Executive Analysis of Fire Service Operations in Emergency Management

A Description of the City of Worcester Fire Department’s
Readiness for Disaster Response.

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Worcester Massachusetts Fire Department

August 2007
Appendix B Not Included. Please visit the Learning Resource Center on the Web at http://www.lrc.dhs.gov/ to learn how to obtain this report in its entirety through Interlibrary Loan.
CERTIFICATION STATEMENT

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

Signed:______________________________
Abstract

The problem: the organizational structure of the WFD was not organized to support operational outcomes in a disaster scenario. The purpose: highlighted how other agencies were coping with the preparedness problem; identified ways to improve support operations. Descriptive research model was used to answer the following; what were some ways to utilize administration and planning to achieve operational outcomes, what methods could the fire department use to increase readiness for disaster response; and how would the improved infrastructure affect operations? Procedures: literature review, personal observations, interviews and data analysis.

Results: properly supported planning did affect operational outcomes. Community risk assessment was vital to disaster response. Organizational structure varied, but commitment to planning was essential. Recommendation: augment support services and planning.
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Introduction

It is a well established axiom that, in fact, ‘the devil is in the details’. All sound modern management philosophies advocate the necessity for planning in order to facilitate efficient and effective operations and this is especially relevant as it relates to a community’s disaster preparedness. Carter and Rausch (1999) succinctly state, “Proper planning improves a community’s ability to respond to and recover from disaster situations” (p. 460). Conversely, lack of or inadequate planning can have serious consequences on a community’s ability to respond to and recover from a natural or man-made disaster.

The scope of responsibilities of the local fire department in the context of national security has been forever altered. Buckman (2006) states, “Since September 11, 2001, the role of the fire service at the local level has expanded quite dramatically,” and that the fire service is now considered a “critical component in the nation’s homeland security plan” (p. 29). This reality however has not been reflected in any significant changes in either personnel assignments, or related planning processes by the Worcester Fire Department [WFD]. Most notably, the lack of administrative infrastructure necessary to adequately plan and prepare for natural and man-made disasters, including terrorist attacks, has left the operational forces and citizens of the City of Worcester unduly vulnerable.

The problem which this research seeks to highlight is that the administrative infrastructure of the Worcester Fire Department is dangerously inadequate in comparison to industry norms, directly impacting operational capabilities in the way of planning, mitigation, response and recovery; consequently exposing public safety personnel and the
community to undue risk/vulnerability in the event of a natural or man-made disaster. A recent independent analysis of the WFD states, “The Department has been organized and staffed for the traditional firefighting function, at the expense of virtually all other functions” (TriData, 1999, p.iii).

The purpose of this research is to identify and describe how public safety agencies use administrative infrastructure to achieve enhanced operational outcomes; to identify some available methods that could increase the WFD’s administrative readiness for disaster response; and the affect which an improved infrastructure could have on the department’s operational capabilities.

This paper will utilize the descriptive research method to compare the City of Worcester Fire Department’s existing capabilities to the current industry standards for emergency response to natural and man-made disasters. The research will respond to the following questions using interviews, literature review, observations, and data analysis. The research questions are as follows: What are some ways in which public safety agencies utilize administration and planning to achieve operational outcomes? What are some methods available that could increase the Worcester Fire Department’s administrative readiness for disaster response? What affect could an improved administrative infrastructure have on the operational capabilities of the Worcester Fire Department?

Background and Significance

In the late afternoon hours of June 9th, 1953 the City of Worcester was thrust into the annals of U.S. meteorological history when an F4 (possibly F5) tornado ripped through Central Massachusetts, more significantly the northern section of the city of
Worcester, killing 94 citizens, injuring 1,288 others and leaving more than 10,000 homeless (Heidorn, 2003). This event took the city and its fire department by surprise, and severely taxed the available public safety resources of the time. Retired Captain Leonard Fortunato, a young firefighter in 1953, who had less than two years experience at the time of the tornado recounts, “We were definitely not prepared for what we saw; there was no organization, no rhyme or reason to what we did” (personal communications, April 18, 2007).

The National Oceanic & Atmospheric Association [NOAA], (n.d.a) ranks the 1953 Worcester tornado as the 20th deadliest in U.S. history. (Note: The NOAA records 90 fatalities, cataloging only those occurring within the city limits. See table 1). New England is not widely considered an area prone to tornadic activity, but Heidorn characterizes central Massachusetts as a relative “Tornado Alley for locations east of the Appalachians.” Statistically from 1950-1994 Massachusetts ranked 35th overall in the number of tornadoes by state, in the number of injuries Massachusetts jumps to 21st, in the number of fatalities, an astounding 16th and in relation to adjusted damage/dollar loss 12th (NOAA, n.d.b). Similar statistical evidence is available for the region with regard to other natural disasters. Hurricanes, blizzards, wildland fires and earthquakes also pose significant challenges to local planners and response resources in this area of the country.

Table 1:  

<table>
<thead>
<tr>
<th>DATE</th>
<th>LOCATION(S)</th>
<th>DEATHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>F1 18 Mar 1925</td>
<td>Tri-State (MO/IL/IN)</td>
<td>695</td>
</tr>
<tr>
<td>2 06 May 1840</td>
<td>Natchez MS</td>
<td>317</td>
</tr>
<tr>
<td>3 27 May 1896</td>
<td>St. Louis MO</td>
<td>255</td>
</tr>
</tbody>
</table>

The 25 Deadliest U.S. Tornadoes
<table>
<thead>
<tr>
<th></th>
<th>Date</th>
<th>Location</th>
<th>Damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>05 Apr 1936</td>
<td>Tupelo MS</td>
<td>216</td>
</tr>
<tr>
<td>5</td>
<td>06 Apr 1936</td>
<td>Gainesville GA</td>
<td>203</td>
</tr>
<tr>
<td>6</td>
<td>09 Apr 1947</td>
<td>Woodward OK</td>
<td>181</td>
</tr>
<tr>
<td>7</td>
<td>24 Apr 1908</td>
<td>Amite LA, Purvis MS</td>
<td>143</td>
</tr>
<tr>
<td>8</td>
<td>12 Jun 1899</td>
<td>New Richmond WI</td>
<td>117</td>
</tr>
<tr>
<td>9</td>
<td>08 Jun 1953</td>
<td>Flint MI</td>
<td>115</td>
</tr>
<tr>
<td>10</td>
<td>11 May 1953</td>
<td>Waco TX</td>
<td>114</td>
</tr>
<tr>
<td>11</td>
<td>18 May 1902</td>
<td>Goliad TX</td>
<td>114</td>
</tr>
<tr>
<td>12</td>
<td>23 Mar 1913</td>
<td>Omaha NE</td>
<td>103</td>
</tr>
<tr>
<td>13</td>
<td>26 May 1917</td>
<td>Mattoon IL</td>
<td>101</td>
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<tr>
<td>14</td>
<td>23 Jun 1944</td>
<td>Shinnston WV</td>
<td>100</td>
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<tr>
<td>15</td>
<td>18 Apr 1880</td>
<td>Marshfield MO</td>
<td>99</td>
</tr>
<tr>
<td>16</td>
<td>01 Jun 1903</td>
<td>Gainesville, Holland GA</td>
<td>98</td>
</tr>
<tr>
<td>16</td>
<td>09 May 1927</td>
<td>Poplar Bluff MO</td>
<td>98</td>
</tr>
<tr>
<td>18</td>
<td>10 May 1905</td>
<td>Snyder OK</td>
<td>97</td>
</tr>
<tr>
<td>19</td>
<td>24 Apr 1908</td>
<td>Natchez MS</td>
<td>91</td>
</tr>
<tr>
<td>20</td>
<td>09 Jun 1953</td>
<td>Worcester MA</td>
<td>90</td>
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<tr>
<td>21</td>
<td>20 Apr 1920</td>
<td>Starkville MS, Waco AL</td>
<td>88</td>
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<tr>
<td>22</td>
<td>28 Jun 1924</td>
<td>Lorain, Sandusky OH</td>
<td>85</td>
</tr>
<tr>
<td>23</td>
<td>25 May 1955</td>
<td>Udall KS</td>
<td>80</td>
</tr>
<tr>
<td>24</td>
<td>29 Sep 1927</td>
<td>St. Louis MO</td>
<td>79</td>
</tr>
<tr>
<td>25</td>
<td>27 Mar 1890</td>
<td>Louisville KY</td>
<td>76</td>
</tr>
</tbody>
</table>
Meteorological factors with regard to a potential catastrophic event are one example of the risks that face the City of Worcester and its fire and emergency services. Domestic and international terrorism are also a real and present danger. Carter & Rausch (1999, p. 459), stated, a full two years prior to the September 11th attacks that, “As the need to prepare for acts of terrorism has become more urgent, fire departments have had to consider how they can mitigate the potential destructive effects of incendiary, radiological, chemical, and explosives incidents.” In addition, nuclear and biological threats have been added to the potential list of weapons that could be used against our communities.

The seriousness of any and all of these potential occurrences is obvious. The local fire department’s mission has been, is now, and forever will be, to protect life and property. The breadth of this mission has been expanded to include prevention, mitigation, response, and recovery for all of these new threats. However, our systems of management, and delivery of resources have made only minimal organizational changes in an attempt to reconcile our mission’s transformation. Organizational change in response to the changing global environment is crucial to operational success, as noted by Cote (2004), “It can no longer be business as usual for the fire service” (p. 190). The potential impact of resisting or not implementing necessary safeguards to meet these escalating dangers could have serious consequences. Increased loss of life including citizens and first responders, expanded property and environmental damage, and significant national economic repercussions are all significant by-products which could result from inadequate planning and preparation. Compton & Granito, (2002, p. 137)
summarize “…a deficiency in any of these critical elements will place human life and valuable property at greater risk.”

This descriptive research study of the Worcester Fire Department’s readiness for disaster response is in line with the United States Fire Administration’s mission as established in its strategic plan which lists; the development of a community’s comprehensive all-hazard risk reduction plan as one of its core operational objectives (United States Fire Administration [USFA], 2007). It also is in direct alignment with the National Fire Academy’s Executive Analysis of Fire Service Operations in Emergency Management course, which in its overview states, “The goal of this course is to prepare senior fire officers in the administrative functions necessary to manage the operational components of a fire department effectively” (Department of Homeland Security [DHS], 2005, p. 1-3).

By evaluating the current state of the organization’s resource allocation and its subsequent administrative effectiveness within the context of industry norms (as it relates to disaster response), this research seeks to identify the Worcester Fire Department’s areas of strength and weakness. By gaining a comprehensive analysis of the existing state of readiness, recommendations can be made for improvement or enhancement to strengthen the department’s operational capabilities and minimizing the community’s risk/vulnerability.

As stated, this investigation will be conducted within the context of the descriptive research method. Through the use of detailed observation and documentation, the current state of affairs can be evaluated; utilizing data analysis of current and past trends, empirical evidence gain be garnered to support or oppose the research premise
and give credibility to the observations; interviews with local members further defines the current state of affairs, and interviews with industry principles help to define the norm; and finally a literature review will also be conducted to help validate the findings.

Literature Review

In its landmark publication *America Burning* the National Commission on Fire Prevention and Control (1973) identified planning as “a major need underlying many others” (p. 27). Some seventeen years later, *America Burning: Revisited* (Federal Emergency Management Agency [FEMA], 1990) revealed that the fire service has failed to heed the original Commission’s call to action, and as a result, “The inability to plan on a comprehensive basis is limiting effectiveness and efficiency” (p. 63). That need has expanded in conjunction with the expanding role of the fire service, and the wisdom and practicality of planning is now universally held (Buckman, 2006; Carter & Rausch, 1999; Coleman & Granito, 1988; Compton & Granito, 2002; Cote, 1999; Wallace, 1998). These assertions establish the premise upon which this research is predicated; that is, planning must be afforded the time and resources necessary to be sufficiently comprehensive in order to affect real change within our profession (Coleman & Granito, 1988). From these assertions, the first research question follows: What are some ways in which public safety agencies utilize administration and planning to achieve organizational outcomes?

Philip S. Schaanman President of TriData Corporation states, “Planning is extremely important to achieving operational efficiency” (personal communication, July 25, 2007). Graham and Hays (1993) describe the dual purpose of developing plans for public organizations; “Plans are aimed at achieving the best use of organizational
resources in a future environment, and they are also the basis for managerial control and
direction of the organization in its current environment” (p. 32). Janing & Sachs (2003),
describe planning more plainly as; determining where an organization would like to be
and how it plans to get there. Planning is considered a cyclical mechanism, that is,
yesterdays plans are implemented into today’s operational policies, similarly tomorrow’s
planning efforts will direct the course of future operations.

“Classically, fire departments have seen themselves as reactive organizations”
(Carter & Rausch, 1999, p. 461). Today however, it is the proactive characteristic of
planning that separates this process from the more traditional standard operational
procedures. Planning, specifically strategic planning is future based; forecasting potential
environments and opportunities, and is vision-driven (Buckman, 2006). SOP’s and
SOG’s are experienced based; developed according to past or recurring events. Both of
these procedures are key component to achieving operational outcomes on a day-to-day
basis. Much of our past administrative efforts however have been focused on developing
and maintaining standard operational procedures, and very few resources have been
directed towards planning (Wallace, 1998).

The concept of using planning as a means of achieving organizational outcomes is
historically more synonymous with private sector organizations than public sector.
Ironically, Goldstein, Nolan and Pfeiffer (1993) describe planning in the private sector as,
“…a shift in focus from fire fighting and crisis management to a proactive consideration
of the future” (p. viii). It is within the planning process that the mission, vision and scope
of responsibilities of a department are established and consequently organizational
resources are coordinated according to those mandates. The International City/County
Managers Association (ICMA), describes how planning can be used to achieve organizational outcomes specifically in the fire service in three ways: by establishing service and risk levels acceptable to the community and fire department, by identifying opportunities for controlling fire losses, and by defining fire protection standards for the community (Coleman & Granito, 1988).

Unlike in the past, there are now numerous planning responsibilities which a modern fire department must undertake. Along with the more traditional operational/budgetary planning function, public safety agencies are developing and maintaining long and short range strategic or master plans, capital investment and facilities/equipment purchasing plans, comprehensive community risk management plans, and an array of emergency response plans (Buckman, 2006; Cote, 2004). Within the realm of emergency response planning are the sub-categories of; pre-incident planning (or pre-fire planning; which are usually occupancy or event specific plans); mutual-aid planning; special operations planning; and community/disaster response planning (Carter & Rauch, 1999; Compton & Granito, 2002; Cote, 2004; Wallace 1998).

The National Fire Protection Association’s (NFPA) standard 1201, *Standard for Providing Emergency Services to the Public*, advocates the necessity for master planning. This master planning process is multi-faceted. Section 4.4.8 and 4.4.10 highlight the necessity for community risk assessment, and maintaining adequate resources to manage the expected levels of risk (NFPA, 2004a). Bryson (2004, p.11) outlines the master/strategic planning process for public and non-profit organizations, and lists “enhanced organizational effectiveness” as one of the major benefits of the process. The sum effect of all of these efforts is that public safety agencies are now better able to
utilize the various planning functions, in combination with traditional administrative support mechanisms to increase operational capabilities.

Another subject of particular concern for this investigation of operational readiness is the WFD’s ability to respond effectively and efficiently to natural or man-made disasters. Therefore, the next research question becomes: **What are some methods available that could increase the Worcester Fire Department’s administrative readiness for disaster response?**

By its very nature, the question assumes a certain state of operational readiness already exists; and it does. The WFD has focused a great deal of time and resources in the area of training and equipment for response to a potential terrorist event. However, those efforts have been strictly tactically concentrated; very little, if any, emphasis has been dedicated to operational planning for a terrorist related disaster response; and operational planning for a natural or meteorological event is nonexistent. The requisite administrative infrastructure necessary to effectively carry out the planning functions is varied among public safety agencies (Cote, 2004).

The first step, as established previously, in disaster readiness is planning; which includes an evaluation of a community’s risk and development of a risk management plan. NFPA 1250, *Recommended Practices in Emergency Service Organization Risk Management*, defines risk management as “The process of planning, organizing, directing and controlling the resources and activities of an organization in order to minimize detrimental effects” (NFPA, 2004b, p. I250-5). The National Academy of Public Administration (2007, p. 102) states “Community Risk Assessments (CRA’s) play a
critical role in predicting hazards and saving lives empirically by profiling the risks of each community in space and time.”

FEMA (1995) describes a process of *Rapid Damage Assessment* (RDA) by local authorities as critical for laying the foundation for an effective operational response. The rapid assessment planning process includes; developing rapid assessment plans and procedures; testing, evaluating and finalizing the plan. The supporting data for a successful RDA procedure comes from initially developing a community profile, or more commonly called a comprehensive community risk/capability assessment.

There are many serviceable models of community risk assessment available from both public and private agencies. One such software based model distributed by the USFA, developed in cooperation with the International Association of Fire Chiefs (IAFC) and the Commission of Fire Accreditation International (CFAI) is RHAVE (Risk, Hazard, and Value Evaluation). RHAVE generally concentrates on the community’s fire problem; however the model can also be used to determine risk/capability for other potential hazards as well. “The RHAVE methodology is used to determine what values are exposed to loss in a community, what the probabilities are of an event occurring and what the consequences of such an event could be on the community if they occur”. RHAVE’s nine primary components are: *Nature of Risk, Hazard and Value to be Protected; Level of Protection Provided; Type of Response Required; Type of Intervention Required; Scope of Problem; Consequence of Loss; Frequency of Event; Level of Effort Required; and Level of Service Provided* (IAFC, 2001).

The RHAVE model contains some technical flaws which have been found to render its original claims to be less effective than anticipated. As a result, a more
comprehensive risk analysis tool is being developed by the Center for Public Safety Excellence (CPSE, formerly CFAI) in collaboration with the IAFC and International Association of Fire Fighters (IAFF), and Worcester Polytechnic Institute (WPI) is called VISION. This software based community risk assessment tool expands upon the fundamental principles of RHAVE and “will establish a technical basis for risk evaluation and deployment of resources by local fire departments” (CPSE, 2007). Dr. Lori Moore, project coordinator explains, “The VISION model will provide the local fire and emergency service department with a more technically sound community risk assessment tool upon which to build their resource allocation response plans.” (L. Moore, personal communication, June 17, 2007).

Dr. Kathy Ann Notarianni, Department Head of Fire Protection Engineering and Director of the Center for Firesafety Studies at Worcester Polytechnic Institute believes that the City of Worcester would benefit immensely from the process of community risk assessment; “…undertaking the process of community risk assessment is an important practice for local fire departments; it is an excellent device for gaining vital information about the community that might not otherwise be considered” (K.A Notarianni, personal communication, June 15, 2007).

Following a comprehensive community risk assessment, the next step in FEMA’s RDA model is the process of sectoring the community into manageable areas in the event of a disaster; “Sectors serve as “addresses” for tracking and allocating assessment personnel and collecting and reporting data” (FEMA, 1995, p.II-3). Each sector is then specifically analyzed for its own inherent risks. A profile of each sector is completed analyzing the following factors, population and demographics, essential facilities,
hazardous materials storage and/or transport, topography, special facilities with high-life-safety concerns, infrastructure life-lines, (water, electricity gas, etc.), and available response resources (FEMA, 1995; DHS, 2005).

Once the community and sector risk profiles are completed, staffing patterns and resource requirements can then be determined. Differing risks may require differing expertise during the RDA. As an example, public works personnel may be better suited to assess infrastructure life-lines than traditional emergency service assets. FEMA (1995, p. II-17) identifies five categories of RDA resources: specially trained Rapid Assessment Personnel; Police, Fire and Public Works personnel; Non-Response personnel; Community Groups; and Recallable personnel.

The Dayton OH Fire Department utilizes a “snapshot” procedure for “reporting preliminary conditions following a disaster” (Dayton, 1999). This simple accountability tool is designed to give the fire department leadership a quick assessment of their resources following an event, including damage assessments of facilities and equipment and any injuries or fatalities to personnel. From this immediate appraisal, commanders can then quickly determine available service levels, reallocate resources if necessary, request additional resources, and develop a tactical plan for response. An immediate damage assessment report or “snapshot” is the first order of business immediately following an incident (DHS, 2005).

Because regular and established lines of communication will likely be disrupted in the event of a major event, alternate communication plans will need to be developed and practiced. RDA resources will require a pre-established method for communicating damage information back to the Incident Commander (IC) or Emergency Operations
Center (EOC). Decision making capability will be limited if information is not communicated in a timely and effective manner from the field to the EOC (DHS, 2005).

The FEMA (1995, p. II-25) RDA model (See figure 1) offers the following representation of how communications avenues are established in a disaster response (DHS provides a similar matrix):

Fig. 1  
*Potential Sources of Rapid Assessment Data Transmission*

Systems of communication promulgated for use during a community disaster response must be practiced to be effective. “The most frequent problems encountered in responding to the disaster are problems in coordination and communication” (Coleman &
Granito, 1988). All models for disaster preparedness include a testing component, usually in the form of drills (FEMA, 1995; DHS 2005; IAFC, 2001).

Another essential pre-disaster component in the FEMA RDA process is developing and implementing the necessary forms to gather data in the field and at the collection points. These forms include: Rapid Assessment forms; Data Collection forms for 911 and Dispatch centers; and EOC data collection forms (FEMA 1995, p. III-1). These forms will provide consistency in data collection, insure that all identified risks within a given sector have been evaluated and provide the framework for deployment of resources.

**What affect could an improved administrative infrastructure have on the operational capabilities of the Worcester Fire Department?** Graham and Hayes (1993) submit that governments tend to create hierarchal organizations in order to influence efficiency and accountability among workers and processes; conversely however, these organizations often lack vitality and spontaneity. This dichotomy which is artificially created within the framework of our current organizational structure is largely responsible for the stagnation which pervades the operational capabilities of the WFD.

In December 1999, just weeks after a fatal fire took the lives of six Worcester firefighters; the TriData Corporation of Arlington Virginia (1999), at the request of the city manager, submitted to local government officials an independent evaluation of the Worcester Fire Department. The first sentence written in the Executive Summary, under the heading of Management and Organization states, “While no single organizational chart has proven ideal for fire departments, the current organization is not efficient and does not provide adequate staffing for Support Services” (p. iv). In the years following
the submission of the TriData report, some of the recommendations have been implemented, and many have not.

NFPA 1201 (2004a) section 4.5.2 emphatically states that the organizational structure of an emergency service organization will be of sufficient size and complexity to meet its core mandates. This precept is reiterated by nearly all management theorists from the earlier studies of Max Weber and Frederick Taylor to more modern theorists such as Peter Drucker and W. Edward Deming’s (Graham and Hays, 1993; Lynn, 2006). The actual shape or structure of an organization is a more fluid concept, and is dependent upon local needs and the number and type of services which an emergency service organization provides to meet its stated mission (Compton and Granito, 2002). Fire service organizational structures have typically been associated with the traditional top-down hierarchal model; what Weber describes as the bureaucratic model. This type of structure is very effective for managing resources in the emergency environment with authority and responsibility necessarily centralized within the highest management positions; but shows deficiencies with regard to non-emergency activities (Coleman and Granito, 1988).

Brudney, O’Toole, and Rainey describe a hierarchal relationship between management (non-emergency) and operations (emergency); each entity necessarily influencing the other. They characterize each group as actors, acting within worlds of action, first “operational (acting directly on and in the world), collective choice (acting on the rules that in turn channel operational actions), and constitutional (acting to craft the rules to be used in shaping collective choice itself)” (2000, p. 25). That is to say that, the constitutional or management entity within an organization has an obligation to
promulgate the guidelines under which the operational entity will operate in order to affect efficient delivery of services to the customer (world). The concept of collective choice is integral to the overall success of the institution; where management and operations come together to form an actual product or service from the established rules or processes.

“The scope and quality of support services is a key factor that often determines whether emergency services are delivered effectively”; and the role of those support services is often overlooked and undervalued within the realm of emergency services; (Systems Planning Corporation, 2007, p. 235). The aforementioned TriData study conducted in 1999 concisely states that “the WFD has not given enough attention and resources to support services”, and that “without adequate support services the WFD cannot maintain efficiency” (p.88). TriData President Philip S. Schaanman, who has overseen the process of independent analyses of over 130 of fire and emergency service agencies, believes that virtually every department needs some improvement in Support Services (personal communication, July 25, 2007).

Bovaird and Löffler (2003) describe this relationship as that between “front-line” or “production function” activities and “back-room” or “support” activities. They state that, “For an organization to be excellent, it must be good at each of these primary and support activities and, in addition, it must be good at combining them” (p.59). Brudney et al. (2000) found that the increased appreciation of supporting services, i.e. administrative infrastructure, through commitment of specialized personnel, is becoming more pervasive in the public sector. This change in organizational commitment can be linked to the
changing mission and scope of services being provided by the modern fire service organization.

In addition to effectiveness and efficiency within the realm of service delivery, organizational structure has been linked to job satisfaction and organizational commitment. Janing and Sachs (2003) consider job satisfaction as “critical to the delivery of high-quality services” (p. 57). Cunningham (2006) considered the relationship of organizational structure as an antecedent to job satisfaction and organizational commitment, in the context of intercollegiate athletics. Cunningham’s research substantiates that both qualities of satisfaction and commitment, “play an important role in subsequent individual- and organizational-related outcomes”, and that “…organizational structure holds significant association with the affective outcomes” (p.6). Cunningham further states that organizational structure can be either “dynamically constraining” or “cognitively economizing” on an employee’s job satisfaction and organizational commitment (p.12).

In 2005 Carroll Buracker & Associates, an independent public safety evaluation group conducted an analysis of the city of Springfield Massachusetts Fire Department (SFD). Springfield is the third largest city in the Commonwealth with an estimated population of 151,176, and historically has had the most similar demographics in the region to that of Worcester (U.S. Census Bureau, 2007). The city of Springfield has been under budgetary oversight by the state of Massachusetts since 2004, and as a result municipal services have undergone drastic reductions. Circa 1980 the SFD maintained a compliment of 502 personnel, 22 fire companies and 12 fire stations. In 2005 the SFD has been reduced to 264 personnel, 13 companies and 7 fire stations; a nearly 50%
reduction in the department’s operational capabilities (Carroll Buracker & Associates, 2007).

The SFD support staff compliment and table of organization is nearly identical to that of Worcester; with the exception of full-time public educators which the WFD does not have. Ironically the report emphasizes, “The Study Team has never seen a fire department the size of Springfield’s with such a limited number of civilian administrative and support personnel; i.e., three full-time and one part-time clerical administrative assistant staff members” (Carroll Buracker & Associates, 2005, p. vii).

Even with the drastically reduced operations resources, the independent study recommends increased staffing in many support services positions. These positions are by and large in addition to current staffing, not lateral transfers of personnel. The study suggests the reinstitution of a full-time grants/planner position, establish upwards of four additional clerical staff positions within various bureaus, create a fire/EMS Captain position, and reestablish a Deputy Chief’s position for Administration. The SFD also maintains two full-time positions in Public Education.

In summary, the research cited provides a general image of the importance of support services in relation to operational success in both public and private industry. Foremost in the realm of support activities is planning. The experts cited are consistent in their defense for the necessity and importance of the planning function. The stated importance of planning is influential to this research project because of its far-reaching implications; that of organizational support in the form of committed resources. Committing resources will likely influence the organizational structure of the department, and can have collateral influences on job satisfaction and enhanced operational
capabilities. Enhanced disaster preparedness and operational capability is also a likely result of the important process of community risk assessment.

The research was not influential however in determining an industry standard for organizational structure within the fire service. In fact the experts agree that no single organizational structure fits every entity. The depth and scope of a fire service organization is large part determined via the CRA process, and a historical analysis of the traditional fire problem. A range of additional service responsibilities have been added to the fire service mission over the past 20-30 years and as a result department structures have evolved dependent upon local circumstances.

Procedures

The procedures used for this research follow those commonly utilized for the descriptive research method; describing the current state of a subject. The process employed the following elements; an extensive literature review, personal observations, interviews with subject matter experts, and a brief organizational structure analysis.

Literature Review

The literature review was initiated at the National Emergency Training Center’s Learning Resource Center during trips to Emmitsburg over the course of research, beginning in July 06, and also in March 07. Several research items were gathered during these efforts which helped to form the basis from which to expand the review. The research review also included use of the Worcester Public Library, and resources from two local college libraries. This researcher also made use of a personal cache of professional education texts which provided information in the areas of human resources and organizational theory. The review also included the use of considerable resources
available from the internet. Subject specific searches utilizing common search engines provided ample reference sources.

**Personal Observations**

Personal observations for this research were limited to the researchers’ historical perspective of the department’s operational readiness for disaster response. Since the tragic events took place on September 11, 2001, the Worcester Fire Department has conducted and/or participated in several disaster response exercises. These experiences have ranged from table-top scenarios to full response disaster drills. Correspondingly, the Worcester Fire Department Training Division has undertaken the task of guiding all 400+ firefighters through the National Incident Management System’s (NIMS) training. Subsequently, the WFD has provided training to all other city departments and executive personnel as required by Homeland Security Presidential Directives 5 & 8 (DHS, 2006).

In October of 2004, the WFD prepared and administered a table-top exercise at the local level to assess the city’s senior management readiness for disaster response utilizing a mock flood scenario. This full-day exercise included the simulated activation of an Area Command to respond and mitigate incident objectives and the necessity to fully staff and support the Emergency Operation Center’s (EOC) activation. The following officials were involved in role-play activities:

- City Manager
- Assistant City Manager (2)
- Public Information Officer (city)
- Emergency Management Director
- Deputy Emergency Management Director
• Police Chief
• Police Command staff
  • Deputy Chief (2)
  • Captains (4)
• Fire Chief
• Fire Command Staff
  • Deputy Chief (2)
  • Captains (3)
• Public Works Commissioner
  • Public Works foreman
• Public Health Commissioner
  • Deputy Public Health Commissioner

This researcher served in the capacity as “controller” for the EOC group and observed that the senior government officials were not aware of anticipated roles during the event of a natural disaster. None of the participants had ever experienced an actual large-scale event necessitating EOC activation, and thus had no prior knowledge of their functional responsibilities within that context. There is no task specific training provided at the local or agency level for this aspect of their job description. This lack of preparation underscores the necessity for disaster preparedness planning, and further highlights the need for continued professional development throughout the city family.

Another observation opportunity of the WFD’s disaster preparedness came in the form of a state sponsored full-scale terrorism exercise, entitled Operation Mass-Decon,
held over the course of two days in September 2005, this exercise included participation from the following:

Federal Organizations:

Federal Bureau of Investigation (FBI), Boston Squad
FBI Boston Hazardous Materials (HazMat) Team/Evidence Recovery

State Organizations:

Massachusetts DFS Hazmat Districts 1, 3, and 4
Massachusetts DFS Special Operations
Massachusetts National Guard
Massachusetts State Police Bomb Squad and Crime Laboratory

Local Organizations:

Amherst Fire Department
Boxboro Fire Department
Clinton Fire Department
Concord Fire Department
Framingham Fire Department
Gardner Fire Department
Holden Fire Department
Leominster Fire Department
Marlboro Fire Department
Milford Fire Department
Natick Fire Department
Northbridge Fire Department
Rutland Fire Department
Southbridge Fire Department
UMass Medical Emergency Medical Services (EMS)
Ware Fire Department
Webster Fire Department
Worcester Central Medical Emergency Dispatch
Worcester Fire Department
Worcester Police Department

Other:

American Red Cross
Clinton Hospital UMass Memorial
Emerson Hospital
Harrington Memorial Hospital
HealthAlliance UMass Memorial - Leominster Campus
Heywood Hospital
Hubbard Regional Hospital
Marlborough Hospital UMass Memorial
Mary Lane Hospital
Metro-West Medical Center (Framingham)
Metro-West Medical Center (Natick)
Milford Regional Medical Center
Saint Vincent Hospital at Worcester Medical Center
UMASS Memorial Hospital
UMASS Memorial Hospital, University Campus

International Agencies:
None

The Worcester Fire Department was tasked as lead response agency for the drill and this researcher served as the initial Incident Commander and later as a member of the Unified Command. The official after action report (AAR) revealed that the WFD has a firm handle on the Incident Command System (ICS), and the implementation interoperability protocols; both key preparedness components of NIMS. It also however cited deficiencies in specific areas of preparedness planning such as the use of tactical worksheets and job aids, communications, and advanced hazardous materials detection equipment (Public Consulting Group, 2006).

Personal observations of the WFD’s operational capabilities at this exercise revealed that experienced personnel will function within an acceptable degree of effectiveness despite having no prior knowledge of any formalized plans or guidelines from which to function at the various levels of response. Experience-based improvisation was readily observed at all ranks, which kept the response momentum moving forward through the initial stages of the exercise. However, certain operational deficiencies became apparent after prolonged operational exposure, such as providing for replacement and rehabilitation of initial responders.
Another such personal observation opportunity took place recently in May, 2007. Strategic Solutions Group of Stoneham, Massachusetts was contracted by the City of Worcester to provide a functional table-top exercise utilizing Homeland Security grant monies. This exercise was designed to evaluate the city's response capabilities for a potential terrorist attack on key infrastructure targets. The major targets included two transportation corridors; rail and interstate highway, and also the partial destruction of a major hospital facility located in the heart of the city's downtown business district. Participants in this exercise included many of the same local groups in the two previous drills, and thus built upon those prior experiences.

Once again the WFD was tasked as the initial lead response agency, and served as IC throughout the scenario. This researcher served as “controller/evaluator” for Unified Command which was established early on in the incident. The official AAR is still pending; however the hot-wash session immediately following the exercise was very informative. Some agencies, in particular the affected hospital administrative staff, were particularly dissatisfied with their degree of involvement at the command level. The hospital maintains an emergency response procedure that includes the implementation of an internal ICS structure within the facility, but was unable to rectify their specific role at the actual statutory response level.

The stated conclusion of this session was that more training on role responsibilities and anticipated levels of involvement for participating and cooperating agencies is needed. The WFD and the City of Worcester are moving forward with preparedness development training for all levels of interest including individual citizen participation. However, these efforts lack a focal point for coordination. The WFD, as the
new parent agency for Emergency Management within the city, has yet to shape the
process for such an endeavor, either through planning or actual implementation.

These personal observations serve to develop the necessary data component in the
context of a “description of the current situation”; compulsory for descriptive research.
The operational readiness of the WFD for a natural or man-made disaster has not recently
been tested, (within the past fifty years). Therefore the best assessment vehicle available
for operational readiness, in the absence of actual experiential data, is observation of
training and simulation activities, followed by critical analysis and review.

Interviews

Several interviews were conducted with subject matter experts (SME) in an
attempt to garner independent analysis of relevant areas of this research. A personal
interview was conducted with retired Captain Leonard Fortunato on April 16, 2007. This
intent of this interview was to gain a historical perspective of the WFD in 1953 during the
time of the Worcester tornado. Captain Fortunato was assigned to the Greendale fire
station, the closest station to the epicenter of the destruction, and was on-duty that day.
The captain joined the WFD just over three years prior to this incident in 1949, and
served until the late 1980’s. This span of service is consistent with an era of great change
in the fire service; and allows for a unique personal perspective and commentary. This
interview was instrumental in gaining insight into the state of the WFD and its response
capabilities during a significant natural disaster. The historical context serves as a tragic
reminder that devastating meteorological events can and do take place in this
geographical area; thus lending credibility to the necessity for preparedness.
Another personal interview was conducted with Dr. Kathy Ann Notarianni, Department Head of Fire Protection Engineering and Director of the Center for Firesafety Studies at Worcester Polytechnic Institute on June 15, 2007. Dr. Notarianni is currently collaborating with the Center for Public Safety Excellence on the VISIONS project as a SME in the field of fire related computer aided design (CAD). Having lived and worked in the city of Worcester most of her adult life, coupled with her impressive professional credentials, Dr. Notarianni is uniquely qualified to comment on the both the WFD’s current state of readiness and potential methods for improvement; research question #2.

A telephone interview was conducted with Mr. Philip S. Schaenman, President and founder of TriData Corporation on July 6, 2007. Mr. Schaenman and TriData have conducted over 130 comprehensive reviews of fire and emergency services departments since 1981. TriData’s analyses include long-term strategic analysis, systems analysis and capability and readiness assessments.

In 1999, TriData was contracted to conduct an operational assessment of the Worcester Fire Department. The results of that analysis are instrumental in providing an independent perspective of the WFD’s current state of preparedness. The recommendations contained therein provide objective solutions to the systemic deficiencies identified in the analysis. Mr. Schaenman’s evaluative experiences are unsurpassed in the fire service industry, and his insights were used to develop valuable data for research questions 1 & 3.

Finally, a telephone interview was conducted with Dr. Lori Moore of the Center for Public Safety Excellence, who is overseeing a $1 million research project funded by the Department of Homeland Security’s Assistance to Firefighters Grant Program called
VISION. This project is designed to develop tools, (software programs and a validated assessment model), that will assist local fire departments to better assess their actual community risk potential; and to help them enhance their planning and operational readiness for response to natural and man-made disasters.

Dr. Moore provides a national perspective on disaster preparedness, coinciding with research question #2. She has extensive expertise in emergency response system design, staffing and deployment of mobile resources, system performance measurement, and evaluation. Dr. Moore began her career as a firefighter/paramedic with the Memphis, Tennessee, Fire Department and Local 1784. Her significant experience as a technical expert for the IAFC has allowed her to combine both her educational and professional qualifications to better serve the nations fire service.

Organizational Structure Analysis

This research included a brief analysis of various fire department organizational charts in order to glean an appreciation of how other departments are structured relative to support services. Utilizing the latest 2006 U.S. Census estimates (See Appendix A), a request was made for recent organizational charts to career fire departments with similar population demographics to Worcester, that being those with populations ranging between 150,000 and 200,000 (U.S. Census Bureau, 2007).

In all 55 cities are included in that populations range. Among that group, five cities do not maintain independent fire protection services (those cities currently contract with a county-wide fire departments) and are not included for comparison. In addition, six other cities are utilizing various levels of volunteer service, thus not all-career departments, and are subsequently excluded. Organizational charts were obtained from
various department web-sites. Those whose web-sites did not include links to organization charts were contacted via telephone and a request was made for an electronic copy of the table of organization is available.

In all 34 of 44 departments within the demographic range provided either visual representations in the form of traditional organizational charts, or a written narrative of the departments support services personnel structure (See Appendix B).

**Definition of Terms**

**Accountability** – The state of being accountable, liable, or answerable.

**Administrative** – Of or relating to or responsible for administration.

**Assessment** – The act of judging or assessing a person or situation or event.

**Demographics** – A portion of a population, especially considered as customers.

**Hierarchal** – Classified according to various criteria into successive levels or layers.

**Infrastructure** – The basic underlying framework or features of a system or organization.

**Meteorological** – Pertaining to meteorology or to phenomena of the atmosphere or weather.

**Strategic/ Master planning** – An organization's process of defining its strategy, or direction, and making decisions on allocating its resources to pursue this strategy, including its capital and people.

**Results**

**Question #1** – What are some ways in which public safety agencies utilize administration and planning to achieve organizational outcomes?
This research found that fire departments of similar size and demographic composition vary greatly in the ways in which they are administered. Many departments are utilizing enhanced civilian staffing to reduce the burden on uniformed personnel for day-to-day clerical duties; thus realizing a substantial budgetary savings. In other areas such as planning, grants writing and acquisition, personnel administration and budget, uniformed members and civilian employees are nearly equally utilized; the availability of qualified uniformed personnel to fill these more specialized areas seems to be the determinant factor.

Industry norms represent that strategic or master planning is more commonplace in today’s fire department. Long-term planning and private sector business concepts have been widely adopted and have now become routine in public sector management. This has resulted in a fundamental shift from the traditional reactive nature of the fire service to a more proactive customer-service driven industry.

Along with these more traditional staff positions in administration, some less common job listings appear in a number of organizational charts, such as Logistics Chief. This title appears to be synonymous with Support Services; but is more in accord with the modern ICS structure. Others including, accountants, purchasing agents, records manager, business/budget analyst, special projects supervisor, and supply officer, are becoming increasingly more routine in fire department organizational charts.

Common among most organizations is the emphasis on managing information services (MIS); also called information technology (IT), or computer specialist. Other related positions found in the industry today are, data entry technicians, programmers, analysts, network/software maintenance and media specialists. There is little doubt that
this area of modernization of the fire service is out-pacing our ability to make organizational change.

**Question #2** – What are some methods available that could increase the Worcester Fire Department’s administrative readiness for disaster response?

Specifically within the area of administrative readiness as it relates to disaster response, clearly conducting *a community risk assessment* (CRA) is a major first step. Use of information technology such as GIS, CAD and other proprietary soft-ware programs can significantly enhance and streamline the process for a medium-to-large metropolitan area like Worcester. Much of the field work is done at the company level during routine pre-fire planning and in-service familiarization inspections such as, gathering information about life-safety hazards, infrastructure sights, target hazards, and transportation corridors.

Once the CRA has been compiled, a rapid damage assessment (RDA) procedure can be developed and implemented. Immediately following the event, public safety agencies first use a *snapshot survey* to determine their own response capabilities, vis-à-vis personnel and equipment. Then along with previously identified public and private sector resources, utilized as area specific field operatives, the RDA personnel can immediately assess and prioritize potential service needs. Response resources can then be efficiently and effectively assigned by command staff.

No matter what level of organization is needed for response; from a localized response effort, to a full-scale Federal declaration, interoperability through pre-established communications channels is paramount to success. Effective communication of information through the use of a properly designed organizational structure, redundant
communications pathways, and standardized forms and language is the single most important supporting service/procedure that can be implemented.

**Question #3** – What affect could an improved administrative infrastructure have on the operational capabilities of the Worcester Fire Department?

The WFD would realize substantially improved effectiveness and efficiency on a daily basis. This research has shown that no single administrative/organizational structure fits all fire service entities. There is great variation among the range of departments, even within the small demographic group analyzed; with regard to the nature and configuration of support services. However, the research does show a consistent trend toward establishing or augmenting those support services areas which have traditionally been either ignored or under-utilized.

As the fire service takes a more prominent role in areas of emergency management and homeland security, the more prominent the scale of administrative infrastructure needed to support this new mission has become. Many fire service organizations are increasing their presence in emergency management, or taking on direct oversight of the task; thus necessitating dedication of personnel and budget resources to that end.

The research shows that there is a definite correlation between the success of operational forces in the field and the quality of support services at hand to sustain them. This hand-and-glove relationship is also directly linked to job satisfaction and organizational commitment; two enormously important factors to operational success and quality of service delivery.
Discussion

In essence, this study seeks to gauge the current state of organizational readiness of the Worcester Fire Department for a natural or man-made catastrophic event. The underlying premise to which, is that operational readiness is to a great degree, contingent upon administrative readiness (planning and support services) for success in its mission. This contention is also the basis for both HSPD 5 & 8 which created the impetus and infrastructure of the National Response Plan (DHS, 2006). Every community and especially every local fire department have come to the stunning realization that they will be required to respond and mitigate the consequences of acts of war here at home. Buckman (2006, p.29) writes, “…local fire service providers have been thrust into the role of first responders to terrorist-related events and are considered a critical component in the nation’s homeland security plan.”

This role is a natural extension of the traditional core mission of the American fire service; to protect lives and property (Compton & Granito, 2002). The extent to which a fire service agency is prepared and equipped for this mission is largely dependent upon a community’s demographics and historical experiences. Most communities have developed and maintained fire departments based exclusively on the frequency and severity of their fire problem (Cote, 2004). This formula for fire protective services has proved adequate for over 300 years, with little perceived necessity for change, and the city of Worcester is a prima facie example of this narrow vision. The organizational structure of the WFD is still overwhelmingly proscribed to an antiquated vision, and thus unprepared for its new responsibilities (TriData, 1999).
One field of administration which the WFD has not embraced is that of planning. In regard to fire department planning, Wallace (1998, p. 6) states “If we don’t take a proactive stance, then we are always going to be reactive to the changes that are continuing around us.” There are numerous planning functions which a modern fire department can utilize to improve service capabilities, including strategic planning. Bryson lists *enhanced organizational effectiveness* as one of the major benefits of strategic planning for public and non-profit organizations. He states, “Organizations engaging in strategic planning are encouraged to clarify and address major organizational issues, respond wisely to internal and external demands and pressures (including those for accountability), and deal with rapidly changing circumstances” (Bryson, 2004, p. 11).

The consequences of inadequate or lack of planning is an increase the potential for crises (Carter & Rausch, 1999). The citizens and first responders of the city of Worcester are at undue personal risk as a consequence of this community’s inability or incapacity to commit resources to the planning function.

The comparative analysis of organizational structures of like size departments showed mixed results with regard to the degree of agency commitment to planning. Many departments delineate the planning function within the table of organization under various headings such as, planning officer, research and development (R&D), preparation and preparedness, special and support services, disaster and emergency management, and administrative analyst. Other departments do not reference planning anywhere within the organizational chart. This absence cannot be interpreted as the department having no planning support, but does bring into question the degree of commitment which that organization places on that service.
This analysis is limited to the graphic representation of each fire department’s organizational structure. Further studies may be targeted to investigate the number of personnel assigned, and the extent to which the individual’s job description includes planning. For example, the WFD table of organization includes R&D in the heading, or job description, of the management of information services (MIS) district chief. In reality, the MIS chief devotes no time or resources to the planning function. As a division consisting of one individual, there are no resources or time available to commit. To date, the WFD administration has been unsuccessful in convincing the city administration that this lack of commitment can and will have dire consequences in the event of a major incident. The extent to which a department embraces these enhanced capabilities will determine the level of support services necessary to maintain them.

Maintaining readiness and dedicating resources to first responder preparedness is vital to efficient operations (Coleman & Granito, 1988). Dedicated staff positions are crucial to maintenance of plans and resource lists for disaster response and for training operational personnel in response and mitigation to less traditional threats. With an influx of over $6 million in equipment and training exercises since the events of September 11, 2001, the WFD is significantly more prepared to take on the responsibilities associated with a terrorist event. Historically however, a major meteorological event is far more likely, and no such preparedness for that contingency is in place. Even the historical facts surrounding the 1953 Worcester tornado are not convincing enough to warrant action on the part of department and city officials (NOAA, n.d.b).

This research found that conducting a comprehensive community risk assessment (CRA) is a vital first step in disaster preparedness planning (DHS, 2005). The CRA is the
foundation for effective response. By identifying critical infrastructure elements, target hazards, transportation corridors and major life safety issues ahead of time, these objectives can be designated to appropriate personnel for rapid damage assessment (RDA) and further prioritized in terms of resource commitment for response by the incident IC (FEMA, 1995). Another element of disaster preparedness is the “snapshot assessment” (Dayton, 1999). This formalized “self-check” is an important first step to secure a quick analysis of response capabilities, vis-à-vis personnel and equipment immediately flowing a significant event.

The CRA process of gathering community response data is done at the company or district response level, often times during the normal course of in-service inspection, or pre-fire planning (IAFC, 2001). Cote (2004), notes that community disaster planning is a logical extension of a fire department’s prefire planning efforts. Conversely, this close process of surveying a company’s immediate response area during the information gathering period of the CRA has collateral benefits for day-to-day operations. Firefighters are exposed to the process of emergency response planning at a personal level, and can utilize the information garnered to better serve the needs of their district when an event occurs. Carter & Rausch (1999, p. 230) add,” The success of fire department operations in the future will depend even more heavily than today on the quality of prefire planning.”

One of the most revolutionary aspects of our ability to adapt operational capabilities is computerization. The modern fire service has become increasingly more sophisticated, and the use computer technology is now commonplace. Along with standard database and word processing applications which have naturally infiltrated administrative areas such as, fire prevention, budgeting, purchasing, and personnel administration, computer
technology has transformed many operational components as well. Computer aided dispatch (CAD), automatic vehicle locators (AVL), on-board wireless computers, and Geographic Information Systems (GIS) have dramatically enhanced dispatch capabilities (Buckman, 2006). Software programs and data gathering formularies like VISION initiated from the leadership organizations of the fire service like the IAFC are being developed to aid communities in the process of community risk assessment (CPSE, 2007).

To date, the city of Worcester, Massachusetts has not conducted a comprehensive community risk analysis. In large part, this omission is due to a lack of support staff necessary to develop and bring the initiative forward. TriData (1999) made the following observation, “Overall, the WFD has not given enough attention and resources to the support services”, and that “Without adequate support services the WFD cannot maintain its efficiency “(p.88). The WFD is caught in a no-win situation with regard to our inability to support a CRA initiative. The CRA instrument may be the catalyst for the local government body to set more logical budget priorities and further maintain them over time (DHS, 2005). Unfortunately, without a budget commitment in place to fund the CRA, the catalyst may never be realized.

In the eight years that have passed since the TriData study was finalized, less than 30% of the recommendations contained in the report have been initiated; and many of those that have only been partially implemented. The divisions of MIS, Safety and Special Operations have been created within the organizational structure, and more recently Emergency Management was added. However, each of these sections lacks the necessary resources of personnel, equipment, operating space and technology to deliver efficient service to the public or to support operations. The organizational structure analysis conducted supports the necessity for these service areas, but does not adequately
address the depth to which these areas should be staffed. Further comparisons along those ends would be necessary for a specific commitment recommendation.

The organizational implications of this research for the Worcester Fire Department are mixed. It is apparent that the WFD is in a better position with regard to operational readiness for disaster response than it was 10-20 years ago for a terrorist event. However, the same case cannot be made for a major natural or meteorological occurrence within the city limits. There are structural and budgetary limitations which have prevented the department from moving forward with projects that could considerably improve its ability to operationally respond to these challenging events. A commitment of time and resources (personnel and technology), toward a comprehensive community risk assessment and its fundamental support components would vastly improve the city’s ability to respond and mitigate these potentially devastating occurrences.

Recently the WFD administration attempted an internal reorganization to meet these very same needs. The department’s personnel compliment has been reduced dramatically over the course of the past eight years, from an authorized uniformed force of 479 members to the current number, 398. The city administration has not funded a firefighter recruit class in over three years has made no commitment to fund one in this fiscal year. As a result of critical operational staff shortages, two front-line engine companies were decommissioned in the expressed attempt to utilize the displaced firefighters to augment the remaining companies to adequate staffing levels. The officer positions were to be transitioned to several support staff positions as identified in the 1999 TriData study, to improve the department’s operational efficiency.
As was the case with the original report, the City administration chose only to implement those parts of the recommendation that would realize immediate cost savings, and ignored the less tangible rationales behind the support staff positions. As a result, four Lieutenants positions were eliminated from the organizational table, with little hope of resurrecting them in the future. These positions were earmarked for Planning (under MIS/R&D), Special Operation’s, an assistant to the Deputy Chief of Operations, and an assistant to the Deputy Chief of Support Services. The four remaining officer positions, two captains, and two lieutenants are to remain in operations until such time as the city funds and implements a firefighter recruit class. As a result, as of this day, not one support position was gained from the decommissioning of the companies, and very little impact was made on the staffing levels in operations.

The research shows that the current organizational structure of the WFD is comparable to that of like-size communities, and is sufficiently broad to accommodate the expanded mission of the department today and in the future. However, the depth of resources dedicated to the realm of support services would appear to be less than desirable to move forward on projects such as the CRA to improve operational readiness, and ironically to support its own specific budgetary commitment. Some degree of trust will be necessary to convince the city government to allocate funds for this and other seemingly speculative programs. The potential implications of not providing these services are difficult to quantify, however historical evidence suggests that they are substantial. It is hoped that this research will serve as validation for that trust, and provide the impetus necessary for justification of creating the administrative infrastructure necessary to support these vital activities.
Recommendations

The following recommendations are presented as a result of this descriptive research for the Worcester Fire Department:

- The WFD should continue to advocate for the full implementation of the TriData operational study in the areas of support services staffing.
- The WFD should undertake the process of community risk assessment for disaster response regardless of the current state of the department’s administrative infrastructure.
- The WFD should investigate the feasibility of a partnership with Worcester Polytechnic Institute and the Center for Public Safety Excellence as a test community for the VISIONS project.
- Upon completion of the CRA, the WFD and other responding agencies must develop and practice the disaster preparedness plan, and continue the process of risk/capability evaluation.
- The WFD must continue the process of self-examination and industry benchmarking with regard to defining its evolving mission and corresponding organizational structure.
- The WFD should continue to embrace and support advances in software and technology which would improve the efficiency and effectiveness of service delivery capabilities and the departments’ administration.
Reference List


http://www.london.edu/assets/documents/PDF/aegeancrisismaywp01.pdf


(This table represents a break-out of the demographic group identified, and not the entire report)

Table 1: Annual Estimates of the Population for Incorporated Places Over 100,000, Ranked by July 1, 2006 Population: April 1, 2000 to July 1, 2006

<table>
<thead>
<tr>
<th>Rank</th>
<th>Geographic Area</th>
<th>Population Estimates</th>
<th>April 1, 2000 Estimates Base</th>
<th>Census</th>
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