

FIRE & EMERGENCY MEDICAL SERVICES STUDY

CITY OF NEW BEDFORD



(This is a draft and will be professionally formatted once finalized.)

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1. Executive Summary

This report presents an analysis of the services provided and the resources allocated to the New Bedford Emergency Medical Service and the New Bedford Fire Department. The report summarizes the operations of the two departments and makes recommendations for improving service and improving the efficiency of these services going forward. This analysis was conducted by FACETS Consulting of Phoenix, Arizona.

New Bedford is a densely developed urban community. The City is admirably served by the professional paramedics, firefighters, and fire officers of both departments. Like many communities in Massachusetts and elsewhere in the United States, New Bedford has been challenged by changes in demographics and in the business community for decades. These challenges were exacerbated by the Great Recession and the strain placed on the City of New Bedford and its residents and visitors.

The New Bedford Fire Department (NBFD) and the New Bedford Emergency Medical Service (NBEMS) have operated in an extremely resource limited environment for some time. The two departments, working with City administration, have generally preserved the level of emergency response resources while neglecting support services, vehicle replacement, and capital facilities maintenance. While there have been some very positive moves recently to improve the condition of the emergency vehicle fleet and facilities, much work remains to be done. We recommend continued efforts to maintain fleet and facilities, assignment of additional responsibilities to NBFD chief officers, and the addition of limited support staff.

The demand on the services of NBEMS exceeds its capacity. In 2014, private ambulances were called to respond to incidents in New Bedford nearly 2,000 times. The vast majority of these responses were initiated because a NBEMS ambulance was not available. These incidents represent a lost service opportunity for NBEMS and a lost revenue opportunity for the New Bedford EMS system. NBEMS has added a peak-time ambulance during the most active part of the week but additional service and revenue opportunities exist. We recommend that NBEMS consider the continuation of peak-time status for Medic 4 and consider the addition of a fifth ambulance for peak periods.

With the high emergency activity levels provided by NBEMS, recently certified paramedics are drawn to serve NBEMS to acquire experience. While NBEMS has a small number of highly tenured and experienced paramedics, many NBEMS paramedics leave for higher paying and less hectic jobs once they have gained

sufficient experience. This revolving door of personnel presents training, staffing, and management challenges. We recommend a wage and benefit study for NBEMS employees.

The New Bedford Fire Department provides protection for a city that is geographically difficult to serve for a fire department. The long and narrow shape of the city and the absence of readily available mutual aid from neighboring fire departments cause the NBFD to be somewhat larger than communities of similar population. The current locations of NBFD fire stations are sub-optimal but the capital costs of new fire station construction are prohibitive at this time.

NBEMS and NBFD members live together in fire stations and work well together on the street to serve the residents of New Bedford and its visitors. While this working relationship is commendable, administrative coordination between the two departments is lacking. Significant service efficiencies would result with the administrative consolidation of the two departments. We recommend the administrative consolidation of NBEMS and the NBFD.

As the combined department begins to work, there are opportunities, for little or no cost, to improve the level of service provided to the citizens of New Bedford. We recommend additional training and equipment for NBFD firefighters and fire officers to raise the level of skill in EMS to the Basic Life Support (BLS) level. This will assure that there is a standard of care and continuity in these operations.

These efficiency opportunities also exist with the consolidation of the dispatch operations of the NBFD into the New Bedford Police Department. This will place the dispatch operations of all city public safety departments together. We recommend co-location of the NBFD dispatch operations into the NBPD dispatch center and assumption of NBEMS dispatch duties by NBFD members.

NBFD staffing levels have been supported by a series of Federal grants. The City has gradually assumed funding responsibility for a number of these positions and applied for a sustainment grant to fund some positions until mid-2018. During the past several years, the number of firefighters and fire officers employed by the NBFD has gradually been reduced. These reductions have not resulted in a lowering of on-duty firefighter and fire officer staffing. Since fire engines and ladder trucks are staffed at a consistent level, reductions in the number of firefighters and fire officers while holding emergency response staffing constant results in overtime.

If it becomes necessary at some point to reduce the number of on-duty firefighter positions, and therefore a fire company, these changes should be accomplished in a planned manner. Any closure of a fire station or fire company reduces the level of fire department service for someone in the community and the closure has impacts beyond the immediate service area of a fire station. We examine the pros and cons of several fire station and fire company closures. We recommend that any fire department

emergency deployment changes be accomplished in a way that preserves compliance with nationally recognized standards for fire department services.

Over the past two years, the NBFD has resorted to unplanned temporary closures of single fire companies during daytime hours to limit overtime expenditures. Fire department operations depend on consistency. If deployment changes are necessary, it is important that the revised deployment system be staffed in a consistent manner. We recommend that the NBFD deployment system, in whatever form it takes based on financial necessity, be staffed in a consistent manner.

Neither the NBFD nor NBEMS has a strategic plan to guide operations and management. We recommend, especially in light of our previous recommendation to administratively consolidate the two departments, that a strategic plan be developed. The term of the plan should be relatively short, perhaps 18 months to two years, because of the initial uncertainty of the consolidation. The plan could also include a component that addresses longer-term issues such as facility maintenance and vehicle replacement.

Lastly, there may be the opportunity for New Bedford to realize revenue from operations that are currently conducted, at no additional cost to the City. We recommend that the City examine the possibility of franchise or revenue sharing agreements with private ambulance companies that provide service in New Bedford.

The FACETS team members involved in every stage of this review were impressed with the dedication of New Bedford staff members and elected officials to their jobs. We were also very impressed with the level of support that the NBFD and NBEMS have in the community. Community members expressed the feeling that members of NBEMS and NBFD served everyone in the community equally.

2. Study Process

In mid-November of 2014, the City of New Bedford contracted with FACETS Consulting to conduct a Fire & Emergency Medical Services Study. The components of the study, as detailed in the request for proposal, were to conduct:

1. A comprehensive risk assessment.
2. A standards of cover/response time analysis for Fire and Emergency Medical Services (EMS).
3. A review of internal operations staff and management resources for the EMS and Fire departments.
4. A review of policies and procedures for the Fire and EMS departments.
5. A financial sustainability analysis, including current organizational configurations

accompanied by the identification of potential efficiencies and service improvements.

6. A review of the structure and delivery of fire and EMS services, including training and operational readiness and benchmarking against established best practices.
7. A capital facilities assessment and a review of the management and condition of vehicles and equipment, including a multi-year capital improvement and asset replacement program.

To address the requirements of the study, FACETS utilized a highly experienced team of public safety and government managers. Additional information on the experience and qualifications of the team is provided later in this report.

The consulting team or components of the team made six trips to New Bedford and held numerous meetings to gather information, first hand, about the services provided by the New Bedford Emergency Medical Service (NBEMS) and the New Bedford Fire Department (NBFD).

Consultants gathered data related to standard operating procedures utilized by both departments as well as computer aided dispatch information about the response to incidents in New Bedford during 2012, 2013, and 2014. The operating budgets of the two departments, as well as statistical information about their services, were also collected.

Consultants conducted a comprehensive Standards of Cover (SOC) analysis utilizing ESRI software. This tool allows for the modeling of past system performance as well as modeling of changes to the deployment system that may be proposed. While the SOC analysis is a discrete task in the RFP scope of work, the information and model developed as a part of the SOC have been integrated into the recommendations developed as a part of this project. The maps and statistics resulting from that analysis inform the recommendations presented later in this report.

FACETS consultants met with a wide range of New Bedford community members, elected officials, and City staff. These data gathering meetings included meetings with Mayor Mitchell and several members of the City Council. Meetings were also held with City department managers that have regular contact with NBEMS and NBFD including the Police Chief, Emergency Manager, City Solicitor's Office, and the Human Resources Director.

Consultants met with members of the New Bedford community that have interaction with the fire and EMS departments to gauge satisfaction with the services provided by both departments. Support for the efforts of both departments was found to be strong.

A significant effort was made to meet with the people who actually provide EMS and fire protection services in New Bedford. Attempts were made to meet every NBEMS

paramedic and Nbfd firefighter and fire officer through numerous on-site visits. Consultants met with the labor representatives for both the firefighter union, IAFF Local 841, and the paramedics union, AFSCME Council 93. Consultants observed EMS and fire operations first hand and met responders in their place of work.

Consultants met with the management of both departments, Director McGraw and Chief Gomes, on many occasions. These department directors allowed members of the consulting team unfettered access to their staffs and facilities.

3. The New Bedford Community

As part of the broad ranging assessment of the New Bedford Fire and EMS delivery systems, FACETS consultants evaluated many New Bedford community characteristics. Included herein is a summary of much of the information gleaned throughout the process. Of particular note are the characteristics of the community that impact the delivery of fire and EMS services which is the focus of this study.

The provision of emergency medical and fire protection services in New Bedford is impacted by a number of factors. In general, people who live and work in lower socioeconomic areas or conditions tend to be larger consumers of fire and emergency medical services. Also in general, people who live in more densely developed communities have a higher risk of fire loss.

In general, people without access to preventive medical care utilize the emergency medical care system as their primary medical care system. In general, it is more difficult to achieve acceptable emergency response times in a long, thin community than one that is closer to round or square in geography. In general, older buildings do not incorporate modern fire protection features or systems and thus present a higher risk of fire damage and risk to life in case of a fire. In general, it is more difficult to achieve adequate response times without the ready availability of fire and emergency medical resources from outside of the community on automatic or mutual aid.

From an emergency medical and fire protection point of view, New Bedford faces challenges in every one of the areas outlined above.

The Community and Port of New Bedford

The City of New Bedford is located in Bristol County, Massachusetts, situated in the heart of what is known as the Massachusetts South Coast. The city is sixty miles south of Boston and approximately 35 miles from Providence, Rhode Island.

As of the 2010 census, the city had a population of 95,072, ⁽¹⁾ making it the sixth-largest city in Massachusetts. The geography of the city is long and narrow with an axis that runs north to south with the southernmost portion of the City being a peninsula that extends approximately one mile into Buzzards Bay. The city has a total land area of twenty square miles and 4.1 square miles of water. There are over 10 miles of coastline

along Buzzards Bay and the Acushnet River. New Bedford is bordered on the west by Dartmouth, on the north by Freetown, on the east by Acushnet and Fairhaven, and on the east and south by the Acushnet River and Buzzards Bay. From New Bedford's northern border with Freetown to the Buzzards Bay coast at the farthest point, the distance is approximately 13 miles. Across New Bedford east to west is a distance that varies from approximately 1 mile to nearly 3 miles at its widest point.

Of note is an earthen berm and hurricane barrier that stretches across the peninsula from Fairhaven to New Bedford along Buzzards Bay. The barrier's 150-foot opening can be closed during hurricane conditions and coastal storms. The US Army Corp of Engineers makes the determination to close the barrier.

Demographics

New Bedford and its surrounding communities are a part of the Providence metropolitan area. According to the United States Census Bureau, the estimated 2013 population for the City of New Bedford, virtually unchanged since the 2010 census, is 95,078 residents.^[1] These residents make up the 39,204 households and 24,990 families residing in the city. The racial make-up of the community consisted of sixty-seven percent (67.9%) of the population that identified themselves as “white alone”. The majority of the remainder identified themselves as Hispanic/Latino (16.7%) and Black/African American (6.4%). However, consultants were told on numerous occasions during contact with people in New Bedford that there is believed to be a significant presence of an undocumented immigrant population that lives in the community; however, this population is not represented in these figures. Interviews with local civic and community leaders indicated that anywhere from 10,000 to 15,000 additional people reside in the community and are not represented in the numbers identified above. Incorporating these estimates into the census figures the “non-white” population of New Bedford could increase to as much as 42%. New Bedford reached its greatest population in the 1920 census when it recorded 121,217 residents and has gradually declined to where it stands today.

The census figures further indicate that 19.9% percent of the New Bedford residents identified themselves as “foreign born” persons. This alone greatly exceeds the US average of 12.9%. However, if the estimates of undocumented residents are accurate, as much as 30% of the community could be considered foreign born. A parallel statistic, those who indicated a “Language other than English” is spoken at home, was measured at 37% in the census figures and could rise to as high as 45% if undocumented resident figures are accurate.

These figures are presented to provide clarity to the service challenges to the community of New Bedford in general, and more specifically to the fire and EMS services being assessed in this study. When consultants spoke with members of the minority community in New Bedford, we were told that emergency medical and fire protection services are provided to everyone in the community equally, regardless of an individual's station in life, country of birth, or any other factor. Paramedics and firefighters were seen by the community as helpers who could be trusted to come to the

aid of anyone in need.

The census reported 39,068 households and the homeownership rate was reported as 42.8%. This is significantly below the state and national averages (Massachusetts 62.7% and U.S. 64.9%). 65.8% percent of New Bedford housing units were in “multi-unit” structures. Again, these numbers greatly exceed state and national averages (Massachusetts 41.7% and U.S. 26%). The average household size was 2.38 and the average family size was 3.01. Age distribution was 6.9% under the age of 5 and 23.2% under the age of 18. 14.6% were 65 years of age or older. The median age was 36 years. Females represented 52.0% of the residents identified in the census.

The city of New Bedford is very multi-cultural and diverse. New Bedford and surrounding communities are home to the largest Portuguese-American immigrant population in the nation. As many as one-third of the residents of New Bedford identify with a Portuguese ethnicity. More recently, immigrants have been arriving from other Central and South American countries and relocating in the New Bedford area.

Local Governance

New Bedford is governed by a Mayor-Council form of government where voters directly elect a mayor and council representatives. The council size for New Bedford is currently at eleven, including six ward councilors and five councilors-at-large. The mayor serves as the chief executive and appoints key officials, a portion of local board members, prepares budgets, approves contracts, negotiates with collective bargaining units, and oversees administration of all aspects of governance. The elected council is the legislative body and is responsible for authorizing the city budget, appropriating all funds to run the city and is responsible for confirming all mayoral appointments. The City Council is responsible for making all laws (ordinances) to govern the City.

County Government

The City of New Bedford resides in Bristol County, Massachusetts. The County Seat and County Commissioners' Office is located in Taunton, Massachusetts.

Economy

In the eighteenth and nineteenth centuries, the New Bedford economy was based primarily on the whaling industry, and New Bedford was a premier whaling community in the nation. In fact, at one time, novelist Herman Melville worked in New Bedford and used concepts and settings from this community for his most famous novel: *Moby Dick*. As the whaling industry faded from pre-eminence as a driver of economies, the industry in New Bedford faded, and in the early twentieth century the last of the whaling companies closed. Although the loss of the whaling industry negatively impacted New Bedford, the textile industry had grown large enough to sustain the city's economy through the 1940's. At its height, over 30,000 people were employed by the 32 cotton-manufacturing companies that owned the textile factories in New Bedford.

The more recent news for New Bedford's economy has been a mixture of both good and bad. For the fourteenth consecutive year, the Port of New Bedford is the number one fishing port in the nation. In 2013, New Bedford had the highest valued catch, 130 million pounds of fresh seafood valued at \$379 million, as reported by the Fisheries of the United States Annual report. The Port of New Bedford has been the number one fishing port in America since 1999. ^[4] The sea scallop industry represents the bulk of New Bedford's catch value.

Employment

In 2014 the Wall Street Journal reported that New Bedford led the nation in its drop in unemployment. Unfortunately the jobless rate in New Bedford remains above the national average as well as above the rate in Massachusetts. See the attached table for comparison.

Table 1 – Unemployment Rates in New Bedford, the Commonwealth of Massachusetts, and the United States

Month	Year	New Bedford	Massachusetts	US
July	2015	8.5%	4.9%	5.3%
June	2015	8.2%	4.9%	5.3%
May	2015	7.5%	4.4%	5.5%
April	2015	7.4%	4.1%	5.4%
March	2015	9.5%	5.0%	5.5%
February	2015	10.4%	5.4%	5.5%
January	2015	10.3%	5.6%	5.7%
December	2014	8.8%	4.9%	5.6%
November	2014	8.6%	5.0%	5.8%
October	2014	8.3%	5.0%	5.7%
September	2014	9.4%	5.7%	5.9%
August	2014	9.9%	5.7%	6.1%
July	2014	10.1%	6.0%	6.2%
June	2014	10.0%	6.0%	6.1%
May	2014	9.6%	5.6%	6.3%
April	2014	9.8%	5.5%	6.2%
March	2014	12.0%	6.3%	6.6%
Source: Labor Force and Unemployment Data Mass. Gov, USDOL Bureau of Labor Statistics				

Personal income for the residents of New Bedford continues to struggle when compared to state and national averages. The chart below outlines a number of key statistics that

exhibit New Bedford's failure to attract and retain high paying employment for its residents as compared to the remainder of the state. New Bedford ranked 228th in income of the 242 reporting communities in the Commonwealth of Massachusetts ^[7].

Table 2 – Income Characteristics for New Bedford and the Commonwealth of Massachusetts

Income Characteristics	New Bedford	Massachusetts
Median Household Income	\$35,999	\$66,866
Mean Household Income	\$48,937	\$90,877
Percentage of Households earning under \$25,000 per year	36.7%	20.0%
Percentage of Households earning under \$50,000 per year	62.8%	38.6%
Source: U.S. Census Bureau 2009-2013 American Community Survey		

The industries employing the largest number of people in the New Bedford community continue to be health care and manufacturing. The two top employers are St. Luke's Hospital/South Coast Health and the Community Health Center ^[6]. An industrial park covers a large portion of the northern end of the city and reaches into the City of Dartmouth. The industrial park area has numerous manufacturing facilities providing employment and income for the area. New Bedford provides fire protection and emergency medical services for facilities in the industrial park that actually lie in the City of Dartmouth, but are most readily accessed from the New Bedford side of the industrial park.

The State of Massachusetts is also working on the "South Coast Commuter Rail" project which would return passenger trains to the South Coast for the first time since 1958. The project would have a terminus in New Bedford with as many as twenty (20) daily rail connections to Boston's South Station. The anticipated seventy-five minute commute would attract visitors, tourists and commuting residents to the local area. However the future remains unclear in regard to both the fiscal and the political commitment to get this project off the drawing table and to completion.

Land Use, Housing, and Construction

New Bedford is a mature and diverse urban city and its land use includes a wide range of uses from open wetland and parks to highly dense multi-unit residential structures, as well as virtually every other type of occupancy found in any major urban area. The City of New Bedford includes a vibrant central business district, an industrial park, a regional airport, and an extensive coastal area used for commercial fishing, recreational boating, and other park areas.

As noted in Table 3 below, residential land use encompasses approximately 34% of New Bedford. However nearly 90% of the area committed to residential housing is occupied by multi-family and/or high density housing.

Table 3 – Land Use in New Bedford

New Bedford Land Use Distribution	Major Categories	Residential Breakdown
Forest, Wetland, and Open Space	47.0%	
Residential	33.9%	
Multi-Family		13.2
High Density		17.1
Medium Density		2.5
Low Density		0.9
Commercial, Industrial, Institutional, or Transportation	17.9%	
Water	1.1%	
Agriculture	0.1%	
Source: Source: Southcoast Urban Indicators Project (SCUP) http://southcoastindicators.org/natural-environment/land-use/		

In a general sense, the housing stock in New Bedford is older and more dense than the typical Massachusetts town. The southern, central, and western sections of the city were developed many decades ago and these residential areas include many wooden frame and multi-unit residences. These occupancies typically range from one-family structures to as many as twelve units in a single detached structure. Older construction (typically of “balloon frame”) carries additional concerns when combating a hostile fire within the structure. Balloon frame structures, built long ago, utilize long timbers for the external walls which permit fire to communicate freely and rapidly from each level of the home to adjacent, and even non-adjacent, levels. Many of these structures have combustible siding and are constructed with narrow passages between them, creating additional fire spread hazards.

Table 4 – New Bedford Housing Characteristics

Housing Characteristics	New Bedford	Massachusetts
Housing Units	43,627	2,808,549
1 unit detached	30.5%	52.3%
3 or more units	46.8%	31.4%
Constructed after 1970	21.0%	37.4%
Constructed prior to 1940	52.7%	34.6%
Owner Occupied	42.8%	62.7%
Value under \$300K	86.8%	42.9%
Source: U.S. Census Bureau, 2009-2013 5-Year American Community Survey		

Remnants of New Bedford's historical past are clearly visible in the structures that remain spread throughout the community. There are numerous vacant and occupied large mill type structures that can be found in many neighborhoods in New Bedford. These structures are typical of the textile industry and are of "heavy mill" type construction with large wooden timbers for interior structural components, and masonry exteriors. Many of these have been converted to multi-family residential occupancies or other mixed-use facilities. These large structures are literally skyscrapers on their side. Newly converted mill structures contain many updated fire protections systems while the vacant and abandoned properties can pose a significant environmental hazard and fire threat.

New Bedford is home to St. Luke's Hospital, a leading health care provider in Southeastern Massachusetts which has provided continuous service to the community since 1884. St. Luke's is home to one of the busiest emergency departments in Massachusetts. New Bedford EMS transports the majority of its patients to St. Luke's. However St. Luke's does not provide certain higher level trauma and cardiac care required by the most seriously ill patients, necessitating ambulance transport to Providence and Fall River.

The city has very little undeveloped land and most growth has been from the reuse of existing developed land. Most recently there has been significant reuse of mill structures into loft style apartments with a number of major conversion projects completed.

The industrial park located along the north end and adjacent to Dartmouth is home to dozens of large manufacturing companies employing thousands of people from the area. Included in the complex are the Titelist Corporation and other manufacturing firms. These complexes include hazardous material storage and handling and require timely response for fire and medical emergencies. These facilities as well as other commercial industry and businesses in the city require significant code enforcement

activity. The location and access into the industrial complex pose a challenge to emergency resource deployment. The complex is located at the northernmost section of the city, furthest from the fire and EMS responders. Additionally there are only two main routes of access into the complex as the area is bisected by State Route 140, a limited access highway.

The City of New Bedford is home to thirteen historic districts that are listed on the National Register of Historic Places.

The Port of New Bedford and Transportation

Similar to most urban communities, the City of New Bedford contains various modes of transportation including roadway, rail, air, and waterborne transportation systems.

The city is bisected from east to west by Interstate 195, a major thoroughfare for persons travelling to and from the Cape Cod area. I-195 has two interchanges within the New Bedford community - a major interchange at State Route 140, and a second at State Route 18 near the eastern border of the city. From I-195 north to the city border, New Bedford is again bisected by State Route 140 which provides a major route for persons travelling between the Greater Boston area and New Bedford. These major thoroughfares provide ready access to the community but also carry many of the associated hazards with major roadways, including major vehicle crashes and hazardous cargo.

The New Bedford Regional Airport is located approximately two miles northwest of the New Bedford central business district and covers an area of 847 acres, including two 5,000 foot asphalt runways^[8]. The airport currently services approximately 24,000 passengers a year, primarily flying the only major carrier (Cape Air) for travel to Nantucket and Martha's Vineyard, and private aircraft. The airport conducted an updated master planning project in 2012 and is currently undergoing an extensive environmental review and assessment to determine the future needs and expansion requirements to meet anticipated growth. The New Bedford Fire Department provides emergency response services to the Airport.

The Port of New Bedford is America's Number One Fishing Port with fish landings valued at \$369 million. It has become New England's seafood hub, with more than 30 processors and distributors, ranging in size from high-volume international wholesale to small-scale local retail. The Port of New Bedford is home to over 200 maritime businesses, including cargo shipping industry and bulk cargo facilities, a commercial fleet of 500 fishing vessels, and numerous shipyards and vessel repair facilities. The Port seasonally employs several thousand people in varying aspects of the fishing industry. There is abundant recreational boating in the harbor and ferry service to Martha's Vineyard and Cuttyhunk.

The presence of the Port of New Bedford, while a great asset to the area, also brings additional hazards and requires local resources to ensure the ability to provide

emergency response. The hazards associated with commercial fishing include cold storage, ice manufacturing, fuel storage, and repair facilities. Additionally, the waterfront activity requires the local responders to have the ability to respond near and on the water. The ferry services and recreational boating bring many visitors to the area on a seasonal basis.

Editorial note - Move notes below to end of section

1. "Geographic Identifiers: 2010 Demographic Profile Data (G001): New Bedford city, Massachusetts". U.S. Census Bureau, American Factfinder. Retrieved April 23, 2015 ("US seafood catch reaches 17-year high," *Associated Press*)
2. "New Bedford No. 1 port for 12th year," *South Coast Today* Accessed September 19, 2012
3. Fisheries of the United States, NOAA annual report.
4. Wall Street Journal – Online publication 11:53 am ET Jul 1, 2014
5. Massachusetts Executive Office of Labor and Workforce Development. Labor Market Information 2015
6. U.S. Census Bureau, 2009-2013 5-Year American Community Survey.
7. FAA Airport Master Record for EWB (Form 5010)

4 - New Bedford Fire Department Services

Fire response agencies nationwide have seen their mission evolve from being focused primarily on responding to fire and fire-related emergencies to encompassing many other missions, most notably emergency medical responses. In fact, the vast majority of fire departments nationwide respond to medical emergencies in far greater numbers than fire-related emergencies. New Bedford Fire is no different. However, being an older urban community with low, medium, and high risk occupancies New Bedford must still be prepared to address a significant fire risk.

The New Bedford Fire Department, established in 1834, is currently staffed by approximately 220 full-time firefighters. Each day the Fire Department staffs 7 "Engine Companies" and 3 "Ladder Companies" responding out of seven Fire Stations. The stations are divided among 2 Districts, each under the command of an on-duty District Chief. These same personnel also respond on other apparatus as needed, including two fireboats, one air supply unit, one foam trailer, and one Airport Rescue Fire Fighting (ARFF) unit based at New Bedford Regional Airport. The FACETS team did not assess fireground operations or procedures as part of this study. All observations and recommendations are in regard to organization and deployment.

Standard of Response Coverage

A critical aspect of analyzing any fire response agency is reviewing the department's performance against an established "standard" of response. Nationwide, a great deal of discussion surrounds the "best practice" and ideal response coverage. There are a

number of different standards and practices which are commonly used by communities as a benchmark to review their deployment and its effectiveness. The primary standards, practices, and agencies include the following:

- National Fire Protection Association (NFPA) 1710 - Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operation to the Public by Career Fire Departments. The NFPA, established in 1896, establishes consensus standards regarding fire deployment, fire prevention, fire protection systems, research, training, building construction, and many other components of the fire service industry designed to minimize the possibility and effects of fire and other risks. The NFPA 1710 standard sets forth in concise terms a standard level of resources required at the scene of fires, emergencies, and other incidents.
- Insurance Services Office (ISO). The Public Protection Classification (PPC™) program administered by ISO evaluates a community's public fire protection capability and assigns a protection-class rating from 1 to 10. Class 1 represents exemplary fire protection; Class 10 means that the area's fire-suppression program does not meet ISO's minimum criteria. There is a significant list of items that are evaluated to assign an ISO rating that includes the capability of the available water supply, call-taking and dispatching resources, response unit staffing, response capacity and coverage and many other factors that impact emergency fire response.
- National Fire Protection Association (NFPA) 1500 – Standard on Fire Department Occupational Safety and Health Program. This standard, issued by the NFPA as outlined above, contains minimum requirements for a fire-service-related occupational safety and health program. The standard specifies safety requirements for those members involved in rescue, fire suppression, emergency medical services, hazardous materials operations, special operations, and related activities.
- Commission on Fire Accreditation (CFAI) is a group of professionals representing a cross-section of the fire service industry, including fire departments, city and county management, code councils, the U.S. Department of Defense, and the International Association of Fire Fighters. The CFAI provides a self-assessment and evaluation model that enables organizations to examine past, current, and future service levels and internal performance and compare them to industry best practices. This process allows local governments and fire and emergency service agencies to compare their performance to industry best practices in order to:
 - Determine community risk and safety needs and develop community-specific Standards of Cover.
 - Evaluate the performance of the department.
 - Establish a method for achieving continuous organizational improvement.

CFAI does not set standards for fire department services but provides a tool for fire departments to assess their performance against national standards or locally adopted performance goals.

The New Bedford Fire Department has not undertaken a comprehensive assessment and has not officially adopted a designated Standard of Response Cover. Typically communities that have not adopted a standard of cover are evaluated using the standards established within NFPA 1710, which will be the primary basis of the evaluation and recommendations included herein.

While NFPA 1710 is a nationally recognized standard it is not a mandated federal or state regulation in most communities, including those in Massachusetts. NFPA 1710 is a valuable tool for assessment and reflects a best practice adopted by a national standards-setting body.

A more complete examination of current coverage in New Bedford is included later in this report.

Resource Type and Function

In a broad sense there are three primary types of emergency response fire resources in the New Bedford Fire Department. The basic types/functions include the following:

Engine Company – Also referred to as a “pumper”. A fire “engine” is the most common vehicle in the fire service. Engines carry a crew of firefighters and have a pump that is used to pump water through fire hoses. Engines also have a water tank and hose for applying water, and carry small ground ladders, emergency medical equipment, and various tools. The role of the crew usually involves entering burning buildings with a hose line, applying water on the fire, and securing a continuous supply of water by hooking up to fire hydrants.

Ladder Company – Also referred to as a “hook and ladder” or sometimes simply as a “truck”. Ladder/Trucks carry a crew of firefighters and have a long “aerial ladder” (up to 100 ft. or more) and carry a large assortment of portable ladders and other tools. Ladder/Trucks usually do not carry any water or hose. Their roles initially include forcible entry, search and rescue, raising ground ladders, and the “aerial” ladder if needed, ventilation and overhaul activities. Ladder companies in New Bedford also provide first response EMS in some situations.

In New Bedford engine companies serve as the primary first responder to support New Bedford EMS and mutual aid EMS providers. Ladder companies serve as a first responder when an engine company is not available.

District Chief/Command Officer - A district chief is a command level “fire officer”. District Chiefs were once firefighters and fire officers and have been promoted to this level. They oversee management issues within the stations assigned to their district and coordinate training, inspections and other daily activities of the firefighters. District Chiefs respond to fire alarms and other emergencies. They serve as the Incident Commander (IC), coordinating all emergency response activities of the firefighters and other emergency responders on scene.

Resource Management

A critical element in the assessment of any emergency service delivery system is the ability to provide adequate resources for anticipated and/or likely fire situations, medical emergencies, and other anticipated events in a timely manner. Properly trained and equipped fire companies must arrive, deploy, and mitigate the event within specific timeframes if successful emergency event strategies and tactical objectives are to be met. Each event, whether fire, rescue operation, major medical emergency, disaster response, or other situations, requires varying and unique levels of resources.

For example, controlling a fire before it has reached its maximum intensity requires a rapid deployment of personnel and equipment in a given timeframe. The higher the risk, the more resources needed. More resources are required for the rescue of persons trapped within a high risk building with a high-occupant load, than for a low-risk building with a low-occupant load. More resources are required to control fires in large, heavily loaded structures than in small buildings with limited contents. The level of service in a community requires making decisions regarding the distribution and concentration of resources in relation to the potential demand placed upon them by the level of risk in the community.

The objective is to have a distribution of resources that is able to reach a majority of events in effective timeframes or those identified in the adopted standard of coverage, in this instance NFPA 1710. The critical timeframes are established in NFPA 1710. The target timeframes outlined below are for a typical 2,000 square foot low-hazard, detached occupancies, and do not include dispatch and turnout time.

NFPA 1710: 5.2.4.1.1 The fire department's fire suppression resources shall be deployed to provide for the arrival of an engine company within a 240-second travel time to 90 percent of the incidents.

NFPA 1710: 5.2.4.2.1 The fire department shall have the capability to deploy an initial full alarm assignment within a 480-second travel time to 90 percent of the incidents.

NFPA 1710: 5.2.4.2.2 A full alarm assignment must have the capability to complete the following functions:

- 1) Establishment of incident command outside of the hazard area for the overall coordination and direction of the initial full alarm assignment with a minimum of one individual dedicated to this task.
- (2) Establishment of an uninterrupted water supply of a minimum of 400 gallons per minute (gpm) for 30 minutes with supply line(s) maintained by an operator.
- (3) Establishment of an effective water flow application rate of 300 gpm from two handlines, with each handline operated by a minimum of two individuals to effectively and safely maintain the line.

(4) Provision of one support person for each attack and backup line deployed to provide hydrant hookup and to assist in laying of hose lines, utility control, and forcible entry.

(5) Provision of at least one victim search and rescue team with each such team consisting of a minimum of two individuals.

(6) Provision of at least one team, consisting of a minimum of two individuals, to raise ground ladders and perform ventilation.

(7) If an aerial device is used in operations, one person to function as an aerial operator and maintain primary control of the aerial device at all times.

(8) Establishment of an Initial Rapid Intervention Crew (IRIC) consisting of a minimum of two properly equipped and trained individuals

In order to accomplish these tasks, and thus meet the goal of NFPA 1710, a minimum of sixteen personnel need to be assembled for a full alarm assignment in the timeframes established within the standard. Thus, in New Bedford a low-hazard structure fire would require at least 2 Engine Companies, 1 Ladder Company, 1 District Chief and one other unit (either Engine or Ladder) to arrive within a total of eight (8) minutes of travel time (not including the alarm processing, dispatching time, and turnout time). The first arriving engine should be on scene within four (4) minutes travel time.

Unit Staffing

Section 5.2, Fire Suppression Services, of NFPA 1710 requires that every engine and ladder company be staffed with a minimum of four on-duty firefighters, one of whom must be an officer. The New Bedford Fire Department currently complies with these requirements. In a dense urban fire fighting environment like New Bedford, this minimum staffing level is appropriate.

Hazard Risk

When assessing and establishing response capacity for a given community, the hazard risk present in that area is a key consideration. The NFPA Fire Protection Handbook as referenced in NFPA 1710 **A.5.2.4.2.3** has established the following hazard classifications:

High-hazard occupancies: schools, hospitals, nursing homes, explosives plants, refineries, high-rise buildings, and other high life hazard or large fire potential occupancies.

Medium-hazard occupancies: apartments, offices, mercantile, and industrial occupancies not normally requiring extensive rescue or fire-fighting forces.

Low-hazard occupancies: one, two or three-family dwellings and scattered small

businesses and industrial occupancies.

Earlier in this document an overview of the New Bedford community was provided. It is clear that the city of New Bedford contains many occupancies that could be considered high-hazard. In addition many of the low and medium hazard occupancies have additional factors that complicate the response. Those factors include:

- Structures in close proximity to each other.
- Older structures with little or no built-in fire protection systems.
- Wood and balloon frame construction.
- Many families living in modified multiple family dwellings.

Additionally there are socioeconomic factors that increase risk for fire. Studies have consistently shown the correlation between poverty and an increased rate of fire incidence. Unfortunately, as was presented earlier in this report, New Bedford has lower income and education levels than most of the rest of the Commonwealth of Massachusetts.

New Bedford Fire Department Daily Deployment and Staffing – April 2015

There are many considerations that must be taken into account when determining the most effective and efficient deployment for a given jurisdiction. Some of the considerations include the following;

- Type and function of each emergency apparatus
- Number of personnel assigned on each apparatus
- Nature typical emergency response
- Location of stations

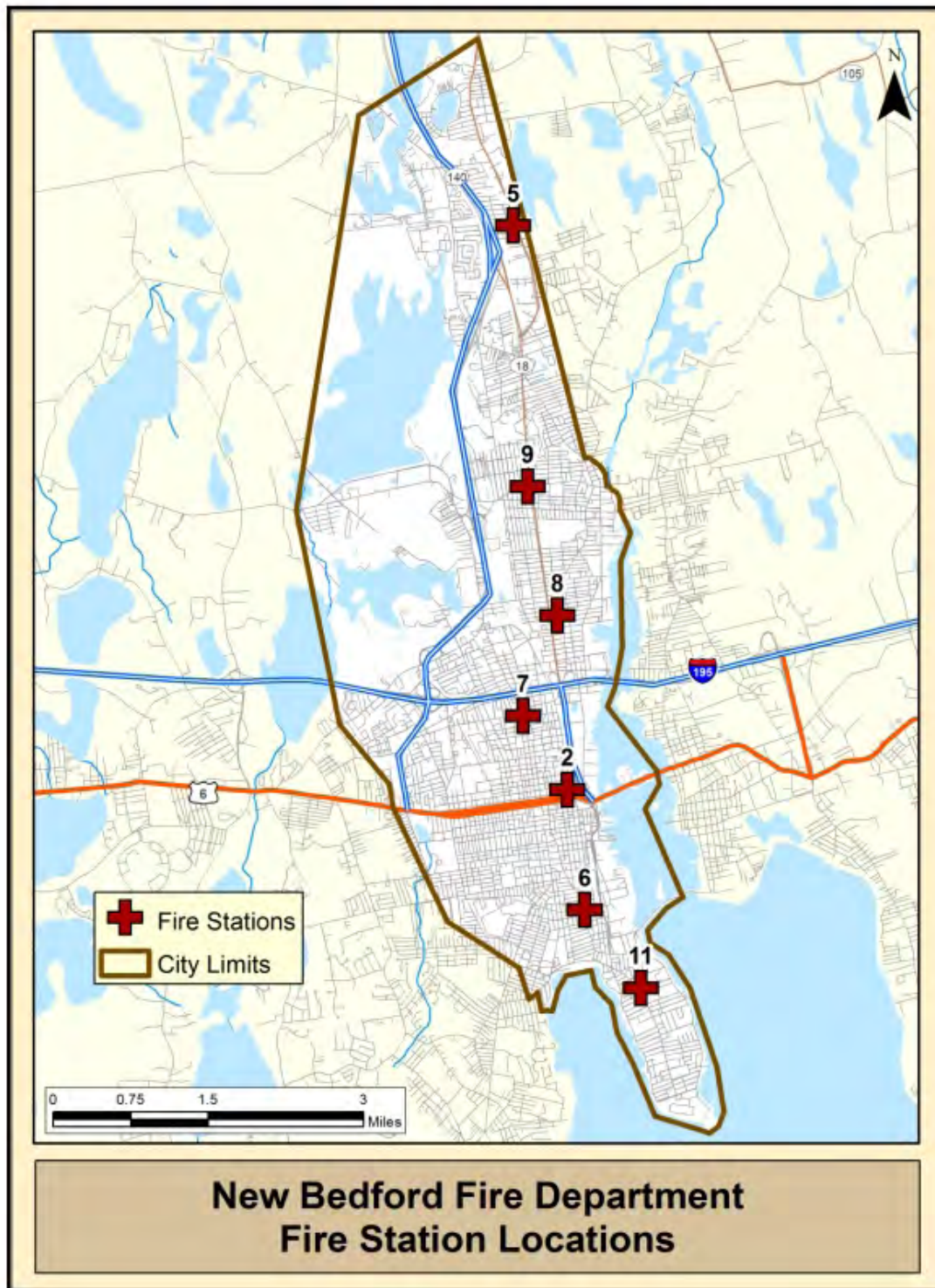
The New Bedford Fire Department staffs the following emergency response companies and personnel on a daily basis. These units are generally staffed twenty-four hours a day, 365 days per year.

Table 5 - New Bedford Fire Department Daily Staffing - April 2015				
Location	Assignment	Number and Type of Supervisors		Number of Firefighters
Station No. 2 868 Pleasant Street	Engine 1	1	Captain or Lieutenant	3
	Ladder 1	1	Captain or Lieutenant	3
	District #2	1	District Chief	
	Dispatch			2
Station No. 5 3675 Acushnet Ave.	Engine 5	1	Captain or Lieutenant	3
Station 6 151 Purchase Street	Engine 6	1	Captain or Lieutenant	3
	Ladder 3	1	Captain or Lieutenant	3
Station No. 7 8 Durfee Street	Engine 7	1	Captain or Lieutenant	3
Station No. 8 1599 Acushnet Ave.	Engine 8	1	Captain or Lieutenant	3
	Ladder 4	1	Captain or Lieutenant	3
	District # 1	1	District Chief	
Station No. 9 799 Ashley Blvd.	Engine 9	1	Captain or Lieutenant	3
Station No. 11 754 Brock Ave.	Engine 11	1	Captain or Lieutenant	3
Total On Duty Daily Staffing - 44				
Staffing Levels in Accordance with the Collective Bargaining Agreement				

New Bedford firefighters and fire officers assigned to work on one of four shifts or groups. Each group works 24-hours beginning at 8:00 a.m. and ending at 8:00 a.m. the next day. Firefighters work 24-hours on and then have 72-hours off. This schedule equates to a nominal average workweek of 42 hours.

Some New England fire departments that work a 42 hour schedule work 10-hour day shifts and 14-hour night shifts. Firefighters, for example, work a mix of day and night tours in a month average out to a 42-hour workweek. The days and nights shift pattern increases shift changes – two a day rather than one a day – and may create the need for additional overtime as firefighters are covered while they are out on the scene of incidents at shift change.

Figure 1 – New Bedford Fire Station Locations



New Bedford Fire Incidents

Each year fire departments nationwide submit a compilation of their responses to the National Fire Incident Reporting System (NFIRS) based in the United States Fire Administration. NFIRS identifies a classification schedule that all departments utilize to insure consistent statistical information can be garnered from communities throughout the United States annually. Outlined below is the most recent three years data for the City of New Bedford.

Table 6 - New Bedford Fire Incidents by Type and Year			
	2014	2013	2012
Fire/Explosion (Structure, Mobile and Outside fires inclusive)	456	394	436
Overpressure/Rupture (Steam/Chemical Explosion w/o fire)	10	7	15
Rescue Call (Including Medical calls) (Medical Calls, Vehicle Accidents, Extrications, Lock in/out)	9587	9376	9397
Hazardous Condition (Chemical Spill/Release, Electrical w/o Fire)	356	435	410
Service Call (Persons or Animals in Distress, Smoke, Water Issues)	505	377	376
Good Intent Call (Controlled Burning, Vicinity Alarm, Smoke Scare etc)	859	911	943
False Call (Malicious False, Unintentional System Alarms)	2071	2082	1828
Severe Weather/Natural Disaster (Wind, Flood, Snow Storms etc)	2	8	3
Special/Complaint (Citizen Complaint or other Non-Coded Alarms)	18	8	20
Total Alarms	13864	13598	13428

The fire incidence can be further broken down as follows:

Table 7 - New Bedford Fires			
	2014	2013	2012
Private Dwellings	55	54	64
Apartment (3 or more units)	136	128	86
Other Residential	1	2	0
Commercial/Assembly/School	33	27	42
Total Structure Fires	225	211	192
Vehicles	50	50	64
Outside Structures w/value	22	12	16
Outside Structure w/o value	46	37	45
Rubbish and Other Fires	111	78	115
Total Fires	454	388	432

False Alarms

Readers are sometimes troubled by the “false alarm” percentages in the above noted statistics. Within the NFIRS reporting system many responses are coded within this category that are standard responses to fire alarm and sprinkler systems within commercial occupancies. As more buildings upgrade to monitored systems, there are typically more responses to system activations that are categorized in these figures. However, as is identified below the “False Alarm” rate within New Bedford is not outside normal parameters for other similarly situated communities.

Table 8 – Percentage of False Alarms	New Bedford MA	Albany NY	Fall River MA	Portland ME
Percentage Of Total Alarms Classified as "False Calls" - 2014*	14.9%	11.3%	12.5%	14.7%

Source 2014 National Run Survey: Firehouse Magazine (An analysis of self-reported figures)

Special Operations

The NBFD provides a number of services in addition to EMS and fire response. Communities need to be prepared to protect their residents and visitors from a breadth of potential emergencies. The scope and nature of these emergencies can vary based on the local weather, environment, geography, and industry. Various modes of transportation also bring hazards into and through communities each day. As with most communities, many of the special hazard responses have been delegated to the fire service. Collectively these are typically referred to as “Special Operations”.

Waterborne Emergency Response

Being a busy maritime community, New Bedford has multiple hazards associated with the waterfront. As noted elsewhere in this report, the significant commercial fishing activity and recreational boating activity present in New Bedford creates a significant potential for waterborne emergencies. Fires, hazardous materials incidents, and medical related emergencies are a significant hazard along the waterfront. The New Bedford Fire Department provides the only “on water” fire fighting capability in the port. The U.S. Coast Guard does not provide any fire fighting capacity. The New Bedford Fire Department currently operates two fire/rescue boats and was recently awarded \$960,000 as part of a port security grant to fund the purchase of a new fire boat for the port. New Bedford Fire has partnered with the Coast Guard and the Buzzards Bay Marine Task Force providing the only 24/7 search and rescue and fire assets in area.

The New Bedford Fire Department maintains the following equipment and available for response as needed:

State Pier

- Marine # 31, 1991 General Marine 31’ Fire Boat (1,000 GPM)
- Marine # 41, 1984 USCG 41’ Rescue Utility Boat (300 GPM)

Fire Station 8 - 1599 Acushnet Avenue

- Marine #8 15’ hard bottom inflatable

Fire Station 11 - 754 Brock Avenue

- Marine #11, 2013 16” Ridged Hull Inflatable Boat

The New Bedford Fire Department staffs one Marine Safety Officer position dedicated to addressing Port response issues. The position is currently filled with a captain and the position is staffed during regular work hours during the week. The duties of this position include administering all aspects of the marine response capability. The Marine Safety Officer coordinates and administers the water based response training, ice rescue, water rescue, and fire turnout gear water survival training. The Marine Safety Officer coordinates all oil spill response training and response including cost recovery. This office also assists in Port Security Grant administration.

At the start of each shift New Bedford Fire identifies the primary and secondary on-duty company personnel trained in marine response who will then respond to waterborne emergencies. Each shift has at least 6 boat crew members who are assigned to the marine unit as a collateral duty. When a response is required, the primary and secondary personnel are dispatched along with an additional crew member and delivered to the dock by their companies or district chief. If the Marine Safety Officer is

on-duty he also responds. This contingent of personnel then responds with the appropriate vessel to address the pending emergency.

Table 9 – Marine Unit Responses	2014	2013	2012
Marine 2 - Fire Station 2			47
Marine 31 – State Pier	110	102	68
Marine 41 – State Pier	111	159	73
Marine Safety Officer	23	13	8
Other Marine Units		4	5

The level of activity for NBFD marine units is relatively high with an average of 241 marine unit responses per year for the past three years. These responses are generally higher in the Summer and Fall months with responses in each month during the three-year period. The number of responses ranged from a low of 3 in February, 2014 to a high of 45 responses in September, 2014.

These response numbers include fires, blasting activity, medical emergencies, vessels in distress, public safety patrols for cultural events and other activity, oil spills, and training.

Airport Crash Rescue

As noted elsewhere in this report, the New Bedford Regional Airport requires emergency response support from the New Bedford Fire Department. The airport is equipped with a 1991 Oshkosh T 1500 crash truck that carries 1,500 gallons of water and has both foam and dry chemical extinguishing agents. This vehicle is maintained by the personnel from Station 7 and Station 9. On a weekly basis the personnel train, maintain, and respond with this vehicle as needed. Firefighters respond to the airport and staff the ARFF vehicle for emergency response on an as-needed basis. No NBFD staff are dedicated to this function.

Hazardous Material Response

As with any community the existence of hazardous materials poses a threat to not only the health and safety of the population, but also to the environment. As an aging industrial city, New Bedford has a significant hazardous materials presence and risk. The activity in and around the Port area requires, and regularly transports, a significant amount of hazardous cargo and materials. The major thoroughfares in New Bedford bring many shipments of hazardous materials each day. The New Bedford Fire

Department currently has a limited operational level HAZ MAT capability to respond if needed. The following limited assets are available:

- 4 fire companies are equipped with metering capability.
- 2 NBFD fire command vehicles are equipped with test strips for limited product identification.
- 4 NBFD members are certified HAZ MAT Technicians and available as needed.
- All NBFD members are trained annually in decontamination procedures and operational level skills.

Additionally the NBFD is a participant in the District 1 Massachusetts Regional Hazardous Material Team. As part of this response team, a State response vehicle is stored at Fire Station 5. The regional system is used to augment NBFD resources in the case of a significant hazmat incident.

Technical Rescue

Loosely defined, Technical Rescue includes responses to various specialized emergencies including rope rescue, confined space, structural collapse, machine extrication, and below ground rescues. These low frequency/high risk operations can pose a significant threat to responders as well as the victim. Regardless of training and equipment, fire departments typically find themselves on these scenes, with the expectation to provide assistance.

New Bedford Fire has limited training and equipment to respond to these emergencies. Each ladder company has an assortment of rescue equipment and capabilities and there are nine technician-level trained personnel available, if needed. The department continues to improve its capabilities in this discipline. The department participates in the Bristol County Technical Rescue Team, which would need to be activated for any major emergency of this type.

Mutual Aid and Shared Fire Services

Many communities augment their level of fire and EMS resources by the use of automatic and/or mutual aid. Automatic aid is assistance dispatched automatically by contractual agreement between two or more communities or fire districts. Mutual aid is assistance provided as needed and upon request between two or more local jurisdictions. One of the keys to a successful automatic aid agreement is that the communities are of similar hazard type, have similar staffing and operational levels, and have an effective communications system for notification and on-scene communications.

The issue of outside assistance for the New Bedford EMS system is discussed elsewhere in this study and is not considered here. The observations included here are in regard to shared fire services.

The New Bedford Fire Department currently does not have any automatic aid agreements to receive assistance for response to fire emergencies. Unfortunately, New Bedford is surrounded by residential communities that primarily use limited staffing or on-call fire departments to provide fire protection. These departments have no or limited on-duty staffing available for emergency response. The closest fire department with a large on-duty staffing force is Fall River, a 16 mile drive to the downtown area of New Bedford.

As such, automatic mutual aid from these communities would not positively impact response times and if enacted the resources received would typically be inadequate to provide significant assistance.

New Bedford is essentially an island for fire emergency purposes. The arrival of mutual aid resources from other fire departments would not generally be within a timeframe that would be helpful in an evolving emergency. New Bedford needs to be self-sufficient for fire emergencies.

Mutual aid for fire services does have value to New Bedford. Mutual aid resources from surrounding communities, from regional resources, and from resources outside of the region have been and will be most helpful in long-duration and specialized incidents and for fire station coverage when New Bedford Fire Department units are committed to an emergency.

Fire Prevention Services

The broad mission of the fire service includes many facets beyond emergency response. Comprehensive and effective Fire Prevention, Fire Investigation and Public Education programs are a critical component of any fire protection organization. Preventing fires before their ignition is by far the most cost effective and efficient manner to approach fire safety. Teaching the public how to respond when they are faced with fire-related emergencies is critical to community fire safety. Finally, when fires do occur, determining the cause and origin of hostile fires is critical for the community's well-being. Every fire service organization must have an effective plan to address each of these functions.

Fire Prevention, Inspection and Investigation

Fire Prevention and Education is the duty of every employee of the fire organization, not just those assigned specifically to those roles. On-duty firefighters and fire officers can be used for any of the following:

- In-service inspections for building familiarization and/or code enforcement
- Permitting
- Attendance at public-events
- Teaching at local schools
- Any other opportunity when the fire department interfaces with the public

Fire code enforcement and permitting, along with fire investigation, also interface with other local and state agencies and those responsible must develop relationships with these partner organizations.

The Fire Chief of the New Bedford Fire Department (or designee) is identified in state code as the local Authority Having Jurisdiction (AHJ) and responsible for the enforcement of The Massachusetts Comprehensive Fire Safety Code, 527 CMR 1.00. The most recent revisions took effect on January 1, 2015. The revised code adopts, in large part, the National Fire Prevention Association's (NFPA) Model Fire Code (NFPA 1- 2012 Edition), with Massachusetts amendments. Thus the Fire Chief along with his Fire Prevention personnel is responsible for all regulated fire code activity in New Bedford.

The New Bedford Fire Prevention Bureau is staffed with 1 Captain, 4 lieutenants, a Firefighter, and a clerk. The duties and functions of the Fire Prevention Bureau are extensive and challenging for the personnel assigned. The duties include the following.

- Conduct review, permitting, and inspection and activities for all of the following:
 - Fire sprinkler plans (new and existing)
 - Fire alarm systems and hood suppression systems
 - Annual inspections for all day care centers
 - Blasting and demolition permits
 - Marine fuel permitting and inspections
 - Above and underground tank inspections
 - Lock box (Knox box) applications
 - Quarterly nursing home inspections
 - Investigate all fire safety complaints
- Participate in the Mayor's housing taskforce and represent the department on all matters before the housing court
- Conduct all licensing inspections including annual Chapter 304 (alcohol licensing) inspections
- Conduct all 26F certificate of compliance for smoke detectors and carbon monoxide detectors for the sale/transfer of residential property
- Conduct fire investigations to determine cause and origin and/or refer to other agencies for conclusive determination and investigation.
- Represent the City of New Bedford at the Zoning Board of Appeals.

Although not a specific target of this study a number of challenges have been identified in accomplishing the mission of Fire Prevention and Inspection in the New Bedford Fire Department. Included are the following:

- Due to the age and condition of the housing and building stock, and other compliance requirements there is an immense demand on inspector time to address all required inspections and conduct appropriate follow up. In 2014 alone there were over 2,750 internal and external complaints received that required

attention. There are 224 locations alone that require the Chapter 304 inspection each year to maintain a license to serve alcohol

- Training and retention of Fire Prevention personnel
- Updating of records management system for inspection records
- Implementing on-line permitting

Fire Permit Fees

Much of the work involved in an active Fire Prevention program involves licensing and permitting. Fees for fire permits are one of the few opportunities a fire department has to produce income. Within this review the FACETS team conducted a cursory survey of various similarly situated fire departments in the State of Massachusetts. Results of the survey indicate that the City of New Bedford's current fee schedule is below other departments in Massachusetts. The table below outlines comparable fees where available and comparable. As is demonstrated below, the New Bedford Fire Department should conduct further review and enact appropriate legislation to increase the fees charged for licensing and permitting services.

Table 10 – Fire Permit Fees	New Bedford	Springfield	Fall River	Worcester
SMOKE DETECTOR One Unit	40	50	50	50
Two Units	40	100	50	60
3-6 Units		150		70
7 or More Units		500		
EACH ADDITIONAL UNIT	20		25	10
REINSPECTION FEE	1/2 of Fee	50		
WELDING PERMITS	25	75	50	50
Natural or LP Gas Heaters	35		50	50
CANNON DISPLAY	25	75	50	
BLASTING PERMIT	35	50	60	50
OIL BURNER PERMIT	25	75	50	50
HYDROGEN STORAGE	35	75	50	50
LPG STORAGE	35	75 to 225	50	50
REMOVAL OF TANKS				
Underground	100	75 to 250	200	50 to 250
Above Ground	35			
Installation of Tanks				
Underground	150	75 to 250	200	50 to 250
Above Ground	35			
Permit for Storage of Black Powder	35		60	50
Copies of Reports	5 ea.	10 ea.	15 ea.	
FIREWORKS	25	100	60	
TANK TRUCK INSPECTIONS	75	100	60	
FUMIGATION AND FOGGING PERMIT	25	50		
CIRCUS OR CARNIVAL	35		50	
TANK REGISTRATION FEE	35			
SPRINKLER PERMIT	25	75	50	
SITE ASSEMENT (21E)	\$35/HR--\$100 MIN.		100	
QUARTERLY INSPECTION	100		\$75.00	
DUMPSTER PERMIT	25	50	50	

Fire Investigation

In accordance with Massachusetts State law, the local fire department is responsible for determining the origin and cause of each fire or explosion in its jurisdiction. The State Fire Marshal is mandated to investigate fires and explosions where local fire authorities are unable to determine the cause, where a violation of law exists, or when the fire or explosion is or may be incendiary nature. In New Bedford, Fire Prevention officers are charged with determining the cause and origin of fires. The inspectors respond to incident sites using a rotating "on-call" basis. Determining and proving the cause of a fire is more challenging now than ever due to changes in standards of proof as well lighter weight construction and building methods and materials. The role of the Fire investigator requires significant training and experience. New Bedford Fire relies on the assistance from the state to assist in criminal or undetermined fire incidents.

Public Education

Public fire education is an important component of a fire department's mission. Educating the public about fire has been cited by many fire service professionals as the single activity with the greatest potential for reducing fire deaths and fire loss. Unfortunately, due to budget and operational demands, fire education remains one of the last items most fire departments provide appropriate resources to, and is one of the first to be reduced in difficult budget times.

Fire education programs should be targeted to the at-risk populations. Historically the at-risk groups include the young, the elderly, low-income, and non-English speaking groups. Certainly New Bedford residents include the young and the elderly. However, of note in the demographics of this area there is a significantly higher proportion of non-English speaking residents as well as many undocumented immigrants who may be the most hesitant to make themselves available to this valuable information.

It is recommended that New Bedford provide additional focus on fire education for its non-English speaking population. This will take a concerted effort and commitment to utilize available community resources as well as other resources available through the US Fire Administration to target these groups.

In Massachusetts and in New Bedford the fire education initiative is supported by the state funded Student Awareness of Fire Education (S.A.F.E.) Program. S.A.F.E provides resources to local fire departments to conduct fire and life safety education programs in grades K-12. The mission is to enable students to recognize the dangers of fire and more specifically the fire hazards tobacco products pose. In New Bedford this funding has been used to compensate off-duty firefighters to conduct fire education at the third-grade level in local schools. In 2014 the S.A.F.E. program provided \$13,000 to New Bedford Fire Department for this activity. At this time the 2015 funding has yet to be determined and is pending final state budget approval.

5 – Fire and EMS Dispatch and Communications in New Bedford

An efficient communication and dispatch process is a critical component of every emergency response system. A dispatch/communication system must be efficient, effective, and reliable twenty-four hours a day, every day of the year. The system serves as the interface between the person in need of assistance and the resources available to assist them. As such, it is important that the processes and personnel involved in the system are trained, efficient and, knowledgeable.

The primary location where calls for assistance are received is typically referred to as a Public Safety Answering Point (PSAP). The PSAP is a “call center” responsible for answering all emergency calls in a local jurisdiction whether the call is for a police, fire, or medical emergency. There is typically only one emergency telephone number for any of these services. In North America this number is typically “911”. Once received, the call and/or the information must be forwarded in a timely manner to the appropriate agency or agencies needed to meet the needs of the emergency. Due to the greater number of calls for police service, often times the local police department serves as the PSAP. This is true in New Bedford.

There are standards which identify and outline targets of performance for PSAP’s in regard to the entire dispatch/communication process. Virtually every standard has identified a series of critical events for each call and response for an emergency. Specific to this study, NFPA 1710 has identified the following as critical time frames for emergency call processing for fire and medical emergencies.

3.3.53.1 Alarm Answering Time. The time interval that begins when the alarm is received at the communication center and ends when the alarm is acknowledged at the communication center.

3.3.53.4 Alarm Transfer Time. The time interval from the receipt of the emergency alarm at the PSAP until the alarm is first received at the communication center.

3.3.53.3 Alarm Processing Time. The time interval from when the alarm is acknowledged at the communication center until response information begins to be transmitted via voice or electronic means to emergency response facilities (ERFs) and emergency response units (ERUs).

These components of the “total response time” are a critical portion of the evaluation of an organization’s effectiveness as it relates to accepted standards. Accordingly, any steps that can be taken to improve New Bedford Fire and EMS communication system performance will increase the level of efficiency and effectiveness of the overall response system.

Currently, the communication and dispatch functions for New Bedford Fire and EMS are handled by two groups of personnel. The radio channels normally used by EMS units are shared with New Bedford Police Department operations. NBFD units operate on a

dedicated radio channel that is different from the Police and EMS channels. All agencies have the capability to communicate on each other's channels within the portable radios carried by paramedics, firefighters, and police officers.

The first group is assigned to the PSAP located at New Bedford Police Headquarters at 871 Rockdale Avenue. The call takers and dispatchers are either police cadets or non-uniformed personnel and are certified Emergency Medical Dispatchers (EMD's). These personnel conduct the following:

- Receive emergency phone calls.
- Triage and prioritize calls for medical emergencies using criteria-based dispatching protocols. The system used is "Powerphone". The call can be prioritized as Priority 1, 2, or 3 and will receive one of the following resources allocations:
 - New Bedford EMS only.
 - New Bedford EMS and Fire 1st Responder for priority 1 calls.
 - Private transport company and Fire 1st Responder
- Provide pre-arrival instructions for medical emergencies.
- Dispatch EMS ambulances via phone or radio notification.
- Notify private ambulance for assistance.
- Notify the Fire Alarm Signal room of the need for fire units to respond to medical emergencies.
- If a Fire 1st responder is needed, the PSAP call taker will contact the Fire Alarm Signal Room who will notify the appropriate response unit(s) of the location and nature of the emergency. Note that the PSAP call takers never directly contact the Fire units.
- Forward phone calls reporting fire emergencies to the Fire Alarm Signal Room.
- Maintain radio communications with the EMS and police units via the radio system.

The second group is uniformed firefighters assigned at the Fire Alarm Signal Room located at Fire Station No. 2 located at 868 Pleasant Street. These personnel conduct the following:

- Receive forwarded phone calls from the PSAP reporting fire emergencies.
 - Triage and dispatch those calls based on the nature of the reported emergency.
 - Enter information into the Computer Aided Dispatch (CAD).
 - Notify appropriate fire units using the Zetron dispatch system. This system notifies each responding fire station and announces incident details over a loud speaker including the nature, location, and units responding to the emergency.
- Receive requests from the PSAP to dispatch Fire 1st Responder units and notify as noted above.
- Monitor and maintain the "Fire Signal" telegraph system and dispatch accordingly.

- Maintain radio communications with dispatched units.

The Fire Alarm Signal Room is staffed by two firefighter/telecommunication operators; twenty-four hours a day, seven days a week. There is a total staffing of nine (9) firefighters to cover the four shifts and one Lieutenant who serves as the administrative head of the Fire Alarm Signal Room.

Beyond receiving emergency calls and dispatching units to emergencies, another facet of the dispatch and communication process involves maintaining communication with units that are on-scene. The communication from personnel on-scene to the dispatch center is critical to ensuring safety of the responders, updating incident status information, and calling for additional resources or agencies as needed. This information is needed to both monitor the resource needs of the incident, and ensure resource availability upon completion of on-scene activities.

Currently both New Bedford Fire and New Bedford EMS use 470 MHz T-band radio communications between their dispatch and the units while on emergency scenes. However, New Bedford EMS communicates with the Police Dispatch Center while New Bedford Fire Units communicate with the Fire Communications Center.

In addition New Bedford Fire units are equipped with Mobile Data Terminal (MDT) technology. These MDT's communicate directly with the CAD to provide alarm information to responding units and to update the availability and status of the responding units. New Bedford EMS units are not equipped with mobile data terminals.

Municipal Fire Alarm System

The City of New Bedford maintains a Municipal Fire Telegraph system that dates back to the mid-19th century. The system is the Gamewell type telegraph and radio box system. The telegraph technology and system currently in place in New Bedford is an antiquated approach to fire communications that pre-dates the invention of the telephone: Not the modern cellular communications ubiquitous in society today, but the telephone invented by Thomas Edison in 1877. These systems are most familiar as the "fire call" boxes that were found on telephone poles and stands throughout many American cities, particularly in the east and northeast. Although some communities continue to maintain these systems, they are most often found in museums and antique stores. Maintaining these decades old wire systems requires a significant amount of resources.

The Fire Call Box systems were historically connected to a central station (usually a local fire station or dispatch center) via hard wire either above or below ground. Newer versions of the systems utilize a "radio" signal to transmit the alarm rather than the hard-wired systems. The system in place in New Bedford today is primarily the hard-wire based network of this system. The "central station" for the receipt of these alarms is located at the Fire Alarm Signal Room located at Fire Station 2. The two on-duty fire telecommunications operators assigned to the Fire Alarm Signal Room are responsible to monitor the system and dispatch when activated. These operators spend a portion

of their on-duty time monitoring, checking, and resetting this system. The entire system is extremely old and subject to failure on a continuous basis. In addition the false-alarm rate in connection with the system is typically extremely high.

The street pull boxes are obsolete and are being slowly removed across the city. Presently the city of New Bedford employs at least two (2) full time employees (FTE) to maintain this network both above and below grade. Since 2007, all new installations are mandated to use a radio box system in place of the wire based boxes. To date there are over 100 installations of this technology.

6 – Fire and EMS Deployment Models

In the United States, virtually every community is served with fire protection and EMS in some fashion. The format in which those services are provided varies widely from community to community and is based on many different factors. Small rural areas may be served by all volunteer fire and EMS services, while most suburban and urban communities are served by a wide variety of professionally trained and equipped organizations. Even within comparable communities there can be significant variance in how these services are provided. The delivery of the pre-hospital EMS service has been undergoing an evolution since the early 1970's, and this evolution continues to today. Medical-related responses continue to trend upward while incidence of fires continues to trend downward. Many communities are evaluating how to most effectively and efficiently provide both these critical services in the future.

There are a number of general models for the delivery of EMS in the United States. For the purpose of this study, the models used by similarly situated urban communities are outlined below:

Public single-role EMS system – This model utilizes a department that is separate from the fire department and sometimes known as a “Third Service”. New Bedford currently operates with this type of system. The EMS and the Fire departments each have their own distinct hiring processes, budget, rules, chain of command, and management team. EMS focuses on emergency medical incidents and the Fire Department responds to fire emergencies. However, due to increasing medical responses, typically the fire department supports EMS by employing a 1st Responder program in either Advanced Life Support (ALS) or Basic Life Support (BLS) capacity. In the case of New Bedford, the fire-based 1st responders are of the Emergency First Response (EFR) level which is lower than the ALS and BLS levels and has a diminished level of training and ability to provide appropriate interventions.

Some of the benefits of this type system include dedicated single-role medical responders (ALS or BLS) who can train and function solely as medical care providers. In addition the administrative personnel can focus entirely on aspects of the medical delivery system and processes. The system can also be a revenue generator for a municipality.

Some of the drawbacks include the relatively “flat” organizational structure most single-role EMS divisions have which hampers career advancement for many of the personnel. Having separate policy makers in each the EMS and Fire departments can lead to conflicting policies and operational inefficiencies. These issues often can lead to inefficiencies, frustration, burnout, and difficulty in retaining career-oriented employees. Additionally, there is typically a heavy workload and little direct operational supervision, especially in more financially stressed communities.

Fire-based system using municipal EMS employees who are not cross-trained as fire suppression personnel. This system includes single-role EMS personnel who operate within the same organizational structure as the fire personnel with all employees reporting to one administrative team. There are typically, although not necessarily, two different entry pathways for the each type of employee. These systems typically use the fire personnel as a 1st Responder in either ALS or BLS capacity.

This type system can lead to more effective and consistent response protocols and, based on the established local hiring and collective bargaining agreements, lead to an entry way and career path for EMS personnel into the fire service for those who choose. Done correctly this can lead to long term retention of personnel who seek an exposure to a fire career as well as an opportunity for personnel who seek long term EMS careers in a stable and reliable organizational structure.

One of the potential pitfalls to these type organizations includes creating a “two-class” system. Often time this can occur when two systems are “merged” into one where the fire-service “culture” is perceived as the dominant culture, leaving the EMS personnel feeling underpaid, unappreciated and even ostracized. It is critical that the administrative leadership fully embraces the EMS side of the service and supports the EMS personnel and services. This is especially true when a leader who has served primarily in a fire service becomes the administrative head of EMS services as well.

Fire-based system using cross trained/multi-role fire fighters. This system usually has a single pathway for employees and may or may not require prior certification for fire and/or EMS qualifications. Both fire apparatus and EMS vehicles are staffed by similarly trained employees; and all personnel fall under the same protocols and administrative chain-of-command controls. Again, typically medical 1st Responders are used. Often times this includes ALS 1st Responders due to the fact that these employees often times serve on ambulances as well as fire vehicles.

Many communities from the very small to the very large use this type system, especially those communities that have seen growth over the past fifty years. This model is typically found in suburban, southern, and western communities. Because many of these organizations have largely developed as a “dual-role” service some of the cultural drawbacks identified above in the fire-based system are not relevant.

Private EMS provider without support from the fire service. This model is similar to “Third Service” model discussed above; except the EMS response is provided by a

private ambulance company or health care system that contracts with the community to provide services. The fire service typically provides a 1st Responder program of either BLS or ALS level.

The effectiveness of this model is often times determined by the level and quality of service provided by the private contractor. In addition the fire administrators may be challenged in effectively controlling the performance, behavior, and response of the private responders. Although there are typically established standards in the written contract, they can be difficult to enforce. Often when this model is used, the community is not realizing its full potential of revenue generation.

Definitions from Massachusetts (Editorial note - place in call out box)

Advanced Life Support (ALS)

In accordance with Massachusetts State Law (CMR 170.295) the levels of licensure for ALS services are:

(A) Advanced Level: services related to airway and circulatory maintenance pursuant to the Statewide Treatment Protocols and any other procedure which is consistent with Department-approved training for Advanced EMT.

(B) Paramedic Level: services related to the treatment of cardiac or respiratory arrest, poisoning, drug overdose or other major trauma or illness pursuant to the Statewide Treatment Protocols and any other procedure which is consistent with Department approved training for EMT-Paramedics.

In general ALS services typically include Tracheal intubation, Cardiac monitoring, Cardiac defibrillation, Intravenous cannulation (IV), Advanced medication administration through oral and intravenous routes. Advanced Cardiac Life Support (ACLS), Pediatric Advanced Life Support (PALS) or Pediatric Education for Pre-Hospital Providers (PEPP), Pre-Hospital Trauma Life Support (PHTLS), Basic Trauma Life Support (BTLS) or International Trauma Life Support (ITLS)

Basic Life Support (BLS)

In accordance with Massachusetts State Law (CMR 170.810) the functions of an EMT Basic include:

- (1) Provision of basic emergency medical care for patients at the scene and/or while in transit in an ambulance;
- (2) Operation of Class I, II, and V ambulances; and
- (3) Other duties as consistent with level of training and certification.

In general BLS level personnel can manage cardiac arrest, acute illnesses, medical emergencies, traumatic emergencies, childbirth, rescue extrication,

ambulance operations, choking, drowning, splinting techniques, communication and documentation, medical legal implications, CPR and use a defibrillator. BLS does not include the use of most drugs or invasive skills, and can be contrasted with the provision Advanced Life Support (ALS). Basic life support promotes adequate blood circulation in addition to breathing through a clear airway and trauma stabilization until such time that ALS care can be administered if required.

First Responder Level

In accordance with Massachusetts State Law (CMR 170.805) the functions of an EMS First Responder (EFR) shall include:

- (1) first aid;
- (2) cardiopulmonary resuscitation, including use of automatic defibrillation (AED)
- (3) other intervention(s) approved by the Department.

1st Response (der): means the dispatch and response by the closest, most appropriate EMS personnel or EMS vehicle in the shortest practicable amount by time of a qualified EMS first response service. In practice a 1st Response program typically utilizes local fire personnel as the responder. This is due to their availability and geographic positioning to be able to respond quicker than the EMS ambulance due to available resources and workload.

7 – New Bedford Emergency Medical Service

EMS delivery in New Bedford is provided by New Bedford EMS. New Bedford EMS is a third service operation funded and managed by the City of New Bedford.

New Bedford EMS has a long history of providing EMS to the community. NBEMS was established in 1976 after a private ambulance service gave 30 days notice that they were terminating service. Prior to 2003, New Bedford EMS was a BLS service. NBEMS is currently an all-ALS service that operates three ambulances 24 hours a day, seven days a week and a fourth ambulance from 8:00 a.m. until midnight, Monday through Friday.

Table 11 – New Bedford EMS Unit Responses and Transports

Year	NBEMS Unit Responses	NBEMS Transports	Private Ambulance Responses
2012	N/A	10,262	N/A
2013	15,514	10,171	2,533
2014	16,658	11,291	1,942
Source: Comstar billing report, Ambulance response report prepared by Chief Gomes 1/18/2015 – may include response of multiple ambulances to an incident			

Each ambulance is staffed with two Paramedics. The part-time ambulance, Medic 4, was gradually added to the emergency response system in mid-2014 to address peak activity hours.

Paramedics currently work two 16-hour shifts and one 8-hour shift per week. These schedules were implemented in July 2010 after a FLSA complaint was filed challenging the 207K exemption. Prior to July 2010, Paramedics worked 10 and 14 hour shifts.

NBEMS is managed by a Director, Deputy Director, and a Training Captain. The Training Captain is responsible for quality assurance and improvement activities. NBEMS currently has no on-duty (on-shift) field supervision. Field Supervisors were eliminated in 2009.

In mid-2015, the minimum starting pay for Paramedics was \$16.39 per hour with senior personnel topping out at \$24.99 per hour. As a part of a recent contract agreement, paramedics received pay raises effective July 1, 2014 (retroactive) and July 1, 2015. In addition to the pay challenge, there is a residency requirement for paramedics for the first three years of employment. Most NBEMS employees are members of the AFSCME Union.

New Bedford is a high-capacity EMS system that has an extremely high unit-hour-utilization rate. At times, there are not enough ambulances to handle the call load. In order to meet the needs of the 9-1-1 system, NBEMS has mutual aid agreements with private ambulance providers who serve as backups to the 9-1-1 system when ambulances are available.

In order to be a part of the mutual aid system in New Bedford, ambulance companies must be based in the city of New Bedford and have radio contact with Dispatch. Mutual aid ambulances are utilized on approximately 2,000 calls per year.

Adding to the need to use mutual aid ambulances are significant delays at the hospital waiting on hospital beds. At times, St. Luke's emergency room experiences demand surges and ambulances must wait to offload their patients from the ambulance stretcher to the hospital bed. Serious or trauma patients are transported to Providence.

EMS Dispatching is done by two police dispatchers and cadets screening 9-1-1 calls. The cadets use criteria-based dispatching protocols. According to EMS personnel, compliance with the use the criteria-based dispatching is sketchy. However, pre-arrival instructions are provided to callers. During blizzard conditions, New Bedford EMS will put someone in the Communications Center to screen 9-1-1 calls for ambulance response necessity.

NBEMS does have some outreach programs. As an example they work with the New Bedford School system where school children do observation rides. There is also a public access defibrillation (PAD) program with a high concentration of AEDs in public

buildings, police cars, and ball fields. The NBEMS Director and Deputy Director maintain the AEDs.

NBEMS does have bike teams and they are utilized at festivals. They also have certified divers that work with the dive team. Paramedics with NBEMS are also Tactical Medics and work with the police SWAT team for high-risk entries and hostage situations.

Challenges

The EMS system has many challenges – of which most are a result of funding for the system – even though there is revenue in excess of expenditures.

Staffing is a challenge. Because of the starting pay rate, many paramedics come to NBEMS only to get the experience and then apply to other fire and EMS agencies where typically the pay rate is \$3 higher per hour. As a result, paramedic staffing at New Bedford EMS is a “revolving door.” As a result of the “revolving door”, it is difficult for personnel to get days off. In order to try and fill shifts, the Director at times will resort to sending text group messages out looking for personnel to work overtime.

The number of calls that are given away to mutual aid ambulances and the high unit-hour-utilization rate points to not enough ambulances in the system. When calls are given away to private ambulance, potential revenue is lost. Additionally, fatigue and sleep deprivation can affect paramedics who drive ambulances and those who have to make patient care decisions.

Equipment is a challenge to the EMS system. Due to the age of the monitor-defibrillators in use, paramedics are currently unable to transmit EKG electronically to hospitals when the patient may be suffering a ST Elevated Myocardial Infarction (Heart Attack). The transmission of an EKG under these conditions is now a standard of care in most communities for the purposes of alerting a cath lab that a patient will be coming to the hospital. There are currently no spare monitor-defibrillators.

The portable computers that Paramedics use to capture electronic patient care data and billing information are old and slow. Other computers within the NBEMS system are also old and slow.

NBEMS recently placed two new ambulances in service. The addition of these vehicles will go a long way toward addressing vehicle reliability within the NBEMS fleet. A regular replacement schedule for ambulances has been implemented by the City. This program will increase the reliability of this important vehicle type and smooth out capital expenditures from year to year.

One major challenge is the lack of field supervision on shifts. New Bedford EMS is a 24-hour, seven day a week operation and thus, field supervision is a necessity, not only for common business practices of overseeing employee actions, but the administrative

functions needed for a successful EMS operation. Some of these functions include replacing supplies, replacing used drugs and narcotics, swapping out broken equipment with reserve equipment, and other issues that may come up such as injured employees, complaints, etc.

As a result of no field supervision, many times the Director or Deputy Director must come in at night or on weekends to address administrative issues. Any delay in them coming into the office can result in down-time for an ambulance, causing response delays or compromising patient care. Additionally, the lack of field supervision can impact clinical patient care issues if no field oversight is provided for paramedics who may be delivering poor patient care or quality control issues.

Training is difficult because of the workload. Additionally, the lack of funds also impacts the adjunct training equipment necessary to properly train correctly. Paramedics are not sent for training outside the department or to conferences because the funding does not exist for seminars, conferences, or travel.

The physical plant of the EMS administrative offices and the rooms where EMS stays at fire stations are less than desirable. The EMS administrative offices are located in an old school building on the 2nd floor. The location is non-ADA compliant for citizen/patient/customers wishing to resolve bills or address complaints. There is no elevator to the 2nd floor and the only access is to climb stairs. Additional information on the physical condition of fire stations and the NBEMS administrative office is included in this report.

EMS System Activity Data

Data regarding NBEMS activities is fragmented and unreliable. Dispatch data gathered for this study was unusable due to the number of incidents that were not represented in the data set. The most reliable data on NBEMS operations was provided by the system's billing contractor. While this data presents a clearer picture of NBEMS operations than the dispatch data, billing data does not capture information on incidents where no ambulance transportation was needed.

Benchmarking against other third service EMS systems proved to be ineffective. There are relatively few third service EMS systems in the United States compared to other models and the systems that were available for comparison, such as Boston EMS, were either much larger than the NBEMS system or much smaller. Comparisons with these systems were not seen as valuable.

The incident benchmark times that are reported in the dispatch data are known to be unreliable. Medic units are not provided with mobile computers and all time benchmarks are communicated verbally over the radio. Police dispatchers enter the time stamps into the dispatch system but these activities can be delayed by other radio traffic.

The NBEMS Director estimates approximately 15,000 total responses by NBEMS units. Billing data is available on only approximately 10,000 to 11,000 of these incidents.

8 – EMS and Fire Department Budgets

The city of New Bedford has a July 1 – June 30 fiscal year. The biggest revenue sources for the general fund are State Aid (~50%), Real Estate and Personal Property Taxes (~35%) and Local Receipts (~10%). The largest areas of expenditure are Schools (~40%), Public Safety (~14%) and General Government (~9%).

Emergency Medical Services Budget and Resources

The Emergency Medical Services (EMS) Department budget is very small in the overall general fund at just \$2.7 million out of \$297.8 million in the 2016 proposed budget. This is less than 1% of budgeted general fund expenditures. The EMS Department is budgeted to collect \$5.7 million in transport revenue in 2016. The EMS Department has not received any grant funding in recent years.

The tables below show total general fund expenditures and revenue by fiscal year (in millions). In each year, EMS revenue exceeds expenditures by a factor of at least 1.7 to one. In 2016, the proposed budget has revenues that are more than double the budgeted expenditures.

Table 12 – New Bedford EMS Expenditures and Revenue

Expenditures	FY 2013 (actual)	FY 2014 (actual)	FY 2015 (pre-audit actuals)	FY 2016 (budget)
Citywide	\$270.6	\$274.2	\$289.0	\$295.5
EMS	\$2.5	\$2.4	\$2.6	\$2.7

Revenue	FY 2013 (actual)	FY 2014 (actual)	FY 2015 (pre-audit actuals)	FY 2016 (budget)
Citywide	\$267.8	\$272.7	\$284.3	\$295.5
EMS	\$4.3	\$4.1	\$5.2	\$5.7

Ambulance Billing

The New Bedford EMS Department has contracted with Comstar to perform ambulance billing services. The most recent contract was awarded in July 2014 and is through June 2017. Comstar has been a third-party ambulance billing contractor in Massachusetts since 1984. The current contract provides payment to Comstar of 3% of actual receipts.

New Bedford enjoys a very high collection rate of more than 95% of total allowable charges. Total allowable charges are what is collectable after mandatory write-downs such as for Medicare. New Bedford's high collection rate is in large part due to the payer mix primarily consisting of Medicare and Medicaid. Over the 2012, 2013 and 2014 fiscal years, the percentage of transports billed to Medicare or Medicaid increased from 84% to more than 87%.

Fire Department Budget and Resources

The Fire Department budget is relatively small in the overall general fund budget at \$14.6 million for 2016. This is just under 5% of budgeted, general fund expenditures. The Fire Department is budgeted to collect \$200,000 in revenue, primarily in Fire Prevention, in 2016.

The Fire Department has received a variety of grant funding since 2010, the biggest of which is the federal SAFER grant. The SAFER grant was started as a means to prevent cities from laying off firefighters during the worst of the recent recession. The New Bedford Fire Department first received SAFER grant funding in FY 2011, funding 70 firefighters. The Department applied for and was awarded a sustainment grant for 63 firefighters in 2013. In spring 2015, the Department applied for another sustainment grant to fund 31 firefighters that would begin in mid-FY 2016 and end in mid-FY 2018.

The 2016 proposed budget has the General Fund absorbing 26 sworn firefighter positions in mid-FY 2016. If the SAFER grant is not awarded, an additional 31 firefighters would need funding to be sustained.

The table below shows total general fund and SAFER expenditures by fiscal year (in millions).

Table 13 – New Bedford Fire Department Expenditures

Expenditures	FY 2013 (actual)	FY 2014 (actual)	FY 2015 (pre-audit actuals)	FY 2016 (budget)
Citywide	\$270.6	\$274.2	\$289.0	\$295.5
Fire – GF	\$12.4	\$13.1	\$14.8	\$14.6
Fire – SAFER	\$5.4	\$4.4	\$5.9	\$3.2

9 – Benchmarking Against Other Communities

As part of the fire and EMS study for New Bedford, MA, a benchmarking survey was completed. The purpose of the survey was to evaluate like-size organizations, communities, and fire and emergency medical services delivery systems. We requested information from five fire departments located in the North Eastern portion of the United States. The list of benchmark cities was reviewed by New Bedford. A

benchmarking survey was developed that evaluated community demographics, response resources and staffing, administration, budget, and statistics and activities.

The following organizations were contacted and requested to participate in the benchmarking survey:

- Manchester, New Hampshire
- Bridgeport, Connecticut
- Fall River, Massachusetts
- Portland, Maine
- Albany, New York

We received benchmarking surveys from Manchester, Bridgeport, Fall River, and Portland. Albany did not respond but we were able to garner some data from on-line sources such as the Albany Fire Department and City of Albany web sites. Each of the survey respondents captured appropriate and comprehensive data and information used in this report and to evaluate against New Bedford.

Key goals of the benchmarking survey were to review population served in comparison to fire and EMS station locations and staffing levels. Additionally, an evaluation of funding and budgeting were also reviewed. One of the final goals of the survey was to evaluate the EMS ambulance transportation service delivery within the community.

New Bedford has an approximate population of 95,000 residents in an area of 24 square miles. It is considered the sixth-largest city in Massachusetts. Fall River was the closest community surveyed to New Bedford and has a resident population of 88,697 in a service area of 33 square miles. Fall River Fire Department also provides services to 7 miles of shoreline.

The Portland, Maine Fire Department provides services to a resident population of 66,318. Peak population served is over 100,000 as Portland is considered a commuter hub for the mid-coast and a vacation destination each summer. The community typically hosts 1 million visitors each year and a significant number of cruise ships visits their port. The Portland Fire Department covers an area of 21 square miles, including 5 island communities.

The Manchester, New Hampshire Fire Department provides services to a resident population of approximately 110,000, which may increase to 140,000 during the occasional influx of population. The department covers a service area of 34 square miles.

The Bridgeport, Connecticut Fire Department provides services to a population of 147,216 in an area of 19 square miles.

Lastly, the Albany, NY Fire Department covers an area of 21 square miles and provides services to 97,856 residents.

Table 14 – Benchmark City Characteristics

Name	Population	Service Area	Number of Fire Stations	Total Number of Incidents in 2014
New Bedford	95,072	24	7	13,864
Fall River	88,697	33	6	16,442
Portland	66,318	21	7	15,922*
Manchester	110,000	34	10	14,433
Bridgeport	147,216	19	8	18,213
Albany	97,856	21	8	22,424
<i>*2013 data provided</i>				

Table 15 – Benchmark Fire Department Resources

Name	Engines	Trucks	Rescues	Chiefs	Medics	Marine Units	On Duty Firefighters
New Bedford	7	3	N/A	2	3.5	3	42
Fall River	6	3	1	2	4	N/A	32
Portland	5	4	1	1	5	1	48
Manchester	7*	2*	1	1	N/A - AMR	N/A	47
Bridgeport	9	4	1	2	N/A - AMR	1	62
Albany	8	4	1	2	0	N/A	60
<i>*3 engines and 3 trucks cross-staffed with 4 firefighters</i>							

One of the key elements of the benchmarking survey was to determine who and how fire and EMS dispatching services are provided. For example, are uniformed firefighters in a fire alarm office providing the dispatch services or are other dispatch services provided through a law enforcement agency or combined public safety communications center? Efficiency and effectiveness can be maintained when public safety communications centers are combined.

Dispatching services provided to the Fall River Fire Department and EMS/ambulance services are provided by civilians at the Fall River Police Department. The Manchester Fire Department is dispatched by the Fire Alarm Office. A combined dispatch service

for police, fire, and EMS is provided to both the City of Portland Fire Department and the City of South Portland, ME. Lastly, Bridgeport is dispatched by an emergency operations center, which is a combined civilian police and fire dispatch center.

The benchmarking survey also looked at EMS services provided to the community and which organization or entity provided those services. For example, was the ambulance transportation service provided by a private entity/company or a fire-based EMS service? Both Manchester and Bridgeport contracted with American Medical Response (AMR) as their ambulance provider. In their response systems, the fire department responded with AMR. Albany, Fall River, and Portland operate ambulances within the fire department, essentially fire-based systems.

A review of each department's budget was also included in the benchmarking survey. The budget included the annual operating budget. If the fire department provided ambulance transportation services, the EMS budget was included in the total budget. For the purposes of this survey, the FY 2014 budget was used to evaluate.

Table 16 – Fire Department Actual Expenditures for 2014

Name	Expenditures	Overtime	– Uniformed Staffing
New Bedford	\$13,077,310	\$620,444	222
Fall River	\$16,189,698	\$573,000	175
Portland	Not Reported	\$1,087,500 (2013)	235
Manchester	\$19,736,000	\$1,300,000	205
Bridgeport	\$58,142,628	\$4,611,290	259
Albany	\$32,917,867		

10 – Standards of Cover – New Bedford Fire Department

Dispatch information was collected for New Bedford Fire Department operations for the past three years. This data, along with Geographic Information System (GIS) information was used to depict NBFD activity and the coverage provided by fire companies in existing fire stations.

As mentioned previously in this report, dispatch information for NBEMS was incomplete and considered unreliable. NBEMS management and operational personnel also told us that EMS units are more often dispatched from outside of their base station so the validity of EMS deployment based on station locations is minimal.

From a fire department deployment perspective, New Bedford is well-covered by fire companies in their existing locations and present staffing levels. This is appropriate in an urban environment such as New Bedford.

Figure 2 below depicts fire emergency incident activity in New Bedford. As expected, activity follows population density with most incidents concentrated north of Fire Station 6 and south of Fire Station 8. These incidents are primarily served by fire department units based at fire stations 2, 6, 7, and 8.

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Figure 2 – Incident Density for Fire Calls

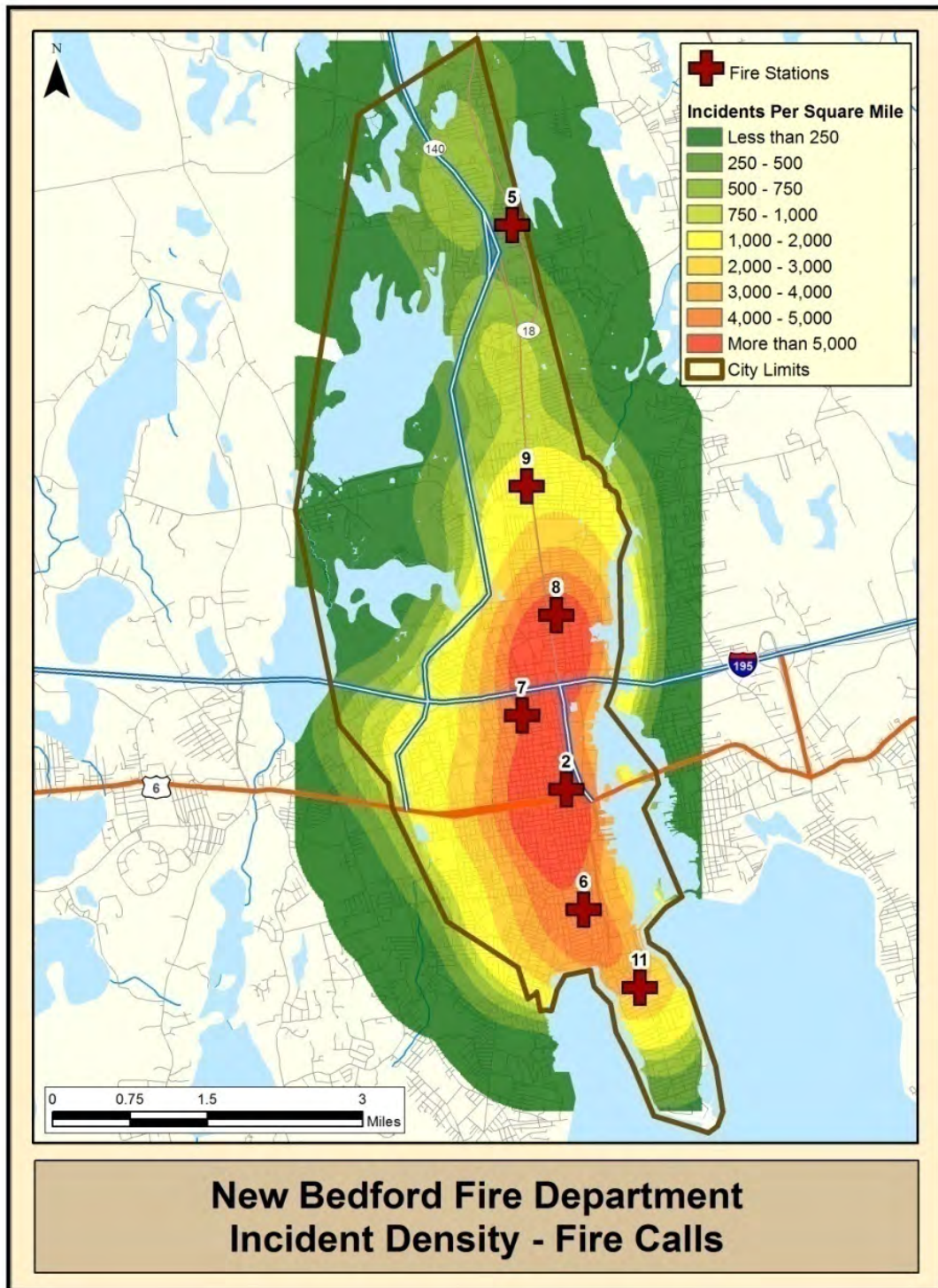
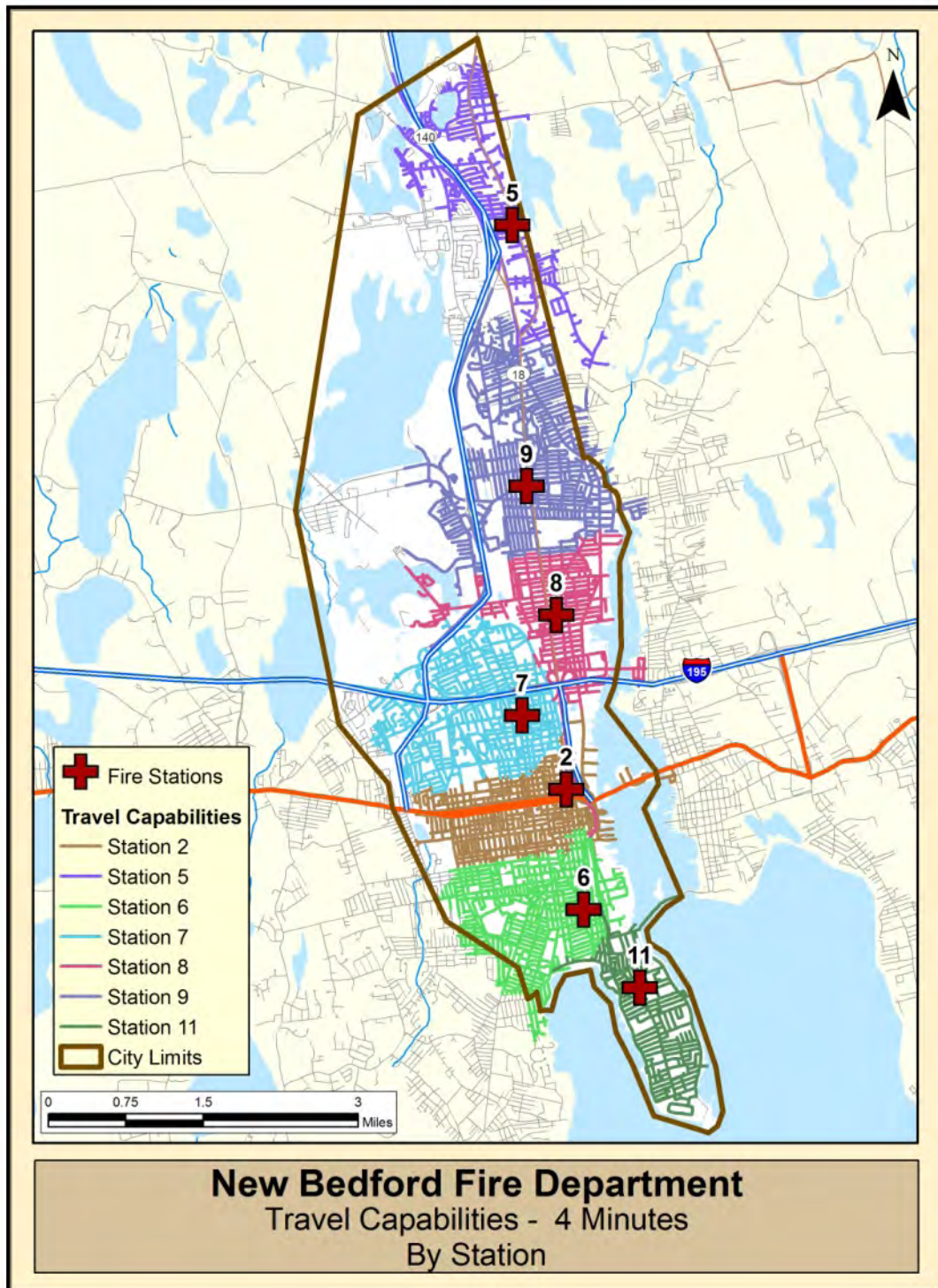


Figure 3 below shows the coverage provided by each existing fire station. Most of the densely populated areas of the city are covered within a four minute response time from an existing fire station. Exceptions exist in the northern part of the city west of 140 due to a limited number of access roadways across the highway to allow a unit from Fire Station 5 to travel. Other areas with predicted travel times in excess of four minutes include the far western portions of the city in the city's midsection.

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Figure 3 – Travel Capabilities – 4 Minutes



Engine and ladder coverage is depicted in Figure 4 and in Figure 5. Engines and ladders have different functions and their arrival on-scene within standard response times has an impact on fire control time, amount of fire loss, and the survivability of people in need of rescue. Again, the current deployment of engines and ladders provides adequate coverage of the city, except in the areas described as deficient above.

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Figure 4 – Engine Travel Capabilities

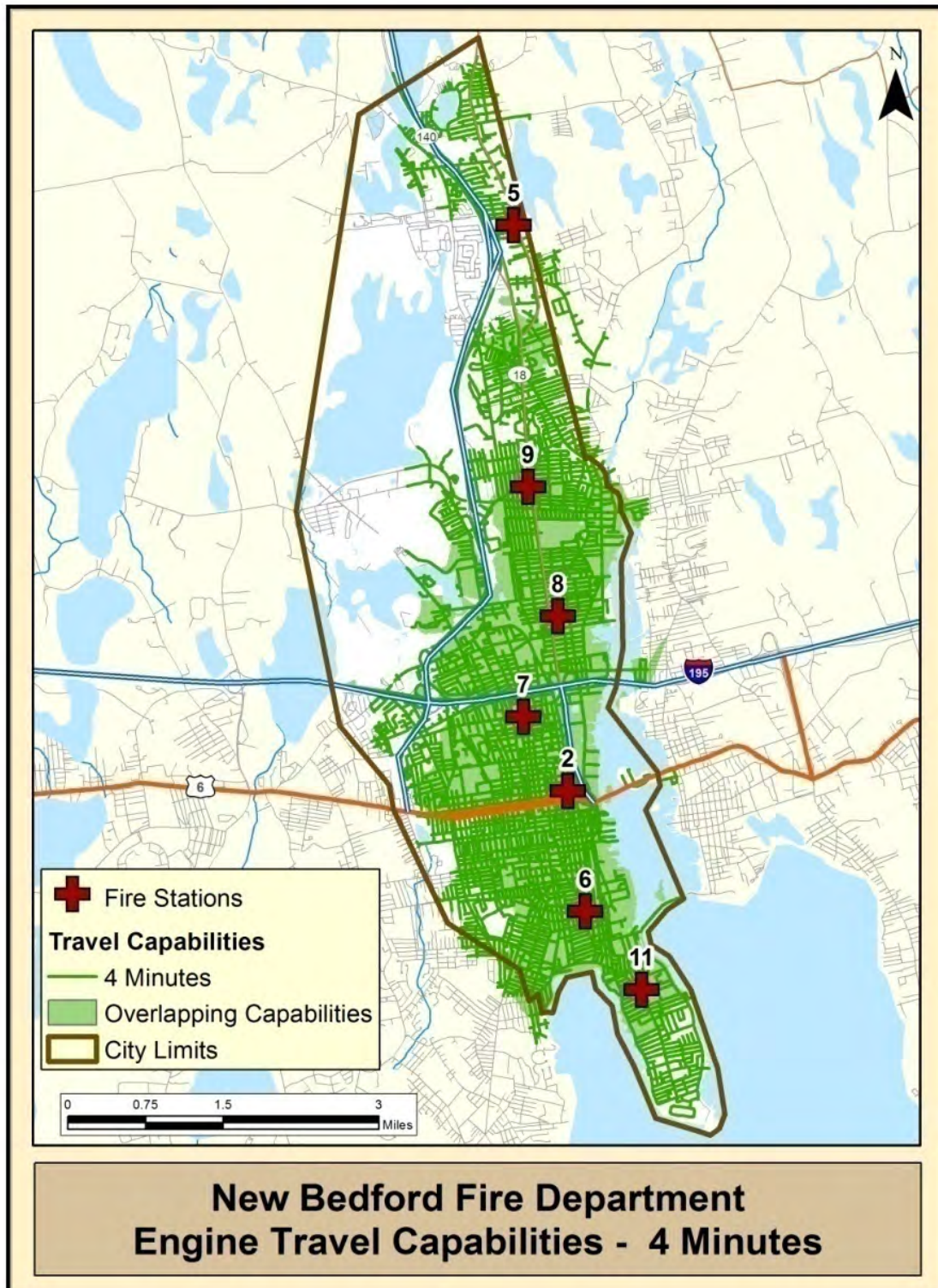
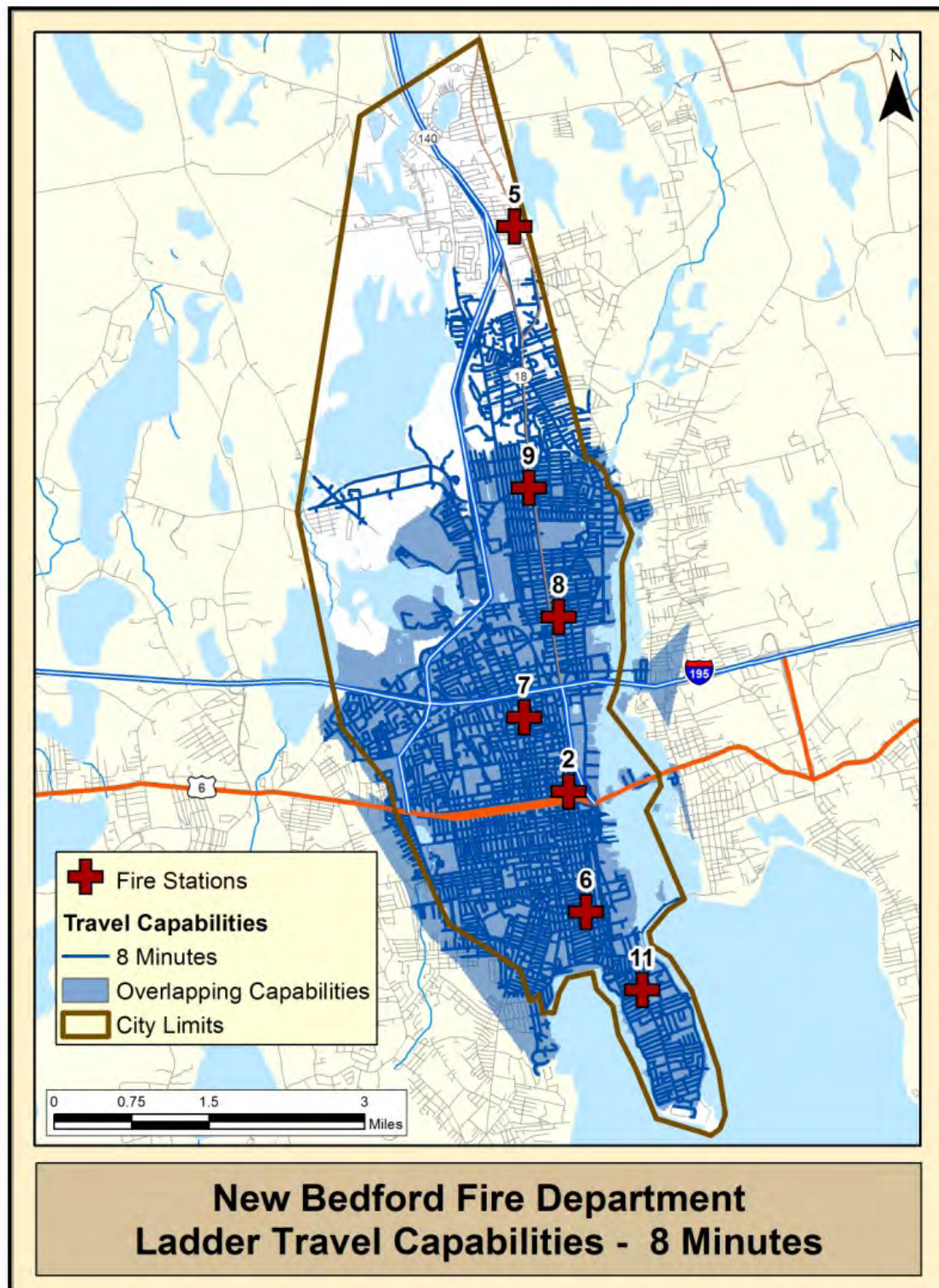


Figure 5 – Ladder Travel Capabilities

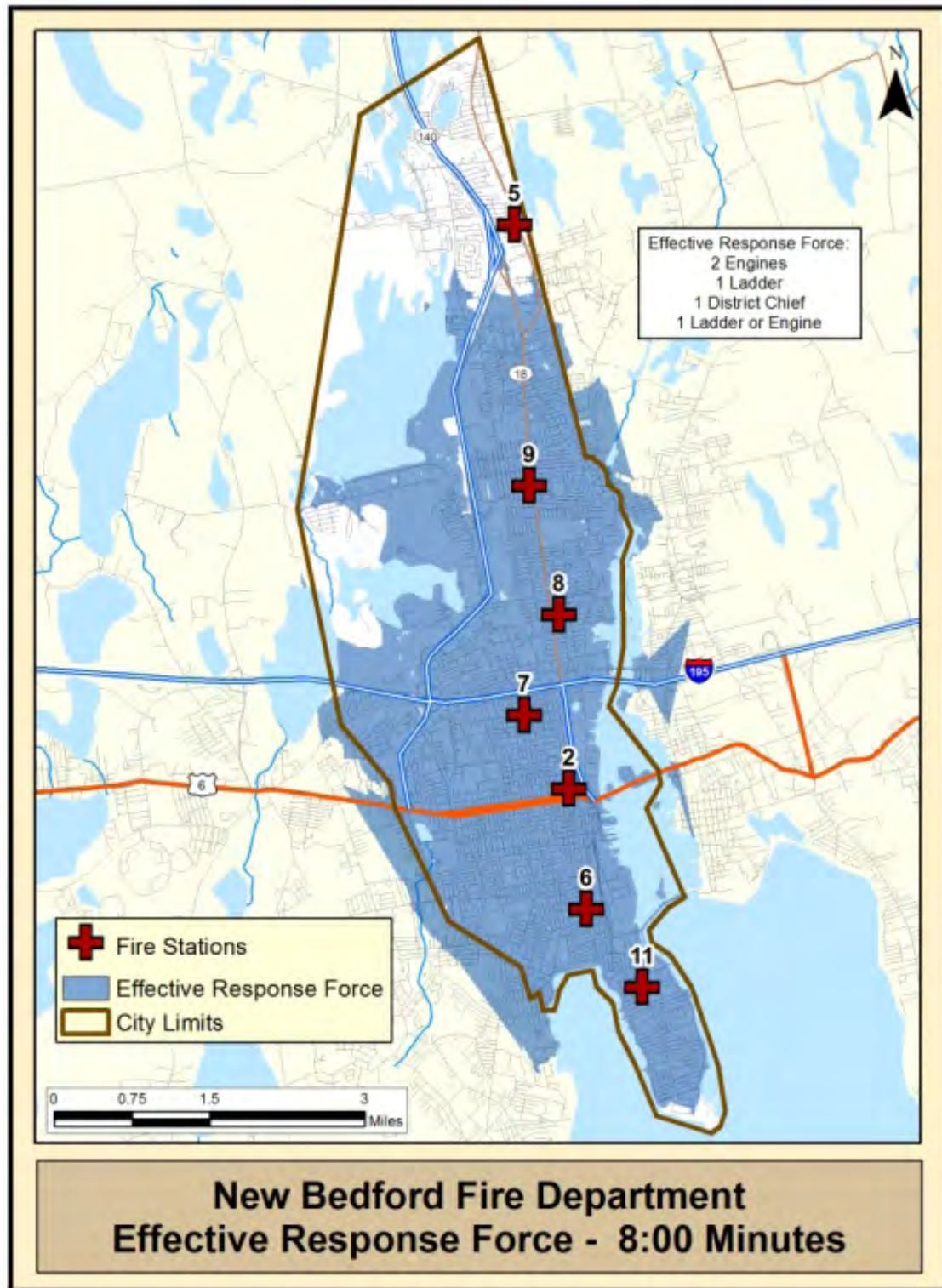


Effective fire control depends upon the arrival of a sufficient number of firefighters on the scene within an adequate amount of time to have a positive impact. These factors vary from fire to fire. Figure 6 depicts New Bedford's coverage from existing fire station locations for the arrival of an effective fire fighting force composed of a minimum of 16 firefighters.

The city is well-covered with the exception of the areas north of Fire Station 5 where firefighters coming from other stations experience long travel times.

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Figure 6 – Effective Response Force Coverage



11 – Recommendations

As consultants worked in New Bedford and as they studied data gathered during our visits, a number of recommendations were developed to increase the efficiency of the New Bedford Emergency Medical Service and the New Bedford Fire Department.

Some of these recommendations will improve the level of service provided and some may result in significant reductions in expenditures.

Recommendation 1: Administratively consolidate New Bedford EMS into the New Bedford Fire Department. Develop and implement a new organizational chart that outlines the concepts outlined below.

- EMS Director McGraw retains his title and reports to the Fire Chief. This position remains a Mayoral appointment.
- Stress the importance of leadership on the part of Director McGraw and Chief Gomes and the need for close attention to the culture change that is needed to make the consolidation successful.
- Combine payroll, logistics, and other functions.
- EMS Director McGraw continues responsibility for paramedic continuing education and quality control.
- On-duty Fire District Chiefs have scheduling, management, and command responsibilities for on-duty firefighters and paramedics.
- EMS paramedics continue to staff ambulances and firefighters and fire officers continue to staff fire apparatus.
- Assure proper and appropriate facilities for EMS members in Fire Department facilities where ambulances are assigned.
- Involve fire and EMS department membership in a decision to retain the name of the New Bedford Fire Department or modify the name to reflect the department's new combined mission.
- Assure that EMS and fire utilize compatible equipment, standardized treatment protocols, and documentation procedures for patient treatment.
- Modify the deployment model to dispatch appropriate resources to EMS incidents.

New Bedford currently operates a standalone fire department and a standalone EMS department; however both agencies play a role in delivery of pre-hospital emergency

medical care. Although paramedics and firefighters work well together on the street, currently there is little to no management-level coordination between the two agencies when it comes to providing these services. There is also a lack of joint training or operating standards.

Both agencies have a lack of support personnel. NBEMS has no on-duty operational supervisors and only administrative supervision and support during weekday working hours. Fire personnel are currently trained to the first responder level and have minimal medical equipment which limits the amount of patient care and intervention that can be delivered prior to NBEMS arrival.

While consultants accompanied NBFD members during ride along opportunities it was observed that there is very little coordinated communication between NBEMS and NBFD while responding to or prior to arrival of NBEMS. Communications difficulties are in part due to the fact that even though the two agencies respond to the same incident with the same objective of providing patient care, they operate on different radio channels and utilize different dispatchers.

New Bedford should administratively consolidate NBEMS into the NBFD with NBEMS Director McGraw retaining his title and retaining responsibility for EMS operations. Chief Gomes would be responsible for the operations of the entire combined department and ensure that all non-EMS and EMS standards are met and followed.

Support functions for both agencies can be consolidated and assigned to current support personnel from both agencies, and with a reduction in duplication of activities an increased capacity in support, appropriate service levels should be attainable.

NBEMS personnel should staff EMS units at their current certification levels and NBFD personnel should staff fire suppression units with the objective of increasing firefighters' certification level to that of EMT basic. The increase to EMT level for firefighters should allow for more in service availability of ambulances due to proper triaging and potential treatment allowing for either a non-emergent response or cancellation of the ambulance. A consolidated deployment model should also result in reduced call volume for fire and EMS personnel by eliminating unnecessary redundancy in unit response.

Certification of firefighters as EMT's and administrative consolidation of NBEMS and NBFD may raise collective bargaining agreement issues. These issues should be addressed in the interest of the customer – the residents of New Bedford.

Consultants do not envision the complete consolidation of the emergency medical service delivery system any time in the near or mid-term. A complete consolidation would incorporate firefighters staffing ambulances. We recommend that paramedics continue to staff ambulances and firefighter and fire officers staff fire apparatus.

It will be essential that Chief Gomes and Director McGraw provide strong leadership in adopting the EMS mission into the NBFD. Both executives need to ensure a culture in which all employees are treated with respect. It must be established and enforced that the EMS director is the authority in regards to EMS operations and his/ her direction must be followed. Unless local conditions change, we do not recommend transitioning NBEMS members to service as firefighters unless they enter the NBFD through the regular hiring process. Likewise, we do not envision NBFD members transitioning to full-time EMS jobs. This should calm fears that were expressed by paramedics and firefighters related to a merger.

Operationally clear rules and guidelines will need to be established in regards to individual's roles and responsibilities. For example, a determination needs to be made in advance on how patient care and overall scene responsibilities will be allocated on an emergency scene.

Successful implementation will rely on strong leadership and a consistent approach and Director McGraw and Chief Gomes should be strong and public advocates of the change. The Director and the Fire Chief also need to make expectations clear on the principle that everyone works together in a respectful and productive atmosphere.

Benefits of the consolidation include a higher level of coordination between paramedics and firefighters on the scene of an emergency – thus improving patient care and outcomes. An additional benefit will be the provision of on-duty management supervision for paramedics. District Chiefs have the capacity to assume the responsibility for staffing and other management functions that are currently performed by Director McGraw and his Deputy Director.

We recommend an intense training component for District Chiefs that includes ride-along time with NBEMS so that the chiefs can effectively undertake management of paramedics and have an understanding of the roles, responsibilities, and challenges faced by paramedics.

With integration of the EMS and Fire departments, the deployment model currently used to assign response units to emergency incidents should be modified. When the consolidation is complete and additional training is provided to firefighters, the deployment system can be made more efficient. The response to incidents can be tailored to fit the information received from the 9-1-1 caller. Fire engines and ladder trucks staffed with firefighters trained as EMT's can respond to some EMS incidents without the initial dispatch of an ambulance. If they arrive on the scene and an ambulance or paramedic-level service is needed, they can request assistance on a common radio channel.

When the system is consolidated, paramedics who arrive first on the scene of an emergency and find that assistance from firefighters is not needed can cancel the response of firefighters. Likewise, firefighters who arrive first and find a minor emergency can cancel the response of the ambulance.

In a consolidated system, paramedics and firefighters will work under a blended set of procedures and utilize compatible equipment to improve service to their customers.

The integration of these two departments will take time but with proper leadership from Director McGraw and Chief Gomes, the systems can be combined to reduce cost, reduce duplication of services, and provide a higher level of service to New Bedford residents and visitors.

Recommendation 2 - Relocate the Fire Alarm Signal Room to the Police Department Dispatch Center.

- Fire Department employees continue to report through the Fire chain of command.
- Fire dispatchers gradually take responsibility for EMS call taking and dispatch services.
- Consider “civilianizing” part of the fire and medical dispatch duties to reduce costs and provide for retention of experienced employees in dispatch operations. Maintain an on-duty uniformed Fire presence in the dispatch center.
- Provide Emergency Medical Dispatcher (EMD) training to the personnel conducting EMS and fire dispatch operations.
- Stress the importance of leadership on the part of the Fire Chief and the Police Chief.

The NBFD currently operates the Fire Alarm Signal Room at Fire Station 2. The Fire Alarm Signal Room is staffed with a minimum of two uniformed operators and is staffed twenty-four hours a day. A uniformed Fire Lieutenant (Communications Lieutenant) is assigned to work days (40 hour work week) in the Fire Alarm Signal Room. Both the Operators and Communications Lieutenant are represented in the Collective Bargaining Agreement (CBA). The Fire Alarm Operators work a 10/14 schedule.

The New Bedford Fire Department Fire Alarm Signal Room should be functionally consolidated into the New Bedford Police Department Communications Center.

This functional consolidation would benefit the citizens served in the community of New Bedford by controlling costs and implementing a “one-stop-shop” for community public safety dispatching services. Improved efficiency and effectiveness of emergency call-taking (9-1-1 answering point) and fire and EMS dispatching would be realized.

A uniformed fire department employee should be located in the New Bedford Police Department dispatch center 24-hours a day to ensure efficiency and effectiveness of fire

and EMS dispatching services. The benefits of a uniformed presence in the dispatch center have been recognized in many communities for the perspective that can be brought to the operation by an experienced firefighter.

A minimum of two dedicated fire and EMS dispatchers should be staffed based on the current and anticipated call volume. The initial staffing may include uniformed fire department members and, through attrition, some of these positions could be filled by civilian dispatchers.

We recommend that all EMS and fire dispatchers meet the requirements of NFPA 1061 *Professional Qualifications for Public Safety Telecommunications Personnel*.

The current New Bedford Police Department Communications Center located at the Police Department Headquarters, has two existing dispatch work stations/consoles available for two fire department dispatchers. In conversations with the Chief of Police, we found that he is supportive of consolidating fire department dispatching services into his facility.

As the consolidation occurs, issues such as how to integrate the fire alarm box system and upgrades to the computer aided dispatch system and station alerting will have to be addressed.

This change will require leadership and cooperation between Police Chief Provencher and Fire Chief Gomes. As issues arise that may derail the consolidation, a commitment to completing the move on the part of both chiefs will be instrumental to its success.

Recommendation 3 - Assess the impact of the 4th part-time ambulance on service delivery. If appropriate, continue the operation of Medic 4 on a peak-time basis. Consider staffing a 5th ambulance for peak demand.

- Charge private ambulance companies operating 911 services in New Bedford a franchise fee for the privilege of providing service and billing for emergency medical services in the City of New Bedford.

In reviewing historical data provided by the third party billing provider – Comstar – the average transport in New Bedford results in revenue of \$380. The collection rate (after insurance write-downs) is very high at more than 95%.

Until July 2014, the city ran three full-time ALS ambulances. On July 1, 2014, a part-time ALS ambulance was added. It is staffed from 8:00 am to midnight, Monday through Friday, but the department did not have adequate staffing until mid-December 2014 to fully operate for those hours. For the first nine months of the 2014-2015 fiscal year, that ambulance ran 1,661 transports, which is equivalent to more than \$630,000 in revenue. If it had been fully staffed for the first six months of the fiscal year, revenue would have been even higher.

According to data provided by Comstar, NBEMS set a record for the number of transports per month at 1,042 transports in October of 2014, and more than 1,000 transports for three of the last five months of 2014. Some of this increased transport activity is likely the result of the more regular in-service times for Medic 4.

We could not get hard data on the number of New Bedford transports conducted by private ambulance providers, but NBEMS Director McGraw believes the number averages between 160-190 per month. At \$380 per transport this is between \$725,000 and \$865,000 annually in lost revenue.

Based on current pay rates, it would cost about \$265,000 (salaries at step 3, pension, FICA, health insurance, and 640 hours of overtime to account for absences) to staff another part-time ambulance for 80 hours per week with four full-time paramedics. Even if a second part-time ambulance is only able to add 100 transports per month, the new revenue will be more than \$450,000 per year.

Additional costs of implementation will be the lease/purchase cost of another ambulance, plus its maintenance, and fuel. As long as these costs are less than \$185,000, the city will more than break even in addition to providing more reliable emergency medical services to its residents.

New Bedford may also consider charging a franchise or utility fee to private ambulance companies that provide service in New Bedford. These companies would not be offering their services in New Bedford unless there was money to be made. This fee could partially reimburse New Bedford for dispatch and administrative costs associated with the operation of the private ambulances.

Recommendation 4 – Provide additional training and equipment to New Bedford firefighters to allow them to provide EMS first responder services with a plan to provide Basic Life Support (BLS) level service by firefighters.

- Consider hiring firefighters with Emergency Medical Technician - Basic (EMT-B) certification.
- Provide EMT-B training and continuing education on-duty
- Allow firefighters and fire officers to provide a higher level of emergency medical services.
- Institute a treatment, documentation, and billing system that is used by NBEMS and NBFD. Current system is fragmented or absent.
- As firefighters provide a higher level of EMS, triage incidents and adjust response protocols to allow firefighters to act as first responders and dispatch ambulances as needed.

Over 70 percent of NBFD responses are for medical emergencies, yet firefighters are only trained to the Emergency First Responder (EFR) level. This is the lowest permissible medical training for emergency responders in the State of Massachusetts.

We recommend that the NBFD undertake a process to upgrade the training and capabilities of NBFD firefighter and fire officers to the next highest certification level, the EMT Basic level.

The most immediate path to accomplish this upgrade in service would be to utilize the skills and training of firefighters and officers who are already trained to the level of EMT-B or higher. In addition to these members, a small group of additional firefighters could be provided with EMT-B training. The goal would be to quickly assemble enough certified firefighters and fire officers to have one EMT-B on every on-duty engine company.

We anticipate that approximately 35 EMT-B certified firefighters and fire officers would be needed to accomplish this initial goal.

In the future, the NBFD can augment the number of EMT-B certified firefighters by making EMT-B certification and retention of that certification a condition of employment for new firefighters hired by the NBFD going forward. In addition, current NBFD firefighters and fire officers could be provided with instruction leading to certification as an EMT-B. This instruction could be conducted on-duty to alleviate any cost concerns.

Some additional equipment would be required to allow NBFD firefighters and fire officers to operate at the EMT-B level. NBFD fire apparatus is already equipped with the most expensive piece of EMT-B equipment, Automatic External Defibrillator (AED). The balance of the equipment needed is low cost and generally disposable.

The equipment for a “First –In Kit/Bag” is outlined in the *Massachusetts Office of Emergency Medical Services Administrative Requirement Manual - Basic Life Support Equipment List*.

Currently, NBEMS and NBFD responders do not share protocols for response to emergency medical incidents and firefighters do not initiate or complete documentation of their actions. As a part of the larger NBEMS/NBFD consolidation, protocols and procedures should be developed to assure a consistent approach to treatment and documentation.

As the EMS skill level of NBFD firefighters and fire officers rises to the EMT-B level, a number of efficiencies will be realized. The quality of patient care will rise with higher skilled responders providing this care, documentation will improve, and some lower acuity EMS incidents may be solely handled by firefighters without the need to dispatch an ambulance to the scene.

Recommendation 5 - Consider implementing alternate pathway management for low acuity emergency medical customers.

- Partner with local hospitals to divert non-emergent customers to other methods of service delivery

The NBEMS system is extremely challenged with a heavy call load. This is not unusual in communities with an above-average percent poverty rate.

An alternative to the addition of emergency response ambulances is to consider creating alternative pathway care models for low acuity patients who simply utilize the EMS system for transportation to the hospital.

The current trend seems to abandon the 50-year old model of “you call 9-1-1, we respond with an ambulance, and we transport you to an emergency room, regardless of your chief complaint.”

Emergency medical systems around the United States are starting to explore the possibilities of Mobile Integrated Healthcare (MIH). MIH is a developing alternative delivery care program that centers on three different components: (1) triaging of phone calls at the communications center to prevent low-acuity calls from getting an ambulance response (2) treat and release programs for people who have called 9-1-1. (typically this is done with a physician’s assistant or nurse practitioner who works in conjunction with a paramedic to respond to a 9-1-1 call to treat and release a patient), and (3) paramedics responding to homes for patients who have been discharged from the hospital with the goal of preventing readmission back to the hospital for the same chief complaint within 30 days.

New Bedford should examine a collaborative effort with St. Luke’s hospital to place a nurse in the communications center to screen out low acuity calls from the 9-1-1 system. The nurse, after determining an ambulance is not required, would make arrangements at a clinic, along with transportation the clinic for the patient’s needs. St. Luke’s should see value in this program since their emergency room is consistently overcrowded and the emergency room experiences frequent surges in demand. In other communities who have this type of model, the nurse in the communications center is funded through the local hospital since they see value with the program.

Recommendation 6 - Conduct a wage and benefit study for EMS employees. Seek methods to retain experienced paramedics.

Perform a wage and benefit study for the city’s paramedics to ensure that their pay is commensurate with competing employers in both the public and private sectors.

Starting pay for a New Bedford paramedic is \$16.39 per hour or just over \$34,000 annually. In addition, top pay is just under \$52,000. This is a stressful career, with significant liability, that requires a considerable amount of continuing education. Anecdotally, we were told on a number of occasions that new paramedics don’t stay with New Bedford long, but leave for other higher paying positions after getting significant experience in New Bedford. As it is very expensive to recruit, hire, and train new employees, it would be in New Bedford’s interest to reduce the churn in paramedics.

Before conducting a study, it will be important to understand whether there is the political will to implement changes that may be recommended. Otherwise, employees will be even more frustrated than if the study had never been conducted. Since this function brings in twice the revenue of its annual costs, it seems reasonable and equitable to ensure the pay and benefits are commensurate with the career and competing jurisdictions.

Recommendation 7 - Eliminate the use of street fire boxes and radio boxes. Transition fire alarm monitoring to certified fire alarm monitoring services.

The New Bedford Municipal Fire Signal Alarm system is an antiquated and outdated system that requires significant resources to maintain. Retaining this system compels the NBFD to maintain street boxes and a citywide wired communications system. The alarm system provides a very limited public service that is prone to constant failure and false alarms. The modern 9-1-1 system, private fire alarm monitoring systems, and the abundant use of cellular phone service render this “telegraph technology” system ineffective and costly.

The New Bedford Code of Ordinances currently requires that private fire alarm systems must connect into the municipal system. (*Chapter Six Buildings and Other Structures, Article VI. – Auxiliary Connected Fire Alarm System; Section 6-104 Municipal System Connection (C), (D), (G).*)

We recommend that the NBFD and the City take the steps necessary to amend the appropriate portions of *Article VI, Section 6-104 of the New Bedford Ordinances* that requires private businesses to acquire a “master fire alarm box” and “connect to the municipal system”. The new language should require that the system connect to a “third party” monitoring company providing notification to the NBFD upon alarm. The costs should be borne by the business. We recommend a requirement to utilize a fire alarm monitoring service that is certified or listed by Underwriters Laboratories to assure reliability.

We also recommend that the NBFD and the City begin a process to dismantle the existing public “fire call” box system. The process should include a public notification process to inform the community the boxes will be removed.

We recommend that the NBFD and the City eliminate the use of radio boxes for commercial businesses and other occupancies in the City and move toward monitored alarm systems by a third party contractor as described above. City buildings equipped with radio boxes may continue to be served by these systems in the near term but transition to third party monitoring for City facilities is also recommended.

Recommendation 8 – Revenue Enhancements

There may be the opportunity for New Bedford to realize revenue from operations that are currently conducted, at no additional cost to the City.

To the extent that private ambulance service support is needed in New Bedford, the City should seek agreements with the companies that are allowed to provide service in New Bedford to share in the revenue from ambulance transports that are generated for these companies in New Bedford.

We recommend that the City examine the possibility of an agreement with the Town of Dartmouth for services provided to the Dartmouth portion of the New Bedford Business Park. The Dartmouth portion of the park is provided with primary fire and EMS coverage by New Bedford and there should be some monetary recognition of this arrangement on the part of Dartmouth. As stated earlier in this report, New Bedford receives limited mutual aid service from Dartmouth and we are unaware of any analogous situation where Dartmouth provides primary service to an area of New Bedford.

Recommendation 9 - Supplement the support staff of the New Bedford Fire and EMS Department in training and other areas.

- Assign functional support tasks to the District Chiefs that can be conducted while on-duty.

The NBFD operates with limited support staff for the overhead management team in the organization. Current staff includes the Chief of Department, Deputy Chief, District Chief of Support Services, Training Captain, Training Firefighter, Communications Lieutenant, Marine Safety Captain, Administration Clerk, Permitting Clerk, and Payroll Clerk.

Providing support staff – an Administrative Assistant – to the senior staff allows for the Chief of Department, Deputy Chief, and District Chief of Support Services to focus on the strategic needs of the NBFD, including planning (strategic planning) for the future of potential EMS transport services, apparatus needs and replacement schedule, information technology advances, and the changing demographic needs of the community.

An Administrative Assistant should be provided to support the senior staff of the organization (Chief of Department, Deputy Chief, and District Chief of Support Services). This position could manage the support functions of budget, grants administration, assist with human resources, information technology (IT), policy and procedures management. Currently, many of these functions are performed by the Fire Chief, leaving limited time for proactive management of the organization.

The District Chief of Support Services should function in global administrative services role for the organization and less as a grants administrator. An option would be to rename Support Services to Administration. The direct management functions of

budget and finance, grants administration, human resources, planning, information technology (IT) and the Fire Prevention Bureau could be managed by the District Chief of Administration. Ultimately, the NBFD should move to a two Deputy Chief system including Operations and Administration by converting the District Chief of Support Services position to a Deputy Chief.

The NBFD has ten District Chiefs within the organization. One District Chief manages the Support Services functions and is assigned to work days. The nine other District Chiefs are field services (operational) chiefs assigned to a shift. Currently two are assigned on each of the four platoons, and one is a floater filling in for vacations, leave, injury/illness, etc.

The role of the District Chief is to lead the members assigned and manage the fire stations under their command. Unit 1 (North District Chief) currently manages Stations 5, 9, 8, and 7 and Unit 2 (South District Chief) manages Stations 2, 6, and 11.

District Chief current functional responsibilities include responding to alarms/incidents per the established policies and procedures, run cards, and response plans per the standard of cover. These include all types of fires, alarms, technical rescues, elevator emergencies, hazardous materials incidents, marine/port emergencies, aircraft emergencies, resetting of street boxes, and multi-casualty incidents (MCIs).

Any significant and complex emergency requires a response from a district chief to ensure incident management (command and control), incident communications, implementation of the appropriate strategy and tactics, monitoring member safety and health, and a continual, on-going size-up process.

The District Chiefs ensure staffing is completed and appropriate positions are filled with qualified members on each company. A “staffing box” is assigned to a fire station for a period of time and that station manages the staffing process, including filling vacancies due to vacation, sick leave, etc. and makes contact with the member(s) who are next up for overtime, etc.

Due to the limited support staff within the NBFD organization, authority to manage programs should be delegated to individual District Chiefs to ensure member safety and health, training and preparedness, and high service delivery to the citizens served by the NBFD. Each District Chief should be given an area of responsibility such as field training, technical rescue, hazardous materials, facilities maintenance, fleet services, incident reporting, community relations, and public education programs.

Recommendation 10 - Develop a vehicle replacement program that assures a reliable EMS and fire fleet for emergency operations.

Fire Apparatus

The New Bedford Fire Department currently operates an inventory of 11 engine apparatus, 4 ladder apparatus, and an Airport Rescue Fire Fighting (ARFF) vehicle. The department also operates a fleet of smaller vehicles, trailers, and other motorized equipment as well as watercraft.

There is no nationally accepted standard for the replacement or service life of fire apparatus. One large urban fire department requires apparatus to be replaced at less than ten years of front line service and some apparatus in low activity volunteer fire departments can last for decades. The NBFD is an active urban fire department in a community where apparatus is required to make many starts, stops, and turns – all of which take a toll on the condition of the vehicle.

This review is focused on major fire fighting apparatus since these vehicles make up the bulk of the cost of a fire department fleet. In the past two years, two new engine apparatus have been purchased and a replacement ladder truck is currently under construction.

Although the cost of these vehicles is high, the eventual replacement of fire apparatus should be viewed as an operational cost for the NBFD. Again, due to cost, it is important to spread the replacement of these vehicles over a projected lifespan for each vehicle and avoid purchasing these vehicles in groups – a group purchase now is a major outlay of funding and that same major outlay will come around again in the future. It is better to purchase a smaller number of vehicles on a more regular basis than to purchase a larger group of apparatus less frequently.

The following purchasing plan is recommended based on a 15 year life for an engine or ladder in front line or primary service and not more than five years as a reserve apparatus (used in the place of front line apparatus in the case of mechanical failure, maintenance, or damage). The plan is subject to modification depending on the condition of individual vehicles, damage that a vehicle may incur, and the eventual deployment model utilized by the NBFD.

2016 – Replace Engine 5
2017 – Replace Engine 9
2018 – Replace Airport 9
2019 – Replace Engine 6
2020 – Replace Engine 11
2021 – Replace Ladder 4
2022 – No apparatus purchase recommended
2023 – Replace Ladder 1
2024 – Replace Engine 8
2025 - No apparatus purchase recommended

Table 17 – Recommended Fire Apparatus Replacement Plan

Current Assignment	Model Year	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Engine 1	2014	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
Engine 5	1994	Primary	Reserve	Reserve	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose
Engine 6	2003	Primary	Primary	Primary	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve	Dispose
Engine 7	2014	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
Engine 8	2008	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Reserve	Reserve
Engine 9	2001	Primary	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve	Dispose	Dispose	Dispose
Engine 11	2005	Primary	Primary	Primary	Primary	Reserve	Reserve	Reserve	Reserve	Reserve	Reserve
Ladder 1	2008	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Reserve	Reserve	Reserve
Ladder 3	2000	Reserve	Reserve	Reserve	Reserve	Reserve	Dispose	Dispose	Dispose	Dispose	Dispose
Ladder 4	2005	Primary	Primary	Primary	Primary	Primary	Reserve	Reserve	Reserve	Dispose	Dispose
New Ladder	2015	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary	Primary
Airport 9	1991	Primary	Primary	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose
Reserve Engine 12	2000	Reserve	Reserve	Reserve	Reserve	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose
Reserve Engine 17	1999	Reserve	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose
Reserve Engine 21	1989	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose
Reserve Engine 27	1989	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose
Reserve Quint 5	1996	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose	Dispose

Ambulances

NBEMS operates a fleet of six ambulance vehicles, two of which were placed in service in 2015. Ambulance vehicle replacement is more dependent upon the number of miles that have been traveled by a particular vehicle. Again, there is no nationally accepted standard for ambulance vehicle replacement.

With the level of activity for NBEMS, we recommend the replacement of one ambulance per year giving each ambulance a total service life of six years in front line and reserve service.

New Bedford has implemented an ambulance replacement program to replace all ambulances on a rolling basis every three years. This program should adequately address the need for ambulance replacement and provide a reliable ambulance fleet.

Recommendation 11 – Planning

- **Develop a master plan for the combined fire and EMS Department to implement, as adopted, the recommendations of this report and plot a path forward for the Department.**
- **Develop a master plan to rehabilitate fire stations to bring them into compliance with NFPA 1500 and local code requirements.**

Neither the NBFD nor NBEMS has a strategic plan to guide operations and management. We recommend, especially in light of our previous recommendation to administratively consolidate the two departments, that a strategic plan be developed. The term of the plan should be relatively short, perhaps 18 months to two years, because of the initial uncertainty of the consolidation.

This report includes an extensive operational review of all NBEMS and NBFD facilities. These facilities are old and deferred maintenance in many of them has created a situation where extensive and expensive projects will be needed to bring them to an acceptable level of occupancy for buildings that are staffed on a constant basis.

New Bedford Fire Department – Fire and EMS Facility Physical Evaluations

A review and physical assessment of New Bedford Fire and Emergency Medical Service facilities was conducted on Monday June 20, 2015. The intent of this review was to provide a third party neutral evaluation of the buildings, their structural integrity, general condition, level of upkeep and maintenance, and to what extent they comply with building codes and NFPA firefighter safety standards..

The review was conducted by James Zwerg, a registered architect with significant experience in the management of fire department and emergency medical service facilities. This review was not an engineering review of these facilities.

All NBFD fire stations and the NBEMS facility are considered architecturally “historic”. The oldest fire station opened in 1882 and the newest fire station opened in 1955. The level of detail, ornamentation, and quality of construction found in each station make these buildings difficult to evaluate purely on a cost comparison basis. Therefore, these evaluations are based on current trends in maintenance and construction costs relative to the square footage of building area. Due to the relatively small and historic nature of New Bedford and the lack of developable land, no property costs were included in this report.

NFPA 1500, Standard on Fire Department Occupational Safety and Health Program, 2013 edition, sets some minimal requirements for fire stations in Chapter 9 of the standard. NBFD fire stations do not generally comply with the requirements of the standard.

Specifically, NFPA 1500 requires, in part:

- Fire stations must meet the requirements of all local health, safety, building, and fire codes. We did not see any evidence that NBFD fire stations had undergone any recent formal inspections.
- Fire stations must be equipped with facilities for disinfection and cleaning of EMS supplies. No such facilities were found.
- The installation of smoke detectors and carbon monoxide detectors in prescribed areas of the fire station. We found smoke alarms installed in every fire station but the systems had not been inspected and it appeared in some cases that building modifications had rendered installed alarms ineffective. We did not note the presence of carbon monoxide alarms.
- The prevention of exposure to firefighters from vehicle exhaust emissions. While every NBFD fire station was equipped with exhaust extraction systems, there was very little in the way of barriers between the apparatus storage area and other fire station living areas.
- Specific safety requirements for fire poles. Fire poles in NBFD fire stations have been deactivated and removed.

The following cost parameters were used in this assessment:

- New commercial construction in the Boston region of the U.S - \$200 per sq. ft.
- Large scale renovations in the Boston region of the U.S - \$100 per sq. ft.
- Abatement of hazardous building materials (removal only) \$25 per sq. ft.

Note that the vertical wall surfaces and roof areas must be included in the area take-off and total square footages can exceed four to five times that of the floor plan. For a complete renovation, buildings of this age would likely require complete abatement (removal) of plaster, piping, insulation, and roof materials resulting in a complete “gutting” of the building. These costs, coupled with the renovation (replacement material) costs would likely exceed \$300 per sq. ft.

A summary of the facility review is presented below. A more detailed report is provided as a separate document.

Fire Station 2 – 868 Pleasant Street

Opened in 1917, this station serves as the main fire station and administration building with all NBFD divisions and sections housed within. This 3 story structure is approximately 23,000 sq. ft. and consists of granite foundations, a cast iron structural frame imbedded in multi-wythe red brick masonry. No significant additions or alterations have been made to this building. The current building is not in compliance with any codes or NFPA firefighter safety standards. No obvious signs of maintenance or repairs being performed were observed and the overall condition is worn and deteriorating.

Immediate repairs to the exterior are recommended to stop the moisture damage being caused to the interior surfaces. This work would require tuck pointing mortar joints, replacing damaged individual brick, and applying a penetrating sealer to all exterior materials. The exterior is approximately 20,000 sq. ft. and would cost approximately \$1.00 per sq. ft. In addition, we recommend an immediate assessment of the serviceability and efficacy of the smoke and carbon monoxide detection systems installed in the fire station and the completion of appropriate repairs, if necessary.

Minor renovations would include prepping and repainting all walls and ceilings, repairing and refinishing floors, updating plumbing and electrical fixtures, and making minor repairs throughout with minimal remediation of hazardous materials. This scope would cost approximately \$75 per sq. ft. $\times 23,000 = \$1.7$ million, not including costs to relocate staff and crews during renovations.

Major renovations would require the complete gutting of the interior and abatement of hazardous materials leaving nothing but the structural shell. This scope would cost in excess of \$300 per sq. ft. $\times 23,000 = \$6.9$ million not including the costs to relocate staff and crews to temporary arrangements.

A new 4 bay fire station, with an efficient floor plan of approximately 15,000 to 20,000 sq. ft. $\times \$200$ per sq. ft. = \$3 to \$4 million. Staff and crews are not affected by this type of work and once the new facility is occupied the old building can be sold or repurposed benefiting the City.



Fire Station 5 – 3675 Acushnet Avenue

Opened in 1955, this fire station serves the far north portion of New Bedford and its first due area is bisected by a major arterial roadway. This 1 story structure is approximately 5,716 sq. ft. and consists of concrete foundations and multi-wythe red brick masonry walls. No significant additions or alterations have been made to this building. The current building is not in compliance with any codes or NFPA firefighter safety standards. No obvious signs of maintenance or repairs being performed were observed and the overall condition is worn and deteriorating.



Immediate repairs to the exterior are recommended to stop the moisture damage being caused to the interior surfaces. This work would require tuck pointing mortar joints, replacing damaged individual brick, and applying a penetrating sealer to all exterior materials. The exterior is approximately 3,000 sq. ft. and would cost approximately \$1.00 per sq. ft. In addition, we recommend an immediate assessment of the serviceability and efficacy of the smoke and carbon monoxide detection systems installed in the fire station and the completion of appropriate repairs, if necessary.

Minor renovations would include prepping and repainting all walls and ceilings, repairing and refinishing floors, updating plumbing and electrical fixtures, and making minor repairs throughout with minimal remediation of hazardous materials. This scope would cost approximately \$75 per sq. ft. x 5,716 = \$430,000, not including costs to relocate crews during renovations.

Major renovations would require the complete gutting of the interior and abatement of hazardous materials leaving nothing but the structural shell. This scope would cost in excess of \$300 per sq. ft. x 5,716 = \$1.7 million not including the costs to relocate crews to temporary arrangements.

A new 2 bay fire station, with an efficient floor plan of approximately 7,500 sq. ft. x \$200 per sq. ft. \$1.5 million. Crews are not affected by this type of work and once the new facility is occupied the old building can be sold or repurposed benefiting the City.

Fire Station 6 – 151 Purchase Street

Opened in 1882, this fire station serves the South Central portion of New Bedford and its first due area is primarily dense residential, single and multiple family row housing. This 2 story structure is approximately 9,000 sq. ft. and consists of granite foundations and multi-wythe red brick masonry walls. This square footage includes a relatively new apparatus bay for the ladder truck.

The current building is not in compliance with any codes or NFPA firefighter safety standards. No obvious signs of maintenance or repairs being performed were observed and the overall condition is worn and deteriorating.



Immediate repairs to the exterior are recommended to stop the moisture damage being caused to the interior surfaces. This work would require tuck pointing mortar joints, replacing damaged individual brick, and applying a penetrating sealer to all exterior materials. The exterior is approximately 9,000 sq. ft. and would cost approximately \$1.00 per sq. ft. In addition, we recommend an immediate assessment of the serviceability and efficacy of the smoke and carbon monoxide detection systems installed in the fire station and the completion of appropriate repairs, if necessary.

Minor renovations would include prepping and repainting all walls and ceilings, repairing and refinishing floors, updating plumbing and electrical fixtures and making minor repairs throughout with minimal remediation of hazardous materials. This scope would cost approximately \$75 per sq. ft. x 9,000 = \$675,000, not including costs to relocate crews during renovations.

Major renovations would require the complete gutting of the interior and abatement of hazardous materials leaving nothing but the structural shell. This scope would cost in excess of \$300 per sq. ft. x 9,000 = \$2.7 million not including the costs to relocate crews to temporary arrangements.

A new 3 bay fire station, with an efficient floor plan of approximately 10,000 sq. ft. x \$200 per sq. ft. = \$2 million. Crews are not affected by this type of work and once the new facility is occupied the old building can be sold or repurposed benefiting the City.

Fire Station 7 – 8 Durfee Street

Opened in 1889, this station is the second oldest of the six fire stations and serves the Central portion of New Bedford and its first due area is primarily dense residential, single and multiple family, and it is close to the interstate highway I-195. This 2 story structure is approximately 4,600 sq. ft. and consists of granite foundations and multi-wythe red brick masonry walls. NBFD recently completed a dorm remodeling project that built walls dividing the open dorm into individual private sleeping spaces. The current building is not in compliance with any codes or NFPA firefighter safety standards. No obvious signs of maintenance or repairs being performed were observed and the overall condition is worn and deteriorating.



Immediate repairs to the exterior are recommended to stop the moisture damage being caused to the interior surfaces. This work would require tuck pointing mortar joints, replacing damaged individual brick, and applying a penetrating sealer to all exterior materials. The exterior is approximately 6,000 sq. ft. and would cost approximately \$1.00 per sq. ft. In addition, we recommend an immediate assessment of the serviceability and efficacy of the smoke and carbon monoxide detection systems installed in the fire station and the completion of appropriate repairs, if necessary.

Minor renovations would include prepping and repainting all walls and ceilings, repairing and refinishing floors, updating plumbing and electrical fixtures and making minor repairs throughout with minimal remediation of hazardous materials. This scope would cost approximately \$75 per sq. ft. x 4,600 = \$345,000, not including costs to relocate crews during renovations.

Major renovations would require the complete gutting of the interior and abatement of hazardous materials leaving nothing but the structural shell. This scope would cost in excess of \$300 per sq. ft. x 4,600 = \$1.4 million not including the costs to relocate crews to temporary arrangements.

A new 2 bay fire station, with an efficient floor plan of approximately 7,500 sq. ft. x \$200 per sq. ft. = \$1.5 million. Crews are not affected by this type of work and once the new facility is occupied the old building can be sold or repurposed benefiting the City.

Fire Station 8 – 1599 Acushnet Avenue

Opened in 1893, this fire station serves the North Central portion of New Bedford and its first due area is primarily residential, single and multiple family, and light commercial. This 2 story structure is approximately 7,400 sq. ft. and consists of granite foundations and multiwythe red brick masonry walls. This square footage includes a relatively new apparatus bay for the ladder truck. The current building is not in compliance with any codes or NFPA firefighter safety standards. No obvious signs of maintenance or repairs being performed were observed and the overall condition is worn and deteriorating.



Immediate repairs to the exterior are recommended to stop the moisture damage being caused to the interior surfaces. This work would require tuck pointing mortar joints, replacing damaged individual brick, and applying a penetrating sealer to all exterior materials. The exterior is approximately 8,000 sq. ft. and would cost approximately \$1.00 per sq. ft. In addition, we recommend an immediate assessment of the serviceability and efficacy of the smoke and carbon monoxide detection systems installed in the fire station and the completion of appropriate repairs, if necessary.

Minor renovations would include prepping and repainting all walls and ceilings, repairing and refinishing floors, updating plumbing and electrical fixtures and making minor repairs throughout with minimal remediation of hazardous materials. This scope would cost approximately \$75 per sq. ft. x 7,400 = \$555,000, not including costs to relocate crews during renovations.

Major renovations would require the complete gutting of the interior and abatement of hazardous materials leaving nothing but the structural shell. This scope would cost in excess of \$300 per sq. ft. x 7,400 = \$2.2 million not including the costs to relocate crews to temporary arrangements.

A new 3 bay fire station, with an efficient floor plan of approximately 10,000 sq. ft. x \$200 per sq. ft. = \$2 million. Crews are not affected by this type of work and once the new facility is occupied the old building can be sold or repurposed benefiting the City.

Fire Station 9 – 799 Ashley Boulevard

Opened in 1934, this fire station is the second newest of the six fire stations and serves the North portion of New Bedford and its first due area is primarily residential, single family, and light commercial. It is on the main arterial Ashley Boulevard. This 2 story structure is approximately 5,700 sq. ft. and consists of granite foundations and multi-wythe red brick masonry walls. No significant additions or alterations have been made to this building. The current building is not in compliance with any codes or the NFPA firefighter safety standards. No obvious signs of maintenance or repairs being performed were observed and the overall condition is worn and deteriorating.



Immediate repairs to the exterior are recommended to stop the moisture damage being caused to the interior surfaces. This work would require tuck pointing mortar joints, replacing damaged individual brick, and applying a penetrating sealer to all exterior materials. The exterior is approximately 6,000 sq. ft. and would cost approximately \$1.00 per sq. ft. In addition, we recommend an immediate assessment of the serviceability and efficacy of the smoke and carbon monoxide detection systems installed in the fire station and the completion of appropriate repairs, if necessary.

Minor renovations would include prepping and repainting all walls and ceilings, repairing and refinishing floors, updating plumbing and electrical fixtures and making minor repairs throughout with minimal remediation of hazardous materials. This scope would cost approximately \$75 per sq. ft. x 5,700 = \$427,500, not including costs to relocate crews during renovations.

Major renovations would require the complete gutting of the interior and abatement of hazardous materials leaving nothing but the structural shell. This scope would cost in excess of \$300 per sq. ft. x 5,700 = \$1.7 million not including the costs to relocate crews to temporary arrangements.

A new 2 bay fire station, with an efficient floor plan of approximately 7,500 sq. ft. x \$200 per sq. ft. = \$1.5 million. Crews are not affected by this type of work and once the new facility is occupied the old building can be sold or repurposed benefiting the City.

Fire Station 11 – 754 Brock Avenue

Opened in 1907, this station is in the worst condition of the six fire stations and serves the South portion of New Bedford and its first due area is primarily middle to upper class residential, industrial, and its first due area is the peninsula to the South. This 2 story structure is approximately 5,400 sq. ft. and consists of granite foundations and multi-wythe red brick masonry walls. No significant additions or alterations have been made to this building. The current building is not in compliance with any codes or NFPA firefighter safety standards. Exterior masonry repairs were being performed as several bricks in the exterior façade have come loose and fallen out. The overall condition is worn and deteriorating.



Immediate repairs to the exterior are recommended to stop the moisture damage being caused to the interior surfaces. This work would require tuck pointing mortar joints, replacing damaged individual brick, and applying a penetrating sealer to all exterior materials. The exterior is approximately 6,000 sq. ft. and would cost approximately \$1.00 per sq. ft. In addition, we recommend an immediate assessment of the serviceability and efficacy of the smoke and carbon monoxide detection systems installed in the fire station and the completion of appropriate repairs, if necessary.

Minor renovations would include prepping and repainting all walls and ceilings, repairing and refinishing floors, updating plumbing and electrical fixtures and making minor repairs throughout with minimal remediation of hazardous materials. This scope would cost approximately \$75 per sq. ft. x 5,400 = \$405,000, not including costs to relocate crews during renovations.

Major renovations would require the complete gutting of the interior and abatement of hazardous materials leaving nothing but the structural shell. This scope would cost in excess of \$300 per sq. ft. x 5,400 = \$1.6 million not including the costs to relocate crews to temporary arrangements.

A new 2 bay fire station, with an efficient floor plan of approximately 7,500 sq. ft. x \$200 per sq. ft. = \$1.5 million. Crews are not affected by this type of work and once the new facility is occupied the old building can be sold or repurposed benefiting the City.

New Bedford Emergency Medical Service Building – 181 Hillman Street

Opened in 1931, this facility is located in central New Bedford and is in a shared 2 story building that was formerly a local high school. This 2 story structure consists of granite foundations and multi-wythe red brick masonry walls. The area used by NBEMS administrative offices occupies approximately 2000 sq. ft. No significant additions or alterations have been made to this building. The current building is not in compliance with any codes or responder safety codes published by NFPA. No obvious signs of maintenance or repairs being performed were observed and the overall condition is worn and deteriorating.



Immediate repairs to the exterior are recommended to stop the moisture damage being caused to the interior surfaces. This work would require tuck pointing mortar joints, replacing damaged individual brick, and applying a penetrating sealer to all exterior materials. Because the staff shares this building with other users and NBEMS is apparently not the owner, the area for repairs is estimated at approximately 6,000 sq. ft. and would cost approximately \$1.00 per sq. ft. In addition, we recommend an immediate assessment of the serviceability and efficacy of the smoke and carbon monoxide detection systems installed in areas where the EMS crew sleeps and the completion of appropriate repairs, if necessary.

Minor renovations would include prepping and repainting all walls and ceilings, repairing and refinishing floors, updating plumbing and electrical fixtures and making minor repairs throughout with minimal remediation of hazardous materials. This scope would cost approximately \$75 per sq. ft. x 2,000 = \$150,000, not including costs to relocate staff during renovations.

Major renovations would require the complete gutting of the interior and abatement of hazardous materials leaving nothing but the structural shell. This scope would cost in excess of \$300 per sq. ft. x 2,000 = \$600,000 not including the costs to relocate staff to temporary arrangements.

A new administrative space, with an efficient floor plan of approximately 2,500 sq. ft. x \$200 per sq. ft. = \$500,000. Staff is not affected by this type of work and once the new facility is occupied the old building can be sold or repurposed benefiting the City.

Table 18 - Summary of Projected Costs per Location

Location	Immediate Repairs	Minor Renovations	Major Renovations	New Construction
Station 2	\$20,000	\$1.7 Million	\$6.9 Million	\$3 to \$4 Million
Station 5	\$3,000	\$430,000	\$1.7 Million	\$1.5 Million
Station 6	\$9,000	\$675,000	\$2.7 Million	\$2 Million
Station 7	\$6,000	\$345,000	\$1.4 Million	\$1.5 Million
Station 8	\$8,000	\$555,000	\$2.2 Million	\$2 Million
Station 9	\$6,000	\$427,500	\$1.7 Million	\$1.5 Million
Station 11	\$6,000	\$405,000	\$1.6 Million	\$1.5 Million
EMS Admin	\$6,000	\$150,000	\$600,000	\$500,000

Recommendation 12 – NBFD Service Reductions

NBFD staffing levels have been supported by a series of Federal grants. The City has gradually assumed funding responsibility for a number of these positions and applied for a sustainment grant to fund some positions until mid-2018.

If it becomes fiscally necessary at some point to reduce the number of on-duty firefighter positions, and therefore a fire company, these changes should be accomplished in a planned manner. Any closure of a fire station or fire company reduces the level of fire department service for someone in the community. We recommend that any fire department emergency deployment changes be accomplished in a way that preserves compliance with nationally recognized standards for fire department services.

The changes in EMS training for firefighters and fire officers and the functional consolidation of NBEMS and NBFD will yield deployment efficiencies that will mitigate the impact of any NBFD resource reductions. The dispatch of NBFD fire and EMS resources in a more coordinated fashion will reduce duplication and eliminate the unnecessary response of emergency vehicles to some incidents. This impact will be further mitigated by improvements in communications between emergency units and dispatch efficiencies with the co-location of NBFD dispatchers into the NBPD facility.

Currently the NBFD operates seven engine companies, three ladder companies, and two District Chiefs on a 24/7 basis in order to provide fire and emergency services to residents of New Bedford. These resources are housed in seven fire stations. These stations are generally spaced about 1.5 miles apart for the most part meeting current ISO (Insurance Services Office) recommendations. In addition, the current

configuration of stations is well situated for meeting the NFPA 1710 response standards.

Given the current staffing and future fiscal challenges that may arise, principally if the SAFER sustainment grant was not approved, the NBFD and the City may need to look at a reduction in both its authorized strength and number of apparatus and or stations.

New Bedford is served by a dense network of fire stations to provide rapid response to emergencies. As mentioned previously in this report, the geographic shape of New Bedford and the absence of timely response from neighboring fire departments make New Bedford especially difficult to serve for fire services. Also as mentioned earlier in this report, New Bedford is a challenging community to serve for fire services due to its age, building construction characteristics, road network, and demographics.

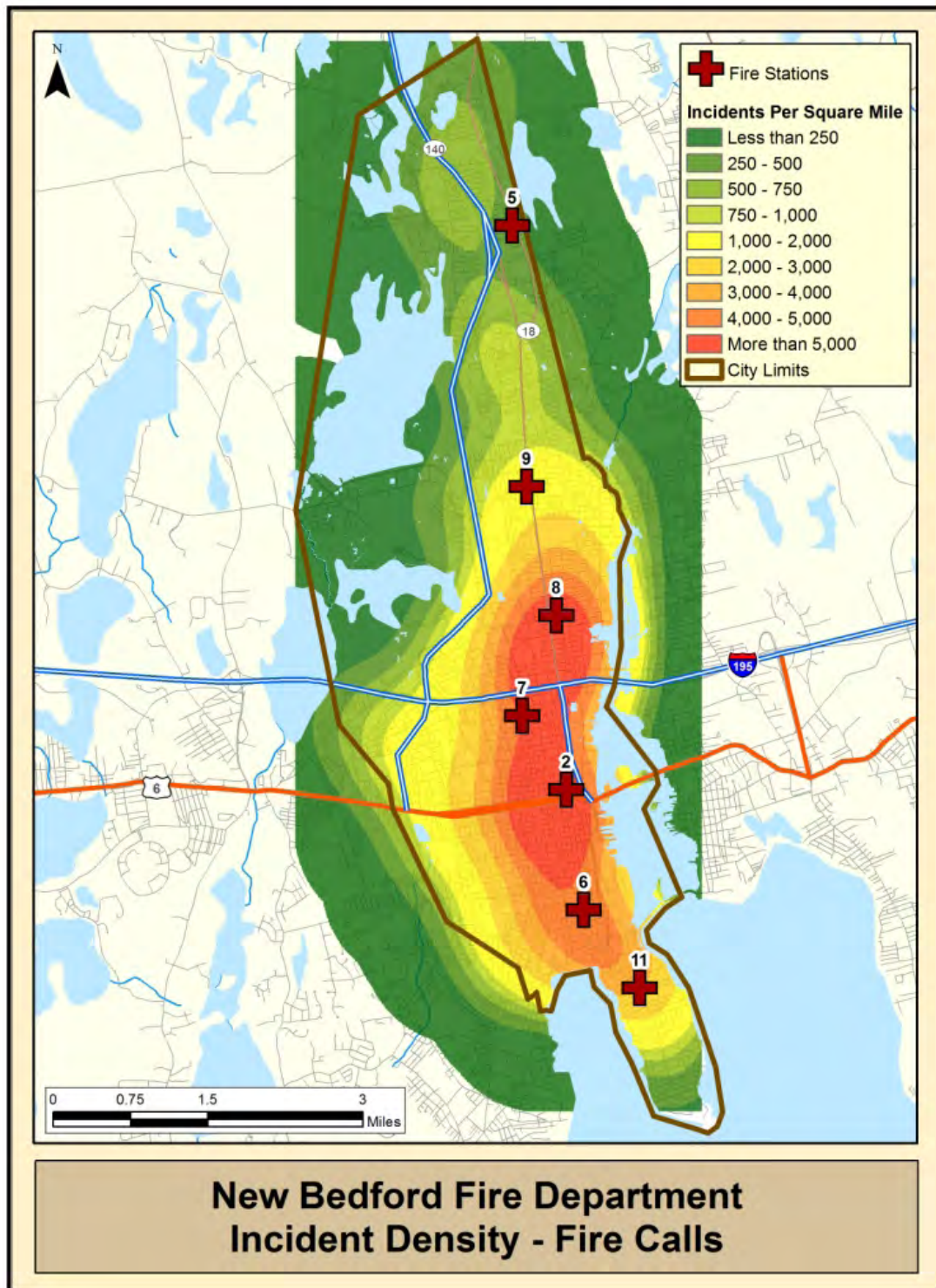
The highest density of fire stations, and the highest density of fire emergencies, is in the central core of the city.

New Bedford recently received a summary report on the most recent assessment of fire protection from the Insurance Services Office (ISO).

The Public Protection Classification (PPC™) program administered by ISO evaluates a community's public fire protection capability and assigns a protection-class rating from 1 to 10. Class 1 represents exemplary fire protection; Class 10 means that the area's fire-suppression program does not meet ISO's minimum criteria. There is a significant list of items that are evaluated to assign an ISO rating that includes the capability of the available water supply, call-taking and dispatching resources, response unit staffing, response capacity and coverage.

New Bedford received a PPC of Class 1 in the 2015 assessment. Any changes in NBFD staffing or deployment could have an impact on PPC classification. An estimation of the impact of any service reduction cannot be made until the full ISO report is released. Chief Gomes does not believe that a consolidation of two fire stations into one will impact the ISO classification.

Figure 7 – New Bedford Fire Incident Density



We examined a number of alternatives to achieve the type of savings that would be needed to reduce the size of the NBFD. The closure of an engine or ladder company would result in the elimination of 20 firefighter and fire officer positions, a savings of more than one million dollars per year.

In order to inform our recommendations, FACETS consultants conducted station visits, rides with District Chiefs, and personnel interviews with the firefighters and fire officers that provide service to the community. Consultants also reviewed the construction, occupancy, and hazards of the many neighborhoods that make up the City of New Bedford.

Consultants also reviewed GIS maps that were created, and NFPA and ISO standards were integrated into overlays and applied to existing station configurations as well as potential new station configurations. Coverage maps representing 4 minute response capabilities and call volume were created in order to look at current response capabilities and the effects of any modifications to the current alignment of stations.

Closure of Fire Station 2, Fire Station 5, or Fire Station 9

We did not examine the closure of Fire Station 2 (868 Pleasant Street) since this station contains a number of specialty units and the NBFD administrative offices.

We did not examine the closure of Fire Station 5 (3675 Acushnet Avenue) or Fire Station 9 (799 Ashley Boulevard) since the removal of either fire station from the response system would leave a large Northern or Western area of the City without acceptable fire protection coverage.

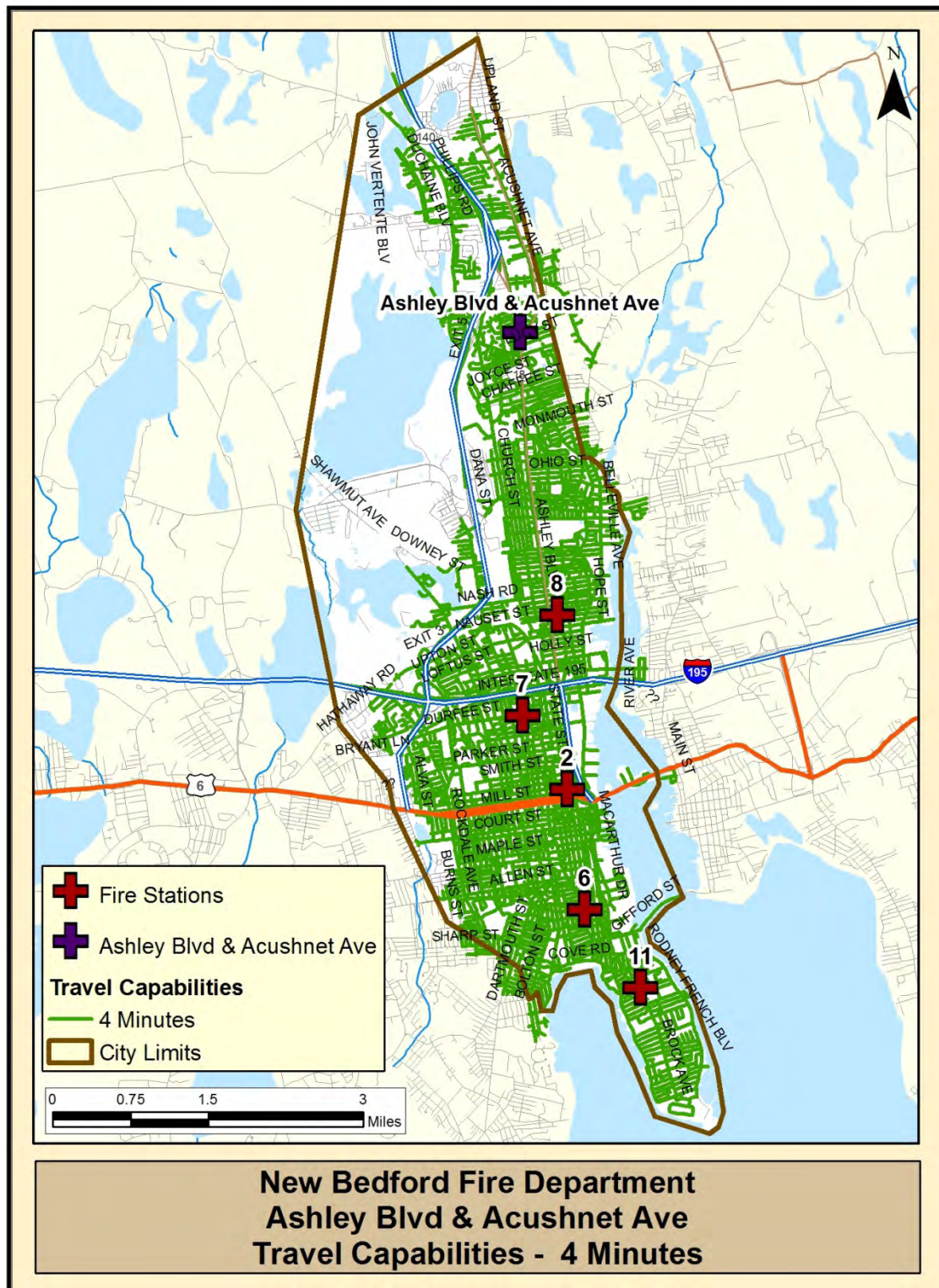
Consolidation of Fire Station 5 and Fire Station 9

The consolidation of Fire Station 5 and Fire Station 9 into a combined facility in the vicinity of Ashley Boulevard and Acushnet Avenue was considered. The Northern part of New Bedford, served primarily by Fire Station 5 has low emergency incident volume but long travel distances for responders. The West-central part of New Bedford, served primarily by Fire Station 9 has limited access due to the need to cross State Route 140.

The coverage provided by a combination fire station located near Ashley Boulevard and Acushnet Avenue is depicted in Figure 8. Note the lack of coverage for far Northern New Bedford and to the areas of New Bedford West of the current location of Fire Station 9.

Due to the lack of coverage generated by this consolidation, we do not recommend this alternative.

Figure 8 – Combination Fire Station – Fire Station 5 and Fire Station 9



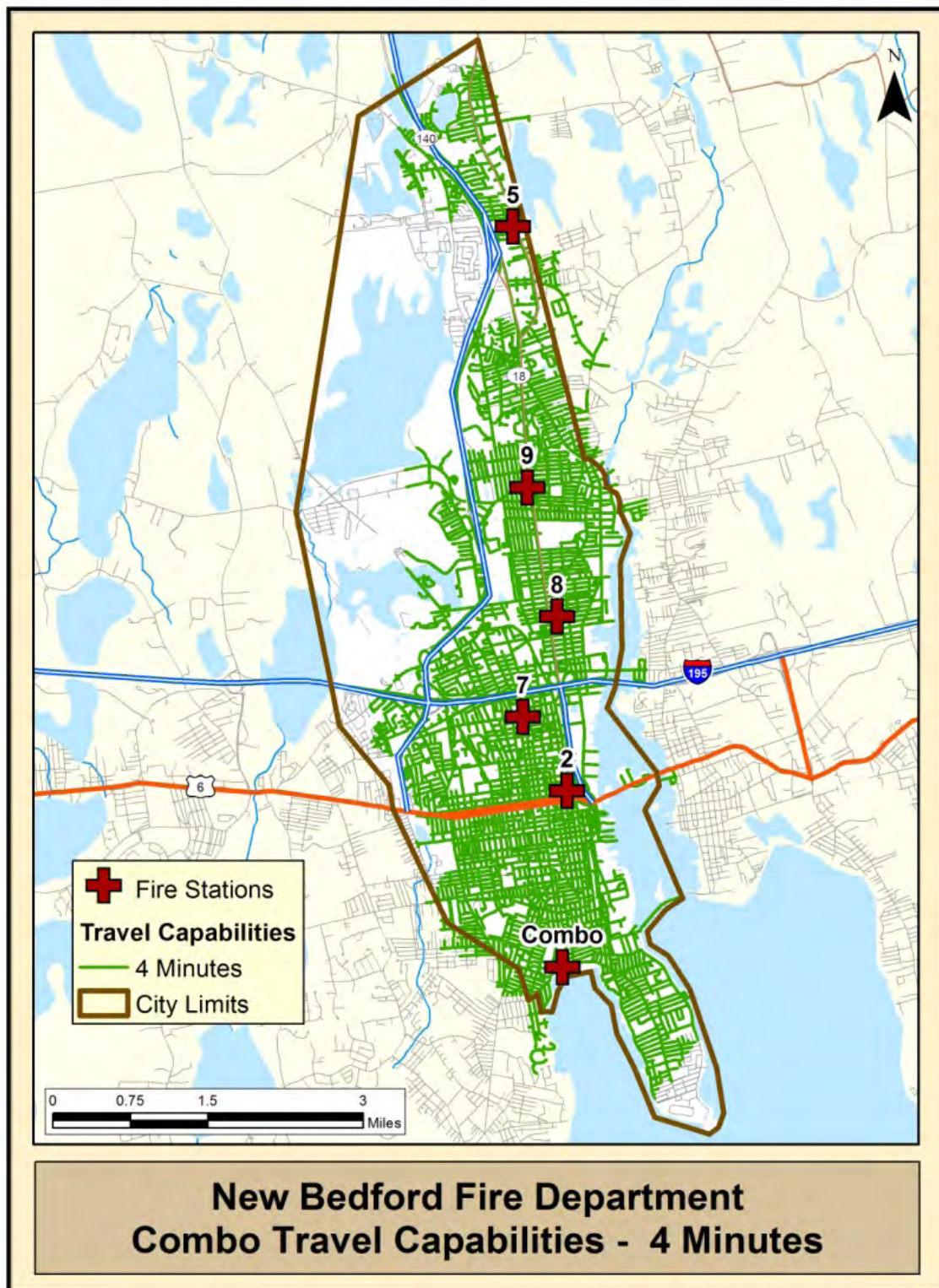
Consolidation of Fire Station 6 and Fire Station 11 – Cove Road

We considered a recommendation from Chief Gomes to consolidate Fire Station 6 (151 Purchase Street) and Fire Station 11 (754 Brock Avenue) into a combined facility in the former Shaw's grocery building in the area of 1339 Cove Road.

The consolidation of Fire Station 6 and Fire Station 11 would result in savings from the reduction of one engine company and eliminate the operational costs of the two stations. Potential revenue from the sale of the two stations could also be realized. The proposed location would also increase station spacing beyond acceptable limits to the southern end of the peninsula as well as increasing spacing from the combination station to Fire Station 2. The combination station would have travel times 4 minutes or less in the western part of New Bedford as well as into eastern Dartmouth. Travel times to the southern part of New Bedford would increase beyond 4 minutes.

We do not recommend this alternative due to the fact that response times to the Southern end of the city would rise and the combination station location would provide primary service coverage to areas that it does not serve in Dartmouth.

Figure 9 – Coverage with Combination Fire Station – Cove Road



Closure of Fire Station Six

The closure of station 6 alone would result in the need to relocate Ladder 3 which may be difficult to do in acceptable manner. The ladder apparatus is large and would not fit into either Fire Station 11 or Fire Station 7 without significant facility modifications. In addition, moving Ladder 3 would compromise ladder company coverage to the South and to the West of Fire Station 6.

If Engine 6 alone was closed and Ladder 3 remained in the fire station, the need to maintain the fire station itself would remain. In addition, the ladder apparatus assigned to Ladder 3 and most of the ladder apparatus in the NBFD do not have the capability to pump water. This sets up a scenario where Ladder 3 could arrive first on the scene of a fire incident without the capability to control the fire.

If Ladder 3 alone was closed and Engine 6 remained in the fire station, a significant coverage hole would exist for ladder company coverage in the Western and Southern parts of the city.

We do not recommend the closure of Fire Station 6, the closure of Ladder 3, or the closure of Engine 6.

Closure of Fire Station 8

The closure of Fire Station 8 (1599 Acushnet Avenue) would have many of the same challenges and opportunities as Fire Station 6 with increased spacing between stations and need to relocate the Ladder 4.

We do not recommend the closure of Fire Station 8, the closure of Ladder 4, or the closure of Engine 8.

Closure of Fire Station 7

The closure of Fire Station 7 (8 Durfee Street) would have the lowest impact on first response coverage of any alternative.

Engine 7 provides primary coverage to a very active part of New Bedford. Engine 7 responded to just over 2,400 incidents per year for the past three years. The closure of Engine 7 will have a negative impact on the availability of other companies. Calls in Engine 7's area will primarily be answered by Engine 1 and Engine 8.

Response times in the immediate vicinity of Station 7 will be longer, but still within those established in national standards. Response times in other areas of the city will increase due to the fact that units from other stations will be occupied with incidents in the area previously covered by Fire Station 7 but would still likely be within national standards. Engine 7 also provides primary fire protection for the New Bedford Regional

Airport and the removal of this unit from service would increase response times for airport emergencies.

The closure of Fire Station 7 would also include the elimination of operational and maintenance costs and revenue from the potential sale of the fire station and property.

The closure of Fire Station 7 will have negative impacts. The response time for the initial arriving engine company in the area of Fire Station 7 will rise. These negative impacts will be mitigated to some extent by efficiencies gained through the administrative consolidation of NBEMS and NBFD. Firefighters and paramedics working in a more coordinated manner will reduce the need for some duplicative responses to incidents and the service provided by Medic 4 will reduce the need for fire apparatus response to emergency medical incidents served by a private ambulance where the response of firefighters is not otherwise called for.

Based on the impact to the overall response system and the immediate possibility of implementation with minimal disruption to the NBFD and NBEMS systems, we recommend the closure of Fire Station 7 if the need arises and no funding is available to construct the combination fire station described in the following section.

Figure 10 – Travel Capabilities – 4 Minutes – Excluding Fire Station 7



Consolidation of Fire Station 6 and Fire Station 11 – Morton Court

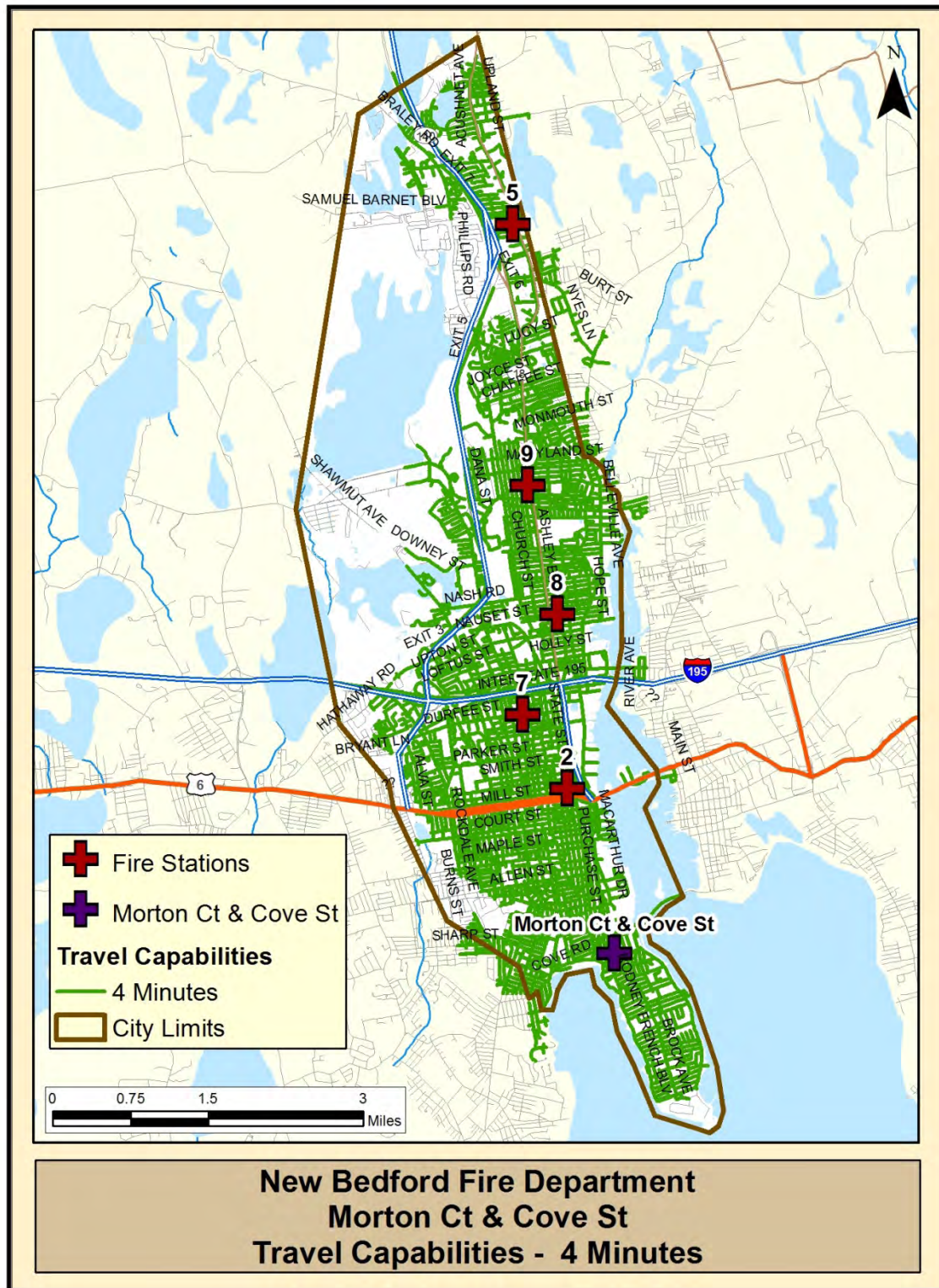
An alternate site has been proposed for a combination fire station near Morton Court and Cove Street. This location is East and slightly North of the initially proposed site.

This location provides adequate coverage to Southern New Bedford with limited impact on those living in the main body of the city and on the peninsula.

If funding is available to construct a new facility, this scenario is preferred over the closure of Fire Station 7. The combined facility could accommodate an engine and ladder company and the decommissioning of Engine 6 or Engine 11.

DRAFT

Figure 11 – Coverage with Combination Fire Station – Morton Court



Glossary of Terms

Advanced Life Support (ALS) - Emergency medical treatment beyond basic life support that provides for advanced airway management including intubation, advanced cardiac monitoring, defibrillation, establishment and maintenance of intravenous access, and drug therapy.

American Federation of State, County and Municipal Employees (AFSCME) - The largest trade union of public employees in the United States representing 1.3 million public sector employees. Members of New Bedford EMS are represented by AFSCME.

Aircraft Rescue Fire Fighting (ARFF) - The fire-fighting actions taken to rescue persons and to control or extinguish fire involving or adjacent to aircraft on the ground; known as Aircraft Crash Rescue.

Alarm Answering Time - The time interval that begins when the alarm is received at the communication center and ends when the alarm is acknowledged at the communication center.

Alarm Processing Time - The time interval from when the alarm is acknowledged at the communication center until response information begins to be transmitted via voice or electronic means to emergency response facilities (ERFs) and emergency response units (ERUs).

Alarm Transfer Time - The time interval from the receipt of the emergency alarm at the PSAP until the alarm is first received at the communication center.

Authority Having Jurisdiction (AHJ) - An organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, an installation, or a procedure.

Automatic Aid - A plan developed between two or more fire departments for immediate joint response on first alarms.

Basic Life Support (BLS) - A specific level of prehospital medical care provided by trained responders, focused on rapidly evaluating a patient's condition; maintaining a patient's airway, breathing, and circulation; controlling external bleeding; preventing shock; and preventing further injury or disability by immobilizing potential spinal or other bone fractures.

Chief Officer - A member whose responsibility is to assume command through a formalized transfer of command process and to allow company officers to directly supervise personnel assigned to them. Chief officers may be response chiefs such as Battalion or District Chiefs or staff chiefs such as Assistant, Division, Deputy or Fire Chiefs.

Commission of Fire Accreditation International (CFAI) - A group of professionals representing a cross-section of the fire service industry, including fire departments, city and county management, code councils, the U.S. Department of Defense, and the International Association of Fire Fighters. The CFAI provides a self-assessment and evaluation model that enables organizations to examine past, current, and future service levels and internal performance and compare them to industry best practices.

Company Officer - A supervisor of a crew/company of personnel. This is typically the rank of Captain or Lieutenant.

Computer Aided Dispatch (CAD) - A combination of hardware and software that provides data entry, makes resource recommendations, and notifies and tracks those resources before, during and after alarms, preserving records of those alarms and status changes for later analysis.

District Chief/Command Officer - A district chief is a command level “fire officer”. District Chiefs were once firefighters and fire officers and have been promoted to this level. They oversee management issues within the stations assigned to their district and coordinate training, inspections and other daily activities of the firefighters. District Chiefs respond to fire alarms and other emergencies. They serve as the Incident Commander (IC), coordinating all emergency response activities of the firefighters and other emergency responders on scene.

Effective Response Force (ERF) - The minimum amount of staffing and equipment that must reach a specific emergency zone location within a maximum prescribed total response time and is capable of initial fire suppression, EMS, and/or mitigation. The ERF is the result of the Critical tasking analysis conducted as part of a community risk assessment.

Emergency First Responder (EFR) - Functional provision of initial assessment (i.e., airway, breathing, and circulatory systems) and basic first-aid intervention, including CPR and automatic external defibrillator (AED) capability.

Emergency Medical Dispatchers (EMDs) – A professional telecommunicator, tasked with the gathering of information related to medical emergencies, the provision of assistance and instructions by voice, prior to the arrival of Emergency Medical Services, and the dispatching and support of EMS resources responding to an emergency call.

Emergency Medical Services (EMS) - The provision of treatment, such as first aid, cardiopulmonary resuscitation, basic life support, advanced life support, and other pre-hospital procedures including ambulance transportation, to patients.

Emergency Medical Technician – Basic (EMT-Basic) – Trained in basic emergency care skills, such as automatic external defibrillation, airway maintenance, CPR, spinal immobilization, bleeding control, and fracture management.

Emergency Medical Technician – Paramedic (EMT-Paramedic) –

Known as a “paramedic,” trained in advanced life support skills, such as assesses organ systems, IV catheters, administers emergency fluids/medications, noninvasive airway management, uses cardiac monitor/defibrillators, manages the emotionally disturbed, and obstetric emergencies.

Engine Company - Also referred to as a “pumper”. A fire "engine" is the most common vehicle in the fire service. Engines carry a crew of firefighters and have a pump that is used to pump water through fire hoses. Engines also have a water tank and hose for applying water, and carry small ground ladders, emergency medical equipment, and various tools. The role of the crew usually involves entering burning buildings with a hose line, applying water on the fire, and securing a continuous supply of water by hooking up to fire hydrants.

Environmental Systems Research Institute (ESRI) - An international supplier of Geographic Information System (GIS) software, web GIS, and geodatabase management applications.

Fire Prevention – Functions and principles designed to prevent or limit the size and severity of fire through the use of fire code compliance inspections, investigation of fires to determine the origin and cause, and public fire education and community risk reduction services.

Fire Signal Telegraph System - A Municipal Fire Telegraph system that dates back to the mid-19th century. The system is the Gamewell type telegraph and radio box system.

Geographic Information System (GIS) - System, typically computer, that allows users to visualize, question, analyze, and interpret data to understand relationships, patterns, and trends.

Hazardous Material - A substance that is capable of creating harm to people, the environment, or property due to its toxicity, chemical reactivity, decomposition, or corrosivity; is capable of explosion or detonation; or presents etiological hazards, whether used for its intended purpose or as a weapon of mass destruction (WMD) or for illicit lab purposes, environmental crimes, or industrial sabotage.

Incident Commander (IC) - The individual responsible for all incident activities, including the development of strategies and tactics and the ordering and the release of resources.

Incident Command System (ICS) - An organized system that defines the roles and responsibilities to be assumed by responders and the standard operating procedures to be used in the management and direction of emergency incidents and other functions.

Incident Safety Officer - A member of the command staff responsible for monitoring and assessing safety hazards or unsafe situations and for developing measures for ensuring personnel safety.

International Association of Fire Fighters (IAFF) – Labor organization representing more than 300,000 full-time professional fire fighters and paramedics in more than 3,100 affiliates.

Insurance Services Organization (ISO) - The Public Protection Classification (PPC™) program administered by ISO evaluates a community's public fire protection capability and assigns a protection-class rating from 1 to 10. Class 1 represents exemplary fire protection; Class 10 means that the area's fire-suppression program does not meet ISO's minimum criteria. There is a significant list of items that are evaluated to assign an ISO rating that includes the capability of the available water supply, call-taking and dispatching resources, response unit staffing, response capacity and coverage and many other factors that impact emergency fire response.

Ladder Company - Also referred to as a “hook and ladder” or sometimes simply as a “truck”. Ladder/Trucks carry a crew of firefighters and have a long “aerial ladder” (up to 100 ft. or more) and carry a large assortment of portable ladders and other tools. Ladder/Trucks usually do not carry any water or hose. Their roles initially include forcible entry, search and rescue, raising ground ladders, and the “aerial” ladder if needed, ventilation and overhaul activities.

Marine Company – A vehicle (marine vessel) for waterborne emergency response used for fire-fighting to prevent, control, or extinguish fire involved in or adjacent to a marine vessel and for rescue actions for occupants using normal and emergency routes for egress.

Marine Safety Officer – the position (Fire Captain) dedicated to addressing Port response issues. The duties of this position include administering all aspects of the marine response capability, including coordinating and administering the water based response training, ice rescue, water rescue, and fire turnout gear water survival training. The Marine Safety Officer also coordinates all oil spill response training and response including cost recovery.

Medic Unit - A vehicle used for out of hospital medical care and patient transport, which provides a driver's compartment; a patient compartment to accommodate an emergency medical services provider (EMSP) and one patient located on the primary cot so positioned that the primary patient can be given emergency care during transit; equipment and supplies for emergency care at the scene as well as during transport; safety, comfort, and avoidance of aggravation of the patient's injury or illness; two-way radio communication; and audible and visual traffic warning devices; also known as an “ambulance.”

Mobile Data Terminal (MDT) - is a computerized device used in emergency vehicles, to communicate with a central dispatch office. They may also display mapping and information relevant to the tasks and actions performed by the vehicle such as CAD drawings, diagrams and safety information. MDTs feature a screen on which to view information and a keyboard or keypad for entering information.

Mutual Aid - A written intergovernmental agreement between agencies and/or jurisdictions that they will assist one another on request by furnishing personnel, equipment, and/or expertise in a specified manner.

National Fire Incident Reporting System (NFIRS) - A reporting standard that fire departments use to uniformly report on the full range of their activities, from fire to emergency medical services (EMS) to equipment involved in the response.

National Fire Protection Association (NFPA) - Established in 1896, develops consensus standards regarding fire deployment, fire prevention, fire protection systems, research, training, building construction, and many other components of the fire service industry designed to minimize the possibility and effects of fire and other risks.

Public Safety Answering Point (PSAP) - A “call center” responsible for answering all emergency calls in a local jurisdiction whether the call is for a police, fire, or medical emergency. There is typically only one emergency telephone number for any of these services. In North America this number is typically “911”. Also known as a facility equipped and staffed to receive emergency and non-emergency calls requesting public safety services via telephone and other communication devices.

Risk Assessment - An assessment of the potential severity of a specific structure in relation to the fire agency’s ability to handle the types and severity of emergencies within that structure. Occupancy risk assessment often includes classifying these risks into categories.

Standard Operating Procedures (SOPs) - A written organizational directive that establishes or prescribes specific operational or administrative methods to be followed routinely for the performance of designated operations or actions.

Standards of Cover - Those written policies and procedures that establish the distribution and concentration of fixed and mobile resources of an organization.

Strategic Plan - A long-range planning document that defines the mission of the agency and broadly identifies how it will be accomplished, and that provides the framework for more detailed annual and operational plans; typically 18 months to 2 years but not more than 5 years.

Technical Rescue - Responses to various specialized emergencies (special operations) including rope rescue, confined space, structural collapse, machine extrication, and below ground rescues.

Telecommunication Operator - The individual tasked by a public safety agency as the first of the first responders whose primary responsibility is to receive, process, transmit, and/or dispatch emergency and non-emergency calls for law enforcement, fire, emergency medical, and other public safety services via telephone, radio, and other communication devices.

Total Response Time - The time interval from the receipt of the alarm at the primary PSAP to when the first emergency response unit is initiating action or intervening to control the incident.

Travel Time - The time interval that begins when a unit is en route to the emergency incident and ends when the unit arrives at the scene.

Turnout Time - The time interval that begins when the emergency response facilities (ERFs) and emergency response units (ERUs) notification process begins by either an audible alarm or visual annunciation or both and ends at the beginning point of travel time.

FACETS Team Members

Brief Biographies

Cathleen Gleason

Cathleen Gleason has almost 30 years municipal experience with the City of Phoenix, and retired in 2011 as the City's Budget and Research Director. In this position, she was responsible for an annual operating and capital budget of more than \$5 billion. In addition to her experience in the Budget and Research Department, Cathleen also worked for the Public Works and Fire Departments.

Cathleen's most significant accomplishment was guiding Phoenix through the worst financial crisis in its 125+ year history, including helping the City maintain its AAA investment grade rating even as revenues were plummeting, and working with labor and management to find solutions to a variety of substantial financial issues.

Cathleen served as a trustee on the City of Phoenix Employees' Retirement System (COPERS) Board for 17 years, and also volunteered her time as a Board director for Arizona Federal Credit Union for more than 18 years. Cathleen has a Bachelor of Science degree in Business and a Master's degree in Public Administration.

Gary Ludwig

Gary Ludwig currently serves as the Fire Chief of the Champaign, Illinois Fire Department. He is a well-known author, lecturer, and consultant who has successfully managed two large award-winning metropolitan fire-based EMS systems in St. Louis and Memphis. Gary has a total of 38 years of fire, rescue, and EMS experience and has been a paramedic for over 35 years.

Gary writes the monthly EMS column in Firehouse Magazine and the monthly leadership column in JEMS Magazine. He is Past Chair on the EMS Executive Board for the International Association of Fire Chiefs and is a member of the IAFF EMS Standing Committee. He has a Master's degree in Business and Management, and is a licensed paramedic. He is a frequent speaker at EMS and fire conferences nationally and internationally. He is the co-author on several books and is the author of *Blood, Sweat, Tears, and Prayers – Firefighting and EMS in Some of the Toughest Cities in America*. In 2014, he was awarded the James O. Page EMS Leadership Award.

Eric W. Morgenthaler

Eric currently serves as a Battalion Chief with the Castle Rock Fire and Rescue Department (CFAI Accredited Agency) in Castle Rock, Colorado. He has served over 20 years in the fire and emergency services as a career and volunteer member in the areas of operations, training and safety, support services, fire prevention, and community risk reduction. Additionally, he worked as a Fire Protection Engineer in the public and private sectors.

Chief Morgenthaler holds a B.S. degree in Fire Protection and Safety Engineering Technology from Oklahoma State University, a Master's degree in Public Administration (MPA) from the University of Colorado, and is a graduate of the Executive Fire Officer Program at the National Fire Academy. Morgenthaler holds the designation of Chief Fire Officer (CFO) through the Commission on Professional Credentialing/Center for Public Safety Excellence and is a Certified Fire Protection Specialist (CFPS) through the National Fire Protection Association. He previously served as a Hazardous Materials Specialist and Safety Officer with Colorado Task Force 1 (CO-TF1), FEMA US&R Team.

He manages the pre-planning program and standard operating guideline development in Castle Rock, and serves on the Standards of Cover (SOC), Strategic Planning, and Self Assessment Manual teams for the CFAI Accreditation process.

Timothy J. O'Toole

Timothy J. O'Toole has served the Cleveland Ohio Division of Fire for over thirty-four (34) years, beginning in 1981. During his career he has served in, or overseen, nearly every unit or bureau in this major urban fire division that employs 750 uniformed employees and responds to over 65,000 alarms annually.

His past assignments have included serving as the interim fire chief, executive officer, chief of staff, and he currently serves as a citywide commander of operations. In addition, shortly after September 11, 2001 Chief O'Toole was tapped by the Mayor to initiate the Mayor's Office of Emergency Preparedness which functions to this day as municipal Emergency Management Agency (EMA). Chief O'Toole brings his wealth of experience to the FACETS team in particular in dealing with emergency service delivery in difficult and challenging economic times.

Kevin M. Roche

Kevin Roche is a FACETS partner. He retired in 2014 as Assistant to the Fire Chief for the Phoenix Fire Department in Arizona. Kevin has over 30 years of fire service management and consulting experience. Kevin has experience as a leader and member of a number of management consulting projects in large fire departments. During his career in Phoenix, Kevin managed the fire department's planning, fire prevention, and logistics operations.

Kevin earned a B.S. degree in Fire Protection and Safety Engineering Technology from Oklahoma State University and a Master's degree in Political Science with a Certificate in Public Administration from the University of Florida.

Eric C. Tade

Fire Chief Eric C. Tade is a second generation firefighter who is currently in his 24th year of service with the Denver Fire Department. Fire Chief Tade was first appointed to position of Fire Chief by Mayor Hickenlooper in 2010 and was most recently reappointed by Mayor Michael Hancock in 2011.

Fire Chief Tade has risen through the ranks of the Denver Fire Department, serving in a variety of assignments which include the Operations Division, Dispatch, DIA/ARFF, and the Administration Division. Fire Chief Tade has previously served for ten years as the Director of Governmental Affairs for Local 858, helping to improve communications between the Union, the Department Administration, and elected officials. Fire Chief Tade also serves as a member of the National League of Cities' Public Safety and Crime Prevention Steering Committee.

Fire Chief Tade has a degree in Fire Science and has served as an instructor at various fire leadership conferences. Fire Chief Tade is a graduate of the International Association of Fire Chiefs' Officers Leadership Program. Fire Chief Tade has become a recognized leader in regionalism and intergovernmental agreements relating to fire protection services.

James Zwerg, AIA

Jim Zwerg is the Architect/Facility Manager in charge of repairs and renovations to existing Phoenix Fire Department facilities. He has been an Architectural Project Manager for over 25 years, specializing in fire station design and construction. He has been with the Phoenix Fire Department, and has been a Registered Architect for 15 years.

Jim's responsibilities include management of new fire station design and construction projects as well as the maintenance, repairs, and renovations of the existing 75 facilities currently in the Phoenix Fire Department. He coordinates the efforts of various support departments--primarily the Engineering and Public Works Departments. He manages the Facilities Section budgets, reviews drawings and specifications for new facilities, utilizes a diverse computerized data tracking system, and co-supervises a staff of 10 support personnel.

Jim is currently managing dozens of projects that range from routine maintenance repair requests to new design and construction meetings. He provides coordination and oversight for Public Works projects like ADA compliance, stand-by generator installations, parking lot repaving, A/C replacements, kitchen and restroom remodels.