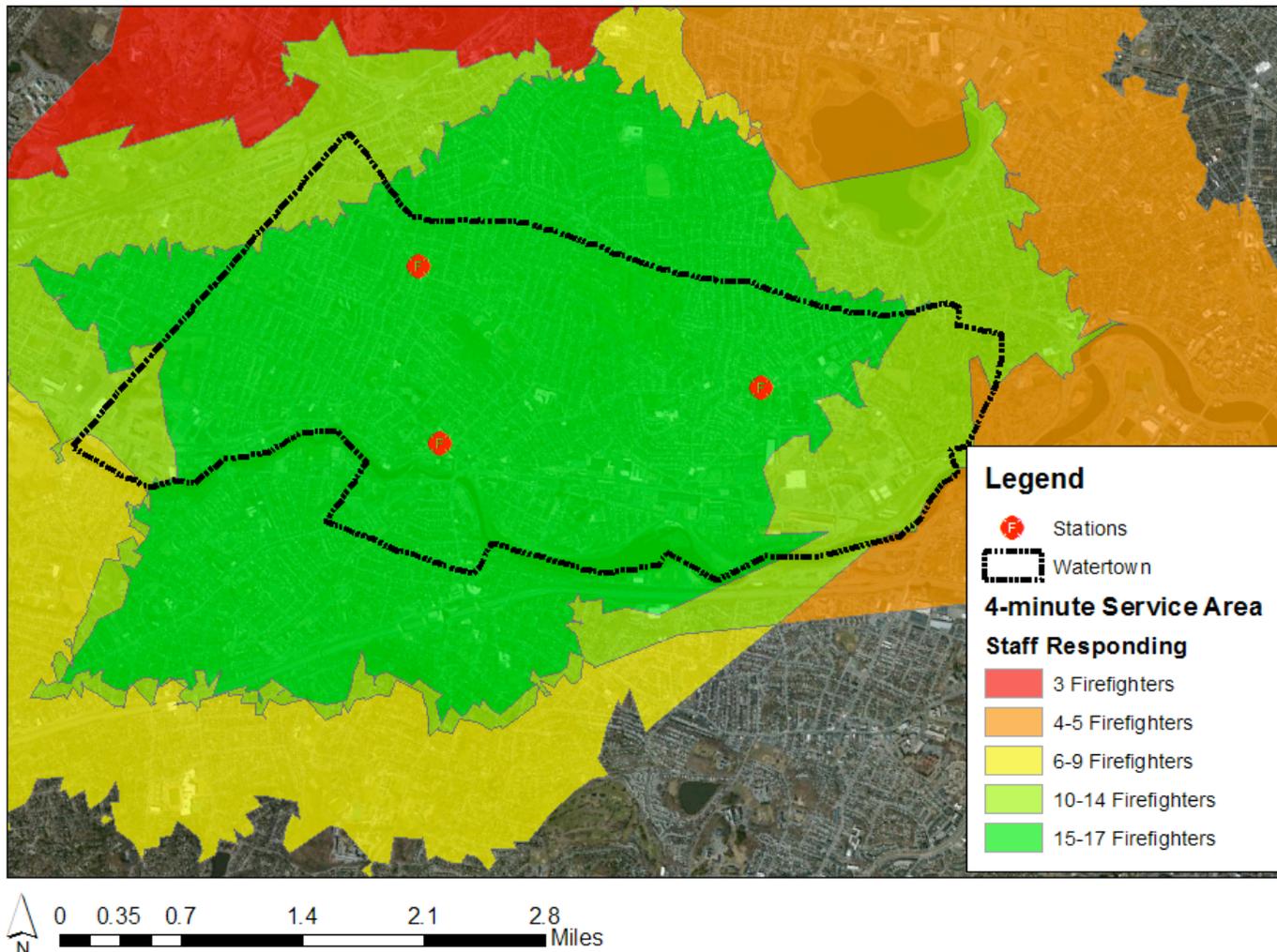
The next step for the project team was to assess the current fire station network utilizing our GIS capabilities. The maps showing station coverage is provided, on the following pages. The paragraphs, that follow, provide a summary of the findings and conclusions that can be drawn from these analyses:

- The maps are broken into 4-minute and 8-minute drive times.
- The Fire Department is well-positioned, from its current locations, to provide a very rapid response throughout the community. This is shown in both the 4-minute drive time map and the 8-minute drive time map. The 4-minute view is most important for single engine responses (EMS, car accidents, etc.) and shows the Department's capability for delivering a rapid initial response to any incident type.
- The Fire Department is also able, within the 8-minute drive time standard, to provide a Town-wide structure fire (or major incident) response of 14+ responders. This is without reference to the availability of mutual aid companies.

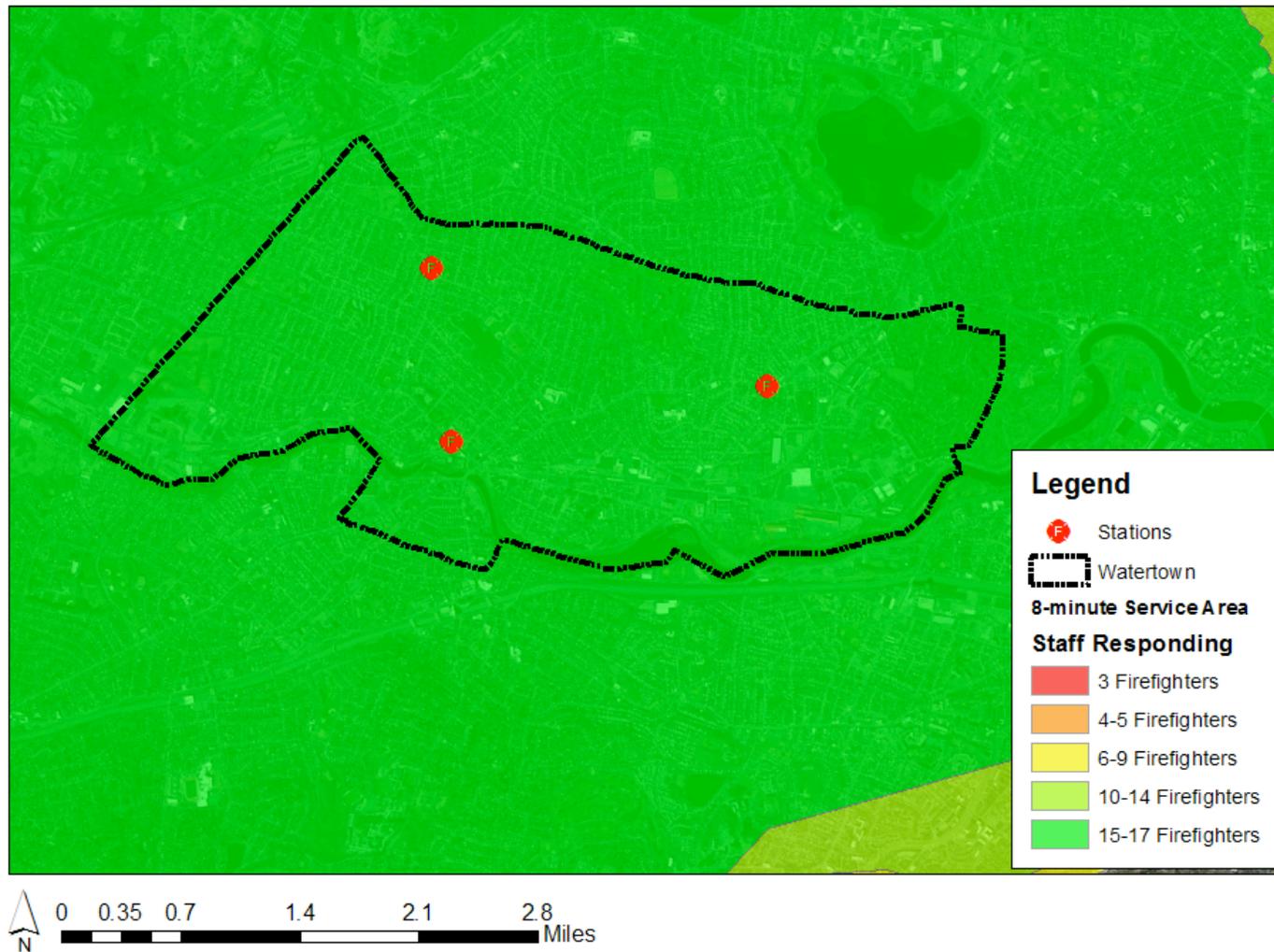
The maps are provided on the following pages. The table, below, shows actual response time average for selected call types:

<b>Call Type</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>
Fire Alarm	4.1	7.0	4.5
Fire Investigation	7.6	5.6	5.2
Structure Fire	4.2	6.1	4.7
Fire Master Box	3.9	4.3	4.7
Fire Hazmat	4.0	10.8	5.9
Medical ALS	5.5	6.0	6.0
Medical BLS	4.4	6.0	5.1
Vehicle Accident	3.7	4.4	4.9

### Watertown, MA Current 4-minute Service Area



### Watertown, MA Current 8-minute Service Area



A review of the response times, in the table preceding the maps, shows that the Department is arriving at most emergency calls in less than six minutes – from the time of dispatch. There are several issues with these data:

- The number of discrete elements currently tracked in the dispatch center are limited. This means that the Fire Department cannot determine whether they are achieving targeted response times in dispatch, in the stations (turnout time) or in their drive time.
- There is no distinction in the data between emergency and non-emergency responses. There are many calls for which a rapid response will result in no improvement in the situation and which could, in fact, result in increased risk to the community as the Department responds. For these calls, a slower response is more appropriate.
- EMS calls tend to have a longer response time than do fire calls. While the project team cannot determine on a call-by-call basis why this might be happening, it is important to note that ALS EMS calls are, by definition, true emergencies. They should be responded to as rapidly as fire calls – and perhaps faster given that the responders do not need to dress in bunker gear before responding.

**Recommendation: The Fire Department must work in conjunction with the Police Department to improve the quality and types of response time data captured. These data are critical for managers to assess the performance of their staff (and even to set response time targets).**

**Recommendation: Once these data are being captured, Deputy Chiefs should monitor their shift performance. If an analyst is hired for the Fire Department, monitoring and analyzing these response time elements should be a key focus of his / her work.**

#### **4. THE FIRE DEPARTMENT IS RESPONSIBLE FOR HANDLING VARIED EMERGENCY RESPONSE WORKLOAD.**

The Fire Department is an all-hazards fire/rescue agency. The Department responds to emergencies including: medical events (as first responders), fires, vehicle accidents, other rescues, etc. The information in this section provides an overview of those workloads:

**TOWN OF WATERTOWN, MASSACHUSETTS**  
**Management and Operations Study of the Fire Department**

Incident Type	Number of Incidents	% of Total Incidents
Fire / Explosion	64	1.43%
Overpressure / Rupture	3	0.07%
Rescue Call	2,656	59.31%
Hazardous Condition	262	5.85%
Service Call	637	14.23%
Good Intent Call	126	2.81%
False Call	686	15.32%
Severe Weather / Natural Disaster	27	0.60%
Special Type / Complaint	17	0.38%
Total Number of Incidents	4,478	100.00%
Coverage Assignment / Mutual Aid	199	n/a

The paragraphs, which follow, summarize these statistics:

- The majority of calls handled by the Fire Department were Rescue (medical) Calls, with more than 59% of total calls being of this type.
- Service Calls and False Calls each were around 15%, for another 29% of total incidents.
- The remaining 11% of calls included fires, overpressures and other ‘fire’ type events.

The project team next examined the Fire Department’s response policies to calls for service, summarized, below:

Call Type	Dep. Chief	Engine	Ladder	BLS	ALS	Comment
Fire-Water Rescue	1	1	1	1	1	Boat also
Fire Box	1	1	1			
CO2 Alarm		1				
CO2 with Illness	1	1	1	1	1	
Bomb Threat	1	1	1			
Mutual Aid						As requested
<b>Investigations</b>						
Animals in Bldg.			1			
Assist Police			1			
Electrical Problem		1				
Elevator Problem	1	1	1			
Forced Entry			1			
Investigations	1	1	1			
Odor of Gas	1	1	1			
Odor of Smoke	1	1	1			
Lockouts			1			
Smoke in Area		1	1			
Water / Flooding			1			
Wires Down			1			

**TOWN OF WATERTOWN, MASSACHUSETTS**  
**Management and Operations Study of the Fire Department**

Call Type	Dep. Chief	Engine	Ladder	BLS	ALS	Comment
<b>Hazardous Materials Calls</b>						
Level 1 (small / <10 gallons)		1				
Level 2 (> 10 gallons)	1	1	1	1		
Level 3 (unable to control)	1	2	1	1	1	Hazmat Team per Command
<b>Fire Calls</b>						
Fire Master Box	1	2	1			
Brush		1				
Motor Vehicle	1	1	1			
Transformer	1	1	1			
Dumpster	1	1	1			
Arcing Wires	1	1	1			
Structure Fire	1	2	1	1		
<b>Medical Calls</b>						
ALS		1	or 1	1	1	
ALS / Forced Entry		1	1	1	1	
ALS Industrial Accident	1	1	1	1	1	
ALS Vehicle vs. Pedestrian	1	1	1	1	1	
BLS		1	or 1			
BLS / Forced Entry						
Elderly / Patient Assist		1	or 1			

A review of the response policy shows a number of interesting elements to be explored:

- The Fire Department has ordered that the Ladder company be sent, reflexively, on a number of calls for service types – some of which are atypical for fire-rescue agencies across the United States. For example, the Ladder is sent on all fire calls (except brush) including dumpster and transformer fires, to any call where forced entry (or technical rescue) may be required, etc. This is driven by the fact that 1) the Fire Department does not staff a heavy rescue unit capable of carrying the tools required for these tasks and 2) that the majority of heavy rescue and other technical tools (a broader range of monitors and meters for example) have been placed on the Ladder.
- The EMS response system in the Town of Watertown results in a larger number of units being dispatched, particularly to ALS calls where three or more units are commonly dispatched. Sending an Engine (or, if none is available, a Ladder) to EMS calls to assist the ambulance crew is a common practice, though many communities are now examining with more focus those calls that may or may not require this level of response.

- The Fire Department has ordered the dispatch center to send the Deputy Chief on a wide range of (non-medical) calls for service. This is generally a good practice, particularly where multiple units are involved, where forced entry or other property destruction may occur as part of the rescue effort, where units are operating in potentially dangerous environments or where units are operating in areas where operations may be impacted by traffic.
- Many communities are routinely dispatching single engine companies to incidents such as car fires, dumpster fires, wires down, transformer fires and so on. In Watertown, each of these call types generates a response by at least three units.

There is a growing national trend to focus on reducing the number of units that are reflexively dispatched to calls for service. This is being done for a number of reasons, summarized, below:

- Sending fewer units, particularly where budgets are challenging departments to reduce staffing or to reduce minimum deployments, preserves units for the 'next call' to come in.
- Each unit dispatched represents a potential risk management issue for the Town in terms of firefighter injury, automobile vs. fire apparatus accidents, disruption of traffic flows and so on.

While the Department is not large enough to consider some of the approaches that other departments are using (deploying alternative vehicles such as SUV's to response to medical calls, etc.) there are approaches that can and should be taken:

- The Fire Department should focus on each call type to answer the question about whether a unit should be sent at all, and if so, which units can be most efficiently sent.
- The Fire Department should focus on responding with a single engine company to a broader range of fire calls, including car fires, dumpster fires, arcing wires and transformer fires. Clearly, in any of these cases, if a structure is threatened or other circumstances warrant, additional units should be deployed.
- Consideration should be given to issues such as the fuel consumption and operating costs for which vehicles are sent.

- Implementation of prioritization software in the dispatch center focused on more effective call triage should be examined. Many departments are making decisions to send fewer units to EMS calls based on these systems. For example, a teenager with a broken ankle might simply receive a response from an ambulance with no engine company being dispatched.

**Recommendation: The Fire Department should be tasked with overall reduction of the number of units that respond to calls for service. This could be done with changing unit deployments and / or implementation of a priority medical dispatch triaging system.**

**5. THE FIRE DEPARTMENT HAS ADOPTED A FORMAL RESPONSE TO VARIOUS STAFFING LEVELS BY PREDETERMINING WHICH UNITS WILL BE STAFFED AND AT WHAT LEVEL OF STAFFING.**

The Fire Department has recently seen reduced workforces on all shifts – this has been a result of budget changes as well as the consequences of long-term disability and, in some cases, extended military deployment. The result from all of these can be shift staffing levels which fall short of the internally viewed as ‘optimal’ level of 21 (which would allow for all five fire apparatus to be staffed with an officer – either Captain or Lieutenant – and two Firefighters, both rescues to be staffed with two Firefighters, and the Chief’s car to be staffed with a Deputy Chief and a Firefighter). Given that shift staffing falls below this level, the Chief has issued the following matrix to enable decisions to be made consistently across all four work groups in the Department with respect to staffing:

**Current Deployment of Personnel  
 At Various Staffing Levels in the WFD**

Unit	Officers and Firefighters on Duty				
	20	19	18	17	16
Car 2	2	2	2	2	2
Engine 1	3	3	3	3	3
Engine 2	3	3	3	3	3
Engine 3	3	3	3	3	3
Ladder 1	3	2	3	2	3
Ladder 2	2	2	2	2	DOWN
Rescue 1	2	2	2	2	2
Rescue 2	2	2	DOWN	DOWN	DOWN

The following paragraphs summarize some key issues in reviewing this table:

- The fact that the Chief issued this directive is a credit to the Department – the focus on consistency across shifts is a positive sign as to the management of the Department.
- The Department recognizes the engine companies as their primary work unit with three personnel always assigned to these pieces.
- What does not show in this exhibit is that the Department has also established a minimum of five officers per shift. This will be one shift commander (typically a Deputy Chief or perhaps a Captain) and three officers assigned to the engine companies and one for the ladder company.
- Only at the higher end of staffing does the Department staff Rescue 2 – choosing at 18 and 17 personnel to staff Ladder 2 instead. This is an interesting choice given that the volume of the workload in the Department falls in the area of Rescue calls.
- The dedication of a Firefighter to serving as the driver for the Deputy Chief is an issue that should be further explored, particularly at lower levels of staffing on a daily basis.
- As can be seen, below, the shifts are staffed with either 19 or 20 personnel:

<b>Group</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Total Staffing	20	19	19	20
Impact of LTD / Military	18	17	17	18
Impact of Time Off	15	14	14	15
Use of OT to Cover to Minimum	1	2	2	1

This results in an average predicated level of overtime use of 1.5 personnel per shift (to obtain a staffing level of 16). This is borne out by examining the number of shifts that needed to be covered in calendar 2011, as shown, below:

<b>Number Schedule / Available</b>	<b>Day Tours</b>	<b>Night Tours</b>	<b>FF's on OT to Cover Day Tours</b>	<b>FF's on OT to Cover Night Tour</b>
6	0	1	0	10
7	0	0	0	0
8	1	1	8	8
9	0	2	0	14
10	1	1	6	6
11	12	12	60	60
12	29	18	116	72
13	39	35	117	105
14	52	47	104	94
15	69	62	69	62
16	67	71	0	0
17	45	70	0	0
18	26	21	0	0
19	2	4	0	0
20	2	0	0	0
<b>Total</b>	345	345	480	431
	<b>Covered with OT / Shift</b>		<b>1.4</b>	<b>1.2</b>

The Fire Department's actual experience, in 2011, using overtime to cover shift operations is exactly what would be predicted given their staffing levels and obligations for leave, etc. found in the contract. Furthermore, it should be noted that the Fire Department is filling approximately 8% of its positions, daily, using overtime. On average, the Department is filling one or two positions per day (clearly some days require higher levels due to sickness, etc.). The level of staffing in the Department typically sits near the minimum threshold of 16 personnel – requiring that overtime be utilized to cover one or more vacancies on each shift. It should also be noted that this resulted, in 2011, in 166 night tours and 142 day tours that were staffed at or above the minimum staffing level of 16 currently in effect. Any step towards adding firefighters as

a way of reducing overtime would also increase by that number of shifts staffing levels above the current minimum of 16.

**Recommendation:** The Fire Department is effectively managing its overtime given current staffing resources and the current minimum staffing level. Adding another firefighter to the complement, while maintaining a minimum staffing level of 16, will result in staffing over the minimum target for almost 50% of the shifts in each year.

**6. THE FIRE DEPARTMENT SHOULD REDEPLOY EXISTING STAFF RESOURCES TO EXISTING UNITS.**

The project team recommends that the Fire Department consider the following changes in the recommended distribution of personnel.

**Recommended Deployment of Personnel  
 At Various Staffing Levels in the WFD**

Unit	Officers and Firefighters on Duty				
	20	19	18	17	16
Car 2	1	1	2 <sup>5</sup>	1	1
Engine 1	3	3	3	3	3
Engine 2	3	3	3	3	3
Engine 3	3	3	3	3	3
Ladder 1	3	3	3	3	2
Ladder 2	3	2	DOWN	DOWN	DOWN
Rescue 1	2	2	2	2	2
Rescue 2	2	2	2	2	2

This change has the following impacts:

- The Fire Department maintains two Rescues at all times, with no additional staffing required. As the primary source of call demand in the Department, it is critical that these units both be staffed at all times. This should significantly reduce reliance on outside units for coverage (i.e., transport) of the Town’s EMS calls and should result in a small increase in revenue for no additional personnel cost.
- Only under the 16-personnel scenario are any of the four primary fire units staffed with fewer than three (3) personnel – this is Ladder 1 under the 16-personnel scenario.
- Ladder 2 is only staffed under the 19 and 20-personnel scenarios.

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<sup>5</sup> The project team shows a driver under the 18-person staff level, rather than showing a four-person company on any of the engines or ladders. The Fire Department could argue for staffing one of the front line fire apparatus with four, rather than assigning the driver to the Deputy Chief.

- Car 2 is reduced, under all but one scenario, to the Deputy Chief in the car alone. Only under 18 personnel would the car be staffed with a second person – this is the most flexible location for this position to be assigned for this level of staffing. This allows the Deputy Chief to assign this firefighter to any other unit that responds to an emergency. The alternative would be to staff a fire apparatus with four personnel or an ambulance with three personnel – neither of which is a practical solution.
- This does not address the issue of a four-officer minimum staffing level. That is considered, below.

This movement of personnel can be accomplished simply by order of the Chief.

It does not require any additional budget authority.

**Recommendation: Deploy personnel so that Rescue 2 can be staffed at all times. Focus on staffing fire units at three personnel if at all possible. Both of these objectives are achieved by reducing staffing in Car 2 by utilizing the Firefighter assigned as the Deputy Chief’s driver to other functions. The project team believes that the appropriate target staffing for the Town is for there to be a minimum of 16 personnel on-duty – this allows for three engines, two ambulances, a ladder and a chief officer to be deployed at appropriate staffing levels. In this staffing approach, personnel could be detailed from Rescue 2 to work with the ladder company and to support the Deputy Chief, if necessary.**

**7. THE FIRE DEPARTMENT SHOULD CONTROL THE USE OF LEAVE AND WORK WITH THE TOWN ON A CONTRACT CHANGE TO PROVIDE FOR A TARGETED MINIMUM OF FIVE OFFICERS PER SHIFT.**

Current policy in the Department allows for the use of overtime to ensure that four officers (Deputy Chief through Lieutenant) are on-duty each day. The current deployment of personnel has six officers per shift:

<b>Group</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>
Deputy Chief	1	1	1	1
Captain	2	2	1	1
Lieutenant	3	3	4	4
<b>Total</b>	<b>6</b>	<b>6</b>	<b>6</b>	<b>6</b>

With current levels of leave utilization, the Department should, through careful scheduling of vacations and other scheduled time off, be able to ensure that five officers

are available on most shifts. This would allow for a shift commander, an officer on all three engines, and an officer on Ladder 1.

**Recommendation: Work to maintain, through improved scheduling of time off, a target of five officers per shift. Continue current practice of using overtime to maintain a minimum of four officers per shift. This will also require changes in the contract restricting the number of officers who can take leave each day.**

**8. OPPORTUNITIES EXIST TO ENHANCE THE LEVEL OF STAFF UTILIZATION IN FIRE DEPARTMENT OPERATIONS. THIS INCLUDES MORE PARTICIPATION IN PUBLIC EDUCATION.**

The Fire Department operations staff work a schedule that rotates using 24-hour shifts. Under current conditions, the Fire Department’s operations personnel perform both emergency and non-emergency functions. These are summarized, below:

<b>Function</b>	<b>Performed by WFD Operations Staff?</b>
Response to Fires	Yes
Response to EMS Incidents	Yes
Response to Rescue / Other Hazards	Yes
Training for Emergency Functions	Yes
Pre-Planning Target Hazard Locations	Yes (facility familiarization)
Conducting Formal Inspections	Yes (commercial buildings)
Testing Hydrants in 1 <sup>st</sup> Due Area <sup>6</sup> (Public)	No (done by Water Dept.)
Testing Hydrants in 1 <sup>st</sup> Due Area (Private)	No (done by Water Dept.)
Supporting Public Education Efforts	Minimal

The matrix, above, shows that the Fire Department is engaged in primary roles of emergency response and training. However, their involvement in other activities such as inspections is limited. The table, which follows, provides the project team’s assessment of the opportunities for expanding the line crew’s involvement in various support functions:

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<sup>6</sup> The ‘first due’ area is an engine company’s primary area of responsibility – a geographic area of the Town that is centered around the station from which the engine (or other unit) responds. This results from the typically static deployment model used by most fire / rescue agencies, including the WFD.

Function	Performed by WFD Operations Staff?
Training for Emergency Functions	Critical part of preparation and safety for personnel. Currently performing 2+ hours of training per shift worked.
Pre-Planning Target Hazard Locations	This is an area that should be enhanced. Companies are well-suited for this since they will have to work in these structures and areas in case of emergency. Companies do conduct “familiarization” walk throughs of facilities – and will notify Fire Prevention of there are issues. These walk throughs result in detailed pre-plans for target hazards.
Conducting Formal Inspections	Company officers would need to be certified as inspectors under MA law. Current inspection staff is sufficient to perform formal inspections on key target hazards. However, many mercantile and other smaller facilities are only inspected when they change hands.
Testing Hydrants in 1 <sup>st</sup> Due Area (Public)	Water Department currently perform annual maintenance and testing of all hydrants in their respective districts. The Fire Department will identify issues with hydrants and forward them to the Water Department.
Testing Hydrants in 1 <sup>st</sup> Due Area (Private)	The Fire Department does not currently test private hydrants. The Fire Prevention staff require private property owners to show that they have had their hydrants tested within the past year.
Supporting Public Education Efforts	The companies are involved in providing very limited public education support to the community – including fire drills at schools.

The project team’s findings in this area of service delivery suggest that engine companies should focus on increased pre-planning for target hazards in their response areas. The workload data presented earlier in this chapter suggests that companies are operating at approximately 50% of their capacity for handling emergency workload<sup>7</sup>.

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<sup>7</sup> The project team recommends that additional engine companies be added in a discrete response area when workload approaches 10 runs per day per unit. For example, a second engine should be added to a station when the primary engine is handling approximately 10 runs a day.

**Emergency Workload by Unit 2010**

<b>Unit</b>	<b>Workload</b>	<b>Total Emergency Hours</b>	<b>Hours in 1/2 of the Day</b>	<b>% of 12 Hour Day Spent on Emergency Workload</b>
<u>E1</u>	1,614	470.75	4,380	10.75%
<u>E2</u>	1,335	389.38	4,380	8.89%
<u>E3</u>	1,150	335.42	4,380	7.66%
<u>L1</u>	1,229	358.46	4,380	8.18%
<u>R1</u>	2,188	1,276.33	4,380	29.14%

The units average between 8% and 29% per day handling emergency incidents. The table, below, shows the level of non-emergency workload (training and public education) handled each day:

**Non-Emergency Workload by Unit 2010**

<b>Unit</b>	<b>Workload</b>	<b>Total Training / Prevention / PE / Maintenance Hours</b>	<b>Hours in 1/2 of the Day</b>	<b>% of 12 Hour Day Spent on Non- Emergency Workload</b>
<u>E1</u>	1,747	2,620.50	4,380	59.83%
<u>E2</u>	1,747	2,620.50	4,380	59.83%
<u>E3</u>	1,747	2,620.50	4,380	59.83%
<u>L1</u>	1,747	2,620.50	4,380	59.83%
<u>R1</u>	1,747	2,620.50	4,380	59.83%

The table, above, shows that all units are spending almost 60% of their day shift on maintenance, training and other administrative support activities (including conducting inspections and the like). The following table shows the combination of the two tables plus the impact of meals and station duties:

**Emergency and Non-Emergency Workload by Unit 2010**

<b>Unit</b>	<b>Workload</b>	<b>Total Hours</b>	<b>Hours in 1/2 of the Day</b>	<b>% of 12 Hour Day Spent on All Workload</b>
<u>E1</u>	3,361	3,091.25	4,380	70.58%
<u>E2</u>	3,082	3,009.88	4,380	68.72%
<u>E3</u>	2,897	2,955.92	4,380	67.49%
<u>L1</u>	2,976	2,978.96	4,380	68.01%
<u>R1</u>	3,935	3,896.83	4,380	88.97%

The analysis, above, shows that the Fire Department is doing an effective job of utilizing personnel during the daytime hours (we have assumed that all emergency workload takes place on the day half of the shift for purposes of calculating utilization – to avoid the complication of sleep time).

There is some capacity in all units for some increased activity and the project team recommends that this time be focused on increased pre-planning for emergency incidents and on expanding their role in public education. It would not be practical for this expanded role to include personnel assigned to Rescue 1. This should be accomplished first at target hazards and then should be accomplished with a focus on all commercial, mercantile, industrial and multi-occupancy structures. The Insurance Service Organization (ISO) recommends that communities conduct annual inspections and pre-planning of all such structures within the jurisdiction.

If one-hour is sufficient to walk-through an average facility (some larger ones may take longer) a facility can be pre-planned on every shift rotation (one hour to conduct the pre-plan walkthrough and another hour to develop drawings and notes). This would enable the Fire Department to pre-plan more than 730 facilities per year. This calculation is shown below:

Shifts / Year	365
Eligible Companies	4
Company Shift Days	1,460
Shifts / Plan	2
Potential Plans (Max)	730

This would increase utilization for most companies to between 80% and 90% during the day with utilization during the night shift at less than 30% (emergency response and meals only). This would enhance the productivity of the Department for no cost. Alternatively, the Department could increase the number of engine company inspections handled by each unit.

**Recommendation: The Fire Department should engage in at least one-hour of pre-planning activity per day per company. If this approach is taken, more than 700 pre-plans could be completed or updated on an annual basis. Initially, facilities should be broken down by first due area, with some exceptions made to expand the scope of the less active companies. Consider adding a layer in the GIS for pre-planning so that the WPD and the WFD have access to these plans.**

#### **9. THE PROJECT TEAM EVALUATED ORGANIZATIONAL ALTERNATIVES FOR EMS OPERATIONS MANAGEMENT.**

The Watertown Fire Department has a Deputy Chief assigned to provide general oversight for shift command on-duty at all times. This position, per shift, report to the Chief and is responsible for all aspects of operations, staffing and deployment of personnel in the Fire Department. The current role of the Deputy Chiefs as they relate to pre-hospital care include the following:

- Ensuring that the daily schedule and roster provides for the deployment of all front-line apparatus in the Watertown Fire Department.
- Providing direct incident command at major incidents with an EMS component (mass casualty, technical rescue, confined space rescue, extrication, and structure fire). Deputy Chiefs do not typically respond to “routine” medical calls – no matter how serious they are in nature – unless there are special circumstances as noted above.
- The Deputy Chiefs have no direct or on-going responsibility for providing quality control or direct medical supervision. They are not currently involved in the

control or distribution of medications or supplies.

- The Department does not have any specific on-shift individuals responsible for the oversight of EMS services as a separate program – this rests with the Training Officer / EMS Coordinator.

The approach to providing EMS shift command varies across the United States.

The project team finds that, among communities the size of Watertown and larger, it is not un-common to maintain shift command for EMS services – particularly when the service is providing advanced life support (ALS) level EMS. These positions typically have responsibilities that are a combination of roles including chart review, quality control, medication coordination, controlled substance distribution and so on. The project team considered several alternatives to address this issue, including the following:

- **Maintenance of the status quo.** This model would remain essentially the same as the approach that is currently in effect with perhaps changes mentioned elsewhere in this report.
- **Maintenance of the current approach with some enhancements.** These enhancements could include the following:
  - Increasing the involvement of the Deputy Chiefs in a range of activities in support of pre-hospital medical services. These roles could include:
    - Distribution of medicines and EMS supplies on shift to the medical units in the Department. This would also add another level of accountability for these materials.
    - Increase their response to serious medical calls beyond those that involve other special circumstances (i.e., extrication, technical rescue, multiple injuries, structure fire). The purpose of this would be to ensure that the system functions as it is intended to. Deputy Chief responses could be set for a range of call types including:
      - Working cardiac arrest or other resuscitation.
      - Drowning.

- Vehicle accident with serious injuries.
- Any call where the ambulance will have a delayed response.
- Provide for Deputy Chief response to several randomly selected emergency medical calls for service, independent on the nature of the call, throughout their shift.
- Conduct follow-up contacts with patients and their families to determine if there are opportunities to improve the level of care provided by the WFD. These calls could be made by the Deputy Chief on the second following shift to allow for some time to have elapsed following the call and to provide for some checks and balances in the contact and reporting of any issues.

The exhibit, that follows, provides the project team's analysis of increasing Deputy Chief involvement in EMS calls. This analysis addresses the benefits and disadvantages as well as highlighting any major differences with the current approach:

Benefits	Challenges	Comparison Points
<b>Enhancement of Current Approaches</b>		
<ul style="list-style-type: none"> <li>• Increases the WFD’s focus on EMS issues on the shift.</li> <li>• Makes shift Deputy Chiefs responsible for overseeing the service delivery on their shift.</li> <li>• Increases the accountability of the command staff in Operations for EMS services.</li> <li>• Adds a layer of checks and balances to controlled substance and other supplies distribution.</li> <li>• Reduces the need for the EMS Officer to restock critical supplies while off-duty.</li> <li>• Allows increased management focus on the paramedic engine company program.</li> <li>• Most cost effective way of providing for on-shift improvement.</li> <li>• Would underscore current efforts at creating checks and balances between EMS and Operations.</li> </ul>	<ul style="list-style-type: none"> <li>• Increased response expectations for Deputy Chiefs would increase their workload and reduce their availability for other assignments.</li> <li>• Does not provide any additional resources for quality control, issues identification, medical instruction, etc.</li> <li>• Could benefit from additional time by medical director and nursing staff conducting ride alongs with WFD units to observe field implementation of protocols.</li> </ul>	<ul style="list-style-type: none"> <li>• Makes greater and more focused use of existing resources (Deputy Chiefs) in the EMS area.</li> <li>• Would not require any positions to be eliminated and would require the creation of a single new position.</li> </ul>

The Fire Department should take immediate steps to increase the involvement of the shift Deputy Chiefs in the management and supervision of EMS services in the City.

The project team recommends the following specific changes to current approaches:

- **Deputy Chiefs should be included on all life threatening calls for service as triaged by the dispatch center.** The Deputy Chief’s role on these calls is not to provide medical supervision, but rather to provide for system management and oversight, to support the victim’s family, to provide for scene safety and other oversight roles. These roles do not require the Deputy Chief to be a paramedic – they rely on these mid-level managers as the connection between the line employees who are delivering the EMS services and the Department’s and Town’s senior management team.
- **Deputy Chiefs should be dispatched to non-life-threatening calls for service on a random basis.** In order to be enhance management oversight

EMS, the Deputy Chiefs must also respond to some of the less serious calls for service that make up the majority of EMS calls. The project team recommends that these responses approximate 3% to 5% of calls for service per week. These should span the entire shift.

- **The following shift Deputy Chief should make contact with the victim or their family to ascertain whether the WFD could have provided enhanced services on the call.** The Fire Department should make one attempt to contact the victim's family to ensure that they view patient care as a positive experience and to determine if there were other steps that the Fire Department could or should have taken to improve their support of the victim and their family. Issues should be cataloged and summarized and passed on to EMS command, Operations command, EMS training staff and to the Medical Director for inclusion in future training. While it is not practical to contact all victims, the WFD should target initiating contact with at least 25% of calls – these should be randomly selected, but should include 100% of life threatening calls.
- **Deputy Chiefs should take on additional responsibilities to ensure the efficient delivery of emergency medical services including** serving as a field representative of the Medical Director with the authority as approved, assisting with hospital status (reroute) and issues, following up on complaints about patient care, and reviewing and updating policies and procedures related to EMS delivery.

These changes would require some changes in policies as they relate to controlled substance distribution and call responses.

**Recommendation: The Matrix Consulting Group recommends that the Watertown Fire Department increase the responsibility of the Deputy Chiefs for EMS calls. There is no estimated recurring cost associated with this recommendation.**

**10. THE TOWN SHOULD MANDATE THE DISTRIBUTION OF AUTOMATIC EXTERNAL DEFIBRILLATORS IN SKILLED CARE FACILITIES, PLACES OF PUBLIC ASSEMBLY AND OTHERS.**

Extensive medical research has demonstrated that rapid application of external defibrillation by those who witness a cardiac arrest is the most successful method for enhancing survivability of these patients. A number of communities around the United States, Canada and Europe have funded distribution of automatic external defibrillators

(AED's) throughout the response system. In addition, many have provided AED's to a wide range of community interests in the Town and throughout its response area.

However, there is no supporting ordinance in the Town requiring the deployment of these devices to a wide range of venues –it has been viewed as an individual risk-management decision. The Town should work to develop a program by which these devices can be deployed and should support such an effort with an ordinance that requires the following classes of enterprises to have at least one on-site, with an allowance for multiple-businesses to place one in common areas which allow for public access – i.e., a medical office building could place them in the public corridors:

- All medical or medical care facilities, including but not limited to:
  - Hospitals.
  - Skilled care facilities.
  - Rehabilitation facilities.
  - “Urgent care” centers.
  - Medical clinics.
  - Physical therapy businesses.
  - Physicians’ offices.
  - Health clubs, private gyms, etc.
- Venues which allow for public assembly of more than 100 people.
- Schools.
- Sporting events.

This would greatly expand the reach of the AED program, would enable it to be done in a cost-effective manner and would enable the Town to improve on its approaches to provide responses to cardiac emergencies.

**Recommendation: The Town should adopt an ordinance requiring the presence of AED's in all medical establishments and places of public assembly. The Fire Department and the Town should work to assist with the placement of these critical devices in locations that cannot afford the full cost of one through a grant program. Furthermore, their location should be added into the CAD system so those near the victim of a heart attack can be directed to one while awaiting the arrival of EMS personnel. The cost would be borne by each medical provider. In the case of a medical office building, the providers could pool together to share this cost.**

**11. THE WATERTOWN POLICE AND FIRE DEPARTMENTS NEEDS TO FOCUS ON "CUSTOMER SERVICE" ISSUES WITH RESPECT TO EMERGENCY COMMUNICATIONS.**

The Watertown Police Department dispatches for the Watertown Fire Department, a public safety practice which this project team supports. However, issues have arisen with respect to resolving problems dispatching some calls, use of air time, explaining changes in the system which need to be addressed in the future. The Police Department, as a result, should take the lead in the following:

- Work with the Fire Department to develop a 'performance contract' for service which would cover such issues as:
  - Ring times.
  - Dispatch times.
  - Problem resolving techniques.
  - Reporting and review meetings.
- Develop measurable performance measures in support of the contract.
- Create a users group with representatives of both departments to address and resolve issues when they arise. This group should meet no less frequently than

quarterly.

- Report back to the Town Manager on an annual basis on the effectiveness of the service and working relationship.

These measures in other jurisdictions have positively addressed perceived and real problems in joint dispatching working relationships.

**Recommendation: Develop ‘customer service’ approaches to address and resolve problems in joint dispatching.**

**12. THE TOWN OF WATERTOWN SHOULD WORK CLOSELY WITH ONE OR MORE OF ITS NEIGHBORS TO EXPLORE A REGIONAL EMS TRANSPORT SERVICE DELIVERY MODEL.**

The Town of Watertown’s Fire Department operates with one and sometimes two transport ambulances. Neighboring communities also operate their own emergency medical transport systems from within their Fire Departments. The Town of Watertown could consider an alternative – to jointly staff a second unit with one or more neighboring communities (either using personnel from more than one agency, or alternating the shift which staffs the ambulance – two shifts from Watertown and two shifts from Belmont or some other community). The table, below, provides an interesting calculation regarding ambulance unit demand:

<b>Model</b>	<b>Avg/ EMS Calls</b>	<b>Ambulance Demand</b>	<b>Units Needed</b>
Calls per Hour	0.26	0.33	0.73
Calls per Hour with Prior Hour Impact or 150% of Average Hour Call Load	0.39	0.49	0.89
Calls per Hour with Prior Hour Impact at 95% Confidence or 250% of Average Hour Call Load	0.66	0.82	1.22

The calculation of the number of transport units required is a straightforward mathematical exercise that relies on the following information:

- Determine the average number of calls for service per hour.
- Calculate the straight demand for units.
- In order to assess the impact of peak workloads (periods of time where the demand for ambulances exceeds the average), we examined the need for units at 100% of the average call load, 150% of the average call load and 250% of the average call load (these models show the impact of concurrent calls from the prior hour).

The Matrix Consulting Group then took the Fire Department's workload and evaluated the number of units that are required on an hourly basis using these methodologies. This calculation is shown in the table, above. Note that these analyses are developed using the approximately 2,300 calls for service to which the Fire Department's units were dispatched in 2010.

What this analysis indicates is that most often the Fire Department requires a single transport unit – but that under peak load pressures the Department's need for transport capability exceeds one unit per hour. There are three solutions to this issue:

- Continue to utilize mutual aid.
- Re-deploy personnel in the Fire Department so that there are more than one Rescue unit staffed at all times. This has already been recommended elsewhere in this report.

- Work with neighboring communities in a cost-sharing arrangement that would offset the cost of running a second Rescue unit.

This model would be potentially applicable to other services including the following:

- Emergency communications;
- Public education;
- Fire fleet maintenance;

**Recommendation:** The project team recommends that the Fire Department and Town Manager seek to work with neighboring communities by offering them the services of Rescue 2 on a cost-sharing basis. Under this model, each community would keep the revenue associated with the calls run in their jurisdictions, and would pay a proportional cost of staffing the ambulance. For example, if one other community participated, the cost reduction to Watertown would be 50% the cost of staffing the ambulance – or approximately \$300,000.

## **APPENDIX A**

# **PROFILE OF THE FIRE DEPARTMENT**

This Appendix is a descriptive profile of the Watertown Fire Department (WFD), prepared by the project team from the Matrix Consulting Group. This profile is intended to serve as a summary of staffing, organization, workload and other factors that describe the operations and services provided by the Watertown Fire Department. This profile is organized into subsequent chapters that describe the Office of the Chief (and other support functions) and Shift Operations. The staffing numbers used are the authorized positions as of July 2011.

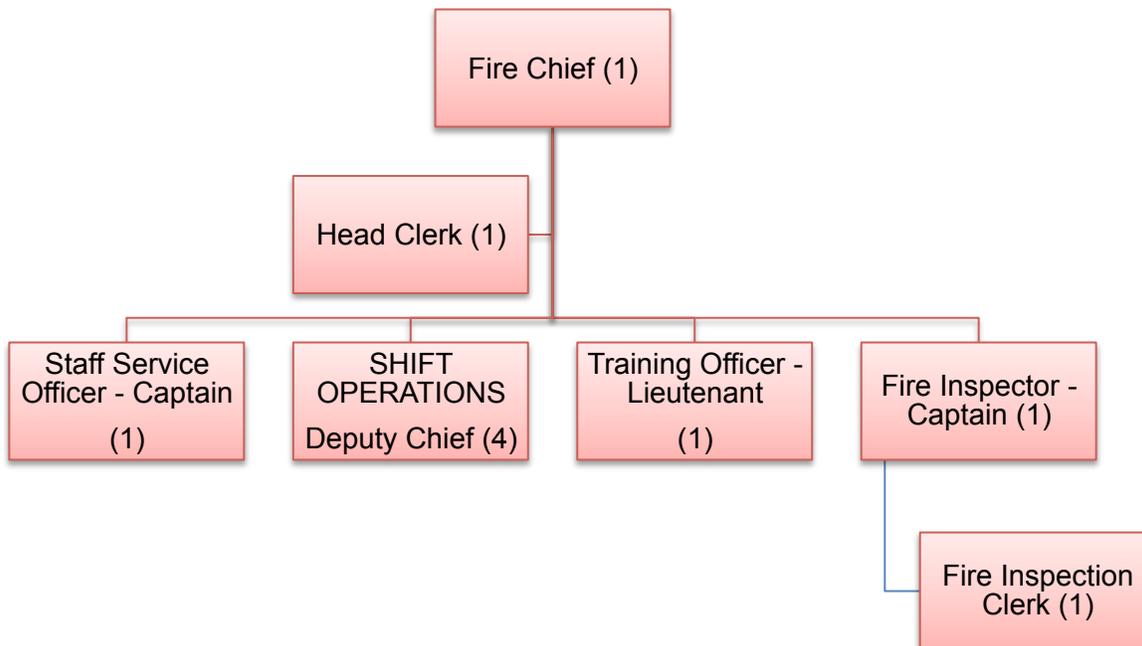
### **1. OFFICE OF THE CHIEF**

#### **(1) Introduction**

The Fire Chief has overall responsibility for all department functions; and has direct responsibility for the supervision of all shift operations, training, prevention and all ancillary duties assigned to Deputy Chiefs, Captains and Lieutenants.

#### **(2) Organizational Structure**

The plan of organization for the Chief's Office is presented below.



### **(3) Staffing**

The exhibit below provides a summary of the staff reporting directly to the Fire Chief, by function and classification, and also summarizes their key roles and responsibilities. The four Deputy Chiefs assigned to Shift Operations are included in that section.

Note: the columns “Bgt” means budgeted/authorized WFD positions; the column “Vac” means the number of positions in each classification that are vacant as of July 2011.

**TOWN OF WATERTOWN, MASSACHUSETTS**  
**Management and Operations Study of the Fire Department**

Function	Position	Bgt	Vac	Key Roles and Responsibilities
Department Management and Leadership	Fire Chief	1		<ul style="list-style-type: none"> <li>• Manages and coordinates all fire services in the Town to meet objectives set by the Town Manager and Town Council.</li> <li>• Provides overall leadership and guidance of Department personnel and fire services.</li> <li>• Provides overall management and administration of the Department; coordinates resources. A member of the executive management team of the Department and the Town.</li> <li>• Develops and maintains good working relationships with other managers in the Town and peers in the regional and state fire service community.</li> <li>• Represents WFD in regional and state fire service work efforts and projects.</li> <li>• Coordinates and evaluates top Department managers.</li> <li>• Performs routine administrative functions in the day-to-day management of the Department.</li> </ul>
Admin. Support	Head Clerk	1		<ul style="list-style-type: none"> <li>• Personal assistance to the Chief (e.g. correspondence, calendar management, phones).</li> <li>• Answers telephones and reception of visitors.</li> <li>• General and project support for command staff,</li> <li>• Processes/tracks: personnel action forms; travel/training and related expense forms, POST reimbursements,</li> <li>• Pays bills, including purchasing card bills, cell phone bills, petty cash.</li> <li>• Maintains Department employee files, phone lists, personnel rosters.</li> <li>• Processes all timecards and pay related issues for the FD; updates and maintains a manual timekeeping log of employees' work hours, leave hours, and comp time hours bank.</li> </ul>
Administration	Captain	1		<ul style="list-style-type: none"> <li>• The Staff Service Officer reports directly to the Fire Chief and is responsible for a wide range of administrative and support tasks.</li> <li>• This position is responsible for helping the Chief as the only other dedicated administrative position in the Fire Department.</li> <li>• Represents the Chief when the Chief is not available.</li> <li>• Additional duties for this position include SCBA, Pass and other breathing air systems.</li> </ul>

**TOWN OF WATERTOWN, MASSACHUSETTS**  
**Management and Operations Study of the Fire Department**

Function	Position	Bgt	Vac	Key Roles and Responsibilities
Fire Inspections	Captain	1		<ul style="list-style-type: none"> <li>• Conducts site plan reviews on initial submission from developers.</li> <li>• Serves as the Fire Inspector – handling major inspections and follow-ups from the line units.</li> <li>• Investigates Fire Code complaints.</li> <li>• Responds to major incidents during normal business hours.</li> <li>• Conducts business inspections on schools, sprinkler, certificate of occupancy and underground.</li> <li>• Investigates suspicious fires to determine cause and origin.</li> <li>• Coordinates the activities of the engine / other companies on the line in their conduct of inspections, hydrant maintenance, etc.</li> </ul>
Fire Prevention	Clerk	1		<ul style="list-style-type: none"> <li>• Supports the Fire Inspection Officer (Captain)</li> <li>• Answers telephones and reception of visitors.</li> <li>• Schedules inspections for the Fire Inspector.</li> <li>• Performs data entry related to fire inspections and plan reviews.</li> <li>• Maintains the property / address files for the Fire Department.</li> </ul>
Training / EMS	Lieutenant	1		<ul style="list-style-type: none"> <li>• Reports to one of the Deputy Chiefs who serves as Training Coordinator (as an ancillary duty).</li> <li>• Coordinates all shift training – this includes working with outside providers as well as internal experts.</li> <li>• Develops monthly training calendars.</li> <li>• Provides direct training elements.</li> <li>• Monitors training records and certifications.</li> <li>• Oversees EMS training, certifications and compliance.</li> <li>• Department liaison with area hospitals, OEMS, etc.</li> </ul>

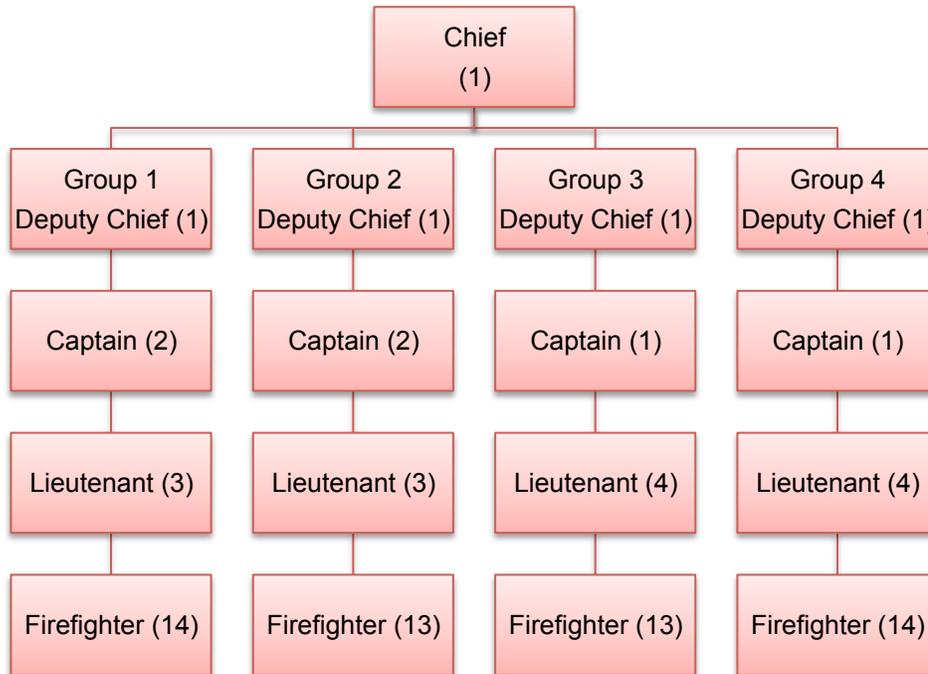
**2. SHIFT OPERATIONS**

**(1) Introduction**

A Deputy Chief who reports directly to the Fire Chief manages each of the four work groups in Shift Operations (Groups 1 – 4). This Division is responsible for providing emergency response to fire, EMS (including transport), and Haz-Mat calls for service, hydrant maintenance, equipment maintenance and assists in business inspections in the Town of Watertown. The WFD operates from three stations, each with a Captain ‘station officer’ assigned to coordinate maintenance and other issues.

**(2) Organizational Structure**

The plan of organization for the Operations Division is presented below.



**(3) Staffing**

The table below provides a summary of the staff reporting to the Shift Operations Deputy Chiefs, by function and classification, and also summarizes their key roles and responsibilities.

**TOWN OF WATERTOWN, MASSACHUSETTS**  
**Management and Operations Study of the Fire Department**

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Function	Position	Bgt	Vac	Key Roles and Responsibilities
Shift Command	Deputy Chief	4		<ul style="list-style-type: none"> <li>• Provides overall leadership, management and administration of each Group.</li> <li>• All Deputy Chiefs are in the bargaining unit. Each reports directly to the Fire Chief.</li> <li>• Work a 24 hour on 72 hour off shift schedule.</li> <li>• Serve as the shift commander for their Group.</li> <li>• Also have ancillary duties (overtime, computers, training, apparatus / maintenance, station maintenance, hose testing, hydrants, ground ladder testing, etc.).</li> </ul>
Suppression	Fire Captain	6		<ul style="list-style-type: none"> <li>• Work a 24 hour on 72 hour off shift pattern</li> <li>• Serve as the first line supervisor of fire personnel stationed at the three fire stations. Station 1 always has a Captain assigned.</li> <li>• Stations two and three have a single Captain assigned across the four groups who serve as a 'station captain' responsible for maintenance and other station issues.</li> <li>• Responsible for ensuring scheduled training occurs.</li> <li>• Ensuring the adequacy of staffing levels</li> <li>• Responds to emergency calls for service.</li> <li>• Evaluates performance of subordinates.</li> <li>• Monitors the condition of station facilities, apparatus, equipment and schedules needed repairs.</li> <li>• Ensures policies and procedures are followed.</li> </ul>
	Lieutenant	14		<ul style="list-style-type: none"> <li>• Work a 24 hour on 72 hour off shift pattern.</li> <li>• Serve as the first line supervisor of fire personnel stationed at the three fire stations.</li> <li>• Responsible for ensuring scheduled training occurs.</li> <li>• Ensuring the adequacy of staffing levels</li> <li>• Responds to emergency calls for service.</li> <li>• Evaluates performance of subordinates.</li> <li>• Monitors the condition of station facilities, apparatus, equipment and schedules needed repairs.</li> <li>• Ensures policies and procedures are followed.</li> </ul>
	Firefighter	54		<ul style="list-style-type: none"> <li>• Work a 24 hour on 72 hour off shift pattern.</li> <li>• Respond to emergency calls for service.</li> <li>• Perform hydrant maintenance activities; including painting.</li> <li>• Perform company inspections as scheduled.</li> <li>• Perform public education activities.</li> <li>• Prepare incident reports for entry into the RMS.</li> <li>• Assist in checking and maintaining fire apparatus and equipment.</li> </ul>

**(4) Summary of Operations**

Given shift staffing patterns, the Fire Chief has instituted a pre-determined unit deployment plan that varies depending on available personnel. This was distributed to all personnel in an effort to centralize the decision making. This is shown, below:

Unit	Officers and Firefighters on Duty				
	20	19	18	17	16
Car 2	2	2	2	2	2
Engine 1	3	3	3	3	3
Engine 2	3	3	3	3	3
Engine 3	3	3	3	3	3
Ladder 1	3	2	3	2	3
Ladder 2	2	2	2	2	DOWN
Rescue 1	2	2	2	2	2
Rescue 2	2	2	DOWN	DOWN	DOWN

## **APPENDIX B DIAGNOSTIC ASSESSMENT**

In this section of the report, the primary operations, staffing and management of the Watertown Fire Department are compared with measures of effective organizations from throughout the country. The measures utilized have been derived from the project team's collective experience and represent the following ways to identify divisional strengths as well as improvement opportunities:

- Statements of "effective practices" based on the study team's experience in evaluating operations in other municipalities or "standards" of the profession from other organizations.
- Other statements of "effective practices" based upon consensus standards or performance goals derived from national or international professional service organizations.
- Identification of whether and how the department meets the performance targets.

The purpose of this assessment is to develop an initial overall assessment of departmental operations and identify opportunities for improvement:

**TOWN OF WATERTOWN, MASSACHUSETTS**  
**Management and Operations Study of the Fire Department**

Performance Target	Strengths	Potential Improvements
<b>ADMINISTRATION</b>		
The organization has grouped like functions together to support the organizational mission and goals.	The Fire Department has grouped like functions together to support the organizational mission and goals. In addition, supervisors are assigned collateral duties in all functional areas: training, resource management, community education, emergency management, etc.	Only the Fire Chief is outside of the collective bargaining unit. All other personnel are represented by the same union.
The organizational structure has similar spans of control for similar levels of management.	The organization is relatively flat. Deputy Chiefs are responsible for shift supervision, incident command, as well as collateral duties.	
Personnel of like rank have similar responsibilities.	Deputy Chiefs have similar responsibilities. Captains all have similar responsibilities.	
The organizational structure supports goals of one manager per function and ensures that staff report to a single manager.	Given the flat organizational structure, all Deputy Chiefs report to the Chief. Captains and Lieutenants report to their respective Deputy Chiefs.	With only the Chief working a standard work week, issues of collaboration and coordination are a concern. This is mitigated by the extra-ordinary efforts of the command staff but is not an ideal organizational staffing configuration.
The Department utilizes data and converts data into regular reports reflecting the progress of programs, activities, or tasks related to the accomplishment of identified goals and objectives.		The Department does not make frequent use of the data which it tracks.
Members of the Department are aware of the targets, goals, objectives and priorities of the department consistent with their role in the organization.		Hard objectives in terms of response times, etc. are not strictly described and therefore not a part of the Department's culture.
All relevant responders are recorded utilizing the same clock or a coordinated clock (i.e. ambulance, rescue, mutual aid units, etc.)	All fire units are dispatched and times recorded through Town's dispatch center.	The Fire Department should work with the Police Department to ensure that dispatch services and record keeping are in keeping with the WFD's requirements.

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Performance Target	Strengths	Potential Improvements
<b>OPERATIONS</b>		
Differential responses are provided for emergency / non-emergency as a risk management tool.		The Department should re-evaluate its policies to responding to calls for service.
Firefighters should be able to roll apparatus within 1-minute of being dispatched.		Data are not available from the CAD to determine compliance with this standard. A number of discrete time stamp elements are not tracked. This will require effort from both Fire and Police to solve.
Deliver a minimum of 15 personnel (three engines, a rescue and a truck and a chief officer) with a travel time for all responding units of 8-minutes on a 90% fractile basis to fire calls.	The Department has the capacity to deliver this level of staffing when all units are available, at minimum staffing. Additional capacity exists in the form of mutual aid.	
Automatic and mutual aid agreements are in place to ensure that sufficient resources are available to handle rare but intensive response such as structure fires.	The Town has mutual aid agreements in place with neighboring jurisdictions to handle larger scale incidents.	The Town could seek to enter into seamless, total boundary drop agreements with surrounding agencies to assure the closest available resource responds to calls for service regardless of political jurisdiction.
Response protocols clearly define the types and number of responders to be dispatched.	The WFD has response protocols in place that indicate what resources will respond to various types of incidents. This includes second and third levels of response.	
<p>Command staff and company officers are trained in Incident Command System (ICS) and National Incident Management System (NIMS) or comparable approach for structuring and exercising command and supervision at emergency incidents.</p> <p>Includes periodic conduct of training exercises in ICS including incident simulation.</p>	Command staff and company officers receive ICS and NIMS training.	<p>Table top exercises are not routinely performed to rehearse the function of ICS and NIMS.</p> <p>Does not include training exercises with neighboring communities.</p>

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<b>Performance Target</b>	<b>Strengths</b>	<b>Potential Improvements</b>
Fire Suppression crews have immediate access to Pre-Incident Plans and Information. Wireless Transmission is preferable		There are some pre-incidents plans completed by the Department, though this is not a universal approach. There is no process by which plans are automatically updated in response units.
The Department has adopted a loss control goal to return commercial properties to functioning within a specific time frame (i.e. 2 hours).		The Department has not adopted such a policy.
Expedite delivery of emergency cardiac care by training and certifying engine company personnel at advanced skill levels including in some cases providing early Defibrillation capabilities on first-in engine company response units.	The Department provides EMT-D (Defibrillator) trained personnel and operates a minimum of one transport ambulance per shift. A second unit can be staffed. Additional transport capabilities are obtained from neighboring communities or private resources.	
EMS systems are fully integrated with ability of units to communicate and all personnel involved in the chain of patient treatment involved in the Quality Assurance/Improvement efforts.	WFD units have ability to communicate via radio with other neighboring ambulance units.	WFD personnel should be actively engaged in EMS Quality Assurance efforts, specifically chart audits that involve patients contacted by WFD personnel.
Implement and support citizen "self-help" programs in the emergency medical services area such as locating defibrillators in high risk areas and providing AED's and CPR training to community residents and businesses.	CPR training is provided to residents.	The Town should implement a community AED program that provides AEDS at public facilities throughout the Town. This should include integrating their locations into the CAD system so that bystanders can be made aware of AED locations.
The Department has an adopted Safety Plan with a dedicated Safety Officer and elements of safety are included in command, operations and training consistent with NFPA 1510.	The Department's safety functions are supervised by the Staff Services Officer. Full accountability systems have been adopted and are utilized.	Identification of a safety officer on each duty shift to enable responses at fire scenes / large incidents. This role is handled by the SSO when the Captain is on duty.

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<b>Performance Target</b>	<b>Strengths</b>	<b>Potential Improvements</b>
Functional areas within the fire station are appropriate to meet the needs of various functions.		The Department lacks adequate space for physical fitness and workout room that is shared on the apparatus floor.  There is not a dedicated area for training equipped with appropriate equipment needed in an adult learning environment.
The Department has full operational inter-operability with emergency responders within the State and/or the region.	The Department participates in both state and regional response networks for both routine and declared emergencies.	
<b>SUPPORT SERVICES</b>		
Suppression crews are actively involved in community smoke detector and CO detector awareness and inspection programs.	Crews are involved in smoke detector inspections prior to real estate transactions.	The Department should expand existing Fire Prevention Education experiences to include smoke detector and CO Detector awareness and inspection programs.
Officers and Firefighters conduct after action discussions and produce after action reports on all major emergencies		After action reports and discussions are not conducted within the Fire Department.
NFPA Firefighter I, II and III requirements for Firefighters.	NFPA Firefighter I and II are required for newly hired all full-time personnel. There is no requirement that experienced firefighters certify at these levels.	
NFPA Fire Officer I, II and III training requirements for fire officers.		There is no requirement under civil service for personnel to obtain these certifications prior to taking / passing / being assigned as an Officer.

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<b>Performance Target</b>	<b>Strengths</b>	<b>Potential Improvements</b>
There is a dedicated training officer who creates monthly and weekly training schedules.	The Deputy Chief over training creates monthly training schedules and monitors training hours. A minimum of 1.5 hours/shift of training is documented. A Lieutenant is directly involved in researching and providing training.	The training and safety functions are supervised by a shift based deputy chief that presents a lack of continuity and consistency between shifts. This is addressed by the assignment of the Training Officer (Lieutenant). The same Training Officer is also the EMS Coordinator responsible for all QA/QC and maintaining track of all certifications.
Training evolutions are based on NFPA 1410.		The Department does not conduct task performance reviews that are largely based on NFPA 1410 targets.
All Training experiences have an evaluation component and the training program has a built in mechanism to measure skills retention.		The Department does not have a formal evaluation mechanism for training with the exception of new employees.  There are no adopted performance standards for manipulative tasks.
The Fire Department dedicates staff to fire prevention, fire code inspection/enforcement, engineering/plan checking, and investigations.	There is one dedicated position responsible for fire prevention, inspections, etc.	Many Fire Prevention inspections are the responsibility of shift based personnel with each shift having a primary fire inspection specialist.
The Department has developed a comprehensive risk assessment and inventory information system that quantifies fire risk, hazard, or values for planning purposes. This is based upon the community's occupancy records, and measures the performance of the Fire Department in controlling risk.	The Department has prepared a standard of cover document (in 2008) based on a comprehensive risk assessment.	Continue efforts to complete and update the Town's risk inventory.
Ordinances requiring built-in protection for high-risk occupancies have been adopted	The Town has adopted the State sprinkler ordinance.	

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<b>Performance Target</b>	<b>Strengths</b>	<b>Potential Improvements</b>
The Fire Prevention staff plan-check planning permit applications, fire protection system plans and specifications, and building permit plans for compliance with the Uniform Fire Code.	The Fire Marshal performs plan checks based on the Fire Code.	
A public education program is provided to improve fire safety knowledge and awareness.		The Fire Department has almost no public education component. There is no dedicated staff assigned. The line crews engage in very little public education themselves.
The frequency of State mandated fire prevention inspections by the Department are in accordance with the ordinances and codes.	State mandated fire prevention inspections for schools, hospitals, day cares, nursing homes, public assemblies, and other high risk occupancies are conducted as required.	
<b>HEALTH AND SAFETY</b>		
The Department has instituted a program of physical fitness evaluation and attempts to identify pre-existing conditions that pose a threat to personnel		There is no formal fitness evaluation, other than an annual physical, which is not required for WFD personnel.
The Department has implemented a wellness program (consistent with IAFF/IAFC Wellness Program as published). This includes agreed upon wellness and fitness goals for the Department.		The Department does not have a formal wellness program or fitness goals.