Community Risk Assessment

and

Standards of Cover

Southborough, MA Fire Department

October 2020

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Introduction

This report serves as the Southborough Fire Department Integrated Risk Management Plan: "Standards of Cover" document. The Commission of Fire Accreditation International (CFAI) defines the process, known as "deployment analysis," as a written procedure which determines the distribution and concentration of fixed and mobile resources of an organization. The purpose for completing such a document is to assist the department in ensuring a safe and effective response force for fire suppression, emergency medical services (EMS), and specialty response situations. In this document are the facts, figures, measures and accountability for the delivery of emergency services by the Southborough Fire Department.

The creation of the department's Standards of Cover was a collaboration internally and with external stakeholders and required that a number of key areas be researched, studied, and evaluated. This report begins with an overview of both the community and the Southborough Fire Department (SFD). Following this overview, the report discusses areas such as risk assessment, critical task analysis, agency service level objectives, and distribution and concentration measures. The report provides documentation of reliability studies and historical performance through charts and graphs. The report concludes with recommendations to improve operations, performance, and reliability.

The department is committed to monitor and assess changes in the community, along with the changes in risks and future service demands in order for the department's Standards of Cover document to remain relevant and applicable.

Department Mission and Vision

Mission

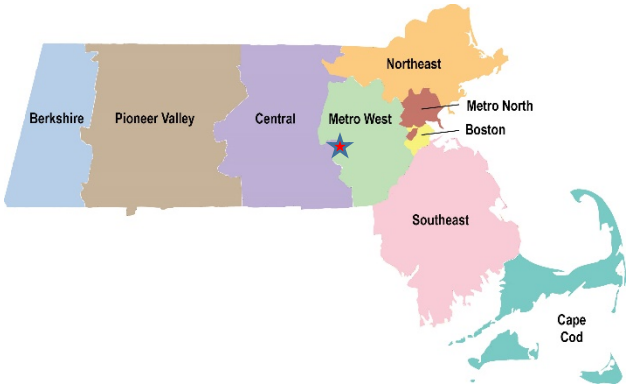
The mission of the Southborough Fire Department is to provide prompt and highly effective public safety and community risk-reduction services to our citizens, businesses and visitors.

Vision

The vision of the Southborough Fire Department is to be a recognized leader within our fire service district, responsive to the ever-changing needs of our members and our community. The Department will embrace new technologies and techniques, while at the same time celebrating our rich history and traditions. We will continue to focus on providing the highest level of customer services in a professional and caring manner.

Current Deployment

Community Overview



The Town of Southborough, Massachusetts is located in eastern Worcester County in the region known as Metro West. Southborough was first settled in 1660 and was officially incorporated in July 1727. The town was primarily a farming community until mills began to tap the small rivers that ran through the town. Today Southborough is predominately suburban residential with areas of commercial development consisting of mostly Business Offices and Light Manufacturing. The town is bordered by six communities: Framingham, Marlborough, Westborough, Northborough, Hopkinton, and Ashland. There are three major highways that pass through the community; Route 9 and the Massachusetts Turnpike run east/west and Interstate 495 that runs north/south. The town also has portions of two major CSX railroad freight lines; one that serves as the primary commuter rail between Worcester, MA and Boston, MA. In addition to public schools, the town is home to two private schools; the Fay School and St. Marks Academy, as well as the New England Center for Children; a private, nonprofit center for autism treatment, education and research with a global presence. The town is also home to the Sudbury Reservoir which serves as an emergency backup to the Boston metropolitan water supply.

Demographics

According to the most recent U.S. Census, the population of Southborough is 9,767. Regarding social and housing characteristics, most of the population is white at 86.1% and the estimated median house or condominium value in the Town in 2017 was $639,473. The median age of the residents is 41.7 years. The estimated median household income is $151,488 and the estimated per capita income is $69,751. The land area is 14.1 square miles and the population density is 690 people per square mile. Unemployment is at 2.1% compared to Massachusetts which is at 3.1% (pre-COVID-19). Southborough's top employers include Sheehan Health Group, Harvard Book Depository, St. Mark's School, Fay School, along with Southborough Medical Group with Reliant Medical Group and the New England Center for Children. Southborough is also home to hundreds of small to mid-size emerging businesses that provide jobs and represent the foundation of our economic diversity. Four NAICS (North American Industry Classification System) supersectors generate nearly 75% of Southborough's total employment; Education and Health employs 23% of our workers, Professional and Business Services employ 21%, Manufacturing employs 18%, and Trade, Transportation and Utilities employ 11%.

Town Governance

Southborough has an Open Town Meeting, Board of Selectmen, Town Administrator form of government. Under state statute, the Board of Selectmen are responsible and have the power to prepare the town meeting warrant or agenda, make appointments to town boards and offices, employ professional administrative staff and town counsel, and the authority to grant licenses and permits. Apart from the strict legal responsibilities, the Board of Selectmen sets policy and strategic direction, coordinates the activities of other boards, and hears appeals and resolves problems that have not been settled at lower levels. The Town Administrator, who serves as the chief administrative officer, oversees the administration of all town affairs and supervises town departments that are placed in his charge. Appointed by the Board of Selectmen for a three-year term, the Town Administrator implements and manages all goals, policies, programs and procedures that have been established by the Board. Additionally, the Town Administrator is responsible for budget preparation, annual license renewals, and negotiating labor contracts. The Town Administrator is the Chief Procurement Officer, and is also in charge of all Town property rental and use, except School property. The Town Administrator also recommends a number of department heads, employees, boards and committees to the Board for appointment. Such appointments by the Selectmen include the Fire Chief, Police Chief, and Superintendent of Streets (Public Works); each of whom serve a three-year term.

Southborough's Town Meeting is an open town meeting in which all registered voters may participate. Town Meeting is a deliberative assembly, conducted via a defined process, charged with considering a maximum number of questions of varying complexity. The three elements of authority at Town Meeting are a quorum of 100 registered voters or more, the Clerk and the Moderator. The Town Clerk is responsible for voter registration, certification of a quorum, setting up the hall and keeping the record of the proceedings. The Moderator presides at and regulates the proceedings, decides all questions of order, and makes declarations of all votes. It is the Moderator's responsibility to approve the distribution of materials, and persons wishing to do so must seek his permission. The Moderator appoints Tellers and alternates for the purpose of counting votes of the meeting.

Town Finance and Budget Process

The Town of Southborough's fiscal year begins on July 1 of each year and ends the following June 30.The annual budget is a continuous process with most activity beginning in September with the opening of the Warrant through Town Meeting, or late March. The process involves the Board of Selectmen, Advisory Committee, along with the Town Administrator, Finance Team, department heads, and board chairs. The Finance team coordinates and guides the budget process from departmental submittals, to revenue estimates, and then to final recommendations by the Board of Selectmen. The proposed budget, along with Town Reports and Warrant are then posted and available to the public. All are voted on at the Annual Town Meeting by Southborough's registered voters.

Department Overview

The Southborough Fire Department (SFD) is an all-hazards, full service fire department providing emergency response, risk-reduction, and inspection services to the Town of Southborough. The department is made up of 29 men and women, both full-time and part-time on-call. The department responds to an average of 1400 requests for services annually. The majority of emergency and community responses include medical emergencies, motor vehicle crashes, building and vehicle fires, smoke and hazardous conditions, fire alarm activations, and incidents related to weather.

Current Service Levels

The department operates 24-hours a day out of the Public Safety Building on Cordaville Road. The station houses the fire chief and administrative offices, the fire prevention officer, on-duty firefighters and paramedics, and all department apparatus and resources. The department's vehicle fleet is comprised of two fire engines, one tower-aerial-pumper, two advanced life support ambulances, one squad-forestry, and three response vehicles. An inflatable boat and multiple support trailers round out the available inventory.

Fire Apparatus and Crew Assignments

1 Officer and
2 Firefighters

Reserve –
Special Call

Reserve

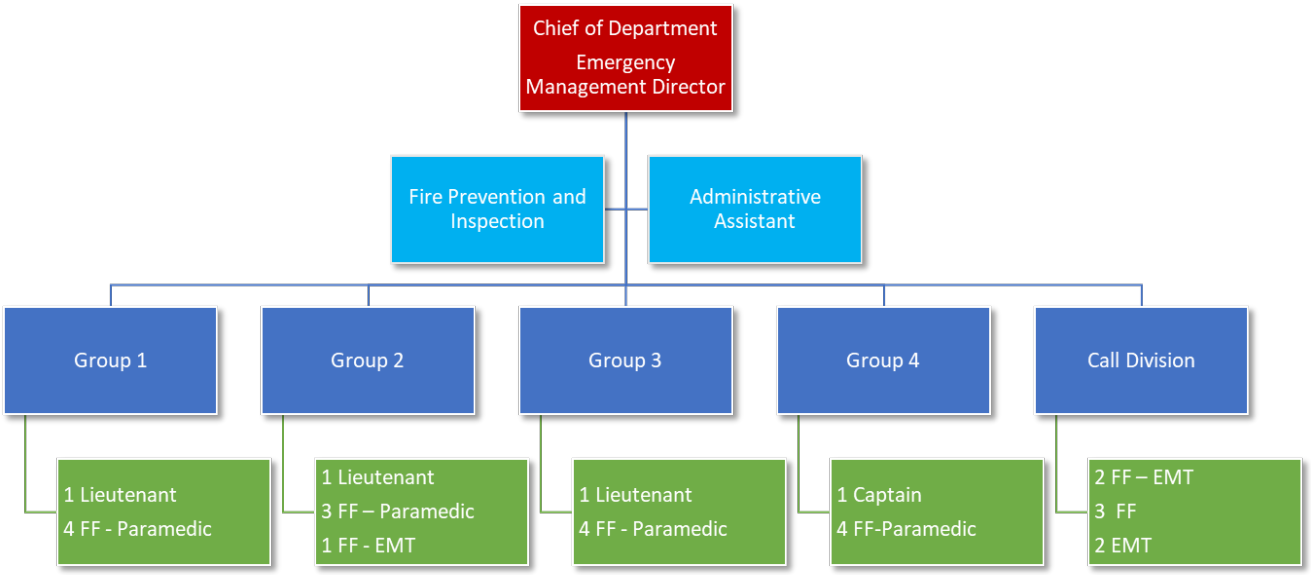
2 Firefighters

Reserve

The SFD utilizes a four platoon shift staffing model (Groups 1, 2, 3, and 4). Based on the department's apparatus staffing policy and collective bargaining agreements, the typical on-duty compliment of firefighters and officers at any one time is 5; the minimum staffing is currently 4.

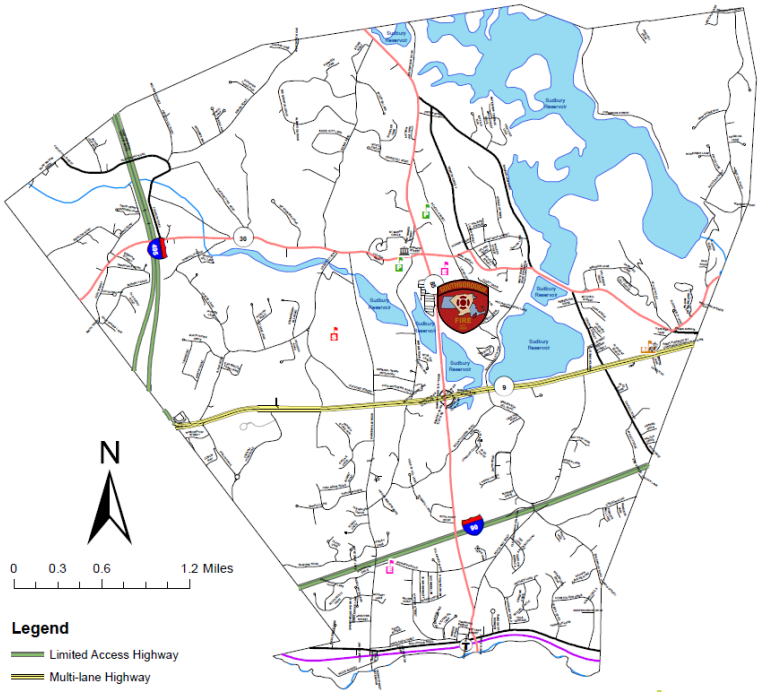
The workweek for full-time shift officers and firefighters is 42-hours, scheduled on a 24-hour basis, averaged over an 8 week cycle. Each group will work (1) 24-hour shift on, 24 hours off, (1) 24-hour shift on, and then 5 days off (Appendix 1). Call members (part-time) have no set work schedules, but supplement the duty shift during member recalls, work call-shifts, and cover for scheduled vacancies when full-time members are unavailable.

Organizational Chart



Facilities

The Public Safety Building serves as the primary and sole facility for both the Fire and Police Departments. The facility is located at 32 Cordaville Road and was built in 2019. The complex also houses the emergency communications center and a 49 seat training room. The training room also serves as the Town's emergency operation center (EOC) when needed. The location of the Public Safety Building is close to the geographic center of the town and has rapid access to Routes 85, 30, and 9.



Apparatus and Vehicles

A fire department's physical resources include fire apparatus and other capital expenditures that make up the property assets of an agency. These assets play an important role in maintaining an efficient, safe, and effective fire and emergency services department. The Commission on Fire Accreditation International (CFAI) has established benchmark criterion to measure apparatus and vehicle maintenance. The following are included performance indicators:

- Apparatus is located to accomplish the stated standards of response coverage and service level objectives.
- Apparatus types are appropriate for the functions served, i.e. operations, staff support services, specialized services and administration.
- There is a replacement schedule for apparatus and other equipment.
- There is a program in place for writing apparatus replacement specifications.
- The apparatus maintenance program has been established.
- Apparatus is maintained in accordance with manufacturer's recommendations, with activity conducted on a regular basis.
- Attention is given to the safety, health, and security aspects of equipment.

NFPA Apparatus Descriptions

Pumper: Fire apparatus with a permanently mounted fire pump of at least 750 gpm (3000 L/min) capacity, water tank, and hose body whose primary purpose is to combat structural and associated fires.

Engine 23

Aerial Fire Apparatus: A vehicle equipped with an aerial ladder, elevating platform, or water tower that is designed and equipped to support firefighting and rescue operations by positioning personnel, handling materials, providing continuous egress, or discharging water at positions elevated from the ground.

Tower 21

Quint: Fire apparatus with a permanently mounted fire pump, a water tank, a hose storage area, an aerial ladder or elevating platform with a permanently mounted waterway, and a complement of ground ladders.

Special Services Fire Apparatus: A multipurpose vehicle that primarily provides support services at emergency scenes.

Car 20

Ambulance: 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.

Ambulance 28

Current Apparatus and Rolling Stock

The SFD maintains a current fleet of 12 vehicles and trailers. The primary response apparatus and vehicles consist of two pumpers, one aerial-tower-pumper, two ambulances, and one squad-forestry. Additional units provide for 1) chief officer and prevention emergency response and travel, 2) equipment and personnel transport, 3) rapid water rescue capabilities, and 4) storage and transport of technical rescue and hazardous material response equipment. The apparatus and rolling stock replacement schedule utilized by the SFD was adopted in 2020. Ambulances are on an 8 year cycle, staff and support vehicles 10, pumpers and aerial at 20, trailers at 15, and special services apparatus on a 20 year cycle.

Unit ID	Type	Mfg	Make	Model	Year Mfg	Year Purch	Proj Repl
A28	Ambulance	Horton	Ford	F550	2018	2018	2026
A29	Ambulance	PL Custom	Ford	F450	2014	2014	2022
E22	Pumper	E-One	Typhoon	Qmax 150-21	2001	2002	2021
E23	Pumper	E-One	Typhoon	Emax	2016	2017	2036
SQ24	Squad	Fireone	Ford	F550	2015	2015	2030
T21	Tower	Smeal	Spartan	C-802-CC-100PL	2010	2010	2030
Car 27	SUV	-	Ford	Explorer	2013	2012	2022
Car 20	SUV	-	Ford	Expedition	2017	2016	2026
Car 30	Pick-up	-	Ford	F 350	2008	2008	2020
Haz-Mat	Trailer	-	Carry On	Utility	2009	2010	2025
Boat 1	RIB 12'	-	N. Atlantic Infl	DB380ALFB	2014	2015	2030
Boat 1 Trl	Trailer	-	Tide	Boat	2015	2015	2030

Apparatus and Vehicle Activity 2019-2020

Unit	avg. per month	median per month	yrly total proj.
Ambulance 28	50.9	37.0	610.9
Ambulance 29	42.2	45.0	506.2
Car 20	3.6	4.0	43.6
Car 27	3.0	3.0	36.0
Car 30	1.2	1.0	14.2
Engine 22	19.5	8.0	233.5
Engine 23	75.9	83.0	910.9
Tower 21	2.2	1.0	26.2

Response District

The Town of Southborough can be divided into four geographic areas by Route 85 (north - south) and Route 9 (east - west). Within and crossing these geographical sub-divisions are four smaller historical villages; 1) Downtown, 2) Cordaville, 3) Fayville, and 4) Southville. Based on the current single station model and with a relative equal mix of occupancy types and risks, the department maintains one town-wide response district. In-coming, single resource mutual aid, however, are identified and assigned by geographical area.

The department's alarm card (Appendix 2) is formatted according to the regional fire district's template. It provides one town-wide response district with two specific sub-districts; Off -Water and St. Marks School. Off -Water is the non-hydrant area of Pine Hill Road to Parmenter Road and includes a number of side roads and neighborhoods. It is estimated this geographic area is 2% of the town. In addition to the standard apparatus deployment, three water tenders (tankers) are automatically dispatched for confirmed or reported structure fires in this area. St. Marks School is a coeducational, Episcopal, preparatory school, located at 25 Marlborough Road. It is situated on 250 acres and contains multiple historic, educational, dormitory, sports and recreation, and place of assembly occupancies. An additional aerial apparatus is automatically dispatched to the campus for reported and confirmed structure fires.

Dispatch Criteria

Southborough Fire Department apparatus are assigned and dispatched to emergency requests through pre-determined criteria. Fire response dispatch criteria is based on National Fire Protection Association (NFPA) 1710, incident complexity, safety best practices, and National Incident Management System (NIMS) vehicle type / kind. Emergency Medical Services (EMS) response dispatch criteria is similarly based, with consideration of Massachusetts 105 CMR 170.00: Emergency Medical Services System and the National Academies of Emergency Dispatch (NAED) Medical Priority Dispatch System.

Initial Response and Deployment

- A single unit response is dispatched to an incident that is minor in intensity, magnitude or scope and may be effectively handled by one company. Most often this is a single engine.
- A two unit response is dispatched to an incident similar in nature to a single unit response, but where the presence of another unit is necessary due to the complexity of the situation. A two unit response is generally an engine and an ambulance.
- Supplemental single unit response is dispatched to the same location as a previous two unit response. Units responding are often staffed by a recall of off-duty and/or call SFD personnel or a mutual aid engine or ambulance.

Initial Response and Deployment continued

- A first alarm response is dispatched to an incident that would require multiple resources or equipment beyond the capabilities of a two unit response, such as a report of a structure fire. A two unit response may be upgraded to a first alarm response by an officer or dispatcher based upon additional information, their judgment of the nature, or relative seriousness of the incident or occupancy. Units responding include mutual aid.
- A multiple alarm is an alarm where additional assignments of companies, according to the department's alarm card, are dispatched to the same location as a previous first alarm response. A second alarm and each subsequent alarm assignment will include SFD as well as mutual aid units.

SFD Initial Response and Deployment

Risk Level	Response	Response Plan
Low Risk	Single Unit	1 Engine
Low Risk	Two Unit	1 Engine and 1 Ambulance
Moderate Risk	Two Unit	1 Engine and 1 Ambulance
Supplemental	Single Unit	1 Engine or 1 Ambulance
Signficant Risk	First Alarm	3 Engines, 2 Ladders, 1 Ambulance, 1 Chief Officer
Maximum Risk	2nd Alarm	Additional 3 Engines and 1 Ladder
Maximum Risk	Multiple Alarms	Additional 2 to 3 Units each alarm

Resiliency

Resiliency is the ability of a public safety response system to maintain daily operations during major incidents as well as training and other planned events without negative impact on response time performance. As defined by the Center for Public Safety Excellence (CPSE) in its Community Risk Assessment: Standards of Cover, 6th Edition, resiliency consists of three components:

- Resistance: The ability to deploy only the resources necessary to safely mitigate an incident
- Absorption: The ability to quickly add resources to the town at times of heavy call volume or incidents of high magnitude
- Restoration: The ability to quickly return resources to normalcy and units back in service.

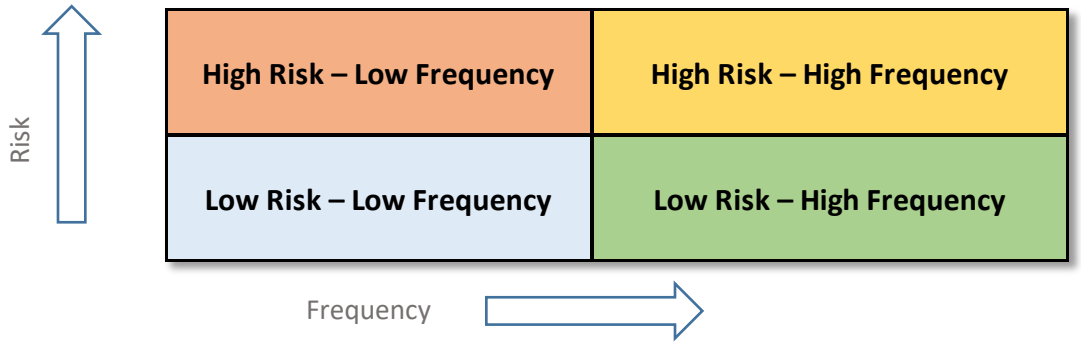
The SFD manages all elements of its system resiliency through a combination of response policies, procedures and the alarm card. Resistance is managed through the stepped use of resources, based on the information reported by the caller and then by oncoming companies. Depending on the information received about the level of risk for the particular hazard, the initial dispatch can be a single, two unit or first alarm. In cases of moderate to significant risk, the appropriate action may be to send a first alarm initially. Absorption is accomplished by upgrading responses as additional information is achieved, initially by the dispatcher and then by the incident commander. The system has the ability to add a full or partial recall of off duty and call members, or mutual aid units to increase the resources at the scene

or to strengthen areas of the jurisdiction that may be lacking resources. Reserve apparatus are kept in an operational state with at least minimum equipment for being placed in service if staffed as a reserve company. The timing and order of restoration is done at the discretion of the incident commander for resources at the scene and the senior fire officer or fire chief for town-wide coverage. For those units returned from the scene of an emergency the first priority is to put the crew, apparatus and equipment back in condition to resume an in-service status.

Risk Analysis

The SFD must assess risks based upon the potential frequency; probability of an incident occurring, and consequence; potential harm should an event occur. The relationships between probability and consequence and the community's adopted service level goals determine the needed concentration and distribution of resources. Distribution is the number of resources placed throughout the town. Concentration is the number of resources needed in a given area within the town. This varies depending on many factors including 1) the number of calls for service, 2) the risk factors of the area, and 3) the availability, reliability, and additional responding units' arrival time.

Risk Probability and Consequence Matrix



Low risk incidents often have minimal consequences when not all core tasks are accomplished. Conversely, higher risk incidents have a greater potential for significant consequences even when simple tasks are delayed, or worse, not completed. Frequency is an important factor related to risk; incidents performed often create experience, incidents performed infrequently or rarely have a higher probability of critical errors and untoward outcomes.

Hazard Analysis and Assessment

A critical element in the assessment of any emergency service delivery system is the ability to provide adequate resources for anticipated emergencies and events. Properly trained and equipped emergency resources must arrive, deploy, and mitigate the incident within specific time frames if successful emergency event strategies and tactical objectives are to be met. Each event, fire, rescue operation, major medical emergency, disaster response, or other situation will require varying and unique levels of

resources. The higher the risk, the more resources needed. For example, 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. Additionally, more resources are required to control fires in large, heavily loaded structures than in small buildings with limited contents.

Creating a level of service 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 the time frame as stated in the service level goals. The following are factors considered by the SFD when determining risk level:

- Estimated fire flow
- Proximity of a hydrant
- Occupancy height (number of stories)
- Access to the occupancy
- Occupant load
- Occupant mobility
- Fire protection and warning
- Probability of an event
- Economic and Environmental impacts
- Life Safety Impact

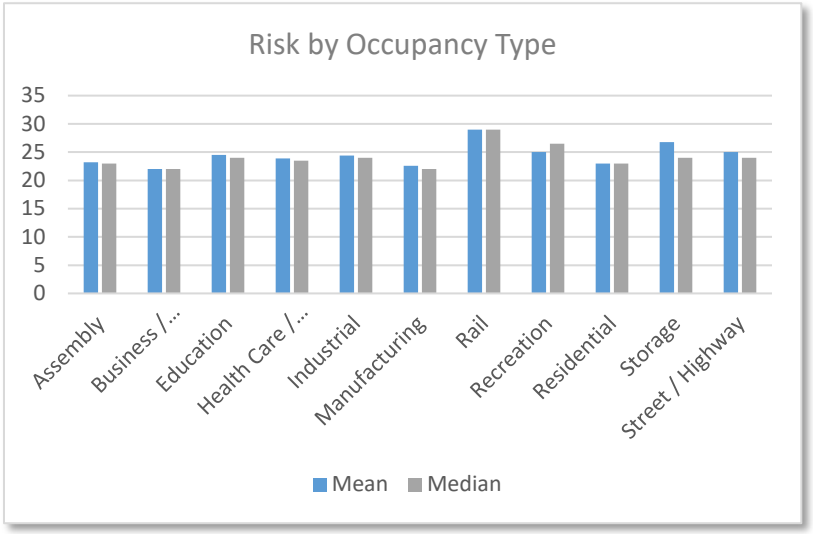
Occupancies Types

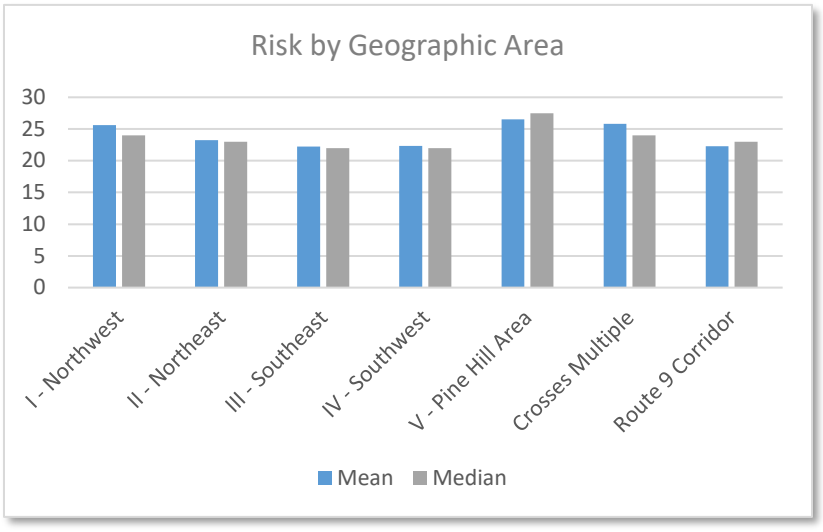
The following type of occupancies and locations are representative of the diverse risks in the Town:

- Assembly
- Education
- Health Care / Correctional
- Residential
- Business and Mercantile
- Manufacturing
- Industrial
- Storage
- Streets / Highways
- Recreation

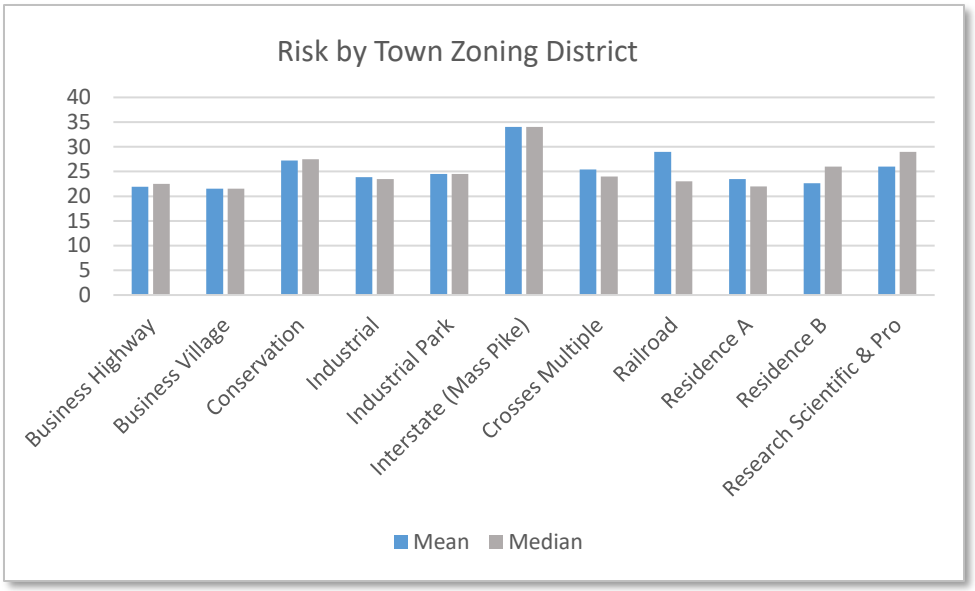
Risk by Response Occupancy Type, Geographic Area, and Zoning District

One hundred and eighty-six existing addresses were evaluated during a 2020 assessment. These occupancies and locations were selected based on the following criteria: 1) response occurrence over the last four years, 2) known or anticipated hazards, and 3) representation of occupancy types. The SFD recognizes that the selected addresses do not represent all locations in the town, but provide an appropriate measure of occupancy type and frequency of responses. The reference for the Risk Analysis Scoring can be found in Appendix 3. The four (4) risk categories are; Low (>20), Moderate (20-29), Significant (30-39) and Maximum (40+). Figures 15 through 17 provide the results of this risk analysis.





Geographic Area Map can be referenced in Appendix 4



Town Zoning Map can be referenced in Appendix 5

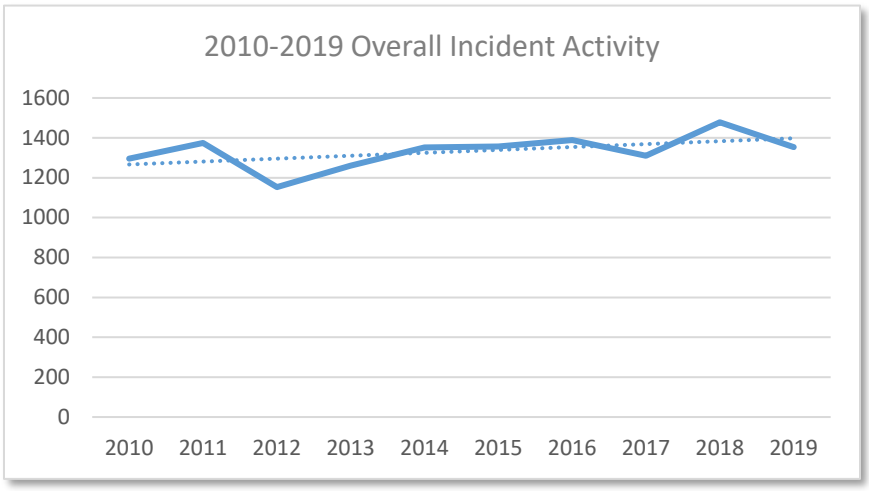
SFD Risk Analysis and Scoring Summary

- Risk by occupancy is overall moderate (20-29) with Rail, Storage, and Highway at or near Significant (30-39).
- Risk by Geographic Area of Town is greatest in the Pine Hill Road and the Northwest areas. Occurrences and locations that cross more than one geographical area also pose higher risks; specifically Highways, Streets, and Rail.
- Risks by Zoning Districts are generally moderate (20-29), with similar higher risk in the Highway (Interstate 90 and 495) and Railroad Districts. Conservation and Research, Scientific & Professional were on the higher Moderate scale. Properties and locations in these areas included the Sudbury Reservoir, Sudbury Dam, and Chestnut Hill Farms.

Historical Response Data Calendar Years 2016 to 2019

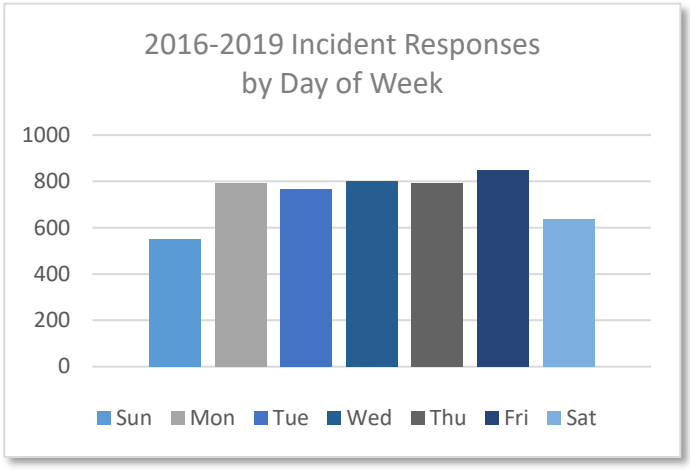
Total Response Data

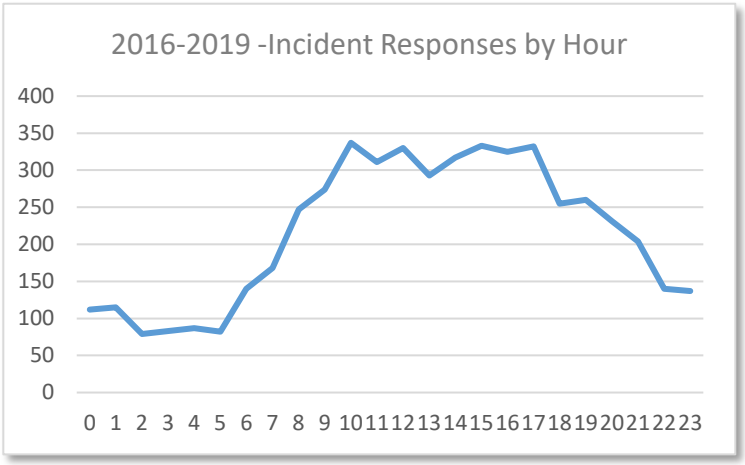
The availability of accurate information about fires and other incidents is vital in monitoring, assessing, and achieving maximum performance. Patterns that emerge from the analysis of incident data assists the SFD in focusing on emerging and current trends, predicting future issues within the community, and measuring our performance. Total incident activity, or call volume, is the most basic measure of department operations. The SFD includes only emergency requests for service in calculating total incident activity. Over the last four years the incident activity for the SFD has averaged 1382 total calls annually.

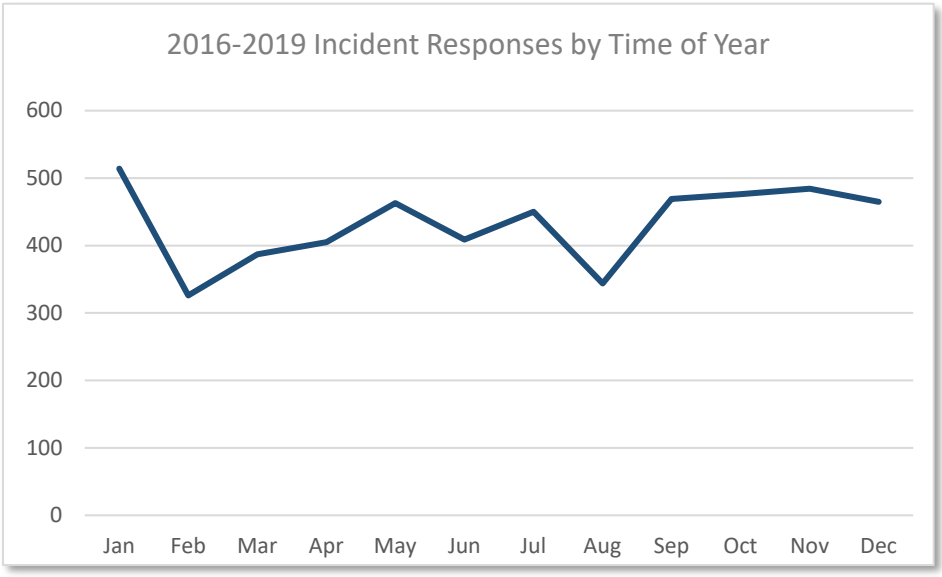


Response Activity by Day of Week, Hour of Day, and Time of Year

Total incident activity conveys the aggregate yearly call volume, but the distribution and concentration of activity can be best illustrated by incident responses by day of week, hour of day, and time of year. This information can be used to determine and monitor staffing, deployment, training, and work schedules. The distribution and concentration of incidents is often reflective of the overall demographics, occupancies, seasonal variations in population, and activities within a community.

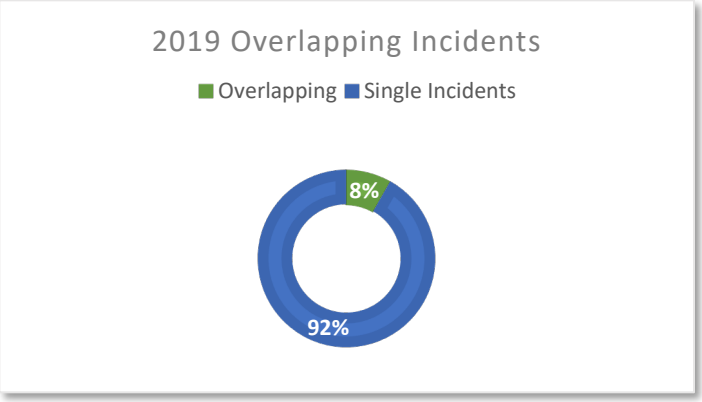

2016-2019 Incident Responses by Day of Week
1000
800
600
400
200
0
Sun
Mon
Tue
Wed
Thu
Fri
Sat


2016-2019 -Incident Responses by Hour
400
350
300
250
200
150
100
50
0
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23


2016-2019 Incident Responses by Time of Year
600
500
400
300
200
100
0
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec

Overlapping Incidents:

The SFD is staffed with only one engine and one ambulance at a time. When incidents remain active simultaneously or require additional resources, recall of off-duty, call members, and/or mutual aid is requested. Therefore, understanding how often multiple calls overlap is important when assessing the department's concentration of activity and resource availability. To determine overlapping events, the department reviews each individual call and then identifies the number of other calls that begin at any time between when the first call began and ended.

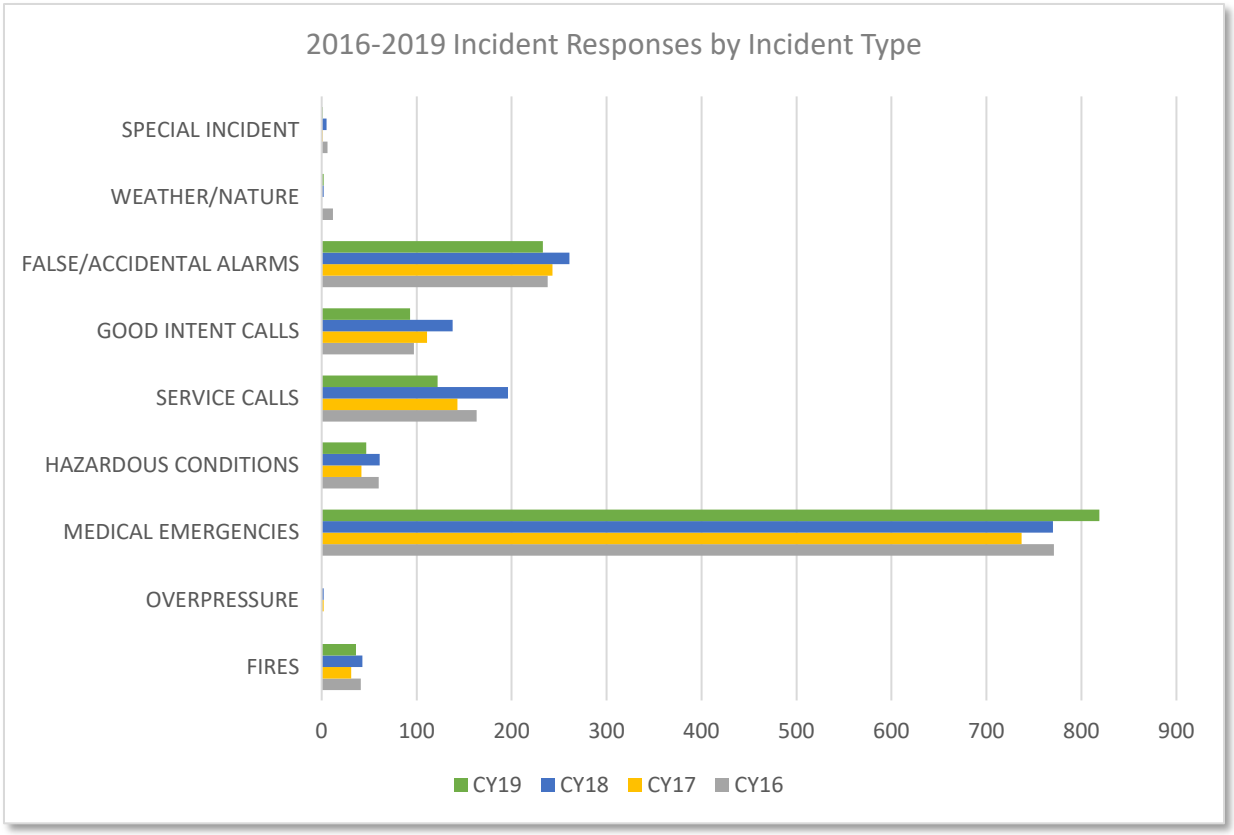


Incident Responses by Incident Type

Incident Type, as defined by the US Fire Administration, is the actual situation that emergency personnel found on the scene when they arrived. These include the entire spectrum of fire department activities from fires to EMS to public service. The type of incident reported is not always the same as the incident type initially dispatched. This critical information identifies the various types of incidents to which a fire department responds and allows the fire department to document the full range of incidents it handles. This information can be used to analyze the frequency of different types of incidents, provide insight on fire and other incident problems, and identify training needs.

National Fire Incident Reporting Incident Types

Series	Heading	Examples
100	Fire	fires in buildings, mobile property, vehicles, vegatation, dumpsters
200	Overpressure Rupture, Explosion, Overheat (No Fire)	rupture of boiler or pipe, explosion, overheating without fire
300	Rescue and Emergency Medical Service Incidents	medical emergencies, refusal of care, vehicle crashes, water rescues
400	Hazardous Condition (No Fire)	combustible and flammable spill, chemical releases, electrical problem
500	Service Call	public assistance, water problem, animal rescue, unauthorized burning
600	Good Intent Call	cancelled enroute, steam mistaken for smoke, no emergency found
700	False Alarm and False Call	detector malfunction, unintentional alarm, malicious false alarm
800	Severe Weather and Natural Disaster	lightning strike, flood, wind storm assessment
900	Special Incident Type	citizen complaint, reports of code violation



Incident Responses by Property Type 2016 to 2019

Each individual property has a specific use, whether it contains a structure or is open land. Information on the frequency, losses, and types of emergencies for each property use can assist in targeting fire prevention programs and fire protection or suppression systems for each type of property. It often assists in ordering priorities for inspection, developing new building codes, and evaluating the success of programs directed at particular types of properties.

Property Type	Total	%	Yearly Avg.
Other	10	0.2%	3
Assembly	106	2.1%	27
Educational	161	3.1%	40
Health Care, Correctional	465	9.0%	116
Residential	2836	54.9%	709
Business / Mercantile	270	5.2%	68
Industrial	36	0.7%	9
Manufacturing	7	0.1%	2
Storage	154	3.0%	39
Street / Highway	942	18.2%	236
Recreational / Open Land	159	3.1%	40
Undetermined / Other	21	0.4%	5
Total	5167	1	1292

Estimated Fire Losses and Values

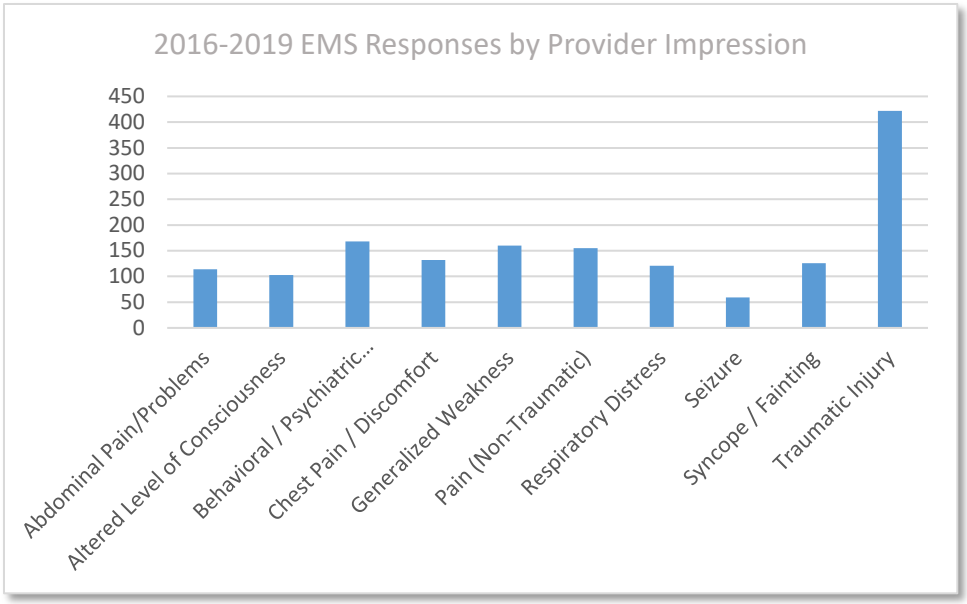
Property and content losses illustrate the magnitude of the fire problem, provides an additional indicator of the incident severity, and can be used to evaluate progress in fire protection. Estimated property and content losses are also crucial for identifying types of situations where high monetary losses are common. This information helps target fire prevention programs.

	2016		*2017*		*2018*		*2019*	
Incident Type	***Total Value***	***Total Loss***	***Total Value***	***Total Loss***	***Total Value***	***Total Loss***	***Total Value***	***Total Loss***
Fire, Other	$500	$500	$0	$0	$0	$0	$0	$0
Building Fire	$3,206,900	$792,900	$1,970,000	$41,600	$24,600,049	$1,916,049	$2,982,000	$964,000
Fire in Other	$0	$0	$2,000	$2,000	$0	$0	$0	$0
Cooking	$800	$400	$0	$0	$0	$0	$0	$0
Chimney	$0	$0	$0	$0	$1,250,000	$5,000	$0	$0
Fuel Burner/Boiler	$0	$0	$0	$0	$0	$0	$0	$0
Mobile Property, Other	$10,500	$10,500	$20,000	$26,200	$5,000	$5,000	$0	$0
Passenger Vehicle	$47,000	$27,000	$37,750	$34,750	$50,000	$49,000	$49,000	$16,000
Road Freight Vehicle	$0	$0	$25,000	$25,000	$0	$0	$0	$0
Off Road / Heavy Equip.	$0	$0	$0	$0	$0	$35,000	$0	$35,000
Brush	$100	$200	$0	$0	$0	$0	$0	$0
Outside Rubbish	$152,000	$6,000	$0	$0	$0	$0	$0	$0
Spec. Outside, Other	$0	$0	$100,000	$500	$0	$0	$510,000	$0
Total $ Loss		*$837,500*		*$130,050*		*$2,010,049*		*$1,015,000*

Emergency Medical Responses by Provider Impression

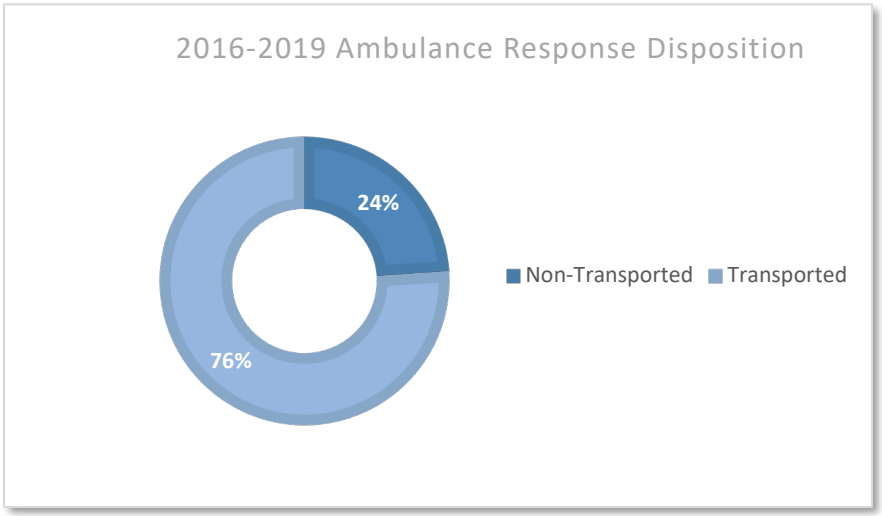
The SFD provides advanced life support level emergency medical care and ambulance transport services to the town. Over the past four years, emergency medical responses accounted for 60% of the department's overall request for service.

Medical Responses by Provider Impression provides information on the various types of emergency medical incidents to which the SFD responds. This information is used to analyze the frequency of different types of medical incidents, provide insight on the type of emergency medical incidents, and identify medical equipment and training needs. The top 10 type of emergency medical responses for the last 4 years are listed below.



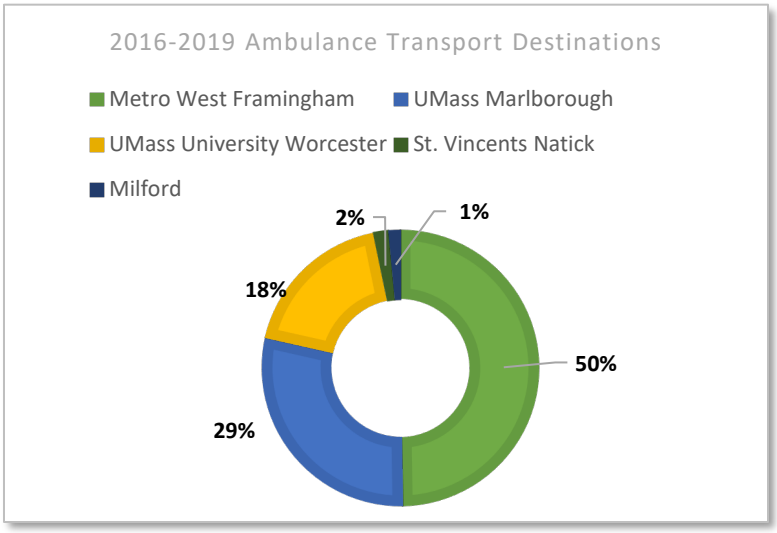
Ambulance Response Disposition

All requests for emergency medical care do not result in the transportation by ambulance to the hospital. The percentage of transports can fluctuate month to month, but on average range between 60-70%. Other dispositions include cancelled enroute, no patient found or no patient contact, and refusal of care and transport.



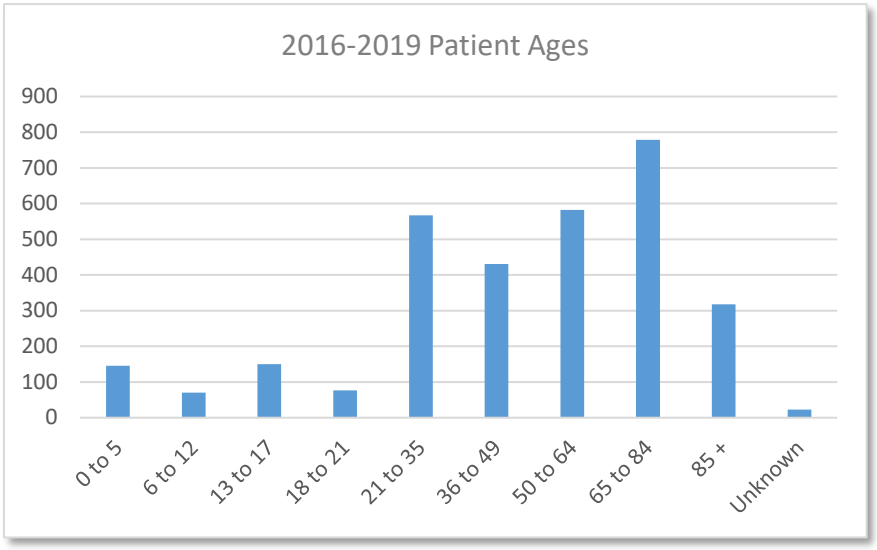
Ambulance Transport Destinations

SFD ambulances transport to the closest and most appropriate hospital based on the patient's medical condition and Regional Point of Entry Protocols. All patients are transported to an Emergency Department.



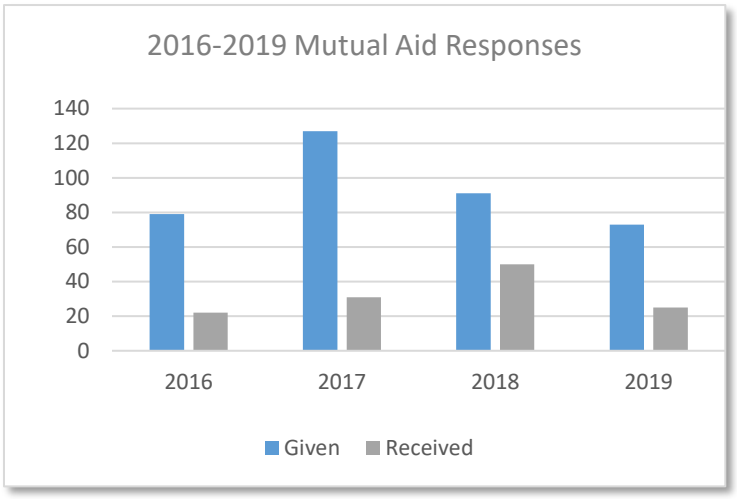
EMS Incident - Patient Ages

Tracking patient ages provides data on what age groups will most likely utilize emergency services in town, as well as where best to focus department injury prevention and public education measures.



Mutual Aid Given and Received

The SFD both receives and provides mutual aid response to area communities. The SFD will respond, at no charge, to a request of another fire department with an ambulance or fire unit. The response may be to the scene of an emergency or to provide community coverage from their fire station. This aid is reciprocated by area fire departments to the SFD. It is often the case that a community will provide more aid than received.



Response Time Analysis

According to the Commission on Fire Accreditation International (CFAI), response time and those individual time elements within the overall response time are critical components of an organization's ability to positively impact the outcome of an emergency event. Fire growth is exponential and is based upon such things as fuel concentrations and elapsed time to interventions. The elapsed time to effective interventions also have a direct relationship in determining survivability and quality of life during medical or traumatic emergencies.

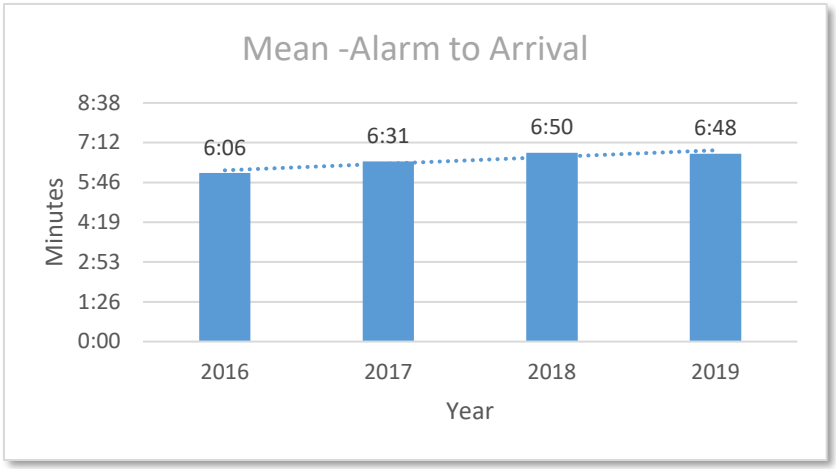
According to the CFAI, total response time consists of (a) notification and alarm processing, (b) turnout time, and (c) travel time. Notification and alarm processing are the time points which an alarm or request for emergency response is received by an agency and the time interval it takes to retransmit that emergency to the specific agency's resources. Turnout time is the time point at which the responding units are notified to the beginning of travel time. Travel time is the actual time of travel from turnout to the arrival on scene.

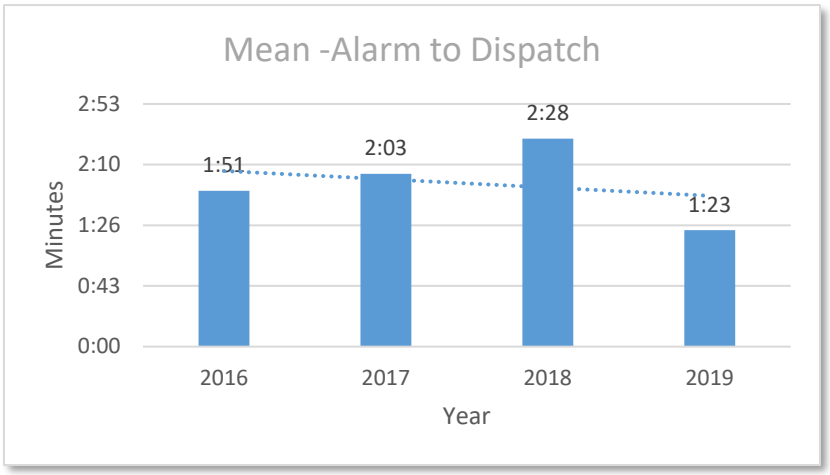
Notification and alarm processing for the SFD is the responsibility of the Southborough Emergency Communications Center. This is a combined public safety dispatch center under the supervision of the police department. The policies and procedures for alarm processing and notification are developed by the SFD and jointly adopted by both the fire and police departments. A nationally recognized Emergency Medical Dispatch (EMD) Protocol is utilized for callers reporting medical emergencies. Callers answer a few brief questions so that the proper response and pre-arrival treatment may be determined.

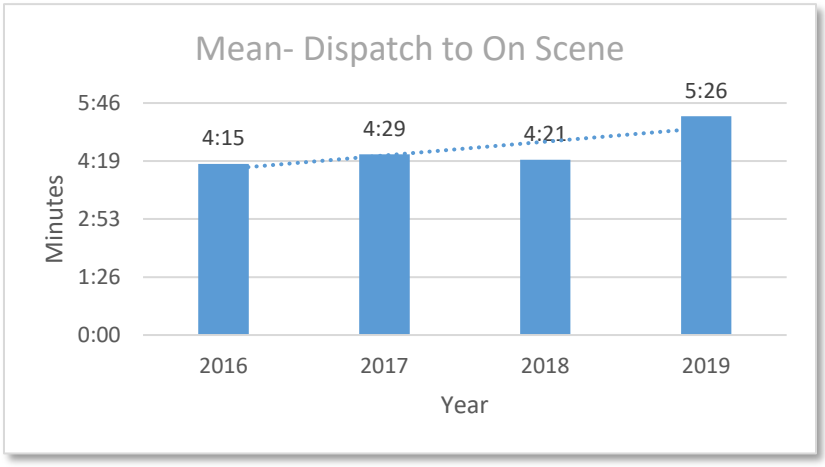
In 2019, the SFD began to develop Standards of Cover along with performance measures as part of a department-wide initiative to improve and strengthen essential services. National Fire Protection Association (NFPA) and Commission of Fire Accreditation International (CFAI) standards were referenced in addressing three main areas: (a) existing deployment, (b) service level objectives, and (c) performance and reliability. The SFD continues to monitor performance and reliability of department resources, as well as measuring and revising service level objectives. In addition to collecting and reviewing historical response data, the department conducted a response time analysis of all incidents that occurred from January 1, 2016 through January 1, 2020. The source of the information was obtained through the SFD's electronic record management system known as ESO Suite.

Mean (Average) Response Times

On average, from the time of dialing 911 until the arrival of the first fire department resource will be 6 minutes and 48 seconds or less 50% of the time. The Alarm to Dispatch time is 1 minute and 56 seconds and the Dispatch to On Scene time is 4 minutes and 38 seconds.

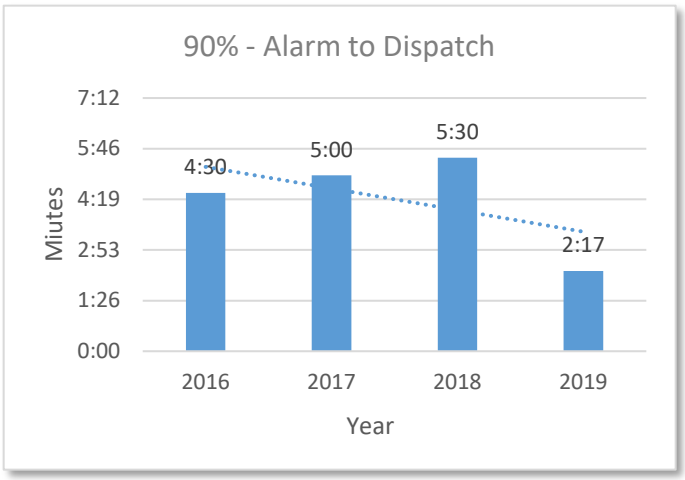

Mean -Alarm to Arrival
8:38
7:12
5:46
4:19
2:53
1:26
0:00
Minutes
6:06
6:31
6:50
6:48
2016
2017
2018
2019
Year

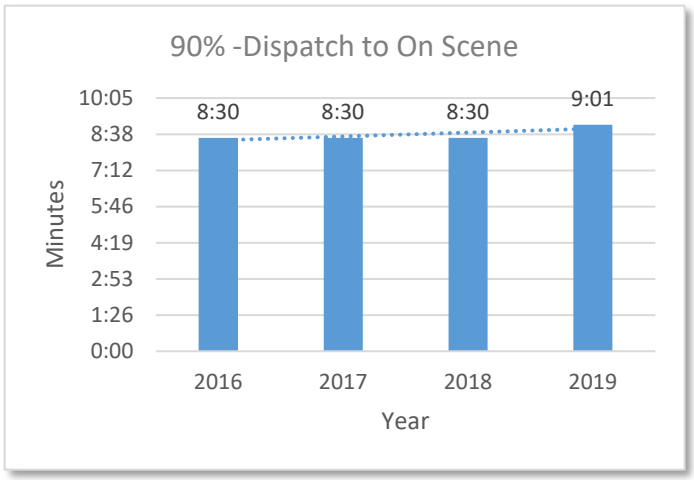

Mean -Alarm to Dispatch
2:53
2:10
1:26
0:43
0:00
Minutes
1:51
2:03
2:28
1:23
2016
2017
2018
2019
Year

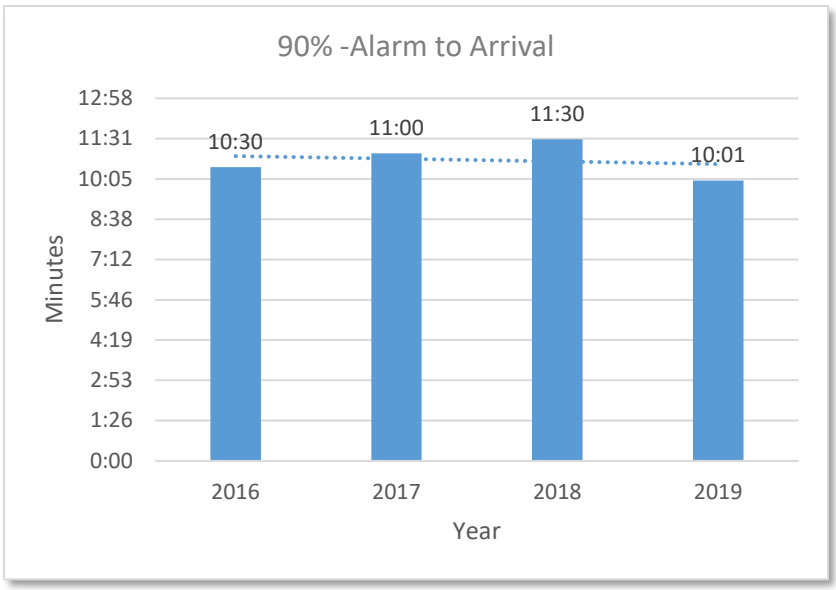

Mean- Dispatch to On Scene
5:46
4:19
2:53
1:26
0:00
Minutes
4:15
4:29
4:21
5:26
2016
2017
2018
2019
Year

90th Percentile Response Times

From the time of dialing 911 until the arrival of the first fire department resource will be 10 minutes and 45 seconds or less 90% of the time. Dispatch time is 4 minutes and 19 seconds and the Dispatch to On Scene time is 8 minutes and 38 seconds.







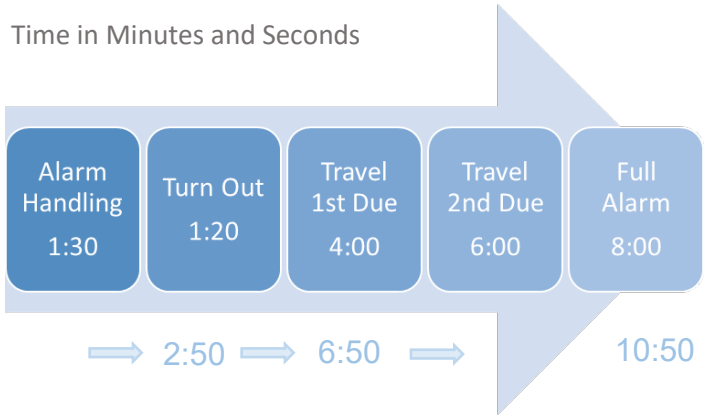
Effective Response Force

Apparatus Staffing and Deployment Standards

Staffing of fire apparatus and ambulances can be determined based on a number of variables. Traditional considerations often include the demographics of a community, the demand and numbers of service requests, the nature of risks and hazards in the service area, the type and age of buildings in the community, the type of occupancies (i.e. residential, commercial, industrial), and travel times from existing stations to the coverage area. The National Fire Protection Association (NFPA) has identified the standards to increase the chance for positive outcomes from fire and other emergencies. Staffing of each company shall be led by an officer who shall be considered part of the company. All engine and ladder companies should be staffed with a minimum of four on-duty personnel. According to *NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments* (2020), fire departments should establish the following 90% performance objectives for the first-due response zones (areas):

- Alarm Handling - 90 seconds (1:30) and within 120 seconds (2:00) 99% of the time.
- Turnout Time - 80 seconds (1:20) from time of dispatch to first unit enroute for fire and special operations response and 60 seconds (1:00) for EMS response.
- Travel Time 1st Due- 240 seconds (4:00) or less travel time for the arrival of the first engine company at a fire suppression incident.
- Travel Time 2nd Due - 360 seconds (6:00) or less for the arrival of the second company.
- Full Assignment - 480 seconds (8:00) or less travel time for the deployment of the of an initial full alarm assignment at a fire suppression incident.

Alarm Handling is the time interval from receipt of the alarm at the primary dispatch center to the notification of response units. Turnout Time is the time interval between response unit notification and travel time. Travel time is the interval that begins when a unit is enroute and ends when the unit arrives at the scene. The best practice for most incidents is a Total Response Time of 6 minutes and 50 seconds, 90% of the time for the first-due unit, 8 minutes and 50 seconds for the second unit, and 10 minutes and 50 seconds for the initial full assignment units to be deployed.



An initial full alarm assignment deployment for a two-story, single-family dwelling with no basement and no exposures should provide for the establishment of incident command outside the hazard area, water supply of a minimum of 400 gallons per minute, two hose lines producing a minimum of 300 gallons per minute, victim search and rescue, ground laddering and ventilation, and firefighter safety and rescue. Some incidents will also require aerial operations and emergency medical services. Therefore, the total effective response force of 16-18 firefighters is required. To meet these measures, automatic aid (joint response on first alarms from other fire departments) may be employed. The minimum effective response force for shopping centers and apartments is higher at 27-28 firefighters.

Effective Response Force	
Incident Command	1
Water Supply (Engine Operator)	1
Fire Attack via 2 Hose Lines	4
Support for Deployed Hose Lines	2
Victim Search and Rescue	2
Ground Ladders and Ventilation	2
Rapid Intervention Crew	4
Aerial Operator (If Used)	1
TOTAL	16-17

Additional studies and standards that influence staffing considerations include the National Institute of Standards and Technology (NIST) *Report on Residential Fireground Field Experiments* (2010) and the U.S Occupational Safety and Health Administration (OSHA) Respiratory Standard 29 CFR 1910.134. The NIST study concluded that four-person crews were more effective than two or three-person crews when it came to extinguishing fires in a 2000 square foot house (15% faster than two-person and 6% faster than three person) and rescuing occupants (30% faster than two-person crews and 5% faster than three-person crews). Additionally, four- and five-person crews were able to complete 22 essential firefighting and rescue tasks in a residential property 30% faster than two-person crews and 25% faster than three-person crews.

The OSHA regulation requires firefighters entering dangerous atmospheres do so in teams of two with a minimum of two more firefighters available outside to assist or rescue those inside (2-in / 2-out rule). Therefore, firefighters entering a building with smoke, toxic gases, or fire must do so only after there are a total of four firefighters on scene. An exception to this rule is when a victim is visible from the outside of the hazardous environment and readily accessible to the firefighters. The ratio of firefighters outside the dangerous environment to those inside after the initial entry is not required to be maintained at 2 to 2 (i.e. 6 firefighters inside requires 6 outside). The intent is to ensure there is adequate resources, equally equipped, to affect a rescue of the inside crews. This is accomplished by applying the NFPA 1710 standards.

NFPA 1710 Staffing and Deployment Standards for EMS

- A fire department first responder with an automated external defibrillator (AED) shall be deployed to provide for the arrival of the AED within 240 seconds (4 minutes).
- A fire department providing Advanced Life Support (ALS) shall be deployed to provide for the arrival of an ALS company within 480 seconds (6 minutes).
- Personnel deployed to ALS emergency responses shall include a minimum of two members trained at the emergency medical technician–paramedic level and two members trained at the emergency medical technician–basic level arriving on scene within the established travel time.

Massachusetts Department of Public Health Staffing Requirements for EMS

Massachusetts 105 CMR 170.305:Staffing requires that each ambulance and Emergency Fire Responder (EFR) service shall at all times maintain an adequate number of EMS personnel to staff EMS vehicles to ensure service availability and back-up 24 hours a day, 7 days a week. Based on the emergency medical care provided, the following staffing requirements exist:

- Basic Life Support: a minimum of two EMTs, certified at the EMT level
- Advanced Life Support: a minimum of two EMT's, at least one certified at the Advanced EMT or higher level.
- Advanced Life Support – Paramedic Level: a minimum of two EMT's, at least one certified at the Paramedic level.
- Advanced Life Support – Paramedic Level: High acuity: a minimum of two Paramedics.

Critical Tasks Analysis

Critical task analysis determines what tasks need to be accomplished at the scene of an emergency. Critical tasking is the process of assigning tasks to firefighters, EMTs, paramedics, and fire officers that must be conducted in a timely manner at in order to stabilize and control an incident. While creating standards of response coverage, the capability of arriving companies and individual responders to achieve these duties must be taken into consideration. On-scene operations, critical tasking, and maintaining an effective response team are elements of response coverage that determine staffing levels, number of apparatus needed, and duties to be performed by each team while at an emergency incident.

Critical Tasks Analysis - Fire

The SFD performs offensive interior fire attack whenever possible while placing firefighter safety in high regards, and using the RECEO VS approach (rescue, exposure, confinement, extinguishment, overhaul ventilation, and salvage). In rescue situations, the first objective is to put a hose line between the victims and the fire, if possible, to assist with the rescue. The second is to contain the fire to the point of origin. Before on-scene procedures can be established, the incident commander (IC) must determine whether or not the fire ground will operate under an offensive, transitional, or defensive strategy. An offensive

strategy consists of immediately entering the interior of the structure upon arrival to perform rescue and confinement. The transitional strategy is performing an exterior attack upon arrival, prior to making entry, to cool the interior and reset the behavior and growth of the fire. A defensive strategy is one that allows for no interior fire attack when fire conditions indicate no or an extremely low probability of survivability of occupants; therefore, no search and rescue is attempted. All firefighting is performed from outside the structure with the goal of containing the fire to the initial structure involved.

An organization providing for an offensive strategy requires the necessary fire resources to arrive sooner than they would have to if only the defensive strategy was provided for. Locations of fire stations and fire apparatus play a major role in the probability of a successful rescue. The incident commander must maintain scene management in order to properly implement the plan of attack. Scene management is not separate from, but is an integral part of successfully managing the incident. Objectives of scene management are life safety for firefighters (accountability, etc.) and non-emergency personnel on the scene, stabilizing the incident by controlling non-emergency personnel so they do not interfere with fire ground activities, and conserving property through timely implementation of resources to gain and maintain control.

The SFD has evaluated the critical tasks needed to control fires in each respective risk category. Whenever firefighters are operating in an immediate danger to life and health (IDLH) environments, additional personnel must be staged to perform rescue functions for interior firefighters, commonly known as two-in / two-out. In this situation, a command structure must also be in place. The growth of fire and the dynamics that are involved, as well as the uniqueness of the occupancy and life safety risks combine to determine which fire ground duties may be required to aid in mitigating potential loss.
On-scene Operations

The first fire company to arrive at the scene will communicate existing and known conditions to the emergency dispatcher and other responding units. At the completion of this report the ranking fire officer or senior firefighter will implement the incident command system (ICS). Before a specific on-scene strategy can be established, an initial size-up must be completed by the incident commander (IC). Factors considered include 1) forecasting fire growth and development, 2) identifying scene hazards, and 3), identifying heat and smoke flow path(s). This size-up should facilitate which strategy to employ; offensive, transitional or defensive.

Offensive Strategy

Considered an interior fire attack operation with the top priority of the search and rescue of any trapped occupants. The SFD employs this strategy most often to limit the number of fires that spread beyond the room of origin. For this reason the SFD uses an aggressive fire attack whenever possible, taking into consideration firefighter safety and other pertinent concerns.

Transitional Strategy

Utilized when the fire companies are faced with changing fire conditions and limited resources, this strategy uses an initial exterior fire attack through a ventilation opening to help transition the fire from ventilation-limited to fuel-limited conditions. Transitional attack reduces the potential for flashover and creates a more survivable interior environment for trapped occupants and also firefighters. A transitional strategy is also appropriate when on scene units are waiting for the arrival of sufficient resources to safely mount an offensive attack or when the initial defensive mode of operations has reduced to a point where interior operations can be conducted in a safer manner. The function of this strategy is reducing temperatures within the structure to increase occupant and firefighter survivability.

Defensive Strategy

Normally an exterior fire attack operation, without interior operations, except if it is necessary to rescue firefighters. There are no attempts to rescue any civilian occupants because the stage of the fire has grown in intensity, all fuel sources are burning (flash point), and the probability that occupants are reasonably presumed to be beyond rescue. In this situation, nearly all of the firefighting is to be performed from the outside of the structure with the concept of containing the fire to the initially involved structure. In the case of a large structure with a defensive attack implemented, a portion of the building may be salvaged with the use of an interior attack to create a safe haven for trapped occupants taking advantage of the building's design.
Life Safety Tasks

Fire Flow Tasks

Fire flow tasks relate to simply getting water on the fire. These tasks are dependent on the type of strategy that is used and available on scene resources. If the responding units use the offensive or transitional strategies, they will deploy one and three-quarter (1 ¾) or two (2.0) inch diameter hand lines to attack the fire. If responding units use the defensive strategy, they may retain the use of large diameter hand lines such as two and one-half (2 ½) inch, three (3.0) inch, or master-stream devices. Master-stream devices take relatively few firefighters to operate when mounted to fire apparatus. Master-stream devices not affixed to apparatus (connected via hose line) may take more firefighters to deploy and operate. These master-streams will be used to confine the fire and keep it from advancing to any adjacent exposures.

Critical Task Capabilities: Fire Services

The following critical tasks and staffing are required to carry out strategic and tactical objectives to 1) protect and rescue occupants, 2) confine, control, and extinguish the fire, 3) reduce property loss, and 4) account for and protect emergency responders for incidents involving fire:

Fire Services – Low Risk (vehicle or fire with no exposures)

This type of response can normally be handled by the on-duty compliment of 1 officer and 3 firefighters. The officer will assume the role of the Incident Commander and will provide support to both the Pump Operator and Attack Line personnel. The Attack Line personnel will also have responsibility of search and rescue, horizontal ventilation, overhaul, and salvage.

- Incident Command – (1) Fire Officer
- Pump Operator / Water Supply Engine – (1) Firefighter
- Attack Line – (2) Firefighters

Fire Services – Moderate Risk (fire with exposures)

Fires that extend beyond the room or floor of origin, impact the ability of occupants to safely evacuate, or pose a risk to adjacent structures require a full first alarm assignment to safely and effectively control. Responsibilities include command and control, accountability and safety of responders, search and rescue, exposure control, confinement, extinguishment, ventilation, overhaul, and salvage. A reliable water supply must be established and a 1 ¾ inch hose that produces up to 200 gallons per minute (GPM) should be deployed along with a backup line of equal or greater size. A fire of this type can transition into a serious fire.

- Incident Command – (1) Fire Officer
- Pump Operator / Primary Engine – (1) Firefighter
- Search and Rescue – (2) Firefighters
- Attack Line – (2) Firefighters
- Back-Up Line – (2) Firefighters
- Ventilation – (2) Firefighters
- Rapid Intervention Crew – (4)
- Support for Hose Lines, Water Supply – (2) Firefighters
- Aerial – Tower Operator – (1) Firefighter

Fire Services – Significant Risk (large fire with exposures)

Fires that involve the actual structure, multiple rooms and floors, injured or trapped occupants, hazardous materials, and/or extend to adjacent structures require a full first alarm assignment and possible a second alarm assignment in order to safely and effectively control. Responsibilities include command and control, accountability and safety of responders, search and rescue, exposure control, confinement, extinguishment, ventilation, overhaul, and salvage. A reliable water supply must be established to support the deployment of multiple 1 ¾, 2.0, or 2 ½ inch hose lines. Fires not contained will require master stream devices. Multiple rescues or casualties, structural collapse, firefighter injuries, hazardous materials release, and extreme weather conditions, will require the IC to request additional resources including mutual or regional aid.

- Incident Command – (1) Fire Officer
- Safety Officer – (1) Fire Officer
- Pump Operator / Primary Engine – (1) Firefighter
- Pump Operator / Water Supply Engine – (1) Firefighter
- Search and Rescue – (2) Firefighters
- Attack Lines – (2) Firefighters
- Back-Up Line – (2) Firefighters
- Support for Hose Lines, Water Supply – (2) Firefighters
- Ventilation – (4) Firefighters
- Rapid Intervention Crew – (4)
- Aerial – Tower Operator – (1) Firefighter
- EMS – (2) Advanced EMT

Critical Task Capabilities: Wildland Fires

Fires that occur in open spaces and wooded areas pose a risk not only to the environment and wildlife, but to adjacent structures, roadways and residential areas. Therefore, wildland fire suppression is primarily focused on containment. Small fires are often controlled by the duty crew. Moderate size fires during high fire danger weather days may require the response of a full initial alarm assignment and a chief officer. The initial IC or Fire Chief may request additional resources including forestry units, hand crews, water tenders (tankers), and MA Department of Conservation and Recreation (DCR) Bureau of Forest Fire Control assets.

The following critical tasks and staffing are established as a standard in order to perform 1) perimeter control, 2) confinement, and 3) extinguishment of a fire in open space, woodlands, and that threaten structures.

Wildland Fire- Low Risk (Hydrant)

- Incident Command – (1) Fire Officer
- Pump Operator / Water Supply Engine – (1) Firefighter
- Hand Crews – (2) Firefighters

Wildland Fire- Moderate to Significant Risk (Hydrant)

- Incident Command – (1) Fire Officer
- Safety Officer – (1) Fire Officer
- Pump Operator / Primary Engine – (1) Firefighter
- Pump Operator / Water Supply Engine – (1) Firefighter
- Hand Crews – (8) Firefighters
- Support for Hose Lines, Water Supply – (2) Firefighters

Wildland Fire- Moderate to Significant Risk (Off-Hydrant)

- Incident Command – (1) Fire Officer
- Safety Officer – (1) Fire Officer
- Pump Operator / Primary Engine – (1) Firefighter
- Pump Operator / Water Supply Engines – (2) Firefighter
- Driver – Operator / Water Tenders – (3) Firefighters
- Hand Crews – (8) Firefighters

Critical Tasks Capabilities: Emergency Medical Services

The following critical tasks and staffing are required to carry out strategic and tactical objectives of 1) triage and assess, 2) treatment, and 3) transport for patients experiencing medical and/or traumatic emergencies:

Emergency Medical Services – Low Risk (minor medical illness or traumatic event)

This type of response can normally be handled by two providers. One Emergency Medical Technician – Advanced (EMT-A) is the primary care provider while the other is the secondary care provider. The second Emergency Medical Technician (EMT) also has the added responsibility of ensuring safe transport to the hospital while basic medical care is being continued in the patient compartment.

- Primary Care Attendant – (1) Advanced EMT / Paramedic
- Secondary Attendant / Driver – (1) EMT / Advanced EMT

Emergency Medical Services – Moderate Risk (serious medical or traumatic event)

This type of response may be handled by two providers, but the condition of the patient may warrant additional personnel. Advanced Life Support responses require the added training of the AEMT- and/or Paramedic. Responsibilities include airway management, cardiac monitoring and interpretation, I.V. access, and medication administration.

- Primary Care Attendant – (1) Paramedic
- Secondary Attendant– (1) Advanced EMT / Paramedic
- Driver – (1) EMT / Advanced EMT
- Incident Command – (1) Officer
- Support – (1) Firefighter

Emergency Medical Service -Significant Risk (multiple casualties)

A mass casualty is considered anything more than the initial alarm assignment units can effectively manage. This can be considered 5-6 patients. The initial scene size up will determine the number of apparatus required for the incident. SFD utilizes a pre-determined, 5 level run card that includes mutual aid response.

- Incident Command – (1) Fire Officer
- Safety Officer – (1) Fire Officer
- Pump Operator / Primary Engine – (1) Firefighter
- EMS Branch Director – (1) Paramedic
- Triage Team – (2) Advanced EMT / Paramedics
- Treatment Officer – (1) Advanced EMT / Paramedics
- Ambulance Transport – (10) EMT / Advanced EMT / Paramedics

Water and Ice Rescue Incidents Critical Tasks

The SFD provides search and rescue of victims in or near the Sudbury Reservoir, as well as other bodies of water in Southborough. Other agencies that have jurisdiction and response capabilities include the Massachusetts Water Resource Authority (MWRA) and the Department of Conservation and Recreation (DCR). These incidents may involve operating in swift moving water, swimming, self-rescue, victim rescue in open water or on ice, boat operations, night operations, and multi-agency coordination. The initial response for a water rescue requires an engine and ambulance response by land or via the department's rescue boat. The Incident Commander may also request the deployment of Massachusetts Fire District 14's Technical Rescue and Dive Team.

The following critical tasks and staffing are established as a standard in order to 1) provide for the safety of responders, 2) gaining access to victim(s), 3) providing floatation device, and 4) affecting rescue.

Land-Side Incidents – Low to Moderate Risk

- Incident Commander - (1) Fire Officer
- Primary Rescue - (2) Firefighters
- Primary Care Attendant – (1) Paramedic
- Secondary Attendant– (1) Advanced EMT / Paramedic

Water-Side Incidents – Moderate Risk (Sudbury Reservoir, Ponds, and Rivers)

- Incident Commander - (1) Fire Officer
- Rescue Boat Operator – (1) Firefighters
- Rescuer - (1) Firefighter
- Primary Care Attendant – (1) Paramedic
- Secondary Attendant– (1) Advanced EMT / Paramedic

Water-Side Incidents – Significant to Maximum Risk (Sudbury Reservoir)

- Land-Side Incident Commander - (1) Fire Officer
- Land-Side Support – (2) Firefighters
- Rescue Boat Operator – (1) Firefighter
- Rescuer - (1) Firefighter
- Back-Up Team – (2) Firefighters
- Primary Care Attendant – (1) Paramedic
- Secondary Attendant– (1) Advanced EMT / Paramedic
- MWRA and or DCR Vessel(s) Water-Side

Hazardous Material Incidents Critical Tasks

In the early stages of a hazardous-materials incident (HMI), it may be necessary for all available on-duty personnel to assist in accomplishing tasks required to identify, isolate, secure, and mitigate the incident. Any HMI beyond the routine fuel spills/odor investigation may require the response of a full initial alarm assignment and a chief officer. The initial Incident Commander (IC) or Fire Chief may request the State Hazardous Materials Response Team for a HMI.

The following critical tasks and staffing are established as a standard in order to 1) isolate an incident, 2) rescue trapped occupants, 3) evacuate exposures and adjacent areas, and 4) contain the spread or release of hazardous materials:

Hazardous Materials Incident- Low to Moderate Risk (limited release, risk assessment)

- Incident Commander - (1) Fire Officer
- Driver/Operator - (1) Firefighter
- Air Monitoring - (1) Firefighter
- Exposure Control – (1) Firefighter
- State Hazardous Materials Response Team Member – (1)

Hazardous Materials Incident – Significant Risk (large release)

- Incident Commander - (1) Fire Officer
- Safety Officer - (1) Fire Officer
- Air Monitoring - (1) Firefighter
- Exposure Control – (2) Firefighters
- State Hazardous Materials Response Team – (15) Firefighters
- Pump Operator - (1) Firefighter
- Primary Care Attendant – (1) Paramedic
- Secondary Attendant– (1) Advanced EMT / Paramedic

Special Rescue Incidents Critical Tasks

Confined space, below grade, rope rescue incidents require basic and specialized equipment, ropes and rigging, safety considerations, scene management and organization, ascending and descending systems, rappelling, belaying, lowering and raising systems, and litter management. It also involves atmosphere monitoring and the provision of basic medical care and advanced life support. Any such incident will require the response of a full initial alarm assignment, chief officer, and the response of Massachusetts Fire District 14's Technical Rescue Team.

The following critical tasks and staffing are established as a standard in order to 1) provide for the safety of responders, 2) search for and rescue trapped victims, 3) secure exposures and adjacent areas, and 4) minimize the impact to the public and victims:

Confined Space, Below Grade, Rope Rescue Incidents- Moderate to Significant Risk

- Incident Commander - (1) Fire Officer
- Incident Command Aide- (1) Firefighter
- Safety Officer - (1) Fire Officer
- Primary Rescue - (2) Firefighters
- Air monitoring- (1) Firefighter
- Secondary Rescue - (2) Firefighters
- District 14 Technical Rescue Team Leader – (1) Fire Officer
- District 14 Technical Rescue Team - (8) Firefighters
- Primary Care Attendant – (1) Paramedic
- Secondary Attendant– (1) Advanced EMT / Paramedic

Service Level Objectives – Standards of Cover

Service level objectives have been established based upon the community risk, current resources, normal travel times, and budgetary considerations. These objectives drive the distribution and concentration of forces which are currently in place, and which will influence future resources and staffing levels. Services provided include structural fire suppression, emergency medical services (EMS) response and ambulance transportation at the Advanced EMT and Paramedic level, and rescue services (vehicle extrication, high angle, water, ice, trench, confined space and building collapse rescue). Rescue services are supported with technician level response of Massachusetts Fire District 14 Dive and Technical Rescue Teams. Hazardous Material response is at the operations and decontamination level with technician response provided by the Massachusetts Hazardous Materials Response Team. It is important that the Southborough Fire Department (SFD) continue to monitor and evaluate changes in the community risk dynamics and emergency response demand as the development of the Town continues.

Performance Goal

The SFD shall limit the risk to our communities and our citizens from fire, injury, death, and property damage associated with fire, accidents, illness, explosions, hazardous materials incidents, and other natural or manmade emergencies through prevention and response.

Performance Level Objectives outline the commitment of the department to meet pre-established objectives regarding the timeliness of response to specific risks. The objectives that follow are the result of a thorough evaluation and categorization of our risks. For each risk we have analyzed our historical response to that risk, the outcome of those responses and have analyzed the potential for future risk in each defined category. Specific performance measures have been established based on our analysis and mission.

Benchmark Definition

A benchmark is defined as a standard from which something can be judged. Searching for the best practices will help define superior performance. This document uses a combination of standards for determining best practices for fire and EMS response. Current and predicted economic indicators and factors will also influence the balance of risk and adequate effective response force. These response resources are enhanced by prevention mitigation intervention; employing enforcement, education, and engineering innovations.

Integrated Time and Performance Objective Statements – Structure Fire

Structure Fire - Low Risk (Hydrant)

Goal:

Effective first alarm response force of 16 personnel deployed via three engines, 2 aerial devices, one ambulance, plus a minimum of one chief officer shall respond.

Measure:

The first unit shall arrive within 10 minutes total response time, for 90% of all requests for emergency services. The completed first alarm units shall arrive within 15 minutes total response time, for 90 % of all requests for emergency services. A chief officer shall arrive within 20 minutes total response time, for 90% of all requests for emergency services.

Performance Objectives:

To stop escalation of a minor fire when found. Includes conducting search and rescue, confining fire damage to the area near the room of origin, and limiting extension of smoke and heat damage to the floor of origin. The first arriving unit is capable of starting rescue work or advancing the first line for fire control. Second due units provide additional personnel for tasks already started, plus ventilation, water supply, and firefighter safety support.

Structure Fire -Moderate to Significant Risk (Hydrant)

Goal:

Effective first alarm response force of 16 personnel deployed via 3 engines, 2 aerial devices, 1ambulance, plus a minimum of 1 chief officer shall respond.

Measure:

The first unit shall arrive within 10 minutes total response time, for 90% of all requests for emergency services. The completed first alarm units shall arrive within 15 minutes total response time, for 90 % of all requests for emergency services. A chief officer shall arrive within 20 minutes total response time, for 90% of all requests for emergency services.

Performance Objectives:

To stop escalation of a major fire when found. Includes conducting search and rescue, confining fire damage to the area or floor of origin, and limiting extension of smoke and heat damage to area or floor of origin. The tasks of rapid intervention rescue for trapped / lost firefighters, property salvage, and crew rotation with rehabilitation requires at a minimum 14 additional personnel on the fire scene.

Structure Fire - Low Risk (Off-Hydrant)

Goal:

Effective first alarm response force of 21 personnel deployed via 3 engines, 2 aerial devices, 1 ambulance, 3 water tenders (tankers), plus a minimum of 1 chief officer shall respond.

Measure:

The first unit shall arrive within 12 minutes total response time, for 90% of all requests for emergency services. The completed first alarm units shall arrive within 25 minutes total response time, for 90 % of all requests for emergency services. A chief officer shall arrive within 25 minutes total response time, for 90% of all requests for emergency services.

Performance Objectives:

To stop escalation of a minor fire when found. Includes conducting search and rescue, confining fire damage to the room of origin, and limiting extension of smoke and heat damage to the floor of origin. The first arriving unit is capable of starting rescue work or advancing the first line for fire control. Second due units provide additional personnel for tasks already started, plus ventilation, water supply, and firefighter safety support.

Structure Fire - Moderate to Significant Risk (Off-Hydrant)

Goal:

Effective first alarm response force of 22 personnel deployed via 3 engines, 2 aerial devices, 1 ambulance, 3 water tenders (tankers), plus a minimum of 1 chief officer shall respond.

Measure:

The first unit shall arrive within 12 minutes total response time, for 90% of all requests for emergency services. The completed first alarm units shall arrive within 25 minutes total response time, for 90 % of all requests for emergency services. A chief officer shall arrive within 25 minutes total response time, for 90% of all requests for emergency services.

Performance Objectives:

To stop escalation of a major fire when found. Includes conducting search and rescue, confining fire damage to the floor of origin, and limiting extension of fire, smoke and heat damage to building of origin. The tasks of rapid intervention rescue for trapped / lost firefighters, property salvage, and crew rotation with rehabilitation requires at a minimum 14 additional personnel on the fire scene.

Integrated Time and Performance Objective Statements – Wildland Fire

Wildland Fire - Low Risk (Hydrant)

Goal:

Effective initial alarm response force of 5 personnel deployed via 1 engine and 1 forestry shall respond.

Measure:

The first unit shall arrive within 10 minutes total response time, for 90% of all requests for emergency services. The completed initial alarm units shall arrive within 15 minutes total response time, for 90 % of all requests for emergency services.

Performance Objectives:

To stop the escalation of a minor or moderate fire when found. Includes controlling the fire to the area of origin on a high fire danger day without spread to adjacent structures or escalating to a size requiring additional resources including mutual aid.

Wildland Fire - Moderate to Significant Risk (Hydrant)

Goal:

Effective first alarm response force of 13 personnel deployed via 2 engines, 1 forestry, 1ambulance, plus a minimum of 1 chief officer shall respond.

Measure:

The first unit shall arrive within 10 minutes total response time, for 90% of all requests for emergency services. The completed first alarm units shall arrive within 15 minutes total response time, for 90 % of all requests for emergency services. A chief officer shall arrive within 20 minutes total response time, for 90% of all requests for emergency services.

Performance Objectives:

To stop the escalation of a major or serious fire when found. Includes controlling the fire to the area of origin on a high fire danger day without spread to adjacent structures or escalating to a size requiring significant additional resources including mutual aid.

Wildland Fire - Moderate to Significant Risk (Off-Hydrant)

Goal:

Effective first alarm response force of 15 personnel deployed via 2 engines, 1 forestry, 3 water tenders (tankers), plus a minimum of one chief officer shall respond.

Measure:

The first unit shall arrive within 12 minutes total response time, for 90% of all requests for emergency services. The completed first alarm units shall arrive within 25 minutes total response time, for 90 % of all requests for emergency services. A chief officer shall arrive within 25 minutes total response time, for 90% of all requests for emergency services.

Performance Objectives:

To stop the escalation of a major or serious fire when found. Includes controlling the fire to the area of origin on a high fire danger day without spread to adjacent structures or escalating to a size requiring significant additional resources including mutual aid.

Integrated Time and Performance Objective Statements – Emergency Medical Service

Emergency Medical Service - Moderate Risk (Serious Medical or Traumatic Event)

Goal:

Effective first alarm response force of 5 personnel deployed via 1 engine and 1 ambulance, which includes a minimum of one Paramedic certified provider, shall respond.

Measure:

The first unit shall arrive within 10 minutes total response time, for 90% of all requests for emergency services. The completed first alarm units shall arrive within 10 minutes total response time, for 90% of all requests for emergency services.

Performance Objectives:

To stop the escalation of the medical emergency beyond the level of severity found upon arrival. Includes patient assessment, basic and advanced life support measures, and transport via ambulance as necessary for three or fewer patients.

Emergency Medical Service - Significant Risk (Multiple Casualty)

Goal:

Effective first alarm response force of 16 personnel deployed via 3 engines, 1 aerial device, 2 ambulances, plus a minimum of 1 chief officer shall respond.

Measure:

The first unit shall arrive within 10 minutes total response time, for 90% of all requests for emergency services. The completed first alarm units shall arrive within 15 minutes total response time, for 90 % of all requests for emergency services. The chief officer shall arrive within 20 minutes total response time, for 90% of all requests for emergency services.

Performance Objectives:

To stop the escalation of the medical emergency beyond the level of severity found upon arrival. Includes aggressive and timely triage, treatment and ambulance transport. Additional significant response resources are required including mutual aid.

Integrated Time and Performance Objective Statements – Water and Ice Rescue

Water and Ice Rescue Incidents -Low Risk

Goal:

Effective first alarm response force of 5 personnel deployed via 1 engine, 1 ambulance, plus a minimum of one chief officer shall respond.

Measure:

The first unit shall arrive within 10 minutes total response time, for 90% of all requests for emergency services. The completed first alarm units shall arrive within 10 minutes total response time, for 90 % of all requests for emergency services. The chief officer shall arrive within 20 minutes total response time, for 90% of all requests.

Performance Objectives:

To stop the escalation of serious injuries beyond the level of severity found upon arrival. Includes gaining access to victim(s), providing floatation device, and affecting rescue.

Water and Ice Rescue Incidents - Moderate to Significant Risk

Goal:

Effective first alarm response force of 10 personnel deployed via 2 engines, 1 utility vehicle with 1 rescue boat, 1 ambulance, plus a minimum of 1 chief officer shall respond.

Measure:

The first unit shall arrive within 10 minutes total response time, for 90% of all requests for emergency services. The completed first alarm units shall arrive within 15 minutes total response time, for 90 % of all requests for emergency services. The chief officer shall arrive within 20 minutes total response time, for 90% of all requests.

Performance Objectives:

To stop the escalation of serious injuries beyond the level of severity found upon arrival. Includes deploying a rescue boat and/or rapid deployment craft, access to victim(s), providing floatation device or entering the water, and affecting rescue. Additional response resources are required including mutual aid, Massachusetts DCR and WRA, and /or a Massachusetts Fire District 14 Specialty Team.

Integrated Time and Performance Objective Statements – Hazardous Materials Incidents

Hazardous Material Incidents – Low Risk

Goal:

Effective first alarm response force of 5 personnel deployed via 1 engine and 1 ambulance shall respond.

Measure:

The first unit shall arrive within 10 minutes total response time, for 90% of all requests for emergency services. The completed first alarm units shall arrive within 10 minutes total response time, for 90 % of all requests for emergency services.

Performance Objectives:

To stop the escalation of minor injuries or a hazardous materials emergency when found. Includes isolating the incident, rescuing trapped occupants, evacuation of exposures and adjacent areas or containing the spread of a hazardous materials release. Additional response resources may be required including a chief officer and/or a Massachusetts Hazardous Materials Response Team Leader.

Hazardous Material Incidents – Moderate to Significant Risk

Goal:

Effective first alarm response force of 15 personnel deployed via three engines, 1 aerial device, one ambulance, plus a minimum of 1 chief officer shall respond.

Measure:

The first unit shall arrive within 10 minutes total response time, for 90% of all requests for emergency services. The completed first alarm units shall arrive within 15 minutes total response time, for 90 % of all requests for emergency services. A chief officer shall arrive within 20 minutes total response time, for 90% of all requests for emergency services.

Performance Objectives:

To stop the escalation of serious or multiple injuries or a hazardous materials emergency when found. Includes isolating the incident, rescuing trapped occupants, evacuation of exposures and adjacent areas or containing the spread of a hazardous materials release. Additional significant response resources are required including mutual aid, and a Massachusetts Hazardous Materials Response Team.

Integrated Time and Performance Objective Statements – Special Rescue Incidents

Special Rescue Incidents – Moderate to Significant Risk

Goal:

Effective first alarm response force of 15 personnel deployed via three engines, 1 aerial device, one ambulance, plus a minimum of 1 chief officer shall respond.

Measure:

The first unit shall arrive within 10 minutes total response time, for 90% of all requests for emergency services. The completed first alarm units shall arrive within 15 minutes total response time, for 90 % of all requests for emergency services. A chief officer shall arrive within 20 minutes total response time, for 90% of all requests for emergency services.

Performance Objectives:

To stop the escalation of serious or multiple injuries when found. Includes providing for the safety of responders, searching for and rescuing trapped occupants, securing exposures, and minimizing the impact to the public and victims. Additional significant response resources are required including mutual aid, and a Massachusetts Fire District 14 Specialty Team.

Plan for Maintaining and Improving Performance

The SFD is an organization of committed men and women working with modern and well maintained apparatus, equipment, and facilities. To ensure the department is meeting or approaching current service level objectives (benchmarks), continuous monitoring of service level baselines must be conducted.

The SFD will begin the review process by conducting a community risk assessment, including the response demands and identifiable risks throughout the town. Changes in community demographics and growth over the previous twelve-month period will be reviewed. This provides the opportunity to determine if there have been any significant changes within geographic areas of the community, changes to service demands, or changes in standards or operations that impact the service level objectives or the Standard of Cover document.

The SFD will continue to review service level baselines and system performance. Included in the review will be a summary of the results of the service level objectives, a comparison of current results to previous results, and calculations of the difference in results between time periods. To aid in the collection and presentation of this information, the department will work as a group to assemble all required information and assist the SFD administration in the interpretation of data and considerations for improvement towards achieving benchmarks objectives. The service level objectives are incorporated for fire and other emergencies in the self-assessment manual. Findings of the self-assessment review are translated, where needed, into budgetary requests for the coming fiscal year budget preparation.

Recommendations

1. Collect data and monitor overlapping calls over multiple years.
2. Evaluate the need for additional water tenders (tankers) for responses to Off-Hydrant areas.
3. Consider improving available water supply to Off-Hydrant areas; including adding a water tender to department fleet and/or extending municipal hydrant system.
4. Consider automatic aid to Off-Hydrant and other high risk areas to improve full assignment response times.
5. Implement measures to reduce Alarm Processing time to national standard.
6. Implement formal pre-plan program.
7. Increase risk hazard assessments to include more locations and occupancies.
8. Develop and maintain a training program to address high-risk, low frequency incidents.
9. Develop a Multiple Casualty Alarm Card.
10. Continue to develop performance-based operational and capital budgets

Appendices

Appendix 1: Work Schedule

Jul2020

Sun	mon	tue	wed	thu	fri	sat
			01 Group 3	02 Group 2	03 Group 3	04 Group 4
05 Group 1	06 Group 4	07 Group 1	08 Group 2	09 Group 3	10 Group 2	11 Group 3
12 Group 4	13 Group 1	14 Group 4	15 Group 1	16 Group 2	17 Group 3	18 Group 2
19 Group 3	20 Group 4	21 Group 1	22 Group 4	23 Group 1	24 Group 2	25 Group 3
26 Group 2	27 Group 3	28 Group 4	29 Group 1	30 Group 4	31 Group 1	

Appendix 2: Department Alarm Card

Southborough			NORMAL AVAILABILITY 1 Engine or 1 Tower		EMG. DISPATCH # (508) 485-3232			BUSINESS LINE # (508) 485-3235		
DIST.14					STATION ASSIGNMENT				NOTES	
ALARM	ENGINE	ENGINE	ENGINE	LADDER	ENGINE	AMBULANCE	SPECIAL	COMMAND	DISPATCH FREQUENCY	
			R. I. T.						FREQ.	PL
1	Southborough	Westborough	Ashland	Marlborough Tower/ Southborough Tower	Framingham	Framingham EMS/ Southborough	*Off Water District/ ** St. Marks	Southborough Chief/Duty Off.	TRANSMIT 471.4250	DPL-065
	TRANSFER MUTUAL AID REQUESTS TO DISRTICT 14 CONTROL									
2	Framingham	Southborough	Hopkinton	Framingham	Northborough	Marlborough EMS	Worcester Box 4 Rehab	Westborough Chief	RECEIVE 471.4250	DPL-065
3	Northborough	Marlborough			Hudson		District 14 Command Support Team	Hopkinton Chief		
4	Hudson			Westborough	Shrewsbury					
5	Shrewsbury	Natick			Sudbury					
6	Sudbury			Ashland	Holliston					
7	Holliston	Milford			Wayland					
8	Wayland			Hudson	Grafton					
9	Grafton	Sherborn			Upton					
10	Upton			Framingham	Northborough			* Notify towns to send tankers*		
NOTE: ALARM ASSIGNMENTS MAY VARY DEPENDING ON INCIDENT LOCATION									PHASE TWO BEGINS	
ADDITIONAL TANKERS: *Out of Water District -Northborough, Hopkinton, Berlin tankers									R = DEDICATED RIT TEAM	
** St. Mark's 25 Marlborough Rd.- Additional Ladder from Hopkinton										
									UPDATED: 06.18.2019	

STRIKE TEAM RESPONSE

	STRUCTURAL	ALT. STRUC.	FORESTRY	ALT. FORESTRY	AMBULANCE	ALT. AMB.	DISASTER	ALT. DISASTER
	14-B			14-A	14-C		14-C	14-B

Appendix 3: Risk Assessment Tool

Address:

Property Use

Select One

Est. Fire Flow*
0
500 gpm - 1 point
1000 gpm - 2 points
3000 gpm - 3 points
5000 gpm - 4 points
6000 + gpm - 5 points

**Fire flow formula: (L x W ÷ 3) x % involved*

Proximity of Hydrant
0
< 100 ' - 1 point
200' - 2 points
300' - 3 points
400' - 4 points
500' + - 5 points

Building Height
0
1 story - 1 point
2 stories - 2 points
3 stories - 3 points
4 stories - 4 points
5 + stories - 5points

Access
0
All sides - 1 point
3 Sides - 2 points
2 Sides - 3 points
1 Side - 4 points
None - 5 points

Occupant Load
0
0-10 - 1 point
11-50 - 2 points
51-100 - 3 points
101-300 - 4 points
301+ - 5 points

Occupant Mobility
0
Awake / Amb 1-2 stories - 1 point
Asleep / Amb 1-2 stories - 2 points
Awake / Amb 3+ stories - 3 points
Asleep / Amb 3+ stories - 4 points
Non-ambulatory - 5 points

Fire Protection and Warning
0
Automatic / Sprinkler - 1 point
Local / Sprinkler - 2 points
Manual / Sprinkler - 3 points
Local / No Sprinkler - 4 points
No system - 5 points

Probability of Event
0
Rare - 1 point
Annually - 2 points
Monthly - 3 points
Weekly - 4 points
Daily - 5 points

Economic Impact
0
None - 1 point
Minimal Dollar Loss - 2 points
Moderate Dollar Loss - 3 points
Significant Dollar Loss - 4 points
Long Term Recovery - 5 points

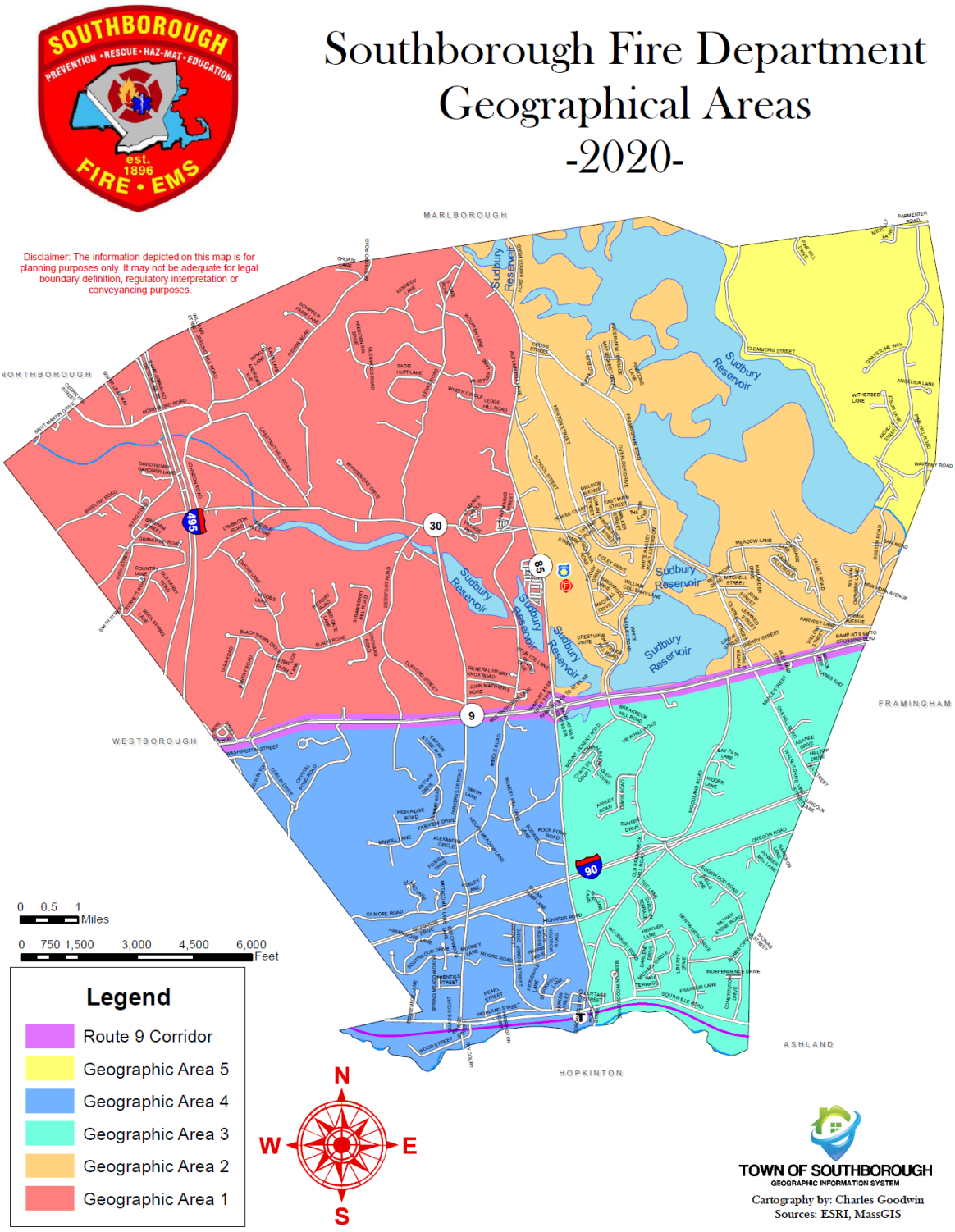
Environmental Impact
0
None - 1 point
Minimal - 2 points
Moderate - 3 points
Significant - 4 points
Long Term Recovery - 5 points

Life Safety Impact
0
None - 1 point
Minimal Risk to Life - 2 points
Moderate Risk to Life - 3 points
Significant Risk to Life - 4 points
Mass Casualty- 5 points

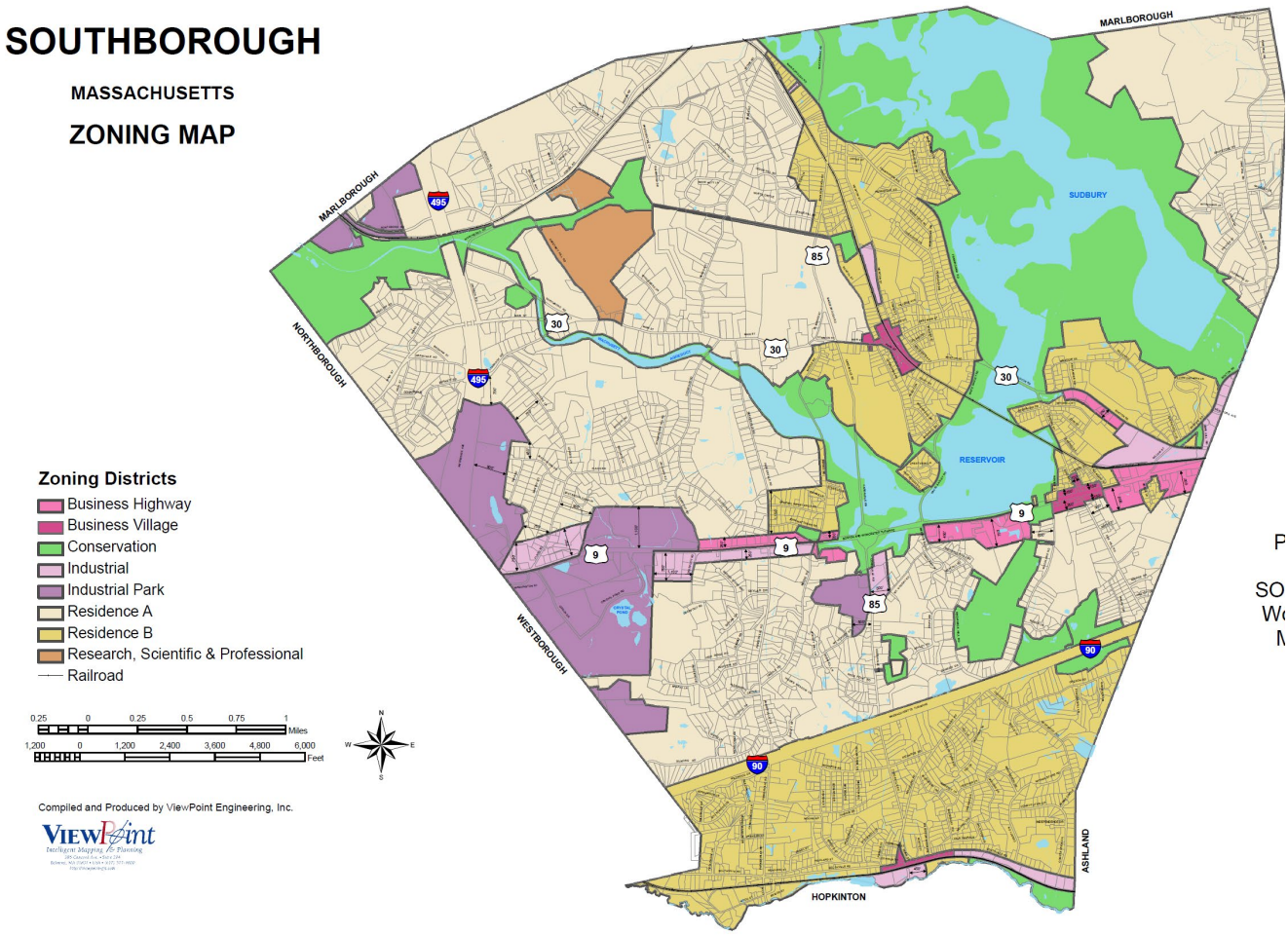
Total Score 0

Low (<20) - Moderate (20-29) - Significant/High (30-39) - Maximum/Very High (>40)

Appendix 4: Town Geographical Area Map



Appendix 5: Town Zoning District Map



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