PRINCETON, MASSACHUSETTS
FIRE DEPARTMENT ORGANIZATIONAL ASSESSMENT

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CHAPTER I – EXECUTIVE SUMMARY

The Town of Princeton, Massachusetts, engaged Municipal Resources, Inc. (MRI) to undertake an in-depth review of the Fire and EMS Department. The primary intent and goal of this project was to determine whether existing levels of staffing, facilities, equipment, and funding are adequate to provide a level of service within the Town that is in line with generally accepted standards and benchmarks for safety utilized by comparable fire departments in similar communities and based on standards and best practices for modern-day fire services currently in practice in Massachusetts and the United States.

The PFD is classified as an "All-Hazards Response organization" as it has responsibility for fire prevention education, inspection, response to fires, hazardous materials incidents, medical emergencies, and rescues both on and off the water. Over the years the types of fires, types of hazardous materials incidents, technical rescue challenges and demands, response to single and Mass Casualty Incidents, medical emergencies are forever changing, and departments must change to meet the challenges that every community faces. The challenges with responding to our day to day calls for service changed dramatically with the inception of COVID-19 and even today continue to challenge us with newer strains of viruses that we not only need to treat but also need to provide proper training and equipment to keep first responders healthy and safe so they can continue to do the job.

The increasing decline in the number of on call firefighters, a nationwide trend, is having an impact on the operational structure currently in place within Princeton. Like many communities across the United States, the growth in population, an increase in the aging population requiring emergency medical services, and a decline in the recruitment, retention, and availability of paid on-call first responders is not uncommon. The once always available, effective group of paid-on-call first responders has been in a steady decline in recent years. Often, fulltime work mandates, family commitments, increasing training requirements, required certifications, and other competing interests has diminished the availability of responders and ultimately affect an organization's ability to provide a timely response to emergencies. In addition, younger generations tend to prioritize leisure time which can reduce the level of interest in becoming an on-call firefighter. Statistics indicate that the highest levels of response are from older members. Princeton is not immune to this dilemma and is part of a nationwide problem in the on-call and volunteer fire service.

The Department is nearing a crossroad and this document is intended to provide the community an understanding on what the current level of service the Department can safely provide and what is needed to ensure a minimal level of response 24 hours a day 7 days a week can be

maintained. The community is not alone and must take the appropriate steps to ensure a responsible level of public safety can be maintained.

General Observations:

- Our team found that the PFD was well equipped with an above average apparatus set.
- The two-station model with the current deployment pattern is appropriate.
- Changing fire growth patterns require more personnel and automatic aid should be increased.
- Administrative resources should be directed at continuing policy, procedure, and guideline development.
- Resources should be directed to reduce liability and enhance operational testing and safety.

The team from MRI was met with and had tremendous cooperation from all levels of the Town and was able to complete this report and subsequent recommendations taking into account the various key people that participated. The vast majority of fire department personnel participated in some level to the study either in person or via Zoom. The amount of statistical data provided by the Chief further allowed for a deep dive into many areas. The team met with approximately twenty-five residents who wanted to offer comments and suggestions with the themes included herein. This makes this document a truly collaborative effort.

Themes from the community meeting include:

Positive Themes

- Residents are very happy with EMS System and staff.
- Residents were pleased with PFD response and involvement during the Covid 19 pandemic.
- Residents believe that PFD personnel have tremendous respect for the residents and value the community.

Themes of Concern

- Residents believe the PFD needs to compromise on the configuration and cost of a new building.

- Residents would like to understand the cost, risk, and liability of remaining in the existing headquarters building.

As part of the project the team has made over sixty recommendations for the community to consider. Key recommendations have further been put into a "road map" to further assist the community with prioritizing items for now and into the future.

This report should be considered a key component to building the future of fire and EMS in the Town of Princeton. As mentioned previously the PFD should increase area collaboration by expanding the use of mutual and automatic aid. Opportunities exist in the area to develop partners and spread the purchase and deployment of specialized equipment. In addition, based on the increasing administrative and operational demands of the position of fire chief, consideration should be given to moving toward a fulltime Fire Chief.

The MRI team was very appreciative of all of the members of the Department from the Chief to each and every firefighter-EMS provider that work with us. Princeton is very fortunate to have such a dedicated group of individuals that strive to provide the best service to the residents possible.

CHAPTER II - PROJECT OVERVIEW, SCOPE, AND METHODOLOGY

Project Overview

Municipal Resources, Inc. (MRI) was engaged by the Town of Princeton, Massachusetts, to undertake a comprehensive organizational, effectiveness, and overall efficiency study of the Town's fire, rescue, and emergency medical services (EMS) delivery system. The primary intent and goal of this project was to determine whether existing levels of staffing, facilities, equipment, and funding are adequate to provide a level of service within the Town that is in line with generally accepted standards and benchmarks for safety utilized by comparable fire departments in similar communities and based on standards and best practices for modern-day fire services currently in practice in Massachusetts and the United States. To that end, the evaluation included, but was not limited to, the following key components:

- Fire/EMS staffing levels
- Deployment of resources
- Fire/EMS service integration
- Fire/EMS facilities
- Evaluation of the adequacy of apparatus and equipment
- Fire service administration
- Financials
- Insurance grading pertaining to the fire service
- Adequacy of training
- Adequacy of support services
- Adequacy of funding
- Services of the fire department serving Princeton

Following the on-site visits, the data and documentation collected, and observations made, were subjected to analysis by the project team, both individually and collectively. The information was then compared with contemporary fire service and public safety standards, recommendations, and best practices, to formulate the recommendations contained in this report, and utilized for the development of this document.

We have produced a comprehensive report containing recommendations that will assist the Town of Princeton and its fire department, to set a clear course of action for future service improvements and providing the level of service expected by the residents of the Town. All

recommendations for improvement are based on a number of administrative regulations promulgated at the federal and state levels, industry best practice and nationally accepted consensus standards developed by the Insurance Services Office (ISO), National Fire Protection Association (NFPA), Commission on Fire Accreditation International (CFAI), Commission on Accreditation of Ambulance Services (CAAS), and industry best practices and procedures. However, since every community has unique characteristics, challenges, and resource limitations, our recommendations are specifically designed to address the immediate and long-term needs of the Town of Princeton.

The recommendations contained in this document are based upon an acknowledgment that fire and rescue services are living and constantly evolving organizations. They must constantly change and adapt to current, and anticipated, conditions and realities. A municipal fire and rescue service, while steadfastly holding onto traditions, is an organization that must be progressive and proactive, and requires a perpetual commitment to improvement. The modern fire and emergency service is constantly besieged with ever increasing demands from the public and must readily adapt to changes in technology, constantly evolving risks and hazards, and new generations of men and women entering this highly rewarding and challenging public service vocation. The delivery of high-quality fire and emergency medical services requires energetic, enlightened, progressive, and proactive leadership at all levels of the fire and rescue services delivery system. Every day must include an effort to improve and move forward.

MRI would like to take this opportunity to thank the Town of Princeton, the members of the Board of Selectman, Town Manager Sherry Patch and the Town's senior management staff, and the entire Princeton Fire Department (PFD) for being most cooperative and helpful in assisting us in carrying out our work on this project. We especially appreciate the openness and integrity of Chief John D. Bennett for his willingness to assist the MRI team and all of the PFD personnel we interacted with, all of whom demonstrated their professionalism and genuine desire to improve and strengthen the fire and rescue services that they deliver to the citizens of, and visitors to, the Town of Princeton.

Municipal Resources

Our project team looked to provide information relative to:

1. Short-term opportunities for improvement of the Department's service delivery capabilities.
2. Identify future needs for facilities and equipment.
3. Present short and long-term organizational and operational adjustments that seek to improve service delivery to the Town.

These activities are part of the Town of Princeton's ongoing fire and emergency services oversight and planning responsibilities. They are focused on identifying the risks that residents, visitors and firefighters are currently exposed to, as well as the potential future risks, and the development of an appropriate set of responses to those threats in a fiducially responsible manner. Through the strategic planning aspect, the project team makes recommendations for long-term success, viability, and stability, together with improved efficiency, operations, and safety for firefighters and citizens today, as well as projecting future needs for the provision of fire and emergency medical services throughout the community. The MRI project team has attempted to produce a report containing recommendations, focused primarily on long-range strategic planning, that will assist the PFD, and the Town of Princeton, to set a clear course of action for future service improvements and delivery.

About MRI

MRI was founded in 1989 by six former municipal and state government managers, with both public and private, professional experience. MRI provides professional, technical, and management support services to municipalities, schools, and non-profit organizations throughout the Northeast. MRI provides technical knowledge and practical experience that others cannot offer because it hires the best in the municipal consulting industry. This is evidenced by a high level of implementation of MRI's recommendations by its clients. MRI's clients have come to expect the organization to provide whatever they need, and it fulfills their expectations.

MRI's dynamic management staff adapts services to specific client needs. Clients realize that MRI has been in their shoes and has the experience, sensitivity, and desire that it takes to develop and deliver services that specifically meet their needs. The depth of MRI's experience is reflected not only in the experiences of its associates, but in the scope of services it provides its clients, from professional recruitment to organizational and operational assessments of individual municipal departments and school districts, or ongoing contracted services for various municipal government and school business support activities. Municipal Resources has a particularly strong public safety group with nationally recognized expertise in fire and emergency medical services.

MRI's professional staff is always focused on helping its clients solve problems and provide solutions for their future success. We simply work to gain an understanding of past events to build a framework for future success. We do not put forth idealistic, unachievable, or narrowly focused solutions.

MRI'S Philosophy

Municipal Resources, Inc. is committed to providing innovative and creative solutions to the problems and issues facing local governments and the agencies that serve them.
The purpose of MRI's approach is to supplement the efforts of municipal employees and other personnel and enable them to do their jobs well. MRI is committed to supporting and enhancing positive, sustainable communities through better organization, operations, and communication. This is achieved by:

- Supporting towns, cities, counties, school districts and other community service agencies with management and technical services to facilitate constructive change within client organizations.
- Conducting studies and analyses designed to assist clients in achieving organizational improvement.
- Advocating and advancing cooperation, coordination, and collaboration between government organizations and related community support agencies.
- Maintaining a staff of highly qualified professional, experienced and open-minded life-long learners to serve as consultants and advisors to clients.
- Maintaining awareness and understanding of advances in "best practices" for delivery of all levels of core community services and related professional management.
- Developing and refining techniques for effective community engagement, information dissemination, and constructive change.

MRI'S Objectives

1. To help municipalities and agencies obtain maximum value for limited tax dollars.

2. To identify and help communities manage the risks associated with public safety functions.

3. To raise public awareness of the value and professionalism of their municipal resources.

4. To help local leaders develop and execute plans that best meet their community's needs, given available resources.

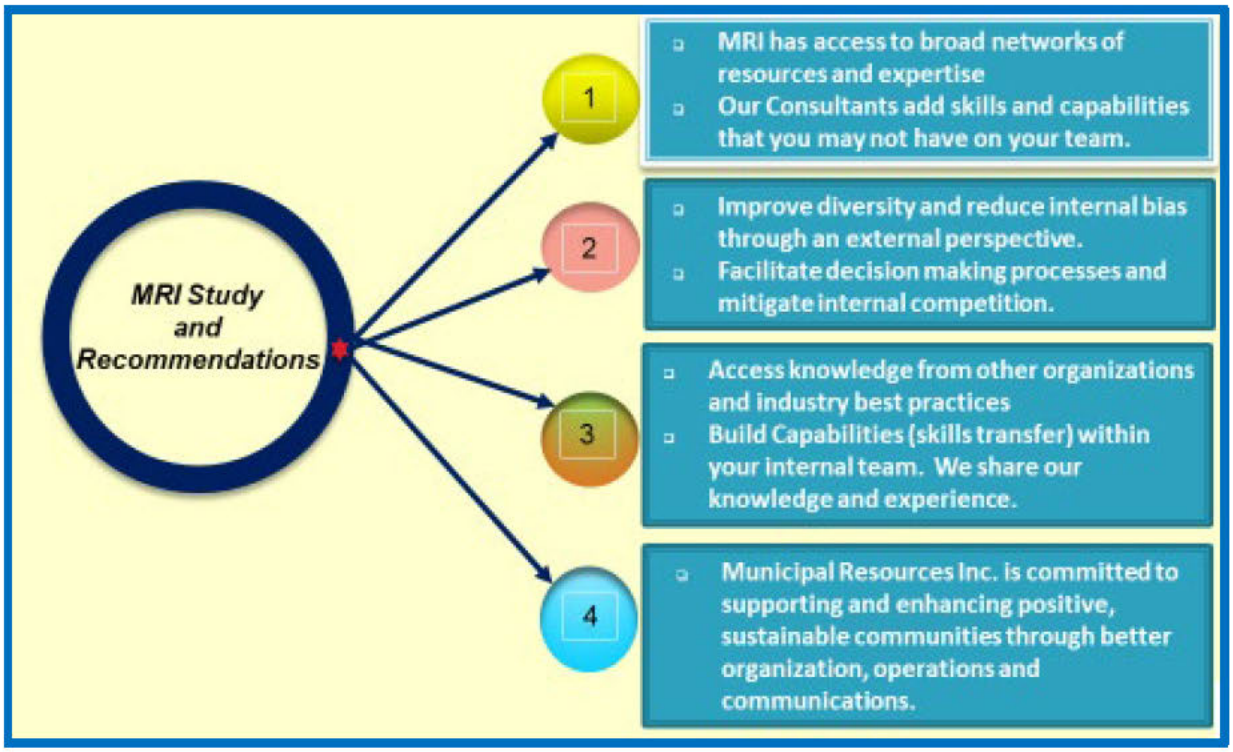

FIGURE II-1: MRI PROJECT IMJPLEMENTATION PLAN

Scope of Work & Work Elements

As part of this project our team evaluated the current conditions and service delivery/performance to assess the PFD's operations in comparison to industry standards and best practices. This evaluation will consider the level of service provided to the community and encompass the following tasks:

- Fire and Emergency Medical Services operations and finances
- Staffing (per shift, deployment, etc.)
- Training
- Service Delivery and Performance
- Command staff structure, including administrative staff and operational span of control
- Review of apparatus fleet
- Review of Facilities
- Review of policies and procedures
- Mutual Aid Agreements
- Review of water availability

Our team conducted interviews with and gathered information from key personnel including:

- Elected or appointed officials
- Fire department managers and other key staff
- Finance function managers
- Inspectional Services key staff
- Relevant external Fire and EMS agencies within the region
- Employees of the PFD

Members of our team will conduct three site visits to sufficiently gather and understand operational data, performance metrics, and other information necessary to inform appropriate recommendations. The site visits included:

- Consultations with the fire department and Town administration
- Site visits to each fire station
- Listening sessions with Princeton Firefighters
- Community meeting to gather the expectations of the community
- Final presentation of the report to Department and Town Administration

To complete the Scope detailed above our team focused on the following key work elements:

A. Administration: Day-to-day management of the Fire Department by on-call and paid personnel, as well as the management structure of the organization. Areas that were evaluated include:
   1) Critical issues
   2) Challenges of the future
   3) Internal and external communications
   4) Budgetary decision-making process
   5) Resource allocation
   6) Incident reporting and records management

B. Identification of service level;
   1) Current service level
   2) Average response time
   3) Expected service level
   4) Review of elongated responses

C. Review of growth, demographics, and projected development
   1) Target hazard analysis

2) Best practice strategies
3) Review of planned document

D. NFPA 1710/1720 Staffing: Review operational staffing levels;
1) Shift staffing
2) Recall of personnel (time and number)
3) Responsibilities and activity level of personnel
4) Provision of services during a major incident

E. Evaluation of the current deployment and response patterns;

F. Evaluation of response times, incident volume, (trend analysis) and the number of personnel that respond to each call for service;

G. Evaluation of the average number of responders to emergency incidents;

H. Assess and evaluate the Department's current staffing, organization and delivery of services, with the primary focus being emergency medical response;

I. Review the location and effectiveness and configuration of fire facilities;

J. Evaluation of mutual and automatic aid practices in Princeton;

K. Based on information provided through on-site field visits and interviews our team developed an informal strength, weakness, opportunity and threat matrix for the PFD. This matrix was used to develop aspects of this report.

L. Review and comment on apparatus, and facilities;

M. Review the qualification, training and selection of officers;

N. Review current recruitment and retention efforts;

O. Recruitment and retention of on-call personnel;

P. Outline a process to implement change.

Methodology/Project Approach

To accomplish these tasks, we employed the following eighteen methodologies:

1. Review of service demand data and Department incident statistics, rules and regulations, budget, capital improvement plan (CIP), and other records;

2. Identified the level of service currently provided to the Town of Princeton;

3. Conducted a review of response times provided by the PFD;

4. Conducted Interviews with the fire chief, command staff, and members of the PFD selected at random and other Department personnel having direct knowledge and understanding of the subject areas.

5. Conducted a Nominal Group Process (NGP) for the PFD.

6. Conducted a community listening session.

7. Conducted an orientation meeting with the Town Administrator, A member of the Select Board and the Fire Chief.

8. Interviews with select fire chiefs/command staff members of neighboring mutual aid fire departments;

9. Interviewed the Building Commissioner.

10. Performed a comparative subject area resource analysis of similar type and size communities.

11. Evaluated PFD facilities and equipment and identified an optimal apparatus set for the Town of Princeton;

12. Conducted two on-site visits to Princeton that included in-person meetings, tour of PFD facilities, and tour of Princeton to observe target hazards, and community risks;

13. Analysis of community demographics and projected growth and development;

14. Analysis of fire department staffing, including current operations, scheduling, organizational structure and future needs based on risk, current operational experience, and projected community growth and development;

15. Review of mutual aid and regional operations, including special response units;

16. Assessment of EMS mutual aid responses

17. Evaluation of ISO Rating and scoring;

18. Review of the applicability of various national standards and best practices for municipal fire and EMS services as listed below:

    - **29 CFR 1910.134**, OSHA 2 in 2 out policy. This provision requires that **at least** two employees enter the Immediately Dangerous to Life or Health (IDLH) atmosphere and remain in visual or voice contact with each other at all times. It also requires that at least two employees be located outside the IDLH atmosphere, thus the term, "two in/two out".

    - **NFPA 1720***,* Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Volunteer Fire Departments.

    - **NFPA 1500***, Standard on Fire Department Occupational Safety, Health, and Wellness Program*.

    - **NFPA 1300***, Standard on Community Risk Assessment and Community Risk Reduction Plan Development.*[1]

[1] NFPA standards are referenced throughout this report as recommended practices for modern fire departments that can be used for state-of-the-art guidance, performance benchmarks and organizational planning and goal setting. They are not mandated by Massachusetts or federal law except when referenced in the state fire code, state building code, OSHA workplace safety regulations, or as a condition of federal grant performance.

CHAPTER III - COMMUNITY OVERVIEW

Town of Princeton

The Town of Princeton covers 35.83 square miles within Worcester County (see Figure III-1) in Central Massachusetts and is located 18 miles northwest of the City of Worcester, Massachusetts. Of these 35.83 square miles approximately 0.4 square miles is water. This will become important later in this report when the MRI team addresses risks and vulnerabilities. A tour of the community by the MRI team found a primarily residential community with a mix of small business, municipal infrastructure, and one major public facility that hosts a well-known ski area generates some seasonal impact.

Within this region there is a small state highway system known as Route 140 which intersects with Interstate 190 approximately 10 miles outside of the community and Route 31 which makes Princeton accessible to surrounding communities with relative ease.

Princeton is home to the Wachusett Mountain where outdoor activities are plentiful and attract people to the trail systems, nature, and a variety of seasonal opportunities that make it a desirable place to visit and enjoy.

FIGURE III-1 – GEO LOCATION OF THE TOWN OF PRINCETON

Community Demographics

According to the 2020 census, the Town has a resident population of 3,495 living out of 1,298 households. With a population density of 98 people per square mile, the Town is classified as a rural community, which is an accurate classification. Based on the U.S. Census the racial makeup of the Town was 91% white, 2% Hispanic, and 7% from two or more other races.

Princeton's median household income is $148,438 while the per capita income is $63,289. Approximately 3.5% of Princeton's residents are considered to be living in poverty. The census for 2020 also showed that of the 1298 households 20% were occupied by residents aged 18 or younger, 76% were married couples living together, 9 % had a female householder with no husband present and 10% were non-families. Of all households 21% were made up of individuals 65 years of age or older. The average household size was 2.7 persons.

The median age in the Town was 46.8 years. Overall, 22% of residents were under the age of 19; 8% were between the ages of 20 and 29; 40% were from 30 to 59; and 30% were 60 years of age or older. The gender makeup of the Town was 50.1% male and 49.9% female.

Princeton is a town that is typical of many New England towns that is defined as a rural exurb, serving as a bedroom commuter town for nearby communities such as Worcester, Leominster, Fitchburg, and the MetroWest area. Within the community there are rural areas that are farmlands, a small number of commercial areas, and industrial areas along the outskirts of town.

The Princeton Center Historic District area is located at the intersection of Hubbardston Road and Mountain Road. Within this area there is a town common, the town hall, the public library, and a place of worship. At this location exists the main public safety facility for Princeton Police and Princeton Fire.

On the east side of the community exists an area known as the East Princeton Village Historic District which includes residential structures that were likely built in the 18th century to support this "industrial village." Although there is no longer a factory in operation in this area there are a small amount of commercial mixed-use properties as well as "Mechanics Hall." Within the Town of Princeton there are two other Districts that are on the Register of Historic Places and they are known as the "Russell Corner Historic District" and the West Village Historic District." These locations both have a small number of residential occupancies that appear to have been constructed in the 17th and 18th centuries.

Lastly, the Town of Princeton shares Wachusett Mountain with the Town of Westminster. Wachusett Mountain is the highest point in Massachusetts east of the Connecticut River. This location is popular for hiking and skiing and possesses an automobile road that ascends to the summit. There is a commercial ski area that operates seasonally that has the capacity to attract 9200 skiers per hour over 27 trails, utilizing 8 lifts. This area does occasion the use of municipal services for EMS however has used private EMS when appropriate throughout the years.
Although structural firefighting in the Town of Princeton is infrequent, when a fire occurs personnel are challenged by an aging stock of residential homes, limited staff, and limited water supply. The ability to get a sufficient number of personnel, along with appropriate apparatus, to the scene of a structure fire is critical to operational success and firefighter safety. Accomplishing this within the fourteen-minute time frame (to have 6 – 15 personnel on scene) as specified in NFPA 1720 is an

important operational benchmark. It should be recognized that this is a substantial task and an ongoing challenge for a rural community.

The Princeton Fire Department

The PFD is a volunteer/ on-call emergency services organization that delivers fire, rescue, fire prevention, and emergency medical services (EMS) to the Town of Princeton. The Department currently has a roster of 34 people (25 on-call staff and nine per diem personnel). This includes a chief, a deputy chief, four captains, one lieutenant, 13 firefighters of which seven act as dual role to support EMS. In addition, there are six EMS providers that are not firefighters. The department also has a per diem staff of five EMT's and four paramedics.

The Department operates out of two fire stations. The headquarters, located at 8 Town Hall Drive, houses the offices of the Department, and is the daytime working and living space for duty staff. Station 2, located at 11 Redemption Rock Trail North, houses the training – meeting room. The PFD operates the following apparatus set:

- Two engines
- Two off road forestry trucks
- Two water tankers (tenders)
- One aerial ladder truck
- One heavy rescue truck
- One service truck
- One class one ambulance and one class five ambulance
- One boat
- One 4-wheeler
- One staff vehicle

In 2021, the Department responded to 364 emergency calls, ten calls more than 2020. This included 209 calls for emergency medical Services (EMS) and 155 fire responses with no EMS component. By comparison, the total emergency incidents in 2019 (320) were slightly less than the number of responses in 2020 (354). The Department continues to monitor and evaluate its response patterns to determine the on-going impact of Covid-19.

The Department provides EMS services to the community at the advanced life support (ALS)/paramedic transport level. The Department has six paramedics, and 22 other EMS providers at both EMR and EMT (Basic level) of certifications.

The PFD is an all-hazards response agency that responds to a wide range of emergency incidents and requests for assistance each year from within the Town. It also provides mutual aid to, and receives mutual aid from, all surrounding municipalities. The PFD is trained to operate at the hazardous materials operations level.

Community Growth & Development

The Town of Princeton is a vibrant New England Community that is a location that most people travel from to their place of employment rather than the opposite. Within the region there are several communities where residents often commute to for employment such as Fitchburg, Leominster, Worcester, and the MetroWest region. Princeton as a whole has a small employment base, and most residents travel outside of the community for their livelihood, for access to healthcare, and for retail needs.

Through the site visit and tour of the Town the MRI team was shown a number of residential areas that are spread out through the community as well as some industrial areas that appear to be situated on the outer portions of Princeton. Within the central area of the Town are municipal buildings accompanied by a limited number of mixed-use occupancies.

Based on trend analysis, we witnessed what we perceive to be low growth in the future due to the lack of infrastructure such as municipal water and municipal sewer. Zoning also appears to be restrictive and classified as either residential, business, or industrial, which appears to be concentrated in low impact areas. Due to these findings, we anticipate that there will be minimal future service demands that will impact the delivery of fire and EMS services in the Town of Princeton.

CHAPTER IV – PRINCETON RISK AND HAZARD PROFILE

Fire and rescue services protecting all communities generally have a common overall mission, the protection of life and property; but different community profiles in which they operate. These dissimilarities create vastly different fire and rescue services operational needs based on a unique community risk profile, service demands, and stakeholder expectations.

A community risk assessment is a comprehensive process to identify the hazards, risks, fire, and life safety problems, and the demographic characteristics of those at risk in a community. In each community, there are numerous hazards and risks to consider. For each hazard, there are many possible scenarios and potential incidents that could be encountered depending on timing, magnitude, and location of the hazard or incident. A thorough risk analysis provides insight into the worst fire and life safety problems and the people who are affected. The analysis results create the foundation for developing risk-reduction and community education programs.

Conducting a community risk analysis is the first step toward deciding which potential fire or injury problem needs to be addressed. Risk analysis is a planned process that must be ongoing, as communities and people are constantly changing. Too often, an objective and systematic community risk analysis is a step that is overlooked in the community education process. Many emergency service organizations address risks based on a perceived need for service that is not there. This approach can be costly (i.e., misdirected resources, continued property loss, injuries, or deaths). In short, a good community risk assessment will produce a realistic picture of what the hazards and potentials for incidents are, identify who is at risk, and attempt to quantify the expected impacts (Figure IV-1).

Understanding the definition of hazards and risks is critical to the risk assessment process. Hazards are physical sources of danger that can create emergency events. Hazards can be items such as buildings, roadways, weather events, fires. Risk relates to the probability of a loss due to exposure to a hazard. People and property can be at risk. Consequences for the community are also factors to consider. Each of these factors are assessed during the community risk process (Figure IV-2).

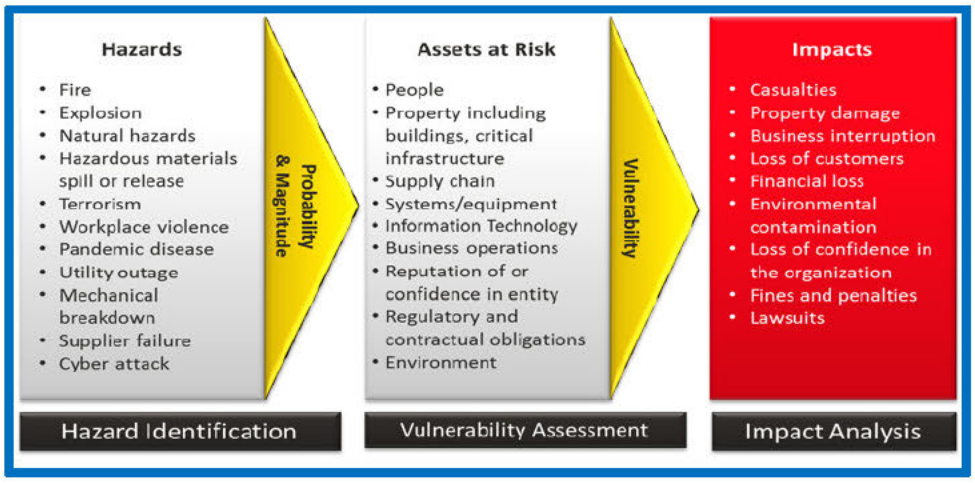

FIGURE IV-1: RISK ASSESSMENT PROCESS
Image credit: www.ready.gov/risk-assessment

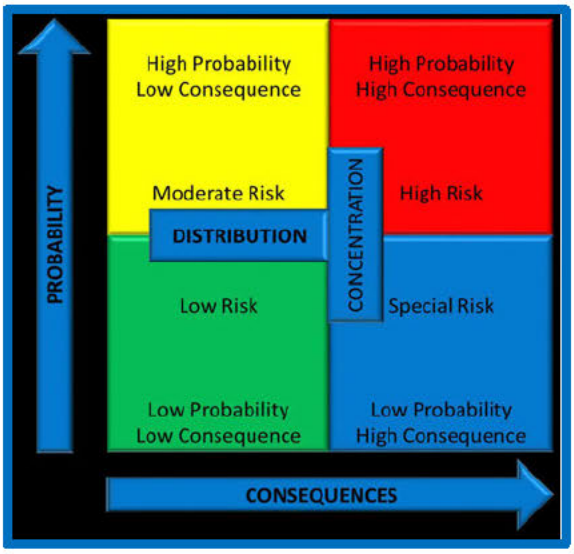

FIGURE IV-2: FIRE PROBABILITY AND CONSEQUENCES MATRIX
Image credit: Commission on Fire Accreditation International

In performing a risk assessment, a community determines which hazard may occur, how often it is likely to occur, and the potential impact of that hazard. Most municipalities' hazard mitigation plans address numerous natural hazards, including but not limited to, floods, hurricanes, tornadoes, and winter storms. They also usually cover a wide variety of human-caused hazards such as fire, hazardous materials releases, and transportation incidents. Almost any of the comprehensive list of potential hazards identified in these plans will involve the community's fire and EMS responders, at least during the initial stages.

A more focused community fire risk assessment is performed by assessing such factors as the needed fire flow, probability of an incident, consequences of an incident, and occupancy risk. The "score" established is then utilized to categorize the area, or even individual properties, as one of low, moderate, or high/maximum risk. This categorization can assist a fire department in establishing fire risk/demand areas or zones. Having this information readily available provides the community and the fire department with a better understanding of how fire stations, response run cards, and staffing patterns can be used to provide a higher concentration of resources for higher-risk

scenarios or, conversely, fewer resources for lower levels of risk.[2] The community fire risk assessment may also include determining and defining the differences in fire risk between a detached single-family dwelling, a multi-family dwelling, an industrial building, and a high-rise building by placing each in a separate category.

According to the NFPA *Fire Protection Handbook*, these hazards are defined as:

> **High-hazard occupancies:** Schools, hospitals, nursing homes, high-rise buildings, and other high life-hazard or large fire-potential occupancies.
>
> **Medium-hazard occupancies:** Apartments, offices, mercantile, and industrial occupancies not normally requiring extensive rescue by firefighting forces.
>
> **Low-hazard occupancies:** One-, two-, or three-family dwellings and scattered small business and industrial occupancies[3].

The NFPA also identifies a key element of assessing community vulnerability as fire department operational performance, which is comprised of three elements: resource availability/ reliability, department capability, and operational effectiveness[4].

> **Resource availability/reliability:** The degree to which the resources are ready and available to respond.
>
> **Department capability:** The ability of the resources deployed to manage an incident.
>
> **Operational effectiveness:** The product of availability and capability. It is the outcome achieved by the deployed resources or a measure of the ability to match resources deployed to the risk level to which they are responding.[5]

As with most communities, the greatest fire safety concern in Princeton is the potential life loss in fires that occur in non-sprinklered, single, and multi-family residential dwellings during sleeping hours, which is consistent with national trends. These fires are fueled by new "lightweight" construction and more flammable home contents. The time to escape a house fire has dwindled from about 17 minutes, 20 years ago, to three to five minutes today. This poses a severe risk not only to

[2] *Fire and Emergency Service Self-Assessment Manual,* Eighth Edition, (Commission on Fire Accreditation International, 2009) p. 49.
[3] Cote, Grant, Hall & Solomon, eds., *Fire Protection Handbook* (Quincy, MA: National Fire Protection Association, 2008), p. 12.
[4] http://www.nfpa.org/assets/files/pdf/urbanfirevulnerability.pdf
[5] National Fire Service Data Summit Proceedings, U.S. Department of Commerce, NIST Tech Note 1698, May 2011.

occupants but also to firefighters as they now have less time to do their job and save residents' lives and property.

Princeton presents a unique mix of challenges and hazards that must be protected by its fire department. Although the Town has significant residential areas, it is not just a prototypical bedroom community. It has a minimal density concentration of commercial occupancies.

Target hazards are defined as significant hazards; those that can strain the fire department response capability. Target hazards could include hospitals, schools, churches, storage facilities, or manufacturing plants.

Automatic sprinklers are highly effective elements of total system designs for fire protection in buildings. They save lives and property, producing large reductions in the number of deaths per thousand fires, in average direct property damage per fire, and especially in the likelihood of a fire with a large loss of life or large property loss. They do so much quicker, often more effectively, and with less damage than firefighters do. No fire safety improvement strategy has as much documented life safety effectiveness as fire sprinklers because they extinguish the fire, or, at a minimum hold it in check and prevent flashover, until the arrival of the fire department.

Newer multi-family residential/apartment complexes are generally fully protected by fire suppression and detection systems. However, as noted below, these systems have limitations as they may not protect all areas of the building, or, are not always properly maintained.

From 2007 to 2011, fires in all types of structures, when sprinklers were present in the fire area of a fire large enough to activate sprinklers in a building not under construction, sprinklers operated 91% of the time[6]. When they operated, they were effective 96% of the time, resulting in a combined performance of operating effectively in 87% of reported fires where sprinklers were present in the fire area and the fire was large enough to activate sprinklers[7]. **In homes (including apartments), wet-pipe sprinklers operated effectively 92% of the time. When wet-pipe sprinklers were present in the fire area in homes that were not under construction, the fire death rate per 1,000 reported structure fires was lower by 82%, and the rate of property damage per reported home structure fire was lower by 68%[8].** In all structures, not just homes, when sprinklers of any type failed to operate, the reason most often given (64% of failures) was shutoff of the system before the fire began[9].

[6] U. S. Experience with Sprinklers. John R. Hall, Jr. National Fire Protection Association, June 2013.
[7] U. S. Experience with Sprinklers. John R. Hall, Jr. National Fire Protection Association, June 2013.
[8] U. S. Experience with Sprinklers. John R. Hall, Jr. National Fire Protection Association, June 2013.
[9] U. S. Experience with Sprinklers. John R. Hall, Jr. National Fire Protection Association, June 2013.

Even with the presence of automatic fire suppression systems, the firefighting and emergency response challenges that may confront firefighters in commercial and industrial structures and occupancies are nonetheless much more complex. They often require significantly more resources to mitigate and are potentially more dangerous from a life safety perspective to both occupants and firefighters, than those usually found in single-family dwellings. While built-in fire protection should significantly reduce the spread of fire, it may not completely extinguish the fire. Firefighters still need to complete the extinguishment and perform ventilation, overhaul, and salvage operations.

Current Massachusetts codes prohibit municipalities from requiring residential sprinkler systems in all new occupancies. However, the fire department can approach the developer/builder/owner to discuss the pros and cons of residential sprinkler systems during the approval process for subdivisions and large single-family residences and encourage them to consider the installation of these life safety systems regardless of where they are located. There are several publications that the fire department can use as resources to market the benefits of residential fire suppression systems including NFPA, which has developed the standards for their design and installation.

Buildings more than three stories in height pose a special risk in an emergency. Fire on higher floors may require the use of ladder trucks to provide an exterior standpipe to be able to deliver water into a building that does not have a system in place. For victims trapped on higher floors, a ladder truck may be their only option for escape. Large area buildings sometimes referred to as horizontal high rises, such as warehouses, malls, and large "big box" stores often require greater volumes of water for firefighting and require more firefighters to advance hose lines long distances into the building. They also present challenges for ventilation and smoke removal.

The fire service further assesses the relative risk of properties based on several factors. Properties with high fire and life risk often require greater numbers of personnel and apparatus to mitigate a fire emergency effectively. Staffing and deployment decisions should be made with consideration of the level of risk within each area of the community. The assessment of each factor and hazard as listed below, took into consideration the likelihood of the event, the impact on the community itself, and the impact on the PFD's ability to deliver emergency services, which includes automatic aid capabilities as well. The list is not all-inclusive but includes categories most common, or that may be presented to the department.

Low Risk:

- Automatic fire/false alarms.
- Single patient/non-life threatening BLS EMS Incidents.
- Minor fire incidents (fire flow less than 250 gallons per minute) with no life safety exposure.

- Minor flooding with thunderstorms.
- Good Intent/Hazard/Public Service.
- Minor rescues.
- Outside fires such as grass, rubbish, dumpster, and vehicle with no structural/life safety exposure.
- Small fuel spills.

Moderate Risk:

- Fires in single-family dwellings and equivalently sized commercial office properties (needed fire flow generally between 250 gallons per minute to 1,000 gallons per minute) where fire and/or smoke is visible, indicating a working fire.
- Life-threatening ALS medical emergencies.
- Motor Vehicle Crash (MVC).
- MVC with entrapment of passengers.
- Hazardous material emergencies requiring specialized skills and equipment, but do not involve a life hazard.
- Technical rescues involving specialized skills and equipment (such as low-angle rescue involving ropes and rope rescue equipment and resources).
- Larger brush and outside fires, particularly if structures are exposed.
- Suspicious substance Investigation involving multiple fire and law enforcement agencies.
- Surface water rescue.
- Good Intent/Hazard/Public Service fire incidents with life safety exposure.

High Risk:

- Fires in larger commercial properties and target hazards with a sustained attack (fire flows more than 1,000 gallons per minute).
- Cardiac/respiratory arrest.
- Multiple patient medical/mass casualty incidents with more than ten but less than 25 patients.
- Major releases of hazardous materials that causes exposure to persons or threatens life safety.
- High-risk technical rescues:
  - Confined space rescue.
  - Structural collapse involving life safety exposure.
  - High angle rescue involving ropes and rope rescue equipment.
  - Trench rescue.

Special Risk:

- Working fire in a structure greater than three (3) floors.
- Fire at an industrial building or complex with hazardous materials.
- Multiple patient medical/mass casualty incidents with more than 25 patients.
- Rail or transportation incident that causes life safety exposure or threatens life safety through the release of hazardous smoke or materials.
- Explosion in a building that causes exposure to persons or threatens life safety or outside of a building that creates exposure to occupied buildings or threatens life safety.

Overall, it is the project team's assessment that the PFD's current relative basic fire and life risk translates to (Figure IV-3):

OCCUPANCY DESCRIPTION	RISK
Single Family Residential (unsprinklered)	Moderate
Multi-family Residential (sprinklered)	Moderate
Multi-family Residential (unsprinklered)	High
Commercial (retail and office) (sprinklered)	Moderate
Commercial (retail and office) (unsprinklered)	High
Industrial	LOW
Open Space	Low
Transportation Incident	Moderate
Water Rescue Incident	Low

FIGURE IV-3: PFD FIRE AND LIFE SAFETY RISK LEVELS

For a town of its geographic size and population, Princeton faces some considerable risks and hazards that are addressed daily by its fire-rescue department. These risks and hazards warrant the need for a highly-trained fire and emergency medical service that focuses on the prevention and mitigation of risks and hazards; is equipped to respond quickly to emergencies of varying types; is integrated into an effective mutual aid system, and adapts to the demands and challenges of a growing and changing community.

The following summarizes the types of risks and hazards that are most significant:

- *Residential occupancies.* According to U.S. Census data, Princeton has approximately 1,298 housing units, of which the majority are single-family homes. According to the National Fire

Protection Association (NFPA), more than one-quarter (26%) of reported fires in 2015-2019 occurred in homes. Even worse, three-quarters (75%) of civilian fire deaths and almost three-quarters (72%) of all reported injuries were caused by home fires.

- *Aging building stock.* Nearly three-quarters of all residential units in Princeton were built before 1979. Older electrical systems and heating systems are more likely to fail and cause a fire. Older buildings may not have up-to-date smoke alarms or fire detection systems and are much less likely to be equipped with automatic fire sprinkler systems.

- *Aging Population.* According to current census data, 21% of Princeton's population is 65 years and older. As the population ages, there will be an increased demand for emergency medical services. In addition, older adults (and the very young) are at the greatest risk from fire.

- *Commercial-Industrial Risks.* Princeton has a very minimal commercial sector that would include manufacturing facilities, medical facilities, skilled nursing facilities, office occupancies, retail trash collection services, and warehouses.

- *Growth and Development.* The Town is focused on the implementation of its Economic Development Plan, which includes the coordination of development initiatives, business retention and recruitment, and commercial and industrial development and revitalization efforts. Risk can be mitigated in new and renovated buildings by adherence to modern building and fire codes and the installation of fire protection systems. However, these initiatives increase the demand for fire inspection, code enforcement, and plan review services as well as emergency medical services. New technologies that are common with bio-technology, pharmaceutical, solar power arrays, and research and development facilities bring new fire protection and EMS challenges which require the fire-rescue department to constantly adapt its training, tactics, and equipment.

- *Natural Hazards*. The Town's hazard mitigation plan has identified numerous natural hazards that are expected to increase due to climate change, including wildfire, flooding, hurricanes, severe storms, dam failure, and extreme temperatures. The result will be increased demands on fire and emergency medical services.

- *ISO Public Protection Classification.* The ISO Public Protection Classification (PPC^{Ò}) rating for the Town of Princeton is a 5/5Y. This rating is based on a scale of 1 to 10, with 1 indicating superior property fire protection. The PPC is used by some property insurers to determine the rates for residential and commercial property insurance. In order to determine the PPC, ISO-Verisk scores a community according to the Fire Suppression Rating Schedule (FSRS). ISO is discussed in greater detail in this document.

Recommendations

Recommendation IV-1

The PFD should conduct a thorough Community Risk Assessment and Hazard Profile evaluation every two to three years. This will help establish the needs of the community and the Department should adjust as needed.

Recommendation IV-2

The PFD should review and be part of any Planning, Zoning, or large-scale permitting process in the community. The Department should at a minimum comment on all access for emergency vehicles, water supply for firefighting, and fire and life safety features.

Recommendation IV-3

When possible, the Town and the Department should encourage sprinkler systems to be installed (or retrofitted) to enhance life safety and the overall protection of structures and the contents within.

CHAPTER V – FIRE OPERATIONS & RESPONSE

Overview

FIGURE V-1 – IMAGE OF A RESIDENTAIL STRUCTURE FIRE IN PRINCETON

Firefighting, emergency medical services and rescue operations, an incident command system, and safety procedures are critical components of a municipal fire department. Because the greatest number of calls for service is predominantly for emergency medical incidents, in reality, many fire departments have shifted from being fire service agencies that provide EMS and have become EMS agencies that provide fire protection services. However, while no longer generating the majority of most departments' responses as they once did, fire-related incidents are still justifiably an extremely high priority for the "fire" department and comprise a significant part of their operational missions.

NFPA 1720, ***Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments*** 2020 edition (National Fire Protection Association, Quincy, MA) addresses the organization and

deployment of fire suppression operations, emergency medical operations, and special operations to the public by career fire departments.[10]

In addition to structural firefighting and emergency medical services, the fire department is tasked with responding to and managing a broad spectrum of other types of emergencies, including, but not limited to, vehicle crashes, building collapse, water and ice rescue, mass casualty incidents, weather-related emergencies, and natural and technological disasters. These types of incidents require specialized equipment and specialized training. In all types of emergency responses, an incident command system (ICS) should be utilized that conforms to the National Incident Management System (NIMS) guidelines that have been promulgated by the U.S. Department of Homeland Security. Since safety is the primary focus throughout all operations, a formal component of the ICS program includes the consistent assignment of an on-scene safety officer when appropriate.

Fire department operations and service delivery can be dramatically improved in those departments that commit resources to goal-setting, master planning, risk assessment, and performance measurement. Several tools and resources are available to guide management in these efforts from organizations such as the US Fire Administration (USFA), National Fire Protection Association (NFPA), International Association of Fire Chiefs (IAFC), International Association of Fire Fighters (IAFF), the Massachusetts State Fire Academy, the U.S. Department of Transportation (USDOT), and Massachusetts Office of Emergency Medical Services (OEMS).

The fire service has experienced tremendous technological advances in equipment, procedures, and training, over that past fifty years. Better personal protective equipment (PPE), the widespread use of self-contained breathing apparatus (SCBA), large diameter hose, better and lighter hand lines and nozzles, and thermal imaging cameras are just a few of the numerous advances in equipment and procedures, that have allowed firefighters to perform their duties more effectively, efficiently, safely, and with fewer personnel. However, the fact still remains that the emergency scene in general, and the fire ground involving a structure fire in particular, is a dynamic, dangerous, frequently unpredictable, and rapidly changing environment where conditions can deteriorate very quickly, placing firefighters in extreme personal danger.

The operations necessary to successfully extinguish a structure fire, and do so effectively, efficiently, and safely, requires a carefully coordinated, and controlled, plan of action, where certain operations,

[10] *NFPA 1720 is a nationally recognized standard, but it has not been adopted as a mandatory regulation by the federal government or the Commonwealth of Massachusetts. It is a valuable resource for establishing and measuring performance objectives in the PFD but should not be the only determining factor when making local decisions about the Town's fire and EMS operations.*

such as venting ahead of the advancing interior hose line(s), must be carried out with a high degree of precision and timing. Multiple operations, frequently where seconds count, such as search and rescue operations and trying to cut off a rapidly advancing fire, must also be conducted simultaneously.

Observations

FIRE OPERATIONS, INCIDENT COMMAND, MUTUAL AID AND SAFETY

The PFD is equipped to respond to a wide variety of emergency incidents. Although EMS calls are more prevalent, the PFD must still be prepared to fulfill its core firefighting mission. It is our observation that the PFD is appropriately trained and well equipped to engage the risk profile (Chapter III) and operational challenges presented within the Town of Princeton.

As with most communities in the United States, the PFDs primary focus in terms of structural firefighting involves incidents within residential occupancies (single- and two-family dwellings, multi-family units, etc.) due to the high potential for loss of life. Firefighting in commercial occupancies are important to the economic well-being of the community, but large commercial occupancies are often equipped with automatic fire suppression systems to reduce risk and damage from fire.

Until residential fire sprinkler systems become commonplace as a critical lifesaving feature in homes, the fire department will continue to be the only "front-line" resource available for firefighting and rescue. The fire codes in the Commonwealth of Massachusetts do not require residential sprinklers and do not allow communities to mandate them through local codes or ordinances. Figure V-2, below contains a snapshot of structure fire data, civilian injuries and deaths, firefighter injuries and deaths, and dollar loss in the Town of Princeton from 2001 through 2021.

Year	# of Incidents	Fire Service Injuries	Civilian Injuries	Fire Service Deaths	Civilian Deaths	Dollar Loss
2001	70	0	1	0	0	$11,500
2002	2	0	0	0	0	0
2003	17	1	0	0	1	$160,000
2004	18	0	0	0	0	$4,300
2005	22	0	0	0	0	0
2006	19	0	0	0	0	$25,500
2007	8	0	0	0	0	0
2008	17	0	0	0	0	0
2009	14	0	0	0	0	0
2010	22	1	0	0	0	$23,450
2011	19	2	0	0	0	$555,500
2012	14	0	0	0	1	$319,650
2013	12	0	0	0	0	$1,700
2014	17	0	0	0	0	$73,800
2015	11	0	0	0	0	0
2016	7	0	0	0	0	$5,550
2017	14	2	0	0	0	$2,865,000
2018	11	0	0	0	0	$35
2019	14	0	0	0	0	$70,000
2020	15	0	0	0	0	$6,235
2021	6	0	0	0	0	$200
Total	349	6	1	0	2	$4,122,420
Last 10 Yrs	121	2	0	0	1	$3,342,170
Avg. Last 10 Yrs.	12	0	0	0	0	$334,217
Last 5 Yrs	60	2	0	0	0	$2,941,470
Avg. Last 5 Yrs.	12	0	0	0	0	$588,294

FIGURE V-2 – PRINCETON STRUCTURE FIRE, DEATH AND INJURY DATA 2001-202

There is a great deal of confusion about Standard Operating Procedures for the department. SOPS should reflect the way the department operates and has often been referred to as the "playbook" for department operations. The MRI team understands there may be some written SOPS that have not been "published" to all members or used as a tool during training. The department should have a set of Rules and Regulations and a set of Standard Operating Procedures. The difference between the two are simple if you violate a rule or a regulation there is a consequence for doing so. If you do not follow an SOP and can clearly explain why you did not, then it may be acceptable and may lead to a need to change that SOP to better reflect the current day operations.

Interviews that were conducted by the MRI study team revealed that the Department is versed in the use of the National Incident Management System (NIMS) and working well with multiple agencies to provide effective and efficient emergency response services to the community. Through discussions with command staff, it became apparent that though the department has adopted, is trained, aware and understands the importance of using an Incident Command System (ICS), it is sometimes difficult to implement it initially on every incident because of limited staffing and not always having a dedicated incident commander on each call. This is also problematic, as identified by abutting fire chiefs, as an incident escalates to maintain control and follow proper ICS procedures.

The operations necessary to successfully extinguish a structure fire, and do so effectively, efficiently, and safely, requires a carefully coordinated, and controlled, plan of action, where certain operations, such as venting ahead of the advancing interior hose line(s), must be carried out with a high degree of precision and timing. Multiple operations, frequently where seconds count, such as search and rescue operations and trying to cut off a rapidly advancing fire, must also be conducted simultaneously. If there are not enough personnel on the incident initially to perform all of the critical tasks, some will, out of necessity, be delayed. This can result in an increased risk of serious injury, or death, to building occupants and firefighters, and increased property damage.

Demand Zone[a]	Demographics	Minimum Staff to Respond[b]	Response Time (minutes)[c]	Meets Objective (%)
Urban area	>1000 people/mi^2 (2.6 km^2)	15	9	90
Suburban area	500–1000 people/mi^2 (2.6 km^2)	10	10	80
Rural area	<500 people/mi^2 (2.6 km^2)	6	14	80
Remote area	Travel distance ≥ 8 mi (12.87 km)	4	Directly dependent on travel distance	90
Special risks	Determined by AHJ	Determined by AHJ based on risk	Determined by AHJ	90

[a]A jurisdiction can have more than one demand zone.
[b]Minimum staffing includes members responding from the AHJ's department and automatic aid
[c]Response time begins upon completion of the dispatch notification and ends at the time interval shown in the table.

FIGURE V-3 – NFPA 1720 STAFFING AND RESPONSE MATRIX

National Standards and Regulations

There are two widely accepted national standards that have applicability to the staffing and operations of the PFD.

1) National Fire Protection Association (NFPA) ***Standard 1720, Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments*** (2020 edition). This standard specifies requirements for effective and efficient organization and deployment of fire suppression operations, emergency medical operations, and special operations to the public by volunteer fire departments to protect citizens and the occupational safety and health of fire department employees. The PFD should review this standard and develop a strategic plan to meet the benchmarks identified within the standard.

Figure V-4, illustrates the critical tasks and resource deployment required on low and moderate-hazard incidents such as residential and small commercial structure fires. Although some people advocate that these types of incidents can be handled with fewer personnel, unless it is a small fire, there is the possibility there will not be sufficient personnel available to perform all the critical tasks necessitating that some be delayed. Figure V-5 illustrated desired number of firefighters that should respond to a structure fire. It is clear that in the Town of Princeton mutual aid and/or automatic aid would be required to meet this goal.

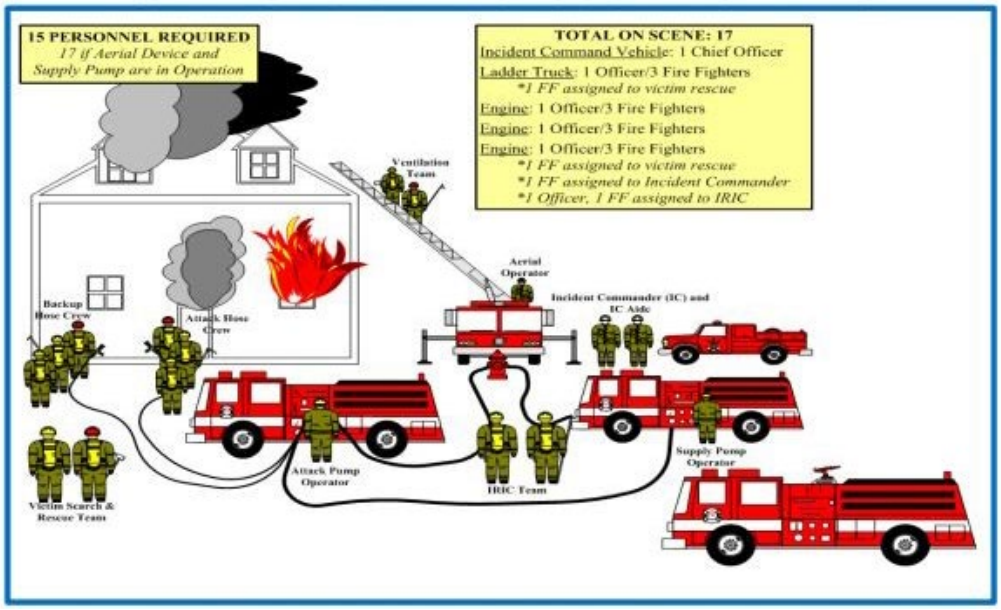

FIGURE V-4 – CRITICAL TASKS AND RESOURCE DEPLOYMENT
LOW TO MODERATE RISK INTERIOR FIRE ATTACK

NFPA 1720 suggests that the following personnel are needed to safely mitigate a structure fire involving several rooms in a 2,000-square foot dwelling. The initial full alarm assignment to a structure fire in a two-story, single-family dwelling without a basement and with no exposures must provide for a minimum of 6 members within 14 minutes and suggests the balance up to 15 personnel to safely conduct operations.

Obviously, the number of personnel required for safe offensive operations dramatically increases based on the extent of involvement, size of the structure, presence of hazardous materials, and use of the occupancy. Critical task assignment is further defined within Figure V-5 which is inserted below.

TASK	# PERSONNEL
Incident Commander	1
Attack engine and water supply engine driver/operator	1
Two handlines with two personnel each	4
Support/back-up firefighter for each handline	2
Search & rescue team	2
Ventilation team	2
Ladder company driver/operator	1
Rapid intervention team (RIT)	2
TOTAL MINIMUM NUMBER OF PERSONNEL	15

Personnel needs for a fire involving several rooms in a 2,000-square foot, one-family, residential occupancy. These are the proverbial "bread and butter" structural fire incidents that fire departments respond to, and are by far, the most common type of structure fire, accounting for around 70% of those types of incidents.

FIGURE V-5 – FIRE ATTACK CRITICAL TASKING

Personnel needs increase dramatically based on the extent of involvement, size of the structure, presence of hazardous materials, and use of the occupancy. An example would be a significant fire within a commercial occupancy would require additional resources based on the potential hazards that could be encountered. For example, a fire in an open-air strip shopping center or a multi-story garden-style apartment would require a minimum of 28 firefighters. The following (Figure V-6), is an example of one of the PFD's 10 alarm run cards:

Princeton Fire Department
ALARM ASSIGNMENT

Community:	Princeton						DISTRICT:	NORTH	
Local Alarm Level		ENGINES	TO FIRE	LADDERS	SPECIALS	CHIEFS	ENGINE HQ	ENGINE STA 2	LADDER HQ
Still	ENGINE 2			LADDER1	EA				
1st	ENGINE 2	ENGINE 1		LADDER 1	PRIMARY EA				
Wrk Fire	ENGINE 5	WESTMINSTER	HOLDEN (RIT)	STERLING			HUBBARDSTON	W BOYLSTON	RUTLAND
2nd	HUBBARDSTON	W BOYLSTON		RUTLAND			BARRE	STERLING	WESTMINSTER
3rd	BARRE	STERLING		WESTMINSTER			PAXTON	BOYLSTON	WEST BOYL.
4th	PAXTON	BOYLSTON					CLINTON	LEOMINSTER	
5th	HUBBARDSTON	LEOMINSTER					OAKHAM	FITCHBURG	
6th			STATEWIDE FIRE MOBILIZATION PLAN						
	STERLING	978-422-7331		PAXTON	508-793-3106		DFS REHAB	800-831-0569	
MUTUAL AID	HOLDEN	978-		HUBBARDSTON	508-886-4033		MEMA	800-831-0569	
PHONE #'S	WEST BOYLSTON	508-832-3233		BOYLSTON	508-869-2113		DCR CONTROL	800-831-0569	
	RUTLAND/OAKHAM	508-886-4033		LEOMINSTER	978-534-7541		WACH FIRE TOWER	978-464-2987	
additional available equipment	Working Fire: Red Cross			WESTMINSTER	978-874-2313		WORC. CANTINE	508-735-7478	508-560-1504
	WORKING FIRE: TANKERS TO SCENE						RED CROSS	508-756-5711	
	3rd Alarm: DFS Rehab								
Specialized Equipment	TANKERS:	HOLDEN	RUTLAND	STERLING	OAKHAM	BOYL.	HUBBARDSTON	WESTMINSTER	
	DIVE TEAM:	STERLING	MIDSTATE FOR	REGIONAL	DIVE TEAM				
	FOAM:	HOLDEN							

MUTUAL AID AMBULANCES WESTMINSTER, STERLING — AFTER 3RD ALARM LADDERS ARE SPECIAL CALL — 7/31/2014

FIGURE V-6 – PRINCETON MULTIOPLE ALARM RUN CARD

The Occupational Safety and Health Administration (OSHA) Respiratory Protection Standard (29 CFR 1910.134) which contains the Two-In/Two-Out Rule. Although referred to as a standard, this is a regulation that requires four firefighters on the scene of an emergency prior to initiating operations within a structure that is on fire (except to perform an immediate, visible rescue). It is important to note that this standard provides for the absolute minimum number of firefighters to initiate operations, but this should not be constructed as an adequate effective response.

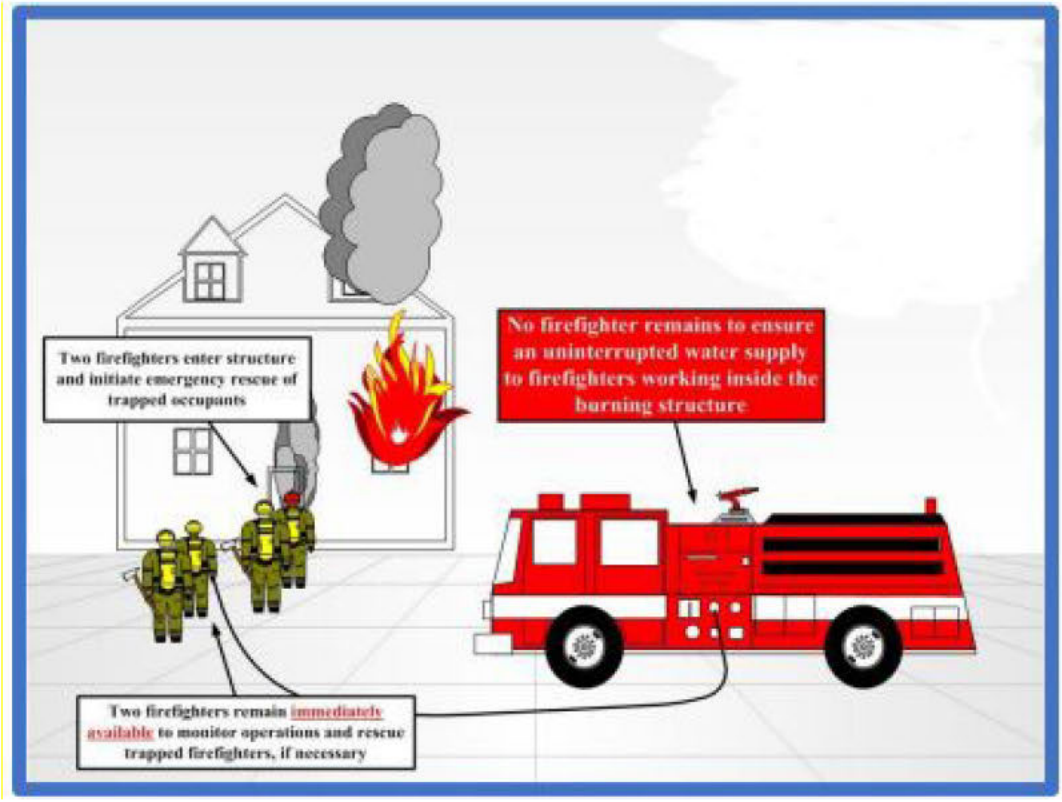

FIGURE V-7 – OSHA TWO IN TWO OUT ILLUSTRATION

Rapid Intervention Team - Of the 15 personnel on scene to safely mitigate a structure fire, there should be a Rapid Intervention Team staffed with four personnel. Utilizing the NFPA 1720 standard this team should start to be staffed with two dedicated personnel and then expanded to four personnel as other resources arrive on the incident scene. Their role is to provide personnel should a firefighter become lost, trapped, or injured. Though the Princeton Fire structural firefighting procedures **should** require this position to be filled, it can only be done so in reality through the use of mutual aid companies. In the structural firefighting assignments, a crew from one of the responding mutual and/or automatic aid companies is assigned to serve as a RIT to all incidents, even the initial response to a fire.

The use of automatic-aid companies as their RIT unit is intended to ensure that this safety mechanism is available at every incident. Unfortunately, our interviews with the command staff revealed that most of the time these companies are utilized for other functions that require immediate attention on scene such as search and rescue, ventilation, water supply or suppression. As such, this critical function is being staffed later and later in an incident as mutual aid companies are responding from further

distances are delayed in responding. The MRI Team recommends that the PFD along with other departments in the region develop a RIT response plan that would have departments that are typically not on the first or second alarm structure fire response be the RIT team. This regional RIT response plan has been very successful in the southern New Hampshire mutual aid plan. If there are not enough personnel on the incident initially to perform all of the critical tasks, some will, out of necessity, be delayed. This can result in an increased risk of serious injury, or death, to building occupants and firefighters, and increased property damage. Ultimately, determining the acceptable level of risk they are willing to assume for the citizens they represent will be a key decision that the Princeton Board of Selectman will need to make.

Pre-Fire Planning - One of the most effective tools the fire department has to assist them with handling fires and other emergencies in commercial and industrial facilities, are pre-fire plans. The purpose of a fire pre-planning program is to allow firefighters to become familiar with buildings and/or facilities within their response area prior to an emergency, alert them to onsite hazards and risks, and develop a detailed fire response plan for them that includes specific tactics that will be required to mitigate fires or other emergencies. A comprehensive pre-fire plan includes as much data about the building as possible, including, but certainly not limited to:

- occupancy type
- floor plans/layouts
- building construction type and features
- utility locations
- presence of fire suppression system
- potential hazards to firefighters or firefighting operations
- special conditions in the building
- recommended apparatus placement plan
- fire flow needs and water supply plan
- forcible entry plan
- ventilation plan

The information contained in pre-fire/incident plans allows firefighters and officers to have a familiarity with the building/facility, its features, characteristics, operations, and hazards, thus enabling them to more effectively, efficiently, and safely, conduct firefighting and other emergency operations. Pre-fire plans should be reviewed and updated regularly. They should be tested and validated by table-top exercises and on-site drills. To derive maximum benefit from the pre-fire plans, the Department should implement a program to make pre-fire plans accessible on mobile data terminals (notebook/laptop computers) on fire apparatus, and in the command vehicle(s) for use in-route to an incident, and while on-scene.

It was reported to the MRI study team that the PFD has done limited pre-planning on some of the target hazards in the Town. The reason given for this is because of the time limitations that members have as well as a lack of resources such as a record management system. Further, what information is gathered is not easily accessible when most needed, during an emergency incident. Even what information can be shared with responding units can be difficult to comprehend when in an emergency response mode and limited staff on the apparatus.

Lack of an up-to-date pre-fire plan is often attributed to being one of the primary contributing factors in large fire losses.

Water Supply - Like many rural communities, Princeton does not have a municipal water system, thus no municipal hydrant system. Within the community there are 21 dry hydrants (9 were recognized by ISO in 2018) that are designed to protect houses that are within 1000 feet of each location. A dry hydrant is a non-pressurized pipe system that is permanently installed in existing lakes, ponds, and streams that extends out of the ground and is similar to a fire hydrant. This pipe system should be fitted with an intake that matches the local fire department suction hose. Because Princeton does not have municipal fire hydrants, the dry hydrants permit the fire department to establish water supply and allow the fire department to do its job quickly and efficiently. One item to be aware of is that there must be regular preventative maintenance on these appliances to ensure that they will function when needed. Annually, each dry hydrant should be back flushed, vegetation controlled around the site to permit access, and ensure that the inlet is free of debris.

Also recognized by ISO as an alternative water supply for fire suppression is the use of suction points. In Princeton these suction sites are labeled as “waterholes.” According to the PFDs water supply plan, there appear to be 5 of these sites. They are located on Gates Road, Wilson Road, Brook Station Road, and two on Fitchburg Road. These sites, as well as the use of large diameter hose, or the use of tanker shuttles contribute to increased safety and improvement of the community’s ISO rating.

The study team recommends that, if given the opportunity, the Fire Department should coordinate with the Princeton Planning Board to petition for mitigation if there is future development in the community. Such mitigation should be used to expand the dry hydrant system or be used to support the preventive maintenance program.

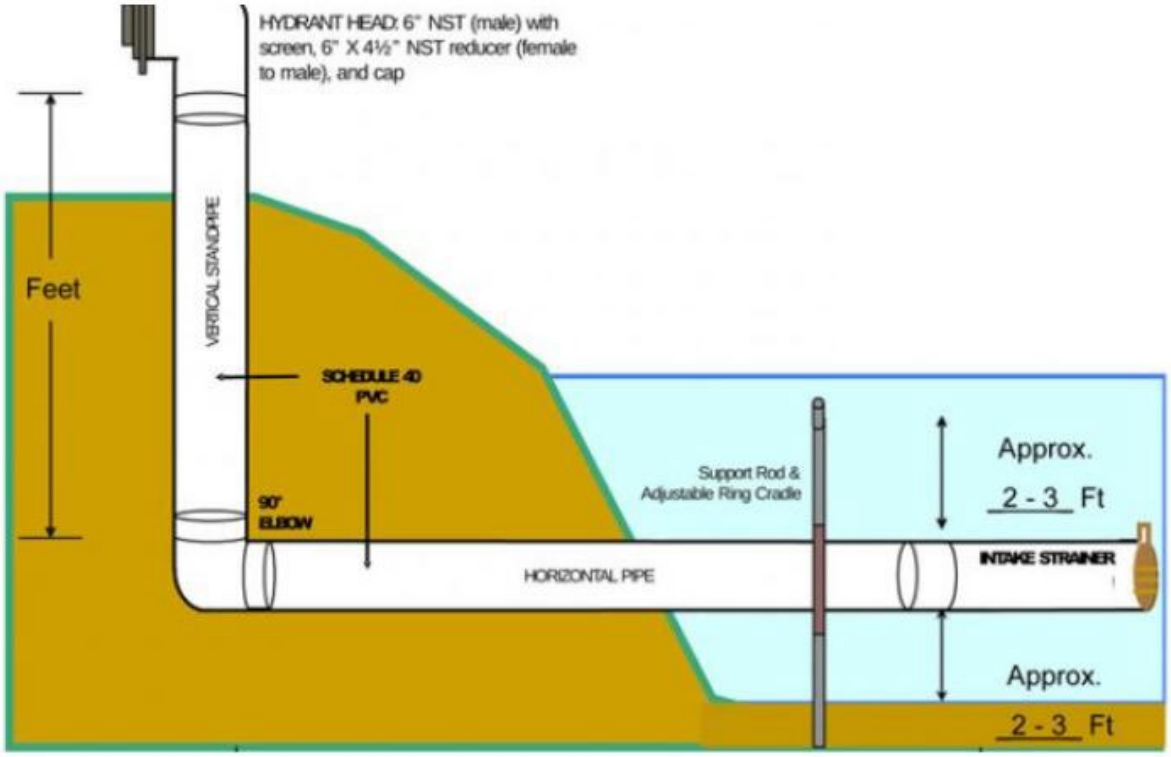

FIGURE V-8 – ILLUSTRATION OF A DRY HYDRANT

Insurance Service Office Rating Schedule

The Insurance Services Office's (ISO) Public Protection Classification (PPC) program evaluates communities according to a uniform set of criteria defined in the Fire Suppression Rating Schedule (FSRS). This criterion incorporates nationally recognized standards developed by the National Fire Protection Association (NFPA) and the American Water Works Association (AWWA). Using the FSRS, ISO evaluates the fire suppression capabilities of a community and assigns a PPC classification; a number rating from 1 to 10. Class 1 represents exemplary fire protection (by ISO's standards), and Class 10 indicates that the area or community's fire suppression program does not meet minimum recognized criteria or standards. In most cases, this means there is no recognized fire department or formal fire protection. Any building more than five road miles from a fire station or outside the boundary of a fire protection area is rated 10. Generally, areas of a community that are more than 1,000 feet from a fire hydrant, but within five road miles from a fire station, are rated Class 9.

The FSRS allocates credit for fire protection by evaluating these three major categories:

1. Fire Alarm and Communication System: This aspect of the evaluation examines a community's facilities and support for handling and dispatching fire alarms. This includes telephone lines and systems, staffing, dispatching systems, and equipment. This component equates to 10% (10 points) of the evaluation.

2. Fire Department: This component of the evaluation, which accounts for 50% of the total classification (50 points), focuses on the fire department and its operations. Areas that are examined include the number of engine and ladder/service companies, distribution of fire stations and fire companies, equipment carried on the apparatus, pumping capacity, testing of hose, pumps and ladders, reserve apparatus, department and on-duty staffing, and training.

3. Water Supply System: The third component of the evaluation is an analysis of the community's water supply system for fire protection. Chief among the areas that are examined include fire hydrant size, type, flow, and installation. In addition, the condition and frequency of inspection of the hydrants is evaluated. Finally, the overall capabilities of the water supply system are assessed in comparison to the needed fire flow for target hazards in the community. Forty percent of the final rating (40 points) is based on the water supply system.

A relatively new addition to the FSRS, the Community Risk Reduction section, offers a maximum of 5.5 points, resulting in 105.5 total points now available in the FSRS. The inclusion of this section for "extra points" allows recognition for those communities that employ effective fire prevention practices, without unduly affecting those who have not yet adopted such measures.
The addition of the Community Risk Reduction section gives incentives to those communities who strive proactively to reduce fire severity through a structured program of fire prevention activities. The areas of community risk reduction evaluated in this section include:

- **Fire prevention**
- **Fire safety education**
- **Fire investigation**

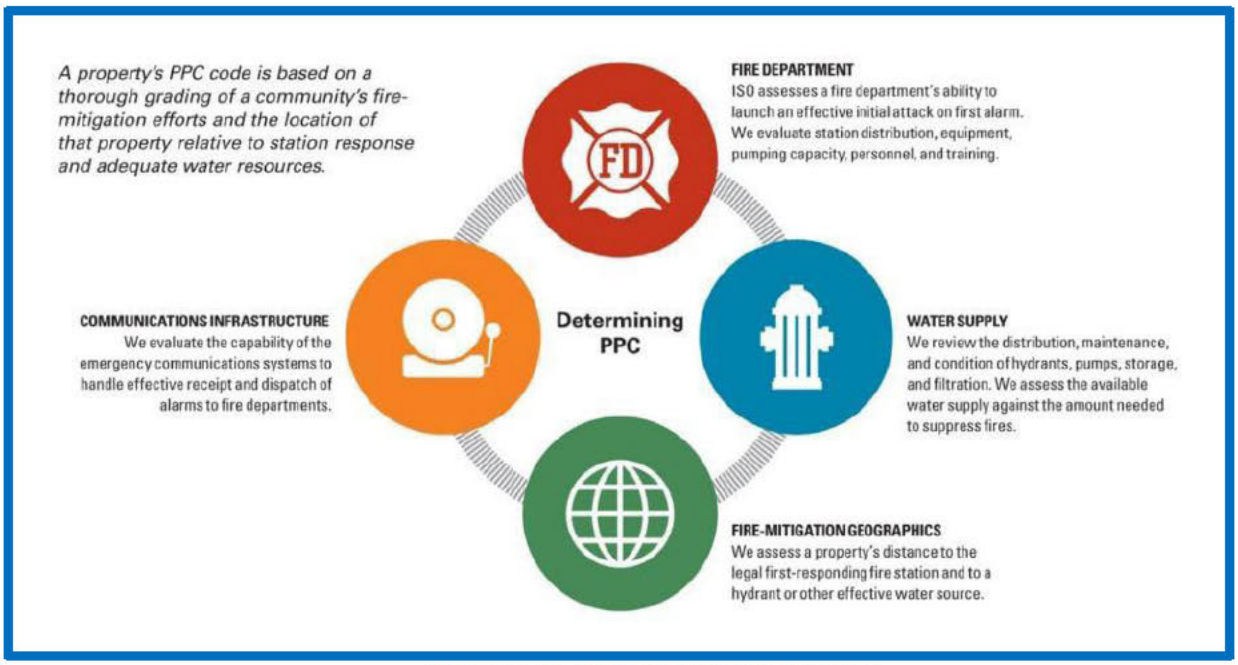

FIGURE V-9 – ISO RATING COMPONENTS
Source: ISO

Every city, town, or area that provides fire protection services is subject to being graded to establish a PPC. Individual buildings, both residential and commercial, are subject to the community's PPC. When calculating property insurance premiums, insurance companies using the PPC apply a factor that reflects a particular community's PPC. Some individual facilities within a community may also be individually assessed and assigned a specific rating.

Although there may be validity to the argument that this rating is no longer utilized by all insurance companies that issue policies to industrial and commercial facilities within Princeton, ISO is still recognized as a comparative benchmark of public fire protection. Moreover, within the past several years, ISO has significantly revised its FSRS, and as a result, the PPC to reflect new innovations and technology, and the evolving standards and industry best practices within the fire service. Among these changes are:

✓ Greater reference to nationally accepted consensus standards; NFPA and AWWA.
✓ Increased recognition of automatic fire sprinklers.
✓ Greater reliance on technology-based solutions (e.g., GIS, thermal imaging cameras, etc.).
✓ Increased emphasis on fire training activities.
✓ New reference to national standard safety requirements.
✓ New reference to accreditation; focus on master/strategic planning.

According to ISO, the PPC helps measure the effectiveness of fire protection and provides an important advisory evaluation to both insurers and communities. It is applied nationwide, and more than ever incorporates accepted national consensus standards. The PPC is used in marketing, underwriting, and pricing of both homeowners and commercial lines of fire/property insurance. Broadly speaking, the cost of insurance premiums is generally lower with better protection which translates into lower losses; the cost is higher in areas that have lower levels of protection which often translates into higher losses. Many insurers still rely on this information, at least partially, to set their fire insurance rates.

FSRS Feature	Earned Credit	Credit Available
Emergency Communications		
414. Credit for Emergency Reporting	**3.00**	**3**
422. Credit for Telecommunicators	**3.20**	**4**
432. Credit for Dispatch Circuits	**0.00**	**3**
440. Credit for Emergency Communications	**6.20**	**10**
Fire Department		
513. Credit for Engine Companies	**3.76**	**6**
523. Credit for Reserve Pumpers	**0.00**	**0.50**
532. Credit for Pump Capacity	**3.00**	**3**
549. Credit for Ladder Service	**1.45**	**4**
553. Credit for Reserve Ladder and Service Trucks	**0.00**	**0.50**
561. Credit for Deployment Analysis	**2.91**	**10**
571. Credit for Company Personnel	**4.38**	**15**
581. Credit for Training	**1.92**	**9**
730. Credit for Operational Considerations	**2.00**	**2**
590. Credit for Fire Department	**19.42**	**50**
Water Supply		
616. Credit for Supply System	**21.00**	**30**
621. Credit for Hydrants	**3.00**	**3**
631. Credit for Inspection and Flow Testing	**3.74**	**7**
640. Credit for Water Supply	**27.74**	**40**
Divergence	**-6.10**	**--**
1050. Community Risk Reduction	**3.72**	**5.50**
Total Credit	**50.98**	**105.50**

FIGURE V-10 PRINCETON ISO SCORING

Based on the 2018 ISO evaluation (which is the most recent), the **PFD received a split Class 5/5Y rating,** which places the organization at the 48th percentile of all fire departments across the country. The

scoring that led to this rating is depicted above in Figure V-10. This is an average rating that reflects the overall quality of the department and the systems that have been put into place. However, we believe that the Town of Princeton in the future could attain a higher rating during the next rating cycle.

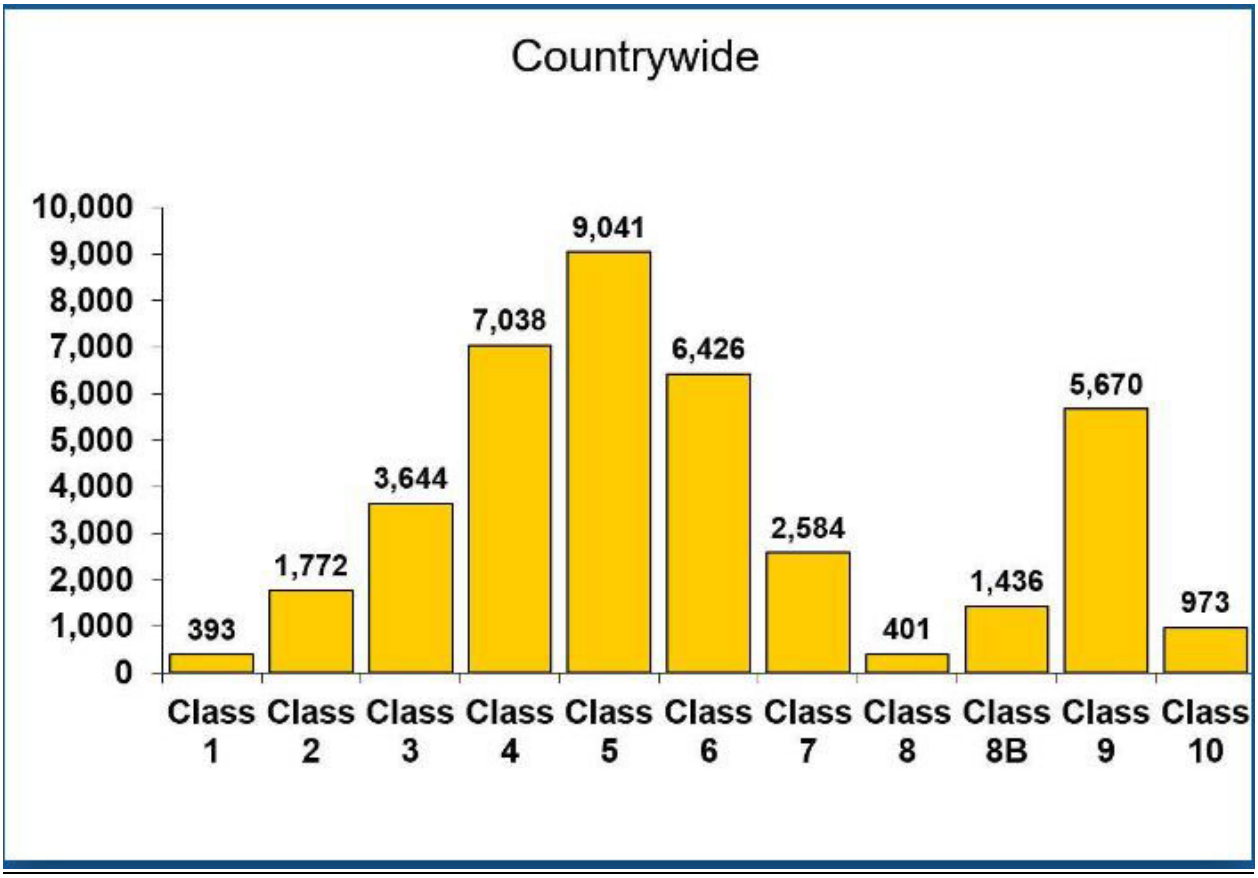

FIGURE V-11 – ISO RATING DISTRIBUTION CHART

According to ISO, many communities receive split classifications, which were revised in 2019 to reflect the risk of loss more precisely. An example of the split classification is 4/4X. The first number refers to the classification of properties within 5 road miles of a fire station and within 1,000 feet of a creditable water supply. The second number applies to properties within 5 road miles of a fire station, but beyond 1,000 feet of a creditable water supply. ISO generally assigns Class 10 to properties beyond 5 road miles. The X classification replaced the former 9 portions of a split classification, respectively. For example, a community formerly graded as a split 6/9 will change to a split 6/6X.

Looking deeper into the ratings, the PFD is currently rated with 19.42 out of a possible 50 points; Emergency Communications (E-911, dispatch and communications) – 6.2 points out of a possible 10

points; and water supply is rated at a 27.74 out 40 points. This means that the most improvement is possible within the areas of the fire department with some improvement in the dispatching/communications and water supply. The water supply area could be improved with additional inspections of the system along with increased fire flow testing.

In discussions with the fire chief during our site visits he noted the improvements that were made within the department relative to training and to maintenance and future expansion of "dry hydrants." If there is follow through on these projects (see training section for additional information) the community should see an improvement of the rating of the fire department.

HOW THE FIRE SUPPRESSION RATING SCHEDULE WORKS

The FSRS lists a large number of items (facilities and practices) that a community should have to fight fires effectively. The schedule is performance-based and assigns/deducts credit points for each item. Using the credit points and various formulas, ISO calculates a total score on a scale of 0 to 105.5. In 2018, Princeton received 50.98 of the 105.5 potential points.

1) **Emergency Communications:** A maximum of 10 points of a community's overall score is based on how well the fire department receives and dispatches fire alarms. In 2018, Princeton received 6.20 of the 10 potential points available for emergency communications. A review of the ISO report indicates that the PFD could evaluate the number of dispatch circuits. Three additional points could be attained by addressing this area.

2) **Fire Department:** A maximum of 50 points of the overall score is based on the fire department. In 2018, Princeton received 19.42 of the 50 potential points available for fire department capability. A review of the rating indicates that the department received less than optimal credit for training (1.92 out of 9), number of personnel (4.38 out of 15), and deployment analysis (2.91 out of 10). Since the ISO evaluation we understand that a more comprehensive training program has been instituted with monthly training goals. However, specific lesson plans, dedicated training hours, evaluations and documentation should be implemented immediately. The department should review their training process and provide this improved documentation to ISO. There is greater information about this topic in the training narrative of the report.
   The need for a new deployment strategy has been documented within this report as well. Implementing the recommendations relative to mutual aid and automatic aid would help to bolster the points awarded within this category and to better support the community during an emergency incident.

3) **Water Supply:** A maximum of 40 points of the overall score is based on the community's water supply. In 2018, Princeton received 27.74 of the 40 potential points available for water supply. The Town received no credit (3.74 out of 7 for inspection and flow testing the hydrants). This would indicate that implementation of a preventative maintenance, inspection, and flow testing program of each flow site over the next 5 years would improve safety and improve rating.

4) **Community Risk Reduction Strategies:** The Community Risk Reduction section of the FSRS offers a maximum of 5.5 points, resulting in 105.5 total points available in the FSRS. The inclusion of this section for "extra points" allows recognition for those communities that employ effective fire prevention practices, without unduly affecting those who have not yet adopted such measures. In 2018, Princeton received 3.72 points for community risk reduction. This suggests that as indicated in other areas of this report, PFD has a well-developed and well managed public outreach and education program.

Looking strictly through the lens of ISO there are many items that can be improved on to allow for a better score. It is important to note that the Town has a very respectable score, and it may not be able to be changed, however, the basic elements listed below have a wider range of effect to the Town and the overall operations of the department.

The following are items that have come specifically from the latest ISO report and are all items that can be improved upon.

FSRS Feature 513 list only 3.76 points out of 6 for Engine Companies. The department has enough Engines for a higher score however the ability to demonstrate proper annual pump testing, ladder and hose testing and the equipment carried generally are the leading impacts to this score.

FSRS Feature 571 list 4.38 out of 15 possible points for Company personnel. This category looks at the number of staff on duty and as call responders. This category also looks at the average number of staff that is on each piece of equipment and further breaks it down by firefighters and officers. Currently the Town receives its score based on having .30 on duty personnel and an average of 12.25 on call personnel responding on the first alarm.
FSRS Feature 581 list 1.92 out of 9 points. This section looks at training at all levels in the department. Company training indicates a minimum of 16 hours per month in structural related training should be conducted. Officers should all be certified and receive 12 hours per month of training. New drivers should receive 60 hours of driver training and existing drivers should receive 12 hours per year. The review team understands that training may be taking place however the participation level as well as good, detailed record keeping is the missing link.

Recommendations

Recommendation V-1

The PFD should work to develop a set of Standard Operating Procedures and operational guidelines to provide consistent direction for operations. Strategically the PFD should establish a SOP/SOG Committee, and the Town should supply subject matter experts to work with and mentor the Committee in the development of these critical procedures.

Recommendation V-2

The PFD should develop a set of Rules and Regulations. These rules should be published for all to see and should be adhered to by all staff.

Recommendation V-3

The PFD should develop a Probationary Manual for all new hires. The manual should consist of written documentation including expectations, operational guidelines, skill sheets done in a building format and sign off boxes.

Recommendation V-4

The PFD should develop a solid group of mentors for two groups. The first should be firefighters who work with probationary staff. The second should be a group of officers to work with firefighters who desire to be an officer in the future.

Recommendation V-5

The PFD should strive to have a minimum of 14 to 16 firefighting personnel on the scene of every structure fire within 8 minutes of the time that units are responding. Although it would be optimal to generate this response on a local level, that is not realistic given the size of the community and the fire department. Strategically in an effort to ensure firefighter safety and amplify effectiveness, this goal can be accomplished through use of automatic aid to all "reported" structure fires.

Recommendation V-6

The PFD should work with other fire departments in the region to develop a Regional Rapid Response Team (RIT) to respond to all structure fire calls in the region. A fire department that sends a company to another town to assist should be dedicated as the RIT and not be assigned other duties on scene that would prohibit them from performing firefighter rescue duties.

Recommendation V-7

The PFD should begin a pre-fire planning program and grow this into a comprehensive program that can be utilized by mutual/auto aid companies that are responding into Town. Appropriate pre-planning software should be obtained and installed in front line apparatus and command/staff vehicles.

Recommendation V-8

The PFD should work to improve its ISO rating to a Class 4 with recommendations noted in the last ISO survey report.

Recommendation V-9

The PFD should address the lack of credit issued for the configuration of dispatch circuits. Documentation of any improvements should be shared with ISO.

Recommendation V-10

The PFD should reevaluate the resource response matrix that determines what equipment responds (known as Run cards) and consider adding in "Automatic Aid" on certain types of incidents such as reported structure fires. This will enhance the response time and allow for a proper number of firefighters to be on scene to minimize damage.

Recommendation V-11

Inventory potential future locations for Dry Hydrants and or Cisterns in areas remote to current water supply sources. Develop a plan to build out the installation of the sites over the next 8 to 10 years.

Recommendation V-12

Develop a training program and a training documentation form that can be used to properly document training. This form should include dates, times, attendees, subject matter, instructor, and a written description of what was done.

Recommendation V-13

Develop and publish a training schedule by quarter, that outlines a well-rounded review of fire department functions that include practical training on both fire and EMS subjects.

Recommendation V-14

The Town and the Fire Chief should work with and support the certification of all officers to a minimum level of Fire Officer I and consider supporting Fire Officer II and Incident Safety Officer certification. Certification to the level of Fire Officer I should be required within two years of appointment as an officer.

Recommendation V-15

The PFD needs to plan to move to an all-electronic records management system that is backed up in the Cloud. The Chief, Deputy Chief and all officers should have the ability to access the appropriate level of records from the stations and remote locations. Payroll, training, inventory, are just a few of the areas that should be available.

CHAPTER VI - EMS OPERATIONS

Emergency Medical Services (EMS) operations are an important component of the comprehensive emergency services delivery system in any community. Together with the delivery of police and fire services, it forms the backbone of the community's overall public safety life net. As was noted in other chapters of this report, the PFD, like many, if not most, fire departments respond to significantly more emergency medical incidents than actual fires, or other types of emergency incidents. As a percentage of overall incidents responded to, it could be argued that EMS incidents constitute the greatest number of "true" emergencies, where intervention by trained personnel does truly make a difference, sometimes literally between life and death. Heart attack and stroke victims require rapid intervention, care, and transport to a medical facility (Figure VI-1). The longer the time duration without care, the less likely the patient is to fully recover. Numerous studies have shown that irreversible brain damage can occur if the brain is deprived of oxygen for more than four minutes. In addition, the potential for successful resuscitation during cardiac arrest decreases exponentially with each passing minute that cardio-pulmonary resuscitation (CPR), or cardiac defibrillation, is delayed.

➢ The potential for successful resuscitation during cardiac arrest decreases exponentially 7% to 10% with each passing minute that cardio-pulmonary resuscitation (CPR) or cardiac defibrillation and advanced life support intervention is delayed.

➢ Few attempts at resuscitation after 10 minutes are successful

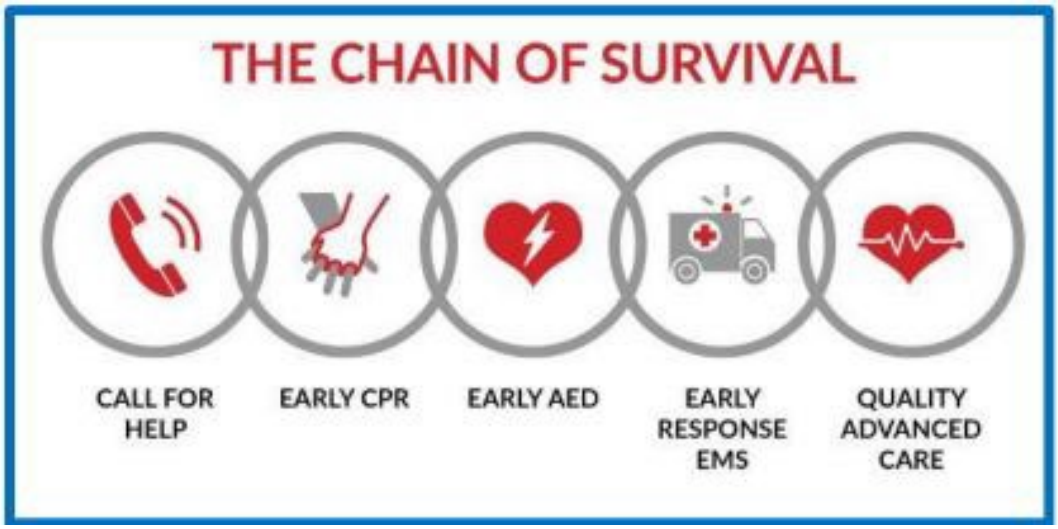

FIGURE VI-1 – EMS CHAIN OF SURVIVAL

The EMS component of the emergency services delivery system is more heavily regulated than the fire side. In addition to NFPA 1720, NFPA 450 Guidelines for Emergency Medical Services (EMS) and Systems, (2021 edition), provides a template for local stakeholders to evaluate an EMS system and to make improvements based on that evaluation. The Commission on Accreditation of Ambulance Services (CAAS)2 also promulgates standards that are applicable to their accreditation process for ambulance services. In addition, the Commonwealth of Massachusetts regulates EMS agencies, and certain federal Medicare regulations are also applicable. The CAAS standard requires a response within 8 minutes and 59 seconds.

Since the 1970s, arriving within six minutes of receipt of an emergency call, 90% of the time, has been the recognized benchmark for determining the quality of an EMS system. Today, the national standard of care benchmark based on stroke and cardiac arrest protocols has evolved to have an emergency response unit on scene at a medical emergency within six minutes of receipt of the call. The Commission on Accreditation of Ambulance Services states that *the agency shall have established standards for the following time intervals: total time to process a request prior to it being assigned to an ambulance; total time for an ambulance to start responding once notified of a request; total response time (defined as the difference in time from the point where the location of the patient, the call-back number, and the problem type are known--if possible--until the time when an appropriate responding crew advises that they have arrived at the scene.) These time intervals will be defined for life-threatening, emergency, and non-emergency requests. Differences in response time standards by geographic area will be described. In life-threatening requests, the default, total response time standard will be eight minutes and fifty-nine seconds, 90% of the time unless the Medical Director and the oversight agency have established a different system standard is appropriate due to system design.*

Typically, less than 10% of 911 patients have time-sensitive ALS needs. But, for those patients, time can be a critical issue of morbidity and mortality. For the remainder of those calling 911 for a medical emergency, though they may not have a medical necessity, this ninety percent, still expect rapid customer service. Response times for patients and their families are often the most important issue regarding the use of the fire department's services and are what is most often referred to when they "rate" their local emergency responders. Regardless of the service delivery model, appropriate response times are more than a clinical issue; they are also a customer service issue.

Most PFD on-call personnel possess a minimum of emergency medical technician-basic (EMT-B) certification according to the "Call Response List" provided by the Department. Several members are certified as Paramedics (EMT-P). Within the organization the balance that do not have EMT certification are certified first responders. The Department appears to have seven Paramedics (five have responded to 10% or less of the calls in 2022), 20 EMT's (16 have responded to 10% or less of the calls in 2022), and four appear to be first responders. Amongst the command staff, all appear to have, at a minimum, an EMT-Basic certification.

The Department operates one well-equipped, and well-maintained ALS capable ambulance. The staffing configuration for the ambulance includes at least one Paramedic for ALS calls but may be staffed by two EMT's for BLS calls for service. Personnel are compensated with a stipend to be on "Ready Status" and by the call that they perform. This means that, for example, if an on-call paramedic is available from home they receive a stipend to be "ready" and if called to duty receive hourly compensation. A recommendation by the MRI team is that if personnel are on the Departments "PFD Call Response Roster" an annual check of the certification status should be performed.

Emergency Medical Services Revenue and Billing

The Town of Princeton has a contract with Coastal Medical Billing to bill patients that require use of the Town of PFD ambulance. After a review of the current billing rates the team from MRI recommends that the Chief of Department schedule an annual audit with Coastal' s representative to evaluate current billing procedures at Princeton Fire. An annual assessment of average billing rates within the region should also be requested and annually, rates should increase based on the governmental health index. Typically, this is somewhere around 3%.

Recommendations

Recommendation VI-1

The PFD should annually conduct an audit of EMS certification, CPR, Advanced cardiac life support for paramedics, and MA Driver's License.

Recommendation VI- 2

The PFD should annually conduct a CORI check of all EMS providers in accordance with 130 CMR 407.405 which states "all transportation providers must ensure that before having any contact with a MassHealth member, drivers and attendants undergo a Criminal Offender Record Information (CORI) check. Documentation of the CORI check must remain on file at the transportation provider's place of business and a new check for each driver and attendant must be conducted annually thereafter".

Recommendation VI-3

The Chief and the Town should consult with the billing Company annually and review the rate schedule and ensure it is in line with industry standards in the area.

Recommendation VI-4

The Town and or the Department web site should have the rate schedule, patient Privacy Policy and billing policy published.

Recommendation VI-5

PFD should develop a Capital plan for the replacement of all EMS equipment that falls under the Towns Capital Improvement rules.

CHAPTER VII -FIRE/EMS FACILITIES

Fire stations are critical components of effective Fire and EMS service delivery. In addition to housing apparatus, a modern fire station will provide for the safe housing of staff and proper storage and maintenance of equipment including personal protective equipment. Modern fire stations should also add safety and efficiency to the fire department's operations.

The PFD operates two stations:

- **Station 1, Central Fire Station, 8 Town Hall Drive:** The Central Fire Station is the main station for the PFD.

FIGURE VII-1 – PRINCETON STATION 1.

There have been studies conducted by Architectural firms that have focused on the current facilities and the needs today and in the future of the Department. The MRI team has toured the facility and has read the report from HKT Architects Inc. The MRI team finds the report and subsequent recommendations to be very accurate and in line with the department needs. **The current facility is very inadequate for a modern-day fire department and currently needs replacement to provide for both a safe and functional operations for now and into the future**. The Study team believe that

continued operation ultimately places the Town at risk and that the replacement of this station should be rapidly pursued.

The station is not adequate in terms of office space, living space for when people are staffing the station for a quicker response, and not in compliance with any ADA accessibility regulations for the public to be able to conduct business. The station has many potential risks that could harm someone and cause a financial risk for the Town. The lack of corrective measures to the known and documented issues further puts the Town at risk.

Although it is a project that comes with a high cost, it is important for people to understand that the station not only houses the expensive equipment the Town has made an investment in, but also is a place where emergency responders need to be able to work out of safely and reasonably, in an effort to provide the emergency services the residents deserve and desire to have when they need it.

Station 2, 11 Redemption Rock Trail North:

FIGURE VII-2 – PRINCETON STATION II

The MRI team finds this station to be efficient and safe to work out of. There are minor needs that the Town will need to continue to build into as capital improvements to ensure this facility stays in a safe and functional operational asset to the Town.

Due to the response matrix used, the community should maintain two separate stations. Having two separate locations to operate out of allows the Department to have flexibility to move staffing and resources around as it is needed during a wide variety of incidents and events. As stated by one of the Architecture firms HKT hired to study the stations, "This station is important to the Town of PFD in terms of response time and adequately serving the entire community. Closing this facility and combing it with a new Public Safety Building would be short-sighted and a disservice to the Town of Princeton." The MRI review team agrees with this statement and would not recommend consolidating or closing this station.

Recommendations

Recommendation VII-1

The Town needs to replace the current Public Safety Building to protect the health and wellness of all public safety staff and to protect the community's investment in apparatus and equipment.

Recommendation VII-2

The Town needs to continue to make improvements and maintain Station 2.

Recommendation VII-3

The Town should consider having the insurance carrier visit and inspect both stations for not only safety needs but for operational needs or concerns to evaluate the level of potential liability that exists.

CHAPTER VIII – INCIDENT RESPONSE TYPES & TIMES

From the perspective of effective emergency response, there are three main factors that are used to help determine the deployment of resources: response time, travel distance, and call volume. For most evaluations, response time is the most critical factor; an important measuring instrument to determine how well a fire department or first response EMS provider is currently performing, to help identify response trends, and to predict future operational needs. Getting emergency assistance to the scene of a 9-1-1 caller in the quickest time possible may be critical to the survival of the patient and/or successful mitigation of the incident. Achieving the quickest and safest response times possible should be a fundamental goal of every fire department and first response EMS provider. It is not just a cliché that during critical life-threatening situations, minutes and even seconds truly do count.

An analysis of the type of incidents Princeton responded to in a three-year period was completed with the data provided. The table below shows a broad classification of the types of incidents as reported to the National Fire Incident Reporting System (NFIRS) and an average of the number of responses to each. Regardless of the actual incident address, all responses were calculated as it was a service that was provided by the Fire Department.

NFIRS Reporting System	2019		2020		2021		3 Year Average		2022	
	# Calls	% of Calls	# Calls	% of Calls	# Calls	% of Calls	# Calls	% of Calls	# Calls	% of Calls
100 Series- Fires	14	4%	16	5%	12	3%	14	4%	16	4%
200 Series - Ruptures / Explosions	1	0%	0	0%	2	1%	1	0%	0	0%
300 Series - Rescue / EMS	203	63%	205	58%	219	60%	209	61%	238	60%
400 Series - Hazardous Condition	11	3%	11	3%	9	2%	10	3%	18	5%
500 Series - Service Call	17	5%	39	11%	38	10%	31	9%	35	9%
600 Series - Good Intent	16	5%	21	6%	28	8%	22	6%	11	3%
700 Series - False Alarm	56	18%	60	17%	55	15%	57	17%	77	19%
800 Series - Severe Weather	1	0%	2	1%	1	0%	1	0%	0	0%
900 Series - Special Incident	1	0%	0	0%	0	0%	0	0%	1	0%
TOTAL	320		354		364				396	

FIGURE VIII-1 INCIDENT TYPE PERCENTAGES AND NUMBER

Note: A good intent incident is when the fire department are dispatched to a scene but upon arrival and investigation the scene is not the incident type reported and is no threat/problem.

Aside from false alarms at 17% of all incidents, the highest demand for service is for medical emergencies at an average of 61%. Fires themselves consistently reflect 4%% of the response volume during the period of the study.

Incidents by month, day of the week and time of day were also analyzed. The outcome of the data reviewed is very comparable to other departments that have been reviewed over the past few years.

Incidents by Month	2019		2020		2021		3 Year Average	
	# Calls	% of Calls	# Calls	% of Calls	# Calls	% of Calls	# Calls	% of Calls
January	30	9%	29	8%	27	7%	29	8%
February	19	6%	26	7%	24	7%	23	7%
March	24	8%	28	8%	26	7%	26	8%
April	26	8%	19	5%	32	9%	26	7%
May	35	11%	24	7%	36	10%	32	9%
June	28	9%	37	10%	33	9%	33	9%
July	37	12%	30	8%	34	9%	34	10%
August	34	11%	33	9%	33	9%	33	10%
September	21	7%	26	7%	22	6%	23	7%
October	21	7%	41	12%	28	8%	30	9%
November	21	7%	26	7%	29	8%	25	7%
December	24	8%	35	10%	40	11%		
TOTAL	**320**		**354**		**364**			

FIGURE VIII-2 INCIDENT BY MONTH

The day of the week was looked at next to see if there was a trend for call volumes and response requests. The chart below indicates that the day of the week has little or no bearing on the call volume as statistically the volume is spread evenly.

Incidents by Day of the week	2019		2020		2021		3 Year Average	
	# Calls	% of Calls	# Calls	% of Calls	# Calls	% of Calls	# Calls	% of Calls
Monday	42	13%	54	15%	44	12%	47	13%
Tuesday	43	13%	41	12%	52	14%	45	13%
Wednesday	48	15%	50	14%	52	14%	50	14%
Thursday	60	19%	57	16%	68	19%	62	18%
Friday	40	13%	43	12%	57	16%	47	13%
Saturday	50	16%	48	14%	51	14%	50	14%
Sunday	37	12%	61	17%	40	11%	46	13%
	320		**354**		**364**		**346**	

FIGURE VIII-3 INCIDENTS BY DAY OF THE WEEK

Incidents by Time of Day	2019		2020		2021		3 Year Average	
	# Calls	% of Calls	# Calls	% of Calls	# Calls	% of Calls	# Calls	% of Calls
0000-0300	16	%	14	4%	13	4%	14	4%
0301-0600	13	4%	15	4%	12	3%	13	4%
0601-0900	40	13%	39	11%	43	12%	41	12%
0901-1200	53	17%	65	18%	68	19%	62	18%
1201-1500	62	19%	71	20%	73	20%	69	20%
1501- 1800	59	18%	73	21%	71	20%	68	20%
1801-2100	48	15%	47	13%	50	14%	48	14%
2101- 2400	29	9%	30	8%	34	9%	31	9%
TOTAL	320		354		364		346	

FIGURE VIII-4 INCIDENT BY TIME AND PEAK VOLUME IDENTIFICATION

The time-of-day data indicates that the peak time of service (highlighted in yellow) is from 9:00 AM to 6:00 PM. This seems to correspond well with the time most of the residents are up and about taking care of their daily tasks. Not surprisingly, the time frame from midnight to 6 AM, when most people are sleeping, indicates the slowest time. What is truly clear is that the needs of the public are 24 hours a day. It is important to be able to respond efficiently and effectively to the incidents all day, every day.

Structural firefighting has become far more challenging and dangerous in the last 30 years. A fire can easily at least double in size and intensity every 30 seconds. If firefighters cannot arrive in a timely manner and attack the fire quickly, a strong possibility exists that a dangerous flashover (simultaneous ignition of all combustible materials in a room) will occur. Flashover can occur within five to seven minutes of fire ignition and is one of the most dangerous events that firefighters or trapped civilians can face. When a flashover occurs, initial firefighting forces are generally overwhelmed and will require significantly more resources to affect fire control and extinguishment.

Heart attack and stroke victims require rapid intervention and care, and transport to a medical facility. The longer the time duration without care, the less likely the patient is to fully recover. Numerous studies have shown that irreversible brain damage can occur if the brain is deprived of oxygen for more than four minutes. In addition, the potential for successful resuscitation during cardiac arrest decreases exponentially with each passing minute that cardiopulmonary resuscitation (CPR) or cardiac defibrillation is delayed. The true key to success in the chain of survival is the education and early access to the 911 system by civilians. The early notification coupled with the added skills of properly trained EMS staff that arrive quickly and transport at the appropriate level of care are all key factors in a positive outcome for patients.

Nationally, for EMS incidents, the standard of care based on stroke and cardiac arrest protocols is to have a unit on scene at a medical emergency within six minutes from receipt of the 911 call. Paragraph

4.1.2.1(4) of NFPA 1710[11], which would apply to departments that provide first response EMS operations since they are primarily provided by in-station per diem staff, recommends that for EMS incidents, a unit with first responder or higher-level trained personnel and equipped with an AED, should arrive within four minutes of response (five minutes of dispatch of the call). An Advanced Life Support (ALS) unit should arrive on the scene within eight minutes (ten minutes of call receipt). Paragraph 4.1.2.2 recommends the establishment of a 90% performance objective for these response times. CAAS[12] recommends that an ambulance arrives on the scene within eight minutes, fifty-nine seconds (00:08:59) of dispatch.

Although NFPA 1720 provides essential benchmarks, fire departments often measure baseline performance in terms of *total response time*, which is the time it takes from the call to be received at the Public Safety Answering Point (PSAP) until the first unit arrives on the scene of the emergency incident. Total response time should be measured and reported for all first- due units *and* the effective response force (ERF) assembly. Total response time is composed of call-processing time, turnout time, and travel time:

Call processing time – the elapsed time from the call being received at the PSAP to the dispatching of the first unit.

Turnout time – the elapsed time from when a unit is dispatched until that unit changes its status to "responding."

Travel time – the elapsed time from when a unit begins to respond until its arrival on the scene.

The response travel time is calculated from the time of dispatch to the time of arrival of the first piece of fire/EMS apparatus. It is also important to keep in mind that there are many possible variables to actual response travel times such as weather, physical location of the incident compared to the location of the station (travel distance), especially during mutual aid responses, as well as other simultaneous calls that may be happening. It is also important to note that the response time of fire staff for non-EMS incidents is typically higher. Before staff leaves the station, they should be wearing all of their personal protective equipment (boots, pants, hoods, and coats). As Princeton has moved to daytime per diem coverage it is our general observation that daytime response times on a in station crew are considerably faster as the crew is typically in the station and ready to respond to an emergency thus eliminating 50 – 65% of the average response times listed below.

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[12] *The Commission on Accreditation of Ambulance Services (CAAS) is an independent commission that established a comprehensive series of standards for the ambulance service industry.*

Response times				
	2019	2020	2021	3 Year Average
Response Time(tone to scene)	10.19	11.61	11.48	11.09

FIGURE VIII –5 OVERALL AVERAGE RESPONSE TIME

The area of response indicates that the North, East and South areas carry the majority of the incident response, and the West are the least. The out-of-town responses is very much in line with what we see in other areas of New England for a town of this size and capabilities.

Incidents by Response District	2019		2020		2021		3 Year Average	
	# Calls	% of Calls	# Calls	% of Calls	# Calls	% of Calls	# Calls	% of Calls
North	97	30%	103	32%	87	24%	96	34%
East	85	27%	69	22%	101	24%	85	30%
South	81	25%	116	36%	111	31%	103	36%
West	48	15%	48	14%	46	13%	47	17%
Out of Town	8	3%	15	4%	18	5%	14	5%
TOTAL	319		351		363		283	

FIGURE VIII-6 INCIDENTS BY DISTRICT

Dollar loss is typically calculated for all fires in structures as well as motor vehicles. This figure is reported to the Commonwealth of Massachusetts monthly and becomes part of the National Incident Reporting System (NFRIRS) database. The amount listed below is a great number to have. Residents should recognize that it only takes a single substantial structure fire or even a new model car fire to dramatically increase the loss statistic.

Property Loss				
Dollar Loss	2019	2020	2021	3 Year Average
Property Loss	$ 50,000.00	$ 5,950.00	$ -	$ 18,650.00
Content Loss	$ 20,000.00	$ 1,285.00	$ 200.00	$ 7,161.67
Total Loss	**$ 70,000.00**	**$ 7,235.00**	**$ 200.00**	**$ 25,811.67**

FIGURE VIII-7 FIRE PROPERTY LOSS BY YEAR

Note: The calculation of fire dollar loss is a subjective figure that lacks clear guidance and consistency and is far less than market value for typical losses associated with an average of 14 fires per year (see Figure VIII-1). It would be atypical to have 14 fire incidents that produce only $200.00 in fire damage. The PFD should base this figure on percentage of loss, assessed value and the NADA vehicle guide.

Recommendations

Recommendation VIII-1

In consultation and cooperation with its neighboring departments, Princeton Fire should enter into formal automatic aid agreements that specifies the number and types of resources that should be dispatched immediately to various types of reported emergencies, such as structure fires. These recommendations should be based upon a community-wide risk management process and/or pre-fire/incident plan.

Recommendation VIII-2

Although more stringent than the requirements found in Table 4.3.2 of NFPA 1720 for rural communities, through the utilization of automatic aid agreements with neighboring communities, the PFD should consider the adoption of a Standard of Cover (SOC) with the goal of attempting to have at least 16 personnel on the scene of any reported structure fire within 14 minutes.

Recommendation VIII-3

The PFD should make it a priority to improve its first unit on scene response times, including the adoption of a SOC for the Town. The SOC should be based upon a hybrid of the NFPA 1710/1720 and Commission on the Accreditation of Ambulance Services (CAAS) recommendations.

Recommendation VIII-4

The PFD should work with the communities listed on each of the "run cards" to ensure the number and qualification of staff that will be sent on responses. In order to be able to meet a safe level of on scene staffing, it will be important to know not only what the department will be receiving and how long it will take, but also to outline what each town will be sending, when these communities request resources from them.

CHAPTER IX - APPARATUS

The Town of Princeton has a very good complement of apparatus that appears to be in excellent shape with the exception of Engine 3 and 4. Engine 4 was observed by the MRI team to have a rejection sticker on it which. It was unknown if it was for emissions or safety related issues however we recommend that this be corrected immediately. The numbers and types of equipment are well in line with a community of this size and reflects an ideal apparatus set based on our experience. It is important to note that not any one piece of apparatus can safely and efficiently accomplish the same tasks. For example, you would not take a structural piece of apparatus up in the woods for a brush fire and likewise you would not take a brush truck to a building fire or a hazardous materials incident.

The geography, infrastructure, hazards, and construction features within the community all play a major role in determining the composition of each department's unique and individualized apparatus fleet and equipment inventory. Princeton is primarily a rural community with the expected limited fire potential such communities usually present. However, new single-family dwellings are nearly all built utilizing lightweight construction which presents many safety hazards to firefighters. These factors, as well as projected future needs, must be taken into consideration when specifying and purchasing apparatus and equipment. Every effort should be made to make new apparatus as versatile and multi-functional/capable as is possible and practical.

A review of the Princeton apparatus fleet in terms of age, condition, and capabilities finds an older fleet, although overall it appears to be well maintained and in good condition. The number and types of apparatus are appropriate for a community and staffing of this size.

Fire and EMS apparatus and equipment comes with a very high price tag. The Town of Princeton like most all communities, are seeing more and more competition for Capital improvement projects from all Town departments. The concept of approving a Reserve Appropriation is appropriate for the Town of Princeton. The amount of money for Capital Reserves in future years will need to be increased in order to keep up with the cost of the equipment. This can be done in slow increments over the next few years and will need to be monitored to ensure the funds are there for the expenditure.

The Town has done a good job procuring a combination of new and used apparatus to meet the community's fire protection and emergency response needs. The current ladder is in excellent shape and should be expected to last for a total life span of between 25-30 years. In the 2030s when the ladder needs to be replaced, a used unit should be a viable consideration.

The MRI study team has concerns over the fact that Princeton has only one ambulance. In any community, there are going to be occasions where there are simultaneous, or at least overlapping incidents, or situations, even relatively minor motor vehicle accidents, where more than one

ambulance may be required. In each of these cases, mutual aid would need to be summoned to Princeton to handle the second incident. This is a normal practice within smaller communities.

The odds of simultaneous or overlapping incidents increases in a community such as Princeton where every transport to the hospital will take time by virtue of the fact that all the local hospitals are located outside the community, some with extended travel distances that lengthen turn-around time. This is especially true when road conditions may be hazardous, particularly during the winter. In addition, anytime the ambulance must be taken out of service for routine maintenance or minor repairs, the Department has no transport vehicle to respond with, again forcing a reliance on mutual aid. Any type of significant mechanical problem, or an accident involving the single ambulance, could effectively render the Department's most important, and frequently used resource, out of service for an extended period of time.

With the current ambulance nearing eight years old, the need for a replacement is fast approaching. Long-term, the Town should give serious consideration to maintaining two ambulances in its emergency vehicle fleet. One would function as the primary response unit, while one would serve as a back-up and second unit when needed. Based upon usage, a new ambulance should be purchased every seven to ten years. As a new vehicle is placed in service the current second unit/spare could be removed from service while the current primary unit is moved to second unit/spare status.

IX-1 Expired Inspection Sticker – PRINCETON ENGINE 4

The key to having a well-maintained fleet is a good preventative maintenance program that is run by qualified people. It appears that Princeton is fortunate to have just that as the fleet is clean and cared for. During the MRI team process it was difficult to obtain records and or documentation on apparatus

and equipment as there is no formal electronic management system that is available for use. Record keeping is critical on apparatus and equipment should there ever be a problem that results in an injury.

There does not appear to be any type of a Capital improvement program for any part of the fleet beyond fiscal year 2023 which only includes replacement of Princeton Ambulance 1. The Town of Princeton can expect delivery time for a new ambulance to be two years from date of order as delivery times have been extensive.

It has been noted that there are many vendors for vehicle parts that may not be doing business with the PFD due to the slowness of payments on invoices. There needs to be a formal process that ensures invoices are matched with receipts and that invoices are paid in a timely manner. Additional administrative capacity may be needed to address this issue.

FIGURE IX-2 PRINCETON ENGINE 1: 1998 Central States tanker / pumper
1250 GPM pump capacity; 2500-gallon water tank

FIGURE IX-3
PRINCETON ENGINE 2: 2011 Pierce pumper
1750 GPM pump capacity; 1000-gallon water tank

FIGURE IX-4
PRINCETON ENGINE 3: 1983 AM GENERAL

FIGURE IX-5
PRINCETON ENGINE 4: 1974 AM GENERAL

FIGURE IX-6
PRINCETON ENGINE 5: 2010 E-One Typhoon pumper
1500 GPM pump capacity; 1000-gallon water tank

Figure IX-7
PRINCETON LADDER 1: 2006 Spartan/Smeal quint
75-foot ladder; 1500 GPM pump capacity; 440- gallon water tank

FIGURE IX-8
PRINCETON TANKER 1: 2018 Kenworth Deep South tanker
1500 GPM pump capacity; 2500-gallon water tank

FIGURE IX-9
PRINCETON RESCUE 1: 1991 Chevy Kodiak Supervac rescue

FIGURE IX-10
PRINCETON SERVICE VEHICLE : 2015 Ford F350

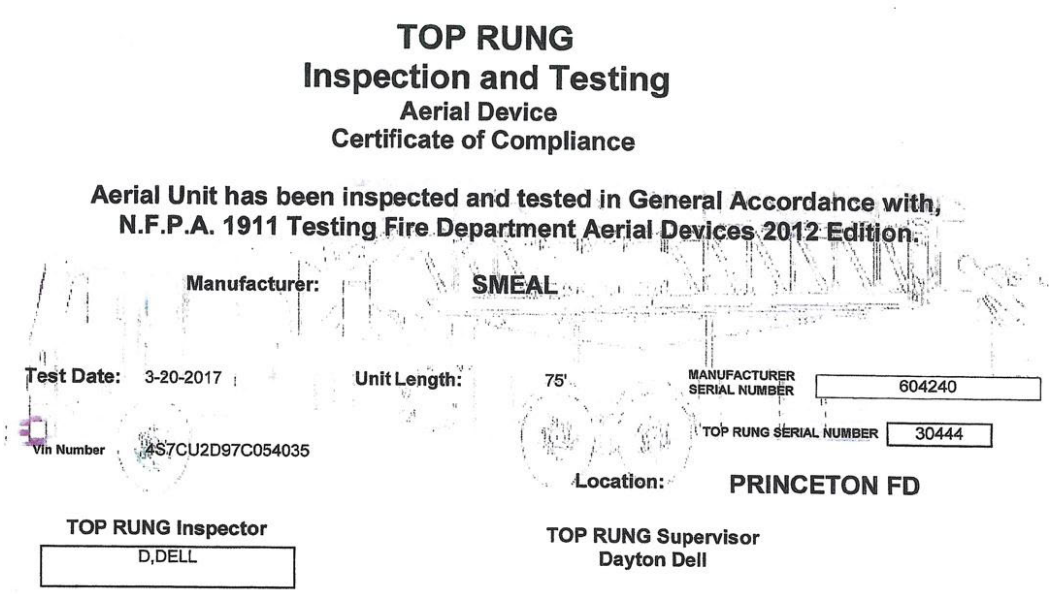
FIGURE IX-11
PRINCETON AMBULANCE 1: 2015 PL Custom ambulance Type III modular

FIGURE IX-12
PRINCETON AMBULANCE 2: 2012 Ford Expedition Class 5 ambulance

Annual Apparatus and equipment testing is critical to firefighter safety and minimizes the possibility of equipment malfunction during emergency operations. The following is fire departments annual apparatus testing status:

1) **PUMP TESTING** - Annual pump test was last completed in **2019** according to documentation provided by the PFD.
   MRI was provided pump testing records for three of the department pumps and the ladder truck (Ladder 1 – 2017, 2018, 2019) (Engine 1 – 2018, 2019) (Engine 2 – 2017) (Engine 5 – 2018, 2019) from 2017 thru 2019. MRI was not provided any documentation of pump testing beyond these dates. Per NFPA 1911 each apparatus that has a pump should be tested at least annually.

2) **AERIAL TESTING** - Annual aerial ladder inspection and **certification** test was last completed in **2017** according to Aerial Device Certificate of Compliance records provided by the PFD.
   a) *Annually, Princeton Ladder 1 should be subjected to non-destructive testing by a third party vendor. This should also be performed after major repairs or overhaul, following an incident where the aerial was used in an unusual manner, or when there is reason to believe that the aerial usage exceeded the manufacturers recommended aerial device operating procedures. After successfully completing this non-destructive test, the Town of Princeton will always receive a certificate of compliance.*
   b)



TOP RUNG
Inspection and Testing
Aerial Device
Certificate of Compliance

Aerial Unit has been inspected and tested in General Accordance with, N.F.P.A. 1911 Testing Fire Department Aerial Devices 2012 Edition.

Manufacturer: SMEAL

Test Date: 3-20-2017 Unit Length: 75'

MANUFACTURER SERIAL NUMBER 604240

Vin Number 4S7CU2D97C054035

TOP RUNG SERIAL NUMBER 30444

Location: PRINCETON FD

TOP RUNG Inspector
D,DELL

TOP RUNG Supervisor
Dayton Dell

Figure IX-13
2017 Aerial Inspection Certificate

For its staffing and normal expected operational needs, the PFD should consider hiring a third-party vendor to evaluate the current condition of the community's fleet. The information gathered should enable the Town and the PFD to right size the organization and maintain a fleet that is safe, appropriate for the community, and conforming to the recommendations of the ISO report. This will also enable the Town of Princeton to integrate the fire department into its long-term capital planning schedule.

Despite the lack of clear guidance in the various NFPA standards, there is a significant body of knowledge that suggests that fire apparatus definitely has a finite life span. The reasonable serviceable life span of fire apparatus will depend on a number of variables such as the level of use, local environment, and operating conditions, and very importantly, *the scope of preventative maintenance.* It is generally accepted that lower use fire apparatus, such as units serving communities that are suburban in nature, might still be mechanically sound after twenty years or more due to their lower frequency of use. However, after twenty years, technical and functional obsolescence may make the apparatus less desirable to use, even if mechanically sound and serviceable. However, that does not mean that it will still not be serviceable as a spare or reserve apparatus. A white paper developed by the Fire Apparatus Manufacturer's Association (FAMA) suggests that the front-line life span of active-duty fire apparatus in a suburban setting ranges from 16 to 19 years, with the possibility of an additional 9 to 10 years in a reserve, or spare status. The International City/County Management Association (ICMA) suggests that the life span of a fire pumper should be 20 years, and the life span of an aerial ladder should be 25 years.

One common recommended practice is to purchase one major piece of fire apparatus every five years. The goal of this strategy is to spread major purchases out over time in an effort to allow the governmental entity to maintain a consistent level of debt service. Regardless, the decision is left to each locality and represents a balancing of numerous factors: fire department activity levels, maintenance costs and history, individual vehicle reliability, funding availability, technological changes, firefighter safety, and vehicle use. Fire apparatus must be replaced before it becomes unreliable, but it must be held in service for as long as practical to maximize the benefit of the large initial investment from the community.

One of the biggest factors that can impact the serviceable life of the apparatus is the level of preventative maintenance that it receives. NFPA 1911: Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus (2017 edition), provides guidance on this important aspect of fire department support operations. Apparatus manufacturers also identify suggested programs and procedures to be performed at various intervals. As apparatus ages, it is reasonable to expect that parts will wear out and need to be replaced. It follows then that maintenance costs and overall operating expenses will increase. As a result, cost history and projected costs for the future must be considered as a factor in determining when to replace or refurbish a fire apparatus. In addition, reliability of the apparatus must be considered. Experiencing low downtime and high parts

availability are critical factors for emergency equipment maintenance and serviceability. A pro-active preventative maintenance program can assist with holding costs to an acceptable level.

Each community determines how they will provide maintenance and repairs to their apparatus and vehicle fleet. This is typically based on the size of the department, the size of the fleet, and if the Town's repair facility and its mechanics are capable of performing the specialized mechanical repairs that are required with fire apparatus and emergency vehicles.

Utilizing outside vendors to perform routine repairs and preventive maintenance activities as well as some major repairs to emergency vehicles is not always the most a cost-effective manner to maintain the operating fleet. Depending upon the type of facility they are sent to, the personnel may not possess the recommended emergency vehicle technician (EVT) certification for working on emergency vehicles. The Town of Princeton should continue to invest in their current mechanic, provide professional growth and development as necessary, and invest in infrastructure, such as a record management system, which will enable him to be successful.

Recommendations

Recommendation IX-1

The PFD in conjunction with the Town of Princeton should develop a 20-25-year Capital Replacement Plan for all apparatus, except ambulances which require replacement at greater frequency. By utilizing such a plan, the need to replace more than one apparatus during a short period of time will be minimized. By maintaining such a plan, the Department will be able to have the newest pieces as front line while maintaining the older apparatus as reserves or secondary pieces.

Recommendation IX-2

The PFD should begin a practice of aerial apparatus testing in accordance with NFPA standards. Ladder and aerial tests should be performed at intervals no greater than twelve months apart. All tests, deficiencies, and repairs/corrective actions performed should be fully documented.

Recommendation IX-3

The PFD should ensure the practice of annual pump testing in accordance with NFPA and ISO standards. Pump tests should be performed at intervals no greater than twelve months apart. All tests, deficiencies, and repairs/corrective actions performed should be fully documented.

Recommendation IX-4

When purchasing new apparatus and ambulances, the PFD should adopt a policy of purchasing new NFPA 1901 compliant and updated EMS equipment when a new apparatus or ambulance is purchased. This policy will ensure that equipment is the most technologically up-to-date and that it is safe and functional. It will also make it possible to keep reserve apparatus and ambulances fully equipped for immediate use.

Recommendation IX-5

The PFD should review the recommendations contained in NFPA Standard 1911, Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus (National Fire Protection Association, 2017 Edition) and use it as a guide to revise and update the vehicle fleet maintenance program as may be necessary.

Recommendation IX-6

All testing and maintenance records should be part of a records management system that not only records the vital records but also should allow for ease in look up of any part of the record on any piece of apparatus and equipment.

Recommendation IX-7

The PFD budget for repair and maintenance of apparatus and equipment needs to be evaluated to verify that this program is properly funded to conduct annual testing and maintenance as outlined by the manufacture and applicable NFPA standards.

Recommendation IX-8

The Fire Chief should delegate the development and management of the maintenance budget to the fleet mechanic.

CHAPTER X – FIRE EQUIPMENT

Overview

The tools and equipment that a fire department utilizes cover a wide assortment of resources necessary to effectively, efficiently, and safely respond to, and mitigate, a wide range of emergency incidents. These resources include, but are certainly not limited to, the firefighter's personal protective equipment (PPE), self-contained breathing apparatus (SCBA), hose, nozzles, adapters, master stream appliances, ground ladders, radios, hydraulic rescue tools and equipment, and various hand and power tools.

The fire service has experienced tremendous technological advances in equipment, procedures, and training, over the past fifty years. Improved personal protective equipment (PPE), the mandatory use of self-contained breathing apparatus (SCBA), large diameter hose, better and lighter hose lines and nozzles, and thermal imaging cameras are just a few of the numerous advances in equipment that have enabled firefighters to perform their duties more effectively, efficiently, safely, and with fewer personnel. However, the fact still remains that emergency scenes present a dynamic, dangerous, frequently unpredictable, and rapidly changing environment where conditions can deteriorate very quickly and place firefighters in extreme personal danger.

The technology and standards for fire department equipment are constantly evolving to improve the effectiveness, efficiency, and safety of firefighters. National Fire Protection Association (NFPA) 1901, Standard for Automotive Fire Apparatus (2016 edition) and ISO provide standards for the minimum complement of equipment carried on fire apparatus. It is important to recognize that each agency has different requirements for apparatus and equipment. NFPA focuses broadly on the safety and performance of the apparatus, while ISO focuses specifically on the fire suppression capabilities of the apparatus as it potentially can impact the fire insurance rating for a community. These differences are most significant for equipment carried on pumpers and aerials. Differences between NFPA and ISO equipment for pumpers include hose, monitors, ground ladders, foam and radios. Differences for aerial equipment include self-contained breathing apparatus (SCBA), ground ladders and radios.

Observations

The PFD's apparatus has a typical selection of portable hand, power, and service tools and equipment utilized for firefighting and other emergency operations. For the most part, the equipment appears to be well organized and well maintained. It appears that most apparatus closely meets the minimum

NFPA and ISO requirements for equipment to be carried. The Department maintains what appears to be a fairly comprehensive inventory of the equipment carried on each vehicle. Personal protective equipment (PPE) includes the full ensemble that encapsulates a firefighter who will be engaging in firefighting operations: helmet, protective hood, turnout coat, turnout pants, boots, SCBA, gloves, eye shield, and station uniform. The specifications and related requirements for PPE can be found in various NFPA standards. The use of PPE is regulated by OSHA.

The regular cleaning of PPE ensures that dangerous and unhealthy contaminants from fire scenes, accidents, medical calls, and hazardous materials incidents are removed from PPE in order to avoid long-term exposure to firefighters and their families. The MRI team saw an extractor -a heavy duty commercial washing machine used for PPE - at Station 2. It appeared to the MRI team that this equipment was used regularly.

As previously stated, the PFD has a total of 22 in-service self-contained breathing apparatus (SCBA) (not including RIT packs). All are variations of the Scott model 50 all utilizing 45-minute duration air cylinders and comply with the NFPA 2013 SCBA standard. The SCBA appear to be properly maintained and are equipped with integrated personal alert safety system (PASS) devices, heads-up displays (HUD) that allow the user to monitor his/her air supply through an electronic display in the wearer's face piece, and universal RIT connections. Annual flow testing of SCBA is required by NFPA Standard 1852, Standard on Selection, Care, and Maintenance of Open-Circuit Self-Contained Breathing Apparatus (SCBA) and manufacturer's recommendations. This testing is performed as required.

SCBA inspections are performed monthly during the apparatus and equipment inspections and other times after use. Flow testing is conducted on an annual basis as required by NFPA and manufacturer's recommendations. This testing is performed by an outside vendor.
The OSHA Respiratory Protection Standard, 29 CFR 1910.134, and NFPA Standard 1500, Standard Fire Department Occupational Safety and Health Program mandate that annual SCBA mask fit testing be completed, after personnel have been medically cleared to wear SCBA. The PFD does perform this testing, however not annually, by a member of the Department.

SCBA breathing air refilling is accomplished with a compressor/cascade system located on the apparatus floor of Station 2. The compressor obtains its intake air from the exterior of the station, as is proper. The Department does have a contract for annual servicing and testing. Air quality sampling/testing is done on an annual basis to ensure the air quality being produced by the compressor is at least Grade "D" as required by the OSHA Respiratory Protection Standard. Complete test results for each test, as well as previous certificates, are maintained in a central file. Due to its location in a confined area hearing protection is mandatory when operating the compressor.

It is the current best practice in the fire service that every firefighter who is wearing SCBA and/or entering an atmosphere that is immediately dangerous to life and health (IDLH) should be equipped with a portable radio. Should a firefighter become trapped, lost, disoriented, or experience any other type of emergency, he/she can summon help on the portable radio. Many departments now have a portable radio assigned to either every riding position on every piece of apparatus, and/or to every on-duty member.

Thermal imaging cameras (TICs) are valuable pieces of equipment used by firefighters during fire incidents. By rendering infrared radiation as visible light, such cameras allow firefighters to see areas of heat through smoke, darkness, or heat-permeable barriers. Thermal imaging cameras pick up body and other types of heat, and are used to more quickly locate and remove trapped fire victims. They are also often used to find hidden fire behind closed walls. Most thermal imaging cameras are handheld, but may also be helmet-mounted. The PFD has several handheld thermal imaging cameras. Each primary engine has one, as does the ladder truck. The TICs appeared to be well maintained. The Department regularly inspects these cameras to ensure proper functionality.

The PFD currently has a set of Hurst hydraulic rescue tools (Jaws of Life). This equipment consists of spreader jaws, cutters and rams. This equipment is very important to the Department's overall operations due to the traffic in the Town. It also has a set of high pressure rescue air bags.

Required Annual Testing of Equipment

FIRE HOSE - Fire service hose should be tested annually according to NFPA 1962 section 4.1.2. The PFD did not provide any hose testing records. It is the recommendation of the MRI team that a third party vendor be utilized annually to catalog, inspect, and test the departments fire hose. Many departments often attempt to test their own however, in an effort to reduce liability, reduce the risk of injury, and ensure consistency in testing, re recommend outsourcing this test.

a) *Per NFPA 1962 fire hose manufactured prior to 1987 should be removed from service immediately. Fire hose shall be tested at least annually. If hose is left in storage for greater than one year it shall be tested before being placed into service.*

SELF CONTAINED BREATHING APPARATUS – The PFD is operating Self Contained Breathing Apparatus (SCBA) that requires annual testing of the actual apparatus and hydrostatic testing of the cylinder. MRI was able to obtain flow testing (required by NFPA 1852) for the last four years' worth of data. Among the SCBA present it was noted that there was no documentation of hydrostatic compliance of the air

cylinders. MRI recommends that this testing requirement be reviewed and addressed immediately to ensure compliance, limit liability and promote safe operations..

GROUND LADDERS - Annual ground ladder test was last completed in **2017** according to documentation provided by the PFD.

a) *Ground ladders shall be tested annually to ensure that they are safe for firefighters to use to prevent injuries. This can be referenced in NFPA 1932 where it states that ground ladders shall be tested before being placed into service, at any time a ladder is suspected of being unsafe, at least annually, after impact loading or unusual use, after any repairs are performed, or after significant heat exposure.*

Recommendations

Recommendation X-1

The PFD should begin a practice of annual ground ladder and aerial apparatus testing in accordance with NFPA standards. Ladder and aerial tests should be performed at intervals no greater than twelve months apart. All tests, deficiencies, and repairs/corrective actions performed should be fully documented.

Recommendation X-2

The PFD should consider increasing the frequency of the air quality tests of the breathing air being produced by the air compressor from annually to quarterly to better ensure that it always remains a minimum of Grade "D".

Recommendation X-3

The PFD should continue to place an important emphasis on evaluating new technology for use on emergency incidents particularly when it pertains to firefighter safety and/or patient care.

Recommendation X-4

The PFD should ensure that all SCBA are subjected to annual flow testing by a third party vendor on a breathing machine in accordance with NFPA 1852 Section 7.2.1.3. Proper documentation of such should be maintained in a record management system.

Recommendation X-5

The PFD should ensure that all SCBA cylinders are 15 years of age or less and that they meet the hydrostatic testing parameters as established by the manufacturer.

CHAPTER XI – TRAINING & PROFESSIONAL DEVELOPMENT

Overview

The primary function of a fire department is to respond to emergency incidents, save lives, and to protect property and the environment. Training is, without question, one of the most important functions that a fire department should be performing on a regular basis. One could even make a credible argument that training is, in some ways, more important than emergency responses because a department that is not well-trained, prepared, and operationally ready, will be unable to effectively, efficiently, correctly, and safely, fulfill its emergency response obligations and mission. A comprehensive, diverse, and ongoing training program is critical to the fire department's level of success. An effective fire department training program must cover all the essential elements of that specific department's core missions and responsibilities. The program must include an appropriate combination of technical/classroom training and manipulative or hands on/practical evolutions. Most of the training, but particularly the practical, standardized, hands on training evolutions, should be developed based upon the department's own operating procedures and operations, while remaining cognizant of widely accepted practices and standards that could be used as a benchmark to judge the department's operations for any number of reasons.

Failure to use widely accepted firefighting practices was a significant conclusion in the many investigations that were conducted after the Charleston, South Carolina, Super Sofa Store fire in June 2007, that resulted in the deaths of nine firefighters. As with all other fire department operations, there must be consistency in how the training is being conducted. The U.S. Occupational Safety and Health Administration (OSHA) has established requirements for minimum training that must be completed on an annual basis, covering various topics including:

1) A review of the respiratory protection standard, self-contained breathing apparatus (SCBA) refresher and user competency training, SCBA fit testing (29 CFR 1910.134)
2) Blood borne Pathogens Training (29 CFR 1910.1030)
3) Hazardous Materials Training (29 CFR 1910.120)
4) Confined Space Training (29 CFR 1910.146)
5) Structural Firefighting Training (29 CFR 1910.156)

National Fire Protection Association (NFPA) standards contain recommendations for training on various topics such as a requirement for a minimum of 24 hours of structural firefighting training annually for each fire department member.

On March 9, 2018, Governor Charlie Baker signed the Massachusetts Workers Safety Bill extending OSHA standards protections to municipal workers. Chapter 149 has been amended relative to these protections effective February 1, 2019. The Department of Labor Standards website is an excellent resource for related materials. Under this new Bill, fire departments are required to show training records relative to:

1) Blood borne pathogens
2) Interior firefighting
3) Ladders
4) Equipment
5) Personal Protective Equipment
6) Traffic Incident Management

Observations

Education and training programs help to create the character of a fire service organization. Agencies that place a real emphasis on their training tend to be more proficient in carrying out day-to-day duties. Despite this evidence, training within fire service organizations is continually faced with a number of challenges that impact its overall effectiveness. Often, training does not get the time, attention, and priority that it deserves. However, the prioritization of training helps to foster an image of professionalism and instills pride in the organization.

The MRI study team evaluated the PFD's training and professional development programs. Through staff interviews, observation, an evaluation of the current training records, and review of the most recent ISO report, the team reached the conclusion that Department's training program is falling behind industry standards and potentially creating a liability for the Town of Princeton. This may be strictly as a result of poor documentation as the fire chief has reported that the Department trains annually on the following:

1) Vehicle extrication
2) Ladder evolutions
3) Pumps and hydraulics
4) Hazardous materials
5) Forcible entry
6) Search and rescue
7) High angle rescue
8) Large diameter hose

9) Fire science
10) Salvage and overhaul
11) Wildland fires
12) Emergency Medical Services (all aspects)
13) CPR
14) First responder
15) EMT / Paramedic refreshers
16) Hose advancement
17) Live burns
18) Ventilation
19) Life Flight landing zones
20) Rapid Intervention Team training
21) Building construction
22) Pre-fire planning
23) Fireground management
24) Communications

If the amount of training that is listed above (appears to be well over 100 hours per year) is completed by the Department than it is apparent that the members of the Department believe in training, and it is our observation that the training program exists. The issues are that there appears to be a lack of documentation which would bring into question the quantity and quality of the content, the dollars spent on personnel who attend the training without receiving proper credit on the community's behalf, and the lack of understanding on the overall positive and negative impacts of not providing documentation.

Within the ISO report the Department was issued 1.92 points out of a possible 9 points. As this number is significant, the MRI team recommends that the PFD (Chief and Training Officer) develop an annual training program that contain the following:

1) Delivery of content by a certified fire instructor or subject matter expert
2) Written course curriculum
3) Clearly identified hours of training
4) Attendance Sheet

To strive toward achieving the maximum points possible for ISO, the Chief of Department and Training Officer should make every effort to conduct, track, and document training in the following capacity:

1) FACILITIES – *Each member should try to attend 18 hours of training annually at a location that has a three-story burn/smoke building. Any one (or multiple in one day) of the above mentioned*

topics, if taught at a facility, will provide maximum credit to the Town. Facilities include the Massachusetts Firefighting Academy, the Worcester Regional Burn Building, or the PFD Training Facility.

2) ***COMPANY TRAINING –*** *Each Princeton Firefighter should receive 16 hours per month in structure fire related topics as outlined in NFPA 1001.*

Note: This number of training hours is required to receive maximum ISO credit which is not practical for the PFD. Company training is worth 25 points, the PFD received 3.5 of the 25 possible points. Therefore, any training should be documented to maximize this score. Typically, on-call departments provide firefighters between 24 and 36 hours of structural firefighting training per year.

3) ***OFFICER TRAINING –*** *Each Princeton fire officer should receive 12 hours of supervisor training on or off site annually. In the above list, it appears that the only training conducted specific to fire officers is Fireground Management.*

4) ***NEW DRIVER AND OPERATOR TRAINING –*** *Each new driver / operator should receive 60 hours of driver/operator training annually in accordance with NFPA 1002 and NFPA 1451. MRI sees no documentation relative to driver training and the Chief of Department reported to MRI that it "is selective."*

5) ***EXISTING DRIVER AND OPERATOR TRAINING –*** *Each existing driver / operator should receive 12 hours of driver / operator training annually in accordance with NFPA 1002 and NFPA 1451. MRI sees no documentation relative to driver training.*

6) ***TRAINING ON HAZARDOUS MATERIALS –*** *Annually, each firefighter should receive 6 hours of training in hazardous materials in accordance with NFPA 472*

7) ***PRE-FIRE PLANNING –*** *For maximum ISO credit, the Department should conduct pre-fire planning inspections at all industrial, commercial, institutional, or other like facilities annually. Records of inspections should be kept up to date.*

BENNETT, JOHN D.	EMS TRAINING	1800	25C	02PRI
DINO, BILL C.	EMS TRAINING	1800	25C	02PRI
KELLY, TIMOTHY F.	EMS TRAINING	1800	25C	02PRI
LONG, BRIAN T.	EMS TRAINING	1800	25C	02PRI
RICHARD, DAVID L.	EMS TRAINING	1800	25C	02PRI
CONNORS, PHILIP	EMS TRAINING	1800	25C	02PRI
M'SADOQUES, ROBERT A.	EMS TRAINING	1800	25C	02PRI
CONNORS, THOMAS	EMS TRAINING	1800	25C	02PRI
GIAIMO, STEVE	EMS TRAINING	1800	25C	02PRI
Hernandez, Juan C.	EMS TRAINING	1800	25C	02PRI
Olson, Kevin	EMS TRAINING	1800	25C	02PRI
Kelly, Ciara G.	EMS TRAINING	1800	25C	02PRI
Duncan, Brett	EMS TRAINING	1800	25C	02PRI
BARRY, JONATHAN	EMS TRAINING	1800	25C	02PRI
Kelly, Seamus P.	EMS TRAINING	1800	25C	02PRI
Rassekh, Rachel	EMS TRAINING	1800	25C	02PRI
LaBAIRE, JOSEPH P.	EMS TRAINING	1800	25C	02PRI
Richard, Alexi	EMS TRAINING	1800	25C	02PRI
BENNETT, JOHN D.	Unassigned	2100	25C	02PRI
DINO, BILL C.	Unassigned	2100	25C	02PRI
KELLY, TIMOTHY F.	Unassigned	2100	25C	02PRI
LONG, BRIAN T.	Unassigned	2100	25C	02PRI
RICHARD, DAVID L.	Unassigned	2100	25C	02PRI
CONNORS, PHILIP	Unassigned	2100	25C	02PRI
M'SADOQUES, ROBERT A.	Unassigned	2100	25C	02PRI
CONNORS, THOMAS	Unassigned	2100	25C	02PRI
GIAIMO, STEVE	Unassigned	2100	25C	02PRI
Hernandez, Juan C.	Unassigned	2100	25C	02PRI
Olson, Kevin	Unassigned	2100	25C	02PRI
Kelly, Ciara G.	Unassigned	2100	25C	02PRI
Duncan, Brett	Unassigned	2100	25C	02PRI
BARRY, JONATHAN	Unassigned	2100	25C	02PRI
Kelly, Seamus P.	Unassigned	2100	25C	02PRI
Rassekh, Rachel	Unassigned	2100	25C	02PRI
LaBAIRE, JOSEPH P.	Unassigned	2100	25C	02PRI
Richard, Alexi	Unassigned	2100	25C	02PRI

FIGURE XI -1
CURRENT FIRE TRAINING RECORD, 2022, PFD

The MRI team was advised by the Chief of Department that the Department conducts training every Tuesday night and some full days on weekends. MRI recommends that the training officer audit the attendance at these training sessions and evaluate the need to add some on-line training platforms that would allow certain training to be conducted by personnel at their convenience. There are multiple vendors available to provide this type of platform including Target Solutions whose inventory is comprised of more than 1,000 online courses. Access to general fire service and training websites and any type of internet-based training, safety, and other online resources should be enhanced.

A final important component of an effective personnel and officer development program is that these members continue to cultivate their skills through ongoing training and education. This training and education should be in addition to the normal training requirements for all firefighters. Officers unequivocally have more responsibilities, and as a result, should have higher standards for their knowledge, skills, and abilities. Management and leadership skills are important for officers to develop.

Recommendations

Gray Shading indicates a recommendation stated previously but pertinent to this chapter.

Recommendation XI-1

The PFD should continue their training regimen and enhance training documentation to provide ISO with the specific information that they require. ISO should be contacted and questioned relative to the low credit granted for training.

Recommendation XI-2

The PFD should continue to strongly encourage personnel to seek additional training on their own, and to the financial and practical extent possible, send personnel to outside training opportunities such as the Firehouse Expo in Nashville and the FDIC in Indianapolis. Information gained at this training can then be brought back and delivered to other members of the Department. Training reports should be completed for all this training, and copies of any certificates earned should be placed in the members' personnel and training files.

Recommendation XI-3

A training bulletin board should be placed in the station where upcoming training opportunities can be posted for all personnel to review. Training notices can also be sent electronically to all personnel and be posted in a member's only area of the Department's website.

Recommendation XI-4

The PFD should implement periodic skills proficiency evaluations for all Department personnel. These proficiency evaluations, consisting of standardized evolutions, can be based upon recognized standards and benchmarks, in conjunction with performance criterion and benchmarks, established through evaluation of, and based upon, PFD operations and procedures.

Recommendation XI-5

The PFD should seek funding to expand the training resources and training library to include current editions of commonly utilized media. The Department should fully utilize the internet and all the various training resources available online.

Recommendation XI-6

The PFD should explore options for providing certain training programs utilizing an online platform to allow personnel to complete the training at their convenience.

Recommendation V-14

The Town and the Fire Chief should work with and support the certification of all officers to a minimum level of Fire Officer I and consider supporting Fire Officer II and Incident Safety Officer certification. Certification to the level of Fire Officer I should be required within two years of appointment as an officer.

Recommendation XI-7

As part of the succession planning process, the Fire Chief should work to implement a professional development program to ensure that all officers can perform their superior's duties, as well as identify the core future leaders of the Department.

Recommendation XI-8

The PFD should continue to foster and support any member to be trained and certified to the Firefighter 1 and preferably the Firefighter 2 level.

Recommendation XI-9

Working through the training officer, training should be planned, a schedule published and all hours should be properly documented. In an effort to keep members interested in training the Department

should be creative and offer training that is outside the normal programs. Making programs fresh, fun and to some degree competitive may increase the participation by members. If it's the same old training, people will lose interest. Make it so they want to participate and at the same time meet training goals. Training hours should exceed appliable NFPA and ISO criteria.

CHAPTER XII – COMPARATIVE ANALYSIS

Overview

The process of benchmarking, also known as comparative analysis, is an effective way of making general comparisons between similar communities and identifying trends and patterns, but there are limitations as to how the data should be used. The data gathered through this process provides a perspective on organizational norms and best practices. Ideally, a community would utilize this information to identify needed change and through paced action, work incrementally toward implementation.

After much discussion and research, the MRI team developed appropriate points of comparison for the benchmarking and comparative analysis. The benchmark communities that were chosen were selected by our team based on the size of the community, the fire department, and the services provided. The communities are Hardwick, Brookfield, Brimfield, Sutton, Warren, and East Brookfield. As the study progressed, the team worked with each of the fire chiefs to interpret and confirm the data collected from their respective communities. In an effort to extract the maximum amount of data, MRI worked to contact the above-mentioned fire chief in each community and request cooperation and response. The Princeton data utilized in this comparative analysis was provided by the Chief of Department, the Town Manager, and by on-line resources.

The methodology for calculating various data categories may vary from community to community, so this can have an impact on the comparison. Therefore, comparative analysis should be considered to provide an averaged perspective and not a definitive guide for action. For example, a fire department budget in one community might not include personnel benefit costs, which would skew the comparison. In the past, MRI has encountered departments that have used different formats to assign incident numbers to emergency calls, or that also assign these numbers to routine activities such as public education programs, inspections, and training. As such, when reading and trying to interpret the information in the tables and graphs in this section of the report it is important to consider that the specific details for the data used could only be extracted with a more detailed and in-depth study of those communities.

Benchmark Data

This comparative data set utilizes the concept of a deviation to indicate how far the Princeton data is from the overall mean of the data provided by peer communities. Significant deviations from the mean are reported under each figure.

COMMUNITY	PROTECTED POPULATION	SQUARE MILES	POPULATION DENSITY/ SQUARE MILE
HARDWICK	2,667	40.8	67.9
BROOKFIELD	3,439	16.6	196
BRIMFIELD	3,694	35.2	96.2
WARREN	4,975	35	173
EAST BROOKFIELD	2,224	9.8	213
SUTTON	9,357	33.9	254
AVERAGE	4,392	28.55	166
PRINCETON	3,495	35.83	98
DEVIATION	0.567	1.254	0.59

FIGURE XII -1 COMMUNITY DEMOGRAPHICS

The following information can be drawn from these data points:

1) Of the seven towns evaluated, Princeton has the second largest area to protect at 35.83 square miles. Hardwick is the largest at 40.8 square miles.

2) The land area protected is approximately 25% larger than the average land area of peer communities.

3) Of the seven towns evaluated, Princeton has the fourth lowest population. The population of Princeton is 59% of the average.

COMMUNITY	Community Budget FY 2023	Tax Rate Residential	Tax Rate Commercial
HARDWICK	$6,148,953	$14.70	$14.70
BROOKFIELD	$9,386,188	$15.98	$15.98
BRIMFIELD	$12,500,000	$15.21	$15.21
WARREN	$10,054,382	$15.80	$15.80
EAST BROOKFIELD	$6,323,901	$13.11	$13.11
SUTTON	$35,983,225	$13.85	$13.85
AVERAGE	$13,399,442	$14.78	$14.78
PRINCETON	$11,638,313	$15.68	$15.68
DEVIATION	0.86	1.06	1.06

FIGURE XII-2 COMMUNITY BUDGETS, TAX RATE, PER CAPITA

The following information can be drawn from these data points:

a. The community budget in Princeton is 86% of the average of the budgets of the six peer communities.

b. As compared to the peer communities the residential and commercial tax rate is six percent higher than the average tax rate in the other communities.

COMMUNITY	FIRE BUDGET FY 23	Per Capita Cost
HARDWICK	$100,000	$37.49
BROOKFIELD	$160,000	$46.52
BRIMFIELD	$187,405	$50.73
WARREN	$736,093	$147.95
EAST BROOKFIELD	$210,408	$94.60
SUTTON	$632,525	$67.59
AVERAGE	$337,738	$74.15
PRINCETON	$593,963	$169.94
DEVIATION	1.75	2.29

FIGURE XII -3 FIRE DEPARTMENT PER CAPITA BUDGET

The following information can be drawn from these data points:

a. The PFD budget is the third highest budget as compared to the peer organizations.

b. The PFD budget is 75% higher than the average of the six peer communities that were surveyed.

c. The PFD per capita cost for the Town of Princeton is the highest of the other communities that were surveyed.

COMMUNITY	Number of actual Sworn Personnel as of 12/28/22	CALL AND/OR VOLUNTEER FIREFIGHTERS	PER DIEM FIREFIGHTERS OR EMS PERSONNEL	FIRE BASED EMS
HARDWICK	16	16	0	No
BROOKFIELD	30	24	0	Yes
BRIMFIELD	25	25	0	No
WARREN	30	25	0	Yes
EAST BROOKFIELD	NR	NR	0	Yes
SUTTON	30	27	0	No
AVERAGE	25.6	23.4	0	50/50
PRINCETON	43	43	7	Yes
DEVIATION	1.67	1.83	N/A	N/A

FIGURE XII-4 DEPARTMENT STAFFING

Note: On-call indicates first responders that are notified of an emergency and respond when available. Per Diem refers to personnel that work assigned shifts and are paid to be at the station to respond to emergencies.

The following information can be drawn from these data points:

1) Princeton has a comparatively high amount of listed personnel and should ascertain the actual number of participating members for safety considerations.

2) The higher number of personnel contributes to a higher-than-average annual cost. These are attributed to things such as training, personal protective equipment, and insurance.

3) Having a higher-than-average number of on-call personnel (persons compensated per call to respond from within the community) is a positive attribute of the organization and should be looked at as an investment that will prevent a costlier transition toward career staff.

4) Princeton has per diem paramedics (compensated hourly to staff the fire station) to support the EMS (primary) volume in the community whereas others do not.

5) While Princeton lists the highest number of personnel it is clear that some personnel are not substantively active. This is a common occurrence in on-call and volunteer departments. Many departments set standards for participation although as it is difficult to recruit and retain personnel, these levels should be based on operational safety and set at a very reasonable level.

6) As Princeton has the highest number of personnel there is a direct relationship to the costs for personnel and protective equipment should be expected to be proportionally above average.

PFD BENCHMARK DATA: FACILITIES

The number of fire stations that a community may have, and their location is typically determined by the historical needs of that community. In most New England cities and towns as the types and locations of industries and businesses evolved many of the current fire station locations have become less than optimal to meet today's needs. Further, as a community's infrastructure evolved including major roadways, highways, and water and wastewater systems allowed them to expand farther, the need for stations in other parts of the city or town were considered. Also, as fire and building codes are upgraded, and the size and types of equipment needed to provide fire and EMS services has increased, the components, size, complexity, and cost of a modern-day fire station has increased substantially.

Note: Our survey did not physically evaluate the fire stations in the benchmark communities. Figure XII- 5 provides a basic comparison:

COMMUNITY	NUMBER OF FIRE STATIONS	STATION NAME OR NUMBER	YEAR OF CONSTRUCTION	SQUARE FOOTAGE	NUMBER OF BAYS	DECON AREA	FACILITY SECURITY SYSTEMS
HARDWICK	1	Headquarters	1978	10,000	2	No	No
BROOKFIELD	2	Headquarters	1927	NR	3	No	No
		Annex	1965	NR	4	No	No
BRIMFIELD	1	Headquarters	Unknown	13,000	6	Yes	No
		Addition	2020				
WARREN	2	Headquarters	1952	2,500	3	No	No
		Satellite	1956	2,500	3	No	No
EAST BROOKFIELD	1	Headquarters	1975	7,480	4	No	No
SUTTON	3	Headquarters	1945	NR	3	No	No
		Manchaug	2003	NR	3	Yes	No
		Wilkonsonvill	2003	NR	3	Yes	No
PRINCETON	2	Headquarters	1988 Reno	4,400	5	No	No
		East Princeton	1987	6,016	4	Yes	No

FIGURE XII-5 FIRE DEPARTMENT FACILITIES

NR = NOT REPORTED

The following information can be drawn from these data points and our observations:

a. Princeton Fire Headquarters is the second smallest headquarters facility within the peer communities surveyed.

b. The Princeton Headquarters station is not suitable to accommodate modern apparatus (direct professional observation).

c. Evaluating square miles per community, two stations for the Town of Princeton is reasonable and offers protection of assets. A two-station model should be maintained.

PFD BENCHMARK DATA: APPARATUS

The types of fire apparatus and equipment that a fire department has is based on the department's operational needs, while the department operations dictate some of the apparatus design features to meet the needs. Further, fire departments will purchase and staff apparatus in order to comply with current NFPA standards and Insurance Service Organization (ISO) recommendations and their own established standards of cover.

For a community that has rural areas with no hydrants, some specialized apparatus will usually include a large water carrying vehicle to meet the operational needs; whereas another department in a more urban setting with adequate fire hydrants to supply water, but high EMS response activity, the community may select the smallest compliant water tank possible to provide room for additional medical equipment. Not every department operates specialty equipment such as boats or off-road vehicles. The need for such equipment is typically based on potential use and frequency. Many fire departments utilize a regional approach or mutual aid to have these types of equipment and the trained staff that they would bring into their community.

This part of the benchmarking survey was used to determine the number and types of apparatus and ambulances that the comparable departments currently operate. The information in the table below indicates that the apparatus set present within the PFD is sufficient. However, should the department consider constructing a new facility sometime in the future EMS coverage should be re-evaluated. The new facility should also have an ambulance deployed from it and the total number of ambulances should be increased to two, so that the community has a reserve unit should the primary ambulance go out of service.

APPARATUS	AERIALS	PUMPERS	TANKERS	RESCUES	BRUSH UNITS	AMBULANCES	LIGHTING UNIT	MOBILE CASCADE/SCBA	SPECIALTY UNITS	COMMAND VEHICLES	STAFF VEHICLES	UTILITY VEHICLES	OTHER	BOATS
HARDWICK	0	2	1	0	1	0	0	0	0	0	0	0	0	0
BROOKFIELD	0	3	2	1	2	0	0	0	0	0	0	2	0	1
BRIMFIELD	0	2	1	0	1	0	0	0	1	1	0	0	0	0
WARREN	0	3	0	1	0	1	0	0	2	2	0	1	0	0
EAST BROOKFIELD	0	2	1	0	2	1	0	0	1	0	0	0	0	0
SUTTON	1	3	2	2	2	0	0	1	4	1	0	0	0	0
PRINCETON	1	3	1	1	2	1	0	1	0	1	1	0	0	0

FIGURE XII-6 FIRE DEPARTMENT APPARATUS

The following information can be drawn from these data points:

a. The apparatus set is reasonable for the size of the community and the current staffing level.

b. Only two of the communities, inclusive of Princeton operate an aerial ladder.

PFD BENCHMARK DATA: OPERATIONS AND EMERGENCY RESPONSES

Typically, fire departments record and maintain information on every emergency response they make through the use of the National Fire Incident Reporting System (NFIRS) which will be part of their records management system. This is a system established by the National Fire Data Center of the United States Fire Administration (USFA), which authorizes the USFA to gather and analyze information on the nation's fire experience, as well as, its detailed characteristics and trends. These records also allow a fire department to more accurately assess and subsequently plan for the fire problem in their community.

The MRI team worked with Chief Bennett to ensure that the survey was able to make

comparisons based similar upon definitions and records within the NFIRS reporting system. However, as with many other things regarding any type of data, this is not an exact science and can involve a significant degree of subjective judgment. For example, whether a fire is defined as a structure fire, or classified in some other way is often determined by the subjective judgment of the personnel responding and completing that report.

The EMS response data is typically based on the information that is sent to EMS billing and The Commonwealth from each department. However, this data too can have a subjective element to it. The following tables and graphs provide a comparison between the various types of incidents and numbers, between Princeton and its comparable communities.

COMMUNITY	*FIRE*	*EMS*	TOTAL
HARDWICK	120	29	149
BROOKFIELD	142	814	956
BRIMFIELD	306	527	833
WARREN	370	748	1118
EAST BROOKFIELD	120	650	770
SUTTON	374	251	625
AVERAGE	238.6	503.1	741.83
PRINCETON	145	219	364
DEVIATION	0.61	0.44	0.49

FIGURE XII-7 EMERGENCY INCIDENT COMPARISON 2022

The following information can be drawn from these data points:

a. The PFD responds to 61% of the average fire volume based on the data provided by the peer communities.

b. The PFD responds to 44% of the average EMS volume based on the data provided by the peer communities.

c. The PFD responds to approximately one half of the overall emergency response volume based on the data provided by the peer communities.

PFD BENCHMARK DATA: ACCREDITATIONS AND ISO RATINGS

As noted previously in this report, the Insurance Services Office (ISO) lists a large number of items (facilities and practices) that a community should have to fight fires effectively. The schedule is performance-based and assigns credit points for each item. Using the credit points and various formulas, ISO calculates a total score on a scale 0 – 105.5. A zero rating makes the community a class 10 while a rating over 90 will rate a community a Class 1.

The ISO rating considers three main areas of a community's fire suppression system: emergency communications, fire department (including operational considerations), and water supply. In addition, it includes a Community Risk Reduction section that recognizes community efforts to reduce losses through fire prevention, public fire safety education, and fire investigation. When a community has both a public water supply (hydrants) and an area of Town using only private wells the ISO will rate both areas separately.

The concept of accreditation in emergency services is a relatively new idea to many fire departments. However, it has been a common practice for many years in a variety of professions, including hospitals and schools. Fire Departments across the country are attempting to achieving accreditation through the Commission on Fire Accreditation International (CFAI); Accreditation can immediately improve a department, and be used to plan for the future, show the public and elected officials what the fire department is doing and make the department a safer place to work.

Some fire departments that provide EMS transport services become Commission on Accreditation of Ambulance Services (CAAS) accredited. CAAS accreditation signifies that the fire department has met the "gold standard" determined by the ambulance industry to be essential in a modern emergency medical services provider. These standards often exceed those established by state or local regulation. The CAAS standards are designed to increase operational efficiency and clinical quality, while decreasing risk and liability to the organization.

COMMUNITY	DEPARTMENT ISO RATING	DEPARTMENT IS NATIONALLY ACCREDITED	DEPARTMENT IS PURSUING ACCREDITATION
HARDWICK	9	No	No
BROOKFIELD	6	No	No
BRIMFIELD	9	No	No
WARREN	5/5X	No	No
EAST BROOKFIELD	NR	No	No
SUTTON	4/4X	No	No
AVERAGE	6/6Y	No	No
PRINCETON	5/5Y	No	No

FIGURE XII-8 ACCREDIDATION AND ISO

The following information can be drawn from these data points:

a. The Town of Princeton is rated a 5/5Y by ISO.

b. When compared to the average ISO Rating, the ISO rating in Princeton is below the average (better than) of 6/6Y reflecting the work the Department puts forth to protect the Town. Our team believes that over time, the PFD should strive to reduce their ISO rating and become a Class 4 Department.

c. None of the surveyed fire departments are accredited or are pursuing accreditation.

CHAPTER XIII – STAFFING & RECRUITMENT AND RETENTION OF ON CALL PERSONNEL

We observed that the PFD is struggling to maintain the service level that the community expects and generate a timely and effective response to incidents. This challenge is not unique to Princeton and is growing within the vast majority of volunteer, on-call and Combination fire departments across New England and the Country.

Staffing across the nation has been a challenge and this challenge has been made greater since the inception of the COVID 19 pandemic. Princeton, the Commonwealth of Massachusetts, and across the nation is having trouble in recruiting and retaining good quality people to fill jobs. The chart below indicates that overall, the fire service has dropped 73,800 firefighters since 2018. Call and volunteer departments have lost 72,100 people and due to the loss of volunteers there has been an increase of 6,300 full-time career positions that have been filled.

# Firefighters in the U.S. 2000 - 2020								
	Total		Career			Volunteer		
2000	1,064,150		286,800			777,350		
2005	1,136,650		313,300			823,650		
2010	1,103,300		335,150			768,150		
2015	1,160,450		345,600			786,300		
2020	1,041,200		364,300			676,900		
		Difference		Difference			Difference	
2018	1115000		370,000			745,000		
2019	1080800	-34,200	358,000	12,000		722,800	-22,200	3%
2020	1041200	-39,600	364,300	6,300	17%	676,900	-49,900	7%
		-73,800		6,300			-72,100	9.50%

XIII-1 NUMBER OF FIREFIGHTERS IN THE U.S.

Staffing is one of the most important elements of any successful fire department. Having the proper number of staff with the right training and experience at any incident truly does make a difference on the outcome. Princeton fire maintains a roster of 35 people. Although having 35 names on a roster may sound impressive, what truly needs to be evaluated is the activity level of each and every person for levels in both responses and training. The Fire Chief has been working to maintain records for each person to ensure that they are active. If he finds the level is not meeting the Department needs he needs to ask them to step down. On average, the overall percentage of incidents that members responded to for the calendar year 2022 was 11 percent. The chart below indicates the number of staff within each group, the average number of incidents people in that group responded to as well as the high and low number of incident responses.

In 2022 Princeton had 396 calls for service. In the same time period, the charts below show the activity level of the Officers, Paramedics, and all other staff members the high and low number of incidents within each group.

			Response Range	
# Staff	Group	Average 2022 Responses	High	Low
7	Officers	17% Incident responses	41	0
7	Paramedics	8% of the incident responses	28	0
25	Staff Members	9% of incident response	39	0

XIII-2 PRINCETON STAFF REPSONSE 2022

The activity level of all staff for 2022 is further broken down below. Each column represents the % of incidents and the number of staff that fell within the parameters of each column.

	Activity Levels / Response staff				
Activity level	0%	1% to 10%	11% to 20%	21% to 30%	31% or more
Officers	1	1	3	1	1
Paramedics	2	3	1	1	0
Staff members	4	14	3	2	2

XIII-3 PRINCETON RESPONSE ACTIVITY LEVEL

The overall activity level per person is very low compared to other call and volunteer departments in New England. With only three people responding to calls for service 31 percent of the time average is 14 people responding to 1% to 10% of the calls would be a flag that compared to other departments there is a reason for the low participation that needs to be addressed.

Nominal Group Process (NGP)

The MRI team met with individuals and the Chief one on one as well as conducted a Nominal group meeting with all staff without the Chief present. The discussion at the meetings had many common themes and the vast majority has been reflected in this document. It will be important that all Department members hear from the Select Board and the Chief that this document has considered their concerns and ideas and that they will be looked at and a plan to work on the many subjects is or will be put into place.

Near the end of the Nominal group session the Department members were able to clearly outline the top three issues they felt were important to move the department forward. The first is lack of participation of individuals. It was strongly felt that the "dead wood" needed to be removed. Secondly the Department members feel that it is time for the Department to be run by a full-time certified Fire Chief that will be consistent and have a positive effect on the future. And lastly there is a sense that morale is very low and getting lower and whatever needs to be done to turn this around needs to happen.

A nominal group process is a variation of brainstorming where individuals come up with ideas on their own rather than as a group. Once different ideas are established, they are evaluated, ranked, and agreed upon collectively. The top-ranked ideas are selected as the output of this process. In general, the technique emphasizes individual creativity and group decision-making.

We conducted a Nominal Group Process (NGP) on December 6, 2022. Twelve members of the Department attended this session. Detailed notes indicating common themes were provided to the Select Board.

Overall Themes

1. **Positive attributes:**
    a. Equipment
    b. Good staffing

TOP 3 issues:

Participation

Station duties
Calls and training participation
Remove dead wood (people who have not made the minimum standard)

Administration

Need solid consistent, trained and certified all hazards chief

Morale

Its low and getting lower
Need to turn around real soon or we will lose good people

The current method of compensation to individuals was briefly reviewed. The "Standard Rate of Pay" and the "Readiness Rate of Pay" seems to line up with industry standards for a department this size operating in the current manner. The compensation rate for external training at $8.00 is far below that of the Massachusetts Minimum Wage and should be adjusted accordingly. Although the Department is only required to meet Federal minimum wage standards having such a low rate for training is not conducive to supporting training to better the individual, the PFD and the community.

Recruitment and Retention

The community has expressed a desire to retain a strong call firefighting force. MRI concurs and believes that goal is realistic and achievable for the foreseeable future. However, it will require the implementation of program(s) to recruit and then retain personnel; a strong commitment from the Town; and strong leadership in the Fire Department.

In March 2004, the International Association of Fire Chiefs (IAFC) issued a report by the Volunteer and Combination Officers Section, entitled ***A Call for Action: Preserving and Improving the Future of the Volunteer Fire Service***. Among other things, the report highlighted the fact that the ranks of on-call firefighters nationwide are declining due, at least in part, to an increasing demand for services. There are also various other factors that are prevalent to the reduction in the number of on-call firefighters in communities such as the study departments. Among them is that the demographics of many communities today do not support a sufficient number of the types of person who is attracted to the fire service in the 21st century - someone with time to dedicate to public service, or a young person who wants to make a career of it. The project team has found that on average, for every five on-call firefighters recruited, two will remain active after a period of 48 months has elapsed. The task of recruitment and retention is further complicated when a department lacks leadership and a true commitment (whether real or perceived) to the on-call force.

On its own, this number may look to be sufficient for the activity level. However, in almost any on-call emergency services organization there is going to be a percentage of members whose names still appear on the "active" roster, yet they no longer truly are, or are minimally so, for a variety of reasons. Factor in that most members of the Department have a primary job, other than the Fire Department, that probably limits their availability to respond, mostly during normal business hours, and the current personnel picture becomes much more of a concern. Based upon the analysis only about three or four of the on-call personnel respond to incidents on a regular basis.

Most Fire Departments also do not have a formal recruitment and retention program for call personnel and has only very infrequently actively recruited new members. The MRI project team was informed

that the newest members of the Department are recruited by word of mouth or are "walk ins". There is no mention of the need for additional members on the Towns' or fire departments' websites, or even a person to contact if someone is interested in joining the department. This is something that is frequently displayed very prominently on the websites of many on-call departments.

It is easy to believe that increasing the number of on-call firefighters can be a cure all to eliminate all staffing, and thus response problems. Unfortunately, in 2022, this is an increasingly difficult problem to overcome. However, there still appears to be a small town feel in Princeton, and perhaps more importantly, still a sense of community. These are key attributes that may increase the likelihood of success for any call firefighter recruitment and retention program. Some studies and reports prepared by various entities have noted that many on-call fire departments serving small to medium sized communities anticipate that about one percent of its year-round population, will be members of the fire department.

In the smaller government, anti-taxes, and benefits climate of today, many of these benefits can be controversial. However, after considering these strategies, the project team has focused on developing innovative strategies for consideration. One example of an unconventional and innovative best practice that may work is to provide a health insurance package for self-employed, year-round residents, provided they complete training, certification, and provide the Town with a high level of immediate response. Typically, this type of program attracts electricians, plumbers, painters, and other trades, as well as self-employed professionals that would be beneficial to the organizations. The Town may also want to explore the opportunity to offer a deferred compensation package as another incentive program in a similar fashion to the health insurance model.

An example of an effective advertising and marketing campaign for the recruitment and retention of on-call and volunteer personnel can be found in Chester County Pennsylvania. This program is called ***"Help Fight Fire"*** and can be located online at https://www.helpfightfire.com/. A campaign such as the example depicted could be a valuable resource to the Princeton Fire Department.

Even if the recruitment obstacles can be overcome, hurdles remain before a new member is a productive member of the Fire Department. Once an individual becomes interested in becoming an on-call firefighter, they must achieve a level of ever-increasing specialized skill that is time-consuming. Often exit interviews reveal that the training commitment alone is daunting and one of the primary reasons that on-call personnel resign. It is also costly to the fire company. To become a certified firefighter takes several hundred hours. Once certified, there are dozens of hours training annually, maintaining firefighter and possibly EMT or paramedic skills and certifications. Younger on-call firefighters frequently use their training and opportunities as a steppingstone to seek employment as full-time firefighters, which often results in their loss to the community.

As most suburban communities across the United States are dealing with the reduction of on-call staff, trying to reverse this trend has become a common issue in many places. When compared to the ever-increasing costs of employing additional full- time career personnel, many communities have concluded that investing in on-call personnel is the best and more cost-effective practice and, to that end, they have pursued some of the following strategies:

- Placing a prominent banner or link on the home page of each fire company and municipal website and along with on all social media platforms. This should be done as a priority that can be accomplished for little to no cost.
- Conducting a recruitment mailing to all residential properties in each municipality with information about the fire company and recruiting new members.
- Placement of temporary signboards at various locations throughout the Community in addition to the billboards from Help Fight Fire. At least one fire company does this in their response area.
- Placement of a recruitment message on the signboard at the various municipal buildings and fire stations.
- Working with local businesses to form partnerships that would allow employees to leave work to respond to emergency incidents when needed.
- Appoint an on-call firefighter "Recruitment and Retention Coordinator" to develop, implement, and coordinate these activities. This should be undertaken as a community endeavor.
- Provide a reduction in property taxes, or a tax abatement incentive, for on-call service.
- Provide on-call firefighters with community-based benefits such as free dump stickers, etc.
- Provide community-based awards and recognition such as implementing an incentive for members that attain a level of more than 25% response. An example would be to provide gift certificates for local restaurants, concerts, or other entertainment as a reward for attaining a high level of response.
- Distribute posters to convenience stores, gas stations, restaurants, and other high traffic locations seeking to recruit new members.

One of the challenges that many on-call organizations face today is that the motivation of newer members is much different than the older, long-time members. The newer members tend to need to receive something tangible to show that their service is appreciated. An associated concern that the MRI project team often hears is the need for better communications within the fire company. This is usually does not refer to the company's formal communications system, but more so, the interpersonal levels of communication that occurs within the company and at the station level. This is frequently an

area of concern in on-call organizations as the cultures and ideas of the older members, who have served the company for many years, often clash with those of the younger, newer members. These intergenerational differences can be even more problematic if those older members, who often no longer respond to calls, are perceived as having an excessive say in company operations. Conversely, there is a perception that the younger members do not take things seriously and show the proper respect for the company and the experience of the senior members. Handling this situation is often a delicate balancing act that the company leadership will need to be able to navigate, if they want to maximize the participation of their most important resource, the active firefighters. Portraying a unified and welcoming environment as part of the recruitment and retention strategy of the fire company is an important component necessary for those efforts to be successful.

As Princeton and the surrounding areas become more diverse, the Fire Departments in the area will need to adjust accordingly to be more inclusive and welcome in new members from different cultures. This is a changing dynamic that the fire companies will need to maintain awareness of as they try to determine the most effective focus of their recruitment, and perhaps more importantly, retention efforts. One of the most important keys to the latter is that the fire company presents a positive and inclusive atmosphere and there is a sense that the leadership is competent. In addition, disciplined, policy driven on-call organizations are often more successful than those where there is little to no discipline and the attitude is, “we’re only on-call, so leave us alone”.

The National Volunteer Fire Council has excellent resources on the recruitment of new volunteer personnel. They can be found at https://www.nvfc.org/make-me-a-firefighter-six-steps-to-recruitment-success-2/. The International Association of Firefighter also has resources that can be found at https://www.iafc.org/topics-and-tools/resources/resource/guide-to-best-practices-in-volunteer-firefighter-recruitment-and-retention.

Some of the critical steps to ensuring engagement with potential members during the recruitment process include:

- Keeping prospective members engaged throughout the entire recruitment process with emails and phone calls;
- Clearly articulate expectations;
- Providing them with a clear point of contact if they have any question, concerns or issues that may arise during the recruitment process, or, if they just want additional information or to stay in the loop;
- Invite them to Department events, meetings, training sessions, work details, or even just to ride along (if permitted by Department policy and insurance regulations.

Once the recruit is accepted into full; or at least probationary membership of the fire company the focus should now shift to ensuring *their* success:

A. Consider pairing them with a mentor, an experienced (and positive) member who can help guide them through their fire experience in the fire/EMS service and start to teach them how to do the "job".

B. Implement a tracking program to follow the member's progress through their probationary period. Are they engaged and showing interest? Are they hitting the right marks? Where do they need help? Any number of programs can also help track key certifications, schedule duty shifts, hold emergency contact information and more.

C. Create a "New Member Guide" with various checklists, progression information, copies of primary response maps, key forms and other critical details they'll need to know as a member of the fire company. Solicit the **"what"** for the document from both the department's longstanding members (what do they wish new members knew sooner?) and the newer members (what do they wish they had known faster when they first joined?)

The new member making a connection with and feeling welcomed into the company is going to be a major driver in their success and level of involvement with the fire company. If they are successful, the company will also, as they gain another important asset. To that end, one of the things the Brighton Fire Department near Rochester, New York did to improve their recruitment and retention efforts, was to engage with an executive coach from the business community (without fire service experience) to mentor their officers, and to create and facilitate an advisory team to collect input on big issues and decisions from across the membership; while bringing the key leadership team members together on "organizational culture improvement." Changing the long-standing culture of many on-call fire departments in acknowledgement of the diversification of society will be critical to the long-term survival of the on-call fire service.

There are no easy or guaranteed solutions to the declining number of on-call firefighters and the related staffing quandary facing communities throughout the country. It is also important to stress that what may work in one community or fire company with regards to staffing and on-call recruitment and retention, may not work in another nearby community or the fire company next door. Each community and fire company must individually determine what programs, incentives, and motivations will work, and be most effective in their community or company. It is also very important to advise the stakeholders in the towns that should they decide to transition from a mostly on-call fire service to a more combination service, the process may be difficult. However, this situation is one that many fire

departments and communities experience during the time of their evolution and growing pains would not be unique at all to these organizations.

One huge unknown for the fire and EMS services is the long-term implications of COVID-19 from a personnel standpoint. The implications here could be particularly acute to the on-call services. In New Jersey, as well as other states, several on-call EMS organizations were forced to suspend operations due to a lack of personnel to provide coverage and response to calls. The on-call emergency services are aging, and our experience indicates this challenge is particularly acute within Massachusetts on-call departments. Therefore, a significant percentage of on-call responders are going to be at, or close to, being higher risk just based upon their age, without factoring in any other underlying health issues. These personnel may decide it is time to take a well-earned retirement. Younger members with families may find themselves reassessing the risks involved in providing on-call services and conclude that it is too great and step away. The pandemic is also certain to impact future recruitment efforts. The Fire Departments need to monitor this situation and be prepared for whatever the results ultimately are on their membership.

The Federal Government has a version of the Staffing for Fire and Emergency Response (SAFER) grant program that pertains strictly to on-call firefighters. It provides competitively awarded funds to municipalities to recruit and retain on-call firefighters. The grant funds expenses, such as recruitment campaigns, tuition for college curriculums in fire science, EMT and paramedic training, health insurance for call members, physical fitness programs, uniforms, and various tax incentives offered to attract new candidates to join the Fire Department, and then stay for an extended period of time.

MRI believes that the Town/Department or the region should attempt to secure a SAFER grant to recruit and retain on-call members. This grant should note the staffing issue that currently exists and indicate that the grant would be an attempt to meet the NFPA 1720 fire response standard. The goal of developing a viable call force of twenty-five total on-call firefighters would also be a goal to articulate in the grant application. It is quite possible that a portion of the health care program cost described above may be eligible for incorporating in a SAFER grant.

***Note: much of the following section is inserted as a best practice example of how and where the on-call volunteer staffing is elsewhere and that the participating communities are not alone in working on properly staffing the Department*.**

THE VANISHING ON-CALL / VOLUNTEER FIREFIGHTER

In March 2004, the International Association of Fire Chiefs (IAFC) issued a report by the Volunteer and Combination Officers Section, entitled ***"A Call for Action: Preserving and Improving the Future of the Volunteer Fire Service"***. Among other things, the report highlighted the fact that the ranks of on-call firefighters nationwide are declining due, at least in part, to an increasing demand for services. There are also various other factors that are prevalent to the reduction in the number of on-call firefighters in communities. Among them is that the demographics of many communities today do not support a sufficient number of the type of person who is attracted to the fire service in the 21st century - someone with time to dedicate to public service, or a young person who wants to make a career of it. In many cases those who are looking for a career leave the area as soon as they are offered a job, which is often in other nearby states.

MRI has found that on average, for every five on-call firefighters recruited, two or three will remain active after a period of about 48 months has elapsed. This fact alone can frustrate recruitment efforts, which in and of themselves are a time intensive endeavor. The task of recruitment and retention is further complicated if the fire company and/or the municipalities it serves lacks a true commitment (whether real or perceived) to the on-call firefighters.

Making the challenge even greater, in 2020 the average citizen does not want to spend a great deal of personal time dedicated to the fire and emergency services, especially when family commitments take priority. Other reasons for difficulty recruiting and retaining members include:

- An overall reduction in leisure time;
- Employment obligations and the common need to maintain more than one job;
- The virtual elimination of employers understanding and flexibility relating to this form of community service;
- Increased family demands;
- Generational differences;
- Increasing training requirements;
- The cost of housing in many affluent communities;
- Organizational culture;
- Internal respect;
- Recognition of personnel;
- Internal communication;
- Department leadership styles and commitments;
- Severe lack of funding;

- Outdated service delivery models;
- Political polarization.

In November 2005, the IAFC Volunteer and Combination Officer's Section released a second report, called ***"Lighting the Path of Evolution: Leading the Transition in Volunteer and Combination Fire Departments"*** (Appendix B). This report further expanded on issues and strategies for maintaining high service levels to the community, and safety for emergency response personnel while simultaneously keeping costs down. One prominent question asked in the report was ***"How can fire departments ensure the delivery of services are reliable?"*** The answer was the development of a list of "indicators for change", were fire department managers and local government leaders need to be cognizant of warning signs pointing to potential problems and "prepare for change before it is forced on them by external circumstances". These "indicators" of change include:

Community Growth: Generally speaking, the larger the community, the larger the call volume and higher level of service, people expect.

Community Aging: Maintaining an appropriate level of service depends on the fire department's ability to recruit new and younger members. This appears to be a major issue as many long time, senior members are nearing retirement or are faced with health problems (even before COVID-19) that limited their availability.

Missed Calls: A critical issue because it is a failure that is highly visible to the public and there is an over-reliance on mutual aid for coverage.

Extended response times: A reliability problem as the public is not provided the appropriate service.

Reduced staffing: A serious problem as it puts citizens and first responder safety at a greater risk.

Most of these issues appear to have growing applicability to the communities and their fire service delivery system as a whole. These warning indicators are not necessarily an indictment of anything wrong in the area; the same problems are facing on-call fire companies and departments across the state and the entire country. The challenge is finding ways to preserve and improve the fire service in the communities for the foreseeable future.

In September of 2020 the National Volunteer Fire Council published results of a research that was titled and focused around **"Why Do Volunteers Stop Volunteering?"**. In this study former volunteers were surveyed to learn of the reasons they left a department, and these results were compared to the perception of the current volunteer leaders and non-leaders alike. Not surprising to the MRI team, the results indicated the primary reason for leaving was not money; but was due to the lack of support and the lack of flexibility in dealing with the department requirements and that of family life. In fact, the primary reason for leaving was due to the department atmosphere being full of cliques and groups that exclude others. The current volunteers in the research conducted indicated that leadership and not focusing on or supporting the needs of members as another of the top three reasons. To round out the top three points of contention, current volunteers cited a lack of clear expectations on how much time and effort is required each week or month to meet training requirements. All of these items will be discussed in the future section of this report.

There has been much research done by several fire departments on the effects of various staffing levels. One constant that has emerged is that company efficiency and effectiveness decrease substantially, while injuries increase when staffing falls below four personnel. A recent comprehensive yet scientifically conducted, verified, and validated study titled ***Multi-Phase Study on Firefighter Safety and the Deployment of Resources***, was performed by the National Institute of Standards and Technology (NIST) and Worcester Polytechnic Institute (WPI), in conjunction with the International Association of Fire Chiefs, the International Association of Fire Fighters, and the Center for Public Safety Excellence. This landmark study researched residential fires, where most of the fires, injuries, and fatalities occur. The study concluded that the size of firefighter crews has a substantial effect on The Fire Department's ability to protect lives and property in residential fires and occupancies.

Several key findings of the study include:

1. Four-person firefighting crews were able to complete 22 essential firefighting and rescue tasks in a typical residential structure 30% faster than two-person crews, and 25% faster than three-person crews.

2. The four-person crews were able to deliver water to a similarly sized fire 15% faster than the two-person crews, and 6% faster than three-person crews, steps that help to reduce property damage and reduce danger/risks to firefighters.

3. Four-person crews were able to complete critical search and rescue operations 30% faster than two-person crews and 5% faster than three-person crews.

Although all the fire departments are facing emerging operational staffing challenges, the project team believes that all the departments can remain successful, primarily on-call organizations, with reduce

response times, and meeting OSHA "Two-in/Two-out" for at least the next decade. However, continuing the on-call composition of the organization will require a concerted effort and the deployment of several best practices, and non-traditional strategies. Although the department is open to new members, a new level of effort needs to be directed toward recruitment and retention initiatives.

While police and fire personnel often have no interest in the other public safety profession, which is often the source a failure of forced public safety pilot programs, encouraging police officers to consider serving the community as on-call firefighters when off duty, should be considered as best practice. It must be recognized that should a full-time police officer that lives in the immediate area become an on-call firefighter he/she would be paid at their Police overtime rate for all additional hours based upon the restrictions of the Fair Labor Standards act (FLSA).

Another best practice to enhance the daytime availability of personnel is to provide preference when hiring Department of Public Works (DPW) Laborers to existing on-call firefighters. In the alternative if no on-call personnel are interested or qualified, the new DPW hire could have the requirement to become and remain active as an on-call firefighter. This strategy has worked in several communities to enhance daytime coverage during the work week when on-call personnel are often least available. An example of this practice was in Hopkinton Massachusetts where at one time several members of the DPW staff were on-call firefighters and would deploy to emergencies if they were not involved in a critical DPW activity. In that community, each DPW utility vehicle had both an emergency and non-emergency lighting package to enable a rapid response and support DPW operations.

Princeton Fire has expressed a desire to retain a strong on-call firefighting force. The project team concurs and believes that goal is realistic and achievable for the foreseeable future, albeit with changes in traditional operational procedures, and the introduction of a career force to supplement the call force may be in the future. However, achieving this goal will require the implementation of program(s) to recruit; and then perhaps more importantly, retain personnel. This will take strong commitment from all Department members.

Recommendations

Recommendation XIII-1

The Town needs to review the pay rates and ensure they are slightly above average for the region. In an effort to keep good people the increase in pay will help to ensure they stay.

Recommendation XIII-2

The Town needs to change the "outside training rate" from the current $8.00 per hour to the individual regular rate of pay. Outside training at the Fire Academy and other recognized training institutions is key to keeping people fresh and up to speed with current fire and EMS standards.

Recommendation XIII-3

The Town and the Fire Chief should review the comments made during the Nominal Group session and take appropriate action even if that action is simply to acknowledge to the Department that they have been heard and appreciated for the honest look at operations today and in the future. The Town should further consider doing this type of exercise on an annual basis.

Recommendation XIII-4

The Fire Chief needs to set a standard for participation and to keep to the standard. Just having a list of names on a roster is not acceptable today and participation in incidents and training are key to the Department and individual success.

Recommendation XII-5

The Town should consider looking at having a full-time Fire Chief in the very near future. This Chief should be a working Chief and take care of daily administrative duties, manage the Department both in house and on incidents and take care of inspections. The Town should also consider that the Chief be a Paramedic and will be expected to use these skills if needed at incidents while they are on duty and in town.

Recommendation XII-6

The Town Administrator in coordination with the Selectboard should annually set goals and objectives for the Fire Chief and Department and provide a written evaluation of the Chief's performance.

Recommendation XIII-7

The officer core should review the PFD roster and look to the members with low participation and find out what can be done to increase their involvement. Work with these members to increase their participation within a pre-determined time frame.

Recommendation XIII-8

The PFD should set a minimum criterion for members to remain in active status. This criterion should include both minimum training and response to incidents for a determined. time period (one year). This criterion should also allow for people to go into an inactive status for a period of time due to approved circumstances. It would be important for inactive status people to make up any important training prior to being put back on active status.

Recommendation XIII-9

The Town should either individually or jointly with another town, apply for a federal SAFER grant for on-call recruitment and retention. This grant should be utilized to develop a comprehensive marketing program to attract new members, and provide incentives for the retention of those personnel, such as tuition reimbursement, health care benefits, tax abatements, etc. This competitive grant requires a lot of time and dedication to write and to be successful to obtain.

Recommendation XIII-10

Town residents and elected officials should recognize that the only way to develop a more active and properly staffed fire department in the absence of hiring a larger force of career firefighters is to determine what would motivate potential responders and craft a program of investment that meets these extrinsic and intrinsic needs.

Recommendation XIII-11

The PFD should convene a focus group to determine what concepts and recruitment and retention strategies are feasible and most attractive to potential candidates.

Recommendation XIII-12

The PFD should set a realistic goal of recruiting at least 5 to 10 new members over the next three years, and simultaneously set a goal of increasing the overall call member force to around 25 to 30 active personnel. These personnel should be required to be properly trained and certified to the Firefighter I/II level, and preferably to the minimum of EMR level.

Recommendation XIII-13

The PFD should make it a priority to develop an active on-call recruitment program led by a Chief Officer. At a minimum, this program should consist of:

1. ***Developing a recruitment brochure and mailing it to all residents***
2. ***Holding periodic open houses at the fire station***
3. ***Performing public outreach through the local media***
4. ***Contacting community and service groups***
5. ***Developing an eye-catching banner on the Town's and fire department's web sites***
6. ***Placing signs recruiting call/volunteer personnel at the main entrances to Town***
7. ***Placing a temporary sign board at various locations within the community***
8. ***Placing signs for call/recruiting volunteers in local businesses, particularly high-volume locations***
9. ***Implementing a fire explorer program***
10. ***Radio and media advertisements***
11. ***Although time-consuming, consideration should also be given to conducting a door-to-door recruitment campaign of every residence in the Town.***
12. ***The proposed SAFER Grant could be utilized to cover many of the above expenses.***

Recommendation XIII-14

The Fire Chief should develop a social media presence and involve other members of

the Department in this endeavor. The use of social media like Facebook and Twitter are what the younger generation use and a very active social media account has the opportunity to reach out to this group of people for hiring.

Recommendation XIII-15

The Fire Chief or his designee should create a quarterly "newsletter" that will highlight the positive things that the Department has done in the prior months. This newsletter should be posted on the Town's web page, shared in social media, given to the Town Administrator who in turn should share with the Selectboard. It is important that the public is made aware of all of the great people and all the good things the department does.

Recommendation XIII-16

The Fire Department should develop a series of team-based activities that build involvement in the organization.

Recommendation XIII-17

All officer positions, from lieutenant to fire chief, should be filled based upon the person's firefighting/emergency services training, certifications, and experience, commensurate with the position being sought, along with successful completion of a formal, rank appropriate assessment process, and a basic practical skills evaluation.

Recommendation XIII-18

Fire Department should ensure that all Department members are trained/ certified to the minimal NIMS level required for their duties/responsibilities and ranks. In addition to the basic I-100/I-700 training mandated; it is MRI's recommendation that all officers should be trained to the ICS-300 level. All chief level officers should be trained to the ICS-400 level.

Recommendation XIII-19

The PFD should join the National Volunteer Fire Council and utilize the tools on the NVFC web site for cooperative programs they have posted. One of the newer programs that should be considered looks to attract returning or former military personnel into the fire service.

CHAPTER XV – CONCLUSION

The Eight Most Positive Attributes of Princeton Fire and EMS Services (Things That are Done Well)

The study team found the PFD to be an effective fire department that strives to provide a high level of service to the community. Positive attributes include the following:

1. The PFD has a higher-than-average number of personnel. While we recognize that some members do not have a high level of participation, it is our observation that this is a positive reflection on the community and the value the Department offers.

2. PFD personnel are well trained compared to most departments we have reviewed.

3. The PFD has an adequate apparatus set and is very well equipped.

4. The PFD has pursued the purchase of used apparatus to provide the Town with cost savings.

5. The PFD provides a robust advanced level EMS system which is atypical compared to many communities we have evaluated.

6. Overall, residents are pleased with the EMS system and its personnel

7. Residents were pleased with the Department's response and involvement during the Covid-19 pandemic.

8. The Department has a strong reputation for providing respect and value to the community.

The Eight Most Significant Challenges Facing Princeton Fire and EMS Services

Based upon the findings and analysis of the team, the most significant challenges facing the participating fire services are:

1. Rapidly diminishing staffing pool for fire and EMS operations, part of a nationwide trend. The cost associated with addressing this issue will be the biggest challenge ahead for all the stakeholders, both internal and external.

2. Emerging generational differences that often produce a lack of understanding on both sides.

3. The time commitment required for certifications and continued training.

4. Tapping into the high school aged students and the ability to market the fire service.

5. Elongated response times based on a lack of available personnel, requiring mutual aid for even basic operations.

6. The skill set required in today's high-tech environment will need to be adapted to.

7. The need to train in new work force prior to the active members aging out.

8. The need to add administrative capacity.

Implications of Not Taking Action

The challenges that are facing the fire and EMS services in all of the departments in and around the study has sometimes been referred to as, ***"a crisis without evidence".*** The MRI project team heard this multiple times. But make no mistake, there is a crisis that is slowly building, and has been for a considerable period. The reason that many stakeholders – municipal leaders and the general public – do not see "evidence" is the long tradition in both the fire and EMS services of "getting the job done". It has long been known that when people have a problem they don't know how to deal with, they call the fire department because two things are certain when they do: 1) the fire department will come, and 2) they will figure out how to deal with the problem or find someone that can/will. Despite robust rosters, decreasing participation translates to longer response times and having fewer appropriately trained personnel on the incident scene.

Looking ahead, the implications of not taking action will be quite simple: service levels will begin to diminish, some companies and EMS agencies may fold under financial pressures, and fewer and fewer

(most likely) aging members will be trying to respond to an ever-increasing number of requests for service.

In the end, **ALL** the various stakeholders need to engage in open, frank, and honest dialogues regarding the fire and first response EMS delivery systems. There will need to be increased funding allocated or funding can be re-appropriated. Priority should be given to innovative solutions to the recruitment and retention of on-call personnel which will have costs associated with it, but it will be money wisely invested. Even with success, the reality is that the fire and first response EMS services in the area are going to evolve into more of a combination system with the need for an increasing number of career personnel to supplement on-call personnel. This too will come with an increased cost. However, this cost will be reasonable, and be money well invested, to help support what remains; a quality fire and first response EMS delivery system.

CHAPTER XVI – STRATEGIC IMPLEMENTAION

Mapping Out the Future

"A Road Map to Success with proper timing and funding"

The MRI project team found that there was a common thread to many of the Department's needs, concerns, and desires. Based on all the information analysis, and discussion MRI proposed the recommendations detailed below.

It is important to keep in mind that the recommendations made are not presented in a prioritized order and adopting a particular recommendation is dependent on the success of the ones listed before it. The project team has tried to allow the community to be able to implement the ideas that work best for them and then to take incremental steps to move toward success. Ultimately, it is up to the community and the area as a whole to decide what works best for them and what level of service/fire protection they wish to have.

Regionalization of the fire service is a term that many people are afraid to consider, as there is a thought that the local resources (fire apparatus, fire station and firefighters) will go away, and that the local authority will be diminished. There have been several regionalization discussions that have gone nowhere, and some that have been highly successful. There is also a strong thought that regionalization will cost a community less than they are currently paying and they will get more. Although it is true that regionalizing will no doubt create an economy of scale, that can be the foundation of efficient

services, it still will come with a cost. In the long term, 10 plus years, there may be an indicator of cost savings or in some areas the development of revenue stream to offset the overall costs.

To begin the process, all stakeholders in the town, including the Fire Chief, should take the time to thoroughly read and understand the information provided within this report. This group should then sit down as an informal group and discuss the many options they have moving forward. It is MRI's hope that this discussion will lead to a basic plan where the community can decide if they wish to continue to participate in the process.

It is suggested that each of the recommendations be considered individually; then put into a priority that the group decides will work best. To build the collaboration, it is further recommended that the no cost items be pursued initially, and then after establishing a track record of success, move forward with items that will require cost.

All changes to current operations should be properly evaluated after being made and if necessary adjusted. It is generally an excepted practice to do an evaluation in a minimum of 30-day increments and a final in one year. Who does the evaluation and what the benchmarks are should be outlined from the onset.

To help put a lot of the key recommendations in a logical order we have created a road map to help outline and facilitate a path that could be followed. By design we did not include a time frame or date on subjects as it will be up to the key stakeholders and the community to decide when to move forward and to spend the necessary funds to do so. It should also be noted that many of the items can be accomplished simultaneously.

The Road Ahead

PHASE 1

Town – Continue with process to build a Public Safety Building. Request that the Town's insurance provider inspect the fire stations and make recommendations for any needed items to ensure a safe work environment.

FD – Create a team(s) to completely review and publish Standard Operating Procedures, Rules and Regulations, probationary manual, and a mentoring group with a policy for new hires.

FD – Create a team to establish a recruitment campaign and hire additional call firefighters.

FD – Inventory potential locations for new draft sites and or cisterns for water supply in key areas of Town. Create a plan for implementation and costs to install and maintain these water sources.

FD – Develop a team of people to work with a training officer and develop a yearlong training program that encompasses the minimums set by ISO. Publish the schedule for all to see. The team should also be charged with developing a training sheet to properly document training components.

Town – FD Need to explore an electronic records management system that encompasses all payroll, training and vehicle maintenance at a minimum. This program should be in the "Cloud" allowing access from different locations.

Town – Work with the Fire Chief to develop and set annual goals. Provide a annual written performance evaluation.

PHASE 2

FD – Conduct an audit of all providers for EMS certifications, CPR, ACLS and driver's license. All EMS providers should annually have a CORI check done on them per 130CMR407.405.

Town – FD Conduct an annual review of EMS billing rates.

FD – Create a Capital improvement budget for all fire and EMS apparatus as well as any fire and EMS equipment that falls under the Towns CIP rules.

FD – Review run cards and Automatic Aid to ensure enough certified people are responding on various alarms.

FD – Ensure that all ladders (ground and Aerial) are inspected annually.

FD – Encourage and support all firefighters to be certified Firefighter 2 and all officers certified to at least Officer 1.

Town – FD Review pay rate schedule and move training rate of $8.00 to be the minimum they receive for calls.

PHASE 3

Town – Consider promoting or hiring a full-time Fire Chief. The chief should be a paramedic and along with regular administrative duties respond as a medic when needed.

Town – FD review and take appropriate action on items from the Nominal Group Session conducted. Conduct a session on an annual basis to continue to grow the Department and to hear from the firefighters and EMS providers about the good things happening and their concerns.

FD - Set and maintain a participation standard that is posted in writing for all to read and understand. This standard should include a process for termination for lack of participation.

Town – Consider applying for a SAFER grant for recruitment and retention of staffing. This can be done with other communities participating to give a better shot of being successful in obtaining the grant.

FD – Convene a focus group to determine what concepts and roadblocks for recruitment and retention are viable for the Department. Set a realistic goal for new hires each year.

FD – Chief and current command staff should develop a promotional process for the future. This program should lead to a mentoring program for future officers to work on.

CHAPTER XVIII – COMBINED RECOMMENDATIONS

A total of 71 recommendations have been generated through this project. These recommendations are listed by chapter below:

Chapter IV (3)

Recommendation IV-1

The PFD should conduct a thorough Community Risk Assessment and Hazard Profile evaluation every two to three years. This will help establish the needs of the community and the Department should adjust as needed.

Recommendation IV-2

The PFD should review and be part of any Planning, Zoning, or large-scale permitting process in the community. The Department should at a minimum comment on all access for emergency vehicles, water supply for firefighting, and fire and life safety features.

Recommendation IV-3

When possible, the Town and the Department should encourage sprinkler systems to be installed (or retrofitted) to enhance the life safety and the overall protection of structures and the contents within.

Chapter V (15)

Recommendation V-1

The PFD should work to develop a set of Standard Operating Procedures and operational guidelines to provide consistent direction for operations. the PFD should establish a SOP/SOG Committee, and the Town should supply subject matter experts to work with and mentor the Committee in the development of these critical procedures.

Recommendation V-2

The PFD should develop a set of Rules and Regulations. These rules should be published for all to see and should be adhered to by all staff.

Recommendation V-3

The PFD should develop a Probationary Manual for all new hires. The manual should consist of written documentation including expectations, operational guidelines, skill sheets done in a building format and sign off boxes.

Recommendation V-4

The PFD should develop a solid group of mentors for two groups. The first should be firefighters who work with probationary staff. The second should be a group of officers to work with firefighters who desire to be an officer in the future.

Recommendation V-5

The PFD should strive to have a minimum of 14 to 16 firefighting personnel on the scene of every structure fire within 8 minutes of the time that units are responding. Although it would be optimal to generate this response on a local level, that is not realistic given the size of the community and the fire department. Strategically in an effort to ensure firefighter safety and amplify effectiveness, this goal can be accomplished through use of automatic aid to all "reported" structure fires.

Recommendation V-6

The PFD should work with other fire departments in the region to develop a Regional Rapid Response Team (RIT) to respond to all structure fire calls in the region. A fire department that sends a company to another town to assist should be dedicated as the RIT and not be assigned other duties on scene that would prohibit them from performing firefighter rescue duties.

Recommendation V-7

The PFD should begin a pre-fire planning program and grow this into a comprehensive program that can be utilized by mutual/auto aid companies that are responding into Town. Appropriate pre-planning software should be obtained and installed in front line apparatus and command/staff vehicles.

Recommendation V-8

The PFD should work to improve its ISO rating to a Class 4 with recommendations noted in the last ISO survey report.

Recommendation V-9

The PFD should address the lack of credit issued for the configuration of dispatch circuits. Documentation of any improvements should be shared with ISO.

Recommendation V-10

The PFD should reevaluate the resource response matrix that determines what equipment responds (known as Run cards) and consider adding in "Automatic Aid" on certain types of incidents such as reported structure fires. This will enhance the response time and allow for proper number of firefighters to be on scene to minimize damage.

Recommendation V-11

Inventory potential future locations for Dry Hydrants and or Cisterns in areas remote to current water supply sources. Develop a plan to build out the installation of the sites over the next 8 to 10 years.

Recommendation V-12

Develop a training program and a training documentation form that can be used to properly document training. This form should include dates, times, attendees, subject matter, instructor, and a written description of what was done.

Recommendation V-13

Develop and publish a training schedule by quarter, that outlines a well-rounded review of fire department functions that include practical training on both fire and EMS subjects.

Recommendation V-14

The Town and the Fire Chief should work with and support the certification of all officers to a minimum level of Fire Officer I and consider supporting Fire Officer II and Incident Safety Officer certification. Certification to the level of Fire Officer I should be required within two years of appointment as an officer.

Recommendation V-15

The PFD needs to plan to move to an all-electronic records management system that is backed up in the Cloud. The Chief, Deputy Chief and all officers should have the ability to access the appropriate level of records from the stations and remote locations. Payroll, training, inventory, are just a few of the areas that should be available.

Chapter VI (5)

Recommendation VI-1

The PFD should annually conduct an audit of EMS certification, CPR, Advanced cardiac life support for paramedics, and MA Driver's License.

Recommendation VI- 2

The PFD should annually conduct a CORI check of all EMS providers in accordance with 130 CMR 407.405 which states "all transportation providers must ensure that before having any contact with a MassHealth member, drivers and attendants undergo a Criminal Offender Record Information (CORI) check. Documentation of the CORI check must remain on file at the transportation provider's place of business and a new check for each driver and attendant must be conducted annually thereafter".

Recommendation VI-3

The Chief and the Town should consult with the billing Company annually and review the rate schedule and ensure it is in line with industry standards in the area.

Recommendation VI-4

The Town and or the Department web site should have the rate schedule, patient Privacy Policy and billing policy published.

Recommendation VI-5

PFD should develop a Capital plan for the replacement of all EMS equipment that falls under the Towns Capital Improvement rules.

Chapter VII

Recommendation VII-1

The Town needs to replace the current Public Safety Building to protect the health and wellness of all public safety staff and to protect the community's investment in apparatus and equipment.

Recommendation VII-2

The Town needs to continue to make improvements and maintain Station 2.

Recommendation VII-3

The Town should consider having the insurance carrier visit and inspect both stations for not only safety needs but for operational needs or concerns to evaluate the level of potential liability that exists.

Chapter VIII (4)

Recommendation VIII-1

In consultation and cooperation with its neighboring departments, Princeton Fire should enter into formal automatic aid agreements that specifies the number and types of resources that should be dispatched immediately to various types of reported emergencies, such as structure fires. These recommendations should be based upon a community-wide risk management process and/or pre-fire/incident plan.

Recommendation VIII-2

Although more stringent than the requirements found in Table 4.3.2 of NFPA 1720 for rural communities, through the utilization of automatic aid agreements with neighboring communities, the PFD should consider the adoption of a Standard of Cover (SOC) with the goal of attempting to have at least 16 personnel on the scene of any reported structure fire within 14 minutes.

Recommendation VIII-3

The PFD should make it a priority to improve its first unit on scene response times, including the adoption of a SOC, for the Town. The SOC should be based upon a hybrid of the NFPA 1710/1720 and Commission on the Accreditation of Ambulance Services (CAAS) recommendations.

Recommendation VIII-4

The PFD should work with the communities listed on each of the "run cards" to ensure the number and qualification of staff that will be sent on the assignments. In order to be able to meet a safe level of on scene staffing, it will be important to know not only what the Department will be receiving and how long it will take, but also to outline what each town will be sending, when these communities request resources from them.

Chapter IX (8)

Recommendation IX-1

The PFD in conjunction with the Town of Princeton should develop a 20-25-year Capital Replacement Plan for all apparatus, except ambulances which require replacement at greater frequency. By utilizing such a plan, the need to replace more than one apparatus during a short period of time will be minimized. By maintaining such a plan, the Department will be able to have the newest pieces as front line while maintaining the older apparatus as reserves or secondary pieces.

Recommendation IX-2

The PFD should begin a practice of aerial apparatus testing in accordance with NFPA standards. Ladder and aerial tests should be performed at intervals no greater than twelve months apart. All tests, deficiencies, and repairs/corrective actions performed should be fully documented.

Recommendation IX-3

The PFD should ensure the practice of annual pump testing in accordance with NFPA and ISO standards. Pump tests should be performed at intervals no greater than twelve months apart. All tests, deficiencies, and repairs/corrective actions performed should be fully documented.

Recommendation IX-4

When purchasing new apparatus and ambulances, the PFD should adopt a policy of purchasing new NFPA 1901 compliant and updated EMS equipment when a new apparatus or ambulance is purchased. This policy will ensure that equipment is the most technologically up-to-date and that it

is safe and functional. It will also make it possible to keep reserve apparatus and ambulances fully equipped for immediate use.

Recommendation IX-5

The PFD should review the recommendations contained in NFPA Standard 1911, Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus (National Fire Protection Association, 2017 Edition) and use it as a guide to revise and update the vehicle fleet maintenance program as may be necessary.

Recommendation IX-6

All testing and maintenance records should be part of a records management system that not only records the vital records but also should allow for ease in the look up of any part of the record on any piece of apparatus and equipment.

Recommendation IX-7

The PFD budget for repair and maintenance of apparatus and equipment needs to be evaluated to verify that this program is properly funded to conduct annual testing and maintenance as outlined by the manufacturer and applicable NFPA standards.

Recommendation IX-8

The Fire Chief should delegate the development and management of the maintenance budget to the fleet mechanic.

Chapter X (5)

Recommendation X-1

The PFD should begin a practice of annual ground ladder and aerial apparatus testing in accordance with NFPA standards. Ladder and aerial tests should be performed at intervals no greater than twelve

months apart. All tests, deficiencies, and repairs/corrective actions performed should be fully documented.

Recommendation X-2

The PFD should consider increasing the frequency of the air quality tests of the breathing air being produced by the air compressor from annually to quarterly to better ensure that it always remains a minimum of Grade "D".

Recommendation X-3

The PFD should continue to place an important emphasis on evaluating new technology for use on emergency incidents particularly when it pertains to firefighter safety and/or patient care.

Recommendation X-4

The PFD should ensure that all SCBA are subjected to annual flow testing by a third-party vendor on a breathing machine in accordance with NFPA 1852 Section 7.2.1.3. Proper documentation of such should be maintained in a record management system.

Recommendation X-5

The PFD should ensure that all SCBA cylinders are 15 years of age or less and that they meet the hydrostatic testing parameters as established by the manufacturer.

Chapter XI (9)

Gray Shading indicates a recommendation stated previously but pertinent to this chapter.

Recommendation XI-1

The PFD should continue their training regimen and enhance training documentation to provide ISO with the specific information that they require. ISO should be contacted and questioned relative to the low credit granted for training.

Recommendation XI-2

The PFD should continue to strongly encourage personnel to seek additional training on their own, and to the financial and practical extent possible, send personnel to outside training opportunities such as the Firehouse Expo in Nashville and the FDIC in Indianapolis. Information gained from this training can then be brought back and delivered to other members of the Department. Training reports should be completed for all of this training, and copies of any certificates earned should be placed in the members' personnel and training files.

Recommendation XI-3

A training bulletin board should be placed in the station where upcoming training opportunities can be posted for all personnel to review. Training notices can also be sent electronically to all personnel and be posted in a member's only area of the Department's website.

Recommendation XI-4

The PFD should implement periodic skills proficiency evaluations for all Department personnel. These proficiency evaluations, consisting of standardized evolutions, can be based upon recognized standards and benchmarks, in conjunction with performance criterion and benchmarks, established through evaluation of, and based upon, PFD operations and procedures.

Recommendation XI-5

The PFD should seek funding to expand the training resources and training library to include current editions of commonly utilized media. The Department should fully utilize the internet and all the various training resources available online.

Recommendation XI-6

The PFD should explore options for providing certain training programs utilizing an online platform to allow personnel to complete the training at their convenience.

Recommendation V-14

The Town and the Fire Chief should work with and support the certification of all officers to a minimum level of Fire Officer I and consider supporting Fire Officer II and Incident Safety Officer certification. Certification to the level of Fire Officer I should be required within two years of appointment as an officer.

Recommendation XI-7

As part of the succession planning process, the Fire Chief should work to implement a professional development program to ensure that all officers can perform their superior's duties, as well as identify the core future leaders of the Department.

Recommendation XI-8

The PFD should continue to foster and support any member to be trained and certified to the Firefighter 1 and preferably the Firefighter 2 level.

Recommendation XI-9

Working through the training officer, training should be planned, a schedule published, and all hours should be properly documented. In an effort to keep members interested in training the Department should be creative and offer training that is outside the normal programs. Making programs fresh, fun and to some degree competitive may increase the participation by members. If it's the same old training, people will lose interest. Make it so they want to participate and at the same time meet training goals. Training hours should exceed appliable NFPA and ISO criteria.

Chapter XIII (19)

Recommendation XIII-1

The Town needs to review the pay rates and to ensure they are slightly above average for the region. In an effort to keep good people the increase in pay will help to ensure they stay.

Recommendation XIII-2

The Town needs to change the "outside training rate" from the current $8.00 per hour to the individual regular rate of pay. Outside training at the Fire Academy and other recognized training institutions is key to keeping people fresh and up to speed with current fire and EMS standards.

Recommendation XIII-3

The Town and the Fire Chief should review the comments made during the Nominal Group session and take appropriate action even if that action is simply to acknowledge to the Department that they have been heard and appreciated for the honest look at operations today and in the future. The Town should further consider doing this type of exercise on an annual basis.

Recommendation XIII-4

The Fire Chief needs to set a standard for participation and to keep to the standard. Just having a list of names on a roster is not acceptable today and participation in incidents and training are key to the Department and individual success.

Recommendation XII-5

The Town should consider looking at having a full-time Fire Chief in the very near future. This Chief should be a working Chief and take care of daily administrative duties, manage the Department both in house and on incidents and take care of inspections. The Town should also consider that the Chief be a Paramedic and will be expected to use these skills if needed at incidents while they are on duty and in town.

Recommendation XII-6

The Town Administrator in coordination with the Selectboard should annually set goals and objectives for the Fire Chief and Department and provide a written evaluation of the Chief's performance.

Recommendation XIII-7

The officer core should review the PFD roster and look to the members with low participation and find out what can be done to increase their involvement. Work with these members to increase their participation within a pre-determined time frame.

Recommendation XIII-8

The PFD should set a minimum criterion for members to remain in active status. This criterion should include both minimum training and response to incidents for a determined. time period (one year). This criterion should also allow for people to go into an inactive status for a period of time due to approved circumstances. It would be important for inactive status people to make up any important training prior to being put back on active status.

Recommendation XIII-9

The Town should either individually or jointly with another town, apply for a federal SAFER grant for on-call recruitment and retention. This grant should be utilized to develop a comprehensive marketing program to attract new members, and provide incentives for the retention of those personnel, such as tuition reimbursement, health care benefits, tax abatements, etc. This competitive grant requires a lot of time and dedication to write and to be successful to obtain.

Recommendation XIII-10

Town residents and elected officials should recognize that the only way to develop a more active and properly staffed fire department in the absence of hiring a larger force of career firefighters is to determine what would motivate potential responders and craft a program of investment that meets these extrinsic and intrinsic needs.

Recommendation XIII-11

The PFD should convene a focus group to determine what concepts and recruitment and retention strategies are feasible and most attractive to potential candidates.

Recommendation XIII-12

The PFD should set a realistic goal of recruiting at least 5 to 10 new members over the next three years, and simultaneously set a goal of increasing the overall call member force to around 25 to 30 active personnel. These personnel should be required to be properly trained and certified to the Firefighter I/II level, and preferably to the minimum of EMR level.

Recommendation XIII-13

The PFD should make it a priority to develop an active on-call recruitment program led by a Chief Officer. At a minimum, this program should consist of:

1. ***Developing a recruitment brochure and mailing it to all residents***
2. ***Holding periodic open houses at the fire station***
3. ***Performing public outreach through the local media***
4. ***Contacting community and service groups***
5. ***Developing an eye-catching banner on the Town's and fire department's web sites***
6. ***Placing signs recruiting call/volunteer personnel at the main entrances to Town***
7. ***Placing a temporary sign board at various locations within the community***
8. ***Placing signs for call/recruiting volunteers in local businesses, particularly high-volume locations***
9. ***Implementing a fire explorer program***
10. ***Radio and media advertisements***
11. ***Although time-consuming, consideration should also be given to conducting a door-to-door recruitment campaign of every residence in the Town.***
12. ***The proposed SAFER Grant could be utilized to cover many of the above expenses.***

Recommendation XIII-14

The Fire Chief should develop a social media presence and involve other members of

the Department in this endeavor. The use of social media like Facebook and Twitter are what the younger generation use, and a very active social media account has the opportunity to reach out to this group of people for hiring.

Recommendation XIII-15

The Fire Chief or his designee should create a quarterly "newsletter" that will highlight the positive things that the Department has done in the prior months. This newsletter should be posted on the Town's web page, shared in social media, given to the town Administrator who in turn should share with the Selectboard. It is important that the public is made aware of all of the great people and all the good things the Department does.

Recommendation XIII-16

The Fire Department should develop a series of team-based activities that build involvement in the organization.

Recommendation XIII-17

All officer positions, from lieutenant to fire chief, should be filled based upon the person's firefighting/emergency services training, certifications, and experience, commensurate with the position being sought, along with successful completion of a formal, rank appropriate assessment process, and a basic practical skills evaluation.

Recommendation XIII-18

Fire Department should ensure that all Department members are trained/certified to the minimal NIMS level required for their duties/responsibilities and ranks. In addition to the basic I-100/I-700 training mandated; it is MRI's recommendation that all officers should be trained to the ICS-300 level. All chief level officers should be trained to the ICS-400 level.

Recommendation XIII-19

The PFD should join the National Volunteer Fire Council and utilize the tools on the NVFC web site for cooperative programs they have posted. One of the newer programs that should be considered looks to attract returning or former military personnel into the fire service.

CHAPTER XVIII – TEAM PROFILES

Team Profiles:

Team Leader

Patrick J Purcell serves as the Fire Chief and Emergency Management Director for the Town of Westborough, Massachusetts. The Town of Westborough Fire Department, which provides full fire, rescue, emergency medical services, and public safety dispatch, is staffed by 45 career firefighters and 9 career public safety dispatchers who serve a residential population of 19,100 and a large transient population, primarily during the daytime hours. During his career Pat has administered an annual fire department budget of nearly $5 million. Pat had also served as a paramedic for Worcester EMS and Life Flight Helicopter at UMass Memorial Health Care for 24 years. He has an associate degree in Paramedic Science from Quinsigamond Community College, a bachelor's degree in Criminal Justice and Graduate Degree in Fire Service Administration from Anna Maria College. He is a graduate of the Chief Fire Officer Program administered by the Edward J. Collins Center for Public Management at UMass Boston and the Massachusetts Department of Fire Services. He is a member of the International Association of Fire Chiefs and the New England Association of Fire Chiefs. Pat has a diverse background and expertise in Firefighting, EMS, Dispatch, Emergency Planning and Operations, Grant Writing, and Municipal Finance and Government and Labor/Management relations. In addition, he has been instrumental in developing a joint public safety dispatch center for the Town of Westborough and has participated in a number of municipal assessment centers.

Team Members

David Houghton is a devoted fire and emergency management professional who has recently retired from the Wayland Massachusetts Fire Department after a distinctive 38-year career from being a call firefighter and rising through the ranks to Fire Chief. Along with dedicating his service to the Town of Wayland, he continues to work for the Massachusetts Department of Fire Services as both an instructor and in the Special Operations Division doing special projects. In 1999 he was given the challenge by the State Fire Marshal to develop and implement what today is known as Special Operations. This development included designing, building, and implementing specialized equipment and staffing to respond to Emergency and planned incidents throughout the Commonwealth. This program was a shared vision between David and the Fire Marshal and today has been shared in whole or in part in other areas of the country. David has a B.S. degree in Fire Science, an A.S. Degree in Fire Science and Technology, and has completed a Local Government and Management program with Suffolk University and the Massachusetts Municipal Association. David has a diverse background Firefighting, EMS (ALS and BLS), Dispatch, Fire Prevention, Emergency Management, and operations. He is a nationally certified Firefighter, Fire instructor, Fire Inspector, Fire Officer. He is a certified Emergency Medical

Technician both at the National Level and in the Commonwealth of Massachusetts. David has most recently continued his fire service career by being appointed as a call firefighter with the Town of Moultonborough Fire Rescue and is a certified New Hampshire Emergency Medical Technician. He continues to be active with the Commonwealth of Massachusetts Fire and Ambulance Mobilization team in the continuous updating and redevelopment of the program. Prior to his retirement as Fire Chief, David was an active member in the Massachusetts Fire District 14 where he was a driving force behind the creation of the District Operational budget, an operations manual and the formalizing of the various specialized teams within the district. David was also selected as the Chief overseeing the Fire District communications team and equipment as well as serving on several other progressive programs within the district. He is a member of the Fire Chiefs Association of Massachusetts, and the International Association of Fire Chiefs.

Brian P. Duggan, Director Fire Services Group, retired from the Fire Department in Northampton, Massachusetts, where he instituted substantial changes to modernize and restructure the entire department including equipment, facilities, personnel, and training. In conjunction with his staff, Brian integrated Emergency Medical Services (EMS) into the organization and created a regional Advanced Life Support (ALS) Program that currently serves 18 communities within the Northampton Area. He formerly commanded the Northborough, Massachusetts, Fire Department, and has significant experience with the Massachusetts Department of Fire Services where over three decades, he held several key positions. Following his retirement, Brian has continued his active fire service involvement by serving as both a volunteer chief fire officer and through continuing to develop training and certification programs as a program Coordinator for the Massachusetts Department of Fire Services.

Mr. Duggan developed and directed the Graduate and Undergraduate Fire Science Programs at Anna Maria College in Paxton Massachusetts from 1995 - 2003. Mr. Duggan has a Business Management/Fire Science degree from Providence College and a Master's Degree of Business Administration (MBA) from Nichols College in Dudley, Massachusetts. He is also a graduate of the National Fire Academy Executive Fire Officer Program and the Senior Executive Program for State and Local Leaders at Harvard University. In December 2012, Mr. Duggan received a Master's Degree in Homeland Security through the Naval Post Graduate School based in Monterey, California, where his thesis entitled "*Enhancing Decision-making during the First Operational Period of Surge Events"* was selected as an outstanding thesis. He was one of the first fire service professionals to be designated as a Chief Fire Officer by the Commission on Fire Accreditation International.

Brian led the Massachusetts fire service through his affiliation as Chairman of the Fire Chief Association of Massachusetts Technology Committee and as a Regional Director on the Massachusetts State Fire Mobilization Committee. Mr. Duggan has authored several publications, inclusive of writing Section 7, Chapter 3, Fire Department Information Systems, in the Nineteenth and Twentieth Editions of the National Fire Protection Association's Fire Protection Handbook. Chief Duggan has been affiliated with

MRI as a subject matter advisor since 2002 and he has served as Director of Fire Services since 2015. Currently, Mr. Duggan is regarded as an expert specific to fire service response to photovoltaic and battery energy storage system (BESS) emergencies. He has developed several nationwide training programs providing first responders with new insight on these emerging challenges.