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Thunder Bay Fire Rescue



Strategic Master Fire Plan



**Emergency
Management &
Training Inc.**

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ACRONYMS

AED	Automatic External Defibrillator
CEMC	Community Emergency Management Coordinator
CFAI	Commission on Fire Accreditation International
CRA	Community Risk Assessment
CSA	Canadian Standards Association
EMCPA	Emergency Management & Civil Protection Act
EMS	Emergency Medical Services
EOC	Emergency Operations Centre
ERP	Emergency Response Plan
FESO	Fire and Emergency Services Organization
FPPA	Fire Protection and Prevention Act
FUS	Fire Underwriter's Survey
FWFN	Fort William First Nation
HQ	Headquarters
IRM	Integrated Risk Management
MFP	Master Fire Plan
MVC	Motor Vehicle Collision
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
OFC	Ontario Fire College
OFMEM	Office of the Fire Marshal and Emergency Management
PFSG	Public Fire Safety Guidelines
SOG	Standard Operating Guidelines
SWOT	Strengths, Weaknesses, Opportunities, and Threats
TBFR	Thunder Bay Fire Rescue

EXECUTIVE SUMMARY

This Strategic Master Fire Plan consists of a review of the community and its fire service that culminates into a 10-year plan for future opportunities for organization improvements over the coming years. The plan assesses present and future population statistics and anticipated growth. It is a plan that also evaluates past and present service levels provided by a fire department, coupled with its service goals and expectations.

The overall goal of this document is to provide the fire service and the City with a comprehensive look at how well Thunder Bay Fire Rescue is meeting the needs of its staff and the community it serves. Once the plan is adopted, the next phase is implementation. Implementation will depend on the City's resources and ability to move forward with the associated recommendations contained within the document.

Objectives

To ensure that they are meeting the needs of the community and their staff, Thunder Bay Fire Rescue recognizes that it is necessary to conduct this strategic review of the organization for the intention of providing high-quality fire services to the residents and businesses of the community along with its visitors. With the creation of a Master Fire Plan, the City of Thunder Bay is evaluating all aspects of its service including the operational costs and capital budgets required to maintain or enhance the service.

To complete the overall objectives of the review by identifying opportunities, possible efficiencies and priorities relating to the provision of fire services to residents, businesses, and visitors in Thunder Bay. Any recommendations arising from the plan will be used to develop strategies for 2020 through to 2030.

Based on the information received during our meetings, a review of supplied documentation and reference to industry standards and best practices, there is a total of 15 general recommendations that are identified within each section, along with six options relating to future staffing and station opportunities for enhancements/efficiencies for consideration by the Fire Chief, senior management, and Council to guide the TBFR into the future.

The scope of work noted in the City's Request for Proposal has been utilized to guide this review. They include but not are necessarily be limited to the following:

- Develop call volume projections by type of call for each year to 2030;
- Review TBFR response to medical 911 calls and comment on their utility and effectiveness;
- Identify any reasonable opportunities to reduce call demands;

- Review TBFR's current services level goals and provide comment on these goals with respect to what is considered best practice, industry standard, and legislated requirement;
- Review and comment of the extent to which TBFR meets, exceeds or fails to meet service level goals;
- Review TBFR's operations in the areas of suppression, fire prevention and investigation, apparatus and equipment, training and administration and provide comment on opportunities to drive efficiencies and/or improve effectiveness;
- Review apparatus and equipment and provide comment on its suitability;
- Review the present fire station locations, undertake analysis and provide recommendations with respect to future requirements as they relate to services delivery expectations; and,
- Review and comment on any other facet of service delivery and organizational shape or culture as deemed appropriate.

A quick reference chart has been included within this Executive Summary, along with a more detailed chart found in Section 10 of this document. The detailed chart includes timelines for implementation along with estimated costs.

Recommendations – Quick Reference Chart

Rec #	Recommendation	Suggested Timeline
1	The present Establishing & Regulating By-law be updated and presented to Council for approval including an outline of services to be delivered by TBFR.	Short-term (1-3 years) and ongoing
2	TBFR work with the Thunder Bay Police Dispatch service to promote adherence with the NFPA 1221 Standard on Emergency Communications Services.	Short-term (1-3 years) and ongoing
3	It is recommended that a review of the fire service agreement between TBFR and the FWFN be reviewed and updated as required in relation to services to be provided and related costs for providing these services.	Short-term (1-3 years)
4	<p>Fire Department should review the comments received from the focus group meeting and identify how improvements can be incorporated into daily operations and/or through social media information sessions.</p> <ul style="list-style-type: none"> This review should be followed up with a media release to demonstrate that input from the surveys and meetings is being considered and, where possible, implemented. 	Short to long-term (1-10 years)
5	Any fire suppression personnel providing primary Fire Prevention activities should be qualified as Fire Inspector 1 and Fire and Life Safety Educator Level 1. At a minimum, each captain on the pumper trucks should receive this training and certification.	Short-term (1-3 years) and ongoing
6	The Fire Chief and Fire Prevention Division Chief need to utilize the NFPA five steps process to evaluate the Fire Department's present level of activity and the future goals for fire prevention activities.	Short-term (1-3 years) and ongoing
7	The Fire Underwriters Survey chart should be utilized as a general benchmark for the Prevention Division to develop a plan on what can be accomplished with its present staffing complement, along with presenting options for increasing inspection frequencies (through utilization of fire officers) and ultimately what is needed to meet the Fire Underwriters Survey benchmarks.	Short-term (1-3 years) and ongoing

8	<p>To verify the training programs are meeting related NFPA (and other) training program recommendations, the Deputy Fire Chief must identify:</p> <ul style="list-style-type: none"> • What training programs are required for the services that TBFR is providing? • The number of hours that are required to meet each of those training needs based on Provincial and industry standards. • Resources required to accomplish this training. • Joint partnerships with private organizations that can be entered to achieve the training requirements identified by the Chief Training Officer. • An annual program outline at the start of each year presented to the Fire Chief, with measured goals and expectations reporting completion success rate at the end of each year. • Continue to identify how the training facility can be better utilized as a form of revenue generation for the City. 	Short-term (1-3 years) and ongoing
9	TBFR to create a more proactive campaign at educating the public about false alarms and how to avoid them. At the same time work with EMS on reduction of medical responses, wherever possible.	Short-term (1-3 years)
10	Implementation of the “Safe Haven” concept that has been built into stations #6 and #7 be installed in all fire stations along with a public education program to promote each fire station as a more integrated public safety measure.	Short-term (1-3 years)
11	The Fire Chief to direct the Fire Prevention/Public Education Division to review Thunder Bay’s inspection program, identifying levels of desired frequency relative to the FUS (see chart in Appendix “B”).	Short-term (1-3 years)
12	Upon completion of the assessment in Recommendation #11, the Fire Chief to provide Council with a draft policy for review and passage that outlines a proactive fire inspection program to address identified needs and expected outcomes. This program should outline the building types, the frequency of inspections, and the staffing/hourly requirement.	Short-term (1-3 years) and ongoing

13	TBFR staff to present an updated Community Risk Assessment to Council by the end of 2020.	Short-term (1-3 years) and every five years thereafter
14	Conduct a review/ evaluation of the Division Chief of Administration and Emergency Management's position to identify time spent on responsibilities. Based on the review, a decision is to be made on what duties the Division Chief should be assigned, and what duties can be reassigned to other staff.	Immediate (0-1 year)
15	The Fire Chief, working with the City Treasurer, should ensure adequate reserve funds for apparatus, and equipment.	Short-term (1-3 years)

Options for Future Staffing and Station Enhancements/Efficiencies

Rec #	Option	Suggested Timeline
16	The 5 th person on each of the two pumper/rescues be utilized as floaters to help offset overtime costs.	Immediate (0-1 years)
17 (1)	Status Quo: Decommission the Vickers Street Headquarters and build a smaller two-bay station, close to the present HQ to ensure proper coverage in the area. Move the administration staff to the upper floor area of Station # 3.	Mid-term (4-6 years)
17 (2)	Station Realignment Option 1: Consolidate stations #1 and #3 into one fire station and place the staff in the new location, in the vicinity of Central Avenue and Balmoral Street. Station #4 would be relocated in the area of Victoria Avenue East and Tarbutt Street North.	Mid to Long-term (4-10 years)
17 (3)	Station Realignment Option 2: Consolidate stations #1 and #3 into one fire station and place the staff in the new location, in the vicinity of Central Avenue and Balmoral Street.	Mid to Long-term (4-10 years)
17 (4)	Station Realignment Option 3: Close fire operations at Station # 4, continuing use as an EMS station. Firefighters from Station #4 to be assigned to medical responses for the fire department.	Mid-term (4-6 years)
18	Conduct a thorough review of medical responses:	Short to Mid-term (1-6 years)
	Option 1: Reduce medical calls that the fire department will respond to.	
	Option 2: Alternatively, upon consolidation of Station #1 and #3, (Rec #16(2)), one crew be broken into two units and be assigned to CRV medical responses for the fire department.	

INTRODUCTION

Review Process and Scope

Emergency Management & Training Inc. (EMT) has based its review process on the City's initial Request for Proposal and the response document submitted by Emergency Management & Training Inc. The specific scope of work identified in the Request for Proposal was reviewed. The Strategic Plan (MFP) review was completed by utilizing best practices, current industry standards, and applicable legislation as the foundation for all work undertaken. Emergency Management & Training Inc. also used both quantitative and qualitative research methodologies to develop a strong understanding of current and future needs and circumstances of the community.

Deliverables

Through a strategic planning process and by building upon the 2012 - 2016 Strategic Plan, EMT has developed a new Strategic Plan for 2020 - 2030. As noted in the Executive Summary the scope of work shall include, but not necessarily be limited to a review of the following:

- call volume projections
- response to medical 9-1-1 calls and comment on their utility and effectiveness
- Identify any reasonable opportunities to reduce call demands
- current services level goals and provide comment on these goals with respect to what is considered best practice, industry standard, and legislated requirement
- how TBFR meets, exceeds or fails to meet service level goals
- operations in the areas of suppression, fire prevention and investigation, apparatus and equipment, training and administration and provide comment on opportunities to drive efficiencies and/or improve effectiveness
- apparatus and equipment
- present fire station locations, provide recommendations with respect to future requirements as they relate to services delivery expectations and,
- comment on any other facet of service delivery and organizational shape or culture as deemed appropriate.

Based on these criteria and through meetings with the Fire Chief, staff, City Council and other stakeholders, the consulting team was able to complete a thorough review of elements that are working well and areas requiring improvement within Thunder Bay Fire Rescue.

Based on the review of the Fire Service's facilities, equipment, programs and related data, (and as noted in the Executive Summary) Emergency Management & Training Inc. is submitting a total of 15 general recommendations that are identified within each section, along with six options relating to future staffing and station opportunities for enhancements/efficiencies for consideration by the Fire Chief, senior management, and Council to guide the TBFR into the future.

Performance Measures and Standards

This MFP has been based upon (but not limited to) key performance indicators that have been identified in national standards and safety regulations such as:

- Office of the Fire Marshal and Emergency Management's (OFMEM) Public Fire Safety Guidelines.
- *The Fire Prevention and Protection Act* and its subordinate regulations, including the Ontario Fire Code O. Reg 213/07, Mandatory Assessment of Complaints and Requests for Approval O. Reg 365/13, and Mandatory Inspection – Fire Drill in Vulnerable Occupancy O. Reg 364/13. And O. Reg 378/18 Community Risk Assessment.
- Office of the Fire Marshal and Emergency Management's (OFMEM) Integrated Risk Management program.
- The *Ontario Health and Safety Act*, with reference to the National Institute for Occupational Safety and Health (NIOSH).
- Ontario Fire Service – Section 21 Guidelines:
 - The Section 21 Committee is based on Section 21 of the *Ontario Occupational Health and Safety Act* (OHSA). This committee is charged with reviewing industry safety concerns and developing recommended guidelines to reduce injuries for the worker.
- The National Fire Protection Association (NFPA) standards:
 - NFPA 921 – Guide for Fire and Explosion Investigations
 - NFPA 1001 – Standard for Fire Fighter Professional Qualifications
 - NFPA 1002 – Standard for Fire Apparatus Driver/Operator Professional Qualifications
 - NFPA 1021 – Standard for Fire Officer Professional Qualifications
 - NFPA 1031 – Standard for Professional Qualifications for Fire Inspector and Plan Examiner
 - NFPA 1033 – Standard for Professional Qualifications for Fire Investigator

- NFPA 1035 – Standard on Fire and Life Safety Educator, Public Information Officer, Youth Fire Setter Intervention Specialist and Youth Fire Setter Program Manager Professional Qualifications
- NFPA 1041 – Standard for Fire Service Instructor Professional Qualifications
- NFPA 1061 – Professional Qualifications for Public Safety Telecommunications Personnel
- NFPA 1072 – Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications
- NFPA 1201 – Standard for Providing Fire and Emergency Services to the Public
- NFPA 1221 – Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems
- NFPA 1500 – Standard on Fire Department Occupational Safety, Health, and Wellness Program
- NFPA 1521 – Standard for Fire Department Safety Officer Professional Qualifications
- NFPA 1710 – Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Career Fire Departments
- NFPA 1730 – Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations
- NFPA 1901 – Standard for Automotive Fire Apparatus
- NFPA 1911 – Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Emergency Vehicles
- The Commission on Fire Accreditation International (CFAI), which is a program that promotes fire service excellence by evaluating a fire department based on related National Fire Protection Association standards, local legislation and industry best practices (the parent organization for Commission on Fire Accreditation International is the Centre for Public Safety Excellence).
 - This program has been adopted by many fire departments in Canada as a measure of best practices. Within Ontario, Guelph, Kitchener, Toronto, and Ottawa are just a few fire departments that have obtained accreditation from the Commission on Fire Accreditation International.
- Fire Underwriters Survey (FUS) technical documents

Project Consultants

Although several staff at Emergency Management & Training Inc. were involved in the collaboration and completion of this Plan, the core review was conducted by:

- Darryl Culley, President Emergency Management & Training Inc.
- Lyle Quan, Fire Service Consultant
- Richard Hayes, Fire Service Consultant
- Rick Monkman, Fire Service Consultant

Together, the team has amassed a considerable amount of experience in all areas of fire and emergency services program development, review, and training. The Emergency Management & Training Inc. team has worked on projects that range from fire service reviews, creation of strategic and master plans, and development of emergency response programs for clients.

SECTION 1: Community and Fire Department Overview

- 1.1 Community Overview
- 1.2 Fire Service Composition
- 1.3 Governance and Establishing &
Regulating By-law
- 1.4 Fire Department Coverage Areas
- 1.5 Dispatching Services
- 1.6 Fire Service Agreements
- 1.7 Mutual and Automatic Aid Agreements

SECTION 1: COMMUNITY AND FIRE DEPARTMENT OVERVIEW

This Master Plan for the Thunder Bay Fire Rescue analyses and identifies current and probable community fire risks and needs over the next 10 years and beyond. This will greatly assist TBFR with future planning relating to staffing and response, fire and life safety programming, and asset management. To ensure a comprehensive review is conducted, this review has examined and researched all aspects of Thunder Bay Fire Rescue operations including planning, fire prevention, training and education, communications, apparatus and equipment, human resources, station suitability and location, and large-scale emergency preparedness.

1.1 Community Overview

The City of Thunder Bay, located on Lake Superior, is the most populous municipality in Northwestern Ontario with approximately 110,000 residents and the second most populous in Northern Ontario following Greater Sudbury.

Figure #1: Map of Thunder Bay in Relation to Other Communities in the Region



Thunder Bay, with large marine ports on Lake Superior, major east/west rail lines, and a network of roads, is a major transportation hub linking the City to markets beyond. With a consistent population of approximately 110,000 for the past 20 years, the growth of Thunder Bay is not projected over the

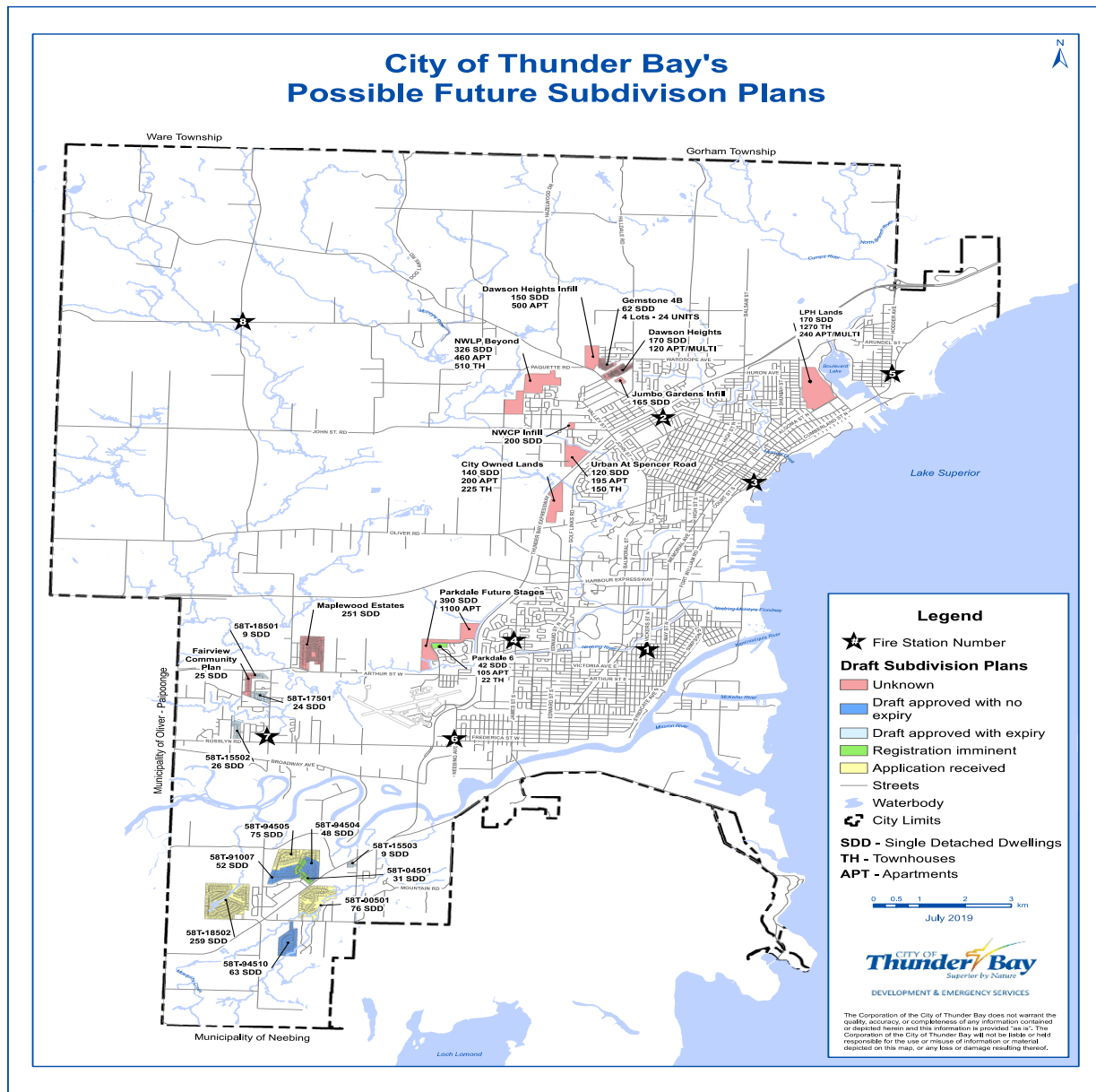
next 10 years to be substantial in either population or housing. Between 2011 to 2016, the population decreased by -0.4% but has shown a 1.8% overall growth between 2011 and 2018. All indicators have the City of Thunder Bay continuing at a projected slow growth rate, which means that the City's population is not expected to grow much beyond the present level of 110,000 over the next 5 to 10 years. As such, it would be expected that call volumes would stay relatively constant, however the fire department call volumes have grown by 23% in the past five years (2014-2018). Presently, there is an approximate call ratio of 15 calls per 1,000 residents.

Table #1: Recent Thunder Bay Population by Two-Year Increments¹

2011	2014	2016	2018
108,359	108,000	107,909	110,000

When identifying population growth, it is advisable to indicate where the actual growth will occur. City staff provided EMT with the following map of possible future subdivisions. As noted in Figure 2 below, the general pockets of growth appear to be occurring within the areas of the City that are already covered by the present fire stations. No significant amount of growth is expected to occur. As such, there doesn't appear to be a need for an additional fire station to service any new pockets of growth.

¹ Stats Canada Website, June 2019

Figure #2: Possible Future Subdivisions

1.2 Fire Service Composition

Responding to approximately 9,000 incidents a year (2018), Thunder Bay Fire Rescue (TBFR) serves a population of approximately 110,000 spread over an area of 320 square kilometres. This equates to a population density of 344 residents per square kilometre.

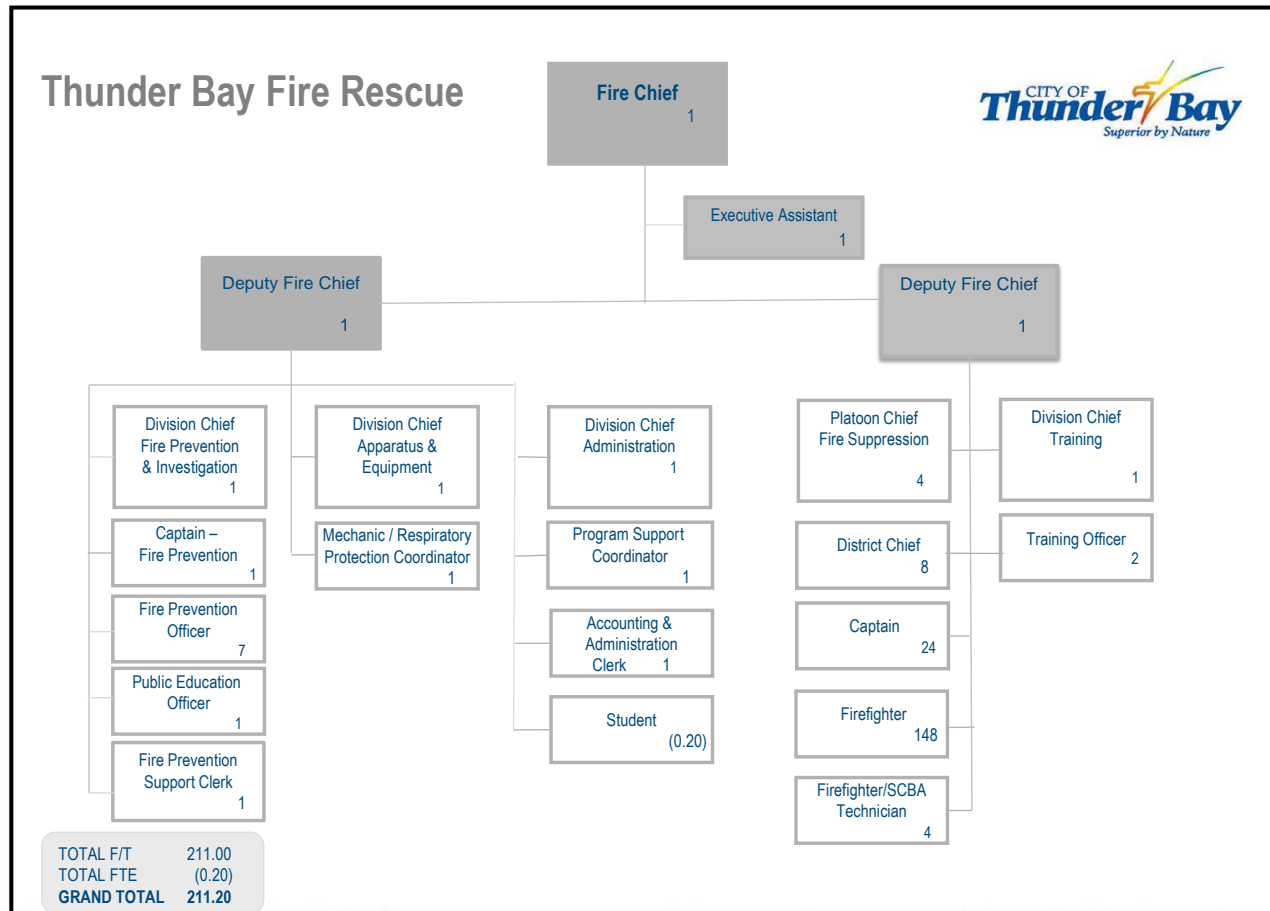
TBFR is a highly trained and technically diverse emergency service capable of handling a broad range of emergencies and hazardous situations. Serving an isolated and large geographic area with an urban and rural composition, the City of Thunder Bay operates TBFR with oversight from Thunder Bay City

Council. TBFR, through the Provincial Mutual Aid Program, provides emergency support for nearby communities. TBFR also provides structural firefighting and emergency response to the abutting Fort William First Nation encompassing an area of approximately 90 square kilometres with a population of approximately 850 in the First Nation community.

Functions of TBFR include fire suppression, auto extrication, hazardous material spills, industrial accidents, tiered medical response, high/low angle rescue, ice and water rescue, urban search and rescue, and confined space rescue, provided from eight fire stations located throughout The City of Thunder Bay. In addition to emergency response services, TBFR provides public fire safety education, fire prevention inspections and code enforcement under the Ontario Fire Code. TBFR also delivers emergency planning for the community.

TBFR employs 211 people. There are five different Divisions within the Department, namely, Administration, Suppression, Fire Prevention and Investigation, Training, and Apparatus Equipment. More information on each Division will be supplied within each related section.

The organizational chart illustrated in Figure #3 reflects the general reporting structure within the Fire Department.

Figure #3: Fire Department Organizational Chart

1.3 Governance and Establishing & Regulating By-law

The current Establishing & Regulating By-law (E&R) was last updated in 1984 and due to the age of this document, it is recommended that a full review be completed and presented to Council for approval. This update is required to ensure that the document accurately reflects the Department's official name, organizational structure and division names, duties of members, rules and regulations, code of discipline, and services offered by TBFR.

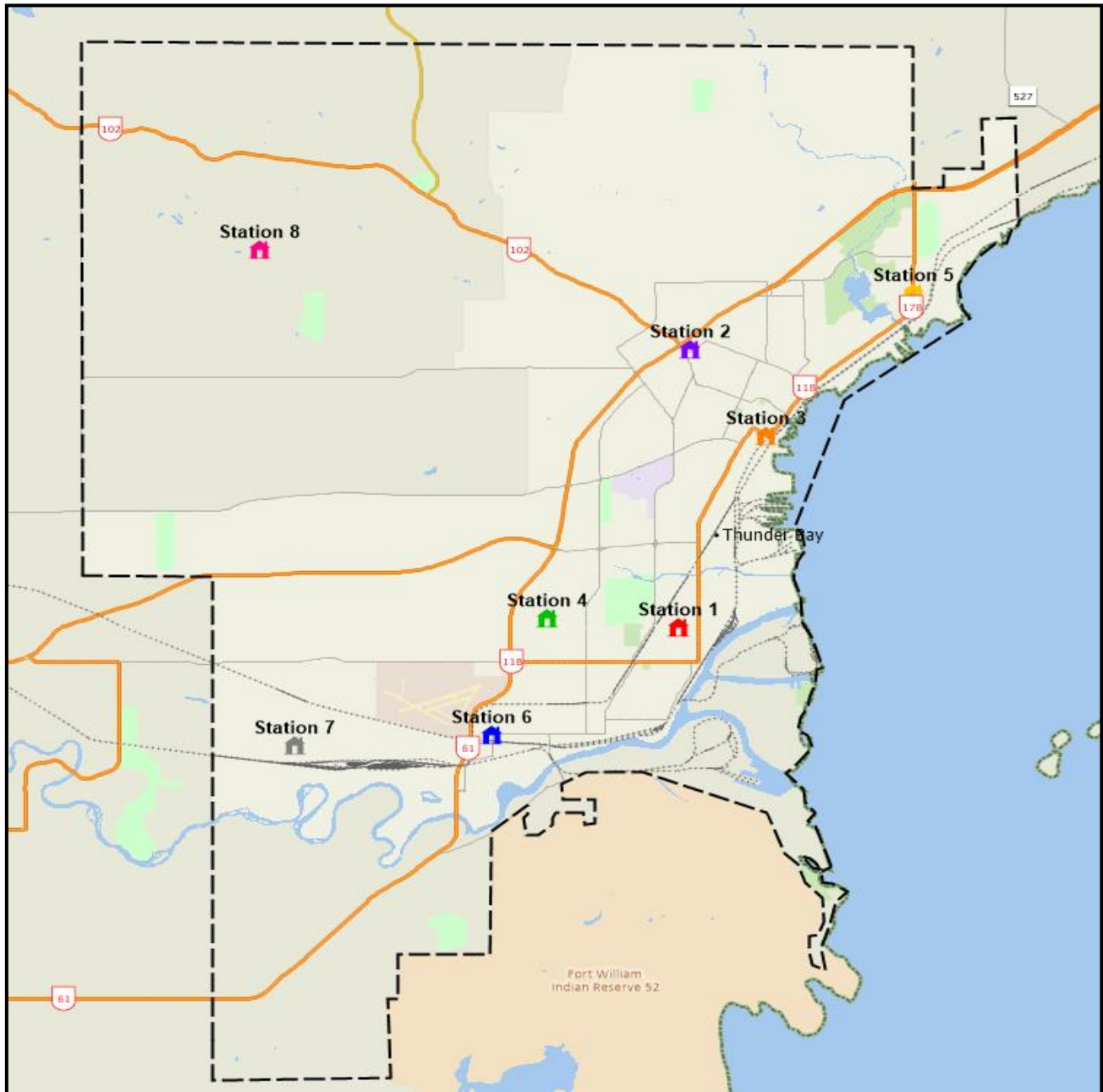
Once the current E&R By-law is updated, annual reviews of the document should be completed by the Fire Chief as a standard business practice to ensure that the Thunder Bay Fire Rescue is operating within the Council approved parameters. This does not mean that an updated by-law be presented to Council annually but that the document is kept current and accurate. By doing this, the Fire Chief can ensure that Thunder Bay Fire Rescue is providing the services required by the community.

As part of the by-law update process, the draft should be vetted through the City Solicitor prior to going to Council.

1.4 Fire Department Coverage Area and Station Locations

The following map (Figure #4) identifies the present locations of the eight fire stations, along with the City's borders.

Figure #4: Thunder Bay Fire Rescue Stations



1.5 Dispatching Services

The Thunder Bay Fire Rescue receives its dispatching services from the Thunder Bay Police Services. Based on information received, along with a review of the dispatching data, Thunder Bay Fire Rescue is receiving adequate dispatching services from the Police Service. For the 2020 contract, TBFR will pay Thunder Bay Police \$875,000.00 for this service. This amount does include extra funds for the upgrades to the Next Generation communications system. Although this amount may seem quite high, for TBFR to operate its own Dispatch center, the cost could be as much as \$1,000,000.00 per year, or more when staffing and required equipment are taken into consideration.

EMT is not recommending that TBFR create its own communications centre. However, it is recommended that TBFR work with the police dispatch service to promote adherence to the NFPA 1221 standard on Emergency Communications Systems, which notes the following benchmark as a standard.

NFPA 1221, Section 7.4 Operating Procedures

7.4.1* Ninety-five percent of alarms received on emergency lines shall be answered within 15 seconds, and 99 percent of alarms shall be answered within 40 seconds. *(For documentation requirements, see 12.5.2.)*

7.4.1.1 Compliance with 7.4.1 shall be evaluated monthly using data from the previous month.

By working towards and implementing this standard, both the Fire Service and Police Service will have a set of goals and expectations clearly identified. TBFR should also conduct annual reviews of the dispatching services provided by the Police Service to ensure that it is meeting the needs of TBFR and to identify ongoing opportunities for improvements (by both parties).

1.6 Fire Service Agreements

The City of Thunder Bay is the largest city in the area and the only department within the District of Thunder Bay that has a full-time fire service. As such, TBFR does not have agreements for receiving support from bordering fire departments. In fact, it is the bordering departments that depend on TBFR for support.

One of the key fire service agreements is with the Fort William First Nation (FWFN) in which TBFR provides structural firefighting and emergency response to the Fort William's area of approximately 90 square kilometres and 850 residents.

Based on discussions with the Thunder Bay Fire Chief, along with a review of the related call volumes and expectations of this FWFN agreement, it would appear that the FWFN is receiving a good level of service from TBFR. However, the agreement does not include fire prevention related activities. As such it is recommended that a review of the fire service agreement between TBFR and the FWFN be reviewed and updated as required in relation to services to be provided and related costs for providing these services.

1.7 Mutual and Automatic Aid Agreements

In fire and emergency services, mutual aid is an agreement among emergency responders to lend assistance across jurisdictional boundaries. This may occur due to an emergency response that exceeds local resources, such as a disaster or a multiple alarm fire. Mutual aid may be an ad hoc request, to be used only when such an emergency occurs.

When services become more of a formal standing agreement or cooperative emergency agreement on a continuing basis, it now becomes either an automatic aid agreement or a fire service agreement. Both types of agreements ensure that resources are dispatched from the nearest fire station, regardless of which side of the jurisdictional boundary the incident is on. The difference between the types of agreements is that mutual aid must be requested, whereas, automatic aid and fire service agreements have response conditions outlined within them.

Thunder Bay Fire Rescue has positive working relationships with the other fire departments in the surrounding jurisdictions. As such, mutual aid and other required agreements (if necessary) are in place. During interviews by Emergency Management & Training staff, no concerns were found about the present agreements that are in place. However, it should be noted that due to the unique geographical location of the City of Thunder Bay, TBFR is the one that supplies mutual aid to the smaller surrounding volunteer fire departments. The surrounding departments are not large enough to offer a measurable level of response in relation to mutual or automatic aid to TBFR.

The Fire Department is also the regional response unit in relation to hazardous materials response, along with urban search and rescues services. The fact that there is no other fire department in the area that can take on such programs as hazardous materials response, confined space rescue and urban search and rescue, the City of Thunder Bay is unable to rely on other neighbouring communities. As such, this can add to the cost of fire and rescue services for the City. Unlike communities like Waterloo, Kitchener and Cambridge; all within Waterloo Region, due to their proximity to each other, each community can take on some of these services, thus reducing cost to each city.

No comparable situations within Ontario were found to identify and evaluate costing in relation to quantifying the apparent higher cost for fire services in Thunder Bay.

Recommendation(s)

Rec #	Recommendation	Estimated Costs	Suggested Timeline
1	The present Establishing & Regulating By-law be updated and presented to Council for approval including an outline of services to be delivered by TBFR.	Staffing related costs only	Short-term (1-3 years) and ongoing
2	TBFR work with the Thunder Bay Police Dispatch service to promote adherence with the NFPA 1221 Standard on Emergency Communications Services.	Dependent on potential changes to the agreement	Short-term (1-3 years) and ongoing
3	It is recommended that a review of the fire service agreement between TBFR and the FWFN be reviewed and updated as required in relation to services to be provided and related costs for providing these services.	Dependent on potential changes to the agreement	Short-term (1-3 years) and ongoing

SECTION 2: Planning

2.1 Three Lines of Defence

2.2 Industry Standards and Best Practices

2.3 Strengths, Weaknesses, Opportunities, and Threats

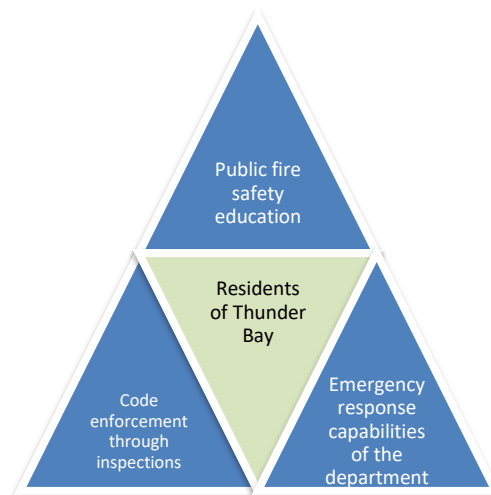
2.4 Interview and Focus Group Feedback

SECTION 2: PLANNING

Planning is a key function of any organization and should be done with a focus on the present needs of the community, coupled with its future growth and how this will affect the service demands on the fire department. The initial phase of such planning efforts is to identify the strengths, weaknesses, opportunities, and threats affecting the department and the community it serves.

2.1 Three Lines of Defence

The Office of the Fire Marshal and Emergency Management (OFMEM) have identified “Three Lines of Defence” to be utilized by all fire departments in Ontario when planning to meet the needs of the community. By embracing and implementing these three lines of defence, the centre of focus is the safety of the community, based on education, enforcement and response.



1. **Education** – Fire safety education is the key to mitigating the fire and life hazards before they start. With the growth of the community, how will the municipality continue to meet the fire safety educational needs of the community?
2. **Inspections and Enforcement** – If the public education program does not prove effective, the next step is for the fire department to enforce fire safety requirements through inspections leading to possible charges under the *Act*.
3. **Emergency Response** – If the first two lines of defence fail for whatever reason, the community, through its fire department, should be prepared to respond in an efficient and effective manner to put the fire out and/or mitigate the emergency itself. By evaluating the effectiveness of the fire stations, staff, and equipment, this report will be able to make recommendations for related efficiencies.

In conjunction with the three lines of defence, a key industry standard that outlines goals and expectations for a fire department is the National Fire Protection Association (NFPA). These standards are not mandated but do form the foundation of the fire services recommended best practices. These NFPA standards are also utilized by organizations such as the Fire Underwriters Survey group to conduct their assessments of a fire department and the community. The provincial Fire Marshal Offices and provincial fire schools also use them to form the foundation of their evaluation and training related programs.

2.2 Industry Standards and Best Practices

2.2.1 National Fire Protection Association 1201

In 2014, the Province of Ontario adopted a move to the NFPA Standards for training and certification courses at the Ontario Fire College. To assist with Emergency Management & Training Inc.'s review, reference has been made to key NFPA Standards that identify services that should be offered and how they are to be delivered based on the composition of a fire department. One of the foundational NFPA Standards is Standard 1201 as it sets out criteria for providing fire and emergency service to the public.

National Fire Protection Association Standard 1201 – Standard for Providing Fire and Emergency Services to the Public

Section 4.3.5 notes:

- The Fire and Emergency Services Organization shall provide customer service-oriented programs and procedures to accomplish the following:
 1. Prevent fire, injuries and deaths from emergencies and disasters
 2. Mitigate fire, injuries, deaths, property damage, and environmental damage from emergencies and disasters
 3. Recover from fires, emergencies and disasters
 4. Protect critical infrastructure
 5. Sustain economic viability
 6. Protect cultural resources

To accomplish this, a Fire and Emergency Services Organization (FESO) must ensure open and timely communications with the Chief Administrative Officer and governing body (Council), create a masterplan for the organization, and ensure there are mutual aid and automatic aid programs in place, along with an asset control system and maintenance program.

To provide a fire department clearer focus on what the ultimate goals for emergency response criteria are, the National Fire Protection Association suggests that response times should be used as a primary performance measure in fire departments. National Fire Protection Association 1710 (refers to goals and expectations for Career Fire Departments) has been incorporated into the evaluation of the fire department's response and staffing needs. More discussion in relation to these two standards will be presented in Sections 3 and 4.

2.2.2 Commission on Fire Accreditation International

“When a Fire Department applies a model of risk assessment to help determine their level of emergency services commitment, they have moved from being reactive to being proactive.” – quote from Commission on Fire Accreditation International overview information.

In the fire service, the National Fire Protection Association standards are considered by many as the benchmark to strive for. Many of these standards have, to a large degree, been adopted and supported by numerous fire departments. The Commission on Fire Accreditation International is an organization that has incorporated all national and local standards into an accreditation process, effectively becoming the model for best practices in fire services. This best practice is seen as a model of fire service excellence.

To accomplish this excellence model, the Commission on Fire Accreditation International program revolves around 10 categories:

1. **Governance and Administration** – Includes such things as organizational reporting structure, establishing and regulating by-law requirements, etc.
2. **Assessment and Planning** – Evaluating the organization in relation to future planning.
3. **Goals and Objectives** – What are the goals of the fire service? Do they have a strategic plan in place?
4. **Financial Resources** – Does the organization have sufficient funding in place to effectively meet the needs of internal and external stakeholders?
5. **Programs** – Includes fire prevention, fire suppression, training and emergency management.
6. **Physical Resources** – What is the state of the fire stations and are they located in the best location to respond to the community in a timely manner?
7. **Human Resources** – Includes staffing of the organization in all branches as well as how the fire service works with the municipality’s Human Resources Department.
8. **Training and Competency** – Review of all training programs based on what the Fire Department is mandated to provide.
9. **Essential Resources** – This section covers such things as water supply, communications/dispatch and administrative services.
10. **External Systems Relations** – Includes such topics as mutual aid, automatic aid, third party agreements, etc.

These categories will be discussed within each related section of this Master Plan document.

2.3 Strengths, Weaknesses, Opportunities, and Threats (SWOT)

The strengths and weaknesses portion of a SWOT Analysis are based on an internal review that identifies what is working well, along with recognizing areas for improvement. The opportunities and threats portion of the SWOT are related to external influences and how they affect the operations and response capabilities of a fire department.

2.3.1 Strengths

- The City of Thunder Bay benefits from having eight fire stations located throughout the City. These stations are staffed full-time, 24/7. This equates to a consistent and dependable service for the community.
- There are fire prevention, public education and code related inspections programs in place throughout the City by Thunder Bay.
- A full line of training programs is in place that are coordinated and are monitored by the Chief Training Officer.
- The Thunder Bay Fire Rescue has strong relationships with neighbouring departments and a long history of cooperative services.
- Thunder Bay Fire Rescue has a force of highly trained firefighters in technical rescue, Urban Search and Rescue, and HAZMAT supporting the City, North Western Ontario, and is capable of responding province wide.

2.3.2 Weaknesses

- There appears to be a need for a new fire headquarters due to the age and condition of the building that has been noted in a previous facilities evaluation report, which notes some issues with the slope of the second floor, and related costs to complete any related upgrades – approximately \$900,000.00 was noted in the report .
 - This could be addressed through a realignment of the stations and relocation of the administrative staff. More discussion on this realignment/relocation later in this report.
- Although the future growth projections do not indicate a large growth in population, service demands could still increase due to an aging population and aging infrastructure in the City.

2.3.3 Opportunities

- TBFR should reassess the locations and use of its present fire stations to find service and cost efficiencies to better utilize its present fire stations and staffing complement.
- TBFR should review the present fire service agreements, emergency medical responses and by-laws to identify further efficiencies, cost savings, and other possible opportunities to reduce call volumes by the Department.
 - More information is noted in relation to both opportunities within Section 9.

2.3.4 Threats/Challenges

- The threat of weather patterns is a challenge for communities to deal with the so called “100-year storm”. Due to changes in climate, inclement weather incidents, such as freezing rain/ice storms and flooding are becoming more commonplace and need to be part of the emergency response program for each community. This change in climate conditions, along with the resulting frequency and severity of incidents, has also predicated the need for a larger response component to these emergencies.

Weather Related Incidents

It is interesting to note that in the past several years TBFR has responded to the following weather-related incidents:

2019

- January weather events resulting in 49 motor vehicle collisions (MVC's)
- February weather events resulting in 42 MVC's
- November 21st snowstorm resulting in 36 wire down/power outage incidents
- October 21st and 22nd resulting in 53 wire down/power outage incidents.

2018

- May – very dry, no rain, fire ban in place, 52 fire incidents related to weather.
- September 20th and 21st – high winds resulting in 36 incidents
- October 3rd and 4th - high winds resulting in 36 incidents
- December 27th and 28th – snowstorm resulting in 107 incidents

2017

- April 26th – high winds resulting in 31 incidents
- October 24th – high winds resulting in 8 incidents
- December 5th – high winds resulting in 28 incidents

2016

- June 25th – high winds and significant rainfall resulted in 64 responses to downed power lines and flooding.

This information does confirm that weather related incidents are becoming more common with each passing year. The fact that TBFR is tracking these weather-related incidents is another example of the high level of service-related monitoring that is demonstrated by the Department.

- A final challenge to be noted is the introduction of three new regulations introduced by the Office of the Fire Marshal and Emergency Management. These regulations were added to the *Fire Protection and Prevention Act*:
 - Conducting a community risk assessment every five years
 - Annual public reporting of fire department responses
 - Certification of firefighters

Note: The regulations relating to firefighter certification and public reporting have been put into abeyance for further review. It is anticipated that the firefighter certification regulation will be reintroduced sometime in the near future. As such, all fire departments should continue to identify this type of training as part of their present and future training programs.

All these previously noted challenges need to be monitored and/or continuing monitoring so they can be evaluated and reported to Council by the Fire Chief to ensure that Thunder Bay Fire Rescue is meeting the needs and expectations of the community.

2.4 Interview and Focus Group Feedback

2.4.1 Open House and Community Survey Feedback

To get a complete understanding of how well Thunder Bay Fire Rescue is meeting the needs of its staff and the community, and to assist City Council in making strategic decisions for the future of the community, open house sessions and external and internal surveys were conducted. Along with the open houses and surveys, interviews were also conducted with the City's senior staff and members of Council.

Overall the interviews were quite positive about the services being offered by Thunder Bay Fire Rescue. The top five key points/challenges identified through the consultation process were:

- The high number of medical responses by TBFR was identified as a concern with comments about whether it was truly required, why or why not, and what could be done to reduce associated costs.

- Finding efficiencies, cost cutting and/or control measures for the services being delivered by TBFR.
- Continuing to meet the needs of the community with the present set up of the fire stations.
- Staffing levels and related response times in relation to what is required and why.
- Changes to provincial legislation impacting service standards and costs.

In relation to the Community Surveys, a total of 246 people participated in the survey which equates to less than one percent return (by the overall population). Even though this number may not be statistically significant, the surveys received, along with the input gathered at the stakeholders' meetings cannot be discounted. The surveys and meetings were both positive and constructive in nature. Based on EMT's experience this level of return and involvement is comparable with other master plan projects.

2.4.2 Internal Staff Survey Feedback

A survey was also conducted to obtain feedback from TBFR staff. EMT received a total of 37 completed surveys. With a total staff of 211 personnel, this level of response equates to an 18% return. The top four challenges/ recommendations made by staff were:

- Continue to keep staffing at a level that will not only meet the needs of the fire department but also ensure the safety of the crews.
- A review of present fire station locations to identify where another fire station may be required.
 - This specific item is part of the project and EMT has incorporated this into the report. Refer to sections 5 and 9.
- Continued enhancement of training programs so the firefighters can continue to meet the needs of the community.
- Consideration for another heavy rescue truck to be placed in the fleet.

Based on the feedback received from both the external and internal surveys, a review of fire station locations and staffing levels needs to be conducted. More information on this recommendation can be found in the related sections within this document.

2.4.3 Community Focus Group Session

On July 18th, members of the community who had expressed a desire to participate in a focus group session were brought together to discuss in more detail their experience with TBFR along with opportunities for improvement to service levels. In total, 23 people attended the focus group session.

All members that attended the focus group with the exception of two had received services from TBFR. Those two had completed the survey and were interested in building upon their comments.

The attendees were broken into three separate groups, including:

- Those who had received services from TBFR for a fire incident,
- Those who had receive services from TBFR for a medical incident, and
- Those who had received services from TBFR for public education, fire prevention or another type of service.

The attendees were asked four questions to discuss in their assigned groups. The four questions were:

1. Overall, was your experience positive or negative. If negative, why? If positive, why?
2. Based on the related service supplied by TBFR, what improvements, if any, can be implemented?
3. As a member of the community, what other services do you believe TBFR should offer and why?
4. Are there any other points the group would like to add in relation to services and/or efficiencies that we have not discussed?

The following feedback was received based on the previously noted questions.

Fire Related Calls Group

#1 – seen in a positive manner

- Professionalism
- Quick response
- Resolutions with more education and prevention
- Overall good feeling of safety and reduction of property loss
- Need to quickly extinguish fires, which they have in noted cases with group

#2 – spend more time on budget, to hire more firefighters and equipment to meet response criteria

- Improvement in response times (shorter response times to emergencies)
- Possibly require more fire halls, which may reduce home insurance costs
- Increase collaborative efforts with First Nations and other communities

#3 – working with First Nations communities

- Community wide collaborative emergency response that includes the First Nations communities

#4 – Stop the silos - more open communication between all three services (police, fire and EMS).

- The concept or belief given in relation to this comment is that Fire, Police and EMS do not appear to be communicating with each other as much as they should to find joint efficiencies that would serve the community in a more efficient and cost-effective manner.

#5 – how to support those living with addiction and substance abuse

- How to ensure that fire is fully involved in the discussions as part of the community
- Collaborative response initiatives with all 9-1-1 partners

EMS (Medical) Calls Group

#1 – overall group experience is positive

- Qualified people showed up and dealt with the incidents in a caring and professional manner
- Professional staff, with fast response

#2 – integration of Fire and EMS

- Increase fire's level of service for medical capabilities – *some respondents seen the need for more medical response by TBFR due to the quick response capabilities*
- Add paramedics to fire crews – *this would be a contractual issue and the TBFR and SNEMS unions would need to be part of such discussion*
- Proper triage of 9-1-1 to ensure the right service responds – *this would take more discussion with both Police and EMS in relation to call taking and triage of the call*

#3 – focus on senior education and services, such as smoke alarm installation

- Promote 24-hour non-emergency call services

#4 – the more services you want to add, the more the costs

- Added services increases training time and costs
- Integrate a program for those that are living on the street that can help reduce the strain on 9-1-1 emergency calls

Miscellaneous Calls or Public Safety Education Exposure Group

#1 – The overall group experience has been positive, specifically regarding:

- Getting prompt service when enquiring about anything such as fire permits.
- Good public image

- Good safety education opportunities

However, they did note concerns about the following points:

- Fire permits – why do so many firefighters show up to inspect?
- School visits – why do so many firefighters show up for the school visits?
- The also noted a concern about the actual value of the 24-hour shift and the fact that firefighters only work 7 to 8 shifts a month and get paid to sleep

#2 – Improvements could be made in the following areas:

- Public image, even though they do have a good reputation, more still needs to be done
- Take advantage of social media to get more information out to the public
- Improve efficiencies in relation to medical calls and inspections in relation to the number of firefighters that attend each of those. Why are so many required?

#3 – Other services to be offered:

- Underwater search and rescue capability – *TBFR had this program in place but it was disbanded*
- Ability to transport for medicals to help EMS – *presently TBFR vehicles are not designed for patient transport. This is the sole job of the Regional EMS service*
- Perhaps wait with patient at hospital to release EMS to attend other critical calls – *to have one firefighter wait with a patient would effectively put that entire crew out of service. This is not an efficient utilization of TBFR crews*

#4 – Other efficiencies:

- No suggestions were given

The information received from the community surveys and the focus group meeting confirms that the fire service is seen in a positive light. However, more still needs to be done in relation to:

- Educating the public about why so many firefighters seem to attend EMS related calls and why so many firefighters are in attendance at school education events
 - ultimately this revolves around “crew integrity”. The collective agreement, along with staffing of fire vehicles, requires 4 firefighters per fire truck. As such, when the fire truck leaves the station for medical responses or public education events, the crew needs to be kept intact. This ensures that when another call comes in that requires the full crew, they can respond immediately, instead of having to return to the station to pick up other crew members.
- Conveying why so many firefighters are required to attend any public education or inspection events

- See notes above as to this need.
- Confirming what services are offered by TBFR and what is not offered and why
- On how the three emergency services (police, fire and EMS) collaborate to provide an overall effective set of emergency services to the community of Thunder Bay, and

Recommendation(s)

Rec #	Recommendation	Estimated Costs	Suggested Timeline
4	<p>Fire Department should review the comments received from the focus group meeting and identify how improvements can be incorporated into daily operations and/or through social media information sessions.</p> <ul style="list-style-type: none"> This review should be followed up with a media release to demonstrate that input from the surveys and meetings is being considered and where possible implemented. 	Dependant on improvements identified	Short to long-term (1-10 years)

SECTION 3: Department Staffing

3.1 Staffing Considerations

3.2 Administration Division

3.3 Fire Prevention and Public Education Division

3.4 Training and Education Division

3.5 Mechanical/ Maintenance Division

3.6 Suppression Division

SECTION 3: DEPARTMENT STAFFING

Within the scope of work noted in the original Request for Proposal document, staffing needs were identified as a priority in which Emergency Management & Training Inc. was to review the capabilities of existing staffing and identify future needs for each of the following branches: Administration, Suppression, Training, Prevention, and Mechanical.

3.1 Staffing Considerations

When a community considers the need for the number of fire service personnel, there is no actual standard that dictates how many personnel are required within a population or whether the fire service needs to be full-time, composite, or volunteer in its service delivery format.

As a general guide, some communities refer to other similar sized municipalities in the determination of firefighter staffing numbers and types (i.e. full-time or volunteer). It must be kept in mind, however, that every community is unique in its geographical composition, population demographics, and size of residential, commercial and industrial sectors. Therefore, community comparisons should be utilized with all the aforementioned information in mind. As an example, although TBFR and the City of Thunder Bay are similar in size to the comparable communities utilized for this review, the City of Thunder Bay, unlike many of the comparables, does not have a bordering full-time fire department that can assist in large emergencies. In fact, as previously noted in this document, due to its geographical location, the City of Thunder Bay may be thought of as an island when it comes to having full-time bordering resources to rely upon.

Emergency Management & Training Inc. has conducted its comparison and more information on this can be found later in the document in Section #4. It should be emphasized that each community is unique in its geography, population, industry and access to support from other communities.

Having noted that there is no standard that recommends a firefighter per population quota, a department can refer to the National Fire Protection Association (NFPA) 1710 standard on Career Fire Departments. This standard identifies a recommended staffing level per responding company. Other NFPA Standards also make recommendations regarding such things as conducting calculations for fire prevention staffing needs. In relation to firefighters, the NFPA 1710 recommends that three firefighters and one officer, for a total of four, should be on the first responding fire truck. Presently, Thunder Bay Fire Rescue has this level of staffing on all of their front run units, with two of the pumper/rescues having a minimum staffing of five per pumper/rescue.

Another reference document is the Collective Agreement between the Firefighter's Union and the City, which also makes note of staffing requirements. Presently, the Collective Agreement states:

“17.03 Effective no later than October 1, 1994, the Corporation agrees that all pumpers shall be manned with no fewer than four (4) full-time Fire Fighters.”

All of the previously noted information should to be taken into consideration when assessing staffing levels within the TBFR. As a general guideline, when considering the overall staffing needs for the TBFR, some of the key questions that should be considered are:

- Is there a proper level of senior staff to manage the Department and its divisions?
- Is there adequate administrative or management staff to effectively deal with such things as records management and addressing day-to-day operations of the Department?
- Is there a need for other support staff for vehicle and facility maintenance?

3.2 Administration Division

The Administration Office is located on the second floor of Station #1 at 330 Vickers Street North. The senior officers including the Fire Chief, two Deputy Fire Chiefs, Division Chief of Administration & Community Emergency Management Coordinator, Fire Prevention staff, and the administrative support staff (consisting of an Executive Assistant to the Fire Chief, Accounting and Administration Clerk, Fire Prevention Clerk and a Program Support Coordinator) are all located at this site.

Along with his regular duties, the Fire Chief under appointment by the Office of the Fire Marshal serves as Fire Coordinator for the District of Thunder Bay.

The Commission on Fire Accreditation International Accreditation program has a specific section that evaluates the administration component of a fire department. In this section, the following points are noted:

Category 9C: Administrative Support and Office Systems:

Administrative support services and general office systems are in place with adequate staff to efficiently and effectively conduct and manage the agency's administrative functions, such as organizational planning and assessment, resource coordination, data analysis/research, records keeping, reporting, business communications, public interaction, and purchasing.

Based on the review conducted by EMT, it would appear that the present Administration Division is well configured and has adequate resources to meet the needs of the Department.

3.3 Fire Prevention and Public Education

The Fire Prevention Division consists of a Division Chief, Captain, Public Education and Safety Officer, and seven Fire Prevention Officers. Their working hours are from 7:30 am to 5:30 pm daily, except for weekends and statutory holidays, and are available 24-hours a day to carry out fire investigations. This Division is responsible for ongoing inspections of industrial, commercial, vulnerable occupancy, and residential properties under the authority of the Ontario Fire Code. TBFR is committed to delivering fire and life safety education, juvenile fire setter intervention and programming for special interest groups, such as youth and seniors.

During interviews with the Division Chief, it was confirmed that there is an annual inspection and public education program in place. The Division Chief monitors all facets of the program to ensure that the Division is meeting its goals. The Fire Prevention and Education Division should be commended for its efforts regarding the first and second lines of defence (public education and enforcement) as noted by the Office of the Fire Marshal and Emergency Management.

The National Fire Protection Association 1035 (3.3.11) identifies fire and life safety education as a “comprehensive community fire and injury prevention program designed to eliminate or mitigate situations that endangers lives, health, property, or the environment.”

Based on recommendations by the Fire Underwriters Survey group, the fire prevention officer per population ratio should be approximately one fire prevention officer per 15 to 20 thousand population minimum. With a total complement of 10 staff in fire prevention, the TBFR Fire Prevention Division is more than meeting the FUS recommendation for staffing and should be commended for this proactive approach. Fire prevention is seen as the first line of a defence therefore, the more resources assigned to this endeavour, the more proactive a community and its fire department are seen in relation to public safety.

There does, however, exist an opportunity for greater utilization of the fire suppression staff for fire prevention and public education. During weekdays, 9:00 am to 7:00 pm, fire suppression staff could be better utilized to conduct general residential fire safety inspection/education programs. To accomplish this in a manner that ensures knowledgeable inspections, it is recommended that all Captains and those providing primary Fire Prevention activities should be qualified as Fire Inspector 1 and Fire and Life Safety Educator Level 1.

3.3.1 Determination of Current Staffing Requirements

The present allotted time for the Fire Prevention Officers supports a proactive program to go above the minimum requirements of a fire prevention program. During the interview with the Division Chief

of Fire Prevention, it was noted that much of their activities are documented, but a more in-depth level of evaluation is recommended by the division to ensure that they are adequately staffed and meeting the needs of the community in relation to fire prevention endeavours. The present level of documentation is not enough for EMT to make recommendations relating to staffing level increase or decreases. More quantifiable documentation needs to be implemented by the Division Chief.

To assist fire departments in the determination of present and future staffing needs, NFPA 1730 outlines a process within Annex “C” of the standard. Ultimately, Council determines the level of Fire Prevention based off the local needs and circumstances of the community.

Note: Annex C is not part of the requirements of this National Fire Protection Association document but is included for informational purposes only.

The five-step process involves a review of the following items:

1. Identifying the scope of desired services, duties and desired outputs.
2. Review of the Fire Prevention Branch’s overall time demands in its efforts to offer services.
3. Review of hours presently documented, coupled with the hours required to meet annual goals of the branch.
4. Actual availability of branch personnel, factoring in vacation and other absences.
5. Estimating total number of personnel required based on the previous four steps.

By completing this process, it will assist the Department in further identifying what services it not only wants to offer, but what can actually be delivered based on present staffing levels. More information on this staffing equation can be found in Appendix “C” of this document and within the National Fire Protection Association 1730 Standard.

As already noted, the Fire Prevention Division Chief needs to ensure close tracking of the actual time spent on each of the fire prevention activity (ranging from site plan reviews, routine inspections, licensing, complaints, and requests, to name a few). Further, reporting should include clearly identifying the number of public education events as well as the number of adults and children reached (through these events). By identifying the time spent on each project and collating this into baseline (approximate) times, the Division Chief can then use those hours spent as a model figure in applying future initiatives.

Further to what has already been noted by the National Fire Protection Association and the Fire Underwriters Survey, the Commission on Fire Accreditation International outlines the following regarding fire prevention and public education:

- *A public education program is in place and directed toward reducing specific risks in a manner consistent with the agency's mission and as identified within the community risk assessment and standards of cover. The agency should conduct a thorough risk-analysis as part of activities in Category 2 to determine the need for specific public education programs.*

The utilization of existing resources is a cost-effective option for the promotion of fire prevention and public education programs. To accomplish this, some fire departments have trained most, if not all their fire officers (e.g. Captains and above) to be certified to conduct fire prevention/public education related inspections and programs. This not only brings more resources to the table but also enhances the level of fire safety awareness by those trained staff.

3.3.2 Fire Underwriters Survey Suggested Inspection Frequency Chart

Through the utilization of the Fire Underwriters Survey chart as a benchmark, the Prevention Division can develop a plan on what can be accomplished with its present staffing complement, along with presenting options for increasing inspection frequencies (through utilization of fire officers), and the determination of what is required to meet the Fire Underwriters Survey benchmarks.

Table #2: FUS Inspection Frequency Chart

Occupancy Type	Benchmark
Assembly (A)	3 to 6 months
Institutional (B)	12 months
Single Family Dwellings (C)	12 months
Multi-Family Dwellings (C)	6 months
Hotel/Motel (C)	6 months
Mobile Homes & Trailers (C)	6 months
Seasonal/Rec. Dwellings (C)	6 months
Commercial (F)	12 months
Industrial (F)	3 to 6 months

It is acknowledged that the Fire Underwriters Survey suggested frequency chart can be difficult to address, therefore, priority should be focused on the vulnerable occupancies (e.g. nursing homes, retirement homes, group homes, etc.), institutional buildings, assemblies, multi-residential, and industrial buildings.

3.4 Training and Education Division

A fire service is only capable of providing effective levels of protection to its community if it is properly trained and equipped to deliver these services. Firefighters must be prepared to apply a diverse and demanding set of skills to meet the needs of a modern fire service. Whether assigned to Administration, Fire Prevention, or Fire Suppression, firefighters must have the knowledge and skills necessary to provide reliable fire protection.

The Training Division is comprised of three personnel that are dedicated to delivering high-quality learning to all TBFR staff. The Training Division provides new recruits with the basic skills necessary to extinguish fires, perform rescues, provide medical assistance, protect the environment, offer public education, and ensure public safety. New recruits spend twenty-four weeks under the guidance of the Training Division, prior to being assigned to a platoon in the Suppression Division.

Once a new recruit is assigned to Suppression, the Training Division is responsible for providing the necessary resources required to become proficient not only in firefighting, but also Medical Responses including, but not limited to, first aid, CPR, and defibrillation. Fire Rescue Service instructors facilitate the learning of Hazardous Material Response, High and Low Angle Rope Rescue, Ice/Water Rescue, and Auto Extrication.

The Training Division is responsible for ensuring that all firefighters and officers meet the requirements for the appropriate National Fire Protection Association (NFPA) Standards, and other recognized industry standards such as Canadian Standards Association (CSA), *Occupational Health and Safety Act* (OHSA). Section 21, etc. Firefighters, fire officers and fire prevention officers undergo written and practical exams established by the Training Division, under direction from the Fire Chief, to meet the required standards.

During Emergency Management & Training Inc.'s review of the training and education programs, it was evident that Thunder Bay Fire Rescue staff are endeavouring to ensure that all required training programs are being addressed to the best of the Department's ability. The Department has a training facility within Thunder Bay's borders to conduct regular hands-on programs such as live fire training and other specialized programs that require more training props outside of those available at the fire stations. This training facility benefits the department by ensuring that all staff are properly trained to do their jobs and with the facility being in the City, staff do not need to leave the community for most of their required training.

National Fire Protection Association 1201 – Providing Fire and Emergency Services to the Public notes, in relation to training and professional development, that:

- 4.11.1 *The Fire Department Organization shall have training and education programs and*



policies to ensure that personnel are trained, and that competency is maintained in order to effectively, efficiently, and safely execute all responsibilities.

The Deputy Chief and Chief Training Officer are aware of the program needs and facility requirements and have indicated that the Chief of Training is tracking much of this. However, to verify in a more formal manner that each training program is meeting the related National Fire Protection Association program recommendations, the Chief of Training should formally:

- Identify what training programs are required for the services that Thunder Bay Fire Rescue is providing.
 - Each area needs to be evaluated regarding the present (and future) services to be provided by the Fire Service, such as suppression, EMS, hazardous materials response, etc.
- Identify the number of hours that are required to meet each of those training needs based on Provincial and/or industry standards.
 - What are the recommended training hours required and what refresher programs need to be conducted, and when?
- Identify the resources required to accomplish this training.
 - Does the training program require a full training tower for live fire and rescue scenarios, or can this be accomplished in other ways?
- Continue to strengthen joint partnerships with bordering fire departments and private organizations to achieve the training requirements identified.
 - What joint training can be accomplished to promote cost efficiencies?
- Present an annual program outline at the start of each year to the Fire Chief, with measured goals and expectations reporting on the completion success rate at the end of each year.
- Continue to identify how the training facility can be better utilized as a form of revenue generation for the City.

The training program should include a training plan for all firefighters such as:

- NFPA 1001 – Firefighter levels one and two within the first year
- NFPA 1002 – Driver operator qualifications within the second or third year
- NFPA 1006 – Technical rescue at the awareness levels
- NFPA 1021 – Fire Officer level one and two training for all suppression officers
- NFPA 1072 – Hazardous Materials response at the awareness level

- NFPA 1041 – Fire Instructor level one and two for those teaching courses within the department

3.4.1 Commission on Fire Accreditation International

The Commission on Fire Accreditation International Accreditation Program has a specific section that evaluates the training component of a fire department. In this section, the following points are noted:

- Category VIII: Training and Competency
 - *Training and educational resource programs express the philosophy of the organization they serve and are central to its mission. Learning resources should include a library; other collections of materials that support teaching and learning; instructional methodologies and technologies; support services; distribution and maintenance systems for equipment and materials; instructional information systems, such as computers and software, telecommunications; other audio-visual media, and facilities to utilize such equipment and services. If the agency does not have these resources available internally, external resources are identified, and the agency has a plan in place to ensure compliance with training and education requirements.*

Through consultation meetings, it was concluded that the Training Division is on the right track with its program development and training goals. Implementing a more formal evaluation of the training needs will assist in optimizing goal outcomes.

3.5 Mechanical/ Maintenance Division

The Mechanical/ Maintenance Division consists of two personnel who perform the servicing and maintenance tasks on all fire service mobile, portable, and stationary equipment. The apparatus and vehicles consist of frontline pumpers, pumper/rescues, aerial platforms, aerial ladder, administrative vehicles, plow trucks, and back-up units. The stationary equipment includes stand-by generators, breathing air compressors, fill stations and portable equipment such as smaller pumps, chainsaws, Jaws of Life, lawn mowers, snow blowers, outboard motors, and boats.

The Mechanical Division works out of Fire Station #3 and has its own work bays, office, and parts storage to meet the needs of the Department. Having such a facility with specially trained staff is a benefit to the Department; not only are these two personnel familiar with each piece of equipment, they are also on call for large-scale emergencies that may require refueling and on-site maintenance of the vehicles and equipment. The present staffing and utilization of the Mechanical Division staff is proving to be an effective use of Department staff and facilities.

3.6 Suppression Division

The Suppression Division is comprised of four platoons working out of eight fire stations, 24-hours a day, 7 days a week. The eight stations are divided into two districts, with four stations in the north and four in the south. Each district has one District Chief and three Captains, with a minimum complement of thirteen firefighters under their command. The District Chiefs report to a Platoon Chief who oversees each platoon.

To make an informed decision on staffing requirements for the Suppression Division, consideration is dependent on the following points:

- Does the Thunder Bay Fire Rescue have an approved response criterion as a baseline?
 - Has Council given direction to the Fire Chief regarding expected response times that are to be met by the Fire Department?
 - If so, is the Department meeting this response criterion on a consistent basis or is it struggling to meet the response times and perhaps falling behind?
- What change in population, demographics, and industry is occurring that may precipitate the need for a modification in stations and staffing?

As already noted, there are four main standards and industry best practices that need to be considered:

- First, there are industry standards/ best practices in the form of the National Fire Protection Association's 1710 and 1730 standards, which offer guidance regarding response times, staffing, fire prevention, and code enforcement.
- Second, the Department must consider the Public Safety Guidelines that are created and distributed by the Office of the Fire Marshal and Emergency Management. These Guidelines advise fire services on aspects of delivering fire prevention, fire suppression, and fire station location programs.
- Third, the Fire Underwriters Survey, which is endorsed by the insurance industry as a tool for measuring the ability of a fire service in meeting the response time, staffing, and water supply needs of a community.
- Fourth, the Commission of Fire Accreditation International. The Commission of Fire Accreditation International is a program that has a fire service complete three key documents, including:
 1. A community risk assessment and standards of cover document
 2. A self-assessment manual based on the 10 categories that make up the program review
 3. A strategic plan for the service
 (The Master Fire Plan can be considered the strategic plan for the service.)

3.6.1 National Fire Protection Association 1710 – Career Fire Departments

To accomplish the National Fire Protection Association Standard, a fire department should endeavour to meet the stated minimum response standards based on responding to a 2,000-sq. ft. single family dwelling. The dwelling (noted in the Standard) does not have a basement or other exposures (buildings close enough to each other to create a greater possibility for fire spread). Most homes in Thunder Bay have basements and are often built close enough to each other to create that “exposure” for potential fire spread, which must be considered by the Fire Department in its response efforts.

Based on a review of the response data supplied, along with discussions with the Fire Chief, Thunder Bay Fire Rescue is witnessing a varying level of success in meeting the NFPA response criteria. This can be seen in the charts found in *Section 4 – Community Response*. By utilizing this information in conjunction with the supplied response maps created by Emergency Management & Training Inc., we can see the effect of road networks, traffic levels, and traffic control systems on response times by emergency responders.

More detailed information can be found in Section 4 that focuses on the Suppression Division, along with goals and expectations in meeting industry standards. However at this point it is worth noting that even though TBFR has a greater firefighter to population ratio than some of the departments that Thunder Bay was compared with, due to its geographical location, TBFR does not have the luxury of relying on other bordering full-time fire departments to assist when needed. This fact must be kept in mind whenever fire station and staffing adjustments are being considered.

3.7 Health and Wellness

Health and wellness of staff is a key focus for all municipalities and Thunder Bay is no exception. During the review by EMT, it was noted that all of the stations have been equipped with workout facilities to ensure that staff have the ability to keep fit, which helps to reduce work related injuries.

Along with this fitness equipment, each station is equipped with diesel exhaust systems to reduce exposure to vehicle exhaust. Diesel exhaust has been contributed to health-related issues when people are exposed to it over long duration. By having these systems in each station, the health concern is greatly reduced.

Over the years the quality of the firefighters’ gear has improved and continues to meet all recommended standards, along with being tested on a regular basis. This ensure that TBFR staff are properly equipped and protected from the vast majority of environments and related exposures that they may come in contact with during the execution of their duties.

From a mental health perspective, the Department has “Peer Mentors” on staff to assist any of the members who may be dealing with personal and/or emotional challenges. This program helps to identify and address issues before they become critical in nature. If there is a need to move a situation to a higher level, the Department has a program in place with a local health services group that offers confidential counselling to the members of TBFR.

TBFR also has a parental leave program for parents of newborn and/or adopted child. This allows the parents the opportunity to be at home with their new family members for an extended period of time.

All of the previously noted initiatives have helped to promote a more supportive environment for all of the staff at Thunder Bay Fire Rescue. As such, the City’s management, senior fire management and the Thunder Bay Firefighters Association are to be commended for their ongoing efforts in relation to ensuring the health and safety of the TBFR staff.

Recommendation(s)

Rec #	Recommendation	Estimated Costs	Suggested Timeline
5	Any fire suppression personnel providing primary Fire Prevention activities should be qualified as Fire Inspector 1 and Fire and Life Safety Educator Level 1. At a minimum, each captain on the pumper trucks should receive this training and certification.	Staffing related costs only	Short-term (1-3 years) and ongoing
6	The Fire Chief and Fire Prevention Division Chief need to utilize the NFPA five steps process to evaluate the Fire Department's present level of activity and the future goals for fire prevention activities.	Staffing related costs only	Short-term (1-3 years) and ongoing
7	The Fire Underwriters Survey chart should be utilized as a general benchmark for the Prevention Division to develop a plan on what can be accomplished with its present staffing complement, along with presenting options for increasing inspection frequencies (through utilization of fire officers) and ultimately what is needed to meet the Fire Underwriters Survey benchmarks.	Staffing related costs only	Short-term (1-3 years) and ongoing

8	<p>To verify the training programs are meeting related NFPA (and other) training program recommendations, the Deputy Fire Chief musts identify:</p> <ul style="list-style-type: none"> • What training programs are required for the services that TBFR is providing? • The number of hours that are required to meet each of those training needs based on Provincial and industry standards. • Resources required to accomplish this training. • Joint partnerships with private organizations that can be entered to achieve the training requirements identified by the Chief Training Officer. • An annual program outline at the start of each year presented to the Fire Chief, with measured goals and expectations reporting completion success rate at the end of each year. • Continue to identify how the training facility can be better utilized as a form of revenue generation for the City. 	<p>The costs are mostly related to staff hours unless outside facilities or trainers need to be accounted for</p>	<p>Short-term (1-3 years) and ongoing</p>
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SECTION 4: Community Response

4.1 Fire Suppression/Emergency Response

4.2 Emergency Response Data

4.3 Fire Department EMS Response Options

4.4 Community/Fire Department Comparables

SECTION 4: COMMUNITY RESPONSE AND COMPARABLES

4.1 Fire Suppression/Emergency Response

There are 188 full-time Fire Suppression personnel. The Suppression Division is comprised of four platoons working out of eight fire stations, 24-hours a day, 365 days a year. The eight stations are divided into two Districts, with four stations in the North District and four in the South District. Each district has one District Chief and three Captains, with a minimum complement of thirteen firefighters under their command. The District Chiefs report to a Platoon Chief, who oversees each platoon.

There is a total of 47 firefighters per shift with a minimum staffing level of 35 per platoon.

4.1.1 National Fire Protection Association (1710)

To provide a fire department clearer focus on what the ultimate goals for emergency response criteria are, the National Fire Protection Association suggests that response times should be used as a primary performance measure by fire departments. The National Fire Protection Association's 1710 Standard for career fire department response times is noted below.

The travel time objectives for units responding on the first alarm indicate that the first unit should arrive within 4 minutes travel time and all units should arrive within 8 minutes travel time. Section 5.2.3.1.2 states that the initial fire unit shall have the capacity to implement an initial rapid intervention crew (minimum of four members).

In relation to response times, section 4.1.2.1, the fire department shall establish the following objectives:

- 240 seconds (4 minutes) or less travel time for the arrival of the first arriving engine company at a fire suppression incident
- For other than high-rise, 480 seconds (8 minutes) or less travel time for the deployment of an initial full alarm assignment at a fire suppression incident
- For high-rise, 610 seconds (10 minutes) or less travel time for the deployment of an initial full alarm assignment at a fire suppression incident
- 240 seconds (4 minutes) or less travel time for the arrival of a unit with first responder with automatic external defibrillator (AED) or higher-level capability at an emergency medical incident

When considering the response times and related needs for a community, the fire response curve (Figure #5) presents the reader with a general understanding of how quickly a fire can grow within a furnished residential structure over a short period of time. Depending on many factors, the rate of growth can be affected in several ways, which can increase or suppress the burn rate through fire control measures within the structure.

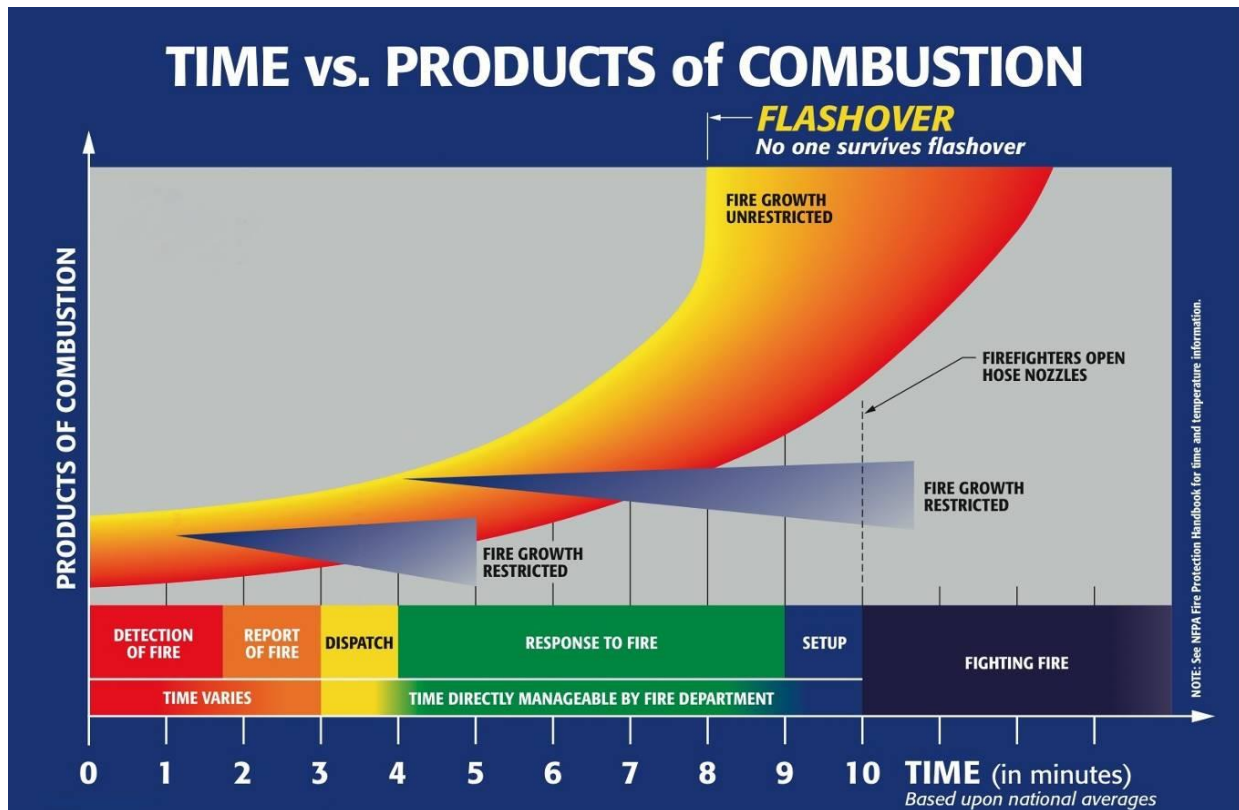
When we look at the response time of a fire department, it is a function of various factors including, but not limited to:

- The distance between the fire department and response/ incident location
- The layout of the community
- Impediments such as weather, construction, traffic jams, lack of direct routes (rural roads)
- Notification time
- Assembly time of the firefighters, both at the fire station and at the scene of the incident
 - Assembly time includes dispatch time, turnout time to the fire station and response to the scene

The criticalness of immediate initiation of fire suppression activities is illustrated in the following fire propagation diagram (Figure #5). The curve within the chart notes the following time variables:

- Detection of fire – when the occupant discovers that there is a fire. The fire may be in a very early stage or could have been burning for quite some time before being detected.
- Report of fire – when someone has identified the fire and is calling 9-1-1 for help.
- Dispatch – the time it takes the dispatcher to receive the information and dispatch the appropriate resources.
- Response to the fire – response time is a combination of the following:
 - Turnout time – how long it takes the career firefighters to get to the fire truck and respond.
 - Drive time – the time from when the crew advises dispatch that they are actually responding, until the time that they report on scene.
- Setup time – the time it takes for the fire crews to get ready to fight the fire.
- Fighting the fire – actual time on scene extinguishing the fire.

Figure #5: Fire Response/Propagation Curve



Based on fire growth, as demonstrated in Figure #5 and the previously noted associated timelines, the overall goal of any fire department is to arrive at the scene of the fire and/or incident as quickly and as effectively as possible. If a fire truck arrives on scene in eight minutes or less, with a recommended crew of four or more firefighters, there is increased opportunity to contain the fire by reducing further spread of the fire to the rest of the structure.

Alternatively, if the first fire attack team arrives with fewer than four firefighters on board, it is limited to what operations it can successfully attempt. Based on studies and evaluations conducted by the National Institute of Standards and Technology and the National Fire Protection Association, no interior attack is to be made by the firefighters until sufficient personnel arrive on scene. The expectation is that a minimum of three firefighters and one officer arrive on scene to make up the initial fire suppression team. This team of four can effectively do an assessment of the scene, secure a water source (fire hydrant), ensure the fire truck is ready to receive the water and get the fire pump in gear, as well as unload and advance the fire hose in preparation for entry into the structure. A team of four also allows for

adherence to the recommended “two-in, two-out” rule, referring to the presence of two firefighters inside the structure with two outside ready to go in as back-up.

Not having enough firefighters at an emergency scene can create an unsafe situation for the firefighters or, in a worst-case scenario, it can cause a delay in conducting fire suppression, lifesaving, and/or rescue operations. The NFPA 1710 standard on firefighting notes that for a typical two-story, single-family dwelling (without a basement), the required response of 12 firefighters on scene is necessary to effectively battle the fire. Thunder Bay Fire Rescue meets these staffing requirements on a consistent basis.

It must also be noted that Thunder Bay Fire Rescue responds to more than just fires. For example, motor vehicle collisions can create a medical or fire emergency that also needs to be addressed urgently. Hence the reason to be as efficient and effective as possible in responding to calls for assistance.

The Office of the Fire Marshal and Emergency Management’s (OFMEM) Comprehensive Fire Safety Effectiveness Model Considerations, notes the following:

- The fire department should strive to provide an adequate, effective and efficient fire suppression program designed to control/extinguish fires for the purpose of protecting people from injury, death or property loss.
 - Does your fire department have a comprehensive training program and evaluation system for all positions?
 - Does the fire department have a system to ensure that an adequate number of trained personnel respond to all emergencies within a reasonable time period?
 - Is your fire department provided with adequate resources to safely and effectively handle the risks it will be called upon to mitigate?
 - Does the fire department use standard operating guidelines (SOGs) to define expected fire department actions for the wide variety of situations it might encounter?
 - Does your fire department have automatic response agreements to guarantee an adequate level of personnel at all times?

Even though EMT has reviewed the previously noted points and incorporated them into this document. The Fire Department should review these questions annually to confirm if it has and continues to implement effective measures to meet the OFMEM Guideline considerations.

4.2 Emergency Response Data

The following chart identifies a comparison of response types and the response breakdown for 2018. To view more data for 2018, 2017 and 2016, refer to Appendix “F”.

Fire department response time is a function of various factors including, but not limited to:

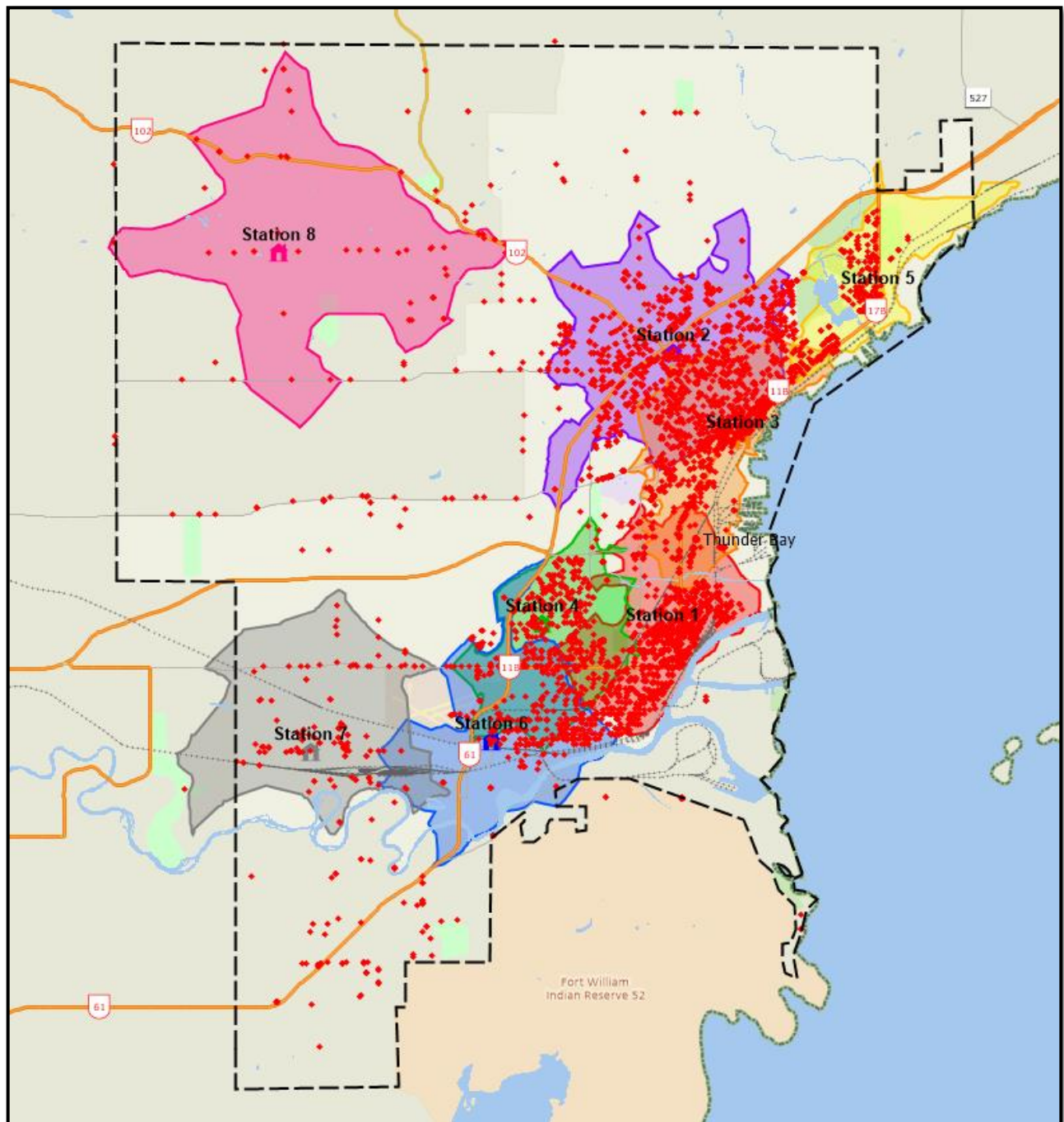
- The distance between the Fire Department and response location
- The layout of the community
- Impediments such as weather, construction, traffic and road networks
- Notification time
- Assembly time of the firefighters, both at the fire station and at the scene of the incident

It should also be noted that during the review of the response data no anomalies were noted in the data, which demonstrates a good level of quality assurance in relation to the accuracy of the response numbers that TBFR collects and retains. In relation to the 90th percentile criterion, in the 2012 – 2016 Thunder Bay Fire Rescue Strategic Master Fire Plan that “the initial apparatus shall arrive on the scene of the alarm within 6 minutes of receipt of the alarm in at least 90% of all occurrences”. With having this response time recommendation in place, TBFR has an identified benchmark to work with when reporting to City Council on performance goals and objectives. This is positive thing because many other fire departments do not have such a specific goal to work with.

Along with the following response data, the cluster map (seen it Figure #6) that utilizes all types of calls that TBFR has responded to in the past year offers an overview of where these calls occur within the City.

The cluster map identifies that the bulk of the calls are within the most densely populated areas. It also confirms that the fire stations are for well situated within the City. After a review of each type of call, it was realized that no one specific type is concentrated in a specific area. Whether it is a medical response or a motor vehicle collision, every type of call is found in every part of the City. As such, numerous cluster maps were not included in this document.

Figure #6: Call Cluster Map



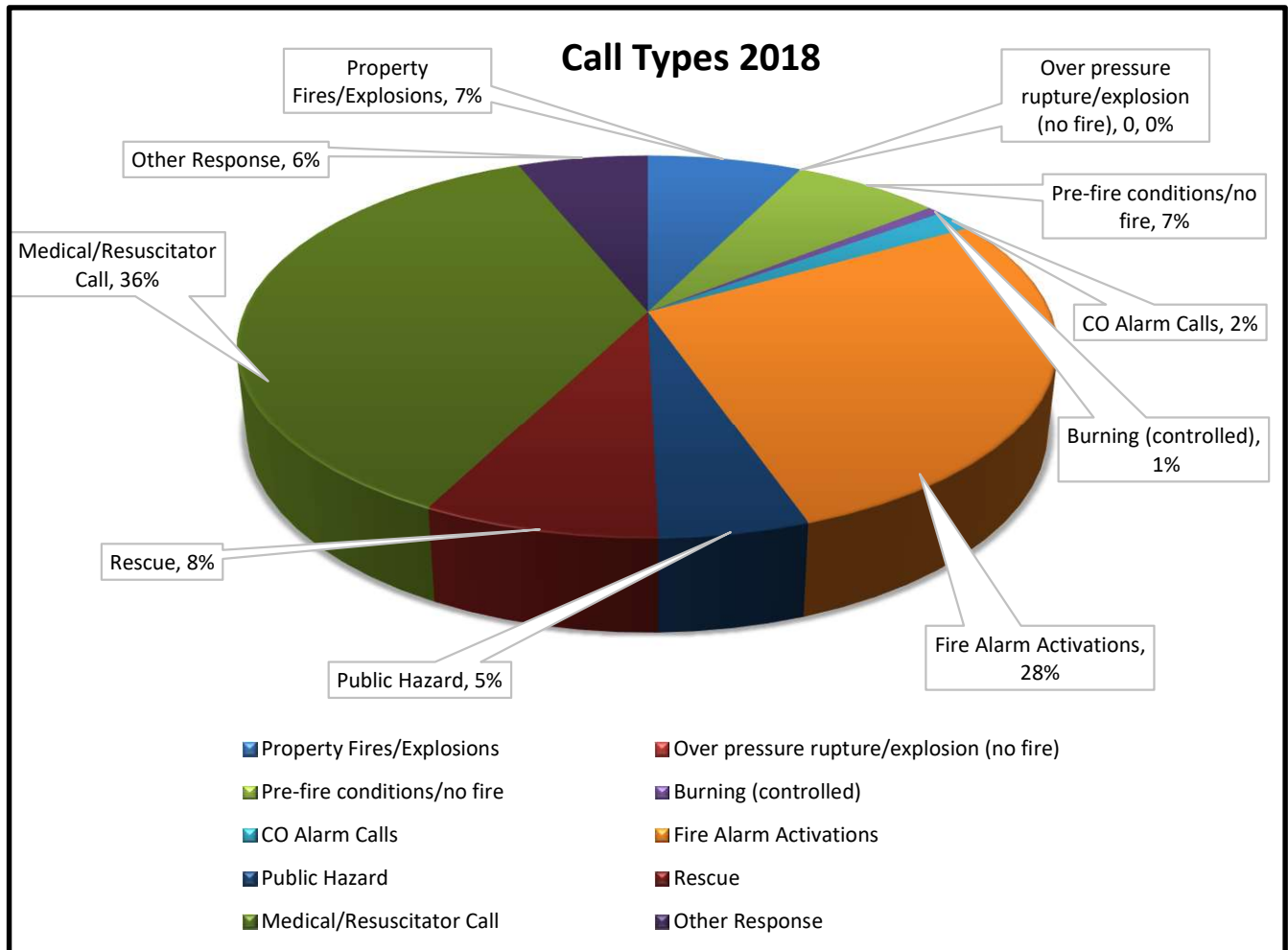
The following set of response charts (using the supplied data) help to identify the types of calls that are creating the bulk of response demands.

Note: The following chart may not reflect 100% of the yearly calls for service. This is due to the following:

- *To get a more accurate accounting of response times, some of the calls were removed from the data analysis due to identified anomalies in time stamping. For example, if an emergency response time duration took hours, it was removed based on the assumption of a data entry error.*
- *Only the emergency responses were measured, which is the recommended practice noted by the National Fire Protection Association and the Commission of Fire Accreditation International*
 - *For example, a department may have noted a total of 2,000 calls for service for the year, however, only 1,700 of those calls were emergency responses.*

Figure #7: Response Data for 2018

Yearly Comparisons of All Calls for 2018



As illustrated in the above chart, the top three types of calls that Thunder Bay Fire Rescue responds to are:

1. Medical/resuscitator, which account for 36% of the Department's overall responses.
2. Fire alarm activations, which account for 28% of the Department's overall responses.
3. Rescue related calls, which account for 8% of the Department's overall responses.

Note: More response information for 2018 can be found in Appendix "E".

The percentage comparison gives the Fire Chief and his staff the ability to monitor where the bulk of their resources are being utilized. This also offers greater focus for the Training Division to ensure that the firefighters are receiving the appropriate training related to the types of responses that will demand a higher skill set.

The high number of medical calls adds to TBFR's operational costs as well as creating additional pressure for ensure resources are available for other response. There are a couple of opportunities that can be examined to reduce the cost of the medical calls including assigning specific firefighters to respond to medical calls. For example, some municipalities will assign four firefighters per platoon for medical calls, who respond in smaller fire trucks. Other departments will work with the paramedic service to reduce the number of medical responses by identifying limited times when the fire department will respond. This may include such parameters as:

- Responding only when an ambulance is not available for specific time, or
- only responding to critical calls that require immediate attention such as a person experiencing a heart attack.

The Fire Chief has confirmed that TBFR has already implemented such parameters and the Fire Department is in fact responding to only high-level, critical needs calls. It is still recommended, however, that the Fire Chief meet with the EMS Chief to review the tiered response agreement in an attempt to further reduce the number of medical calls. During the review of responses for 2018, it was observed that medical related calls accounted for approximately 36% of the overall call volume. With a 2018 total of 9,158 calls, this equates to approximately 3,300 calls per year.

The Fire Chief is currently monitoring call volumes and response capability, however, incorporating an overview of station location and its reliability to respond to calls within its response zone should also be reported to Council. This review would entail identifying how many times units from a particular fire station are available or not available (due to being tied up at other calls) for responses. This will confirm whether there is a high percentage of reliability (ability to respond to calls without a delay). It may also identify whether there is a need for more staff to be available for support or secondary calls.

4.2.1 Future Call Volume Expectations

Over the past 10 years the fire department's call volume has been steadily increasing. In the 10-year period of 2008-2018, the call volume has gone from 6,903 to 9,158 responses, which equates to an increase of 32.7%, a difference of 2,255 calls. As can be seen in the following

chart (Figure #8) this increase in call volume is related to all types of calls, not just medical incidents.

Based on information obtained from the Planning Department, Thunder Bay's population is forecasted to grow by approximating 1% over the next 10 years. Taking into consideration the 10-year historical call data, and the 32.7% increase in call volume. If this increase were to continue, then TBFR could conceivably be responding to approximately 12,000 calls by 2030. Of course, there are many circumstances that could affect call volumes such as the age of the population, weather conditions, an increase/decrease in industry and even an increase/decrease in population. The estimated call volume of 12,000 is therefore something that would need to be monitored by the Fire Chief and staff, along with possible response time challenges.

Figure #8: Call Response Year-by-year Comparison

<i>Incidents by Response Type</i>											
						Year					
Response Type	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
<u>Property Fires & Explosions</u>											
01 Fire	322	253	266	266	201	194	176	196	150	160	170
02 Combustion Explosion (no fire)	1	1	2	1	0					1	0
03 NO LOSS OUTDOOR fire (see exclusions)		85	218	170	139	109	62	86	81	59	127
<u>Overpressure Rupture</u>											
11 Overpressure Rupture (no fire)		2			2	1	1	1	1	1	0
13 Overpressure Rupture - gas pipe (no fire)		2							1		0
<u>Prefire Conditions</u>											
21 Overheat (no fire, e.g. engines, mechanical devices)	90	61	47	32	48	32	51	42	34	41	45
22 Pot on Stove (no fire)	165	120	101	86	92	73	64	67	69	57	53
23 Open air burning/unauthorized controlled burning (no uncontrolled fire)	56	75	71	61	59	49	40	44	36	49	45
24 Other Cooking/toasting/smoke/steam (no fire)		102	116	112	124	132	156	175	156	149	160
25 Lightning (no fire)				1	5	2	1		1		1
26 Fireworks (no fire)		3	1	1	0		1	1	1	1	0
29 Other pre fire conditions (no fire)		27	41	45	36	26	32	36	47	32	46
36 Authorized controlled burning - complaint	63	63	46	36	42	48	43	36	27	30	22
<u>False Fire Calls</u>											
31 Alarm Equip - Malfunction	332	377	377	356	343	361	384	353	341	351	418
32 Alarm Equip - Accidental	321	341	364	337	330	348	323	297	283	320	284
33 Human - Malicious	90	78	77	89	94	85	70	73	81	100	104
34 Human - Perceived Emergency	216	198	204	207	189	159	173	192	183	143	160

35 Human - Accidental	162	173	195	165	196	196	190	226	178	200	308
37 CO false alarm - perceived emergency (no CO present)		42	28	49	38	30	35	55	40	56	65
38 CO false alarm - equipment malfunction (no CO present)		134	149	135	129	129	178	179	168	172	168
39 Other False Fire Call	42	34	61	39	63	45	38	43	46	41	39
<u>Public Hazard</u>											
41 Gas Leak - Natural Gas	25	35	28	28	24	28	31	30	19	35	31
42 Gas Leak - Propane	5	4	4	1	1	1	2	7	4	2	4
43 Gas Leak - Refrigeration	1	0	9	1	2	2			1		0
44 Gas Leak - Miscellaneous	9	6	11	5	7	12	4	7	3	4	9
45 Spill - Gasoline or Fuel	15	18	0	23	9	16	14	12	8	10	16
46 Spill - Toxic Chemical		2	0	0	0			1	2		1
47 Spill - Miscellaneous	11	10	6	4	5	6	4	3	5	6	7
49 Ruptured Water, Steam Pipe	27	14	14	15	12	18	14	15	12	8	12
50 Power Lines Down, Arcing	36	64	62	68	53	67	87	106	88	96	163
51 Bomb, Explosive Removal, Stdb	2	3	3	8	6	8	2	3	3	7	2
52 CO Reporting	141										
53 CO incident, CO present (exc false alarms)		31	23	16	23	33	41	38	47	65	41
54 Suspicious substance		4	2	2	1		3	3		1	1
57 Public Hazard no action required		14	15	22	32	32	27	15	32	34	47
58 Public Hazard call false alarm		20	12	21	23	23	35	29	32	40	27
59 Other Public Hazard	41	47	50	37	106	30	41	43	27	37	65
<u>Rescue</u>											
602 Confined space rescue (non fire)		0	1	0	2		1				0
603 High angle rescue (non fire)		2	0	1	1	2	1	3	1		0
604 Low angle rescue (non fire)		2	1	3	1	1	1	2		2	4
605 Animal rescue		7	4	8	10	7	2	2	3	3	2
61 Vehicle Extrication	16	17	15	18	19	25	26	16	10	13	10

62 Vehicle Collision	496	348	387	393	381	409	327	334	409	382	395
63 Building Collapse		1									
64 Commercial/Industrial Accident	1	1	2	1		1	2		1	1	1
65 Home/Residential Accident	2	1	5	2	5	3	3	3	3	3	2
66 Persons Trapped in Elevator	7	13	14	8	24	22	13	13	8	16	14
67 Water Rescue	12	11	12	12	11	8	5	10	14	13	11
68 Water Ice Rescue	17	14	15	6	11	15	3	7	13	22	12
69 Other Rescue	25	12	8	16	14	9	8	11	13	16	16
698 Rescue no action required		12	13	6	11	11	17	15	13	15	30
699 Rescue false alarm		14	11	19	7	13	7	3	12	8	8
<u>Medical/Resuscitator</u>											
701 Oxygen administered		458	567	608	707	396	241	233	197	239	177
702 CPR administered		10	15	10	12	11	10	8	6	6	7
703 Defibrillator used		3	8	2	3	3	3	3	1	3	3
72 Convulsions	8										
71 Asphyxia/Respiratory Condition	2115	1276	1297	1285	1236	1337	1440	1241	1278	1381	1283
73 Seizure	121	111	138	115	113	130	98	118	95	106	113
74 Electric Shock		0		0		1					0
75 Traumatic Shock	2	1	7	2	2		1		3	3	0
76 Chest pains or suspected heart attack	243	128	141	141	122	101	86	99	71	107	106
77 Stroke	28										
80 Cuts, Abrasions	46										
81 Fracture	22										
82 Burns	1		1	0			1			1	0
83 Person Fainted, Nausea	117										
84 Medical Aid not Required on Arrival	57	115	155	148	174	228	147	84	92	86	103
85 Vital signs absent, DOA	101	138	128	151	139	185	193	139	182	175	224

86 Alcohol or drug related	424	393	479	544	560	599	612	546	548	673	833
88 Accident or illness related - cuts, fractures, person fainted, etc.		142	188	201	222	352	417	345	431	516	450
89 Other Medical/Resuscitator Call	518	381	376	351	299	309	332	353	191	282	350
898 Medical/resuscitator call no action required		335	486	675	719	795	777	787	963	1393	1511
899 Medical/resuscitator call false alarm		39	48	43	37	33	39	21	29	37	26
<u>Other Response (assist, cancelled)</u>											
91 Assist Other Fire Department	2										
910 Assisting Other FD: Mutual Aid			1	1	3	2	1	1	1	3	3
911 Assisting Other FD: Automatic Aid					0					1	0
913 Assisting Other FD: Other				1	1						1
92 Assistance to Police (exc 921 and 922)	17	44	44	39	39	6	8	16	9	10	11
921 Illegal grow operation (no fire)				0	1		1				0
93 Assistance to Other Agencies (exc 921 and 922)	42			2	6	39	38	46	45	59	28
94 Other Public Service	55	41	42	18	83	65	63	69	93	60	63
95 Auth FD Activated Activity	3										
96 Call cancelled on route	148	269	297	291	289	353	352	402	594	702	585
97 Incident not found	46	21	46	34	10	16	21	32	32	38	41
98 Assist not req'd by other Agency	12	15	9	1	3	8	23	37	117	202	80
99 Other Response	26	10	13	7	23	16	21	10	19	14	14
Grand Total	6903	6828	7577	7602	7734	7806	7664	7423	7704	8899	9158

EMS and Alarm Activation call types account for 63% (36% + 27% respectively) of TBFR responses. Either way, if call volumes increase as noted in Figure #8, there will be increased pressure on the present staffing levels to continue to meet the 2016 Strategic Plan response time goals. This does not mean that an increase in staffing is required. What it does mean is that wherever possible, call volumes need to be reduced through public education campaigns and ongoing initiatives with EMS in relation to medical responses.

There needs to be a concerted effort on behalf of TBFR management to investigate options for the reduction of medical calls along with creating a more proactive campaign in educating the public about false alarms and how to avoid them.

4.3 Fire Department EMS Response Options

Approximately 36% of TBFR's responses are to medical assistance calls. It is reported that TBFR is called off by EMS approximately 20 to 30% of the time as their assistance is deemed not required. This "not required" situation is out of the control of TBFR because neither service (EMS nor Fire) knows what is required until someone arrives on scene to assess the situation. With all this noted, TBFR is reported first on scene 72% of the time. In a recent conversation with a Doctor who has been involved in evaluating the value of tiered response protocols, the Doctor noted the following:

- Since the inception of the tiered response program in Thunder Bay, survival rates for cardiac deaths have increased from 3.5% to approximately 9%. This increase cannot be totally attributed to Firefighter intervention, however, there is a direct correlation.
- For every minute that CPR is delayed, a patient's survival rate decreases by 10%. In 2019, the analysis of 2401 medical calls indicated that 72.41% of the time ambulance was not present when fire arrived on the scene.
- According to the Doctor, the Medical Priority Dispatch System in Ontario will be undergoing some changes. This in itself will result in a decrease in the number of medical calls that TBFR responds to.
- The Doctor was very clear in that fire needs to continue to respond to medical incidents for the benefit of the end user, the patient.

On another note, it should be made clear that in spite of the amount of medical calls that TBFR was dispatched to in 2019, in many instances they were cancelled enroute. This was as a result of Paramedics assessing the patient prior to TBFR arrival, or that the patient's condition

changes from the onset of the call and TBFR was cancelled by CACC (the EMS dispatch service). To assist in the containment of call volume increases and the associated costs the following options are put forward for consideration.

4.3.1 Response Option # 1

To help reduce the call volumes relating to medical responses, TBFR should consider responding to only those calls in which there is a time delay for ambulance response due to a lack of available ambulances and the most serious medical calls (Vital Signs Absent). By doing this, TBFR would only be called out by EMS when absolutely necessary.

This option would see a reduction in EMS related calls; however, this number cannot be quantified at this time.

Based on the recent information received from Dr. Affleck, any reduction of service by TBFR could have an adverse effect in relation to patient outcomes. As such, Emergency Management and Training Inc., is not recommending a reduction in the level of service that is presently being offered.

4.3.2 Response Option # 2

A second option is to utilize the second crew that is to be relocated from the two consolidated fire stations (in Section 9.2.2 Fire Station Option # 2) and splitting that crew into two fast response units for medical assistance calls. This option would accomplish two things: the first being less wear and tear on the much larger pumper trucks, along with ensuring that these pumper trucks (and crew of four) are available for fire related incidents. The second is that a pumper truck could be removed from the fleet and replaced with two smaller units. Depending on the size of the quick response units, the cost for each vehicle would be approximately \$150,000 each, which is a savings of \$300,000 on the replacement value of a new pumper truck (\$600,000). These firefighters could still respond to fire calls where additional firefighters were required.

Although this option does not actually reduce the amount of medically related responses it does offer a more cost-effective option while keeping the full size (4 person) crews available for larger response requirements, such as fires, motor vehicle collisions, rescues, etc.

EMS Response Estimated Costs

Based on information received from TBFR, the associated fuel costs amount to approximately \$22,000 to \$30,000 per year. The Fire Chief was not able to quantify any other vehicle costs such as repairs or possible out of service time. With an overall annual operating budget of \$31 million, the estimated fuel costs relating to medical responses equate to less than one percent.

In relation to staff costs, EMS calls have no impact on the amount of staff required by the Fire Department. The firefighters are already on duty and would continue to be on duty even if they stopped responding to EMS calls.

Responding to medical related incidents has an effect on the firefighters due to the situations they can become involved in; however, even if TBFR stopped responding to EMS calls, the firefighters would still be exposed to traumatic events at motor vehicle collisions, rescues, and fire related incidents. All of this has already been taken into consideration with the Health and Wellness program that is in place for the firefighters.

4.4 Community/ Fire Department Comparables

The population in Thunder Bay has only grown by a small percentage and the reported growth projections for the next 10 years has the City population at a continued lower growth rate than that of the rest of the Province of Ontario. Call volumes, however, are growing at a steady rate, an average of 3.27% per year (2008-2018). With the installation of more smoke/fire alarm systems in residences being connected with alarm companies (e.g. Bell and Rogers Home systems) and an aging demographics, these types of calls will continue to grow.

To assist with the planning process, a fire service needs to look at other comparable fire services within its own region to help identify similarities and possible shortcomings in its organizational structure, staffing, and equipment. In completing this type of review, it needs to be emphasized that no two communities are identical. Each community has its own unique challenges due to demographics, topography, and percentage of residential, commercial and industrial areas, along with transportation and road network challenges.

The comparable chart found in Appendix B provides a general overview of comparable communities and fire departments, their staffing levels and type, along with call volumes for each fire department.

4.4.1 Comparisons with Other Similar Sized Communities

A review of the following municipalities and their fire service was conducted: Sudbury, Central York, St. Catharines, Waterloo, Cambridge, Brantford, Guelph, Sarnia, and Niagara Falls.

These communities were chosen based on several factors including similar populations and fire department sizes, existence of colleges and universities in their municipalities, and, in some cases, the existence of a tourism industry. Another relevant reason was that these cities are used as comparables during negotiations.

A cross reference (comparables) chart can be found in Appendix B. The chart offers an at-a-glance view of the data received from each fire department regarding the following topics:

- Population
- Transient population (i.e. students, tourism)
- Number of tourists visiting per year
- Population versus fire suppression staffing
- Career, composite or volunteer
- Number of fire suppression staff
- Minimum staffing levels
- Minimum staffing on truck
- Number of fire stations
- Number of front-run vehicles
- Present shift system
- Response time criteria
- Response time goal (in place of response time criteria)
- General breakdown of call distribution
- Main tax assessment base
- Geographical overview of community
- Response time, department average – time of call to on location
- Response time, department average – travel time

4.4.2 General Findings of Comparisons Review

As expected, there is a variety of population versus staffing ratios between the communities surveyed. No definitive conclusion or recommendation can be drawn from this comparison. This data does, however, offer a snapshot of information which can be used to identify if

Thunder Bay is in a similar situation relating to call volumes, population versus staffing, and composition of the service.

The 2018 Municipal BMA study also noted that in the group of communities that are 100,000 population and above, Thunder Bay is paying one of the highest costs per ratio (for fire services) than any other city in this category. It is worth noting that even though TBFR has a greater firefighter to population and cost ratio than some of the departments that Thunder Bay was compared with, due to its geographical location, TBFR does not have the luxury of relying on other bordering full-time fire departments to assist when needed. This fact must be kept in mind whenever fire station and staffing adjustments are being considered.

Thunder Bay Fire is also the provincial/regional response team for specialty responses such as hazardous materials and urban search and rescue for the surround areas. They also utilize fire service agreements where required. The utilization of these fire service agreements can be attributed to several factors:

- Area of landmass – Thunder Bay is comprised of approximately 320 square kilometres with a total of eight fire stations in the City.
- Population equates to approximately 344 people per square kilometre.
- Population per firefighter equates to approximately 1 firefighter per 600 population
- The overall geographic makeup of Thunder Bay compared to the other fire departments is similar with a mix of residential, commercial, and industrial. Thunder Bay also has a university with a student population.
- Thunder Bay also has high rise buildings within the community.
- The City is crisscrossed with railway and road networks.

Like the other fire departments surveyed, Thunder Bay Fire Rescue responds to thousands of calls per year out of its fire stations. These calls are a mix of fires, medicals, motor vehicle collisions, false alarms and other miscellaneous calls for assistance.

Based on the review of the comparables, TBFR does have a higher firefighter to population ratio than most other communities and the cost per capita is higher than most other communities as well. But it is the location of the City that has an influence on the staffing needs and specialization of the Department for the technical responses (hazmat and rescue) to the City of Thunder Bay and other neighbouring communities.

Unlike communities such as Waterloo, where three career fire departments border each other (Waterloo, Kitchener and Cambridge) and can rely on each other for support, there is no other department within several hours drive that can accommodate this type of fire and specialized response to the community.

Recommendation(s)

Rec #	Recommendation	Estimated Costs	Suggested Timeline
9	TBFR to create a more proactive campaign at educating the public about false fire alarms and how to avoid them. At the same time work with EMS on reduction of medical responses, wherever possible.	Staff time only	Short-term (1-3 years)

SECTION 5: Facilities, Vehicles, and Equipment

5.1 Fire Station Review

5.2 Training Facilities

5.3 Mechanical/ Maintenance Division –
Apparatus and Equipment

5.4 Fire Apparatus – New and
Replacement Schedules

SECTION 5: FACILITIES, VEHICLES, AND EQUIPMENT

5.1 Fire Station Review

There are eight fire stations located throughout the City. A review of the existing facilities was conducted by Emergency Management & Training Inc. and will be addressed in this section. This walkthrough consisted of a visual inspection; no destructive testing or engineering assessment was conducted.

5.1.1 Fire Station Location

Fire stations should be positioned to offer the most efficient and effective response to the community they serve. Centering them within a determined response zone that is simply based on “timed” responses is not always the best option to implement. Fire station location depends on many factors such as key risks within the response zone, future growth of the community, and the response team composition. Another consideration is the geographical layout of the community that can include natural barriers or divides (such as water, railway tracks) that may make it necessary to have some stations located within proximity of each other.

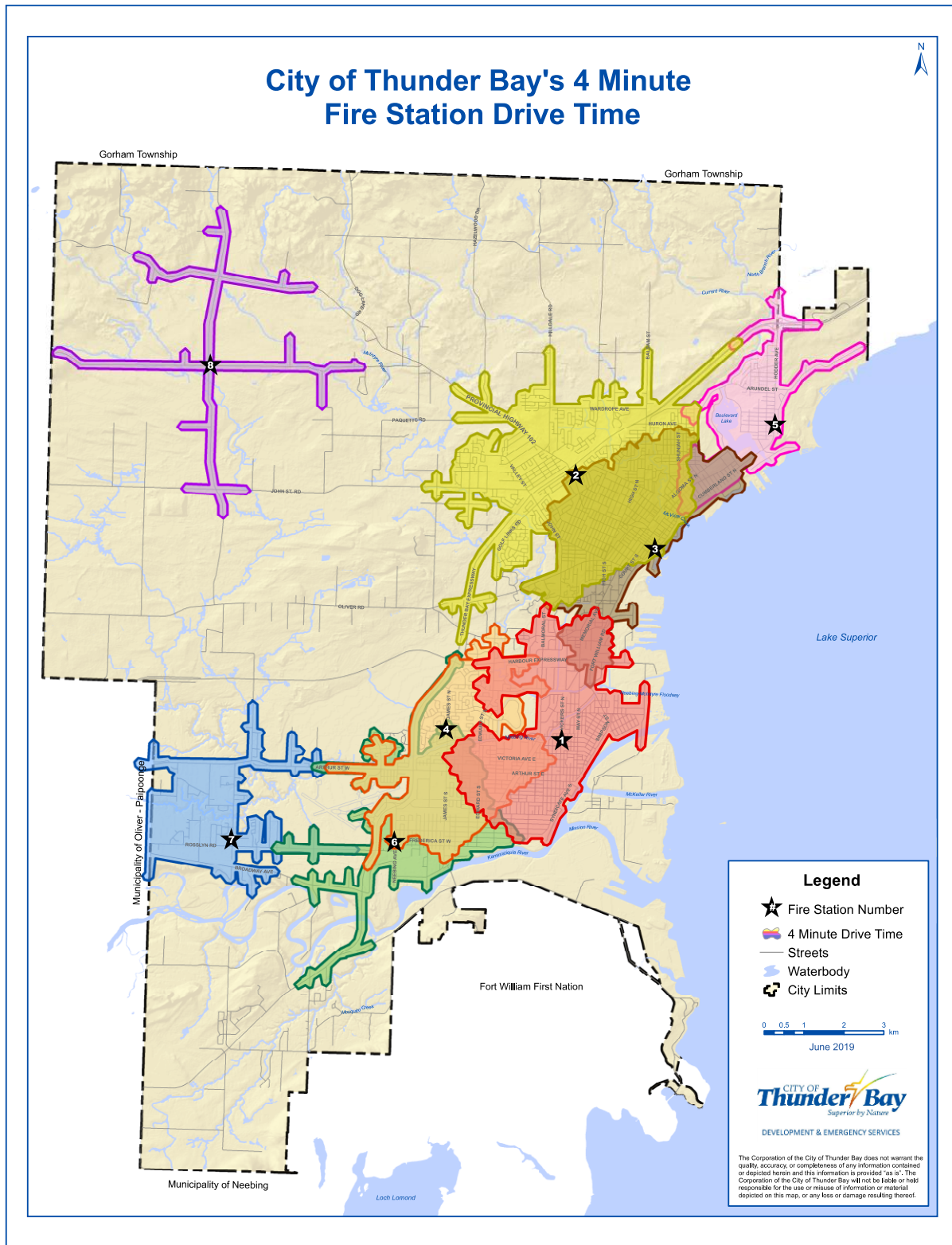
Fire stations should be situated to achieve the most effective and safe emergency responses. Distance and travel time may be a primary consideration; however, if a basic expectation of response time is set by the community’s decision makers, a more realistic level of service and fire station location criteria can be identified.

In the following maps, the shaded area around the fire station denotes a response time zone:

- The response time zone in the following map is for four-minute drive time. This is the NFPA recommended drive time for career fire departments.

The response mapping and related response data supplied in this document should not be taken in isolation. A full in-depth study along with an annual report submitted to Council by the Fire Chief with an update on the key performance measures and expectations is required.

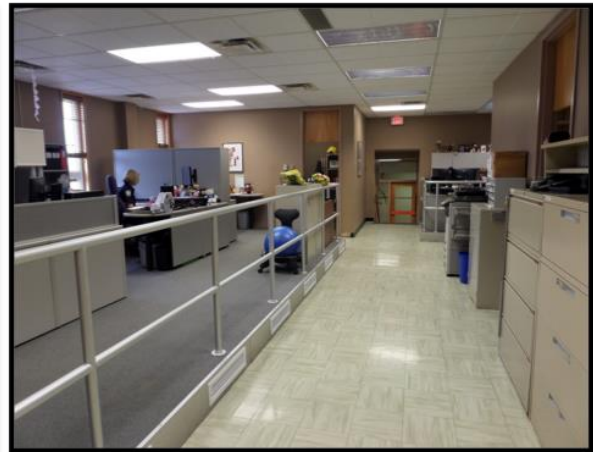
Figure #9: Drive Time of 4-Minutes from Each Fire Station



The map indicates that Thunder Bay is well covered in the major populated areas based on response time criteria. There are, however, some less densely populated sections of the City that are outside of the 4-minute drive time.

Fire Station #1 – Headquarters





Regional EMS responds out of the fire station, providing an efficient use of the facility by offering both services out of the same location for the City of Thunder Bay.





This building is at capacity and it was observed that some structural issues are present with the second floor and its increasing slope. In a past fire services review, it was identified that approximately \$900,000 dollars worth of upgrades was required. It is safe to assume that with the passage of time, this cost has increased to over \$1 million and this only addresses the required repairs; it would not create a long-term fix for the fire department.

Unfortunately, the engineer's report did not quantify how these repairs would expand the life expectancy of the fire station.

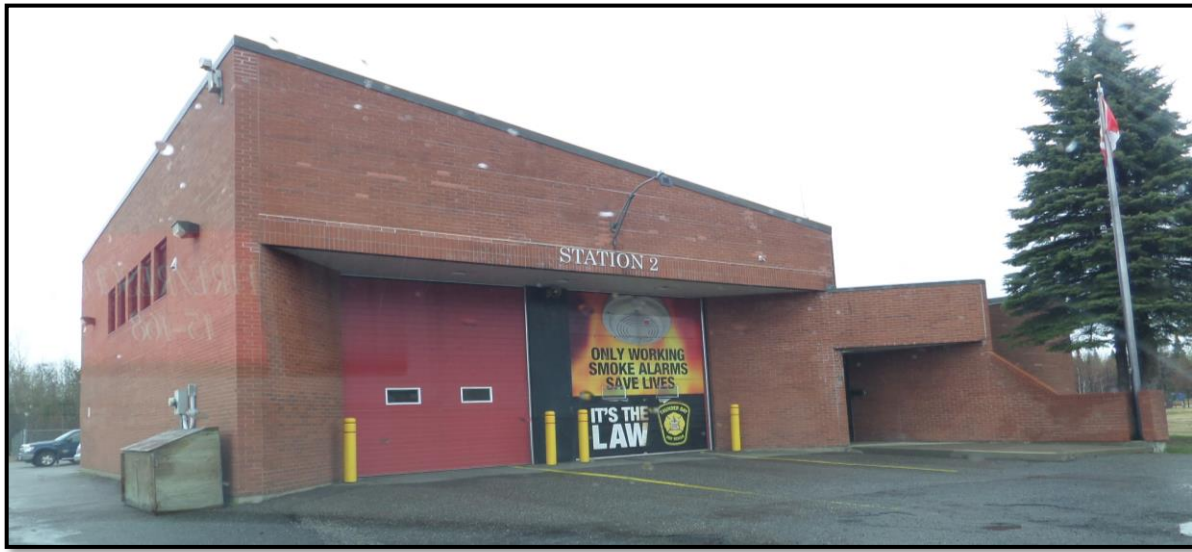
Based on this information, EMT is recommending that Council support the option of headquarters being dismantled and that the Administration staff be moved to Station #3, which has ample room on the upper floor areas to accommodate staff. Station #3 is a newer building and would meet the needs of Administration for decades to come.

In place of the current headquarters fire station, a smaller two-bay fire station, much like the two newer fire stations (Station #6 and #7) could be built on City-owned property close to the location of the present headquarters. This move would not only save the City over a million dollars in repairs to an aging, out-of-date facility, it will also make better use of present facilities within the Department's inventory.

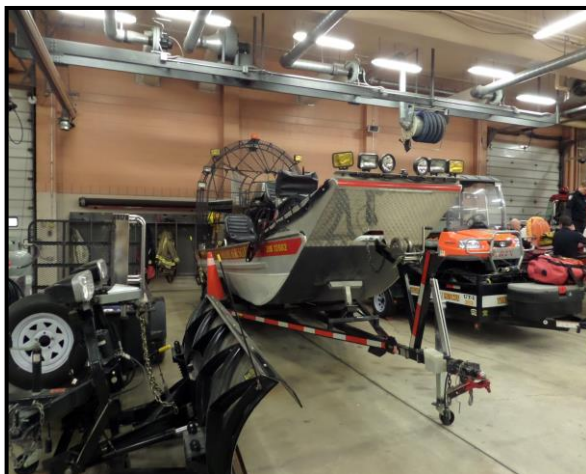
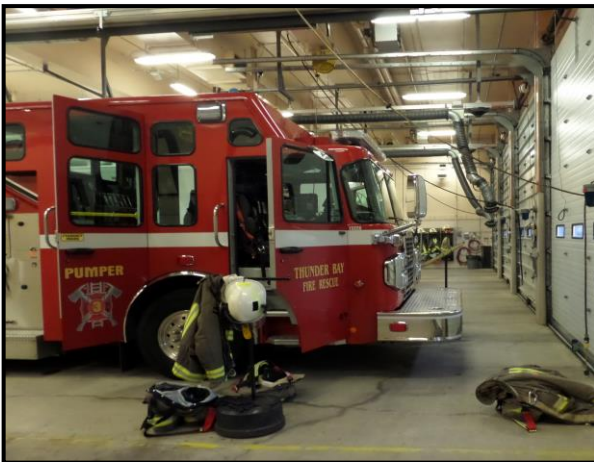
The estimated cost of a new fire station would be approximately \$1.5 - 2 million. There would also be the cost of demolishing the headquarters building. This cost can range greatly depending on city by-laws, type of demolishing to be done, and any possible hazardous materials abatement required; however, a general range of \$10.00 to \$50.00 per square foot could be realized.

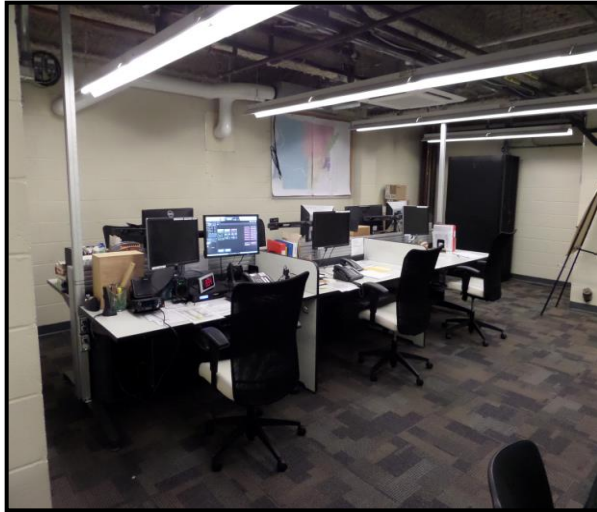
No other equipment or staff would be required as they would be reallocated from the current headquarters facility to the new facility. More information is presented on this recommendation within Section 9 of this document.

Fire Station #2



This facility was found to be in good condition with no recommendations at this time.

Fire Station #3



This facility was found to be in good condition with no recommendations at this time.

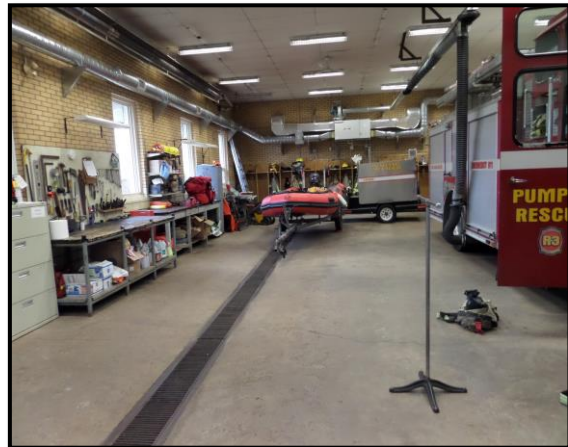
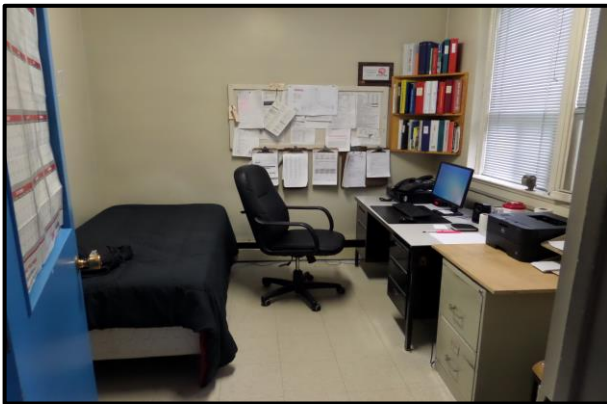
With reference to Station #1 – Headquarters, it can be seen in the photos of Station #3 that there is room to renovate the second floor to accommodate Administration Staff. The back-up EOC and Dispatch could be relocated to the Training Centre. The EOC does not have to be a permanent fixture within a building; the building/location only has to have the ability to be converted to an EOC in times of emergencies.

Fire Station #4

This station also houses the District Ambulance (EMS) Service, making efficient use of City resources.



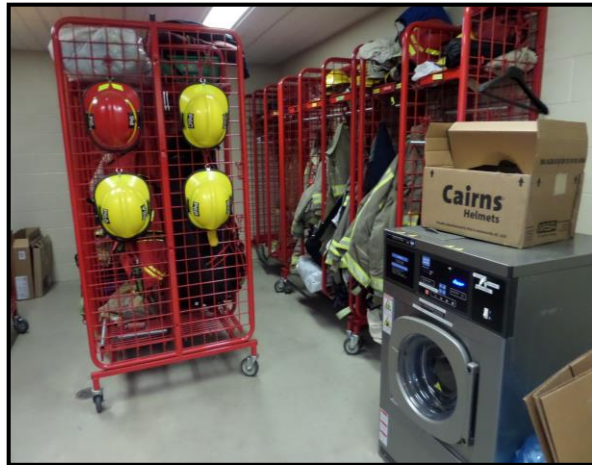
This facility was found to be in good condition with no recommendations at this time.

Fire Station #5

This facility was found to be in good condition with no recommendations at this time.

Fire Station #6



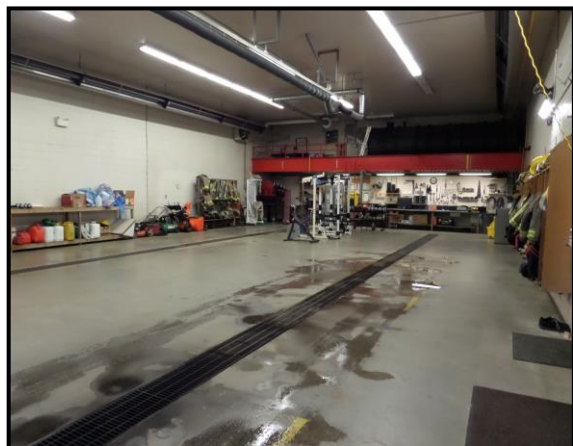


This facility was found to be in good condition with no recommendations at this time.

Fire Station #7



This facility was found to be in good condition with no recommendations at this time.

Fire Station #8

This facility was found to be in good condition with no recommendations at this time.

5.1.2 Overview of Facilities Review

Emergency Management & Training Inc. found that the fire stations are generally in good condition. Overall, the office spaces, gear storage, and vehicle bays were found to be well configured and maintained.

Aside from the changes recommended for Station #1, the only recommendation to add to this section is the continued implementation of the “Safe Haven” concept that has been built into Stations #6 and #7. This type of program not only makes each fire station more a part of the community, it also offers a safe refuge for those in need of assistance. The Safe Haven Program is a system that is tied into the dispatch centre. When someone activates the emergency button, a direct open connection is provided to dispatch so the person in need can communicate their situation and get help sent to either the station (if vacant due to the firefighters being out on a call) or to another location as required.

Both the Guelph Fire Department and Waterloo Fire Rescue have implemented this type of program in many of their fire stations. Both departments have recorded incidents in which the Safe Havens have been able to send police to the aid of someone and/or have been able to respond to a fire quicker because local residents knew that this system was in place at the local fire stations (two very positive reasons for the installation of such a low-cost public safety initiative).

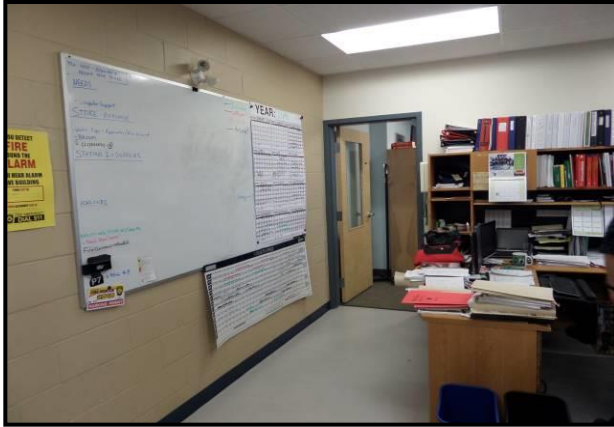
It is recommended that these public safety systems be installed in all fire stations along with a public education program to promote each fire station as a more integrated public safety measure. The estimated cost to install these at the other fire stations is approximately \$3,000 - \$5,000 per station.



5.2 Training Facilities

As previously indicated, Thunder Bay Fire Rescue has a training centre located within its City boundaries.





While all fire services in Ontario have the option of utilizing the Ontario Fire College's (OFC) training grounds in Gravenhurst, this is a logistical challenge and impractical for TBFR due to the distance from Thunder Bay to the OFC. Having a local training facility offers the ability to train and practice on a wide range of training programs and more importantly, it keeps the fire service resources in the community it serves. Keeping staff in the Thunder Bay area is also a cost savings for not having to send staff to the OFC.

Staff with the Training Division noted that the Department is promoting the training facility for rental purposes by local colleges that have firefighter programs. TBFR is also identified as a Regional Training Centre for the Ontario Fire College. This partnership is a positive, cost-effective endeavour for two key reasons. The first being OFC related programs can be brought to the training facility, which results in fire service staff getting the training they require, without having to leave the City. The second reason is that the City of Thunder Bay through the TBFR training centre is now able to offer provincially recognized training to local fire departments on a cost recovery basis. This cost recovery ability makes the training centre more of a financially sustainable entity for the City.

Based on Emergency Management & Training Inc.'s experience and considering the size of the City of Thunder Bay's fire department, it is recommended that TBFR continue to utilize the training facility's resources at their disposal along with identifying ongoing joint opportunities to enhance the use and possible revenue generation of this facility.

5.3 Mechanical/ Maintenance Division – Apparatus and Equipment

The Mechanical/Maintenance Division is located at Fire Station #3. They are equipped with their own set of bays, office area and parts section.

As noted in Section #3, this Division consists of two personnel, performing the servicing and maintenance tasks on all fire service mobile, portable and stationary equipment. The Division is also responsible for the CSA Z94 Respiratory Protection Program and mandatory program administrator roles. The Division takes care of stationary equipment that includes stand-by generators, breathing air compressors, fill stations and portable equipment such as smaller pumps, chainsaws, Jaws of Life, lawn mowers, snow blowers, outboard motors, and boats.





The facility was found to be in good condition. Interviews with staff confirmed that the present facility meets the needs of the Division.

5.4 Fire Apparatus - New and Replacement Schedules

Reliability of fire apparatus is critical to the successful operation of a fire service. Over the long-term, delaying the replacement of a vehicle is inadvisable as it will add to the overall maintenance costs of the apparatus and can influence insurance costs based on the Fire Department's Fire Underwriters Survey rating.

5.4.1 Fire Underwriters Survey – Vehicle Replacement Recommendations

When assessing a Fire Department's ability meet the needs of the community, the Fire Underwriters Survey considers the age of a fire truck as one of its guidelines. The *Major Cities* section (outlined in blue) is the recommendation for vehicle replacement for a city the size of Thunder Bay. This allows for up to a 15-year replacement cycle for first line units, and a 20-year replacement cycle for reserve units.

Table #3: FUS Replacement Cycles

Apparatus Age	Major Cities ³	Medium Sized Cities ⁴ or Communities Where Risk is Significant	Small Communities ⁵ and Rural Centres
0 – 15 Years	First Line	First Line	First Line
16 – 20 Years	Reserve	Second Line	First Line
20 – 25 Years ¹	No Credit in Grading	No Credit in Grading or Reserve ²	No Credit in Grading or Reserve ²
26 – 29 Years ¹	No Credit in Grading	No Credit in Grading Or Reserve ²	No Credit in Grading Or Reserve ²
30 Years ¹	No Credit in Grading	No Credit in Grading	No Credit in Grading

1. All listed fire apparatus 20 years of age and older are required to be service tested by a recognized testing agency on an annual basis to be eligible for grading recognition (National Fire Protection Association 1071)
2. Exceptions to age status may be considered in small to medium sized communities and rural centre conditionally, when apparatus condition is acceptable, and apparatus successfully passes required testing
3. Major cities are defined as an incorporated or unincorporated community that has:
 - a. a populated area (or multiple areas) with a density of at least 400 people per square kilometre; AND
 - b. a total population of 100,000 or greater.
4. Medium Communities are defined as an incorporated or unincorporated community that has:
 - a. a populated area (or multiple areas) with a density of at least 200 people per square kilometre; AND
 - b. a total population of 1,000 or greater.
5. Small Communities are defined as an incorporated or unincorporated community that has:
 - a. no populated areas with densities that exceed 200 people per square kilometre; AND
 - b. does not have a total population in excess of 1,000.

Fire Underwriters Survey definition of 1st line, 2nd line and Reserve is:

- 1st line is the first fire truck utilized for response at the fire station
- 2nd line is the next truck to be used if the 1st line unit is tied up at a call, and

- Reserve is the vehicle kept in the fleet to be put into service if a 1st line or 2nd line vehicle is out of service.

The Fire Underwriters Survey is reviewed by insurance companies. Provided that the Fire Department adheres to the recommended replacement timelines through an approved capital replacement schedule, the Department will obtain its fire rating for vehicle replacement.

By ensuring that the vehicles are being replaced on a regular schedule, Thunder Bay is demonstrating due diligence towards ensuring a dependable response fleet for the Fire Department and the community it serves through its vehicle replacement schedule.

The National Fire Protection Association 1911, *Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus* also supports a regular replacement schedule of fire vehicles. This standard includes guidance on retirement criteria for fire apparatus. Much like the FUS, National Fire Protection Association 1911 recommends that all front-run vehicles are replaced on a 15 to 20-year cycle, depending on the community size.

For fire departments that are considering refurbishing their vehicles to extend the in-service life, reference can be made to the National Fire Protection Association (NFPA) 1912, *Standard for Apparatus Refurbishing*. It should be noted that while the FUS do take refurbishment of vehicles into consideration, no credit rating is assigned to vehicles over 20 years of age for major cities.

The Thunder Bay Fire Rescue is well-equipped with pumper trucks, aerials, tankers and support vehicles required for primary response to the City. The vehicles and small engines (pumps, generators, etc.) are on a standard replacement cycle and maintenance and repair work is addressed as quickly as possible by Thunder Bay or other recommended facilities.

5.4.2 Apparatus Replacement Schedule (as noted by TBFR)

National Fire Protection Association and Fire Underwriters Survey both recommend replacement of front-run units after 15 years. This same vehicle can then be put into a secondary role. As such, all front-run units should be scheduled for replacement at the 15-year stage with the back-up/secondary units being replaced at 20 years. Once a pumper truck has passed the 20-year stage, no credit is given by Fire Underwriters for major cities.

Recommendation(s)

10	Implementation of the "Safe Haven" type of system that has been built into stations #6 and #7 be installed in all fire stations along with a public education program to promote each fire station as a more integrated public safety measure.	Approx \$3,000 - \$5,000 per station	Short-term (1-3 years)
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SECTION 6: Risk Assessment and Emergency Management

- 6.1 Community Risk Assessment – Current and Future Needs
- 6.2 Integrated Risk Management Approach
- 6.3 Emergency Management Program

SECTION 6: RISK ASSESSMENT AND EMERGENCY MANAGEMENT

The first and most effective way to reduce injuries, death, and property damage due to fire is through public education, inspections, and enforcement. The Fire Prevention Program addresses these key components of fire safety which starts with conducting a community risk assessment.

6.1 Community Risk Assessment – Current and Future Needs

When conducting a community risk assessment, it is important to remember that it is Council that approves the level of service within the community. Therefore, it is the Fire Chief's responsibility to inform Council on the risks that exist within the community, along with the related needs and circumstances. Based on the information received from the Fire Chief, Council can make an educated decision regarding recommended improvements and/or adjustments.

The National Fire Protection Association (NFPA) 1201 – Standard for Providing Fire and Emergency Services to the Public, section 4.3.1 states “The Fire & Emergency Service Organization shall carry out a program to develop public awareness and cooperation in management of risk, based on analysis of relevant loss records and potential hazards in the identifiable physical and social sectors of the community.”

Section 4.3.5 notes that the Fire and Emergency Services Organization shall provide customer service-oriented programs and procedures to accomplish the following:

1. Prevent fires, injuries, and deaths from emergencies and disasters
2. Mitigate fires, injuries, deaths, property damage, and environmental damage from emergencies and disasters
3. Recover from fires, emergencies, and disasters
4. Protect critical infrastructure
5. Sustain economic viability
6. Protect cultural and historical resources

The “needs” of a community can be defined by identifying and cataloging the types of buildings, infrastructure, and demographics of the local area, which in turn can be extrapolated into the types of services that would be offered and needed. The “circumstances” are considered the ability to afford the level of service to be provided. Together, the needs and circumstances assist in identifying a level of service for the community. This combination meets the expectations of the public for safety and the affordability of this level provided.

Conducting a risk assessment is a practical information gathering and analyzing exercise. It is intended to create a community fire profile that will aid in identifying appropriate programs or activities that can be implemented to effectively address the community's fire safety needs. As the community continues to change, the document should not become dormant, as the results are only accurate to the time of which the review was conducted.

The recently updated *Fire Protection and Prevention Act.*, along with the NFPA 1730 Standard on *Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations*, note that this review should be conducted at a minimum every five (5) years or after significant change.

The NFPA 1730 standard also establishes a process to identify and analyze community fire risks. There are seven (7) components of a Community Risk Assessment outlined in the NFPA Standard. These components are:

1. Demographics
2. Geographic overview
3. Building stock
4. Fire experience
5. Responses
6. Hazards
7. Economic profile

6.1.1 Current Condition

The City of Thunder Bay is comprised of a mix of residential, commercial and industrial buildings. Along with these buildings there is a large waterfront section (Lake Superior) along the City's southern edge. The City is crisscrossed with several railways that could at times reduce or restrict the ability of fire trucks to take the most direct route to an emergency incident.

With all of this in mind, the Fire Chief and staff have been very proactive in identifying all of these concerns and have created response criteria for each type of incident or hinderance to a timely response. The TBFR team should be commended for their diligent efforts.

TBFR has also created a list of vulnerable occupancies, hazardous materials sites and other facilities and/or concerns that may impact on the efficiency and effectiveness of their response in cases of emergencies.

In relation to its fire prevention and public education initiatives, Thunder Bay Fire Rescue has a Fire Prevention/Public Education Division that is very proactive in identifying present and future program needs. The Division is aware of the minimum fire prevention programs required for a community under the *Fire Protection and Prevention Act*. The minimum acceptable level that a municipality must provide includes the following:

- Simplified Risk Assessment
- Smoke Alarm / Carbon Monoxide Program
- Fire Safety Education materials distributed to residents /occupants
- Inspections upon complaint or Request to Assist with code compliance (including any necessary code enforcement)

The Fire Prevention/Public Education Division is doing an admirable job in meeting and exceeding these requirements and should be applauded for their efforts.

6.1.2 Preparing for Future Needs

Continual assessment of the community and its needs will allow Thunder Bay Fire Rescue to be proactive in its education and enforcement programs for the community and to all fire service staff. When fires or other emergencies occur within the community, the firefighters can be better prepared to cope with the emergencies because they are trained and aware of the unique hazards that are found within the community. These hazards need to be identified in a Risk Assessment conducted by Thunder Bay and its Fire Service.

6.2 Integrated Risk Management Approach

The Integrated Risk Management (IRM) Approach was introduced by the Office of the Fire Marshal and Emergency Management. It is meant to combine a review of building stock, fire safety and prevention related issues to be addressed, ability to effectively and efficiently respond to emergencies, and how well equipped and trained the firefighters are to deal with emergencies within the community.

Conducting a review of every building (as recommended by the IRM) within the City of Thunder Bay may not be practical, however, utilizing National Fire Protection Association 1730 definitions of risk categories may guide Council in deciding the focus and service level within the community. Council should determine (with input from the Fire Chief) an acceptable level of risk to manage within the community based on its needs and balanced with the circumstances to deliver the services.

National Fire Protection Association 1730 defines the risks in three categories and provides examples for each. These risk categories are:

- High-Risk Occupancy – An occupancy that has a history of high frequency of fires, or high potential for loss of life or economic loss. Alternatively, an occupancy that has a low or moderate history of fire or loss of life, but the occupants have an increased dependency in the built-in fire protection features or staff to assist in evacuation during a fire or other emergency.
 - Examples: apartment buildings, hotels, dormitories, lodging and rooming, assembly, childcare, detention, educational, and healthcare
- Moderate-Risk Occupancy – An occupancy that has a history of moderate frequency of fires or a moderate potential for loss of life or economic loss.
 - Examples: ambulatory healthcare and industrial
- Low-Risk – An occupancy that has a history of low frequency of fires and minimal potential for loss of life or economic loss.
 - Examples: storage, mercantile, and business

6.2.1 Current Condition

Thunder Bay Fire Rescue staff have identified the vulnerable occupancies (care facilities) and schools within the community that are a high priority for annual inspection. Thunder Bay Fire Rescue has been as proactive as possible based on present staffing and available resources; however, a more formal proactive inspection program needs to be put into place that goes above and beyond conducting inspections on a request and complaint basis.

To accomplish this, Thunder Bay Fire Rescue should keep track of the following building stock within the City of Thunder Bay to ensure that they are meeting the inspection recommendations outlined in the following Fire Underwriters Survey (FUS) chart:

Table 2: FUS Inspection Frequency Chart

Occupancy Type	Benchmark
Assembly (A)	3 to 6 months
Institutional (B)	12 months
Single Family Dwellings (C)	12 months
Multi-Family Dwellings (C)	6 months
Hotel/Motel (C)	6 months
Mobile Homes & Trailers (C)	6 months
Seasonal/Rec. Dwellings (C)	6 months
Commercial (F)	12 months
Industrial (F)	3 to 6 months

The FUS Suggested Inspection Frequency Chart is highly aggressive and being able to provide inspection frequencies at the noted levels may be difficult to achieve. As a benchmark, however, the FUS chart provides an optimal set of goals for Thunder Bay Fire Rescue to strive towards. Priority should be given to vulnerable occupancies, institutional facilities, hotels/motels, multi-family dwellings (including basement apartments), and assemblies.

Utilizing the Integrated Risk Management approach in conjunction with the guidance from NFPA 1730 standard will provide an overall picture of the resources, time, and tools required to keep the fire risks in the community to a manageable level (as defined by Council).

It is recommended that the Fire Chief direct the Fire Prevention and Public Education Division to review Thunder Bay's inspection program identifying levels of desired frequency for inspections outlined in the Fire Underwriters Survey (FUS) Chart noted above in Table 2. The FUS strongly recommends that a level of frequency be identified by the Fire Service in its quest towards ensuring a fire-safe community. The firefighters of Thunder Bay Fire Rescue may not be able to meet the FUS recommendations, but a set of goals and expectations should be outlined to identify staffing hours required to achieve these goals and expectations.

The utilization of the IRM approach will provide an understanding of a fire risk building-by-building that can be extrapolated to show the hazards in given areas. Along with the risk assessment, the IRM approach will aid in the design and formation of the fire prevention inspection and education programs.

A thorough risk assessment can also avoid invalid comparisons between your fire service and others. A municipality with a similar population may have very different fire risks, and therefore very different fire protection needs. A thorough risk assessment will ensure that such comparisons are valid. By providing a valid basis for comparison, a sufficient risk assessment can also provide confidence that innovations introduced elsewhere can be successfully applied in your municipality.

As of July 2019, the Ontario Regulation 378/18 on conducting a community risk assessment has come into force. This regulation notes the following:

When to complete (at least every five years)

- 3. (1) The municipality or fire department must complete a community risk assessment no later than five years after the day its previous community risk assessment was completed.*
- (2) If a municipality, or a fire department in a territory without municipal organization, comes into existence, the municipality or fire department must complete a community risk assessment no later than two years after the day it comes into existence.*
- (3) A municipality that exists on July 1, 2019, or a fire department in a territory without municipal organization that exists on July 1, 2019, must complete a community risk assessment no later than July 1, 2024.*

Based on the excerpt taken from the new Ontario Regulation, a fire department should be conducting a Community Risk Assessment every five years commencing July 1, 2019. The current Thunder Bay Community Risk Assessment is dated, and it is recommended that an updated CRA be completed in the near future; it is inadvisable to wait until 2024 as per the regulation requirements. It is also recommended that the Fire Chief provides Council with a fire inspection program that addresses identified needs and expected outcomes.

In relation to staffing (Fire Prevention) hour requirements, an initial assessment needs to be completed to identify hours presently being spent on inspections along with identification of the annual goal. By doing this assessment, future hourly requirements can be consolidated into a report to Council.

Note: Due to the complexities with fire prevention inspections, along with the variety of building stock in a community, there is no industry standard formula for calculating number of hours based on building stock. This can only be accomplished through experience, familiarity, and understanding of the community's needs.

6.3 Emergency Management Program

Emergency Management & Training Inc. conducted a review of Thunder Bay's Emergency Management Program, including existing training for Thunder Bay employees and response planning. As mandated by the *Emergency Management and Civil Protection Act* (EMCPA), all municipalities in Ontario must have an emergency response plan and an emergency planning program. For every community in Ontario, there must also be an identified Community Emergency Management Coordinator (CEMC).

Based on interviews with the Fire Chief and Division Chief of Administration and Emergency Planning that oversees the emergency management program, it would appear that the City's Emergency Response Plan (ERP) complies with all required legislation and that annual training exercises are conducted to ensure that the ERP is reviewed and practiced on a regular basis.

The Division Chief of Administration and Emergency Planning in his role as the CEMC and emergency management program coordinator is very busy in relation to Thunder Bay being one of host communities for evacuees from floods and wildfires in Northern Ontario. Along with these duties, it should be noted that this Division Chief's portfolio, is also charged with quite a few other logistical tasks such as the issuing of uniforms, boots, rank insignias and other miscellaneous items which does not appear to be a good use of the Division Chief's time. Logistical tasks such as this could be easily assigned to a civilian working in the administration division.

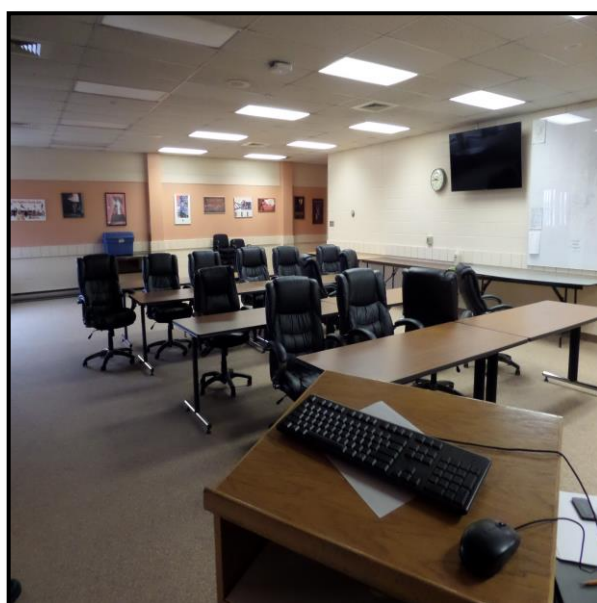
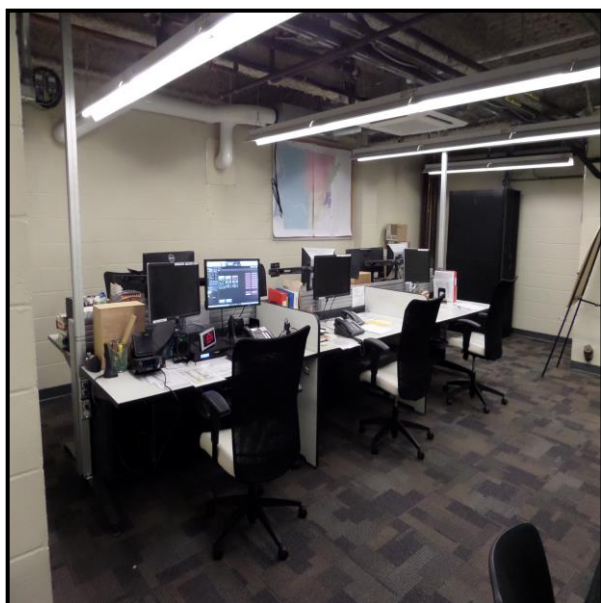
It is recommended that this position of Division Chief of Administration and Emergency Planning be re-evaluated to make the best use of this senior officer's time. This evaluation may result in such recommendations as to reassign some of the general duties to the civilian staff. Alternatively, it could result in redefining the actual roll of this Division Chief and its future needs/focus.

6.3.1 Current Condition of the Emergency Management Program

The primary and secondary Emergency Operations Centres (EOC) are functional spaces that can be set up, as needed, by the EOC group.

The primary EOC is located at Station #3 and has served the community well. The fire station has a back-up power system in the case of a power failure in the community which makes this a suitable location. The alternate EOC is located at Station #1 and is also equipped with a back-up

power system. Superior EMS is on the list as a second alternate EOC location. This gives the City three EOC's which creates a high level of flexibility in the Emergency Management program.



There is a well-written Municipal Emergency Plan and Communications Plan, overseen by the CEMC. Annual training is also in place to meet the requirements set out by Emergency Management Ontario.

Based on a review of the two present EOC facilities and the program in place, the City is well equipped in relation to its EOC and no recommendations are being put forth for this section.

Recommendation(s)

Rec #	Recommendation	Estimated Costs	Suggested Timeline
11	The Fire Chief to direct his Fire Prevention/Public Education Division to review Thunder Bay's inspection program, identifying levels of desired frequency relative to the FUS (see chart in Appendix "B").	Staff time only	Short-term (1-3 years)
12	Upon completion of the assessment in Recommendation #11, the Fire Chief to provide Council with a draft policy for review and passage that outlines a proactive fire inspection program to address identified needs and expected outcomes. This program should outline the building types, the frequency of inspections, and the staffing/hourly requirement.	Costing would depend on resource requirements to meet Fire Chief recommendations	Short-term (1-3 years) and ongoing
13	TBFR staff to present an updated Community Risk Assessment to Council in 2020.	Staffing related costs only	Short-term (1-3 years) and every five years thereafter
14	Conduct a review/ evaluation of the Division Chief of Administration and Emergency Management's position to identify time spent on responsibilities. Based on the review, a decision is to be made on what duties the Division Chief should be assigned, and what duties can be reassigned to other staff.	Initially staffing related costs only, but may change due to outcome of evaluation	Immediate (0-1 year)

Section 7: Finance, Budgeting, and Capital

Forecast Plan

7.1 Operating Budgets

7.2 Capital Forecasts

SECTION 7: FINANCE, BUDGETING, AND CAPITAL FORECAST PLAN

The Thunder Bay Fire Rescue has a set of annual operating and capital budget/forecasts that fluctuate based on the staffing, programs, and equipment that have been identified for replacement.

During the review of the operating and capital budget process, it was found that Thunder Bay Fire Rescue is well organized in both areas. This indicates a strong level of support by Council in relation to assisting the Fire Department in meeting its service goals.

7.1 Operating Budgets

During the review of the operating budget, it was found that all key account operating sections are identified and tracked, such as:

Operating Budget Line Items:

- Staffing related costs
- Training
- Fire Prevention and related Fire Safety Education
- Vehicle and equipment maintenance
- Station maintenance

7.2 Capital Forecasts

It appears there is a standard year replacement cycle for the fire trucks that is based on the FUS recommendations for frontline vehicles. This replacement cycle falls in line with the industry standards of 20 years or more, depending on the vehicle's function. As such, Thunder Bay and its Fire Department should be commended for its efforts in endeavouring to adhere to this industry standard.

Capital Budget Line Items:

- Vehicle replacement
- Equipment replacement (for large cost items that are not covered in the operating budget)

Along with the replacement schedule, FUS recommends that there should be at least one spare fire truck for up to every eight related units. For example:

- One pumper truck for every eight (pumpers),
- One spare aerial truck for every eight (aerials),
- One spare tanker truck for every eight (tankers), etc.

A reserve unit should always be available, should one of the primary units go out of service. This still applies if the department has less than eight vehicles. Although TBFR meets this FUS recommendation, TBFR does not have another full-time fire department in the area that has the capacity to support Thunder Bay during a large-scale situation. Therefore, Thunder Bay needs to continue to ensure it has adequate reserve vehicles because it is so isolated.

The Fire Chief, working with the City Treasurer, should ensure adequate reserve funds for apparatus, and equipment. It is important to ensure that adequate annual contributions for apparatus, apparatus repairs, small equipment and contributions for future infrastructure (fire stations) are identified. If any shortfalls are determined, the Fire Chief should establish what effect this will have on operations and bring forward any recommendations (for funding adjustments), if necessary.

There is a business plan in place that incorporates all the department's general vehicle and equipment needs to support future goals and expectations.

Recommendation(s)

Rec #	Recommendation	Estimated Costs	Suggested Timeline
14	The Fire Chief, working with the City Treasurer, should ensure adequate reserve funds for apparatus, and equipment.	Costs to be determined through an asset management plan	Short-term (1-3 years)

SECTION 8: Review of Previous Master Plans

- 8.1 2009 Office of the Fire Marshal and
Emergency Management Master Plan
- 8.2 2012 – 2016 Thunder Bay Fire Rescue
Strategic Master Fire Plan

SECTION 8: REVIEW OF PREVIOUS MASTER PLANS

8.1 2009 Office of the Fire Marshal and Emergency Management Master Plan

In 2009, a review of the Fire Department was conducted by the Office of the Fire Marshal and Emergency Management. The resulting Master Plan identified 15 recommendations. The recommendations covered the following key areas:

- A review of core services
- A review of senior management staffing levels, with the introduction of a new position
- A review of the administration staffing levels
- A review of the fire prevention/public education initiatives
- A review of the present Establishing and Regulating By-law
- A review of the functional lifespan of the fire department Headquarters building
- A review of the training division staffing levels
- A review of the communications/dispatching services

Of the 15 recommendations noted in the 2009 report, all but two have been addressed. Those two recommendations related to:

- Addressing the functional lifespan of the fire department headquarters building, and
- updating the fire department's Establishing and Regulation By-law.

EMT met with a representative from the Office of the Fire Marshal and Emergency Management (OFMEM) to discuss the 2009 report, along with obtaining any input from the OFMEM about any other recent items that should be addressed in this 2019 Master Plan. The representative with the OFMEM had no further input to offer other than the two outstanding items still requiring attention.

8.2 2012 – 2016 Thunder Bay Fire Rescue Strategic Master Plan

In 2012, a review of the Fire Department was conducted by staff and a Strategic Master Plan was created. This plan contained 94 recommendations. The recommendations were in relation to:

- Fire Prevention
- Emergency Operations and Response Capability
- Training and Special Operations
- Administration, and
- Communications/ Dispatching Services

Of the 94 recommendations included in the 2012-2016 Strategic Plan, all have either been addressed or are in the process of being worked on, with the exception the following:

- Recommendation 2.4.2 – amalgamate fire stations to achieve operational efficiencies.
 - This has been carried over into this Master Plan document and has been noted in the recommendations section.
- Recommendation 2.4.10 – review of the lifespan of the Vickers Street North station (Headquarters).
 - This has also been addressed with in this Master Plan document, along with a specific recommendation.
- Recommendation 2.4.11 – review of fire stations to determine how response coverage could be improved.
 - Addressed within this Master Plan document with an associated recommendation.
- Recommendation 2.4.12 – Implement a fire prevention and public education program that is approved by Council
 - Two recommendations are noted in this 2019 Master Plan document relating to this topic.

Thunder Bay Fire Rescue has had two relatively recent major reports suggesting numerous recommendations for improvement, the majority of which have been implemented or are presently being worked on. The areas that still require attention have been incorporated into this Strategic Master Plan document.

SECTION 9: Recommendations for Future Fire Service Enhancements

1.1 Fire Staffing Efficiency Opportunities

1.2 Fire Station Enhancement Options

1.3 Fire Department EMS Response Options

SECTION 9: OPTIONS FOR FUTURE FIRE SERVICE ENHANCEMENTS

9.1 Fire Staffing Efficiency Opportunities

This section has been provided to offer Thunder Bay a more focused opportunity to review options for future fire service protection initiatives for the community. These options range from keeping things status quo but taking more efficient utilization of present staffing, to the closing of a fire station, and the relocation of some stations.

It is the opinion of Emergency Management and Training Inc. that the implementation of the recommendations in this section will assist Thunder Bay in realizing cost and staffing efficiencies in its efforts to meet the needs of the community.

9.1.1 Staffing – Utilization of 5th Person on Pumper/Rescues

TBFR has two personnel per platoon that are assigned to the pumper/ rescue trucks as Entry Control and Accountability officers. Each of these vehicles have a total minimum staffing of five personnel on each of the two pumper/rescues.

To take full advantage of these two personnel per platoon, EMT is recommending that the platoon staffing minimums be kept as per the collective agreement. These two personnel should be utilized in more of a “floater” capacity to help offset the overtime costs incurred when staffing falls below the minimums.

A quick review of overtime costs was conducted; of particular focus was when one or more staff had to be called in to keep the minimum staffing levels. This review identified that by utilizing these two staff as floaters, the estimated savings could be up to \$400,000 per year in the overtime budget.

On an annual basis over the past three years, this overtime account has paid out approximately \$500,000 per year.

9.1.2 Staffing – Utilization of Community Response Vehicles

In Fire Station Realignment Option #3 consideration is given to the closing of Station #4. By doing this, TBFR has a total of 5 firefighters per platoon to utilize for medical and non-emergency type calls in what is termed as “Community Response Vehicles. Brampton Fire uses this concept and has seen some positive results in relation to two key areas:

1. First is the reduction of the wear and tear on the larger fire department vehicles because they are not used for medical and non-emergency calls
2. Second is the ability to use the staffing on these CRVs cover for staffing shortages due to illnesses.

By incorporating this CRV concept, TBFR can still offer a higher level of medical response to the community and at the same time, have the ability to further reduce overtime costs.

9.2 Fire Station Enhancement and/or Realignment Option

Four options are presented here in relation to the closing and/or relocation of the present fire stations within the City. One of the options does not show a reduction in the number of fire stations, just a more efficient use of the present locations. While the other three options do present station reductions and relocation, to serve a broader area (with fewer stations).

9.2.1 Fire Station Option – Status Quo

A previous master plan report indicated that the TBFR Headquarters (HQ) renovations be completed at a cost of just under \$1 million. Taking into consideration the age and physical state of this facility, along with its challenges in meeting the needs of staff, it is recommended that the present HQ facility be vacated. Administration and fire prevention staff should be relocated to Station #3 which has ample space on the upper floor areas to accommodate staff.

It is further recommended that the fire suppression staff be relocated to a new fire station built in the same vicinity as the current HQ. The cost of such a facility would be approximately \$2 million. This would be a long-term investment that would better utilize the money being considered for upkeep of the present HQ facility. This option would also take advantage of the space available at Station #3.

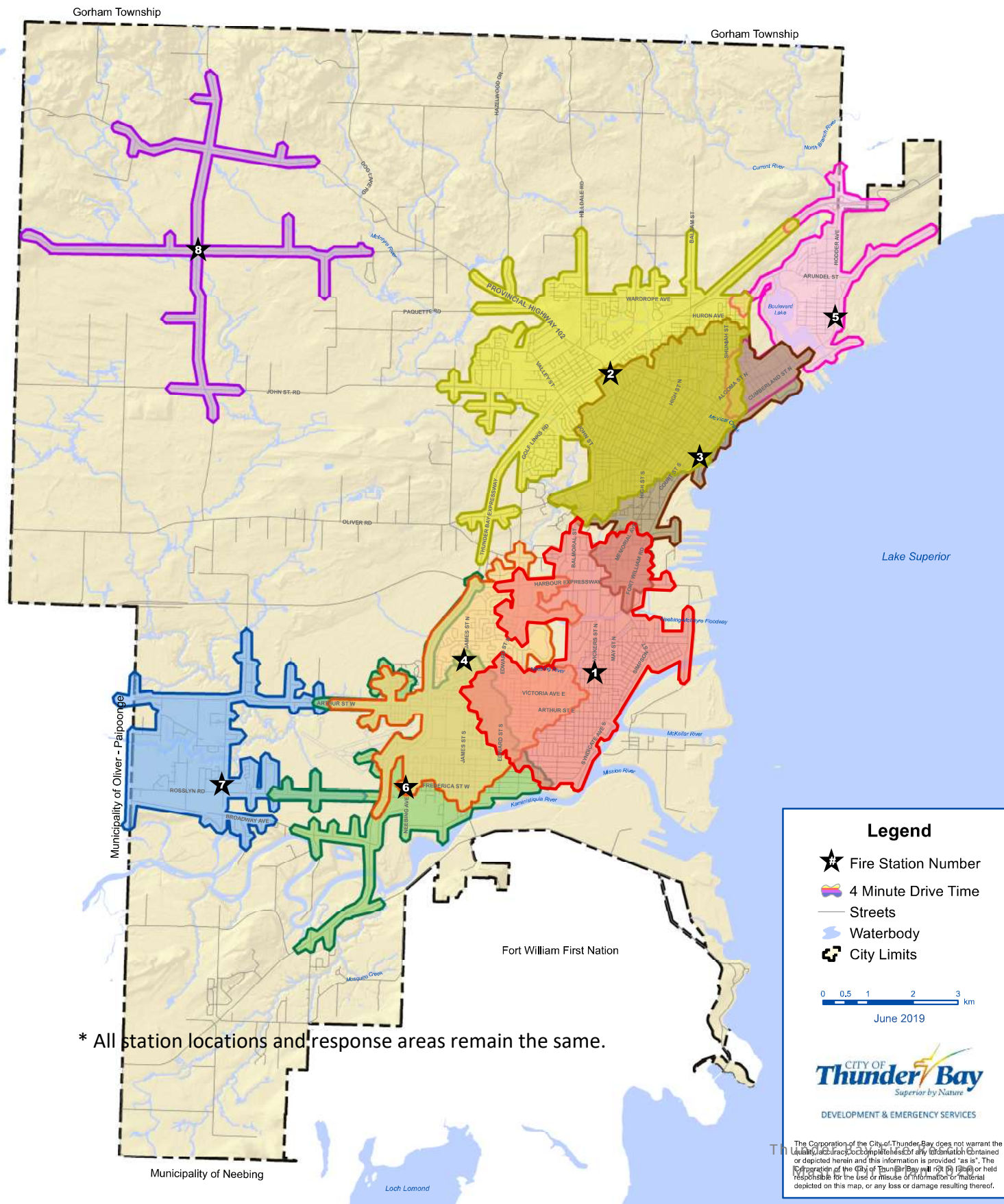
No other costs for fire vehicles and equipment would be required (other than the demolition of HQ) as these would be relocated from the present HQ to the new building. With the new building being built in the same area as its current location, the response grids would remain relatively the same.

Note: Demolition costs can range from \$10 to \$50 per square foot, depending on the type of building being demolished and if there are any hazardous materials within the building.



City of Thunder Bay's 4 Minute Fire Station Drive Time

Figure #10: Fire Station Option - Status Quo



9.3 Fire Station Realignment Options

In the following options, EMT is presenting station reductions and relocations for consideration. All three options are long term ventures that will require substantial costs during the initial phase, but in the long term can present savings for the City due to the reduction of fire stations. It should be noted that no staffing reductions are being presented in these options, rather, a more efficient utilization of resources.

9.3.1 Fire Station Option #1 (Stations 1, 3 and 4 Affected)

In this option, Station #1 (HQ) and Station #3 would be closed, and staff would be relocated into a new HQ/Station #1. Station #4 would be closed and relocated further east.

The new Station #1 facility should be constructed in the general vicinity of Central Avenue and Balmoral Street. Station #4 would be in the area of Victoria Avenue East and Tarbutt Street North.

In this option, the administration, fire crews, mechanical division and vehicles from both Stations #1 and #3 would be located in this new fire station/HQ. This new facility would need to be the same square footage of the present Station #3 to ensure enough space for all divisions. The cost of a new larger fire station to house both Administration and Operations staff would be approximately \$10 million, depending on the size and construction design. To construct a new Station #4 would be approximately \$2 million.

Amalgamating Station 1 & 3 in the area of Balmoral St. and Central Avenue, relocating Station 4 to the area of Victoria Avenue East and Tarbutt Street North would result in a service level reduction to 3,088 people occupying 895 structures in the North Downtown Core.

Note: Demolition costs can range from \$10 to \$50 per square foot, depending on the type of building being demolished and if there are any hazardous materials within the building.

9.3.2 Fire Station Realignment Option #2 (Stations 1 and 3 Affected)

In this option, Station #1 (HQ) and #3 would be closed and staff would be relocated into a new HQ/Station #1.

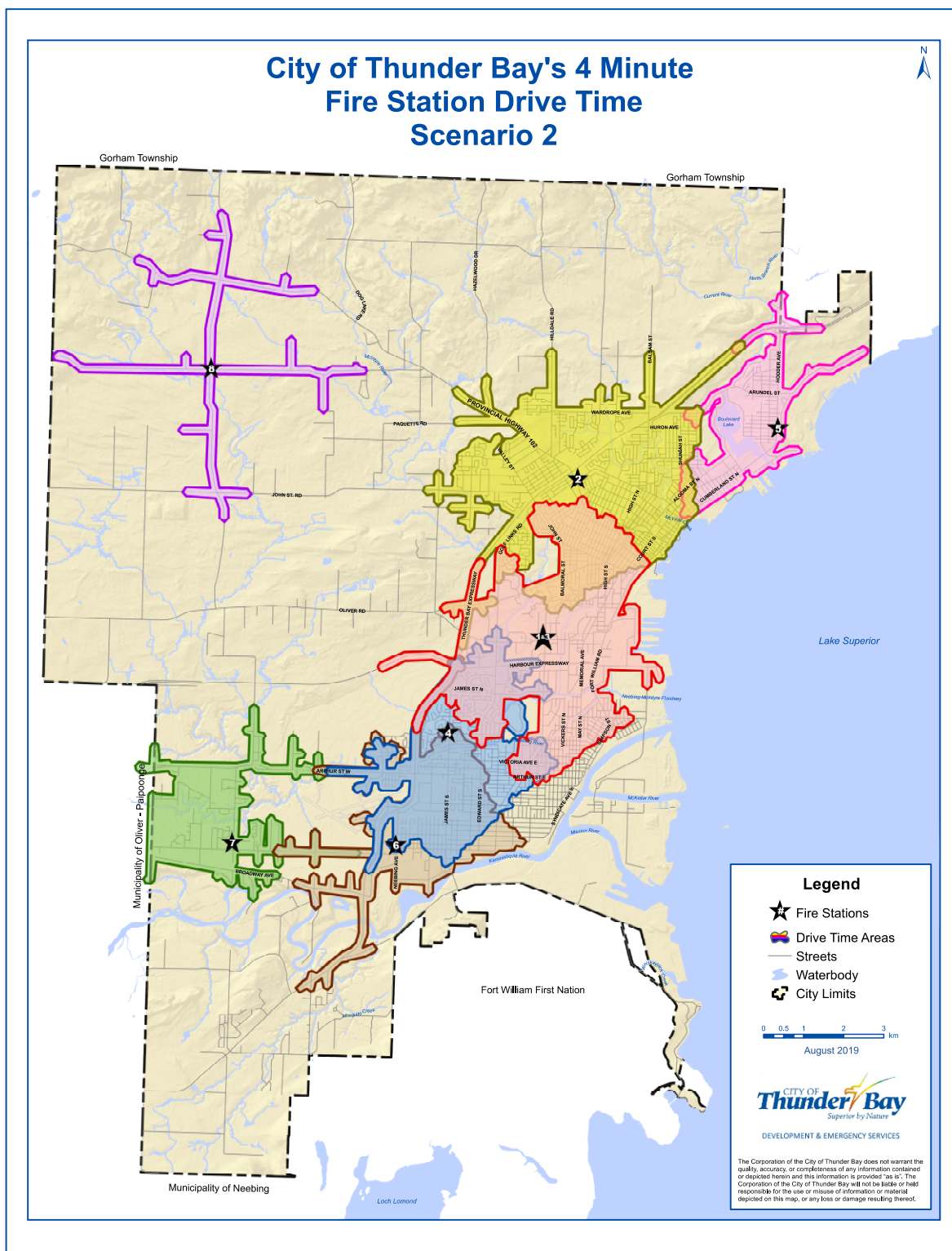
This new Station #1 facility should be constructed in the general vicinity of Central Avenue and Balmoral Street. As illustrated in Figure #13, although response coverage is slightly reduced in the south east area there is still adequate coverage for the two areas where the fire stations are to be closed.

- In this option, the administration, fire crews, mechanical division and vehicles from both Stations #1 and #3 be located in this new fire station/HQ.
- The cost of a new larger fire station to house both Administration and Operations staff would be approximately \$10 million, depending on the size and construction design.

Amalgamating Station 1 & 3 in the area of Balmoral Street. and Central Avenue would result in a service level reduction to 12, 412 people occupying 4,118 buildings in the South Downtown Core.

Note: Demolition costs can range from \$10 to \$50 per square foot, depending on the type of building being demolished and if there are any hazardous materials within the building.

Figure #12: Fire Realignment Station - Option #2 Map



*Stations #1 and #3 closed and combined into a new facility.

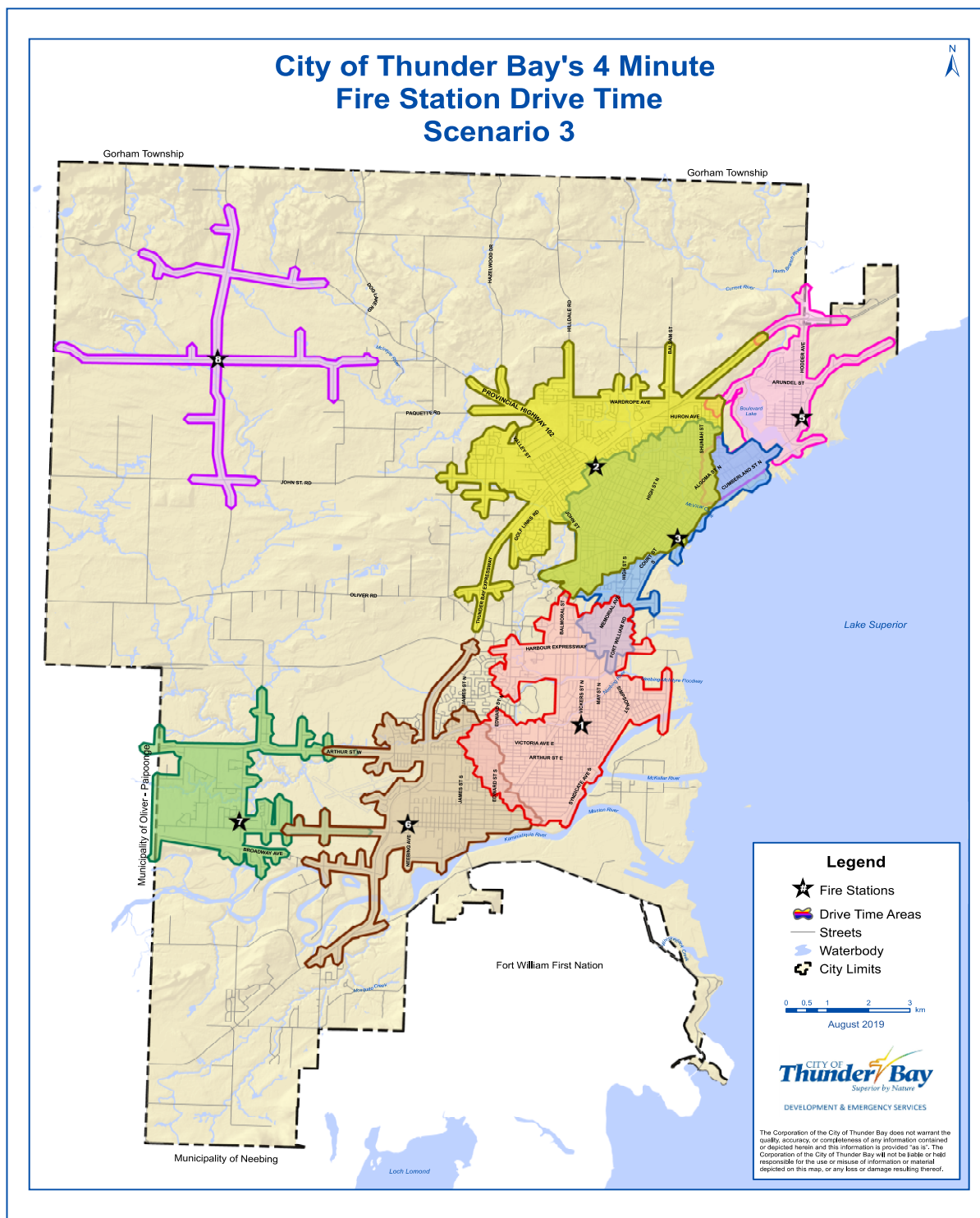
9.3.3 Fire Station Realignment Option #3 (Station 4 Affected)

In this option, all stations are left in place except for Station #4 which is to be removed from the present station configuration. As illustrated in Figure #14, the majority of the original Station #4 coverage area is still serviced, with the exception of a small portion located in the western section. Closing Station 4 would result in a service level reduction to 10,208 people occupying 3,198 structures.

Suppression staff from Station #4, can be utilized as medical response teams in Community Response Vehicles (CRVs). As noted earlier in this document, this would still offer some type of medical response by TBFR for the more severe type of calls, while at the same time, leaving the larger crews to be utilized for the larger type calls, such as fires, motor vehicle collisions, rescues, etc. This would also reduce the wear and tear on the larger fire department vehicles.

One of the positives to this option is that Station #4 is already utilized by Superior North EMS and is still a viable emergency response location for EMS. There may also be the option for the EMS service to take advantage of newly opened space by stationing more ambulances at the location or even as a secondary sub-headquarters. More discussion would need to take place to confirm what options are available. In the end this facility would still be utilized by EMS only.

Figure #13: Fire Realignment Station - Option #3 Map



*Station #4 removed from the present TBFR station configuration.

9.3.4 Return on Investment

With the three realignment options noted in this section (9.3), a return on investment would vary greatly based on the following considerations:

- If a fire station is vacated, would it be used and/or leased out to another stakeholder?
 - In this case, the return on investment would depend on the lease amount and related revenue received for the lease.
- If a fire station is vacated and demolished, would the land be sold off to an investor?
 - In this case, the actual revenue received from the sale would need to be considered.
- If a fire station is vacated, would it be kept in the City's inventory and be repurposed for use by another City department?
 - In this case, a ledger reassignment would be conducted by the Finance Department. This would mean that all future costs would be assumed by the other City department.

Staff at TBFR did review annual costs related to the operation a satellite fire station, which was estimated to be between \$2.6 to 2.7 million a year. This estimate includes both facility costs and staff wages. This amount would not be consistent with stations #1 and #3 because of building size and larger number of staff at these two stations.

With all of this in mind, the only tangible savings to be realized with the closing of a fire station would be annual utilities and repair costs assigned for the upkeep of the station. Therefore, a return on investment may simply be the annual savings of station utilities and repairs, which can vary between \$10,000 to \$20,000 a year, depending on the age and condition of a fire station.

Based on the station options presented, the considerations and information noted, EMT is unable to supply an exact time when the City of Thunder Bay would see a return on investment.

Recommendation(s)

16	The 5 th person on each of the two pumper/rescues be utilized as floaters to help offset overtime costs.	<i>[savings of up to \$400,000]</i>	Immediate (0-1 years)
17 (1)	Status Quo: Decommission the Vickers Street Headquarters and build a smaller two-bay station, close to the present HQ to ensure proper coverage in the area. Move the administration staff to the upper floor area of Station # 3.	New fire station – approx \$2 million plus renovations to Station 3	Mid-term (4-6 years)
17 (2)	Station Realignment Option 1: Consolidate stations #1 and #3 into one fire station and place the staff in the new location, in the vicinity of Central Avenue and Balmoral Street. Station #4 would be relocated in the area of Victoria Avenue East and Tarbutt Street North.	Cost of a combined fire station/facility 1 & 3– approx \$10 million dollars. New station 4 - \$2 million dollars, plus demolish costs	Mid to Long-term (4-10 years)
17 (3)	Station Realignment Option 2: Consolidate stations #1 and #3 into one fire station and place the staff in the new location, in the vicinity of Central Avenue and Balmoral Street.	Cost of a combined fire station/facility 1 & 3– approx \$10 million dollars, plus demolish costs	Mid to Long-term (4-10 years)
17 (4)	Station Realignment Option 3: Close fire operations at Station # 4, continuing use as an EMS station. Firefighters from Station #4 to be assigned to medical responses for the fire department.	No building costs, only movement of staff and equipment	Mid-term (4-6 years)
18	Conduct a thorough review of medical responses.	The cost of two smaller response units would be offset by the reduction of one pumper truck	Short to Mid-term (1-6 years)
	Option 1: Reduce medical calls that the fire department will respond to.		
	Option 2: Alternatively, upon consolidation of Station #1 and #3, (Rec #16(2)), one crew be broken into two units and be assigned to medical responses for the fire department.		

SECTION 10: Summary

10.1 Conclusion

10.2 General Recommendations

10.3 Future Fire Service Enhancement Recommendations

SECTION 10: SUMMARY

10.1 Conclusion

Thunder Bay Fire Rescue staff are truly dedicated to the community they serve. During our review, it was clear that Council, the City Manager, General Manager of Development and Emergency Services, and Fire Chief are sincerely committed to ensuring the safety of the community and the firefighters. Based on the present staffing, equipment, and fire stations locations, Thunder Bay Fire Rescue is endeavoring to offer the most efficient and effective service possible. There is always room for improvement, however, and it is hoped that the recommendations made by Emergency Management and Training Inc. will assist TBFR in meeting its goals.

All costs and associated timelines are approximate estimates that can be implemented through prioritization between the Fire Chief, the City Manager, General Manager of Development and Emergency Services, and Council.

This Plan is a long-range planning document; however, it is recommended that annual updates be completed, along with a full review to be conducted at the five-year mark.

10.2 General Recommendations

The following chart provides an overview of the recommendations found throughout this report along with any estimated costs and suggested timelines for implementation.

Rec #	Recommendation	Estimated Costs	Suggested Timeline
1	The present Establishing & Regulating By-law be updated and presented to Council for approval including an outline of services to be delivered by TBFR.	Staffing related costs only	Short-term (1-3 years) and ongoing
2	TBFR work with the Thunder Bay Police Dispatch service to promote adherence with the NFPA 1221 Standard on Emergency Communications Services.	Dependent on potential changes to the agreement	Short-term (1-3 years) and ongoing

3	It is recommended that a review of the fire service agreement between TBFR and the FWFN be reviewed and updated as required in relation to services to be provided and related costs for providing these services.	Dependent on potential changes to the agreement	Short-term (1-3 years) and ongoing
4	Fire Department should review the comments received from the focus group meeting and identify how improvements can be incorporated into daily operations and/or through social media information sessions. <ul style="list-style-type: none"> This review should be followed up with a media release to demonstrate that input from the surveys and meetings is being considered and where possible implemented. 	Dependant on improvements identified	Short to long-term (1-10 years)
5	Any fire suppression personnel providing primary Fire Prevention activities should be qualified as Fire Inspector 1 and Fire and Life Safety Educator Level 1. At a minimum, each captain on the pumper trucks should receive this training and certification.	Staffing related costs only	Short-term (1-3 years) and ongoing
6	The Fire Chief and Fire Prevention Division Chief need to utilize the NFPA five steps process to evaluate the Fire Department's present level of activity and the future goals for fire prevention activities.	Staffing related costs only	Short-term (1-3 years) and ongoing
7	The Fire Underwriters Survey chart should be utilized as a general benchmark for the Prevention Division to develop a plan on what can be accomplished with its present staffing complement, along with presenting options for increasing inspection frequencies (through utilization of fire officers) and ultimately what is needed to meet the Fire Underwriters Survey benchmarks.	Staffing related costs only	Short-term (1-3 years) and ongoing

8	<p>To verify the training programs are meeting related NFPA (and other) training program recommendations, the Deputy Fire Chief must identify:</p> <ul style="list-style-type: none"> • What training programs are required for the services that TBFR is providing? • The number of hours that are required to meet each of those training needs based on Provincial and industry standards. • Resources required to accomplish this training. • Joint partnerships with private organizations that can be entered to achieve the training requirements identified by the Chief Training Officer. • An annual program outline at the start of each year presented to the Fire Chief, with measured goals and expectations reporting completion success rate at the end of each year. • Continue to identify how the training facility can be better utilized as a form of revenue generation for the City. 	The costs are mostly related to staff hours unless outside facilities or trainers need to be accounted for	Short-term (1-3 years) and ongoing
9	TBFR to create a more proactive campaign at educating the public about false alarms and how to avoid them. At the same time work with EMS on reduction of medical responses, wherever possible.	Staff time only	Short-term (1-3 years)
10	Implementation of the "Safe Haven" type of system that has been built into stations #6 and #7 be installed in all fire stations along with a public education program to promote each fire station as a more integrated public safety measure.	Approx \$3,000.00 per station	Short-term (1-3 years)
11	The Fire Chief to direct his Fire Prevention/Public Education Division to review Thunder Bay's inspection program, identifying levels of desired frequency relative to the FUS (see chart in Appendix "B").	Staff time only	Short-term (1-3 years)

12	Upon completion of the assessment in Recommendation #11, the Fire Chief to provide Council with a draft policy for review and passage that outlines a proactive fire inspection program to address identified needs and expected outcomes. This program should outline the building types, the frequency of inspections, and the staffing/hourly requirement.	Costing would depend on resource requirements to meet Fire Chief recommendations	Short-term (1-3 years) and ongoing
13	TBFR staff to present an updated Community Risk Assessment to Council in 2020.	Staffing related costs only	Short-term (1-3 years) and every five years thereafter
14	Conduct a review/ evaluation of the Division Chief of Administration and Emergency Management's position to identify time spent on responsibilities. Based on the review, a decision is to be made on what duties the Division Chief should be assigned, and what duties can be reassigned to other staff.	Initially staffing related costs only, but may change due to outcome of evaluation	Immediate (0-1 years)
15	The Fire Chief, working with the City Treasurer, should ensure adequate reserve funds for apparatus, and equipment.	Costs to be determined through an asset management plan	Short-term (1-3 years)

10.3 Future Fire Service Enhancement Recommendations Options

Rec #	Recommended Options	Estimated Costs	Suggested Timeline
16	The 5th person on each of the two pumper/rescues be utilized as floaters to help offset overtime costs.	Staff overtime savings	Immediate (0-1 years)

17 (1)	Status Quo: Decommission the Vickers Street Headquarters and build a smaller two-bay station, close to the present HQ to ensure proper coverage in the area. Move the administration staff to the upper floor area of Station # 3.	Cost of a fire station – approx. \$2 million, plus demolition costs	Mid-term (4-6 years)
17 (2)	Station Realignment Option 1: Consolidate stations #1 and #3 into one fire station and place the staff in the new location, in the vicinity of Central Avenue and Balmoral Street. Station #4 would be relocated in the area of Victoria Avenue East and Tarbutt Street North.	Cost of a combined fire station/facility 1 & 3– approx. \$10 million. New station 4 - \$2 million, plus demolition costs	Mid to Long-term (4-10 years)
17 (3)	Station Realignment Option 2: Consolidate stations #1 and #3 into one fire station and place the staff in the new location, in the vicinity of Central Avenue and Balmoral Street.	Cost of a combined fire station/facility 1 & 3– approx. \$10 million, plus demolition costs	Mid-term (4-6 years)
17 (4)	Station Realignment Option 3: Close fire operations at Station # 4, continuing use as an EMS station. Firefighters from Station #4 to be assigned to medical responses for the fire department.	No building costs, only movement of staff and equipment	Mid to Long-term (4-10 years)
18	Conduct a thorough review of medical responses:	The cost of two smaller response units would be offset by the reduction of one pumper truck	Short to Mid-term (1-6 years)
	Option 1: Reduce medical calls that the fire department will respond to.		
	Option 2: Alternatively, upon consolidation of Station #1 and #3, (Rec #16(2)), one crew be broken into two units and be assigned to medical responses for the fire department.		

SECTION 11 – Appendices

- Appendix A – Definitions and References
- Appendix B – Comparable Communities Reference Chart
- Appendix C – Five Step Staffing Process Review
- Appendix D – Call and Response Data for 2018, 2017, 2016 and 2015
- Appendix E – OFMEM Guidelines

SECTION 11: APPENDICES

Appendix A – Definitions and References

Automatic Aid Agreements

For the purposes of this report, an automatic aid agreement means any agreement under which,

- a) a municipality agrees to ensure the provision of an initial response to fires, rescues and emergencies that may occur in a part of another municipality where a Fire Department in the municipality is capable of responding more quickly than any Fire Department situated in the other municipality; or
- b) a municipality agrees to ensure the provision of a supplemental response to fires, rescues and emergencies that may occur in a part of another municipality where a Fire Department situated in the municipality is capable of providing the quickest supplemental response to fires, rescues and emergencies occurring in the part of the other municipality.
 - *Automatic aid is generally considered in other jurisdictions as a program designed to provide and/or receive assistance from the closest available resource, irrespective of municipal boundaries, on a day-to-day basis.*

Commission on Fire Accreditation International - Community Definitions

- Suburban – an incorporated or unincorporated area with a total population of 10,000 to 29,999 and/or any area with a population density of 1,000 to 2,000 people per square mile
- Rural – an incorporated or unincorporated area with a total population of 10,000 people, or with a population density of less than 1,000 people per square mile.

National Fire Protection Association Documents

- National Fire Protection Association 1201 - Standard for Providing Fire and Emergency Services to the Public
- National Fire Protection Association 1500 – Standard on Fire Department Occupational Safety and Health Program, 2013 editions

- National Fire Protection Association 1710 – Standard for the Organization and Deployment of Fire Suppression Operations, Medical Operations, and Special Operations to the Public by Career Departments
- National Fire Protection Association 1720 – Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments

Mutual Aid

- a) Mutual aid plans allow a participating Fire Department to request assistance from a neighbouring Fire Department authorized to participate in a plan approved by the Fire Marshal.
- b) Mutual aid is not immediately available for areas that receive fire protection under an agreement. The municipality purchasing fire protection is responsible for arranging an acceptable response for back-up fire protection services. In those cases where the emergency requirements exceed those available through the purchase agreement and the backup service provider, the mutual aid plan can be activated for the agreement area.

Appendix B – Comparable Communities Chart

Jurisdiction	Thunder Bay	Sudbury	Central York Fire	St. Catharines	Waterloo	Cambridge	Brantford	Guelph	Sarnia	Niagara Falls
Population	110,000	164,689	141,000	131,400	120,000	139,000	97,496	131,800	72,125	88,071
Transient population (i.e. students, tourism)	No data	No data	8,000 students	19,000 students	60,000 students	No data	Student pop of 3,000	No data	Day time working and College (est.) 110,000	12 million annual tourists
Number of tourists visiting per year	No data	1.2 million per year	No data	Approx. 125,000	No data	No data	46,000	33,350 staff & students U of G. 120,000 approx. tourists	1,833,000 visitors to Sarnia-Lambton	12 million per year (average of 32,000/day)
Population verses fire suppression staffing	1 FF per 600	1 FF per 1,500 supplemented by 256 volunteers	1 FF per 1,137	1 per 966	1FF per 1,000	1 FF per 1,053	1 FT/FF per 902	Need more information to answer questions i.e. on duty/off duty, total?	1 FT/ FF per 643	1 FT/ FF per 760 supplemented by 104 volunteers
Career, composite, or volunteer	Career	Composite	Career	Career	Career	Career	Career	Career	Career	Composite
Number of fire suppression	188 total 47 per platoon	112 Career 265 Volunteers	128 total 32 per platoon	136 total 34 per platoon	104 26 per platoon	112 career Sept 2018 – 132 FF	108 (27 per platoon)	146 Career, (36 per platoon including dispatchers)	112 FT FF (28 per platoon) 2 TSO	116

Jurisdiction	Thunder Bay	Sudbury	Central York Fire	St. Catharines	Waterloo	Cambridge	Brantford	Guelph	Sarnia	Niagara Falls
Minimum staffing levels	35	22 FF/Capt + 1 Platoon Chief for Career	21 per platoon (5 trucks @4 + 1PC)	27 per platoon	21 per platoon	Currently - 23	19 FF, 4 pumps (4 people per) 1 Aerial (min 2 people) 1 PC	28 including two dispatchers	23 per platoon *Not in collective agreement	22 per platoon
Minimum staffing on a truck	4 on pumpers, 5 on pumper/rescues	4	4	No data	4	4	4 per pump Min 2 on Aerial	4	4 Engine/Ladder 2 Heavy Rescue	4
Number of fire stations	8	24	4 + 1 in design mode	6	4	5 + new one in Sept	4	6	5	6 + 1 in design mode
Number of front run vehicles	8	73	6	7	5	7	4 Pumps 1 Aerial 1 PC	7	3 Engines 2 Ladders 1 H/R & 1 Tanker (not staffed)	8
Present shift system	24 hours	24 hours	24 hours	24 hours	24 hours	24 hours	24 hours	24 hours	24 hours	10/14 hours
Do you have a response time criterion	No Council approved time	No	Yes, master fire plan approved by council	Yes, in process of going to NFPA 1710 2017 – 6:20 initial apparatus	Yes, 5-minute drive time	Use NFPA	NFPA 1710 4 and 8 min initial and full alarm assignment (not	No	No, NFPA 1710 is referenced only. We do not have good data.	No

				90% of time			council approved)			
Jurisdiction	Thunder Bay	Sudbury	Central York Fire	St. Catharines	Waterloo	Cambridge	Brantford	Guelph	Sarnia	Niagara Falls
If no criterion, do you have a response time goal	Use NFPA 1710	No – internal assess. to NFPA 1710/1720 as appropriate.	NFPA 1710	NFPA 1710	N/A	5 min travel time 90%	N/A	Yes	No, will establish criteria to reasonable time not sure if we will use 90 th percentile	
General breakdown of call distribution	Medical, Fire / alarms, MVCs	Alarms ringing, MVCs, Medical, Fires, Open air burning	Medical assist, structure fires, MVCs, remote alarms	Medical assist, structure fires, MVCs, remote alarms	Medical assist, structure fires, MVCs, remote alarms	Medical, MVCs, Auto alarms, fires, tech rescues	Medical assist, structure fires, MVCs, remote alarms, technical rescues	Medical, fires, rescues, alarm activations and hazardous material	Medical, structural fires	Medical/re suscitator, fire alarms, rescue, property fires
What is your main tax assessment base	Mix of res., comm., and industrial	Residential	Residential	Residential	Res., comm., & institutional	Mix of res. and industrial	Mix of res., comm., and industrial	Res., comm., and industrial	Mix of res. and comm.	No data

Jurisdiction	Thunder Bay	Sudbury	Central York Fire	St. Catharines	Waterloo	Cambridge	Brantford	Guelph	Sarnia	Niagara Falls
Geographical overview of community	320 sq. km on Lake Superior, one major highway, inter-City rail lines	3,630 sq. km, 330 bodies of water, vast remote areas, three class 1 railways, trans-Canada highway, heavy industry base	88 sq. km, 2 rail lines, east Holland river	96.11 sq. km, Welland Canal, 12-mile creek, two major highways and bridges	65 sq. km, one major highway, inter-City spur rail line	112 sq. km	102 sq. km, Grand River, Hwy 403 and railway system	288.4 sq. km, Speed River, Eramosa River, one expressway and highway, rail throughout, University of Guelph, and Conestoga College	165 sq. km located on the lower Lake Huron and the headwaters of the St. Clair River	212 sq. km, 85% land-based and 15% water-based, border city, QEW, Hwy #420 and Hwy #405, railway system
Response Time Dept. Avg. Time of Call to On Location	Report on 90 th percentile	No data	No data	No data	No data	Use 90% - 7.21	Not easily accessible	8 min (90 th percentile for fires). We do not report averages	Turnout time needs improvement	9 mins, 90% of the time
Response Time Dept. Avg. Travel time	Report on 90 th percentile	No data	No data	No data	No data	90% - 5.32	Not easily accessible	5 min (90 th percentile for fires)		7 mins

Appendix C – Five-Step Staffing Process

Step 1: Scope of Service, Duties, and Desired Outputs

Identify the services and duties that are performed within the scope of the organization. Outputs should be specific, measurable, reproducible, and time limited. Among the elements can be the following:

- Administration
- Data collection, analysis
- Delivery
- Authority/responsibility
- Roles and responsibilities
- Local variables
- Budgetary considerations
- Impact of risk assessment

Step 2: Time Demand

Using the worksheets in Table C.2.2(a)-(d), quantify the time necessary to develop, deliver, and evaluate the various services and duties identified in Step 1, taking into account the following:

- Local nuances
- Resources that affect personnel needs

Plan Review – Refer to Plan Review Services Table A.7.9.2 of the standard to determine Time Demand.

Step 3: Required Personnel Hours

Based on Step 2 and historical performance data, convert the demand for services to annual personnel hours required for each program [*see Table C.2.3(a) through Table C.2.3(e)*]. Add any necessary and identifiable time not already included in the total performance data, including the following:

- Development/preparation
- Service
- Evaluation
- Commute
- Prioritization

Step 4: Personnel Availability and Adjustment Factor

Average personnel availability should be calculated, taking into account the following:

- Holiday
- Jury duty
- Military leave
- Annual leave/vacation
- Training
- Sick leave
- Fatigue/delays/other

Example: Average personnel availability is calculated for holiday, annual, and sick leave per personnel member (see Table C.2.4).

Step 5: Calculate Total Personnel Required

Branch of the unassigned personnel hours by the adjustment factor will determine the amount of personnel (persons/year) required. Any fractional values can be rounded up or down to the next integer value. Rounding up provides potential reserve capacity; rounding down means potential overtime or assignment of additional services conducted by personnel. (Personnel can include personnel from other agencies within the entity, community, private companies, or volunteer organizations.)

Correct calculations based on the following:

- (1) Budgetary validation
- (2) Rounding up/down
- (3) Determining reserve capacity
- (4) Impact of non-personnel resources (materials, equipment, vehicles) on personnel

More information on this staffing equation can be found within the National Fire Protection Association 1730 standard. The Fire Prevention should assess the previous five steps and evaluate their present level of activity and the future goals of the Branches.

Appendix D – Call and Response Data for 2018, 2017, 2016 and 2015

Yearly Comparisons of 90th Percentile Response Times for 2018, 2017 and 2016

Note: The 90th percentile criterion is the recommended practice that is endorsed by the National Fire Protection Association and the Commission on Fire Accreditation International. This data is considered more accurate since it is evaluating the times based on 90 percent of the calls, as opposed to averaging the times at the 50th percentile. For example:

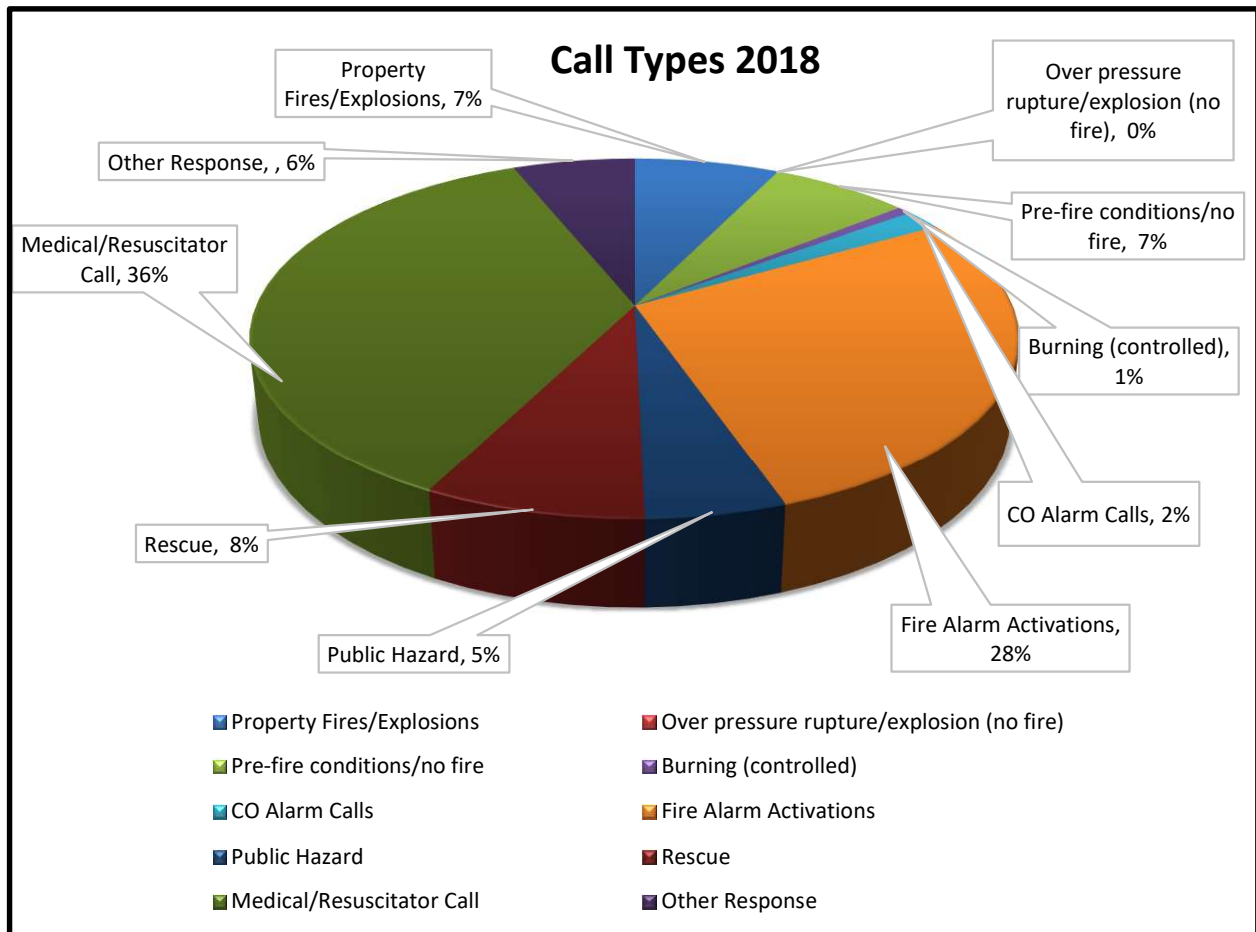
- *9 out of 10 times the fire department arrives on scene in 14 minutes or less. Which means that only 10 percent of the time they are above that 14-minute mark, as opposed to 5 out of 10 times the fire department arrives on scene in 14 minutes or less, which means that 50 percent of the time they are above the targeted minute mark.*
- *Travel Time is the time tracked from when the fire vehicle has left the station until arrival at the incident location.*
- *Response time is the total time from receipt of page (on 9-1-1) to the time the fire vehicle arrives at the incident location.*

Note: Call data displayed in the charts are for emergency responses only.

As noted earlier in this document, during the review of the response data no anomalies were noted in the data, which demonstrates a good level of quality assurance in relation to the accuracy of the response numbers that TBFR collects and retains. It should also be noted, in relation to the 90th percentile criterion, in the 2012 – 2016 Thunder Bay Fire Rescue Strategic Master Fire Plan that “the initial apparatus shall arrive on the scene of the alarm within 6 minutes of receipt of the alarm in at least 90% of all occurrences”.

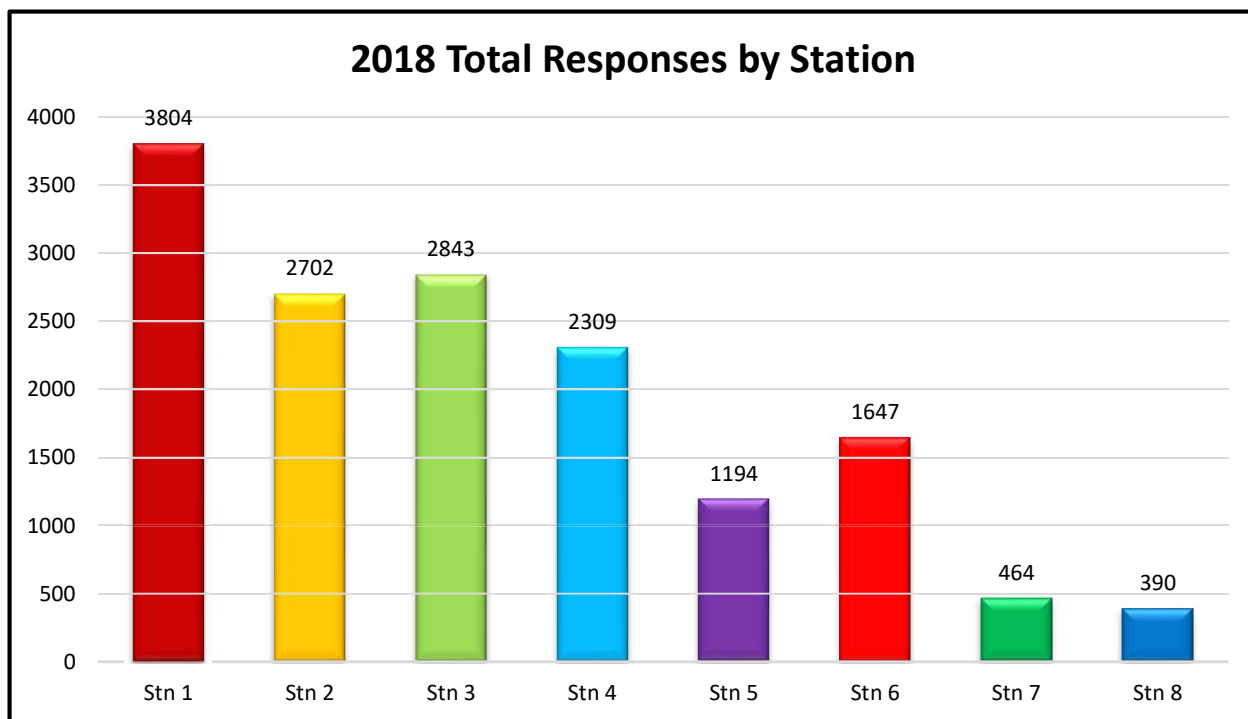
2018 Calls and Response Data

(this pie chart is also found in Section 4)

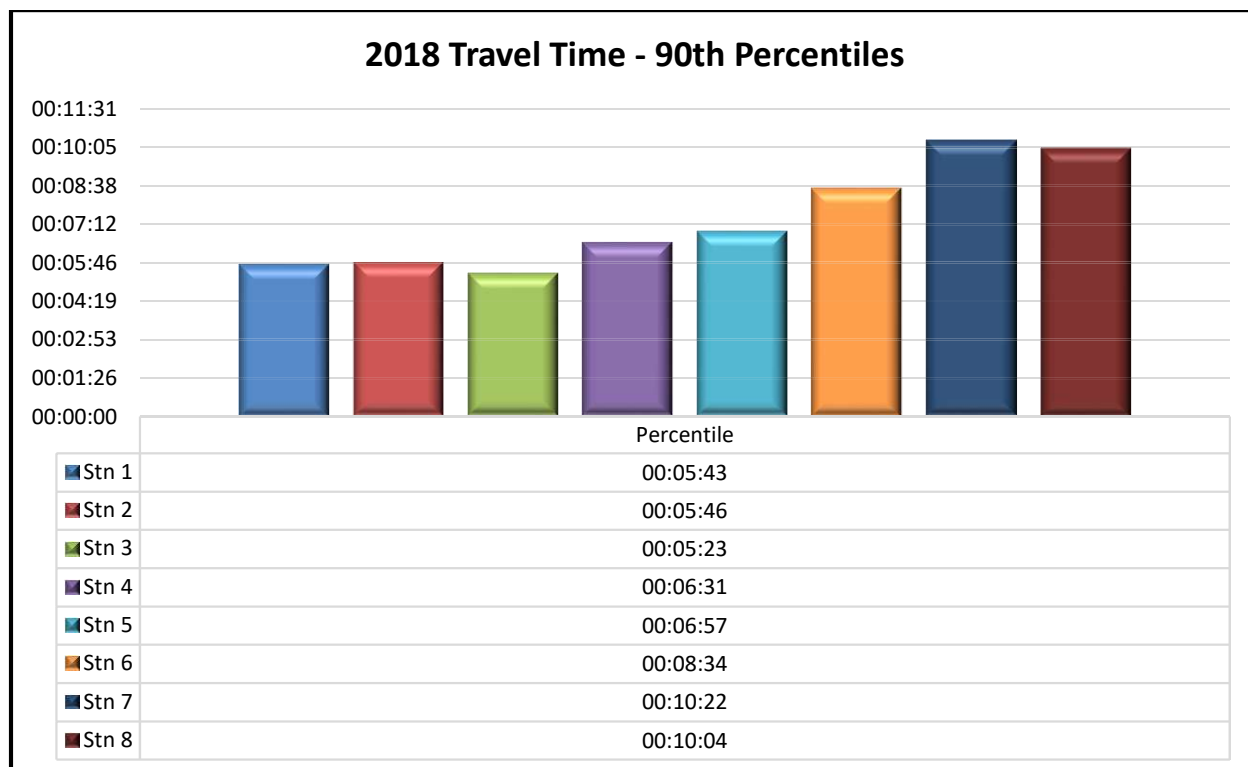


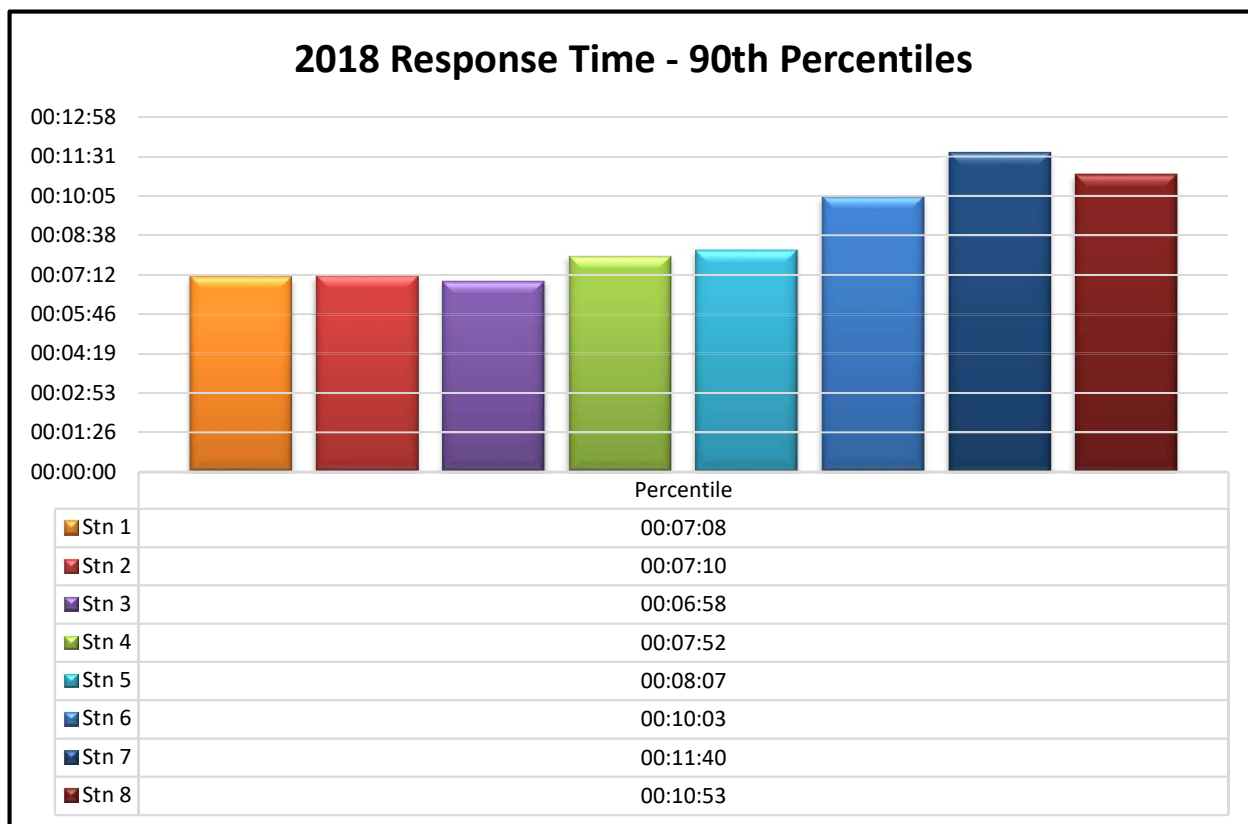
Top three types of calls for 2018:

- Medical = 36%
- Fire alarm activations = 28%, and
- Rescue = 8%

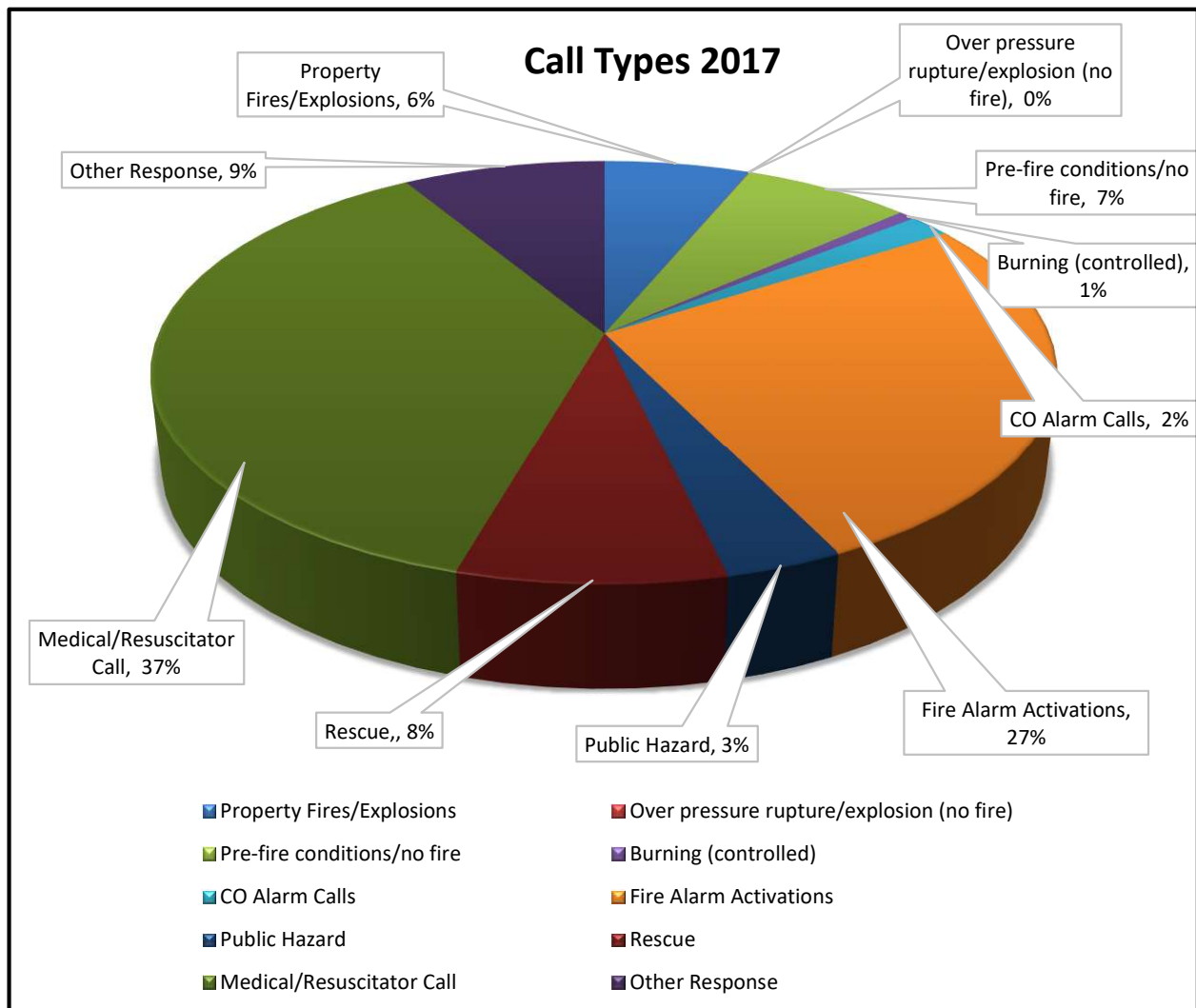


Total responses by station charts for 2015, 2016, 2017 and 2018 have been included to show how busy each fire station (and their crews) are in relation to call volumes per station.



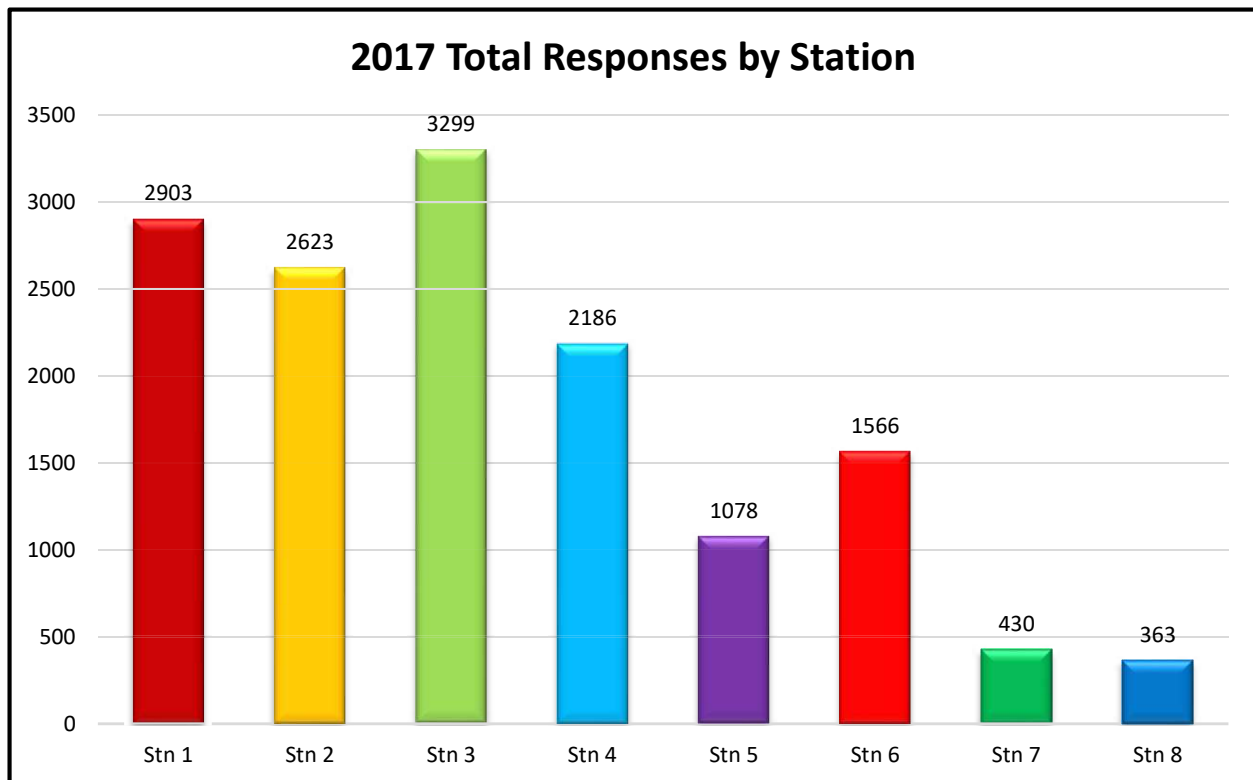


2017 Calls and Response Data

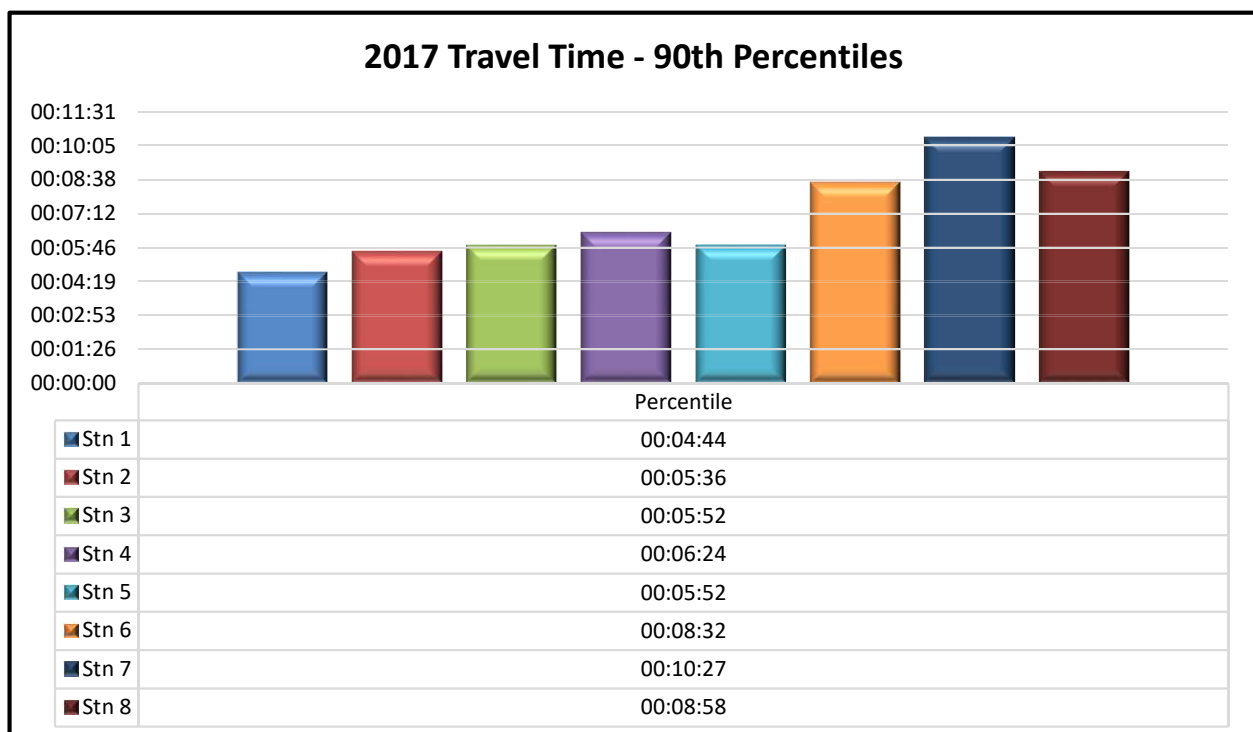


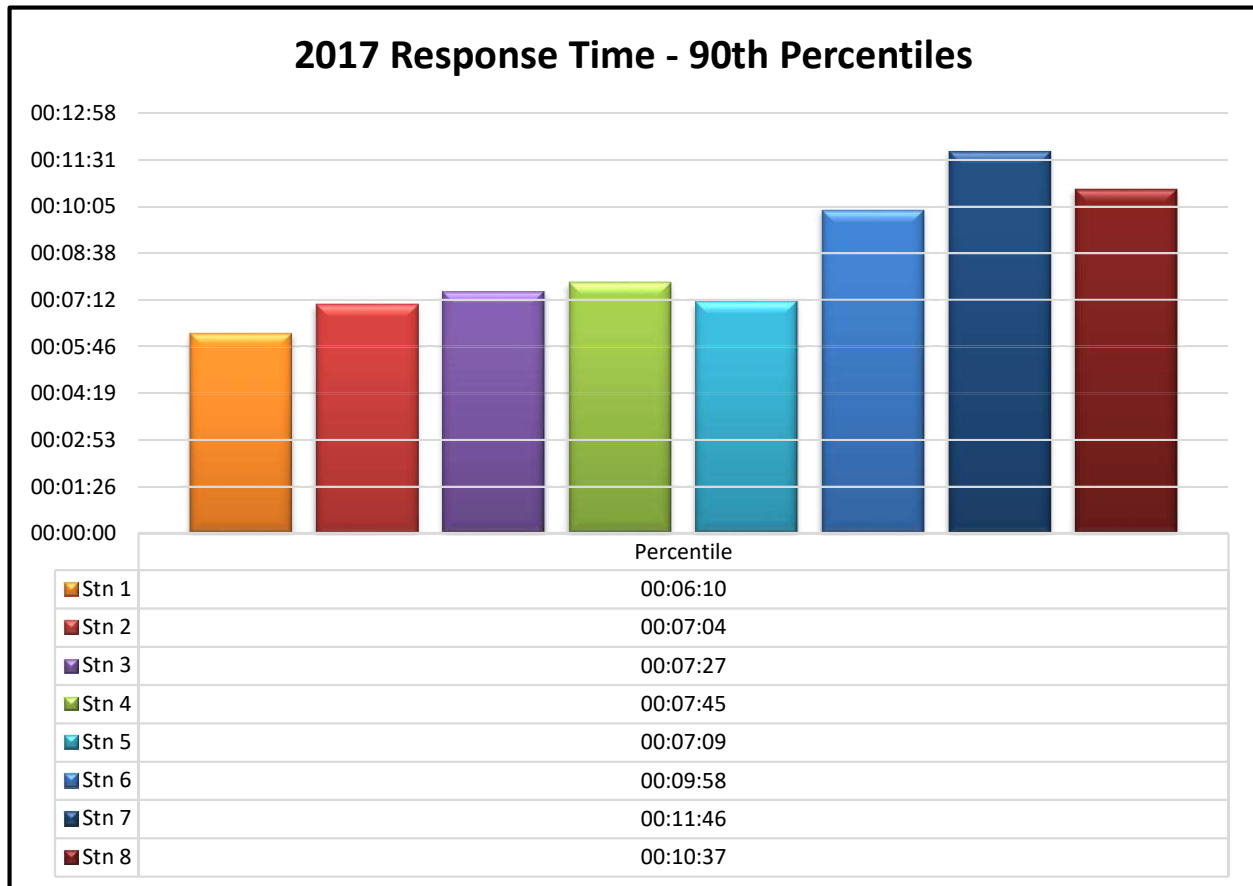
Top three types of calls for 2017:

- Medical = 37%
- Fire alarm activations = 27%, and
- Rescue = 8%

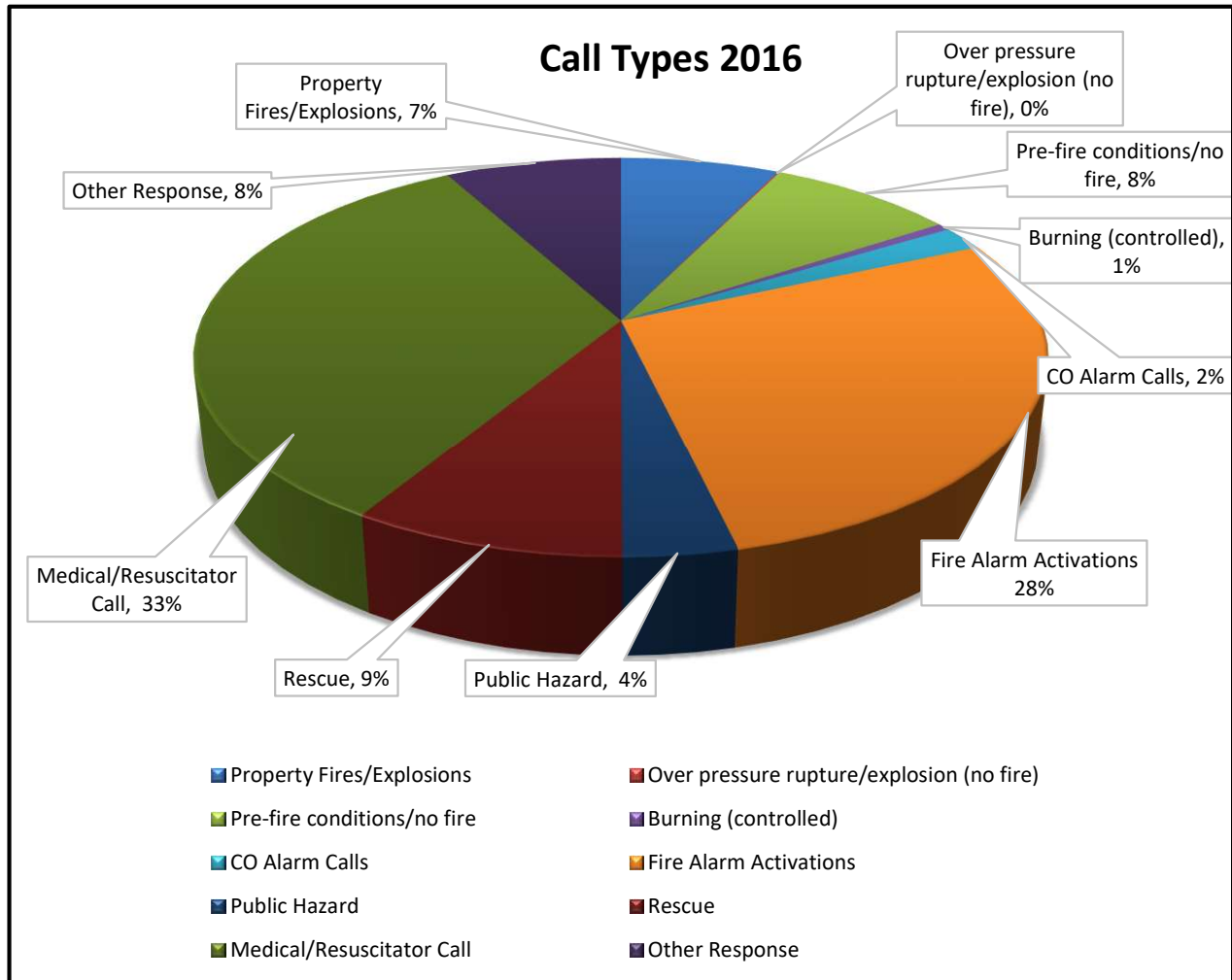


Total responses by station charts for 2015, 2016, 2017 and 2018 have been included to show how busy each fire station (and their crews) are in relation to call volumes per station.



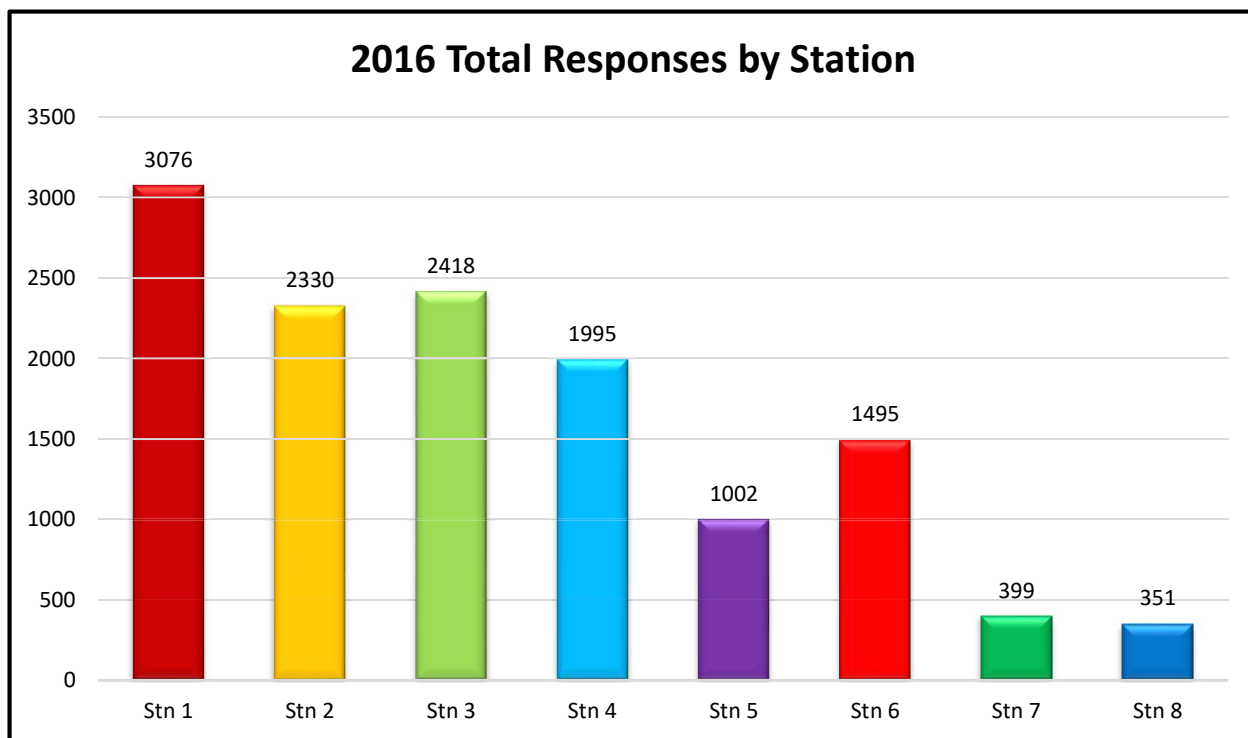


2016 Calls and Response Data

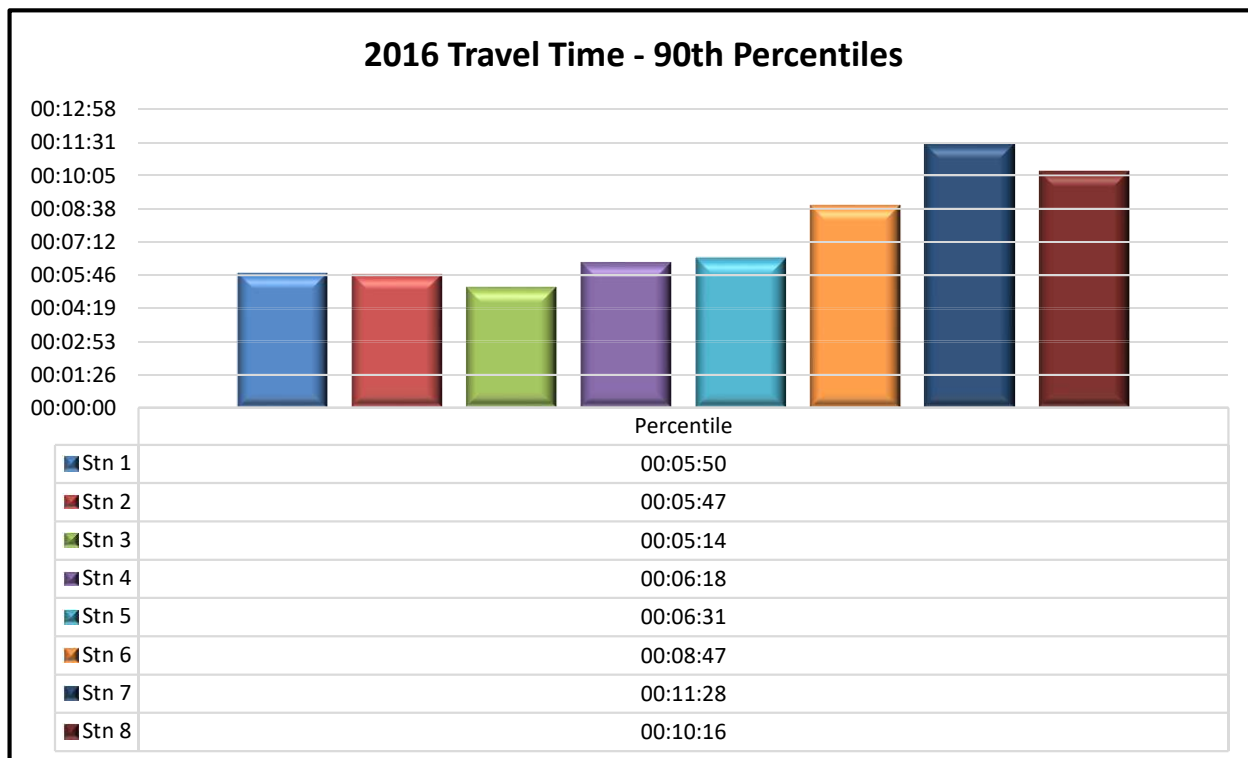


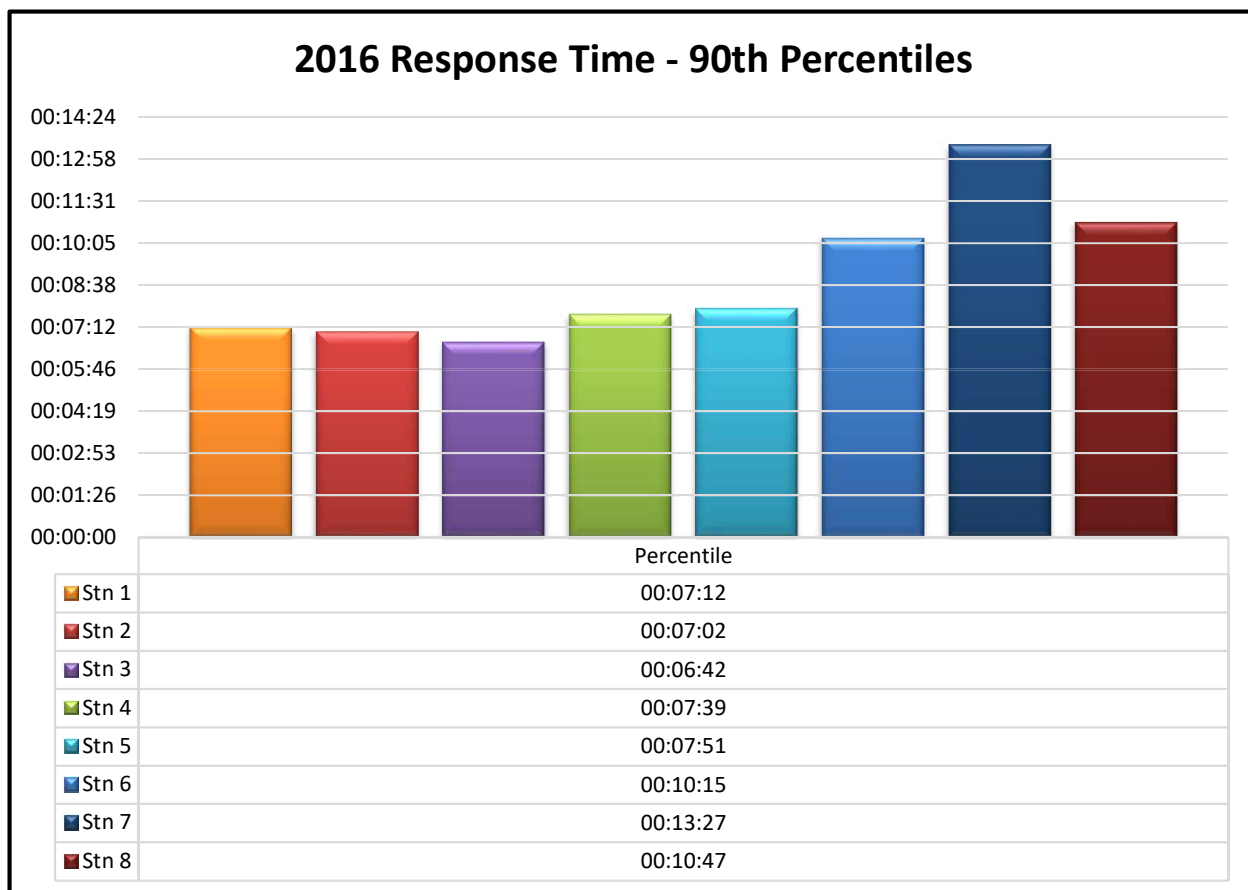
Top three types of calls:

- Medical = 33%
- Fire alarm activations = 28%, and
- Rescue = 9%

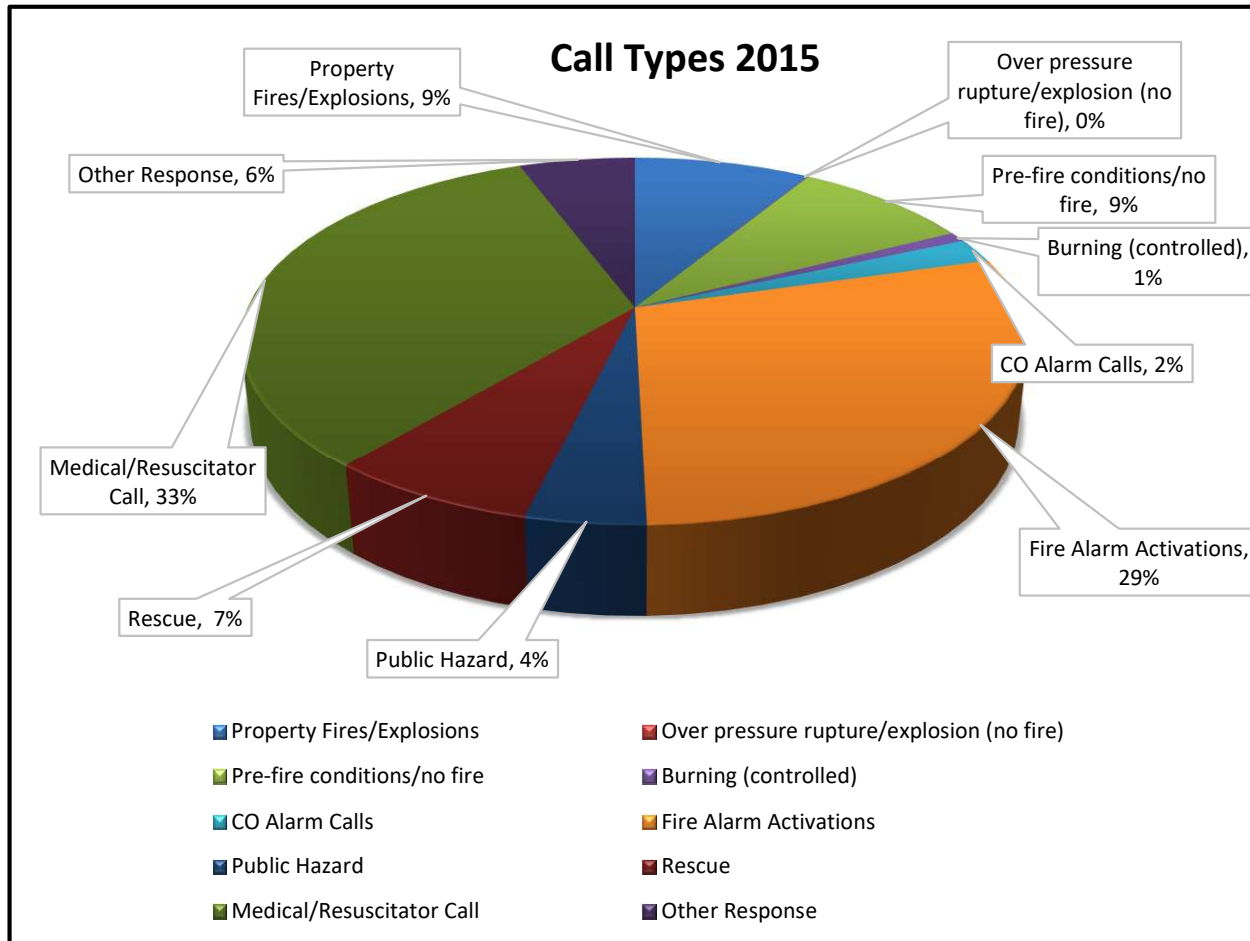


Total responses by station charts for 2015, 2016, 2017 and 2018 have been included to show how busy each fire station (and their crews) are in relation to call volumes per station.



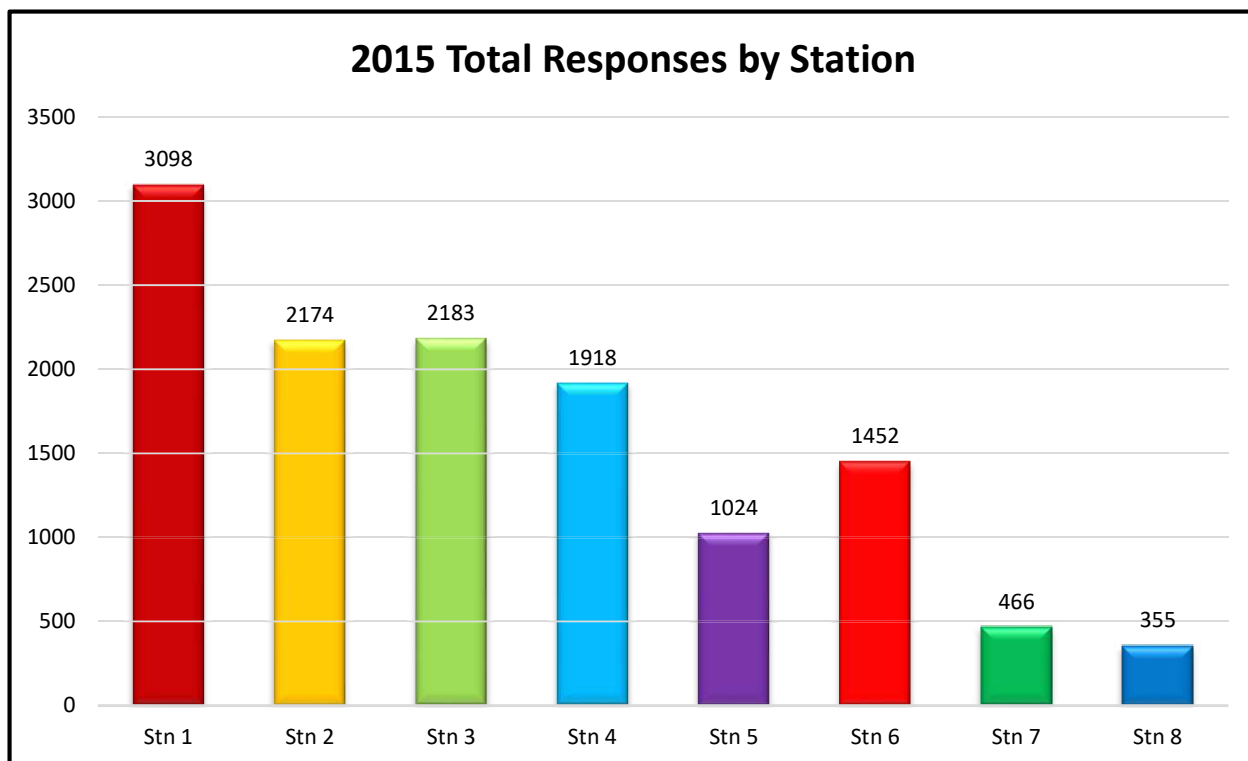


2015 Calls and Response Data



Top three types of calls:

- Medical = 33%
- Fire alarm activations = 29%, and
- Property Fires/Explosions and Pre-fire conditions/no fire = 9%



Total responses by station charts for 2015, 2016, 2017 and 2018 have been included to show how busy each fire station (and their crews) are in relation to call volumes per station.

Appendix E – OFMEM Guidelines

Planning and Growth Practices

Public Fire Safety Guidelines	Subject Coding PFSG 04-58-12
Section Fire Administration	Date August 1998
Subject Planning and Growth Practices	Page

Under Review

Purpose:

To provide municipalities and fire departments with considerations for planning and growth practices.

Service Delivery Implications:

- Fire departments, in conjunction with council and the municipal administrators, should develop and implement a planning process.
- The process should provide information for a community wide, balanced and cost-effective fire control strategy.
- Existing conditions and anticipated community growth must be taken into consideration.
- Effective planning improves:
 - financial forecasting
 - quality and quantity of services
 - organizational performance
 - efficiency and effectiveness of the department
 - the ability to identify future service demands
- Failure to consider planning and growth will lead to confusion and an inability to maintain standards of coverage.¹

Service Delivery Options:

- Most fire protection agencies are experiencing escalating demands for emergency response and fire prevention services, fire safety education, emergency medical services, and hazardous materials control. Resources to provide these services are often limited.
- Fire departments must take the following steps to ensure proper needs analysis:

1. Identify the nature and extent of risks.

2. Establish service levels.
 3. Identify the most effective use of resources to obtain the desired service level.
 4. Implement a management evaluation system to review the effectiveness of the implemented levels of service.
- This planning process should address the following:
 - master planning
 - evaluating programs and services
 - projecting station locations and re-allocations
 - determining staffing levels and assignments
 - co-ordinating with other emergency services
 - co-ordinating development with other community departments
 - co-ordinating with other counties/districts/regions
 - co-ordinating with private sector organizations

Strategic (Master) Plan

The strategic or master plan is based upon a community risk management approach that:

- considers the nature, extent and magnitude of the risks in the community
- considers methods of providing protection for identified risks
- considers alternative levels of protection
- determines an acceptable level of risk
- establishes objectives for the fire department and any additional requirements that are necessary for the community to limit the risk
- develops and adopts a plan that will provide the established level of fire department services and other requirements
- establishes a process to evaluate the effectiveness of the plan
- establishes a process to periodically validate the plan

Policy Requirements:

- Those responsible for fire department planning should:
 - maintain an ongoing relationship with other agencies involved in community planning
 - keep the fire chief and other staff informed of community development plans, projected service demands, alternative approaches, and problems that might develop as change occurs.
- These liaisons should include budget and planning agencies, redevelopment agencies, water, street, traffic, and engineering departments, and private sector developers.

Quality Management Standards:

- The fire department should have a master plan to guide its activities. It should be:
 - long term (3 to 5 years)
 - the result of a continuous planning process
 - published and updated on regular basis
 - a companion document to the budget
 - the result of input from all stakeholders
 - approved by municipal government or authority having jurisdiction
- The fire department should have a process to assess, measure and evaluate the attainment of progress towards completion of specific objectives and overall system performance.

Quality and Performance Measures:

Evaluating Programs and Services

Fire departments should have an evaluation system in place for programs and services.

- This program should be based on a cost/benefit analysis that:
 - determines need
 - develops objectives
 - develops the criteria for measuring effective accomplishment
 - generates alternatives
 - analyses and selects alternatives
- Any program of planning needs to encompass any or all aspects of the fire department's activities.
- The goal is to improve and maintain the efficiency and effectiveness of the fire department as well as providing for a responsive approach to the community's changing needs for service

Codes, Standards, and Best Practices:

Codes, Standards and Best Practices resources available to assist in establishing local policy on this assessment are listed below. All are available at <http://www.mcscs.ius.gov.on.ca/>. Please feel free to copy and distribute this document. We ask that the document not be altered in any way, that the Office of the Fire Marshal be credited and that the documents be used for non-commercial purposes only.

[02-02-12](#) & [03](#) Fire Risk Assessment

[02-03-01](#) Economic Circumstances

[02-04-01](#) & [23](#) Capabilities of Existing Fire Protection Services

03-01-13 Preparation of Draft Report on Existing Fire Protection Services

04-12-13 Core Services

04-39-12 Fire Prevention Effectiveness Model

04-56-12 Use of Fire Related Statistics

Additional References: *National Fire Service Accreditation Program*

¹ Standards of Coverage - a written statement that combines service level objectives with staffing levels to define how and when a fire agencies resources will respond to a call for service.

Station Training Practices

Public Fire Safety Guidelines	Subject Coding PFSG 04-81-01
Section Training & Education	Date August 1998
Subject Station Training Practices	Page

Under Review

Purpose:

This guideline provides suggested procedures regarding the delivery of station training programs.

Introduction:

- Training and educational resource programs express the philosophy of the organization they serve and are central to its mission.
- Increased fire service expectations and evolving suppression and apparatus technology have expanded the role of fire service personnel.

Service Delivery Implications:

- A key factor in the success of fire suppression activities is the performance of members of the organization.
- This performance level is achieved and maintained through a comprehensive training program.
- One critical component of this training program is training carried out within the fire station.
- Learning resources should include a library as well as audio visual material.
- Training staff should provide services which encourage and stimulate competency, innovation, and increased effectiveness.

Service Delivery Options:

- The training program content should be coordinated with the needs of department personnel and available resources in the community.

- Training officers should:
- provide performance standards
- develop training schedules
- Within the fire station an officer or other qualified person may deliver the training program.

Policy Requirements:

- The fire department should have a training program and policy that ensures personnel are trained and competency is maintained to effectively, efficiently, and safely execute all responsibilities consistent with the department's mandate.
- The training program should be consistent with the fire department mission statement and meet its organizational needs
- The program must be consistent with legal requirements for training
- Company officers should be responsible for the on-going, in-service training of members of the company assigned to them.
- Sufficient time should be spent on company (in station) training during tours of duty in full time departments, and at convenient times for volunteers, to ensure required proficiencies are met.
- Training should be in the form of self-directed learning, classroom instruction, practice drills, familiarization tours and pre-fire planning.

Quality Management Standards:

- The effectiveness of the training program should be evaluated through fire department performance at emergency incidents as well as training simulations and exercises.

This evaluation should ensure that:

- training is uniform
- fire department procedures are followed properly

Quality and Performance Measures:

- Company officers should periodically evaluate members assigned to their company to determine:
 - training objectives have been achieved
 - the training has been effective for each member
 - elements of individual performance evaluations, when required

Codes, Standards, Best Practices:

Codes, Standards, and Best Practices resources available to assist in establishing local policy on this assessment are listed below. All are available at www.ontario.ca/firemarshal. Please feel free to copy and distribute this document. We ask that the document not be altered in any way, that the Office of the Fire Marshal be credited and that the documents be used for non-commercial purposes only.

Additional References:

- Ontario Firefighter and Company Officer Training Curriculums
- Ontario Firefighter and Company Officer Standards

Sample Agreement for Community Fire Safety Officer or Team

Public Fire Safety Guidelines	Subject Coding PFSG 04-42A-13
Section Fire Prevention and Public Education	Date March 2000
Subject Sample Agreement for Community Fire Safety Officer or Team	Page

Under Review

The following is a sample agreement to provide for establishment of a Community Fire Safety Officer or Team in territories without municipal organization.

WHEREAS the Fire Protection and Prevention Act is intended to provide for a minimum level of public fire safety for communities in Ontario and whereas s.3 permits the Fire Marshal to enter into agreements appointing Community Fire Safety Officers or Teams to provide fire prevention and public fire safety education services in territories without municipal organizations the Fire Marshal is entering into the following agreement.

Definitions:

1. (a) "Fire Marshal" means the Fire Marshal of Ontario or his designate.
- (b) "Office of the Fire Marshal" includes any representative assigned by the Fire Marshal.
- (c) "Community Fire Safety Officer" means a Community Fire Safety Officer appointed by an agreement under clause 3(2) (a).
- (d) "Community Fire Safety Team" means a Community Fire Safety Team appointed by an agreement under clause 3(2) (a).
- (e) "Member" means a Community Fire Safety Officer appointed to the team.
- (f) "Team Leader" means the one person recommended by the community and named in this agreement as the leader of the "Community Fire Safety Team".
2. (a) A Community Fire Safety Team for the _____ of _____ to be known as the _____ Community Fire Safety Team (the "team") is hereby established.
- (b) In addition to the Team Leader, the team shall consist of such number of other members recommended by the Team Leader as approved and appointed by the Fire Marshal.
3. (a) The Team Leader is responsible to the Fire Marshal or designate for the proper administration and operation of the team and compliance with relevant Office of the Fire Marshal policies and procedures for the Community Fire Safety Program.
- (b) The Team Leader
 1. shall ensure that the members of the team participate in the training opportunities including training offered by the Office of the Fire Marshal;

2. shall ensure that records of training, inspections, public education appearances, fires and any other records or reports required by the Fire Marshal are maintained;

3. is responsible to meet the intent of this agreement

(c) The Team Leader is responsible for ensuring that the duties pertaining to the function of public fire and life safety education and fire prevention are carried out in accordance with Appendix A.

4. The Office of the Fire Marshal will provide the Community Fire Safety Team with;

1. training to provide services and deliver the programs that are agreed as appropriate to meet the specified local needs and circumstances of the community and outlined in Appendix A.

2. appropriate fire prevention literature, handouts and education materials, normally provided to the fire service at no charge, for the programs to be implemented within the community;

3. advice and/or assistance with fire safety inspections and related reports, upon request;

4. appointment as an Assistant to the Fire Marshal when determined necessary by the Fire Marshal

5. continuing support and provision of updated fire prevention and fire safety information through local Office of the Fire Marshal staff

6. access to materials from the Fire Marshal's Public Fire Safety Council.

5. The Office of the Fire Marshal shall conduct an annual review of the community fire safety team to assess the impact of the program

6. The agreement will be in force for a period of one year commencing _____ on and expiring on _____.

7. Notwithstanding section 6 of this agreement, the Fire Marshal or they _____ may terminate this agreement at any time upon 60 days written notice to the other party.

8. Notwithstanding section 6 of this agreement setting out the termination date of this agreement, the agreement may be renewed or extended or amended by the mutual consent of the parties upon 60 days written notice of the proposed renewal, extension or amendment.

Dated at _____ this _____ day of _____, 19____.

 Manager of Operations
 Office of the Fire Marshal
 pursuant to delegated authority

Dated at _____ this _____ day of _____, 19____.

Community Fire Safety Team Leader

Community of _____

Witness

Representing

Appendix "A"

Community Fire Safety Program
for
the Community of

General

The Office of the Fire Marshal in conjunction with the Community Fire Safety Team have conducted a risk assessment of the community and have entered into an agreement to provide public fire and life safety services to the community of... The fire protection services to be delivered as a result of this risk assessment will be based on the local ability to deliver and include, but are not limited to:

Public Awareness Programs

The Community Fire Safety Team will make available to the community information on fire hazards, smoke alarms and escape planning.

Inspections

The Office of the Fire Marshal will provide assistance with the inspection of properties through the Fire Department Assist Program.

When the Community Fire Safety Team receives a fire safety complaint or is conducting an inspection on a property he/she will contact the OFM Regional Office for assistance when the skill and knowledge required goes beyond their level of expertise and training.

Investigations

The Office of the Fire Marshal will provide reasonable assistance with the investigation of fires in the community.

Selection of Appropriate Fire Prevention Programs

Public Fire Safety Guidelines	Subject Coding PFSG 04-40-03
Section Fire Prevention and Public Fire Safety Education	Date March 2001
Subject Selection of Appropriate Fire Prevention Programs	Page

Under Review

Purpose:

To assist in developing or selecting programs to meet the four minimum fire prevention and public education requirements of the Fire Protection and Prevention Act.

Introduction:

Municipalities must develop a fire prevention and fire safety education program that addresses their needs and circumstances, as determined by the application of sound risk management principles.

Minimum Required Services:

Section 2. (1) of the Fire Protection and Prevention Act states:

(1) Every municipality shall,

1. establish a program in the municipality which must include public education with respect to fire safety and certain components of fire prevention; and
2. provide such other fire protection services as it determines may be necessary in accordance with its needs and circumstances.

Therefore, as a minimum acceptable model municipalities must provide the services listed below. The simplified risk assessment should identify the extent to which additional services may be required to meet the local needs and circumstances of specific municipalities. Municipalities may develop a different model for fire prevention and public education services provided they are able to demonstrate that their model meets the mandated requirements of the community's local needs.

3. Simplified risk assessment
4. A smoke alarm program
5. Fire safety education material distributed to residents/occupants

6. Inspections upon complaint or when requested to assist with code compliance

Simplified Risk Assessment:

A simplified risk assessment must be done for the community to determine the needs and circumstances of the municipality and to establish the level of fire prevention and public fire safety education required. Any significant risks identified through the analysis should be addressed. For example; if the risk assessment indicates a significant life or fire loss in multi-unit residential buildings, a program that will adequately improve their fire safety - such as routine inspections - would be appropriate to address the specific need of the community. The scope and extent of the remaining three required programs can be determined by the results of the simplified risk assessment.

Smoke Alarm Program:

The objective of a smoke alarm program is the provision and maintenance of working smoke alarms and home escape planning activities for all residential occupancies in the municipality. The activities associated with the program may include any combination of the following:

- community surveys
- distribution of pamphlets or other education material
- instruction to residents regarding smoke alarms
- providing smoke alarms at reduced or no cost
- installation of smoke alarms
- inspecting premises to determine compliance with the smoke alarm provisions of the Fire Code.

Fire Safety Material:

Fire safety education material may be distributed to residents and/or occupants consistent with the community's needs and circumstances by any combination of the following activities:

- distribution of pamphlets or other education material
- public service announcements utilizing the available media
- instruction to residents/occupants on fire safety matters
- presentations to resident groups
- attendance at public events

Fire safety education material addresses such issues as preventing fire occurrence, the value of smoke alarms, planning escape from fire, and being prepared to deal with a fire incident. The OFM Regional Office can provide assistance with fire safety education material for the public. Fire safety education material may also be found on the OFM website.

Public Fire Safety Education:

For public fire safety education, the following should be established:

- the audience to be targeted
- the message that needs to be delivered to improve the fire safety situation must be determined.
- an inventory of the available or required resources and programming.
- the most appropriate method of delivering the message.
- the duration or frequency of the message delivery.

Inspections:

Inspections of properties must be done, or arranged for, by the municipality when:

- a complaint is received regarding the fire safety of a property
- a request is made to assist a property owner or occupant to comply with the Fire Code and the involvement of the Chief Fire Official is required by the Ontario Fire Code

Any inspection conducted must include notification of the property owner or responsible person and appropriate follow-up with enforcement, if necessary.

Inspection Program Considerations:

For inspections, the following factors should be considered:

- The type of inspections to be conducted and the buildings to be inspected. For example: routine inspections of all multi-unit residential buildings, new construction inspections of all buildings, smoke alarm checks of single-family residential buildings.
- The methods of inspection appropriate for the circumstance. This will have implications for the amount of time required to inspect, as more comprehensive inspections require more time.
- The category of buildings being inspected, and the skills and knowledge required to inspect them. The more complicated the building, the more skill and knowledge required.
- The frequency that the properties will be subject to inspection

Program Selection:

In addition to the minimum services outlined above, programs need to be selected, developed and implemented that address any risks identified through needs analysis. Programs being considered need to be effective for the type of concerns identified. For example; a routine inspection program would be effective to address concerns for the fire safety of a group of buildings that demonstrate poor performance during fire incidents. Similarly, a public fire safety education program such as Older and Wiser would be effective where there is a lack of knowledge of fire safety behaviour by the elderly and this lack causes them to suffer significant fire losses.

Each area of program activity has a number of factors which need to be considered.

Service Delivery Options:

The Fire Prevention Effectiveness Model may also assist with informed decision making about fire prevention and public education programs. Once the needs analysis component of the

model has been completed, fire department managers can decide what programs are appropriate to address their identified local risks.

There are a number of options for delivery of selected fire prevention programs. They can be provided by fire department staff - personnel dedicated to fire prevention and/or fire suppression staff. Other persons in the community may be used. Agreements with other communities may be made for provision of services. The OFM provides assistance in delivery of fire prevention programs through the Assist Program.

Policy Requirements and Other Relevant Issues:

Any selected/mandated programs must have sufficient resources, human and others, to be effectively delivered.

Persons assigned responsibility for delivering programs must be adequately trained.

Policy decisions must be made with appropriate authority and records made of the level of service decreed.

Appropriate program guidelines must be established for each program to be delivered.

Any fees for services should be discussed and decided upon at the policy level.

Legal counsel should be consulted regarding any changes to the delivery of services to the community.

Codes, Standards, and Best Practices:

Codes, Standards and Best Practices resources available to assist in establishing local policy on this assessment are listed below. All are available

at <http://www.mcscs.jus.gov.on.ca/>. Please feel free to copy and distribute this document. We ask that the document not be altered in any way, that the Office of the Fire Marshal be credited and that the documents be used for non-commercial purposes only.

See also PFSG

01-02-01 Comprehensive Fire Safety Effectiveness Model

04-12-13 Core Services

04-40A-03 Simplified Risk Assessments

04-40B-12 Smoke Alarm Programs

04-40C-12 Public Education Programs

04-40D-12 Inspection Programs

Operational Planning: An Official Guide to Matching Resource Deployment and Risk

Public Fire Safety Guidelines	Subject Coding PFSG 04-08-10
Section Emergency Response	Date January 2011
Operational Planning: An Official Guide to Matching Resource Deployment and Risk	

Under Review

1.0 Purpose

1.1 Municipalities are responsible for the funding and delivery of fire protection services in accordance with Section 2 of the *Fire Protection and Prevention Act, 1997* (FPPA). In order to meet the intent of Section 2 of the FPPA, municipalities are expected to implement a risk management program.

The evaluation tool ***Operational Planning: An Official Guide to Matching Resource Deployment and Risk***, found in the Appendix, is to be used as part of a risk management program. The purpose of this guideline is to encourage municipalities and fire departments to use this tool so that they can make informed decisions regarding the delivery of fire suppression services.

2.0 Scope

2.1 This guideline applies to all municipalities.

3.0 Risk Management

3.1 In order to be in compliance with clause 2.(1)(a) of the FPPA, a fire department must have completed a simplified risk assessment, one of the four key minimum requirements for fire protection services. It is expected that this assessment be reviewed and updated periodically to support informed decision making and evaluation of program delivery.

4.0 Legislation

4.1 This guideline is issued under the authority of clause 9.(1)(d) of the FPPA.

4.2 Municipal Council, obligated by the FPPA to provide fire protection services, must

- establish levels of service commensurate with needs and circumstances; and
- provide fiscal resources for staffing, apparatus and equipment to support the established level of service.

4.3 Fire Chief

Person appointed by the council of a municipality, responsible for the delivery of fire protection services, and accountable to the council.

4.4 Fire Department

The fire department delivers the services as approved by municipal council and at the direction of the fire chief.

Operational Planning: An Official Guide to Matching Resource Deployment and Risk can help fire departments to

- assess and analyze fire risk;
- determine current capabilities: staffing, apparatus, equipment, etc.;
- find gaps; and
- work out options, develop recommendations and present them to municipal council using a standardized format.

4.5 Clause 2.(1)(b)

Every municipality shall provide such other fire protection services as it determines may be necessary in accordance with its needs and circumstances

4.6 Subsection 2.(7)

The Fire Marshal may monitor and review the fire protection services provided by municipalities to ensure that municipalities have met their responsibilities under this section and, if the Fire Marshal is of the opinion that, as a result of a municipality failing to comply with its responsibilities under subsection (1), a serious threat to public safety exists in the municipality, he or she may make recommendations to the council of the municipality with respect to possible measures the municipality may take to remedy or reduce the threat to public safety

4.7 Subsection 5.(1)

A fire department shall provide fire suppression services and may provide other fire protection services in a municipality, group of municipalities or in territory without municipal organization.

4.8 Clause 9.(1)(a)

The Fire Marshal has the power to monitor, review and advise municipalities respecting the provision of fire protection services and to make recommendations to municipal councils for improving the efficiency and effectiveness of those services.

4.9 Clause 9.(2)(b)

It is the duty of the Fire Marshal to advise municipalities in the interpretation and enforcement of this Act and the regulations.

4.10 Clause 9.(2)(d)

It is the duty of the Fire Marshal to develop training programs and evaluation systems for persons involved in the provision of fire protection services and to provide programs to improve practices relating to fire protection services.

5.0 References

OFM documents, programs and courses

- Comprehensive Fire Safety Effectiveness Model
- Public Fire Safety Guidelines
- Shaping Fire Safe Communities – Phases 1 and 2
- Essentials for Municipal Decision Makers [course]
- Essentials for Fire Service Leaders [course]

National Fire Protection Association standards

- NFPA 1710 and NFPA 1720

6.0 Appendix

Evaluation tool:

Operational Planning: An Official Guide to Matching Resource Deployment and Risk.

Workbook

(Guidelines PDF version available on request at [AskOFM](#))

[HTML version](#)

Sample Establishing and Regulating By-law

Public Fire Safety Guidelines	Subject Coding PFSG 01-03-12
Section General	Date March 2000
Subject Sample Establishing and Regulating By-law	Page

Under Review

- Purpose:** To assist in the preparation of a by-law, which will provide clear and accurate policy direction reflecting how council wants their fire department services to function and operate.
- Introduction:** A municipality has responsibility to determine the types and extent of fire protection services necessary to meet their specific needs and circumstances. It is not practical to produce a sample that identifies the needs of every municipality.
- Development:** An analysis must be made to determine if each clause is appropriate for the particular municipality. Unless otherwise noted in the margin, the OFM regards each clause as a necessary component for a complete by-law.
In preparing by-laws, consideration must be given to the provisions of any collective agreement formulated under the Fire Protection and Prevention Act that supersedes establishing and regulating by-laws.
The municipal solicitor, prior to enactment, should review any draft by-laws prepared by council.
- Related Functions:** The primary issues addressed in an establishing and regulating by-law may include policy direction in these areas:
- general functions and services to be provided
 - the goals and objectives of the department
 - general responsibilities of members
 - method of appointment to the department
 - method of regulating the conduct of members
 - procedures for termination from the department

- authority to proceed beyond established response areas
- authority to effect necessary department operations

**Codes,
Standards and
Best Practices:**

Codes, Standards, and Best Practices resources available to assist in establishing local policy on this assessment are listed below. All are available at www.ontario.ca/firemarshal. Please feel free to copy and distribute this document. We ask that the document not be altered in any way, that the Office of the Fire Marshal be credited and that the documents be used for non-commercial purposes only.

See also PFSG

[02-02-12](#) Fire Risk Assessment

[02-03-01](#) Economic Circumstances

[04-01-12](#) Selecting a Fire Suppression Capability

[04-02-01](#) Service Delivery Considerations

fire department

SAMPLE ESTABLISHING AND REGULATING BY-LAW

corporation of the Town of Anywhere

By-Law No.

Whereas the Municipal Act, R.S.O. 1990 c., as amended, and the Fire Protection and Prevention Act, 1997, S.O. 1997, c.4 as amended, permits the council to enact a by-law to establish and regulate a *fire department*;

BE IT THEREFORE ENACTED by the Municipal council of the corporation of the Town of Anywhere, as follows:

1. In this by-law, unless the context otherwise requires,

- a. **approved**
means approved by the council
- b. **chief administrative officer**
means the person appointed by council to act as chief administrative officer for the corporation
- c. **corporation**
means the Corporation of the Town of Anywhere
- d. **council**
means the council of the Town of Anywhere

Definitions: define any terms or positions which may be of concern to users of the by law

- e. **deputy chief**
means the person appointed by council to act on behalf of the fire chief of the fire department in the case of an absence or a vacancy in the office of fire chief
 - f. **fire chief**
means the person appointed by council to act as fire chief for the corporation and is ultimately responsible to council as defined in the Fire Protection and Prevention Act
 - g. **fire department**
means the Town of Anywhere fire department
 - h. **fire protection services**
includes fire suppression, fire prevention, fire safety education, communication, training of persons involved in the provision of fire protection services, rescue and emergency services and the delivery of all those services
 - i. **member**
means any persons employed in, or appointed to, a fire department and assigned to undertake fire protection services, and includes officers, full time, part time and volunteer firefighters
 - j. **volunteer firefighter**
means a firefighter who provides fire protection services either voluntarily or for a nominal consideration, honorarium, training or activity allowance
2. A fire department for the Town of Anywhere to be known as the Town of Anywhere Fire Department is hereby established and the head of the fire department shall be known as the fire chief.
 3. The *fire department* shall be structured in conformance with the *approved* Organizational Chart, **Appendix A**, forming part of this by law.

**Approved
Organizational Chart**

4. In addition to the fire chief, the council shall appoint a deputy chief and such number of other officers and members as may be deemed necessary by the council **Identifies appointment of other officers and members without listing all specifically**
5. The *fire chief* may recommend to the *council* the appointment of any qualified person as a *member* of the *fire department*, subject to the *approved* hiring policies of the Town of Anywhere **Appointment via approved Hiring Policy**
6. Persons appointed as *members* of the *fire department* to provide *fire protection services* shall be on probation for a period of 12 months, during which period they shall take such special training and examination as may be required by the *fire chief*. **Probationary Members**
7. If a probationary member appointed to provide *fire protection services* fails any such examinations, the *fire chief* may recommend to the *council* that he/she be dismissed.
8. The remuneration of the volunteer members shall be as determined by the *council*. **Remuneration and working conditions**
9. Working conditions and remuneration for all firefighters defined in Part IX of the Fire Protection and Prevention Act shall be determined by *council* in accordance with the provisions of Part IX of the Fire Protection and Prevention Act.
10. If a medical examiner finds a member is physically unfit to perform assigned duties and such condition is attributed to, and a result of employment in the *fire department*, *council* may assign the member to another position in the *fire department* or may retire him/her. *council* may provide retirement allowances to members, subject to the Municipal Act. **Other employment, retirement options and/or allowances**
11. The *fire chief* is ultimately responsible to *council*, through the (insert appropriate position for the municipality) for proper administration and operation of the *fire department* including the delivery of *fire protection services*. **Chief ultimately responsible to council through FPPA (via chief administrative officer, clerk, fire committee or**

specify appropriate position)

12. The *fire chief* shall implement all *approved* policies and shall develop such standard operating procedures and guidelines, general orders and departmental rules as necessary to implement the *approved* policies and to ensure the appropriate care and protection of all *fire department* personnel and *fire department* equipment. ***Developing SOP's, guidelines, rules and regulations***
13. The *fire chief* shall review periodically all policies, orders, rules and operating procedures of the *fire department* and may establish an advisory committee consisting of such members of the *fire department* as the *fire chief* may determine from time to time to assist in these duties. ***Advisory Committee***
14. The *fire chief* shall submit to the (insert appropriate position) and *council* for approval, the annual budget estimates for the *fire department*; an annual report and any other specific reports requested by the (insert appropriate position) or *council*. ***Budgets and reports***
15. Each division of the *fire department* is the responsibility of the *fire chief* and is under the direction of the *fire chief* or a member designated by the *fire chief*. Designated members shall report to the *fire chief* on divisions and activities under their supervision and shall carry out all orders of the *fire chief*. ***Divisional responsibilities designated by chief***
16. Where the *fire chief* designates a member to act in the place of an officer in the *fire department*, such member, when so acting, has all of the powers and shall perform all duties of the officer replaced.
17. The *fire chief* may reprimand, suspend or recommend dismissal of any member for infraction of any provisions of this by law, policies, general orders and departmental rules that, in the opinion of the *fire chief*, would be detrimental to discipline or the efficiency of the *fire department*. ***Discipline***
18. Following the suspension of a member, the *fire chief* shall immediately report, in writing, the suspension ***Suspension of members***

and recommendation to the (insert as appropriate) and *council*.

19. The procedures for termination of employment prescribed in Part IX of the Fire Protection and Prevention Act shall apply to all firefighters defined in Part IX of the Fire Protection and Prevention Act. ***Termination procedures***

20. A volunteer firefighter shall not be dismissed without the opportunity for a review of termination, if he/she makes a written request for such a review within seven working days after receiving notification of the proposed dismissal. A person appointed by the municipality, who is not employed in the *fire department*, shall conduct the review. ***Provides volunteers with the same opportunity for review as full-time members***

21. The *fire chief* shall take all proper measures for the prevention, control and extinguishment of fires and the protection of life and property and shall exercise all powers mandated by the Fire Protection and Prevention Act, and the *fire chief* shall be empowered to authorize:
 - a. pulling down or demolishing any building or structure to prevent the spread of fire ***Pulling down structures***

 - b. all necessary actions which may include boarding up or barricading of buildings or property to guard against fire or other danger, risk or accident, when unable to contact the property owner ***Boarding up or barricading***

 - c. recovery of expenses incurred by such necessary actions for the *corporation* in the manner provided through the Municipal Act and the Fire Protection and Prevention Act ***Recovery of expenses***

22. The *fire department* shall not respond to a call with respect to a fire or emergency outside the limits of the municipality except with respect to a fire or emergency:
 - a. that, in the opinion of the *fire chief* or designate of the *fire department*, threatens property in the municipality or property ***Authority to leave municipal limits***

situated outside the municipality that is owned or occupied by the municipality

- b. in a municipality with which an *approved* agreement has been entered into to provide *fire protection services* which may include *automatic aid*
- c. on property with which an *approved* agreement has been entered into with any person or *corporation* to provide *fire protection services*
- d. at the discretion of the *fire chief*, to a municipality authorized to participate in any *county, district or regional* mutual aid plan established by a fire co-ordinator appointed by the fire marshal or any other similar reciprocal plan or program
- e. on property beyond the municipal boundary where the *fire chief* or designate determines immediate action is necessary to preserve life or property and the appropriate department is notified to respond and assume command or establish alternative measures, acceptable to the *fire chief* or designate

AN APPROVED ORGANIZATIONAL CHART FORMS PART of THIS BY LAW AS Appendix A

Goals and objectives of the fire department may also be added as an appendix to the By-law

This by-law comes into effect the day it is passed by council, in the manner appropriate to the municipality.

Comprehensive Fire Safety Effectiveness Model Considerations

Public Fire Safety Guidelines	Subject Coding PFSG 01-02-01
Section General	Date January 1998
Subject Comprehensive Fire Safety Effectiveness Model Considerations	Page

Under Review

Comprehensive Fire Safety Effectiveness Model Considerations For Fire Protection & Prevention In Your Community

Fire Protection & Prevention in Your Community

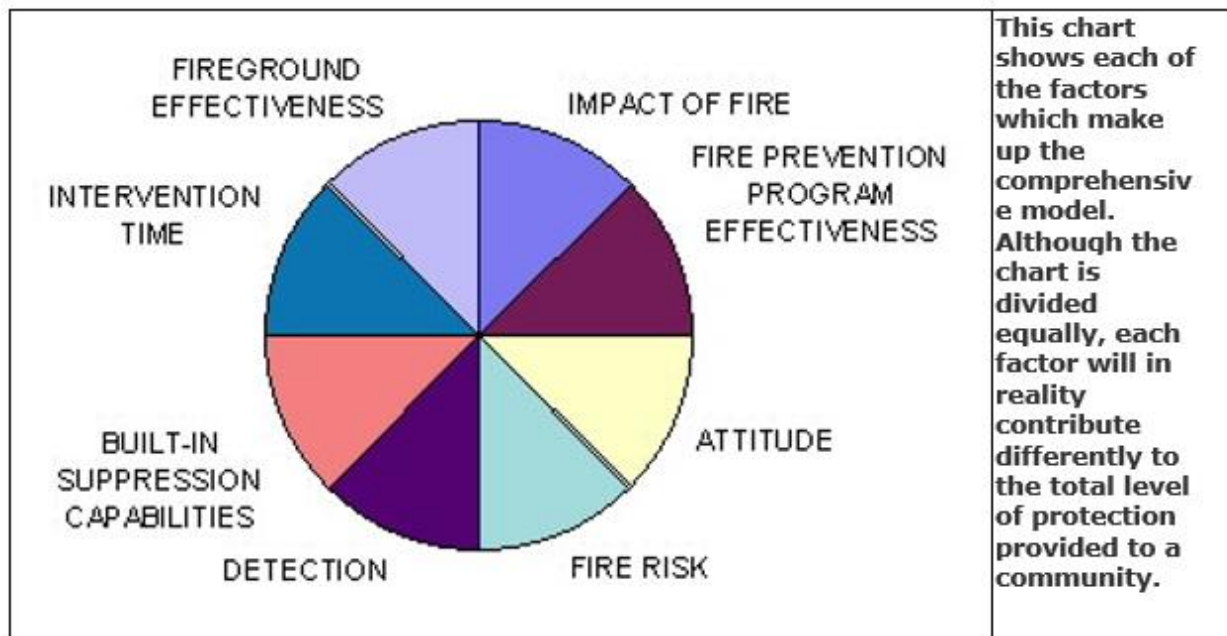
Every day, local elected leaders, managers and fire chiefs are faced with decisions relating to the provision of fire and other related emergency services for their community. Now, more than ever there are constant pressures of doing "more with less". Many government officials are hard-pressed to justify any increase in expenditures unless they can be attributed directly to improved or expanded service delivery in the community. This effort has often been hampered by the lack of criteria by which a community can determine the level and quality of fire and other related emergency services it provides to its residents. The *Comprehensive Fire Safety Effectiveness Model* is a document which can assist communities in evaluating their level of fire safety.

The provision of fire protection in Ontario is a municipal responsibility. The level and amount of fire protection provided is determined by the residents of the community through decisions made by and support provided by the local municipal council. Due to a wide variety of factors, the Ontario fire service finds itself in a period of change. Increased community expectations coupled with reduced financial resources are forcing all communities to critically assess their fire protection needs and to develop new and innovative ways of providing the most cost-effective level of service. A refocus on fire protection priorities is providing progressive fire departments and communities throughout Ontario with an exciting opportunity to enhance community fire safety. There is more to providing fire protection than trucks, stations, firefighters and equipment.

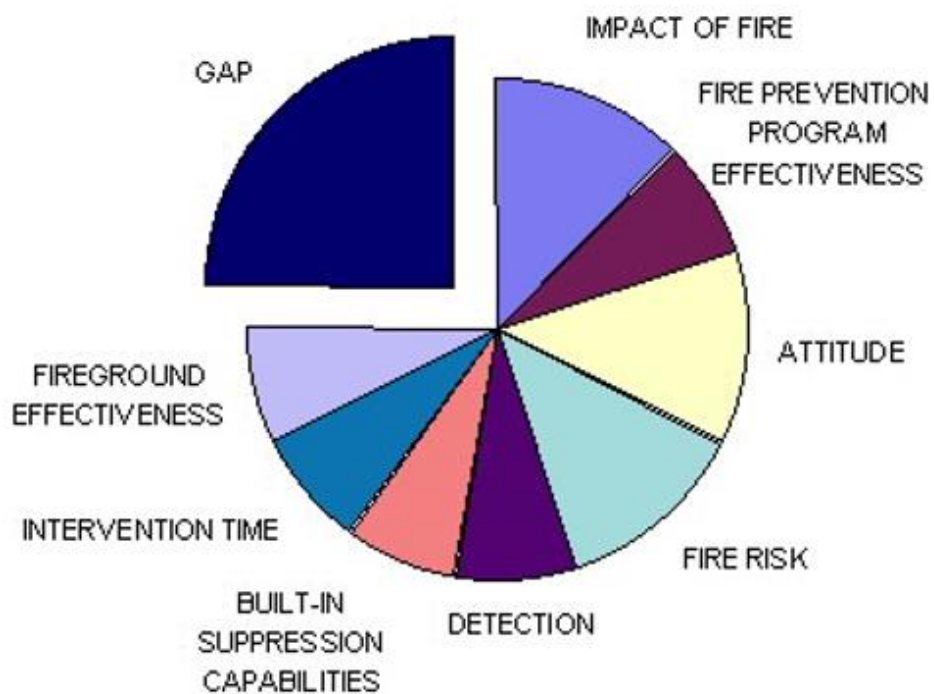
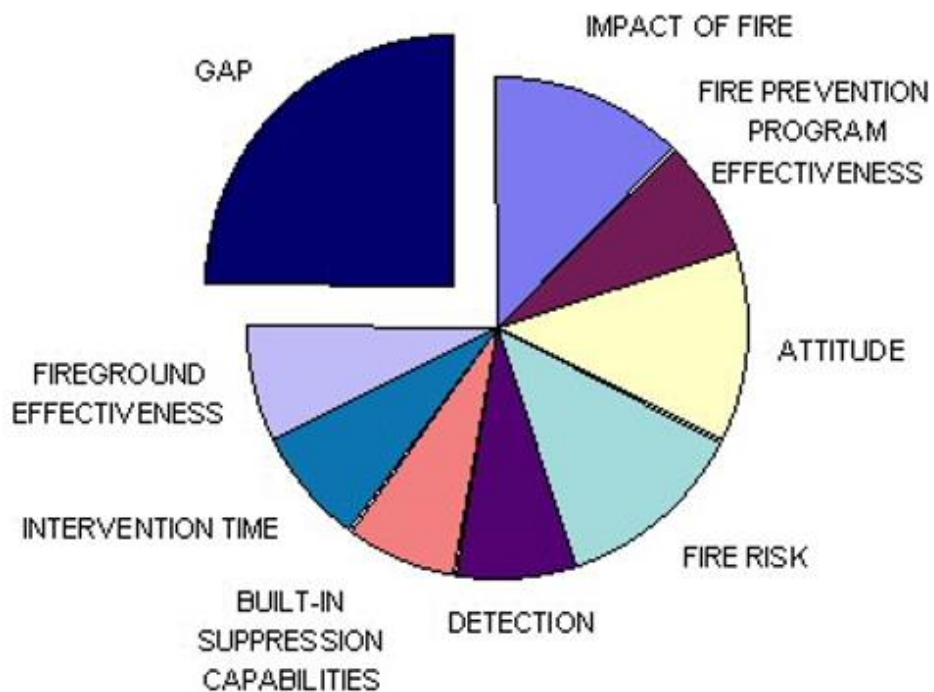
The Office of the Fire Marshal has developed the *Comprehensive Fire Safety Effectiveness Model* which can be used as a basis for evaluating fire safety effectiveness in your community. This model looks at community fire protection as the sum of eight key components, all of which impact on the fire safety of the community. Deficiencies in one of the components can be offset by enhancements in another component or components.

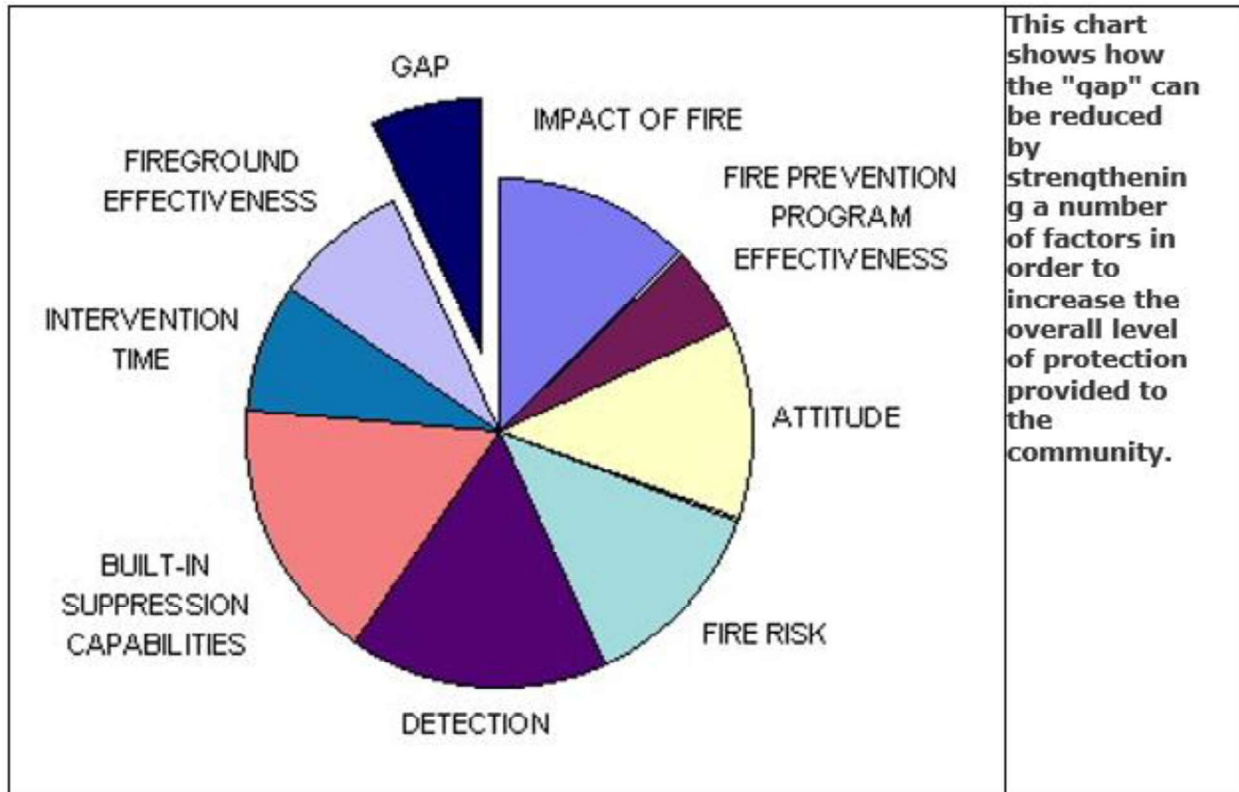
Community Master Fire Protection Plan

Every fire department should be guided by a master or strategic plan. This *Community Master Fire Protection Plan* traditionally focused on the identification of fire hazards and planning an appropriate suppression force response. Today, hazard or risk assessment has expanded well beyond the fire problem in the community to include emergency medical incidents, hazardous materials incidents and many other emergency situations. Paradigms are being shifted to emphasize the concept of fire prevention and control systems as communities attempt to effectively reduce losses experienced. This document should include plans for human resources and program financial support as well as the many external influences that impact on the fire service. The information contained with the *Community Master Fire Protection Plan* should provide a clear and concise overview of the most recently adopted organizational goals and objectives, budgetary commitments, mission statements and assessments of organizational activity. The document should cover a long-range planning period of five to ten years.



This chart shows how the comprehensive model can be applied to a typical fire department. The "gap" depicts the difference between the existing level of protection and the ideal.





It is critical that the fire department be guided by a written philosophy, general goals and specific objectives which are consistent with the legal mission of the department and are appropriate for the community it serves. These should all be integral components of the Community Master Fire Protection Plan.

Application of the Comprehensive Fire Safety Effectiveness Model will enable municipalities to make informed choices by providing an objective and innovative approach to public fire protection - a new way of thinking. Communities are able to determine if the level of service provided matches the risk in the community.

1. Impact of Fire:

The impact of fire in any community can be significant with far reaching consequences. Not only do fires result in deaths and personal injuries but they also cause substantial property and environmental loss. Often overlooked are factors such as the historical value of unique local properties as well as the potential for lost tax assessment. There are many communities in Ontario where the loss of a particular occupancy will have a serious impact on the local economy. Involvement in fire often has a negative psychological impact on those affected.

Every community should carefully assess the total impact of fire. This assessment should be used as a basis for a Community Master Fire Protection Plan that addresses all areas of community fire safety including fire prevention and life safety as well as the delivery of suppression and rescue services.

- Does your community have a property whose loss would result in a significant financial burden to the community?
- Does your community have a property whose loss would result in a significant impact of local employment?
- Does your community have a property which if involved in fire would pose a significant environment risk?
- Does the master fire protection plan adequately consider the impact of a major fire?

2. **Fire Prevention Program Effectiveness:**

- Perhaps the most important component of and community's fire protection services is the effectiveness of its fire prevention program. Legislation, regulations and standards pertaining to fire safety focus primarily on fire prevention. Enforcement of these codes is one of the most effective ways of reducing the loss of life and property due to fire. In addition, public fire safety education programs have the potential to substantially reduce the loss of life and property due to fire.

Every community should strive to provide an adequate, effective and efficient program directed toward fire prevention, life safety, risk reduction of hazards, the detection, reporting of fire and other emergencies, the provision of occupant safety and exiting and the provisions for first aid firefighting equipment.

- Does your community have a fire prevention and public education policy that adequately addresses:
 - inspections?
 - public education?
 - code enforcement?
 - investigation?
- Does your community provide inspections upon request?
- Does the fire department respond to complaints?
- Does your community's fire prevention program address public life safety in structures from pre-construction planning until demolition through application of the Building Code and Fire Code?

3. **Public Attitude:**

North Americans tend to be more complacent about fires and the resulting losses than other parts of the industrialized world. Communities often accept the consequences of fire and provide community support. Comprehensive insurance packages are available to mitigate damages.

Communities need to assess the resident's attitudes toward fire to determine what role it plays in determining the extent of fire losses. Properly designed public fire safety education programs will significantly improve public attitudes toward the prevention of fire. This will result in lower fire losses.

Every community should assess public attitudes toward fire and life safety issues. This assessment should be used to develop and deliver public fire safety education programs to enhance community fire safety.

- Do the residents of your community demonstrate an interest in public fire safety?
- Is there a general awareness of fire safety in your community?
- Is there a sense of personal responsibility for one's own safety within the community?

4. **Fire Risk:**

The characteristics of your community affect the level of fire risk that needs to be protected against. Older buildings pose a different set of problems than newer buildings constructed to current construction codes. High rise, commercial and industrial occupancies each present unique factors, which must be considered. Construction, occupancy type, water supply, exposure risks, furnishings and the risk which the combination of these factors pose to the occupants must be assessed. The presence of effective built-in suppression and/or protection measures can reduce the fire risk.

36% of all structural fire alarms and 46% of all structural fire deaths in Ontario during the period 1990-1994 occurred in single family, detached, residential occupancies.

Every community should carefully assess its fire risk. The results of this risk assessment should be used as a basis for determining the level, type and amount of fire protection provided and should be a critical factor in the development of the community master fire protection plan.

- Has your community assessed the fire risk?
- Does your community have a master fire protection plan which takes into account the results of your fire risk analysis?
- Has the fire department identified all the possible actions it could take to reduce the number of fire incidents that occur in the community?
- Does your community planning process consider the impact of new developments and industries on the fire department?

5. **Detection Capabilities:**

The presence of early warning detection capabilities notifies occupants and allows them sufficient time to escape. It also allows for earlier notification of the fire department. Communities who encourage the widespread use of early warning detection systems have the potential of significantly reducing notification time, which, when coupled with effective fire department suppression, results in a corresponding reduction of loss of life, injuries and damage to property from fire.

Every community should develop and implement programs that promote the use of early warning detection systems in all occupancies. These programs should be a fire protection priority.

- Does your community have a program to ensure that all occupancies are provided with adequate early warning detection devices?
- Does your community have a program to ensure that residents are familiar with the importance and proper maintenance of early warning detection devices?
- Does your community promote the use of direct connect early warning detection devices in residential as well as commercial, industrial and assembly occupancies.

6. **Built-In Suppression Capabilities:**

Traditionally, the use of built-in suppression has been limited to fixed fire protection systems associated with assembly, commercial, industrial and manufacturing occupancies. Application of this concept has been limited in the residential environment. These systems, particularly the use of automatic sprinkler systems play an important role in minimizing the effects of fire by controlling its spread and growth. This enables the fire department to extinguish the fire more quickly and easily.

Although effective in newer buildings, it is often difficult if not impossible to provide for built-in suppression systems that effectively control fires in wall cavities and concealed spaces associated with certain older types of construction or reconstruction.

The use of built-in suppression systems should be a fire safety priority in all communities. Programs should be developed and delivered that promote the advantages of built-in suppression systems for residential, commercial, industrial and assembly occupancies.

- Does your community promote the use of built-in suppression devices in all types of occupancies:
 - residential?
 - commercial?
 - industrial?
 - assembly?
 - institutional?
- Does your community consider built-in suppression devices and early warning detection as an alternative to traditional concepts of fire protection?

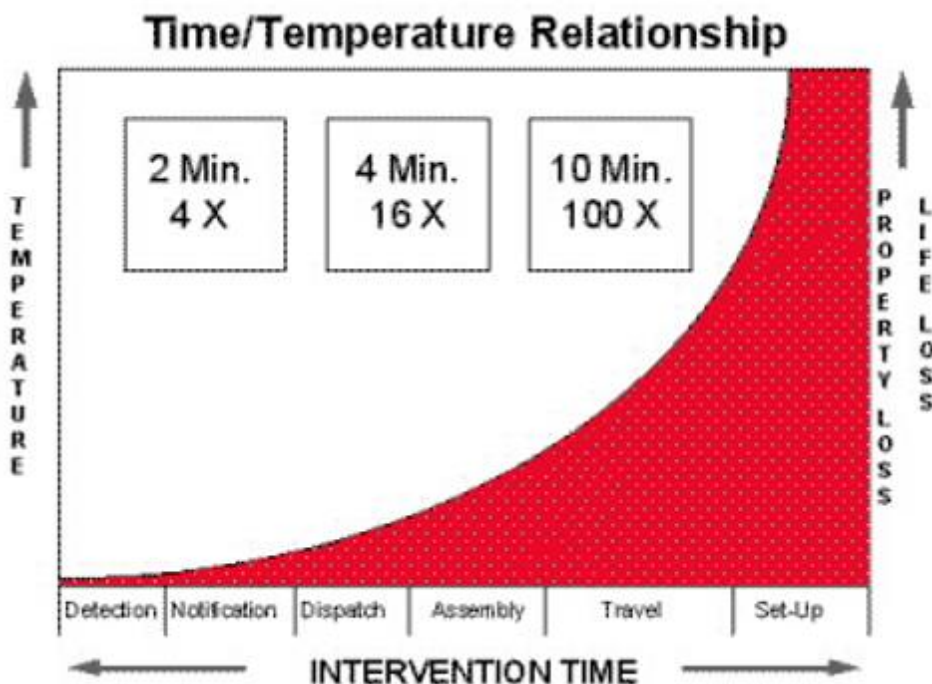
7. **Intervention Time:**

This is the time from ignition until effective firefighting streams can be applied to the fire. There are many factors influencing this component of the model:

- the time required to detect the fire
- notification time from the public
- notification time to the firefighters
- preparation time for the firefighters to leave the station
- the distance between the fire station and the response location
- the layout of the community

- impediments such as weather, construction, traffic jams, lack of roads, etc.
- set-up time

Fire department intervention time is crucial in determining the consequences of a fire in terms of deaths, injuries and loss of property and damage to the environment. Effective fire prevention and public education programs can reduce intervention time which will result in increased fire department effectiveness.



Every community should develop and implement a range of programs and initiatives that reduce intervention time. These programs and initiatives should address all aspects of intervention time from the time required to detect the fire to the set-up time of the fire department.

- Are all occupancies in your community equipped with suitable smoke alarms and provided with fire emergency escape plans?
- Do all residents in your community know how to report a fire or other emergency?
- Does your community have a common fire emergency reporting number?
- Is the fire department dispatched by an appropriate dispatch facility?
- Does the community's master fire protection plan consider the different turn-out times for volunteer and/or full-time firefighters?
- Has the department instituted an appropriate fire department training and education program?
- Are all structures within the community clearly identified using an accepted numbering system?

- Has the department instituted a policy of having the closest fire department respond even though that fire department may be from another municipality?

8. Fireground Effectiveness:

The fireground effectiveness of the fire department has a wide range of benefits for your community. Not only does the fire department's performance affect the degree of damage to the environment and property, it also has a direct relationship to personal injury and death from fire. Many factors influence the effectiveness of any fire department. Included in these factors are:

- fire department organization
- community support of fire department
- firefighter availability
- firefighter and fire officer training
- adequate resources which are properly maintained
- time effective response to emergency incidents

The fire department should strive to provide an adequate, effective and efficient fire suppression program designed to control/extinguish fires for the purpose of protecting people from injury, death or property loss.

- Does your fire department have a comprehensive training program and evaluation system for all positions?
- Does the fire department have a system to ensure that an adequate number of trained personnel respond to all emergencies within a reasonable time period?
- Is your fire department provided with adequate resources to safely and effectively handle the risks it will be called upon to mitigate?
- Does the fire department use standard operating guidelines to define expected fire department actions for the wide variety of situations it might encounter?
- Does your fire department have automatic response agreements to guarantee an adequate level of personnel at all times?

The answers to the questions in this document will provide you with some indication of the level of fire safety in your community, however this is only the start. Application of the OFM Comprehensive Fire Safety Effectiveness Model will permit you to develop a plan for the safe, effective and economical delivery of fire protection services in your community.

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Further assistance is available from your local OFM representative.