



THE CORPORATION OF THE TOWNSHIP OF UXBRIDGE

Fire Master Plan



June 2022



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EXECUTIVE SUMMARY

This document has been prepared in response to Uxbridge Fire Department's (UFD) request for consulting services to develop a Fire Master Plan (FMP) that will provide a framework to guide future policy, organizational, capital, and operational planning decisions.

An FMP traditionally focuses on the identification of risks and challenges within the community, which results in identifying appropriate options to either minimize or completely remove these risks. Today, hazard and risk assessment programs have expanded well beyond the fire problem to include emergency medical incidents, hazardous materials incidents, and many other emergency situations. To help mitigate these emergencies as much as possible, more emphasis is being placed on fire prevention and control systems as communities attempt to effectively reduce fire related losses.

Current challenges faced by Uxbridge Fire Department are like those faced by many rural/urban interface fire departments in Ontario. These challenges include increased rigour from statutory and standard requirements related to firefighter health and safety; increased skills, competencies required, changing work patterns (where fewer volunteer or paid on call [Vol/POC] firefighters are available for response), along with placing an increased and priority emphasis on prevention and public education are examples of some common themes.

This document includes plans for future needs relating to equipment, facilities, human resources, fire prevention and training, as well as the many external influences that impact the fire service.

Objectives

The FMP will include an analysis of current and forecasted fire protection service delivery needs and develop clear and concise recommendations including a detailed 10-year implementation strategy for the fire chief to present to the Uxbridge Council.

To assist in prioritizing the recommendations, they have been presented in the following timelines for implementation; immediate for situations that require priority focus (0-1 year), short-term (1-3 years), mid-term (4-6 years), and long-term (7-10 years). Wherever possible these recommendations are supported by requirements based on growth trends, regulatory requirements, and financial capabilities of the township. This plan will set the foundation for strategic decision making for the provision of fire and rescue services within the Township of Uxbridge.

Scope of Work

The review included but was not limited to the following key areas:

Staffing needs – review capabilities of existing staffing and identify future needs for each of the following divisions: Suppression, Training, Prevention, and Administration.

Facilities – review capacity and condition of existing facilities and plan for future needs. Specific attention is required to the facility needs for the Training Division, Prevention Division, and Administration.

Station location – review of existing locations relative to the current and future demands and consideration of potential needs for relocation or additional stations.

Apparatus – review existing vehicles and replacement plans relative to the existing and expected demands, in addition to, the review of how apparatus maintenance is conducted and best practices thereof.

Service Level Standards – review established benchmarks to ensure they meet the communities' needs, reflect best practices, and establish comparable joint Key Performance Indicators that can/will be used to identify performance of the various fire services.

Community Risk Assessment – review the community, anticipate growth, call volumes and related challenges that could pose a risk within the community presently and/or in the future.

Emergency Management – review the present emergency management program along with any recommendations for future improvements.

The report is a review of the existing FMP and an expansion of that document.

Plan outcomes must establish strategic priorities complete with action plans. These shall be expressed in terms of goals, objectives, action steps, resources (human and financial) and the timelines required to successfully complete the priorities.

Based on the summarized criteria above and through meetings with the fire chief and other stakeholders, the consulting team was able to complete a comprehensive review of elements that are working well and those requiring improvement within UFD.

EM&T is presenting UFD with a total of 24 recommendations. Some of the recommendations are operational in nature, meaning that little to no cost is associated with the recommendation.

Most of these imply the effort of staff time and can be implement with relative ease. However, there are recommendations that are strategic in nature because of the cost involved and/or the level of involvement by internal or external stakeholders. These recommendations will most likely require further approval by the Chief Administrative Officer (CAO) and/or Council.

The recommendations are identified within each section of this document and are also summarized in a quick reference chart located in Section 11.2. The quick reference chart includes suggested timelines for implementation, estimated cost, along with rationale for each recommendation.

Below, is a general outline of the recommendations within each of the key categories. Greater detail surrounding each recommendation, where applicable, can be found within each section from which it is derived.

Public Fire Safety Education

- Enhanced level of staff resourcing in providing proactive public education.
- Continual community surveying for external stakeholder input.

Fire Safety Standards & Enforcement

- The completion of the Community Risk Reduction Plan (CRRP) may identify additional areas of risk that should be addressed.

Emergency Response – Fire & EMS

- Vehicle life cycle budgeting and procurement.
- Equipment life cycles.
- Review and consistent updating of mutual/automatic aid and other agreements.

Staff/Personnel Development

- Programming to support health and wellness.
- NFPA – certification, knowledge, and skills maintenance.

Strategic Priorities

- By-Law updates.
- Development and utilization of the training facility.
- Review fees and services by-law for additional revenue generation opportunities.

Note: All estimated costs presented in this document are based on current industry pricing along with the estimated amount/extent of equipment and/or facility requirements. Taxes and/or other inflationary information has not been included in the estimates. Therefore, actual costing can vary depending on the date of implementation (by the community), the type of equipment used, level of staff involvement and other mitigating factors (i.e., pricing between contractors can vary).

DEFINITIONS

Immediate	Recommendations that should be addressed urgently due to the legislative or health and safety requirements or operational critical need within 0 -1 year
Short-term	Recommendations that should be addressed within 1 – 3 years
Mid-term	Recommendations that should be addressed within 4 – 6 years
Long-term	Recommendations that should be addressed within 7 – 10 years
AED	Automatic External Defibrillator
AHJ	Authority Having Jurisdiction
ALS	Advanced Life Support
ASHER	Active Shooter/ Hostile Event Response
BLS	Basic Life Support
CACC	Central Ambulance Communications Centre
CAD	Computer Aided Dispatch
CAFC	Canadian Association of Fire Chiefs
CAO	Chief Administrative Officer
CBRNE	Chemical Biological Radiological Nuclear Explosive materials
CEMC	Community Emergency Management Coordinator
CERB	Central Emergency Reporting Bureau
CISC	CRTC Interconnection Steering Committee
CISM	Critical Incident Stress Management
CO	Carbon Monoxide
CRA	Community Risk Assessment
CRRP	Community Risk Reduction Plan
CRTC	Canadian Radio-television & Telecommunications
DPG	Dwelling Protection Grade
DPS	Durham Paramedic Services
DRD	Drag Rescue Device
DRP	Durham Region Police
E&R	Establishing & Regulating (By-Law)
EAP	Employee Assistance Program
EM&T	Emergency Management and Training Inc.
EMCPA	Emergency Management & Civil Protection Act
EMO	Emergency Management Ontario
EMPC	Emergency Management Program Committee
EMS	Emergency Medical Services
EOC	Emergency Operation Centre
ERP	Emergency Response Plan
ESA	Electrical Safety Authority
EVT	Emergency Vehicle Technician
FI	Fire Inspector
FMP	Fire Master Plan
FPO	Fire Prevention Officer
FPPA	Fire Prevention & Protection Act
FUS	Fire Underwriters Survey
GPM	Gallons Per Minute
GPS	Global Positioning System

Township of Uxbridge Fire Master Plan

GVRW	Gross Vehicle Ratio Weight
HAZMAT	Hazardous Materials
HRFP	Health-Related Fitness Programs
HVAC	Heating Ventilation and Air Conditioning
IMS	Incident Management System
IT	Information Technology
L/min	Liters Per Minute
MCG	Municipal Control Group
MNDMNRF	Ministry of Northern Development, Mines, Natural Resources and Forestry
MOU	Memorandum of Understanding
NFPA	National Fire Protection Association
NG 9-1-1	Next-generation 9-1-1
NIOSH	National Institute for Occupational Safety & Health
NIST	National Institute of Standards and Technology
OAFC	Ontario Association of Fire Chiefs
OBC	Ontario Building Code
OFC	Ontario Fire College
OFMEM	Office of the Fire Marshal and Emergency Management
OSI	Occupational Stress Injuries
PFPC	Public Fire Protection Classification
PFLSE	Public Fire & Life Safety Educator
PPE	Personal Protective Equipment
PTSD	Post Traumatic Stress Disorder
RFP	Request for Proposal
SCBA	Self Contained Breathing Apparatus
SDS	Safety Data Sheets
SOG	Standard Operating Guideline
SOP	Standard Operating Policy
SRA	Simplified Risk Assessment
SWOT	Strengths, Weaknesses, Opportunities, Threats
TSP	Telecommunications Service Provider
TSSA	Technical Standards & Safety Authority
UFD	Uxbridge Fire Department
Vol/POC	Volunteer/Paid-on-Call Firefighter
WSIB	Workplace Safety & Insurance Board

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INTRODUCTION

INTRODUCTION

Project Initiation

In 2021, the Township of Uxbridge issued a Request for Proposal (RFP) on behalf of its Fire Department. As the successful bidder, Emergency Management & Training. (EM&T) has worked collaboratively with Uxbridge and Uxbridge Fire Department (UFD) in gathering data and developing the FMP. EM&T. would like to thank all staff and the community for their contribution into this plan.

Purpose

The principal purpose of the project is to obtain a detailed FMP for the future delivery needs of town residents, businesses, and visitors who request emergency services as provided by UFD.

To achieve the overall goal of this FMP, input from the following was obtained:

- Mayor and members of Council
- Chief administrative officer (CAO)
- Planning Department
- Operations Department - Water Services
- Finance and IT Services
- Operations and Corporate Administration
- Corporate Communications
- Chief officers of Uxbridge Fire Department
- Training officer of Uxbridge Fire Department
- Fire prevention officers of Uxbridge Fire Department
- Suppression officers and firefighters
- Township of Uxbridge Community

Their observations, comments, and recommendations provided great insight for the future of UFD.

Review Process

The aim of the project is to complete a comprehensive review of all Fire Department operations and develop an FMP which will facilitate the provisions to an optimum level of fire protection and rescue services appropriate for the community. The FMP must address these key areas:

To be conducted using best practices, current industry standards, and applicable legislation as the foundation for all work undertaken.

Use both quantitative and qualitative research methodologies to develop a strong understanding of current and future needs and circumstances of the community, and customer service demands of the public.

Analyze, comment on existing, and provide recommendations for enhancement in the following key areas:

Governance –The applicable legislation and regulations, and municipal by-laws relative to the Fire Department.

Service Delivery –The level and range of services and programs delivered currently, and future requirements considering predicted growth and service delivery expectations. Including review of existing service level standards and benchmarks to ensure they meet the community’s needs and reflect best practices, as well as recommendations on what service levels may be required in the future, both short and long-term.

Fire Prevention – Fire Prevention Program including fire inspections, investigations, and code enforcement.

Public Fire Safety Education – Public Education program, including demographics, website, and social media opportunities.

Emergency Response – Call volume and trends, including types of calls, number of calls, apparatus deployment, response staffing, firefighter deployment and safety.

Firefighter training – Firefighter Training Program, including recruit training, firefighter training, and officer training.

Administration – Including organization, policies and procedures, administrative support, record keeping, information management, purchasing, inventory control, public and media relations, and customer service, within the Fire Department.

Human Resources –Fire Department staffing, organizational structure, ratio of officers to firefighters relative to effective span of control, firefighter recruitment and retention, promotional policy, succession planning, and health and safety.

Facilities – Location and amenities of the Fire Department. Review capacity of existing facilities and plan for future needs.

Communications – Fire Department communications including dispatch, paging, telephone, and radio systems. Mutual Aid/Automatic Aid – Agreements that are written, historic and understood/assumed with neighbouring municipalities.

Review of Fees and Charges and Cost Recovery Mechanisms – Review the Township’s current Fees and Charges By-law for completion and possible other cost recovery options.

Emergency Management – Review the Emergency Response Plan (ERP) and make recommendations to update and evaluate the Primary and Secondary Emergency Operations Centres (EOC).

Include input from members of Council, senior town staff, senior fire department officers, Vol/POC firefighters, and the community.

The FMP recommendations are based on industry standards, and provincial and federal laws, where applicable. Regulations and references to accepted practices recommended by the Office of the Fire Marshal and Emergency Management (OFMEM) and the National Fire Protection Association (NFPA) in the delivery of fire prevention, fire suppression, fire communications, fire training, as well as pre-hospital emergency medical care services and specialized rescues. A review of local and neighbouring municipality trends has also been considered during EM&T’s review.

Performance Measures and Standards

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

- The Fire Protection and Prevention Act (FPPA)
- O.Reg 378/18 – Community Risk Assessments (CRAs)
- The National Fire Protection Association (NFPA) standards
- NFPA 1021 Standard for Professional Officer
- NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plans Examiner
- NFPA 1035 Standard on Fire and Life Safety Educator
- NFPA 1041 Standard for Fire and Emergency Services Instructor
- NFPA 1061, 1221, and 1225 addresses recommended standards in relation to communications/dispatching services
- NFPA 1071 D Standard for Emergency Vehicle Technician
- NFPA 1710 addresses recommended standards for career fire departments
- NFPA 1720 addresses recommended standards for volunteer fire departments
- NFPA 1730 addresses recommended standards for fire prevention and education activities
- Fire Underwriters Survey (FUS) technical documents – FUS information relating to tanker accreditation, along with equipment needs and expectations of fire departments.
- The Ontario Occupational Health and Safety Act (OSHA), and National Institute for Occupational Safety and Health (NIOSH)
- Ontario Fire Service – Section 21 Firefighter Guidance Notes

The Section 21 Committee is based on Section 21 of the *Ontario Occupational Health and Safety Act*. This committee is charged with reviewing industry safety concerns and developing recommended guidelines to reduce injuries for the worker.

Project Consultants

Although several staff at EM&T were involved in the collaboration and completion of this FMP, the overall review was conducted by (listed in order of involvement):

- Phil Dawson, Fire & Emergency Services Consultant – Project Lead
- Rick Monkman, Fire & Emergency Services Consultant
- Lyle Quan, Vice President of Operations
- Darryl Culley, President

Together, the team has amassed a considerable amount of expertise in all areas of fire and emergency services program development, review, and training, amounting to 150 years of experience. The EM&T team has worked on projects that range from fire service and municipal reviews, creation of strategic and fire master plans, and development of emergency response programs for clients.



SECTION

1

Community & Fire Department

- 1.1 Community Overview
- 1.2 Fire Department Composition
- 1.3 Governance and Establishing & Regulating By-Law
- 1.4 Assessment of Current Fire Service By-Laws

SECTION 1: COMMUNITY & FIRE DEPARTMENT

1.1 Community Overview

Incorporated as a municipality in 1850¹, The Township of Uxbridge is a predominantly rural community located approximately 40 kms northeast of the City of Toronto and is one of eight (8) municipalities forming the Regional Municipality of Durham. It formally came into existence in 1974 when the former Township of Uxbridge, Township of Scott and the Town of Uxbridge were amalgamated. It is bordered by the Region of York to the north, the Township of Brock and the Township of Scugog to the east, the Region of York to the west and the City of Pickering to the south.

While the Township of Uxbridge has the second smallest population in the Region of Durham, it has the third largest geographic area (420.65 sq. km) of the eight (8) municipalities that form the Region. There exists a suburban area within the Township, the Town of Uxbridge, which is home to most of the Township's population and is the location of the Township's downtown core. The remainder of the Township is comprised of many small hamlets, which include the hamlets of Coppin's Corners, Goodwood, Leaskdale, Sandford, Siloam, Udora, and Zephyr.

Despite development, the Township continues to possess a great deal of prime agricultural land. Agriculture continues to be an important sector of the Township's economy, with dairy, beef, hog, sheep, poultry, and cash crop operations activity. Agri-tourism is also an important contributor. Along with a stable agricultural base, the Township also possesses a strong industrial economy. For instance, the Township is a valuable source of mineral aggregates such as sand, stone, and gravel, which are transported to construction sites across Ontario.

Other major business sectors within the Township of Uxbridge include finance and insurance, technical services, construction, manufacturing, and tourism, to name a few.

There is an estimated 21,556 residents, 8,010 private dwellings, with an average household of 2.7 inhabitants² plus approximately 1900 businesses. It is expected that by 2026 there could be over 25,000 residents. The largest demographic group is between the ages of 55 and 59, with an average household income of more than \$110,000 yearly.

¹ All About Uxbridge Series: Uxbridge History, City House Country Home, April 22, 2016, <https://www.cityhousecountryhome.com/uxbridge-series-uxbridge-history/>

² Profile table, Census Profile, 2021 Census of Population, Statistics Canada, Accessed May 1, 2022, <https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?Lang=E&SearchText=Uxbridge&DGUIDlist=2021A00053518029&GENDERlist=1,2,3&STATISTIClist=1&HEADERlist=0>

Growth in the rural areas within the Township is restricted by both the Oak Ridges Moraine and the Greenbelt Plan. Build-out of developments, whose approval predates these policies, rural severances, and the creation of secondary dwellings will be the primary mechanism of growth outside of the Uxbridge urban area. However, this is not anticipated to increase the population of the Township significantly.

1.2 Fire Department Composition

Uxbridge Fire Department is a composite department that currently provides fire protection services from one fire station located at 301 Brock St West. Evidence of the history and tradition within the fire department remains visible in the station today. Pictures and plaques mounted on station walls reflect the years of dedicated service the firefighters have provided to their community. This sense of community continues in the commitment of firefighters today. This commitment is shown by their individual and coordinated efforts to provide fire protection services to their community.

Uxbridge Fire Department responded to approximately 401 service calls in 2021⁵. These occurrences include, but are not limited to, fire related incidents, medical assist, water rescue, as well as motor vehicle collisions. To ensure that they are meeting the needs of the community and its staff, the Fire Department recognizes that it is necessary to update and maintain an FMP for the purposes of providing high-quality fire services to the residents and businesses of the community along with its visitors.

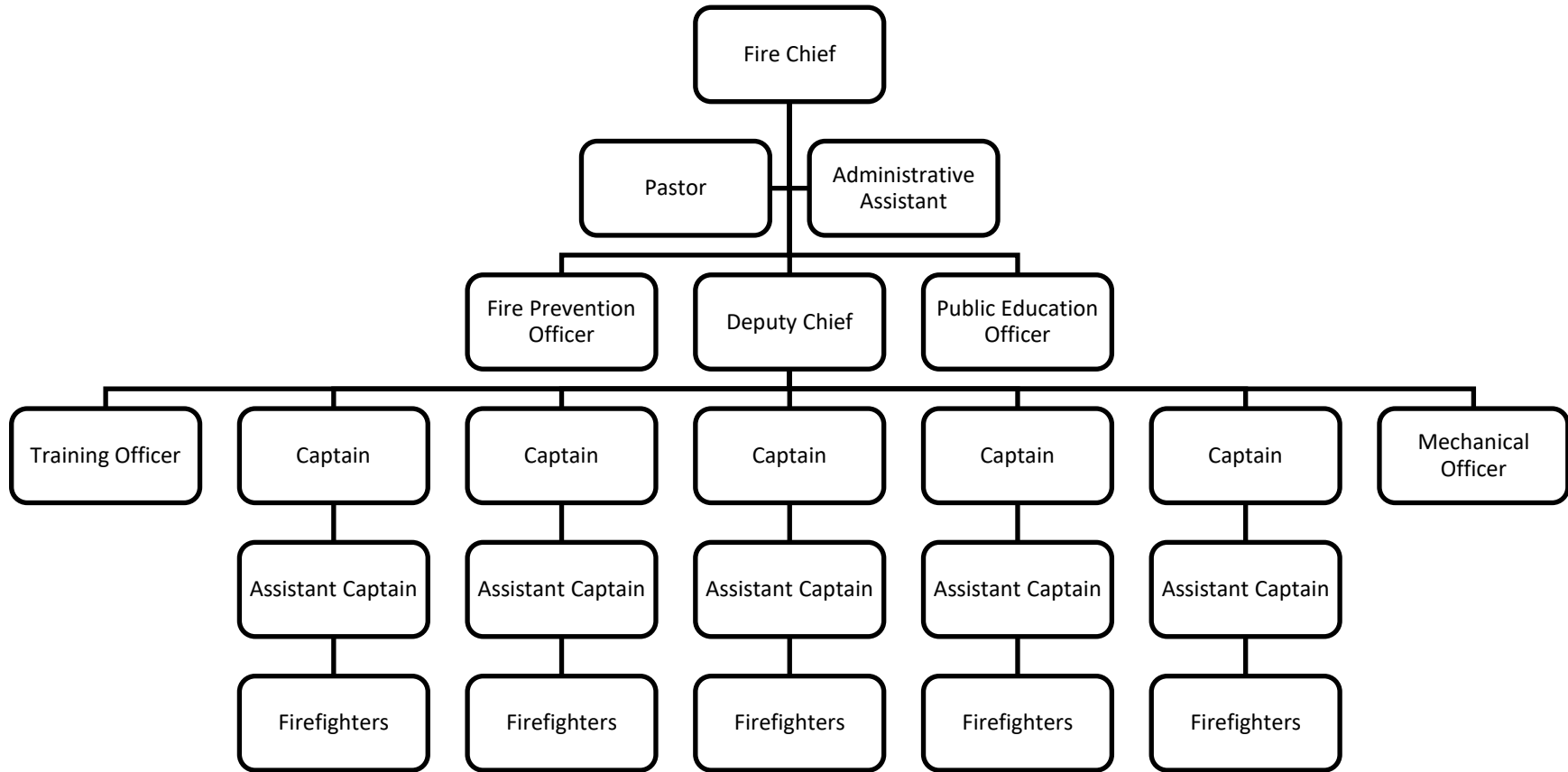
The Fire Department staff includes:

- Full-time fire chief (1)
- Full-time deputy fire chief (1)
- Full-time fire prevention officer (1)
- Part-time training officer (1)
- Part-time public educator
- Full-time executive assistant (1)
- Volunteer paid- on-call (Vol/ POC) firefighters (40) – when at full (approved) strength

The station has a complement of captains, acting captains, and firefighters who respond out of the one fire station. The organizational chart found in FIGURE #1 reflects the general reporting structure within the Fire Department.

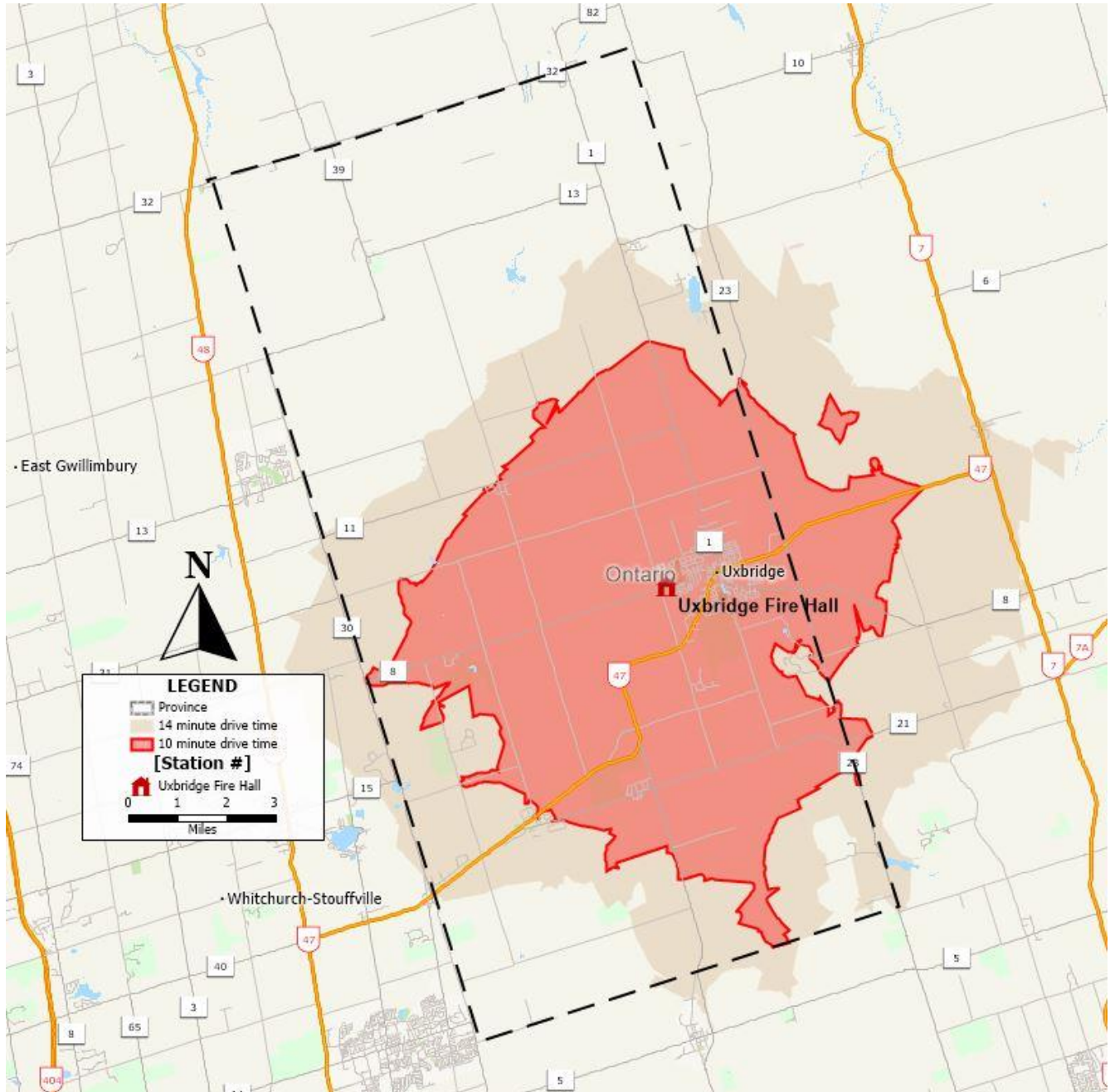
⁵ Office of the Fire Marshal, “Preliminary Summary of Emergency Responses”, Queens Printer for Ontario, February 14, 2022

FIGURE #1: Uxbridge Department Organizational Chart



This current reporting agreement allows for a sufficient level of involvement by the fire chief within the senior management structure of the township and also allows for a high-level of administrative oversight of the day-to-day operations of the fire department.

FIGURE #2: The Township of Uxbridge with the Fire Station Location



The town has several fire service/assistance agreements in place and is a member of the Region of Durham Mutual Aid Program. This is discussed at length in Section 9 of this Fire Master Plan.

1.2.1 Community Growth

The data found within this document, and the accompanying Community Risk Assessment (CRA) document, are collated from the Government of Canada’s 2021 Census.⁶

The population of Uxbridge was 21,556 permanent residents in 2021 and is forecasted to grow to roughly 25,000 people by 2031. This growth is anticipated to occur across the town with a mix of permanent residents and commercial/industrial developments. This represents an estimated population increase of 3,444 citizens or 14%. The forecasted population growth certainly will translate into an increase in call volume for the fire department. How much call volume will actually increase is unknown because population percentage growth or historical call growth are not the only factors related to calls for service. Other factors include:

- population demographic changes (e.g., aging population may increase medical calls)
- variations in tourist populations (e.g., COVID-19 restrictions reduced the numbers of vehicles and persons visiting the Town in 2020 and 2021)
- changes in policy/protocols (e.g., changes in tiered response or other dispatch protocol)
- commercial development (e.g., both types and size of development)
- weather events (e.g., a single weather event can increase call volume significantly)
- technology changes (e.g., development of CO alarms increased calls)

TABLE #1: Actual Call Volumes for 2018 to 2021

2018	2019	2020	2021	Percentage increase over the past four years	Estimated call volume for 2022 based on a 2% increase/year	Estimated call volume for 2029 based on a 2% increase/year
368	370	379	401	8%	409	471

It should be noted that along with the consistent increase in call volume, there will also be additional requests for fire inspections and public education placed on fire prevention and public education staff.

To maintain an understanding of anticipated call volumes, the fire chief will be required to track these annual percentage increases and will also need to report these findings to Council. This will ensure that Council is aware of the increases and what challenges, if any, are impacting UFD regarding the ability to maintain service levels along with actual growth in call volume and daily tempo of operations, in all areas of UFD.

⁶ Profile table, Census Profile, 2021 Census of Population, Statistics Canada, Accessed April 30, 2022, <https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?Lang=E&SearchText=Uxbridge&DGUIDlist=2021A00053518029&GENDERlist=1,2,3&STATISTIClist=1&HEADERlist=0>

1.3 Governance and Establishing & Regulating By-Law

The current Establishing &Regulating (E&R) By-Law 2013-057 was updated in 2013, making this an outdated document. There were some minor amendments requested in a report to Council in December 2021 in anticipation of the FMP review in mid-2022 (ref: FR- 11/21, December 6, 2021). Nonetheless, many parts of the E&R document may not align with the expectations of the level of service or reflect the standard of fire and life safety protection required currently and anticipated in future. To assist the fire chief in meeting the needs and expectations of Council, the E&R By-law should be updated to include the level of service, types of incidents the fire department responds to, as well as focus on the proactive risk management priorities of prevention and public education activities. This will greatly affect department training, operational, and equipment resource needs.

E&R By-laws should be reviewed yearly and updated to reflect such things as new legislation, changes in the types and level of response, and training expectations. Consideration should also be given to include reference to such guidelines and standards as:

- Section 21 Firefighter Guidance Notes
- OFMEM Guidelines in relation to staffing and response recommendations
- Related NFPA Standards that deal with:
 - Training
 - Fire prevention and public safety programs
 - Fire department response goals and objectives
 - Communications and vehicle dispatching

By incorporating these guidelines and standards, UFD will be ensuring that staffing, training programs, fire prevention and public education initiatives, as well as response to the community adhere to industry best practices.

During the preparation of this report, the fire chief was in the process of completing a new E&R By-Law to be presented to Council for their consideration and approval in the foreseeable future. EM&T recommends that the E&R By-Law be revised for Council's approval. Having an up-to-date, regularly reviewed, E&R By-Law will guide the operations of the UFD and identify response guidelines, fire prevention and public education program, and all levels of training.

1.4 Assessment of Current Fire Services By-Laws

The by-laws typically reviewed for the FMP process include, but not limited to where applicable:

- Open Air Burning By-Law (ref: 2019-030)
- Fireworks By-Law (ref: 2011-012)
- Registry and Secondary Suites By-law (ref: 1999-07)
- Establishing & Regulating By-Law (ref: 2013-057)
- Fees and Charges By-Law (ref: 2020-146)
- Mutual Aid Plan By-Law (ref: 2019-052)

By-laws of this nature should be reviewed on a regular basis with recommendation to be brought to the start of any new term of council as an update, and with any necessary amendments. This will allow a newly sitting council to understand the full scope of the Fire Department's level of service and commitment related to the community.

1.4.1 Open Air Burning By-Law – 2019-030

The Open-Air Burning By-Law stipulates the parameters for outdoor burning within the Township of Uxbridge. This by-law is all encompassing and covers a variety of topics such as permits, when open air burning is allowed, what items / materials may be burnt, who may obtain a permit, timelines of when a fire is permitted, and any penalties, to name a few. Since the last amendment was recently made in 2019, the fire chief will need to only monitor this document and amend, as required. The amended document should be brought forward for Council's information regarding current open air burning activities and for by-law approval.

1.4.2 Fireworks By-Law 2011-012

The Fireworks By-Law was passed by council on January 24th, 2011. While many areas are still current, the by-law is outdated and it should be reviewed, updated, and presented to Council for their approval.

Referencing the actual federal regulation, regarding the training required to set off commercial and pyrotechnic fireworks, should be included in the document. Doing so will direct those who require this training and education and assist them on locating the supporting information. The by-law should list the distinction between the consumer, display, and pyrotechnic fireworks, as listed in the *Explosives Act, R.S. c. E-15*.

The review of the fireworks restrictions will identify any areas of concern; however, the importance of fire safety could be lost. Therefore, it would also be appropriate to include the safety information on the proper method of setting off fireworks. As well as the equipment that should be worn by those setting off consumer fireworks.

Along with this document it will also be important to outline the need for some form of fire control that should be readily available such as a pail of water, fire extinguisher, or a garden hose that is charged with water.

Not only will this showcase fire safety importance, but it will also provide the fire department with the ability to publicly educate in a constant and consistent manner. The municipal authority to control fireworks rests within the Ontario Fire Code O. Reg. 213/07, Division B, Part 5, ss 5.2.

The Open-Air Burning By-Law states there will be no open fires when a fire ban is in place. Prohibiting the use of fireworks during a fire ban should also be included in the by-law.

The celebrational and holiday seasons, in which pyrotechnics may be set off, should be reviewed.

1.4.3 Registry for Second Suites By-Law

Second suites were permitted under the Province of Ontario's Housing Supply Action Plan, which was developed to relieve some of the affordable housing shortages. Second suites are an important part of Ontario's rental housing landscape and offer affordable housing solutions throughout the province. Second Suites are self-contained residential units which are generally allowed in single detached, semi-detached, and row houses. They are also permitted in ancillary structures (i.e., garage, laneway house or garden suite).

These changes, however, do not automatically legalize existing second suites, and they do not allow new units without a building permit. Health, safety, housing, and maintenance standards must also be met by all second suites built in Ontario. These standards include but are not limited to the Ontario Building Code (OBC), Fire Code, and municipal property standards by-laws.

A by-law should be developed and regularly reviewed so a municipality would have the ability to inspect renovations or new constructions that would involve a second suite. Many municipalities, such as Uxbridge, have gone the extra steps and implemented by-laws which regulate these accommodations. It is industry practice to have an initial inspection during the construction stage, and subsequent inspections during the renewal process of the registration. It is during these subsequent inspections that renovations, or changes to the suite, may be found to be in violation of the OFC, and potentially be a life safety hazard.

The municipality should also consider review opportunities to implement a means of reporting unregistered or illegally built second suites, such as an anonymous tip line.

1.4.4 Second Suites By-Law

The Township of Uxbridge does have a by-law in place regulating second suites. There are a few points to be examined and considered:

- Unidentified number of second unit apartments in a house.
- Combustible furnishings within the dwelling.
- Increase in housing within the municipality will result in increase demands on the fire services.
- Detached dwellings being used as lodging for multiple students with bedrooms in basements.
- Students or other tenants on restrictive budgets may locate in residences that may not be permitted or legal (i.e., do not have proper exits, adequately sized basement windows, smoke alarms, CO alarms, fire extinguishers, fire escape plan, etc.).
- May lack direct routes to the outside, particularly from basement suites.
- Windows that are too small for a person to escape through in the event of a fire.
- Property owners may not understand their responsibilities regarding fire safety and fire code.
- UFD should review its Fire Prevention and Enforcement resources regarding adequate staffing to inspect all the second units in the municipality.
- UFD should establish and advertise a method (reporting line) to identify possible illegal locations.

- Inground related dwellings (basements) which must meet OBC and Ontario Fire Code standards, under the *Strong Communities through Affordable Housing Act, 2011*.
- Provincial legislation supports the installation of second units and to reflect local needs.
- Several significantly sized residential developments are in progress, which may contain second suites.
- There is an undetermined increase in population, with the new developments in various stages of approvals.
- Statistically, most fires occur in residential units.

With these points in mind, EM&T commends UFD and that it continues to work collaboratively with the Planning and Building Department regarding by-law(s) that regulates second units, including the requirement for them to be registered and licensed.

Section 1: Recommendations

Rec #	Recommendation	Estimated Cost	Suggested Timeline
1	That the fire chief bring forth a revised version of the Establishing & Regulating By-Law for Council’s approval and going forward the fire chief annually review and update, the By-Law as necessary.	Staff Time	Short-term (1-3 years)
2	The Fireworks By-Law that was passed by Council on January 24 th , 2011 should be reviewed, updated, and presented to Council for their approval.	Staff time	Short-term (1-3 years)

SECTION

2

- 2.1 Three Lines of Defence
- 2.2 NFPA Standards
- 2.3 FUS
- 2.4 SWOT
- 2.5 Focus Group Sessions
and Public Survey



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 emergency services. 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 Community Safety – Three Lines of Defence plus Emergency Management

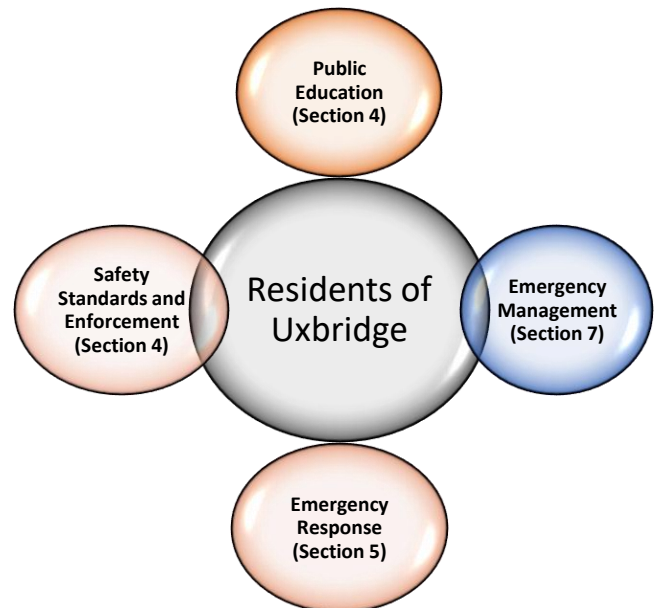
The Office of the Fire Marshal and Emergency Management’s (OFMEM) community safety model revolves around three specific lines of defence. These three lines are Public Education, Safety Standard, and Enforcement and Emergency Response. EM&T also views Emergency Management as the fourth, inclusive line of defence, and have added this into the overall concept of community safety.

Public Education – educating residents has proven to be the most effective means in reducing and preventing the incidences of fire and property damage. Reducing the number of fires before they start and identifying how the municipality will continue to meet the fire education needs while the municipality grows. More information on this topic can be found in Section 4.

Safety Standards and Enforcement – ensuring that the inspection and enforcement of fire codes occur so buildings meet the required safety standards. More information on this topic can be found in Section 4.

Emergency Response – the availability of well trained and well-equipped firefighters to respond and effectively mitigate the incident is the last defence. The staff, equipment, as well as fire station locations impact how the emergency is mitigated. More information on this topic can be found in Section 5.

Emergency Management – a municipality is legislated to have an emergency preparedness program to ensure the safety of the residents of the community by having a training, education, response, and mitigation plan in place for any possible emergency the community may encounter. More information on this topic can be found in Section 7 of this report.



Along with these four lines of defence, the following industry best practices help to inform a fire department of industry expectations. Neither the NFPA nor the Fire Underwriters Survey (FUS) are legislated and therefore, do not have to be followed but utilizing them to improve a community’s fire service is encouraged by EM&T. Given the Fire Marshal’s issuance of mandatory requirements, dated April 14, 2022⁷, requiring NFPA-based

⁷ O. Reg 343/22 Firefighter Certification, “Fire Prevention and Protection Act 1997 S.O. 1997 c. 4”, Ontario, April 12, 2022, <https://www.ontario.ca/laws/regulation/r22343?search=343%2F22>

standards as the minimum benchmark for training and certification by all Ontario fire departments, it is prudent to be current and meet with such best practices.

2.2 National Fire Protection Association (NFPA) 1201

The National Fire Protection Association Standard 1201 – Standard for Providing Fire and Emergency Services to the Public makes note of the services that should be offered and how they are to be delivered based on the composition of an emergency service. Section 4.3.5 sets out criteria as stated below:

“The Fire and Emergency Services Organization (FESO) shall provide customer service-oriented programs and procedures to accomplish the following:

- Prevent fire, injuries and deaths from emergencies and disasters
- Mitigate fire, injuries, deaths, property damage, and environmental damage from emergencies and disasters
- Recover from fires, emergencies, and disasters
- Protect critical infrastructure
- Sustain economic viability
- Protect cultural resources”

To accomplish this, an FESO must ensure open and timely communications with the CAO 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 an emergency service clearer focus on what the ultimate goals for emergency response criteria are, the NFPA suggests that response times should be used as a primary performance measure in emergency services. NFPA 1720 refers to goals and expectation for volunteer emergency services has been incorporated into the evaluation of the emergency services’ response and staffing needs. More discussion in relation to the 1720 standard will be presented in Section 5 of this report.

2.3 Fire Underwriters Survey (FUS)

FUS provides data on public fire protection for fire insurance statistical work and underwriting purposes of subscribing insurance companies. Subscribers of FUS represent approximately 85 percent of the private sector property and casualty insurers in Canada. The insurance rates are based on the score that a community receives which is founded on entities such as the emergency services assessment. This assessment includes a review of apparatus, distribution of companies/ fire stations, staffing, training, maintenance, pre-incident planning, etc. In essence, the more effective and efficient a fire service is, the better the rating, which can equate to lower property insurance rates for a community.

The FUS has expectations around fire prevention inspection frequencies, fire truck replacement schedules and water delivery capabilities of a fire department. More on each of these three topics will be considered in this document. It is noted that UFD has completed a FUS report in 2019 (see Section 10 for further information).

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

The strengths and weaknesses segment of a SWOT analysis is based on internal reviews which identify what is working well, in collaboration with recognizing areas for improvement. The opportunities and threats section of the SWOT is related to external influences and how these influences affect the operations and response capabilities of an emergency service.

2.4.1 Strengths

The UFD does have a full-time fire prevention officer to ensure that most mandated fire safety inspections and public education needs are being met.

The department has strong relationships with its partner emergency services (police and EMS), along with service agreements, mutual and automatic aid agreements have been established with other fire services to assist with general response needs. UFD is in the process of updating its dispatching agreement with City of Oshawa.

UFD is in the process, during the time this FMP was conducted, of addressing trails/off-road response-type resourcing regarding equipment and training.

2.4.2 Weaknesses

Many composite emergency services depend on its team of dedicated volunteer firefighters and UFD is not any different. Although generally, UFD does not currently experience the same significant challenges of other municipalities, volunteer firefighter response, there may be times it will be challenged in future.

Due to other commitments, such as their full-time jobs and family obligations, there is no guarantee the volunteer firefighters will be available or accessible to respond as needed, which can create a situation where there is a low turnout of volunteer numbers of on-scene.

There is a part-time training officer, however, with over 40 UFD staff, it is a challenge to ensure that staff development, technical training needs and expectations as outlined in such documents as the NFPA, and the *Occupational Health and Safety Act* are being delivered and documented on a consistent basis.

And with the OFMEM having implemented training standards and certification requirements for all positions within the fire service, even more training will be required (by all fire departments in Ontario).

2.4.3 Opportunities

UFD has a history of engaging in partnerships with bordering departments for such things as joint training, cross border responses, mutual aid and fire service agreements that benefit both communities.

Continuing to build on these partnerships will improve available options in relation to meeting future training and certifications requirements.

2.4.4 Threats/ Challenges

Major emergencies stress availability and perhaps place even greater dependence on suppression staffing resources. Equipment must be considered as the township's population continues to grow and age.

Recent move by the Province to mandatory NFPA certification particularly NFPA 1061 and firefighter telecommunications and vehicle dispatching requirements. UFD firefighters assume vehicle dispatching as well as call taking duties, once alerted by Oshawa.

Response by the firefighters may be a challenge due to their other obligations, such as full-time jobs within or outside of the community. This is the case for most emergency services that may need to depend on responses from the volunteer firefighters.

The level of response should be continually monitored to identify if any issues exist.

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. Weather occurrences are becoming increasingly common and need to be a part of the emergency response program for each community.

These changes in climate conditions, along with the frequency and severity of incidents, has predicated the need for a larger response component to these emergencies.

All these noted challenges will need to be monitored, evaluated, and reported to council by the fire chief to ensure that UFD is meeting the needs and expectations of the community.

2.5 Focus Group Sessions and Public Survey

Interviews and surveys were conducted to get a complete understanding of how well the UFD is meeting the needs of its staff and the community. Feedback has been gathered from internal fire staff, which included firefighters, administration, training, and fire prevention. Mayor and Councillors were interviewed individually and in small group to ensure there was no quorum criteria triggered. In addition, the municipal Senior Management Team members were also interviewed. These session and surveys results are used collaboratively to assist Uxbridge Council in making strategic decisions for the future of the community.

The sessions resulted in the recognition of the following themes:

- Continuing to meet the needs of the growing community with the present set up of the fire station, equipment, apparatus, and service level expectations.
- Staffing roles, development, and firefighter recruitment.
- Continuing excellence of leadership and communication between the Fire Chief and the CAO, council, and firefighters.
- Continually ensuring that the growing community of residents and businesses understand the fire services delivery model and expectations of service levels.
- Need for corporate Human Resources capability to address needs of the township including UFD as the township grows in population and municipal staffing levels.

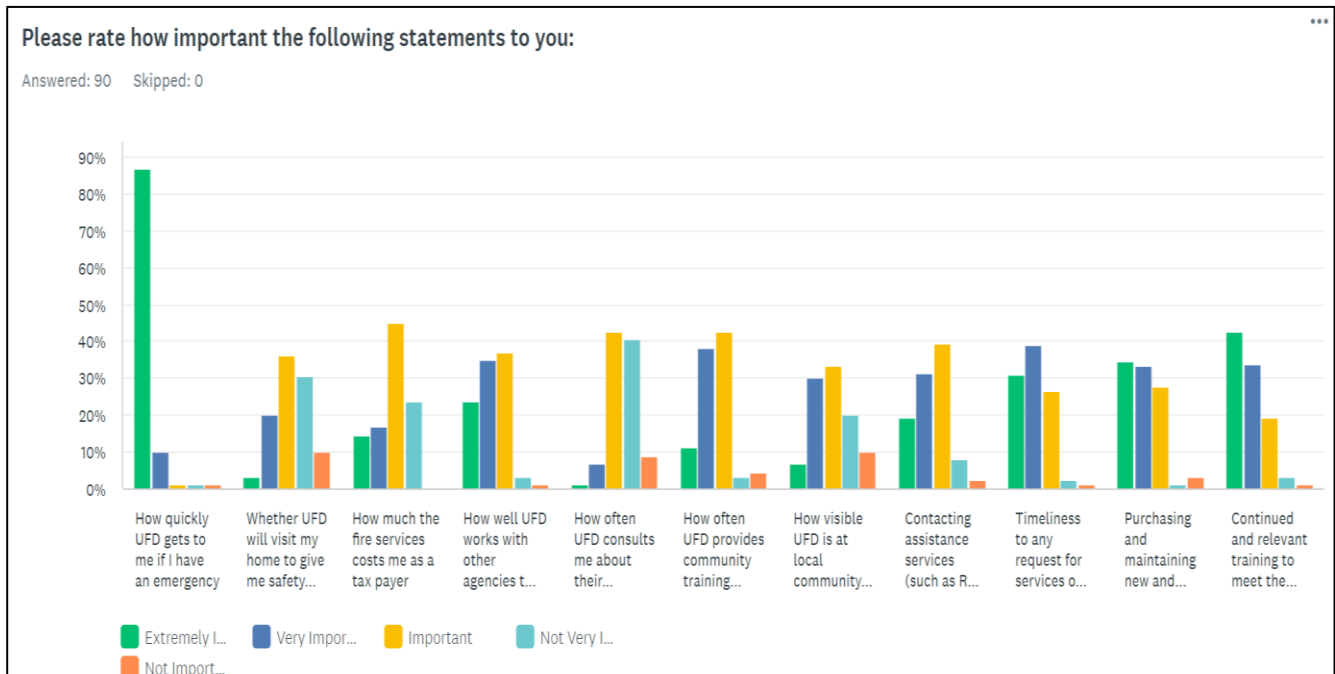
2.5.1 Public Survey

There was a total of 90 respondents to the Public Survey. The survey was posted to the Township’s website along with a media release to facilitate interest and generate as much participation as possible. Additionally, the survey opportunity was proactively distributed to various community groups, and business associations.

Based on the information received, at this time the key areas that were extremely important to the respondents, are shown below:

- Response to calls
- Response for service
- Relevant training
- Purchase and upkeep of equipment

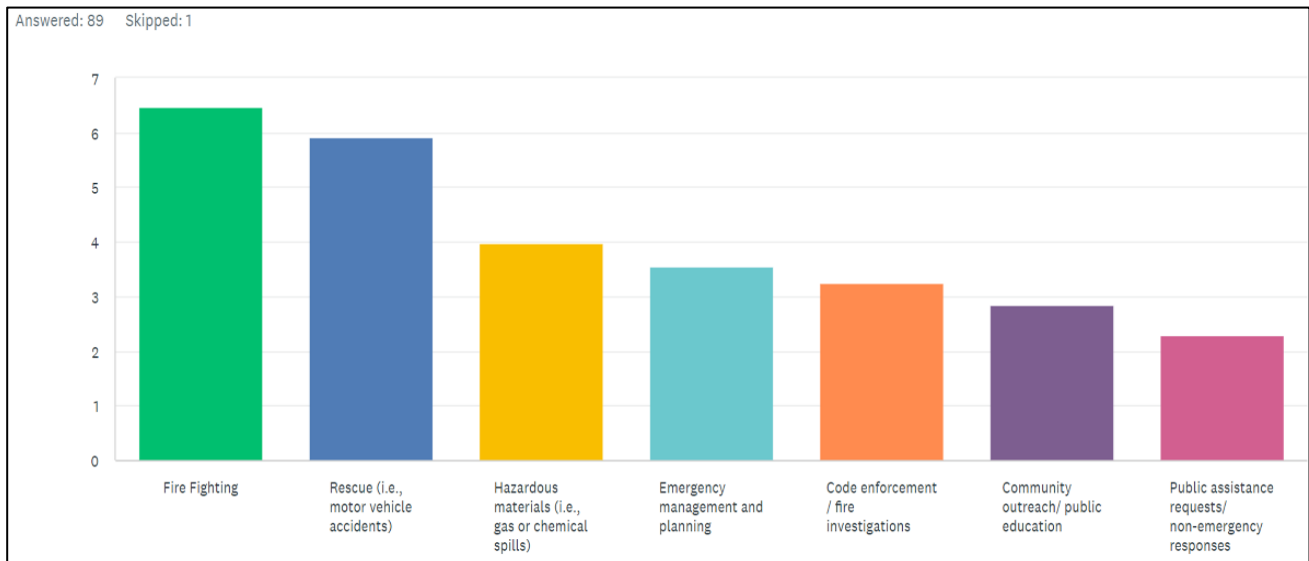
Figure #3: Public Survey Results



The top three services that the public survey revealed as most wanted, based on the information received:

1. Fire fighting
2. Rescues – motor vehicle accidents
3. Hazardous materials response

Figure #4: Public Survey Results (2)

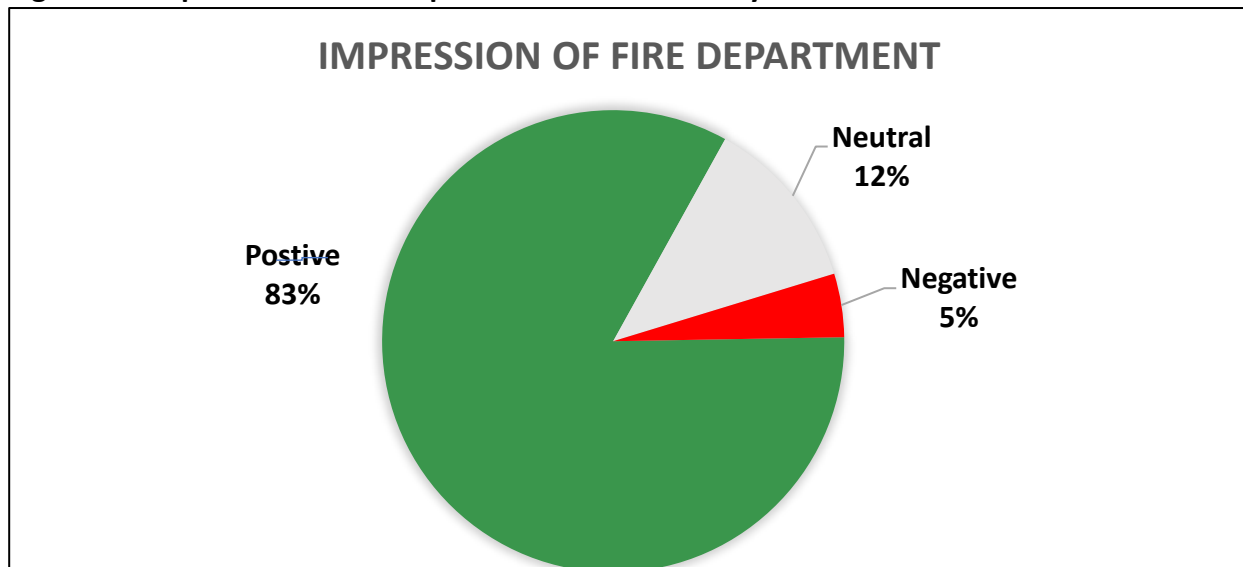


Other information received, and that EM&T recommends for consideration include:

The fire department is positively viewed as professional and as a good community partner and some suggestion comments that the external stakeholders would like to see an increase:

- More attendance at community events
- More home inspections
- More education and safety programs
- Regular communication / safety newsletter with businesses and homeowner

Figure #5: Impression of Fire Department – Public Survey



It should be noted that that 73% of the respondents indicated that they had not directly received service from UFD.

Section 2: Recommendations

Rec #	Recommendation	Estimated Cost	Suggested Timeline
4	That UFD continues to survey the Community and considers for action, external stakeholder suggestions and comments.	Staff Time	Short-term (1-3 years) ongoing

SECTION

3

Risk Assessment



- 3.1 Community Risk Assessment
- 3.2 Simplified Risk Assessment and Community Growth
- 3.3 Community Risk Reduction Plan

SECTION 3: RISK ASSESSMENT

3.1 Community Risk Assessment

The first and most effective way to reduce injuries, death, and property damage due to fire is through public education, inspections, and enforcement. A proactive fire prevention program paired with a current Community Risk Assessment (CRA) will be able to identify and address these key components of community fire safety.

3.1.1 Community Risk Assessment Profile

The Province of Ontario Regulation 378/18 Community Risk Assessment (CRA) states, “a community risk assessment is a process of identifying, analyzing, evaluating and prioritizing risk to public safety to inform decisions about the provision of fire protection.”

Effective July 1st, 2019, the regulation states that every municipality shall complete a CRA by 2024 with renewal to occur every five years, thereafter. The municipality is required to review the document annually.

Council has the authority to establish the level of fire protection within their municipality. The fire chief is responsible for informing council of any, and all risks existing within the township. It is based on this information that council can make an informed decision on the level of service to be achieved.

There are two basic risk categories associated with the fire service – **operational risk** and **organizational risk**. Operational risk is the responsibility of the UFD to determine the risks within its community and plan strategic, tactical, and task orientated plans to mitigate incidents. Organizational risk is a function and responsibility of council to determine the disciplines, level of service, staffing, stations, and approval of the department business plan based on the overall risk assessment of the municipality.

It is the accumulation and analyzation of these factors that will assist in applying this information to identify potential risk scenarios that may be encountered. It is during the assessment of the information gathered, which includes the likelihood of these scenarios occurring and subsequent consequences, that will assist in answering the following questions:

1. What could happen?
2. When could it happen?
3. Where could it happen?
4. Who could it happen to?
5. Why could it happen?
6. How likely could it happen?
7. How bad would it be if it happened?
8. What can be done to mitigate or prevent any or all the above?

Once these questions are answered, they establish the basis for formulating and prioritizing risk management decisions to reduce the likelihood of these incidents from occurring and to mitigate the impact.

In developing the CRA there were several steps followed, in order of priority they include:

- Identify Risks in the community considering the nine profiles
- Prioritize Risks based on probability and consequence levels.
- Assign Risk Levels for each identified risk level.
- Determine Risk Treatment Options for each identified risk.
- Determine Fire Protection Services to be provided based on how risks will be treated.
- Review the CRA annually and complete a new risk assessment every five years to ensure it accurately reflects risk in the community.

The probability or likelihood of a fire occurring within a community is estimated based on previous occurrences and the frequency of such events. EM&T's review of previous events, including the fire loss data, and learning what occurred, assisted in establishing a baseline for evaluation.

3.1.2 Township's Community Risk Statistics

Even though a full CRA was part of this FMP project, it is of value to review the following information that was obtained from the OFMEM and the UFD. The data offers an overview of the areas of concern within a municipality. For ease of review, the data has been listed from the highest to lowest level of concern. This information will assist the fire chief and staff with fire prevention and public safety awareness initiatives.

Fire Loss by Occupancy Classification

The analysis indicates that between 2017 to 2021 on average approximately 70% of the fires reporting a loss occurred in Group C - residential occupancies.

Municipality of The Township of Uxbridge, Fire Loss by Property Classification

Based on the information received, the following building classifications for property loss are listed in order of occurrence type:

- Group C – Residential occupancies
- Other occupancies not classified within the Ontario Building Code (i.e., farm buildings)
- Group A – Assembly occupancies

Municipality of The Township Uxbridge, Reported Structure Fire Cause

Assessing the possible cause of the fires reported is an important factor in identifying any potential trends or areas that may be considered for introducing additional public education of fire prevention initiatives as part of the community fire protection plan.

The leading causes of structure fires were:

- Misuse of ignition source/material first ignited
- Other unintentional
- Arson
- Municipality of The Township of Uxbridge, Ignition Source Class
- The leading causes for ignition sources were:

- Heating equipment, chimney, etc.
- Miscellaneous
- Electrical distribution equipment
- Other Electrical / Mechanical
- Cooking equipment
- Appliances
- Open flame tools, smoker's articles
- Lighting Equipment

In assessing the data there is a low number of undetermined fires occurring in Uxbridge. The Fire Chief and Fire Prevention Officer should be commended for their position in determining causes and ignition sources. Nevertheless, it is important to continue to supplement staff (new and incumbent) training and engage the use of outside resources, where necessary. These resources include the OFMEM, Police (Durham Regional), Electrical Safety Authority (ESA), and third-party investigators in conjunction with insurance companies.

To assist the fire department in its fire safety goals, it is recommended that the fire department staff regularly meet with relevant local community groups to form a partnership for organizing fire safety and public education events. This would allow the events to be tailored to the unique needs and challenges within the community, as they can be based on the previous fire cause information supplied. An example of community group would be a local Lions Club (or other clubs) that want to support fire safety initiatives.

Within NFPA 1730, it breaks down how a fire service should evaluate and categorize the level of risk for each occupancy. By using this as a reference in assigning risks, it will aid the department in what occupancies they need to focus their resources on fire inspections and enforcement as well as public education opportunities. 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 (e.g., apartment buildings, hotels, dormitories, lodging and rooming, assembly, childcare, detention, educational, and health care).
- **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 (e.g., ambulatory health care, 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 (e.g., storage, mercantile, and business).

Utilizing NFPA 1730 definitions of risk categories may guide council in deciding the focus and service level within the community. As conducting a review of every building within Uxbridge may not be practical, Uxbridge 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.

3.2 Simplified Risk Assessment and Community Growth

A Simplified Risk Assessment (SRA) was not previously completed by the UFD. With completion of the township's CRA, it will identify if there has been significant building stock growth within the community (namely residential, but not exclusively). This growth has impacted the demographic profile and, subsequently, the needs and circumstances for the delivery of services by the fire department. Also, as the population and infrastructure grow the types of calls and related frequency will need to be monitored by the fire chief to ensure that, they are in fact meeting the needs of the community. The fire chief will also need to ensure that the levels of internal training and equipment needs of its firefighters are monitored to manage their jobs in an efficient and effective manner.

3.3 Community Risk Reduction Plan

After a CRA is completed and the risks have been identified the process of developing a Community Risk Reduction Plan (CRRP) will commence. When properly applied, the CRRP coordinates emergency operations with prevention and mitigation efforts, throughout the community and at the fire station level. Involvement of fire station personnel is critical for both gathering local risk data and performing activities necessary to implement the CRRP.

Aside from the key advantages to the community, a CRRP can contribute positive impacts on the fire department. A CRRP improves firefighters and emergency responder safety and occupational health, as well as assisting with decreasing line-of-duty deaths. This is due in part to the enhancements in the number of fire inspections and public education events that are completed, enforcement of the OFC, and the reduction in the number of fires, resulting from these measures.

In addition to firefighter safety, there are several other reasons why departments should begin the process of developing a CRRP, including:

- The presence of new and emerging hazards, that are identified, and the risks managed, which makes the community safer.
- Declining budgets among fire departments and local governments, thereby better resource allocation.
- Rapidly changing community demographics.
- Community engagement.
- May avoid potential ramifications of hazards that were ignored or not fully addressed.
- Better defines the fire department's purpose and value within the community, beyond just fighting fires.

The development of a CRRP includes:

1. **Identification and Prioritization** – Upon the completion of the CRA in which the various community risks were identified and the priorities determined, the results should be documented for use in the remaining planning process. The document does not need to be complex or complicated, but in a clear and concise format that enables the reader to understand the risks and those that should have the highest priority.

During this process consider the following:

- Why and how the risk occurs and, in some cases, when?
- Who does the risk affect the most and why?
- How is the community and the fire department affected by the risk?
- What about this risk ranks it higher than others?

2. Develop Mitigation Strategies & Tactics – This requires input with a variety of individuals involved, including those most affected by the risk. Stakeholder involvement is paramount and should always be included in the decision-making processes. It will necessitate decisions to determine what tactics and strategies will be necessary to prevent and/or mitigate those risks with the highest priority.

During the development of the plan, there are five elements that should be included:

- **Education:** Determining the appropriate type and mix of educational messaging necessary to inform the public and effect behavioural change. More encompassing education through different mediums of social media.
- **Enforcement:** Identifying whether stronger enforcement is necessary or if newer codes and standards need adoption. Notification of the public on successful convictions through the justice system.
- **Engineering** – Determine whether there are engineering or technological solutions to address the identified risk(s).
- **Emergency Response** – Changes to the emergency response protocols, SOGs, SOPs, and policies to better meet a specific risk or need. This may require additional resources such as stations, apparatus, equipment, staffing, and/or enhanced levels of training.
- **Economic Incentive** – Identifying whether financial incentives will improve compliance or help increase awareness of community needs.

3. Prepare the CRRP – Once the risks are identified and prioritized and strategies and tactics determined for prevention and mitigation, it will be necessary to develop a written plan.

4. Implementation of the CRRP – The implementation of the completed CRRP usually involves several steps. The process should include timelines, which can be quick and focused or slow and methodical. The implementation may rely on the fire department, community partners, or a combination of both.

5. Monitor the Progress, Evaluate Your Findings & Modify the CRRP – The final step involves monitoring and evaluating the effectiveness of the plan and adjusting, as necessary. This will enable the organization to determine if they are achieving their desired goals and/or if the plan is or is not having an impact. Ongoing monitoring allows for plan modifications in a timely manner.

The CRRP is a gateway to the reinvention of the fire service culture. It requires buy-in from council along with vision, and strong leadership to advocate for needed change and navigate the process. Having a successful CRRP will bring additional resources to the effort through partnerships within the fire department as well as the community it serves. The community-based approach increases public safety because of the collective work within the community to understand, assess, and provide inclusive solutions to community safety issues.

Section 3: Recommendations

Rec #	Recommendation	Estimated Cost	Suggested Timeline
5	That Uxbridge develops a comprehensive Community Risk Reduction Plan that falls in line with the Community Risk Assessment.	Staff Time	Short-term (1-3 years) ongoing



SECTION

4

Fire Department Divisions – Non- Suppression

- 4.1 Administration
- 4.2 Fire Prevention & Public
Education
- 4.3 Training & Education
- 4.4 Training Facility

SECTION 4: FIRE DEPARTMENT DIVISIONS – NON-SUPPRESSION

Within the scope of work noted in the original RFP document, staffing needs was identified as a priority in which EM&T was to review the capabilities of existing staffing and identify future needs for each of the standard, general component areas of a fire department organization. This includes Suppression, Communications, Mechanical, Training, Prevention, Public Education, and Administration.

This section will discuss the following divisions:

- Administration
- Fire Prevention and Public Education
- Training & Education

4.1 Administration Division

The fire chief responsibility, in either a large or small fire department, requires regular interaction of council, and senior corporate management. Responsibility for Fire Protection Services found in Part 2, section 2, paragraph 6 (3), of the Fire Protection and Prevention Act, 1997, S.O. 1997, states that “A fire chief is the person who is ultimately responsible to the council of a municipality that appointed him or her for the delivery of fire protection services”. It is based on this provincial legislation that the fire chief needs to communicate directly and regularly with the council of a municipality to satisfy the requirements of the role.

The Administration Division is comprised of senior and administrative staff. The Uxbridge Fire Department includes:

- Fire Chief
- Part-Time Deputy Fire Chief
- Fire Prevention Officer
- Part-Time Fire Inspector
- Part-Time Training Officer
- Part-Time Public Educator
- Part-Time Administrative Assistant

This team is doing an admirable and commendable job at managing the day-to-day operations of the department.

With the administrative, operational, data reporting, and training requirements there will most likely be a need to increase the following:

- Upgrading of the present part-time deputy chief to a full-time deputy fire chief position.
- Maintain the current part-time training officer position to support administrative functions and the newly legislated training requirements, and
- Increase the current administrative support to full-time hours dedicated to UFD.

4.2 Fire Prevention and Public Education

Fire prevention and public safety education are the foundation to creating a safe community. In fact, the Ontario Fire Marshals Office has long stated that Education and Prevention are the first two priorities in the “Three Lines of Defence”, with Suppression being the third and last line of defence. The more resources assigned to this endeavour, the more proactive a community and its fire department are, regarding fire safety. Fire prevention and public education should be the initial focus of a fire service, to create an effective, manageable education, and awareness program.

Safety Standards and Enforcement (prevention) is the second line of the ‘Three Lines of Defence’, in preventing fires before they begin. Public education, combined with safety standards and enforcement, are the most effective methods of reducing injuries and death associated with fires and associated emergencies.

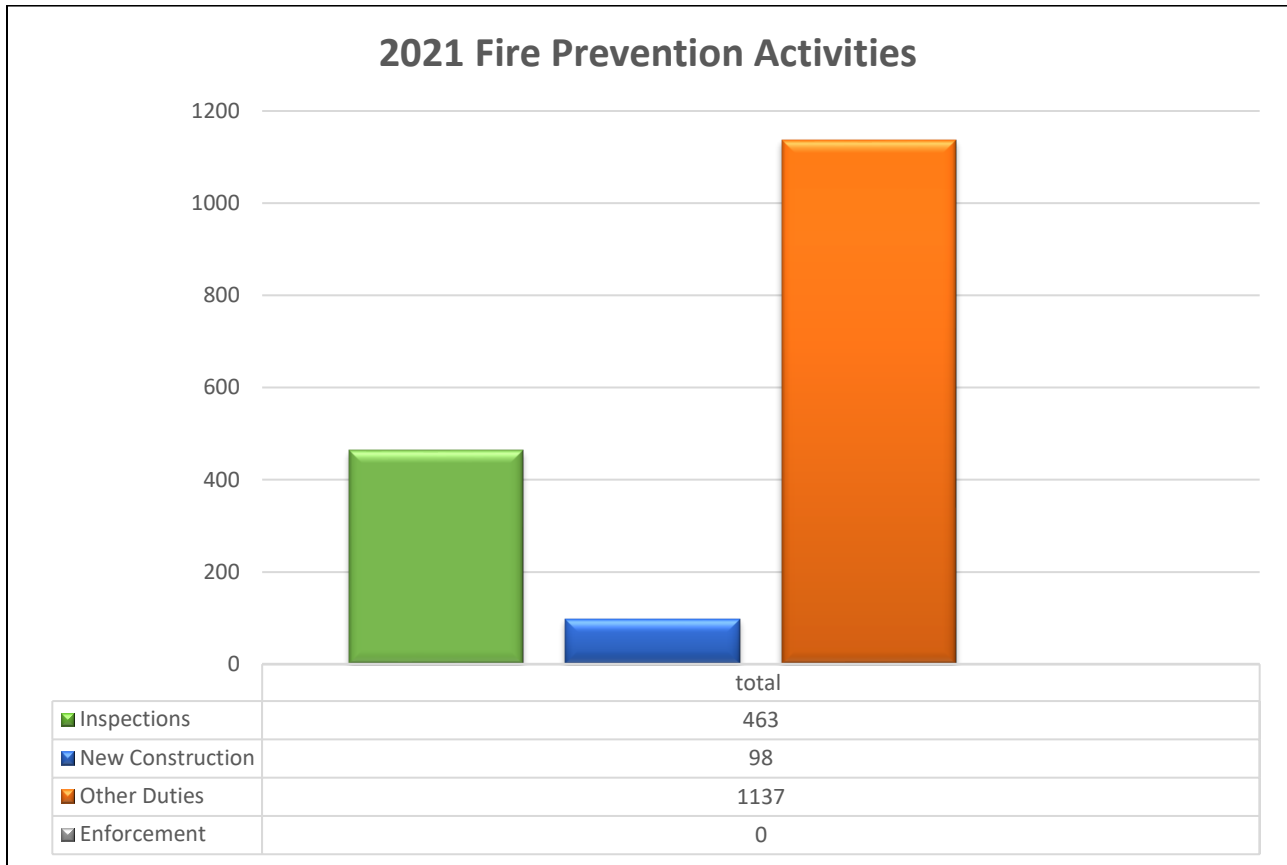
NFPA 1035 Standard on Fire and Life Safety Educator, Public Information Officer, Youth Fire Setter Intervention Specialist and Youth Fire Setter Program Manager Professional Qualifications (section 3.3.11) identifies fire and life safety education as a “comprehensive community fire and injury prevention program designed to eliminate or mitigate situations that endangers lives, health, property, or the environment.”

EM&T has reviewed data and daily operations in relations to fire prevention and public education. It was confirmed that there are annual inspections and robust public education programs in place. The fire chief oversees all components of the program to ensure that the fire prevention and public education staff are meeting their goals. The Division is staffed with one full-time Fire Prevention Officer (FPO) that reports to the fire chief. The FPO and the proactive prevention programming is supported by a part-time (25% FTE) fire inspector (FI).

The FPO oversees all prevention and public education activities and sets overall program goals. The FPO manages all community outreach, data analytics, and is the primary investigator for fire origin and cause investigations. Additionally, all building development plans are examined and reviewed by the FPO. This is a positive risk-management process that the FPO should be involved with. These processes must reviewed from a fire protection/response perspective, in conjunction with the township staff who are responsible for planning and building and adherence to the Ontario Building Code.

UFD currently has a significant amount of assembly, institutional, mercantile, residential, and industrial occupancies in the township. These occupancies totalling over 200 that require regular inspection schedules. It is important to note that these facilities involve a significant annual commitment of resourcing regarding annual and bi-annual inspections that take place, often by demand request. Currently UFD is committing significant resources towards ensuring fire and life safety compliance as well as ensure a continued positive stakeholder relationship.

FIGURE #6: Number of Fire Prevention Activities: 2019 to 2021



The FPO and Fire Inspector (FI) hours are generally split between time spent inspecting on-site, as well as, in office time to complete all required documentation. The office hours also include Fire Code research and application, in addition to working with the Chief Building Official and other outside agencies. Should there be outstanding/follow-up inspection orders on a facility site, the hours can easily double.

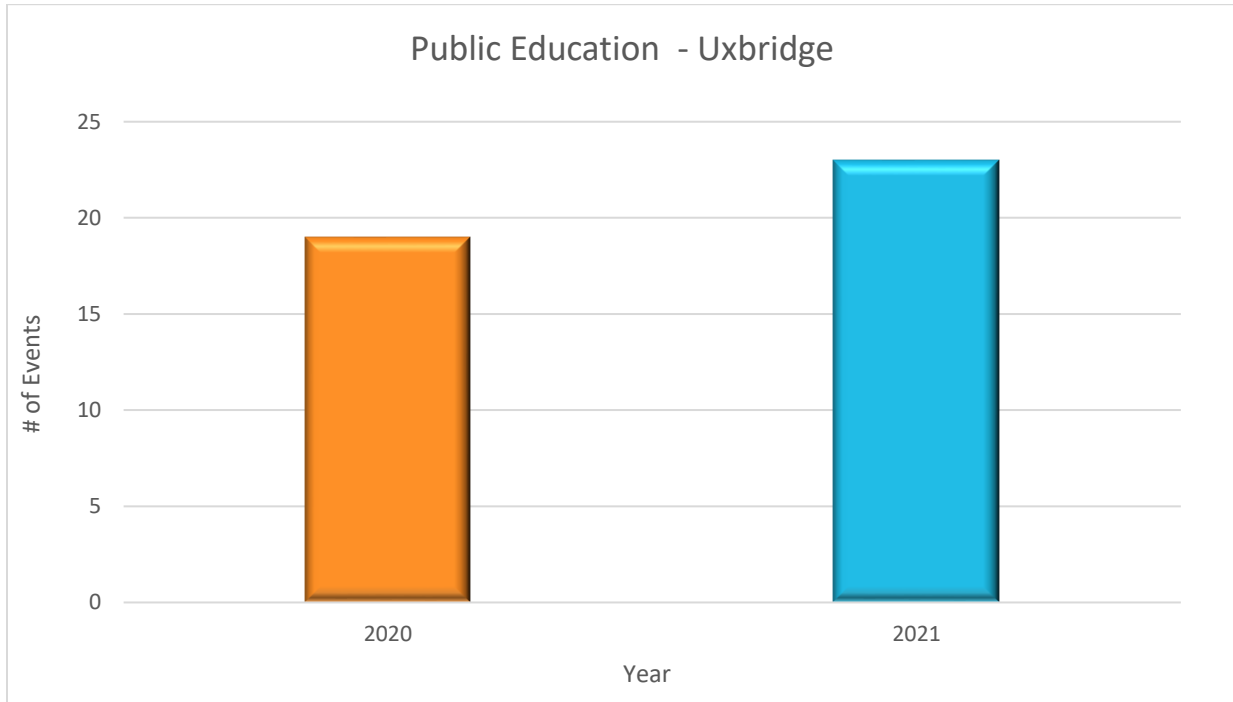
Considering the multiple other duties of an FPO and FI position such as plans reviews, fire permit reviews, investigations, fire safety plan reviews, staff development, and proactive prevention activities, is critical in providing effective community fire and life safety service levels. EM&T’s review has confirmed that UFD continues to perform very well and continues to monitor and consider the necessary staff resourcing.

4.2.1 Public Education

Uxbridge Fire Department has a successful program that teaches fire safety to all ages and in a variety of formats and settings. Numerous partnerships with local businesses, media outlets and other town entities such as the library have been established that aid in the delivery of this public education programming. However, it was noted that the public educator responsible for coordinating educational activities and creating and/or delivering the programs is only budgeted part-time hours for this

important undertaking. Restricting the resourcing (staff and budget) in public education reduces the level of effectiveness for delivering fire safety messaging to the residents of the town.

FIGURE #7: Number of Public Education Activities from 2020 and 2021



Nevertheless, the current level of part-time staff resourcing in this area, the Public Educator is performing at a high level; regularly in the community and utilizing local radio and other media to ensure regular fire and life safety messaging. Fire and life safety behaviours in homes, businesses and even the many trails and outdoor venues in Uxbridge are all areas the Public Educator addressed and continues to recognize as areas of opportunities to enhance messaging effectiveness.

As mentioned, Public Education is first in the Three Lines of Defense. Budget and staff resourcing priority should be afforded to the proactive activities in public education and community safety. Corporate communications policies, access to social media platforms, and continued frequent messaging via the township’s communication resources are all positive opportunities that UFD can consider and implement in conjunction with the township’s corporate partners.

EM&T recommends that the part-time Public Educator position be evaluated along with expected deliverables and service expectations. This position, given its proactive activities and value in reducing or eliminating negative fire and life safety behaviours in the community, should be considered transitioning to a full-time position over the mid-term of this Fire Master Plan.

4.3 Training and Education

Fire departments can only provide effective community safety through the delivery of service levels if firefighters are properly trained and equipped to deliver those services. As a fire department grows with the expanding and/or changing needs of the community, the delivery of essential services also expand.

The industry standards and legislation are intended to improve the health and safety of firefighters. The goal is to meet the standards and industry best practices for a fire department's training program. This proactively addresses the risk management actions and competencies of the fire department. It is important to note that volunteer firefighters must be provided with the same minimum training certifications and equipment as the full-time firefighters, is necessary.

NFPA 1201, Standard for Providing Fire and Emergency Services to the Public identifies that:

- **4.11.1** The Fire and Emergency Services Organization (FESO) shall have training and education programs and policies to ensure that personnel are trained, and competency is maintained to effectively, efficiently, and safely execute all responsibilities.

The responsibility for fire department training and development falls under the scope of the part-time training officer (TO).

The training and overall staff development funding resources are currently at a training and development budgeted funding total of the \$59,400 (ref: UFD 2022 approved budget). The current funding component of UFD training and development resourcing places UFD in a positive position, given the significant importance of training in terms of competent service delivery, health & safety, as well as risk management for the township. EM&T notes that UFD administration and the Uxbridge council are supportive and proactive within this level of funding.

EM&T found the UFD is ensuring that the required levels of technical training are being met. There are good lesson plans and syllabus framework along with a good training matrix covering the several NFPA qualifications and certifications that are now required in Ontario. UFD has been utilizing NFPA-based training and certification for several years and as such is very well positioned to meet and maintain Provincial NFPA requirements well ahead of the required timelines as state by the OFM (ref: O. Reg. 343/22: Firefighter Certification). The part-time TO performs well regarding delivery of required training as well as tracking training appropriately to confirm that UFD addresses any identified training needs.

FIGURE #8: Number of Training Hours from 2019 to 2021

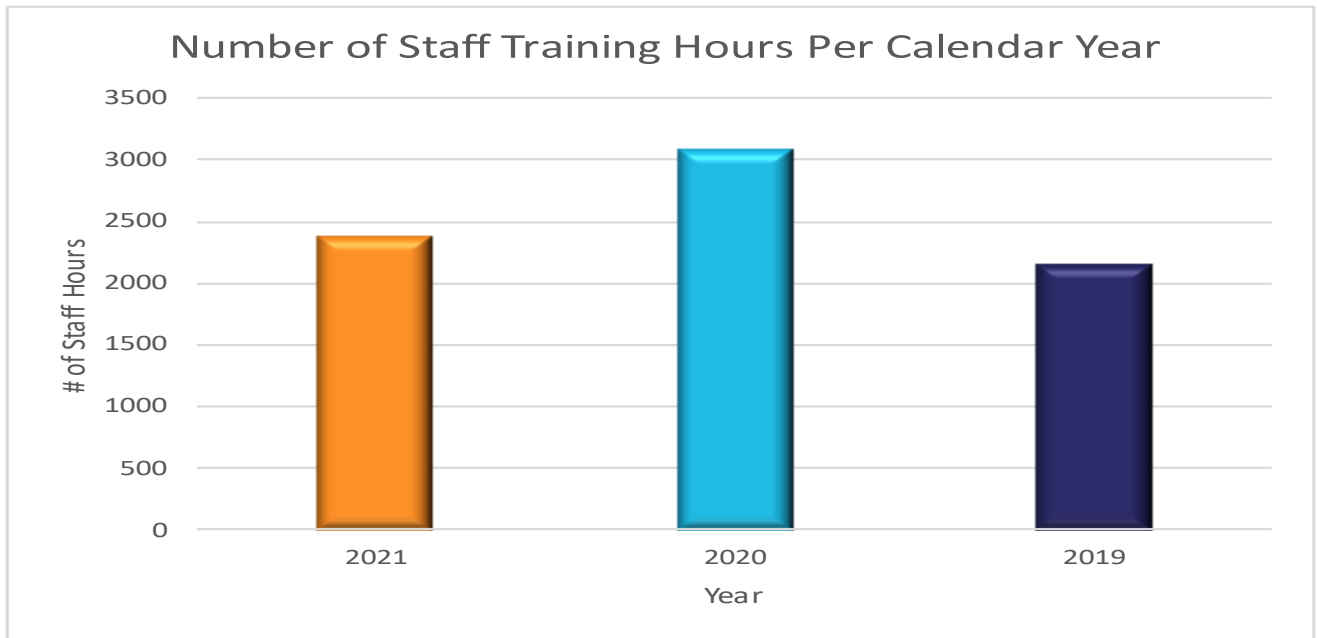
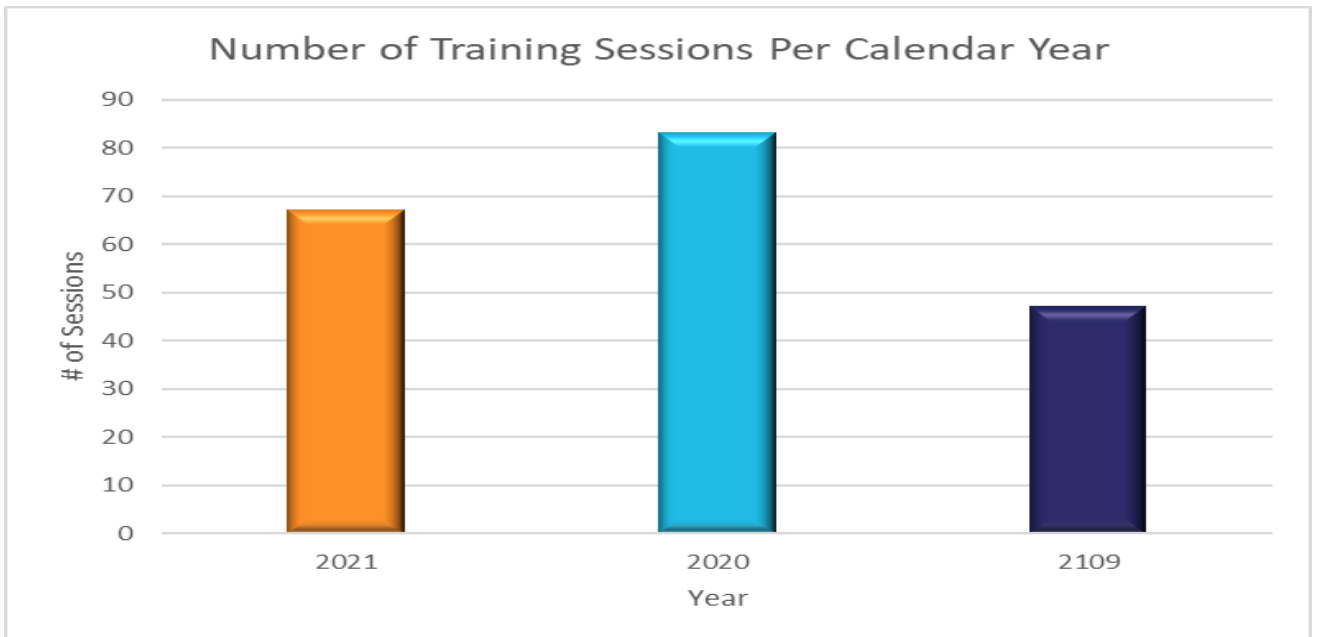


Figure #9: Number of Training Sessions from 2019-2021



As mentioned, the UFD utilizes and continues to enhance its training programs in reference to the NFPA standards. The Ontario Fire Marshall (OFM) has moved to mandatory NFPA-based training and certification for all firefighters in the province. The early adoption of the NFPA standards has strengthen and supported the UFD training program as well as ensure that UFD complies with OFM mandates. NFPA Standards aligned with the mandatory training and certification are as follows:

- NFPA 1001 Standard for Fire Fighter Professional Standard Qualifications.
- NFPA 1002 Standard for Fire Apparatus Driver/Operator Professional Qualifications.
- NFPA 1006 Standard for Technical Rescue Personnel 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 Firesetter Intervention Specialist and Youth Firesetter Program Manager Professional Qualifications.
- NFPA 1041 Standard for Fire and Emergency Services Instructor Professional Qualifications.
- NFPA 1061 Standard for Public Safety Telecommunications Personnel Professional Qualifications
- NFPA 1072 Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications
- NFPA 1521, Standard for Fire Department Safety Officer Professional Qualifications

Factors to Consider in the Delivery of Training

There are three over-arching factors when delivering training to firefighters:

- **Initial training:** The training required to meet the competencies identified by the AHJ.
- **Refresher (maintenance) training:** Training that is ongoing and keeps firefighters current with their skills. This ongoing training is provided to firefighters and officers to ensure that previously acquired competencies are not lost or diminished with lack of use.
- **Advanced training:** The training used to develop firefighters for the promotional process and succession planning. Courses and training are offered as part of their developmental process to prepare them and typically requires more time and effort on behalf of the firefighter. This training generally includes formal fire officer, fire prevention, fire investigation and fire education programs.

To verify, in a formal manner, that the Training Division is meeting the related NFPA program recommendations, the Training Division must identify the following:

- What training programs are required in relation to the services that the fire department is providing.
- The number of hours that are required to meet each of those training needs.
- Resources required to accomplish this training including training instructor.

- Joint partnerships with bordering fire departments and private organizations that can be entered into to achieve the training requirements identified by the Training Division.
- An annual program outline, at the start of each year, to be presented to the fire chief, with noted goals and expectations, which are based on current and identified future needs of the fire department, measured and reported-on regarding completion success rate at the end of each year.
- Robust and accessible training records.

4.3.1 Standard Operating Procedures/Guidelines

As standard practice, EM&T reviews and examines the fire departments procedures, guidelines, and policies, as applicable. Given the importance of these documents and the standard direction these documents give to all staff on matters of process, safety, accountability, service delivery, and in-particular training, it is important to ensure all aspects of fire department operations are addressed. Generating, reviewing, and maintaining Standard Operating Policy and Standard Operating Guidelines (SOP/SOG's) is a significant task that requires constant attention. UFD has an opportunity to review its existing SOP/SOG's to revamp, update, and convert into electronic format. Given that UFD procedures, guidelines, and policies in need of review and updating, EM&T recommends that striking a stakeholder SOP/SOG committee with clear direction, timelines, and resourcing would ensure this significant matter is addressed in a timely and effective manner. This would be an opportunity for the Training Officer to supervise and manage this important matter, under the direction of the fire chief.

4.3.2 Training Records Management

It is the responsibility of a fire department to maintain detailed training records and to have them readily available upon request by the Ministry of Labour and the Workplace Safety and Insurance Board. Uxbridge Fire Department presently utilizes FirePro2 – Fire Department Management Software to record training data for all firefighter staff. The records management software system is adequately addressing the UFD needs.

Currently, training is recorded manually on hard-copy templates and then forwarded to administrative assistant to enter in to FirePro2. Ideally, the process for training records should be entered by the staff that conduct the training, either the training officer or suppression officer(s). This ensures all training, scheduled and ad hoc, is captured regularly, accurately, and in a timely fashion. Furthermore, this process ensures that should training records need to be reviewed, confirmed, or amended, then staff training records are easily accessed. EM&T suggests that consideration be given to the process of the entry of training records by the Training Officer, and the opportunity that consideration for all officers to provide initial training documents and reports entries. The Training Officer would then provide a level of quality assurance when reviewing, training records and certifications, on a regular basis.

EM&T's review of the training and education area notes that the part-time Training Officer position is performing well. However, actual and expected increased training and education demands, as well as time resourcing, will exceed capacity for a part-time position. Training and education components are

particularly critical to the operations of a fire department, the health and safety of firefighters, and the successful execution of the delivery of services to the Community.

It would be beneficial to have a full-time training position to ensure that the UFD will be able to meet the current and future demands (that will come in the form of new regulations and certification standards). OFM training requirements, community growth, increase in call volumes, increase in training requirements, and training records management, and involvement in training and education budgeting process will also add to the workload of the present part-time Training Officer. Therefore, EM&T recommends that the present part-time Training Officer position should be transitioned to a full-time position.

Consideration would have to be given not only to the general hours of work, but also in relation to such things as:

- If expected to respond to calls outside of scheduled hours of work
- Evening training programs and practical evaluations
- Attendance at outside courses

4.4 Training Facility

A great deal of training can be accomplished through video training, in-class training, and hands-on training at the fire station. However, there is a need for actual live fire training by all the suppression staff. The UFD, unfortunately, requires a proper training facility to conduct regular hands-on programs, such as live fire training and other specialized programs, which would require more training props outside of those available at the fire station.

While UFD does not have a training centre within its municipal boundaries, UFD has made significant utilization of the alternative option of the Eastern Ontario Emergency Training Academy, approximately 1.5 hours away. They have also worked with the Uxbridge Works Yard to facilitate some training. Given the high level of inter-department collaboration within the Corporation, the Works Yard facility location and size is a positive factor in considering UFD training and education practical needs.

Eastern Ontario Emergency Training Academy has assisted the UFD in the ability to train and practice on a wide range of training programs as well as ensure all new firefighters receive NFPA Firefighter I and II certification. Having this option ensures that the UFD continues to be successful at ensuring NFPA-based training and certification is met. However, due to the travel distance, attendance at the Eastern Ontario Emergency Training Academy takes considerable amount of planning, funding, and resource management. As always, the cost benefit comparison of utilizing an external, third-party training centre, versus opportunities to training internally are important to ensure a fiscally sound fire department operation.

The cost of designing, developing, and maintaining a training centre can be cost prohibitive for a community like the Township of Uxbridge. Many smaller and mid-size departments have opted to purchase a mobile training unit that has multi-training capabilities. The advantage of having access to such a unit is that it can be parked at a fire station and does not require a full site-specific

yard/compound to use. Another advantage of such a unit is that it can be moved between fire stations or even rented out to other communities on a scheduled basis as a method of revenue generation.

The cost of these units can range greatly depending on if it is purchased through a vendor or is an in-house design. The advantages of purchasing from a vendor is that all structural and engineering approvals have addressed. The unit noted in the following photo is approximately \$500,000.00.

The range of building such a unit can range from approximately \$100,000.00 to \$500,000.00. Whether it is a used, rented or exclusively purchased unit, the overall goal is to ensure that the firefighters are provided with live fire training on an annual basis.

It should be noted that the OFMEM has two Live Fire Training Units available. However due to the many Ontario fire departments competing for the use of the Units, the availability is a limiting factor should any long-term utilization of a Live Fire Training Unit be considered.

FIGURE #10: Example of Live Fire Training Unit – Propane Powered



4.4.1 Small-Scale Training Facility

As an alternate solution, there is also the possibility of a “public-private” partnership that may be possible where funding is secured between a municipality and third-party agencies that have a vested interest in fire suppression training.

A growing trend for training facilities is the use of shipping containers (also called sea-cans) due to the ease and flexibility of modifying the shipping containers to design a facility that meets the NPFA 1402 Standard on Facilities for Fire Training and Associated Props. The use of shipping containers allows a fire department to custom design a facility that specifically meets their needs and allows expansion at a low cost in the future.

A two or three-storey structure for ladder training and firefighter emergency exiting such as bail out procedures from a second storey window can easily be accommodated with a shipping container training structure. A propane fed system can provide environmentally friendly fires for suppression and advanced training in fire flow behaviours. The designs are limitless in terms of what a department wants to incorporate into the facility. An analysis of what the fire department requires must occur to ensure that taxpayers' dollars are spent in the most efficient and cost-effective manner. While considering the possibility of new fire station locations, it may be cost-effective to build a small-scale training facility at the same time while ensuring the necessary space is considered for this new facility.

The fire department that responds to multi-storey structures must have a training facility that be, at the very least, a two-storey structure with preference being higher. A two-storey structure can be designed to replicate a modern apartment floor plan for ladder, search and rescue and emergency bail out training. A new training facility must have concrete pads for auto extrication, HAZMAT training, and a car fire prop.

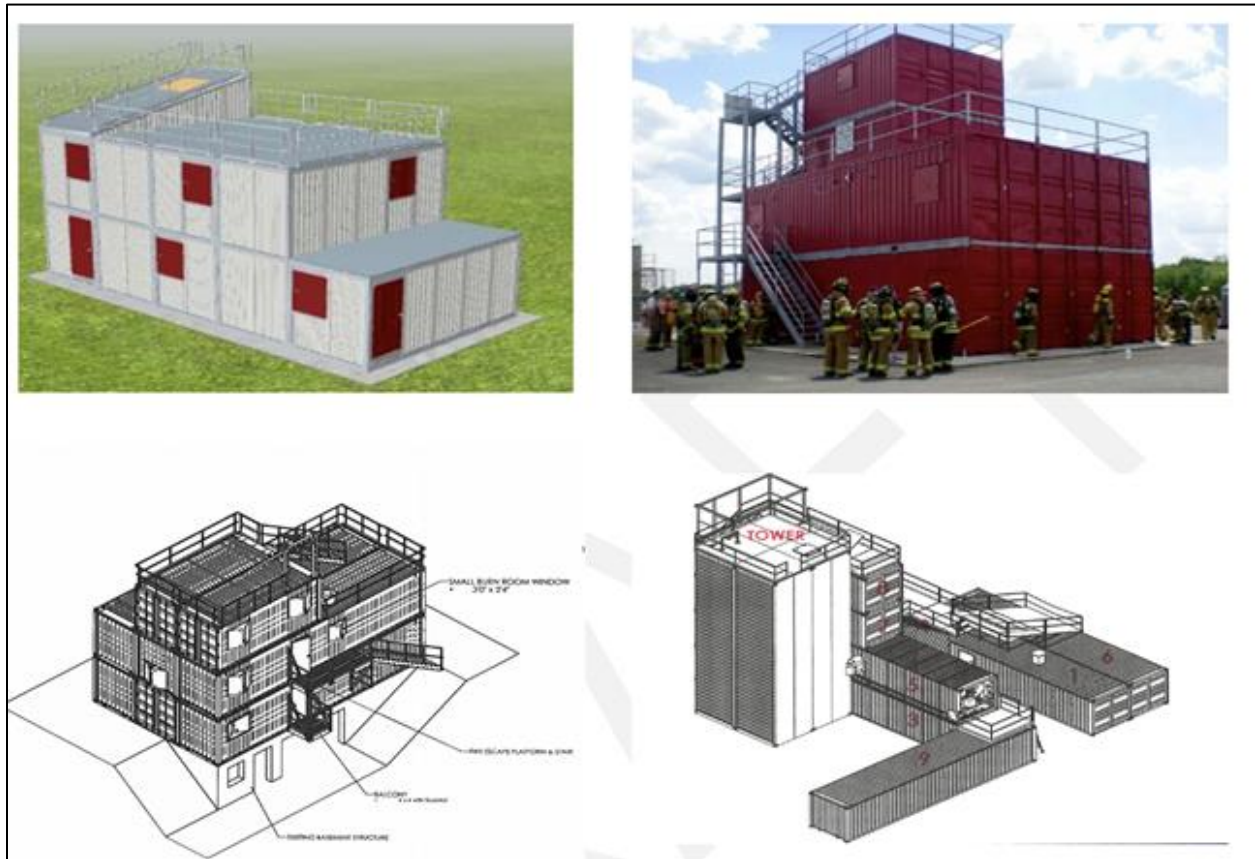
The benefits of the hands-on practical component of a small-scale training facility are numerous as firefighters can develop new skills, maintain existing skill sets, and gain confidence in equipment and tactical strategies. The practical training improves firefighter safety and reduces work related injuries. Live fire burn training is an invaluable training tool to improve a firefighter's skills and confidence when facing heat, smoke and understanding the science of fire flow paths.

An often-overlooked aspect of a training facility is building situational awareness in fire officers. The fire officer is responsible to minimize the loss of life and property and to ensure that firefighters on scene are safe. A fire officer must conduct a rapid assessment of the situation during times of stress and while countless bits of information are bombarding the Officer. The ability to make good decisions is based upon Recognition Primed Decision Making (RPDM) process. These factors are of key importance for the fire department as the number of structure fires is low volume and regular exposure to live fire training ensures that firefighters and officers can maintain their skills.

The key points for supporting a new training facility for the fire department include the benefits to firefighters as they develop and maintain skills, and to officers as they gain new situational awareness through continuous exposure to real life scenarios.

A new small-scale training facility will vary in price from \$200,000-\$700,000 depending upon the options that meet the needs of the fire department.

FIGURE #11: Training Facility Examples



Note: Prior to the building of such a facility, a fire chief would need to ensure that all environmental requirements are met by the contract. This could include the installation of proper run-off, catchment systems for contaminated water, and a properly engineered foundation for the facility.

A well-designed small-scale training facility that meets the needs of the fire department will have many benefits that include:

- A satellite centre that can offer certified NFPA 1001 firefighter related training as well as specialty rescue skills in NFPA 1006 and Driver/Operator as per NFPA 1002.
- A significant cost savings for the FD as they can provide improved training for all volunteer firefighters without them having to travel.

4.4.2 Live Fire Training

The purpose of live fire training is to provide realistic fire training evolutions under safe and controlled conditions. Live fire training evolutions are intended to simulate the actual fire conditions that a firefighter may encounter such as fire spread, high heat, humidity, restricted vision, and smoke conditions. This training must comply with NFPA 1403, *Standard on Live Fire Training Evolutions*.

The current editions of the NFPA Professional Qualification standards require fire service members to “remain current” with the knowledge and skills related to their qualifications or certifications. This need for knowledge and skills proficiency has been expressed in various ways in the NFPA Professional Qualifications and Training standards for at least a decade. Advancements in fire science reveal that continuing education in the fire service goes beyond maintenance of initial skills and core competencies. Continuing education is necessary to ensure that firefighters are current with changes in suppression and ventilation techniques, building construction, fire behavior, personal protective equipment, firefighter health and safety.

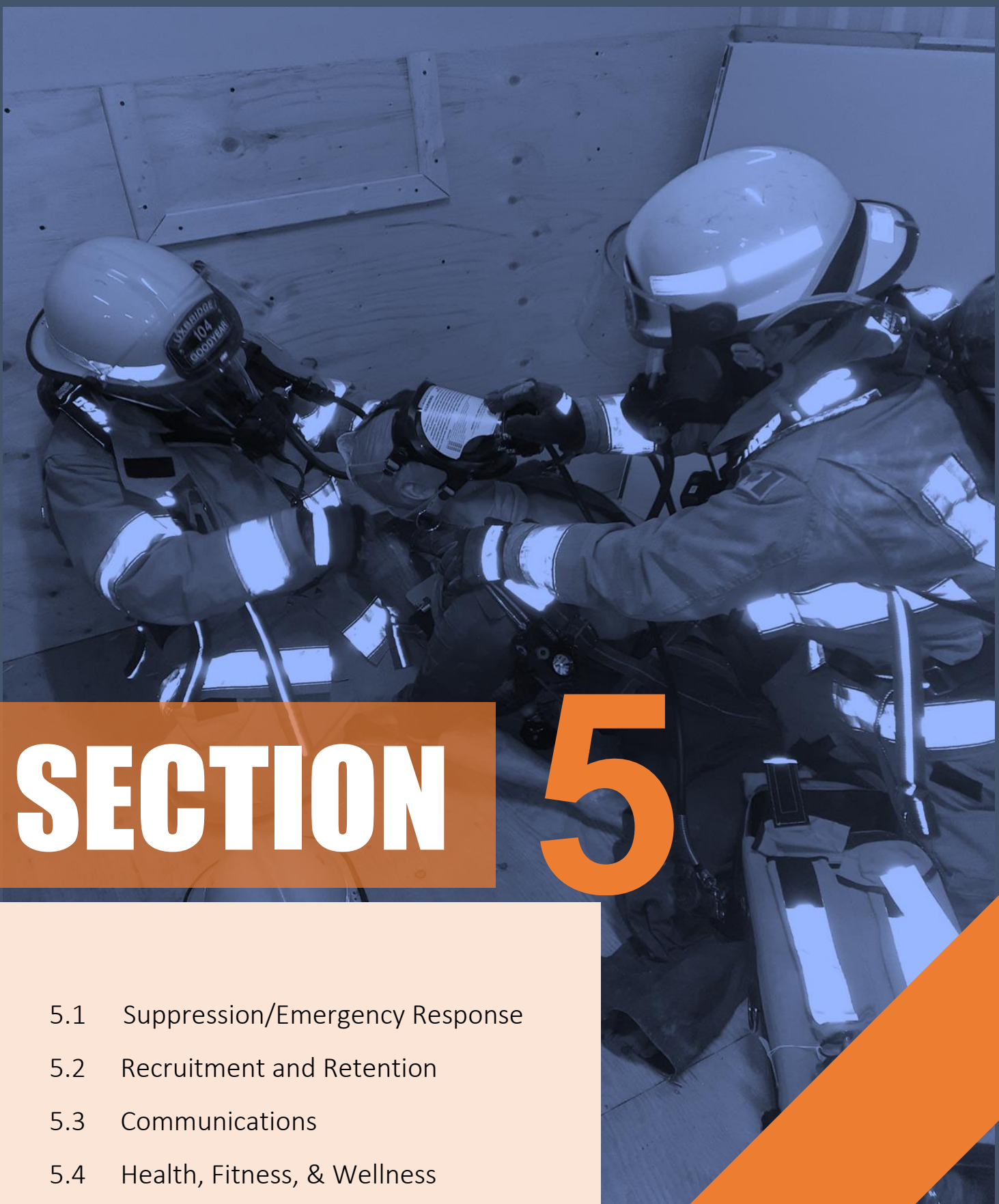
As such, industry best practices indicate that firefighters should be participating in live fire training exercises at least annually. This type of hands-on training and exposure to heat and smoke conditions should be considered a mandatory component of the fire department’s comprehensive training program.

EM&T recommends that all firefighters receive live fire training on a regular basis. At a minimum, all recruit firefighters receive initial training and incumbent firefighters receive live-fire refresher training, assuming they have received live-fire training previously.

In consideration of above, EM&T recommends consideration of a training facility/mobile training unit that provides live-fire and other training opportunities internally. The other option is to secure the use of an outside facility on a regularly scheduled basis to ensure that all firefighters are provided with this critical life saving training.

Section 4: Recommendations

Rec #	Recommendation	Estimated Cost	Suggested Timeline
6	A full-time deputy fire chief position be created and that the fire chief closely monitor the present staffs' ability to manage this increase in administrative record keeping and other role demands with a plan to implement full-time position(s) in the short term to long term timeframe.	\$120,000 to \$140,000	Immediate (0-1 year) ongoing
7	The part-time public educator position be evaluated along with expected deliverables and service expectations. This position, given its proactive activities and value in reducing or eliminating negative fire and life safety behaviours in the community, should be considered transitioning to a full-time position over the term of this Fire Master Plan.	\$100,000	Short-term (1-3 years)
8	Striking a stakeholder SOP/G committee with clear direction, timelines, and resourcing would ensure this significant matter is addressed in a timely and effective manner. This would be an opportunity for the Training Officer to supervise and manage this important matter, under the direction of the fire chief.	StaffTime	Short-term (1-3 years)
9	The present part-time training officer position should be transitioned to a full-time position.	\$115,000 to \$130,000	Short-term (1-3 years) ongoing
10	All firefighters receive live fire training on a regular basis. At a minimum, all recruit firefighters receive during initial training phase and incumbent firefighters receive live-fire refresher training, assuming they have received live-fire training previously. In consideration of above, EM&T recommends consideration of a training facility/mobile training unit that provides live-fire and other training opportunities internally. The other option is to secure the use of an outside facility on a regularly scheduled basis to ensure that all firefighters are provided with this critical life saving training.	\$200,000 to \$700,000	Long-term (1-3 years)



SECTION 5

- 5.1 Suppression/Emergency Response
- 5.2 Recruitment and Retention
- 5.3 Communications
- 5.4 Health, Fitness, & Wellness
- 5.5 Cancer Prevention
- 5.6 Mental Wellbeing

SECTION 5: FIRE SUPPRESSION, COMMUNICATIONS AND HEALTH & SAFETY

5.1 Fire Suppression/Emergency Response

Uxbridge Fire Department is a composite fire department in that it has both career and volunteer firefighters. The career contingent consists of a full-time fire chief, and a full-time fire prevention officer. The fire suppression division consists of 40 volunteers and paid-on-call firefighters. For UFD, the NFPA standard that relates to the department is 1720 - Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments. This NFPA standard notes the following operational goals:

Staffing and Deployment

4.3.1 The fire department shall identify minimum staffing requirements to ensure that the number of members that are available to operate are able to meet the needs of the department.

4.3.2* Table 4.3.2 (noted here on page 76) shall be used by the AHJ to determine staffing and response time objectives for structural firefighting, based on a low-hazard occupancy such as a 2000 ft² (186 m²), two-story, single-family home without basement and exposures and the percentage accomplishment of those objectives for reporting purposes as required in 4.4.2.

4.6 Initial Firefighting Operations.

4.6.1 Initial firefighting operations shall be organized to ensure that at least four members are assembled before interior fire suppression operations are initiated in a hazardous area.

4.6.2 In the hazardous area, a minimum of two members shall work as a team.

4.6.3* Outside the hazardous area, a minimum of two members shall be present for assistance or rescue of the team operating in the hazardous area.

NFPA 1720 section 4.10.3 identifies other types of companies that are utilizing specialized equipment and apparatus, to assist Engine and Ladder companies as per the fire departments SOGs. *“Special operations shall be organized to ensure that the fire department’s special operations capability includes the personnel, equipment, and resources to deploy the initial arriving company and additional alarm assignments providing such services.”*

The overall goal of any fire department is to arrive at the scene of the incident as quickly and as effectively as possible. If a fire truck arrives on scene in four minutes or less with a recommended crew of four or more firefighters, there is increased opportunity to contain the fire by reducing further spread 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 (NIST) and the NFPA, 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 (e.g., 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.

In 2010 and 2020, the NIST in the United States conducted a study on fire crew efficiencies and the tasks that may be completed during a residential structure fire with different sized crews.

The following research questions guided the experimental design of the low-hazard residential fireground experiments documented in this report:

- How does crew size and stagger affect overall start-to-completion response timing?
- How does crew size and stagger affect the timings of task initiation, task duration and task completion for each of the 22 critical fireground tasks?
- How does crew size affect elapsed times to achieve three critical events that are known to change fire behavior or tenability within the structure?
- Entry into structure?
- Water on fire?
- Ventilation through windows (three upstairs and one back downstairs window and the burn room window).
- How does the elapsed time to achieve the national standard of assembling 16 firefighters at the scene vary between crew sizes?

The experiments were conducted in a burn prop designed to simulate a low-hazard fire in a residential structure described as typical in NFPA 1710. A low-hazard occupancy is defined in the NFPA Standard as a one, two or three-family dwelling and some small businesses. Medium hazard occupancies include apartments, offices, mercantile and industrial occupancies not normally requiring extensive rescue or firefighting forces. High-hazard occupancies include schools, hospitals, nursing homes, explosive plants, refineries, high-rise buildings and other high life hazard or large fire potential occupancies.

The study found that four-person crews were able to complete 22 essential firefighting and rescue tasks in a typical residential structure fire 30% faster than a two-person crew and 25% faster than a three-person crew.⁹ Having crews of four firefighters lessens the risk of injury as more personnel are available to complete assignments.

5.1.1 National Fire Protection Association (1720)

Chapter 4 of the NFPA 1720 Standard identifies the number of response personnel for the deployment of volunteer firefighters:

Section 4.3.1: “the Fire Department shall identify minimum staffing requirements to ensure that a sufficient number of members are available to operate safely and effectively.

In Urban areas (population greater than 386 people per square kilometer/1,000 per square mile), there should be a minimum response of 15 staff within 9 minutes, 90 percent of the time.

⁹ “Report on Residential Fireground Field Experiments,” Averill, Jason D. et al, April 2010, https://tsapps.nist.gov/publication/get_pdf.cfm?pub_id=904607

In Suburban areas (population of 103 - 386 people per square kilometer/500 – 1,000 per square mile), there should be a minimum response of ten (10) staff within 10 minutes, 80 percent of the time.

In Rural areas (population of less than 103 people per square kilometer/500 per square mile), there should be a minimum response of six (6) staff within 14 minutes, 80 percent of the time.”

With a current permanent population of approximately 21,556 (2021) within approximately 420.52 square kilometres, UFD’s communities fall into the rural standard with approximately 51.3 residents per square kilometer. This would require six (6) firefighters on scene within 14 minutes 80 percent of the time.

Although, the UFD generally falls within the Rural response time standard under the NFPA 1720 definition, more developed areas like Uxbridge village are more densely populated than the rest of the total coverage area. This area would potentially fall under the Suburban population density. Therefore, the fire chief should consider developing a standards-of-cover with the previously noted response times in mind. But this standards-of-cover document must consider the needs and circumstances of the community and the level of service that the UFD can effectively support.

Note: 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).

Fire Response Curve

When considering the response times and needs of a community, the fire response curve (FIGURE #8) presents the reader with a general understanding of how 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 different ways, which can increase or suppress the burn rate through fire control measures within the structure. As an example, some older legacy homes, fire spread, and flashover may progress slower than newer homes due to the type of construction and contents. Some older homes may not witness flashover for up to 25 minutes. Whereas newer homes could incur flashover in as little as four minutes within the room or origin.

Note: Flashover is a situation in which the entire contents of a room ignite due to the extreme high heat conditions. This situation is not survivable by unprotected occupants that may caught in this type of situation. Even firefighters are at great risk of severe injury and/or death due to the extreme fire and heat conditions within the area of the flashover.

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

- The distance between the fire stations and response 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. It should be noted that assembly time can vary greatly due to weather and road conditions along with the time of day.

As illustrated in the following fire propagation diagram the need for immediate initiation of fire suppression activities is critical. UFD responds to more than just fires; motor vehicle collisions can create a medical or fire emergency that also needs immediate response. Thus, it is imperative to be as efficient and effective as possible in responding to calls for assistance.

FIGURE #12: Fire Response/Propagation Curve

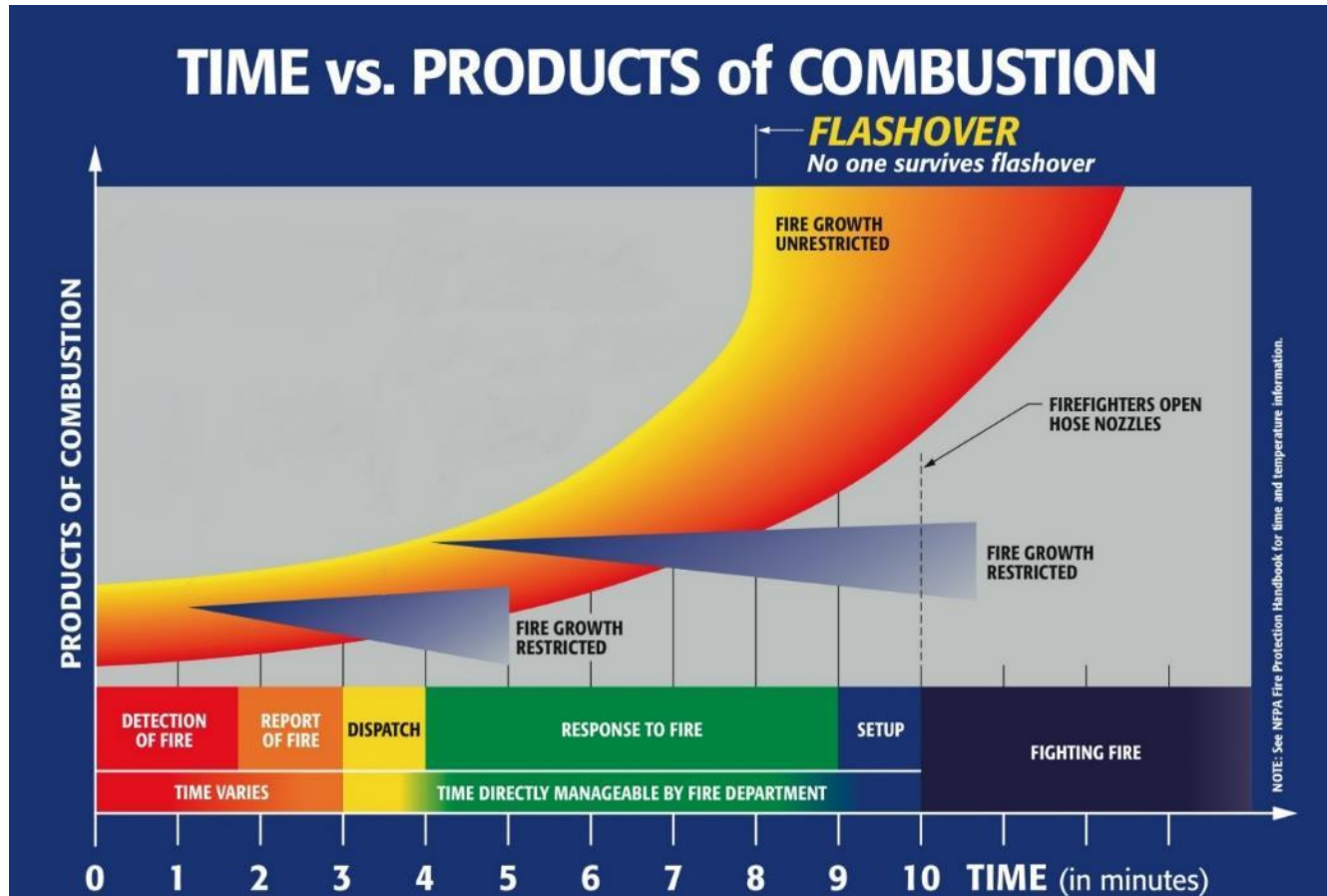


FIGURE #8 notes the following time variables:

- Detection of fire – this is when the occupant discovers that there is a fire. For the purposes of this chart, detection time is noted as being within one to one and half minutes – this could in fact be shorter or longer. The fire may be in a very early stage or could have been burning for quite some time before being detected.
- Report of fire – this is when someone has identified the fire and is calling UFD 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 or how long it takes the volunteer firefighters to get to the fire station to respond on the fire truck.
- Drive time – the time from when the crew advises dispatch that they are 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 it takes to extinguish the fire on scene.

The overall goal of any fire department is to arrive at the scene of the incident as quickly and as effectively as possible. If a fire truck arrives on scene in ten minutes or less, there is increased opportunity to contain the fire by reducing further spread to the rest of the structure.

In relation to on scene staffing, based on studies and evaluations conducted by the National Institute of Standards and Technology (NIST) and the NFPA, 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 (e.g., 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.

The fire chief must ensure that the station has a complement that allows for an initial full crew response to incidents. To accomplish this, a response protocol is in effect that ensures whenever the station and its firefighters are dispatched to any type of call where back-up may be required, additional resource(s) is automatically dispatched to the same incident.

5.1.2 Response Data

Based on a review of the response data supplied, the Uxbridge Fire Department is achieving a varying level of success in meeting the NFPA response criteria. By utilizing this information in conjunction with the supplied response maps created by EM&T, we can see the effect of road networks, traffic levels, and traffic control systems on response times by emergency responders. As such, UFD response times should be monitored based on the OFMEM definition, which is from “dispatch time, to time of arrival at the incident”; in other words, from the time the call is received, to when the fire station or pager tones activate, to when the firefighters get on the fire trucks and arrive at the emergency scene location.

Performance measurements that the fire department should monitor include:

- Response time: the total time from receipt of call to the time the fire vehicle arrives at the incident location.
- Firefighter turnout time: time from page until the first vehicle is responding.
- Drive time: time tracked from when the fire vehicle has left the station until arrival at the incident location.

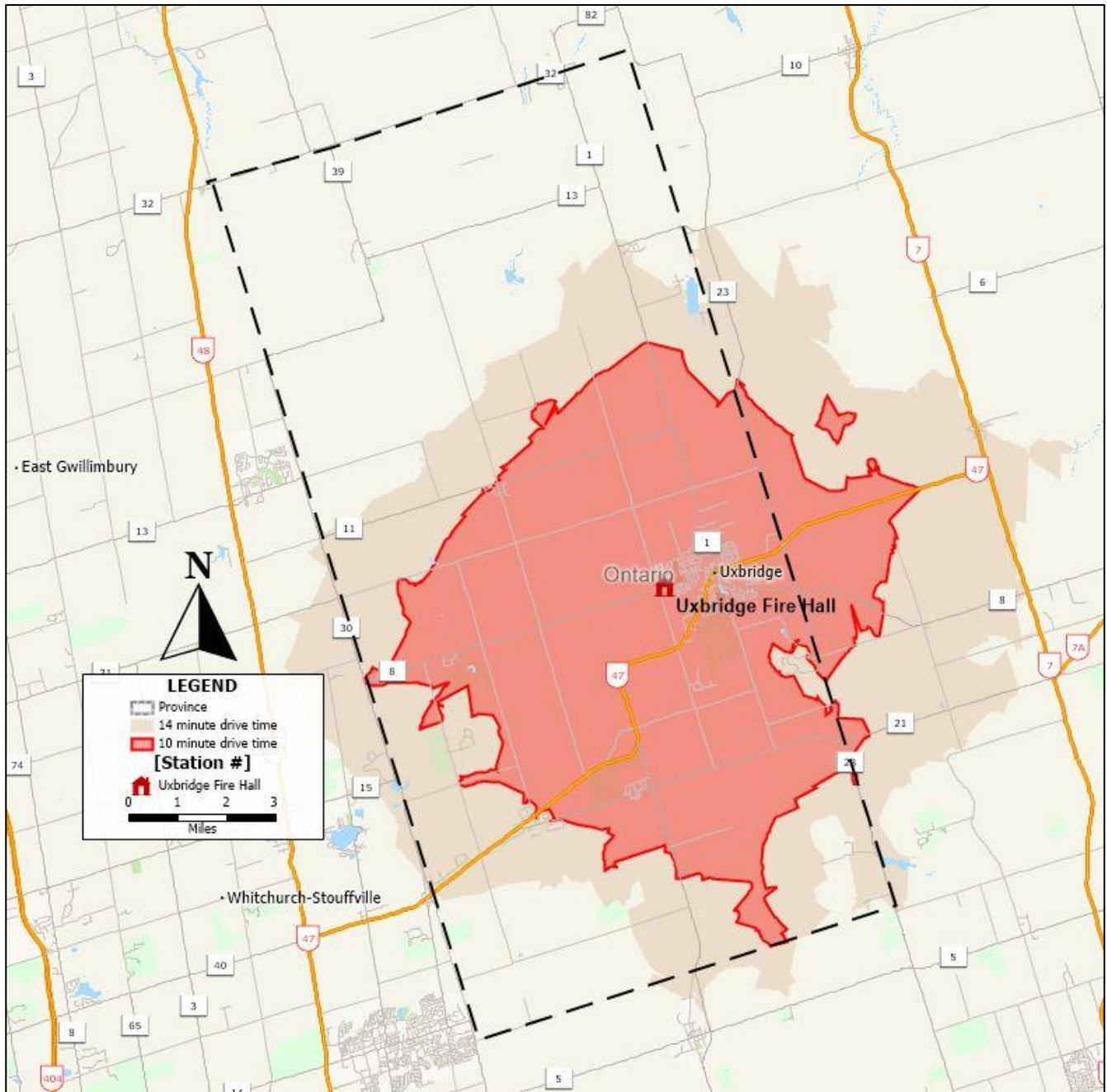
UFD response times should be monitored based on the NFPA 1720 standards which is from “dispatch time to time of arrival at the incident”, from the time the call is received, to when the fire station tones activate, to when the firefighters get on the fire trucks and arrive at the emergency scene location.

Note: In monitoring time measurements, the 80th percentile criterion is the recommended practice that is endorsed by the NFPA. This data is more accurate since it is evaluating the times based on 80% of the calls as opposed to averaging the times at the 50th percentile. For example:

8 out of 10 times the fire department arrives on scene in 10 minutes or less, which means that only 10% of the time they are above that 10-minute mark, as opposed to 5 out of 10 times (average) the fire department arrives on scene in 10 minutes or less, which means that 50% of the time they are above the 10-minute mark.

The travel time grids highlighted in Figure 9 is calculated using the GIS software Caliper Maptitude, which uses the road network with the posted speed limits, factoring in direction of travel, traffic lights and stop lights. While the posted speed limit is used, it is understood that at times fire apparatus responding to calls may exceed the speed limit if it is safe to do so, thus reducing the response time. Correspondingly, there will be times due to weather conditions, construction, and traffic congestion that the fire apparatus will be travelling at speeds lower than the posted speed limit (even using emergency lights and sirens). Therefore, using the posted limit is a reasonable calculation in determining travel distance.

FIGURE #13: Location of the Current Fire Station – Noting 10-Minute & 14-Minute Drive Time



Deciding on where a fire station is located varies upon several factors:

- Relative fire risk values for various areas, occupancies, or properties
- Desired response times for each identified fire risk
- Information regarding the road network in the community including reasonable travel speeds, one-way streets, rail crossings, etc.
- Emergency vehicles and personnel necessary to assemble fire attack teams

With the program tailored to the specific needs of a community, many fire response factors may be analyzed including:

- Existing and proposed station locations based on desired response times
- Best and alternate emergency response routes to specific locations
- Ability of pumper, aerial, rescue, and support crews to cover all parts of the community based on desired response times
- Emergency response times for first, second and additional vehicles and personnel
- Areas for potential automatic aid responses.

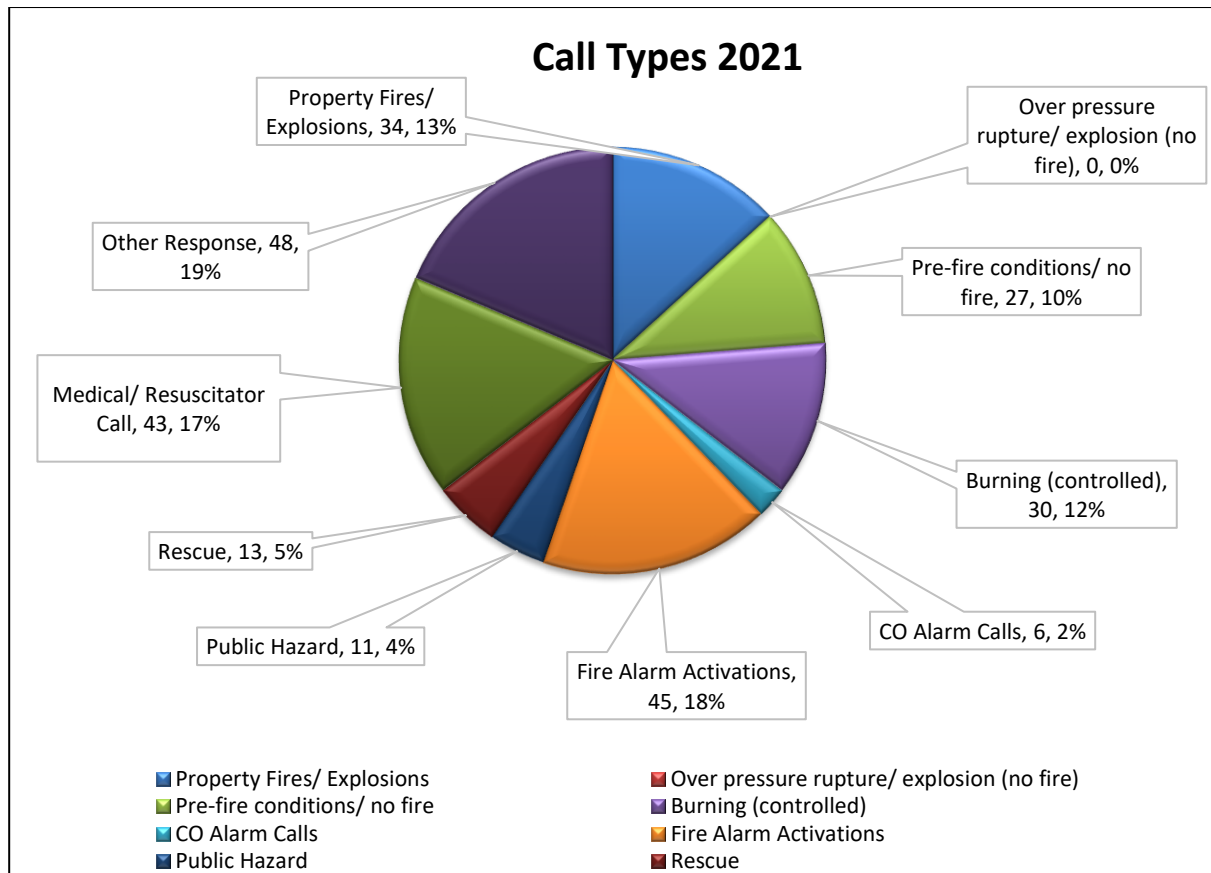
A benefit of using a computer program is the ability of UFD or municipal staff and council to evaluate fire station location needs (based on objective criteria).

Generally, fire stations should be located where they can serve much of the protection area, they are assigned rather than for a specific hazard. For example, it may seem wise to place the fire station across from a nursing home. However, if many responses are to the residential or commercial areas at the other side of the coverage area, the station should be situated closer to that area but still could arrive at the nursing home in the desired time. No matter where a new fire station is located, the primary goal is serving the community in a timely manner by meeting NFPA Standards for response times.

Although the NFPA response times are not mandated, it would be beneficial for a fire chief to have a response time goal supported by council as a benchmark. It is recommended that a fire chief present a response time goal for the approval of council, which may reference NFPA 1720 (2020 Edition) – the expectation of 6 staff in 14 minutes, 80th percent of the time as a start. UFD monitor its ability to meet effective response times. This includes the following:

- Achieve a goal of 80 seconds for firefighter turn-out time.
- Four firefighters arriving on scene within four minutes of travel time.
- Sixteen firefighters arriving on scene within an eight-minute travel time.

FIGURE #14: Call Types for 2021



5.2 Recruitment and Retention of Volunteer Firefighters

Recruitment and retention of volunteer firefighters is becoming more of a challenge within the Fire Service in Ontario. This has been exasperated with the increasing NFPA-based training that must be completed on an annual basis. With staff turnover, this makes the challenge of onboarding, training, and ensuring maintenance of training and certifications a significant task for many municipalities. For many volunteer fire departments, the daytime hours from Monday to Friday are the greatest challenge for volunteer response due to fact that many volunteer firefighters are either at work, school, or taking care of family. In some instances, members have had to leave the department to move closer to their work location, education facilities, or family needs.

The Fire Marshal has announced the implementation of mandatory training and certification for firefighters. As of 2022, all firefighters and officers will be required to meet the upcoming training/certification requirements. The formal listing of expectations and related timelines, as outlined in the updated Fire Prevention and Protection Act. All fire departments will need to conduct a full evaluation of their present training programs and implement whatever improvements necessary to meet the new legislation. This increase in training will also add to the recruitment, and training of new recruits, along with the retention of present volunteers.

In a nationwide survey, the leading reasons why people stop volunteering include the following:

- No time to volunteer
- Conflicts within the organization
- Organizational leadership created an adverse atmosphere
- Too much training
- Attitude of existing personnel towards newcomers
- Criticism received from officers/ older members
- Lack of camaraderie

While some issues may be uncontrollable, other issues can be mitigated such as conflicts within the organization, leadership, training, attitudes, criticism, and camaraderie.

Note: the previously listed items are not a direct reflection on the status of the UFD, they have only been listed for consideration in the department's recruitment and retention initiatives.

Retention Concerns:

The retention concerns have been identified as a challenge with just about every volunteer fire service. There are numerous reasons for leaving, including the firefighters not feeling appreciated by the municipality, the time and effort required for both training and response to calls, firefighter's family not being recognised for "lending" their family member to the community.

Increasing Retention – Opportunities:

- Family nights at the fire station that would include a movie and activities for the children.
- Assign a seasoned member to mentor each rookie when a new member joins the department.
- Conduct a firefighter appreciation events (e.g., dinner, BBQ) where members are recognised by council for their long term, outstanding service, or something exceptional they did at a call.
- Council take time to acknowledge, the employers, of the firefighters for permitting their participation in the fire department and/or permitting them to leave work to attend fire calls.

- Survey other fire services to compare pay rates and adjust the honorarium accordingly.
- Implement a service recognition pay incentive. This might include paying extra in the form of a 5% to 10% pay increase for every 5 years they have been on the department; this would prevent the loss of years of experience.
- Performance pay, for those who reach high percentages of attendance at training sessions and fire calls.
- Offer benefit packages as many may not have benefits at their place of employment, and some are self employed. Such packages would include basic dental, drug, and eyewear coverage.
- Purchase a wellness benefit package for the firefighters such as mental, financial, and family counseling.
- Engage in treating Post Traumatic Stress Disorder (PTSD), which is a common illness among fire responders.
- Offer a RRSP/pension savings plan with contributions from the Town after they have been a member of the department for a predetermined length of time.
- Provide excellent training opportunities to make them want to remain a member of the fire department. Make the training sessions fun and memorable.
- Recognition and support of those who want to attend Fire College or regional courses, which sometimes requires firefighters using their vacation time from their full-time employers.
- The implementation of an “on call or platoon” program that would pay a week or weekend stipend to the volunteer firefighters who commit to being available by signing up for weekdays and/or weekends
- Education assistance programs to support staff in their professional development.
- Maintain and improve morale by providing modern trucks, equipment, and stations.
- Endorse that each station designs their own logo for their station promoting their region of the town or the services they provide. They could include a diplomatic mascot character. These could be placed on t-shirts and perhaps the apparatus as a sense of pride.
- Provide strong leadership that focusses on the Mission, Vision and Values of the department while resolving conflict resolution in a timely manner.
- Conduct exit interviews with those that leave the department to understand their reasons for leaving. While there may be simple reasons, there could be a deep-rooted issue that administration may not be aware was occurring such as taunting, bullying, harassment, a feeling of not being welcome, etc.
- Foster the history of each fire station by creating displays of pictures of past members, events, apparatus, to instill a sense of pride on how far the department has grown.

The Uxbridge Fire Department may already be implementing some of these noted opportunities. This list is simply intended for the purposes of confirming what is being done and what can be implemented. Some of these suggestions may imply an expense, however the efforts and attempts to save the ongoing training of new firefighters will far outweigh the cost. The expense the township puts out to train and equip new firefighters is

immense, therefore it is important that a means to retain their investment is developed and supported by Council.

Another area to evaluate is tracking the number of volunteer firefighters that arrive at the fire station to respond. For example, if the standard set by a fire department is that three or more volunteer firefighters must arrive at the station before the fire truck can respond, this should be monitored along with how many times the department is unable to assemble the needed personnel to effectively respond based on time of day, and day of the week. Continued monitoring of this data will assist with future fire service needs assessment.

The Canadian Association of Fire Chiefs (CAFC) have also published a program entitled “Answer the Call” that is available on their website www.answerthecall.ca. This program uses messaging and imagery to reflect the local challenges. It shows and displays a set of images that can be used as well as documentation that can be personalized to the organization which is available to use at no cost. The “canned” images can, and do, reflect volunteers across all demographics, and the local community could add additional ones specific to their department. It has received significant support and it does not require considerable time or monetary investment.

Volunteer firefighter recruitment is a challenge in virtually every jurisdiction of Canada and utilizing resources available to promote recruitment and retention is always advisable.

The Uxbridge Fire Department is very well situated in its volunteer/paid-on-call staff commitment as well as time-of-day general response. EM&T notes that the UFD does not currently have the recruitment and retention challenges as outlined above. EM&T also notes that the Fire Chief continues to monitor volunteer firefighter call turn-out and addresses any concerns, if applicable, with low volume responses by individual firefighters. The township is to be commended on the effective, responsible, and high level of community safety commitment demonstrated by the volunteer and paid-on-call staff.

5.3 Communications

The Uxbridge Fire Department receives its dispatching “Alerting” (ref: Alerting Services Agreement) from the Corporation of the City of Oshawa, located at Oshawa Fire Services Fire Headquarters. As a critical component supporting delivery of all emergency services, communications infrastructure and dispatching service delivery are key features. Regular review, as stipulated in the terms of Agreement, Section 10.12, occurs and no issues have been found that would suggest immediate changes to terms of current Agreement, other than review and updates tracking.

Opportunities exist to improve the service being delivered by Oshawa to the UFD. Industry best practices take into consideration the collection and sharing of data, prioritization of UFD communications, geographic mapping, and ensuring an inclusive process whereby all stakeholders regularly evaluate service levels with consideration given to quarterly or bi-annual meetings.

With the implementation of the OFMEM training and certification requirements, specifically reference to NFPA 1061 Standard for Public Safety Telecommunications Personnel Professional Qualifications, EM&T is of the understanding that this will also affect communications/dispatching services. EM&T recommends that Uxbridge Fire Department should consider this new mandatory NFPA 1061 Standard requirement and review

the Agreement to ensure adherence to the mandatory standards by Oshawa dispatch centre as part of the Agreement terms and conditions.

Given the uniqueness of the “Alerting” requirement only, the UFD provides its own radio operator to serve as the telecommunication/dispatcher function once the alerting call has been activated by Oshawa Dispatch Centre and then passed to the Uxbridge Fire Department. As such, UFD may be required to eventually train and implement the NFPA 1221, Standard for the Installation, Maintenance and Use of Emergency Services Communications Systems, which is used to identify dispatching service criteria. Additionally, the UFD may need to ensure its own staff are trained and certified to NPFA 1061 Standard for Public Safety Telecommunications Personnel Professional Qualifications.

NFPA 1221, Sections 7.2, 7.3 and 7.4

- **7.2.1** – Telecommunicators shall meet the qualification requirements of NFPA 1061 – Professional Qualifications for Public Safety Telecommunications Personnel, as appropriate for their position.
- **7.3.1.1** – The Authority Having Jurisdiction shall ensure that there are enough telecommunicators available to affect the prompt receipt and processing of alarms and events needed to meet the requirements of Section 7.4.
- **7.4.1** – 95% of alarms received on emergency lines shall be answered within 15 seconds and 99% 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.

The Deputy Chief should continually review the performance of the communications operators to ensure they meet NFPA 1221, Section 7.4.

NFPA 1221 will be referenced if any questions arise regarding activities that are to take place within a fire service communication centre such as communication operator qualifications, radio communications, telephone communications, back-up communication centre or power requirements and staffing.

It has been reported that NFPA 1225, Standards for Emergency Services Communications, which is the combination of both NFPA 1061 and 1221, has now been approved. This new standard and the integration of the Next-generation 9-1-1 (NG 9-1-1) will have far reaching impacts on emergency service communications, both operationally and financially.

In Canada, the Next-Generation 9-1-1 (NG 9-1-1) system standards are to be implemented in all communication centres across the country by March 30, 2024. It is anticipated the start-up costs for NG 9-1-1 could be from \$250,000 and \$500,000 or higher. This cost is to implement and have the ability to receive emergency texts as well as images and pictures from the scene of the caller. No concrete estimates have been provided on what the annual costs could be of operating the NG 9-1-1 system. Start-up costs are more directed towards infrastructure improvements at the communications centre and may not affect any of the radio infrastructure used by UFD, which is under the control of Durham Regional Police (DRP). Any costs will inevitably be passed onto the clients.

Given the factors as outline above, EM&T recommends that the Township review the requirements under the updated NFPA training and certification legislation, determine applicability and the affects to the UFD operations and staff, develop a funding model to cover expected future agreement, training and operating

costs for the standards regarding Public Safety Telecommunications Personnel Qualification and Emergency Services Communications.

5.4 Health, Fitness, & Wellness

Health and wellness of all personnel is the key focus for all municipalities, Uxbridge is no exception. The nature of firefighters is retaining a separate primary occupation, and a focus on fitness can be overlooked. The inherent nature of firefighting is both stressful and physically demanding. During the review by EM&T, it was noted that the fire station is equipped with a minimal workout facility. Workout facilities provide benefits and ensures that staff have the ability to keep fit, which helps to reduce work related injuries. The fire department should work towards standardizing the fitness equipment including a fitness instructor to work with the volunteers as well as full-time staff. An instructor could assist in a proper workout program and/or at the very least demonstrate the proper and safe way to use the exercise equipment.

Many fire departments routinely assess their firefighters to meet occupational fitness tests delivered internally or by a third party. NFPA 1582 details basic expectations placed upon firefighters. UFD is encouraged to review these and incorporate them into both candidate testing and firefighter fitness and functionality. It is recommended that, as part of a larger commitment to firefighter health and wellness, UFD review the physical expectations of a firefighter for use in training and recruiting.

NFPA 1582 Standard on Comprehensive Occupational Medical Program for Fire Departments identifies 14 essential job tasks that detail the physical and physiological strains placed on firefighters. The standard outlines the requirements for a department medical program including certain conditions that may pose a risk to firefighting. As the core determination for the physical aspects of firefighting, it is important for the UFD to understand the expectations they are placing on their personnel. These job tasks are listed in the Standard as:

5.1 Essential Job Tasks and Descriptions

5.1.1 The fire department shall evaluate the following 14 essential job tasks against the types and levels of emergency services provided to the local community by the fire department, the types of structures and occupancies in the community, and the configuration of the fire department to determine which tasks apply to their department members and candidates:

1. While wearing personal protective ensembles and self-contained breathing apparatus (SCBA), performing firefighting tasks (e.g., hose line operations, extensive crawling, lifting, and carrying heavy objects, ventilating roofs or walls using power or hand tools, forcible entry), rescue operations, and other emergency response actions under stressful conditions, including working in extremely hot or cold environments for prolonged time periods.
2. Wearing an SCBA, which includes a demand valve-type positive-pressure facepiece or HEPA filter mask, which requires the ability to tolerate increased respiratory workloads.
3. Exposure to toxic fumes, irritants, particulates, biological (infectious) and nonbiological hazards, and heated gases, despite the use of personal protective ensembles and SCBA.
4. Depending on the local jurisdiction, climbing six or more flights of stairs while wearing a fire protective ensemble, including SCBA, weighing at least 50 lb (22.6 kg) or more carrying equipment/tools weighing an additional 20 to 40 lb (9 to 18 kg).

5. Wearing a fire protection ensemble, including SCBA, that is encapsulating and insulated, which will result in significant fluid loss that frequently progresses to clinical dehydration and can elevate core temperature to levels exceeding 102.2°F (39°C).
6. While wearing personal protective ensembles and SCBA, searching, finding, and rescue-dragging or carrying victims ranging from newborns to adults weighing over 200 lb (90 kg) to safety despite hazardous conditions and low visibility.
7. While wearing personal protective ensembles and SCBA, advancing water-filled hose lines up to 2 ½ in. (65 mm) in diameter from fire apparatus to occupancy [approximately 150 ft (50 m)], which can involve negotiating multiple flights of stairs, ladders, and other obstacles.
8. While wearing personal protective ensembles and SCBA, climbing ladders, operating from heights, walking, or crawling in the dark along narrow and uneven surfaces that might be wet or icy, and operating in proximity to electrical power lines or other hazards.
9. Unpredictable emergency requirements for prolonged periods of extreme physical exertion without benefit of warm-up, scheduled rest periods, meals, access to medication(s), or hydration.
10. Operating fire apparatus or other vehicles in an emergency mode with emergency lights and sirens.
11. Critical, time-sensitive, complex problem solving during physical exertion in stressful, hazardous environments, including hot, dark, tightly enclosed spaces, that is further aggravated by fatigue, flashing lights, sirens, and other distractions.
12. Ability to communicate (give and comprehend verbal orders) while wearing personal protective ensembles and SCBA under conditions of high background noise, poor visibility, and drenching from hose lines and/or fixed protection systems (sprinklers).
13. Functioning as an integral component of a team, where sudden incapacitation of a member can result in mission failure or in risk of injury or death to civilians or other team members.
14. Working in shifts, including during nighttime, that can extend beyond 12 hours.

The 14 essential job tasks explained in NFPA 1582 lay the groundwork for NFPA 1583 Standard on Health-Related Fitness Programs (HRFP) for Fire Department Members. NFPA states that “this standard outlines a complete HRFP for members of fire department involved in emergency operations to enhance their ability to perform occupational activities and reduce the risk of injury, disease, and premature death”. The applicable portion of the standard comes from section 4.1 wherein it states:

4.1 Program Overview

The fire department shall establish and provide a HRFP that enables members to develop and maintain a level of health and fitness to safely perform their assigned functions.

The occupational health and safety program provides direction on performing assigned functions in a safe manner. The HRFP allows members to enhance and maintain their optimum level of health and fitness throughout their tenure with the fire department. Education, one provision of a health-related fitness program, allows a means for improving health and fitness throughout the organization. The organization needs to

provide the recognition and support to ensure the promotion and success of this process. Health and fitness needs to become a value within the organization just as safety is a value.

Data suggests a correlation between the following:

- A proactive approach to health and fitness and a decrease in debilitating occupational injuries.
- A reduction in workers compensation claims and a decrease in acute and chronic health problems of fire fighters.

Combining the health-related fitness program with a proactive occupational safety and health program provides a fire department with the level of quality needed for its members. It is suggested that, as part of a larger commitment to firefighter health and wellness, the UFD review the 14 essential job tasks from NFPA 1582 as they pertain to their recruitment and testing process and seek options for offering personnel the ability to exercise and maintain fitness levels as explained in NFPA 1583.

5.5 Cancer Prevention

In recent years there has been a more intensive review of cancer prevention and a correlation of the disease to firefighting. The focus has been on contamination control surrounding fire incidents. From pre-fire, incident duration, to cleaning and decontamination post-fire, all aspects of prevention are currently under review by all levels of fire service management. The department does have decontamination kits to start the decontamination procedures, which is a significant positive. However, it is suggested that, as part of a larger commitment to firefighter health and wellness, UFD begin work on a cancer prevention program. This may include items such as, but not limited to:

- Post-fire decontamination of personal protective equipment (PPE)
- Firefighter hygiene at fire scenes
- PPE during handling of contaminated gear/equipment
- Documenting potential exposures
- Reducing exposures to diesel exhaust

The fire stations are not equipped with “at source” diesel exhaust extraction systems (that attach to a vehicles exhaust pipe) to reduce exposure to vehicle exhaust. Diesel exhaust has been contributed to health issues when people are exposed to it over long duration. By having these systems in the station, the health concern is greatly reduced. This would be a positive feature towards cancer prevention by have a system installed in the station.

In reviewing the Personal Protective Equipment (PPE) program, also known as structural firefighting ensemble, it was noted a plan has been established to review PPE inventories and forecasted replacements are identified so that budgetary submissions are effectively managed. This is important to note as NFPA 1851 Standard on Selection, Care and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting states in Chapter 10:

Structural fire fighting ensembles and ensemble elements shall be retired in accordance with 10.2.1 or 10.2.2, no more than 10 years from the date the ensembles or ensemble elements were manufactured.

The appendices, to that section also references that “...it is imperative that the protective elements be routinely inspected to ensure that they are clean, well maintained, and still safe”. UFD has a program that PPE is inspected and cleaned in-house, and that there is a cache of used gear that can accommodate a portion of the Department.

EM&T suggests that the UFD should review and endeavour to maintain up-to-date standard operating guidelines on PPE/Bunker Gear inspections and cleaning. There is a need for ongoing/refresher instructions ensuring the correct re-assembly of the ensemble, including how to check that the Drag Rescue Device (DRD) has been properly installed.

Cancer prevention may begin at the scene of a structure fire. The bunker gear becomes laden with contaminants and smoke, and off gas for some time after a fire. By decontaminating the firefighters at the scene of the fire and ensuring they do not wear their dirty gear back to the station or transporting it in the cab of the truck, is the step in the right direction of cancer prevention. The department should invest in some on-scene decontamination equipment and bags for transporting the bunker gear back to the station.

Use of Personal Vehicles for Response:

In some jurisdictions, firefighters can respond to an emergency scene in their own vehicles, which means that some or most of the firefighters are carrying their firefighting gear in their vehicles. If the gear has not been properly cleaned this can pose a health risk to the firefighter and any other occupants of their personal vehicle. Many fire departments in Ontario, including the UFD, have ceased the practice of allowing firefighters to respond to an emergency scene. All firefighters are required to attend at the fire station, put on their gear and leave as a team.

By doing this, the department accomplishes three key things; the first being that no contaminated gear is transported in a private vehicle. The second, is that an emergency scene is not impeded with firefighters’ personal vehicles. And third, it ensures full accountability of who is responding and how many firefighters are on the scene. When firefighters respond in their personal vehicles, there is an opportunity for “freelancing”, which means that firefighters are working without direct supervision and support (of other firefighters and emergency vehicles). As noted in the NFPA 1720 standard in relation to initial firefighting operations:

4.6 Initial Firefighting Operations.

- **4.6.1** Initial firefighting operations shall be organized to ensure that at least four members are assembled before interior fire suppression operations are initiated in a hazardous area.
- **4.6.2** In the hazardous area, a minimum of two members shall work as a team.
- **4.6.3** Outside the hazardous area, a minimum of two members shall be present for assistance or rescue of the team operating in the hazardous area.

By having all firefighters respond to the fire station first, this creates full accountability and supervision of staff. It is true that there are advantages of having firefighters go to the scene as opposed to passing it (the scene) to get to the fire station. But personal vehicles are not emergency vehicles and should not be used in such a manner.

Uxbridge Fire Department has developed policies and procedures that reflect the following. That gear is not to be:

- Transported inside the cabs of fire department vehicles.
- Transported inside personal vehicles.
- Taken into living quarters of a fire station (this should include any areas of the fire station other than the apparatus bays).
- Taken into the firefighter's home.

Cancer prevention does not stop at just taking off and bagging the bunker gear for cleaning at the fire station, the individuals clothing may also contain cancerous contaminants. The hygiene and decontamination program should also address the fire fighters personal clothing or uniform worn in the fire. This may see the necessity of the fire fighters having spare clothing at the fire station or in their personal vehicle, available for them to change into after they have a shower at the station. This clothing should also be washed at the fire station and not taken to the residence to be washed as they are then introducing the contaminants to members of their family.

A fire department exposure report should be completed each time a fire fighter is exposed to the products of combustion.

5.6 Mental Wellbeing

Like law enforcement, paramedics, and military personnel, firefighters are regularly exposed to critical incidents. A critical incident can be described as:

- A near miss that threatened the health and safety of a member of the Department. This can include a situation where a member of the department experienced an event that could have resulted in significant harm or was a close call where they escaped significant harm.
- The suicide or attempted suicide of a co-worker.
- The sudden death of a fellow firefighter.
- The loss of a patient after a rescue attempt.
- The death or a critical incident involving a child.
- A prolonged rescue or incident with excessive media coverage.

Being regularly exposed to horrific events can lead to critical incident stress. A critical incident can best be described as a normal reaction to an abnormal traumatic incident. Exposures to critical incidents can impact firefighters later in life and it is critical to have a formal record of critical incidents to assist a firefighter for a workplace injury if they are struggling due to post traumatic stress disorder (PTSD).

Mental health takes on a critical importance in high-stress, high-risk work settings, such as those in which first responders operate, where their own functioning has serious implications for the health, safety, and security of the public they serve.

Firefighters are the greatest asset of any fire service, and it is imperative that their mental well being is addressed in a genuine, consistent, and professional manner. This may include the establishment of a PTSD

prevention plan by a committee of firefighters, chief officers, mental health professions and representatives of the firefighters and padre staff.

The plan should include:

- An introduction about the plan.
- Goals and objectives
- Prevention and education focus areas
- Screening and initial intervention focus areas
- Support, WSCC claims management, recovery and return to work focus area
- An overview of PTSD, risk factors, signs, and symptoms.
- Legal requirements of the municipality under the OH&S Regulations of Nunavut.
- Organizational PTSD practices (promoting good mental health).
- Organizational anti-stigma practices.
- Roles and responsibilities for prevention, intervention, recovery, and return to work.
- Training on awareness and anti-stigma, recognising the signs and symptoms and responding to signs of PTSD, postexposure education and awareness.
- Specific education nights that include members of the firefighter's family and given a prepared handbook at its conclusion, that includes what to watch for, such as behavioural changes and the contact phone numbers of mental health support agencies.

In 2017, emergency services organizations were required by the Ontario, Ministry of Labour to submit a Post Traumatic Stress Disorder (PTSD) Prevention Plan. This was to coincide with PTSD and Occupational Stress Injuries (OSI) to be considered as workplace injuries and compensable through the Workplace Safety & Insurance Board. An information package is to be made available to its members and their families, outlining what PTSD is, the dangers it presents, training, on-going support, early intervention, WSIB claims management, recovery, and return to work. The Uxbridge Fire Department has not developed this information package. The development of this package should be a priority of the UFD Peer Support Group.

Uxbridge Fire Department has included all its fire department staff in the Employee Assistance Program (EAP) offered through VFIS of Canada as an initial contact. This is part of their PTSD program, however, ensuring that the firefighters have full EAP coverage for all related needs is an important piece of employee wellness. The fire chief should meet with township staff who oversee EAP and related programs to ensure that firefighting personnel are fully aware of what benefits the EAP offers, should they need it. This may require a more inclusive package. As an opportunity to improve retention of the volunteer firefighters, this EAP could be offered as a family package.

Section 5: Recommendations

Rec #	Recommendation	Estimated Cost	Suggested Timeline
11	That the fire chief present a response time goal for the approval of council, which may reference NFPA 1720 (2020 Edition) – the expectation of 6 staff in 14 minutes, 80 th percent of the time as a start.	Staff Time	Immediate (0-1 year) ongoing
12	Uxbridge Fire Department should consider this new mandatory NFPA 1061 Standard requirement and review the Agreement to ensure adherence to the mandatory standards by Oshawa dispatch centre as part of the Agreement terms and conditions.	Staff Time and Funding TBD	Immediate (0-1 year) ongoing
13	The Township review the requirements under the updated NFPA training and certification legislation, determine applicability and affects to UFD operations and staff, develop a funding model to cover expected future agreement, training and operating costs for the standards regarding Public Safety Telecommunications Personnel Qualification and Emergency Services Communications.	Staff Time	Immediate (0-1 year) ongoing
14	UFD develop a formal health and wellness program that includes all facets relating to fitness, cancer prevention, PTSD and EAP peer support.	Staff Time	Immediate (0-1year) ongoing

SECTION 6

Facilities, Vehicles, Equipment & Water Supply

- 6.1 Fire Station Reviews
- 6.2 Fire Apparatus –
New & Replacement
Schedules
- 6.3 Equipment and Maintenance
- 6.4 New Technologies
- 6.5 Hydrants



SECTION 6: FACILITIES, VEHICLES, EQUIPMENT & WATER SUPPLY

36.1 Fire Station Review

A review of the existing fire station was conducted by EM&T and will be addressed in this section. It should be noted that the walkthrough of the fire stations was a visual inspection; no destructive testing or engineering assessment was conducted.

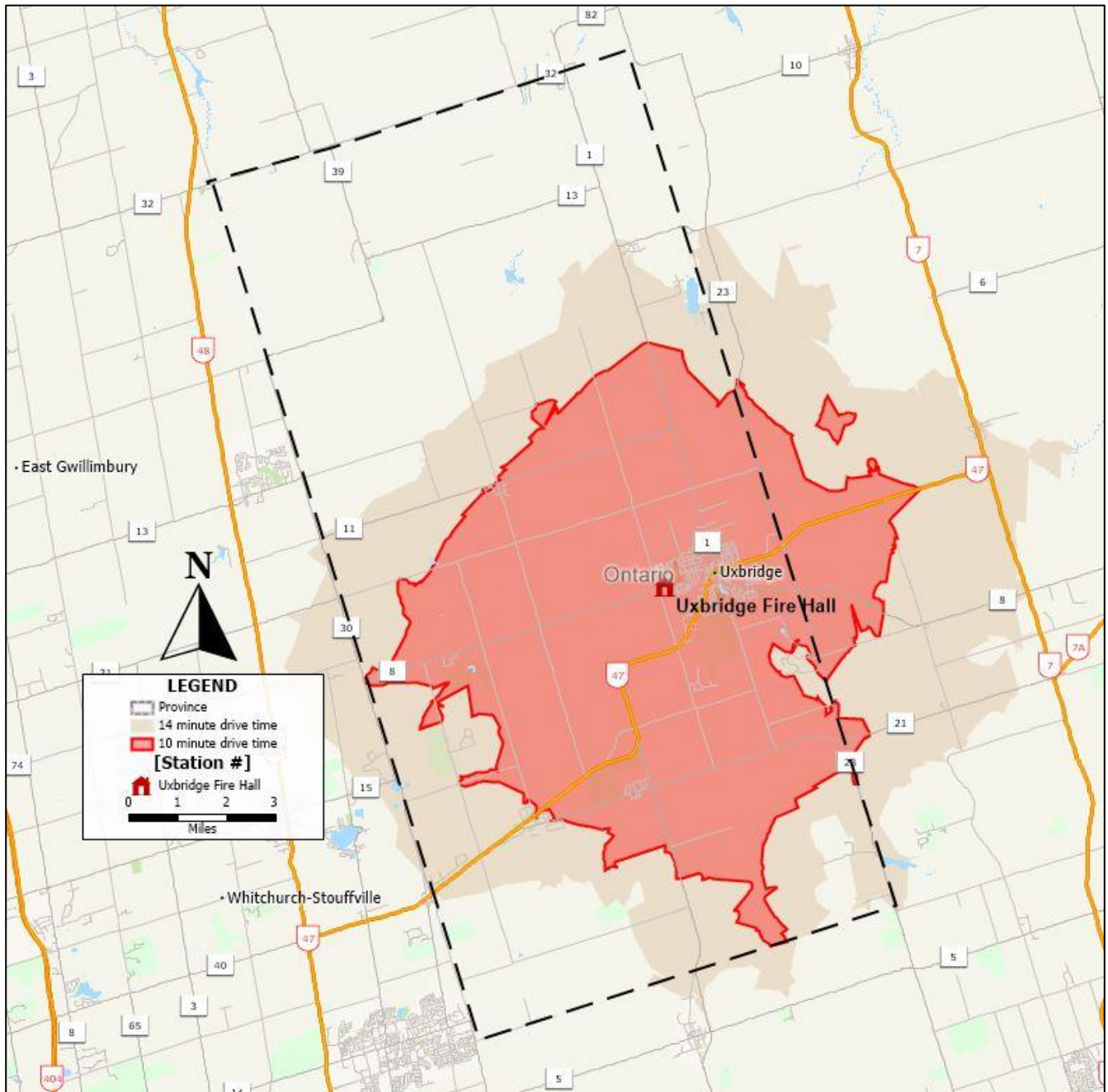
Fire stations should be positioned to offer the most efficient and effective response to the community they serve. Centering them within a determined response zone that is simply based on “timed” responses is not necessarily the best option to implement. Fire station location depends on many factors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

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, then a more realistic level of service and fire station location criteria can be identified.

The following map depicts where the fire station is located and indicating a response time zone based on the NFPA recommended 14-minute overall response. The zones represent 10-minute drive time, minus 4-minutes for volunteers to arrive at the station and then respond in an emergency services vehicle. Even though the firefighters are allowed to respond directly to the location in their personal vehicles, no actual firefighting procedures (such as extinguishment) will occur until the fire trucks arrive. The 4-minute response to the fire station is used as an overall averaging.

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 #14: Location of the Fire Station and Drive Time of 10-Minutes



As can be seen in the response zone map, a large portion of the township is covered by the fire station, based on a 10-minute drive time.

6.1.1 Uxbridge Fire Station

Uxbridge Fire Department provides emergency service response from one fire station. Based on visit to the station, the building is new, constructed in 2018.

Note: The station review in this report is general in nature. Therefore, if more in-depth structural analysis is desired by the township, then a comprehensive station/facility review should be undertaken.

Any health and safety related items have been reviewed and mentioned, only if applicable.

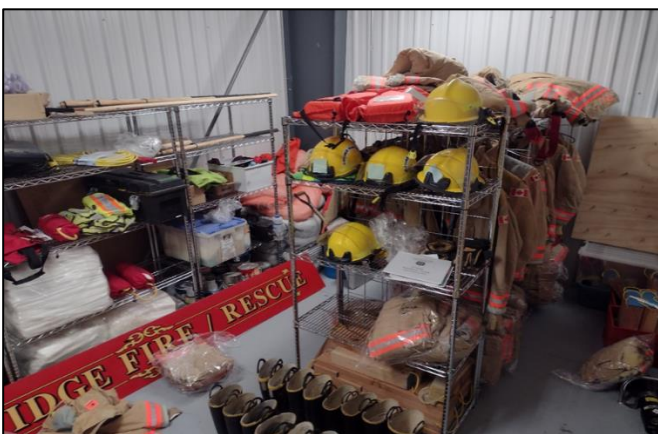
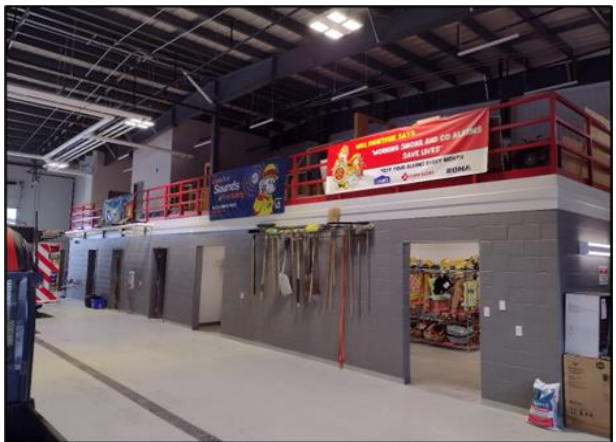
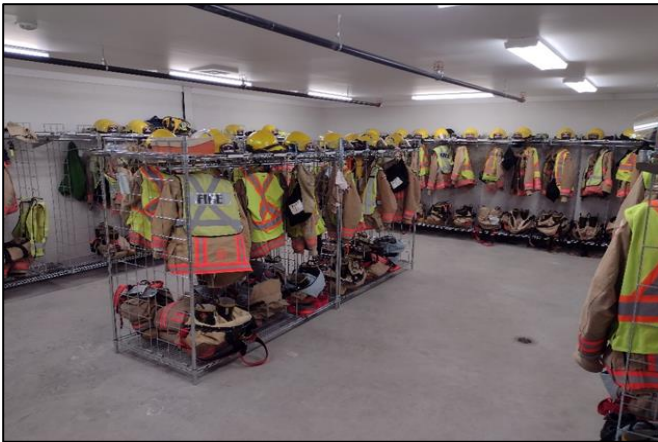
Uxbridge Fire Station



Apparatus Bays



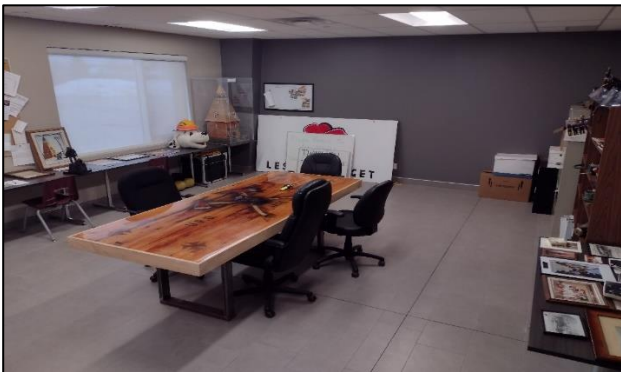
Space and Storage



Township of Uxbridge Fire Master Plan



Training Area and Meeting Rooms





During the walk-through, it was evident (as can be seen in the supplied photos) that the Uxbridge fire station is in excellent condition in all aspects. Uxbridge Fire Department is well served by this facility.

The only comment that EM&T would make is that consideration be given regarding the opportunity to construct a hose tower on the west side of the building, north corner. The hose tower would provide the ability to train for multistorey building stair and hose evolutions. Functional windows in the hose tower facility would provide opportunity to train for exterior ladder operations and practical performance drills.

EM&T makes no recommendations regarding Fire Station Review.

6.2 Fire Apparatus – New & 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 emergency service's Fire Underwriters Survey rating.

The Uxbridge Fire Department is well-equipped with pumper trucks, tankers and support vehicles required for primary response to calls within the Township. All the vehicles have been identified in the department's capital replacement plan. There is also reference to an aerial device that is scheduled for inclusion into the fleet in late 2022. EM&T is supporting the inclusion of this new aerial device as it will enhance the emergency service's ability to battle 'above ground' fires that are out of the reach of conventional ground ladders. Aerials or any type of elevated device trucks play a vital role at the scene of a structure fire; securing building access for upper floors, rescue, assisting with rooftop ventilation, and suppression can be achieved from an aerial ladder. These factors are especially important when dealing with apartment buildings and/or other structures of two storeys or more, such as commercial buildings and industrial facilities. The new aerial replacement is to be incorporated into the fleet's future replacement plan.

6.2.1 Fire Underwriters Survey – Vehicle Replacement Recommendations

When assessing an emergency service's ability to respond and meet the needs of the community, the Fire Underwriters Survey considers the age of a fire truck as one of its guidelines.

The Small Communities and Rural Centres section (outlined in blue) is the recommendation for vehicle replacement for a township the size of Uxbridge. This allows for up to a 20-year replacement cycle, in which

the fire vehicle can be utilized as 2nd Line response status. It is, however, recommended that all First Line units be replaced by a new or younger unit when it reaches 15 years of age.

TABLE #2: FUS Vehicle Replacement Recommendations¹⁰

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 Duty	First Line Duty	First Line Duty
16 – 20 Years	Reserve	2 nd Line Duty	First Line Duty
20 – 25 Years ¹	No Credit in Grading	No Credit in Grading or Reserve ²	No Credit in Grading or 2 nd Line Duty 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 +	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 (NFPA 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 populated area (or multiple areas) with a density of at least 400 people per square kilometre; AND
a total population of 100,000 or greater.

⁴ Medium Communities are defined as an incorporated or unincorporated community that has:
a populated area (or multiple areas) with a density of at least 200 people per square kilometre; AND
a total population of 1,000 or greater.

⁵ Small Communities are defined as an incorporated or unincorporated community that has:
no populated areas with densities that exceed 200 people per square kilometre; AND
does not have a total population in excess of 1,000.

Fire Underwriters Survey definition of First Line Duty, 2nd Line Duty, 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.

¹⁰ TECHNICAL BULLETIN, FIRE UNDERWRITERS SURVEY™, A Service to Insurers and Municipalities, INSURANCE GRADING RECOGNITION OF USED OR REBUILT FIRE APPARATUS, accessed January 31, 2022, file:///C:/Users/EmergencyLT/Downloads/FUS-TechnicalBulletin-InsuranceGradingRecognitionofUsedorRebuilt%20(1).pdf

The FUS is reviewed by insurance companies. Provided that an emergency service adheres to the recommended replacement timelines through an approved capital replacement schedule, the department will retain its fire rating for vehicle replacement. By ensuring that the vehicles are being replaced on a regular schedule, an emergency service is also demonstrating due diligence towards ensuring a dependable response fleet for emergency services and the community it serves through its vehicle replacement schedule.

6.2.2 National Fire Protection Association – Vehicle Replacement Recommendations

The NFPA 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. NFPA 1911 recommends that all front-run vehicles are replaced on a 15 to 20-year cycle, depending on the community size.

For emergency services that are considering refurbishing their vehicles to extend the in-service life, reference can be made to the NFPA 1912, Standard for Apparatus Refurbishing. It should be noted that although the FUS do take refurbishment of vehicles into consideration, no credit rating is assigned to vehicles over 30 years of age.

During EM&T's review, it was noted that the vehicles are on a standard replacement cycle and that maintenance and repair work is addressed as quickly as possible by an Uxbridge Fire Department mechanical officer, Township Fleet mechanics or Emergency Vehicle Technician (EVT) certified 3rd party facilities as required. Uxbridge is very well positioned regarding its fleet matters. The commitment by staff and the collaboration demonstrated within the Township has ensured this and should be noted as such.

EM&T does recommend that the UFD works with the Township Finance Department and begins the budgeting and procurement approval process for 20-year replacement several years prior to the end of the 20 year cycle. The current situation is that funding and procurement approval processes are done in year 20 thereby resulting in replacement vehicles not being received for entry into service until sometime after the 20-year replacement cycle mark.

6.3 Equipment and Maintenance

The Uxbridge Fire Department does have its own mechanical officer for equipment repair and maintenance. SCBA, heavy hydraulics, and other small equipment is repaired and maintained in-house. As such, repairs can be done efficiently which is a cost avoidance because the equipment does not always need to be sent out to a 3rd party shop. It also is a more effective in relation to conducting repairs/service in a more expedient manner.

Uxbridge Fire Department is utilizing FirePro2 records management system and as such is also transitioning their fleet, equipment, and maintenance data. Mechanical matters are in collaboration with the Township fleet staff.

EM&T review has confirmed that the UFD is very well positioned in its equipment and maintenance operations and program.

EM&T does recommend that given the cost of major equipment such as heavy hydraulics, auto-extrication, defibrillators, speciality rescue equipment, and SCBA to name a few, there should be a life-cycle program in place. Life cycling major equipment based on historical and expected use would benefit UFD and the Township

in that major equipment and therefore significant expenses would be funded and replaced over a pre-determined period. Equipment inventories would always be in good condition and with up-to-date technological, operating, and operator safety factors addressed on a managed and funded basis.

6.4 New Technologies

Technology is ever evolving within the fire service, with new pieces of equipment being added to the resources used by an incident commander. One such technology which has proven to be a valuable tool is the use of drones. Police services have been using them for some time to locate missing persons or document accidents and crime scenes.

The use of drones in the fire service is a growing trend as a multi-purpose tool that can assist with large scale assessments of fireground and hazardous material incidents, enhance search and rescue functions, and be used in pre-incident planning. Dependant on the drone cargo limits some have the capacity to take small loads to victims requiring rescuing such as personal floatation devices during ice rescues or warm clothing. In some cases, having the ability to communicate with the victims may prevent unnecessary resources from being deployed. This would be applicable given Uxbridge and the significant trail system and water features that is present in the Township.

Drones can cover a lot of ground thus allowing valuable fire services personnel to be utilized elsewhere. They have proven beneficial for hazardous materials incidents and large-scale emergencies as the drone can be quickly deployed and give the Incident Commander a live view of the incident. The reduction of risk to firefighting personnel is a significant benefit of drone technology along with the live view capabilities that provides invaluable information to the Incident Commander.

Drone pilots must follow the Canadian Aviation Regulations (CARs) Part IX-Remotely Piloted Aircraft Systems that contain the rules for drones up to 25 kilograms. Advanced operations include flying in a controlled airspace, flying over bystanders, or flying within 30 meters of bystanders.

New technologies are being developed each year to protect the firefighters; these include the use of robotics to fight fires, which are being actively used in Europe and Asia.

New SCBA have built in telemetry systems that, like some portable radios, identify the location of the fire fighter. New technology SCBAs can transmit GPS data, the amount of air in the SCBA cylinder, monitor the heart rate, level of exertion the fire fighter is being exposed to, and body temperature.

As the technology progresses it is important to monitor the benefits and opportunities to integrate these devices into the fire service.

6.5 Hydrants

The Region of Durham is responsible for supplying water to the populated and some rural areas of the township. . The Township needs to work in collaboration with the Region to ensure there is adequate flow rates to sustain firefighting operations especially in high-risk areas in which vulnerable occupancies, schools, community centres, hospitals, youth residences and medical treatment centres are located. It should be noted there is one private water system in the township and it, like the other water systems, it to must meet Ontario water quality, OFC and NFPA requirements.

All fire hydrants should be inspected and tested as noted within, NFPA 24, Standard for the Installation of Private Fire Service Mains Their Appurtenances, along with NFPA 291, Recommended Practises of Fire Flow Testing and Marking of Hydrants. The hydrants should also be painted in colours appropriate to their flow rate, as identified in NFPA 291. The Region Of Durham should ensure that every hydrant is flushed each year and operating properly, including draining after use, to prevent freeze up in the winter. The failure of a hydrant to operate as required may present catastrophic results and expose the ROD to risk of litigation. The OFC, Subsection 6.6.6 specifically speaks to the maintenance and marking requirements for fire hydrants.

When a fire hydrant is out of service, repairs should be completed in an expedited manner, notifying the fire department of such breakages and the anticipated time to complete the required repairs.

During winter months some hydrants should have markers installed beside or on them for ease of location amongst snowbanks. It aids firefighters year-round to locate a hydrant at night with reflectors being installed on the 65mm ports and be colour coded to the hydrant’s flow rate.

Section 6: Recommendations

Rec #	Recommendation	Estimated Cost	Suggested Timeline
15	That UFD works with Township Finance Department and begins the budgeting and procurement approval process for 20-year replacement several years prior to year 20. This would ensure that replacement vehicles are actually purchased and received prior to exceeding the 20-year mark.	Staff Time and Costs Dependant on Vehicle Type	Mid-term (4-6 years)
16	Given the cost of major equipment such as heavy hydraulics, auto-extrication, defibrillators, speciality rescue equipment, and SCBA to name a few, there should be a life-cycle program in place.	Staff Time and Costs Dependanton EquipmentType	Mid-term (4-6 years)



SECTION

7

Emergency Management

- 7.1 Emergency Management Program
- 7.2 Emergency Operations Centres
- 7.3 Emergency Planning, Training & Exercises
- 7.4 Emergency Response Plans

SECTION 7: EMERGENCY MANAGEMENT

7.1 Emergency Management Program Overview

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. This *EMCPA* also stipulates that municipalities are to conduct a training exercise on an annual basis. Also, every community in Ontario must have an identified Community Emergency Management Co-Ordinator (CEMC). Currently this duty falls to the fire chief as CEMC of the Township with the Director of Works and Operations as the alternate.

The latest version of the Emergency Response Plan (ERP) is noted as December 2021. It is a legislative requirement for emergency response plans to be reviewed and updated each year. Changes could be minor, not requiring a complete document update. To catalog such changes, the CEMC should insert a page at the front of the document to include the following:

- The date changes were completed.
- A brief outline of the changes and the sections involved.
- Name of individual completing the updates.

Whether the revised document requires council approval.

The primary Emergency Operations Centre (EOC) location has an automatic standby generator, however, the secondary EOC location does not. Even though the EOC may not be placed in operation frequently, they are maintained in a state of readiness including updates to the information technology system. The EOCs are reflective of the ERP in that the Incident Management System (IMS) command model has been followed, reflecting the Province of Ontario, and surrounding municipalities model. Other than the generator matter at the alternate EOC, the Township is well positioned with IMS functioning and appropriately resourced EOCs. EM&T suggests that the lack of alternate EOC generator matter be addressed when considering the entire Emergency Management Program in review.

Given the abundance of bodies of water in the Township of Uxbridge and as with many area municipalities, each spring there is always the threat of flooding. Prior to the spring melt, a community should receive direction on what could occur, from either the Region Of Durham or Ministry of Northern Development, Mines, Natural Resources and Forestry (MNDMNR), determine the resulting effects to expect, what should be completed in preparation in the event of significant flooding, and ways to self prepare for such events. Public messaging is key, and this may be accomplished through social media, Township of Uxbridge website, public messaging on radio and television stations, and print media.

The Emergency Management Program Committee (EMPC) meets and plans for changes to the ERP and future training opportunities, along with any changes that may be required to the EOC. The Municipal Control Group (MCG) is established and compliant in the requirements to meet and train. The CEMC ensures that the Emergency Control Group contact information is reviewed and updated annually. Based on EM&T's review, the emergency management program is well administered regarding training and compliance with EMPCA in Uxbridge.

7.1.1 Incident Management System

Interagency, multi-jurisdictional, multi-government and multi-disciplinary are terms used when operating in a large-scale emergency environment. On May 1, 2016, a wildfire seven kilometers outside of Fort McMurray became the worst wildfire incident in Canadian history with losses and economic impacts to the community close to \$10 billion. The Incident Command System (ICS) is based upon best practices in Canada and the United States and is used for both small or large emergency and non-emergency planned events. It identifies roles and responsibilities to improve resource and interagency communications for a common purpose. In the Province of Ontario, the ICS is known as the incident management system.

During some emergencies there is a likelihood of the IMS being expanded into a Unified Command. The type of incident, complexity and location of an incident may require a Unified Command structure. The Unified Command “is a management structure that brings together the ‘Incident Commanders’ of all major agencies and organizations involved in the incident to coordinate an effective response while at the same time carrying out their own jurisdictional or functional responsibilities.”¹¹

The EOC is critical for providing coordination, resource management, communications, and critical assessments of the event with the Incident Commander. The strength of the IMS is in ensuring the safety of responders and other personnel are a priority and an effective use of resources or elimination of the duplication of services is achieved. Individuals that are expected to be part of the EOC, including designated alternates, should have training in IMS.

There are four different types of Incident Command levels and Emergency Management Ontario (EMO) identifies the following levels:

- **IMS 100:** The awareness level training that introduces the participant to IMS topics and concepts.
- **IMS 200:** The awareness level training that is designed to help people function within the IMS. This level of training provides a greater depth regarding the functional areas and positions in the IMS.
- **IMS 300:** The level that is directed for supervisory functions and provides exposure to setting objectives, unified command, planning, demobilization, and termination of command. This level is focused on developing skills through practical exercises.
- **IMS 400:** The level that is directed for supervisory functions and is orientated to developing skills for complex incidents and the coordination of multiple incidents.

There is no minimum training identified for the EOC, however, the IMS is identified in the Township’s Emergency Response Plan. Most incidents are routinely dealt with without activating the EOC and it must be noted that the EOC is activated when an event is expected to expand in complexity and duration, requiring an efficient coordination among departments or responding agencies. IMS courses are available on-line and at no cost.

¹¹ Deal, Bettercour, Deal, et al, (2010) Beyond Initial Response, ICS, p.I-33.

7.1.2 Emergency Planning Training and Exercises

Emergency planning and IMS are skills that need to be used regularly. Several training options as noted below, can be utilized to plan, and exercise in IMS and the community's emergency plan activation. The frequency of training exercises that involve IMS and use of the EOC, will aid in the efficient operation of the EOC during a real emergency.

EOC Activation: Planning for a practice activation of the primary and secondary EOC keeps staff orientated to their roles and all staff members that are expected to have a role in the EOC should participate in these practice sessions.

Discussion-Based Exercise: In Discussion-Based Exercises, the primary intent is to have dialogue regarding the emergency plan, procedures, bylaws, and any policies that could impact an emergency. The discussion sessions are low key, low pressure and a great tool for familiarization of plans, procedures, bylaws, and policies. The secondary intent of discussion-based exercises is to build confidence through familiarization amongst team players in the application of the plan. These discussion-based exercises are great tools to facilitate the learning process for the staff designated as alternates expected to fill a role in the EOC.

Discussion based training is a great way to orientate new staff or existing staff that have not had a real opportunity to familiarize themselves with the emergency plan or organizational plans, bylaws, procedures, and policies.

Tabletop Exercise: These exercises are low cost with minimal stress, but preparation can require some time to create a scenario that is relevant to the municipality. A tabletop exercise is generally led by one facilitator depending upon the complexity of the scenario. Tabletop exercises are great ways to identify gaps in plans, policies, and procedures in the post-exercise discussions. To complete the exercise, an After-Action Report is completed to identify any shortcomings or deficiencies that need to be addressed.

Operations-Based Exercise: The primary intent is to deploy personnel and equipment in a drill, functional exercise, or a full-scale exercise. The disadvantage of an operations-based exercise is that they require a significant amount of time to plan and prepare for, as resources will be required from multiple agencies. Operations-based exercises generally reveal gaps and weaknesses in training, inter-agency communications, resource allocation and operational procedures. Operations-based exercises include:

- Drills – These are exercises that are intended to evaluate a specific operation. For example, UFD along with the Durham Paramedic Service (DPS) may conduct a drill of a carbon monoxide leak in a long-term care home.
- Functional exercises – These exercises can be complex with a high degree of realism and are used to test plans, procedures and policies in the training scenario which is at a single site. These exercises are used by agencies to test their capabilities of performing multiple functions.

Full-scale exercises: A complex exercise that tests multiple agencies in a single scenario at multiple sites. These exercises are in real time, highly realistic and usually stressful for agency personnel participating in the exercise. A full-scale exercise can take from 6-10 months to prepare for and require a significant investment in resources and funds. Several facilitators are required to ensure safety and compliance to the storyline of the exercise. A full-scale exercise is developed with clear objectives to test multiple agencies. Upon completion of the exercise, a hot wash is conducted which is a formal discussion of the involved agencies performance during

the exercise. An After-Action Report and a formal Improvement Plan are prepared and distributed that identify actions required to address and improve performance.

7.2 Emergency Management Program Opportunities

An ERP should be updated regularly and as per legislative requirements. Given the most recent version of the ERP is 2021, Uxbridge is well positioned in in-line with best practice that would suggest the ERP version is within a year of the current date. However, EM&T recommends the 2021 ERP when next updated, include a revision tracking page be included at front of document outlining the sections updated and confirming council approval as minimum.

EM&T recommends that due to the importance of staff understanding their roles and responsibilities in the EOC, that a policy be implemented that identifies IMS 100 for all staff, IMS 200 as the minimum standard for staff required to be in the EOC, and IMS 300 being the minimum for all department heads. As such EM&T recommends review and consideration of the Emergency Management Program regarding training and funding to ensure the Township has organizational depth with IMS trained staff as well as adequate funding to ensure training (external resourcing if and as necessary) regarding training and exercises.

With so many acts of domestic terrorism taking place each year throughout the world, including Canada, a municipality must plan for the possibility of such events within their own community. As such, EM&T recommends that the ERP should have a section dedicated to domestic terrorism. The section should include an integrated response program comparable to NFPA 3000, Standard for an Active Shooter/Hostile Event Response (ASHER) Program. Partnerships could be achieved with outside agencies such as the Durham Regional Police (DRP) and DPS to develop and deliver a presentation to the public and include local businesses as sponsors to assist in offsetting any expenses.

Section 7: Recommendations

Rec #	Recommendation	EstimatedCost	Suggested Timeline
17	<p>The 2021 ERP, when next updated, include a revision tracking page be included at front of document outlining the sections updated and confirming council approval as minimum. Update ERP and insert a page at the front of the document to include the following:</p> <ul style="list-style-type: none"> • The date changes were completed. • A brief outline of the changes and the sections involved. • Name of individual completing the updates. • Whether the revised document requires council approval. 	Staff time	Short-term (1-3 years)
18	<p>Due to the importance of staff understanding their roles and responsibilities in the EOC, it is recommended that a policy be implemented that identifies IMS 100 for all staff, IMS 200 as the minimum standard for staff required to be in the EOC with IMS 300 minimum for all department heads.</p>	Staff time (courses are offered at no charge)	Short-term (1-3 years) ongoing
19	<p>Conduct a review and consideration of the Emergency Management Program regarding training and funding to ensure the Township has organizational depth with IMS trained staff as well as adequate funding to ensure training (external resourcing if and as necessary) regarding training and exercises.</p>	Staff time with Funding TBD	Short-term (1-3 years) ongoing
20	<p>The ERP should have a section dedicated to domestic terrorism.</p>	Staff time	Short-term (1-3 years)



SECTION 8

8.1 Mutual Aid Partners and Agreements

8.2 Automatic Aid &
Fire Protection Agreements

SECTION 8: MUTUAL AID, AUTOMATIC AID AND FIRE SERVICE AGREEMENTS

8.1 Mutual Aid Partners and Agreements

A mutual aid plan provides the framework by which assistance can legally be provided by all parties identified within the plan. The Township of Uxbridge has mutual aid plan and various service agreements with the following partners:

- Bylaw No. 2019-052 – Region of Durham Mutual Aid Plan and Program (April 2019)
- Bylaw No. 2013-058– Tiered Response: Region of Durham Emergency Medical Services (May 2013- Agreement #1865)
- Bylaw No. 2010-095 – Alerting Services: City of Oshawa (November 2004 – Agreement #1667)
Note: Amends Bylaw No. 2018-136 (August 2018 – Agreement #2220)
- Bylaw No. 2021-078 – Fire Protection Services: City of Oshawa (June 2021 – Agreement #2380)
- Bylaw No. 2017-170 – Fire Protection Services: Township of Scugog (November 2017 – Agreement #2146)
- Bylaw No. 2016-137 – Fire Protection Services: Town of East Gwillimbury (November 2016 – Agreement #2089)
- Bylaw No. 2017-177 – Fire Protection Services: Town of Whitchurch-Stouffville (January 2018 – Agreement #2158)

EM&T notes that in support of mutual aid efforts across the Province of Ontario, the OFMEM requires fire departments to update their equipment lists as to what apparatus they have and could be available for mutual aid purposes. However, it is incumbent upon each participating fire department to also have a clear understanding of what resources are available from its neighbouring fire department(s) and how to access these during times of need.

8.2 Automatic Aid and Fire Protection Agreements

Automatic aid and fire protection agreements exist between fire departments and communities when time and resources are a factor in responding to an emergency. Many times, these agreements identify the personnel and equipment that will be dispatched automatically in certain conditions. These agreements may also reference specific geographic areas to which resources will be deployed.

For clarity, the benefits of an automatic aid agreement in contrast to a mutual aid agreement, means that the necessary equipment and resources will automatically be dispatched for suppression services, rescue and other identified emergencies that fall within the parameters of the automatic agreement, thereby saving critical time. Oftentimes, these automatic aid agreements involve a reciprocal arrangement between two or more agencies. Typically, fire protection agreements in

contrast, follow this same model in terms of response, however the arrangement is often weighted more heavily towards one agency providing a service rather than being focused on reciprocity.

Uxbridge Fire Department has Fire Protection agreements with the following partners:

- Bylaw No. 2017-170 – Fire Protection Services: Township of Scugog (November 2017)
- Bylaw No. 2016-137 – Fire Protection Services: Town of East Gwillimbury (November 2016)
- Bylaw No. 2017-177 – Fire Protection Services: Town of Whitchurch-Stouffville (January 2018)
- Bylaw No. 2021-078 – Fire Protection Services: City of Oshawa (June 2021)

EM&T has reviewed the noted agreements and observed that they are current and remain in effect. The effort that goes into maintaining these relationships has a direct benefit to the citizens being served, to protecting lives, homes, and infrastructure, and to keeping firefighters safe.

The standard review process seeks to identify considerations for improvements that support and strengthen the provision of fire protection services. With that said, a greater level of clarity is generally achieved for all parties by following a standard template around wording and structure for the various agreements.

Additionally, it is also in the best interest that fire departments in a fire protection agreement, automatic aid agreement or mutual aid plan identify annual training sessions where firefighters get acquainted with the equipment of other departments. These combined training sessions also build the working relationship and morale between fire departments. Automatic aid and protection agreements bring fire departments together to work as a team for the benefit of the public, but without combined training sessions to practice as a team, the team cannot effectively function, and breakdowns can occur.

Another benefit of the mutual training session is the identification of gaps in equipment, communications, or training prior to a real emergency. It is highly recommended that when the current agreements are revised and updated, that a defined commitment to regular training be included that designates the position accountable for completion of this task. In addition, the agreements should lay out a commitment to ongoing meetings with senior fire department leadership. These mutual aid/automatic aid meetings allow fire chiefs and chief officers from the participating departments to discuss issues or gaps in response protocols and to identify a collaborative path forward that enhances fire protection for all participating agencies and communities.

EM&T does recommend that all Automatic Aid, Mutual Aid and Fire Protection/Service Agreements continue to be annually reviewed and revised if necessary. Particular attention should be paid to adherences to regular defined review periods and/or expiry dates identified. Also, a page listing the

dates of review and areas revised should be an addendum to any of the revised agreements and associated bylaws. Section 8 Recommendations

Section 8: Recommendations

Rec #	Recommendation	Estimated Cost	Suggested Timeline
21	That all Automatic Aid, Mutual Aid and Fire Protection/Service Agreements continue to be annually reviewed and revised if necessary. Particular attention should be paid to adherences to regular defined review periods and/or expiry dates identified. Also, a page listing the dates of review and areas revised should be an addendum to any of the revised Bylaws.	Staff time	Immediate (0-1 year) Reviewed annually

A photograph of the Uxbridge Fire Department building, a large brick structure with a sign that reads "UXBRIDGE FIRE DEPARTMENT" and the number "301". A flagpole with a flag is visible in front of the building. The image is overlaid with a blue diagonal graphic in the top left and an orange diagonal graphic in the bottom right.

SECTION

9

- 9.1 Operating Budgets
- 9.2 Capital Budgets
- 9.3 Revenues
- 9.4 Fees By-Law

SECTION 9: FINANCE, BUDGETING, FEES, & COST RECOVERY MECHANISMS

The costs associated with supporting public safety and operating a fire department can make up a large part of municipal finances, in this case the township's operating and capital budget. That said, the vast majority of a fire department's budget, such as with the Uxbridge Fire Department, is a relatively fixed cost.

Presently, when assessing the UFD operating and capital budgets comparatively with that of the township overall, the percentages align with common industry practice. The Uxbridge Fire Department operating budget, inclusive of contributions to reserves and exclusive of potential revenue generation, equates to approximately 8.7% (2022) of the Township's annual operating budget. Uxbridge Fire Department percentage of the capital budget of the Township for 2022 is approximately 9.2% (2022). When comparing these percentages to other fire services, the advantages a municipality gains from having a predominantly 'Paid-on-Call' volunteer firefighting force is evident through staffing expenditures that comprise a small portion of the overall operating costs. As is the case with the UFD, fire department budgets should be strategically built to meet the public safety needs of the community being served in a sustainable manner. It has been scientifically demonstrated that if fire department resources are deployed to match the risks inherent to hazards in the community, then the community will be far less vulnerable to negative outcomes.

During municipal budget deliberations, internal departments are essentially competing against each other for insufficient budget resources. The job of a fire chief is to educate civic administration and elected officials explaining why these costs are necessary for the fire department to provide the service levels identified in the E&R Bylaw and for the safety of staff and citizens in the community.

9.1 Operating Budget

Over a period beginning in 2019, UFD has seen a relatively consistent level in the percentage of the township operating budget allocated to its operations. The percentage level may not have reflected the true costs associated with the provision of emergency services within the Township. The need to ensure appropriate and adequate training for staff and costs related to wages will both require a sustainable funding stream and attention in the coming years.

During a review of the operating budget, it was found that key account operating sections are identified and tracked with sufficient detail that supports both transparency and accountability. Budget items include:

- Salaries & Benefits (Staffing costs)
- Contract Services, Materials, Equipment
- Utilities and Facility Maintenance
- Insurance
- Staff Development (Training)
- Administration
- Grants and Community Programs
- Other Expenses

Each of the preceding items were further defined and categorized according to expenditures within the detailed Uxbridge 2022-2023 Operating Budget. While the fire department is the primary stakeholder in managing the budget process, it is engaged and involved in this process through participation of the fire chief, as is the case in Uxbridge. This level of engagement ensures that the leadership and elected officials are kept informed of the public safety needs of the community and its fire department.

9.2 Capital Budget

The Township of Uxbridge 10-Year Capital Plan identified capital funding for the UFD which is further broken down into detailed categories such as fire station, fire vehicles, SCBA, and turnout (bunker) gear replacement as required by the department.

Based on projections as laid out in the 10-Year capital plan, each year the Township approves an updated spending plan for its capital budget. The capital budget generally consists of large investments into the community and Uxbridge is to be commended for their efforts and long-range planning. Examples of the long-term capital planning process include the Next-Generation Radio, capital reserves, and equipment.

During the budget process the fire chief prepares a capital budget report and works closely with the Township of Uxbridge Financial Services to review, revise, and update as necessary. The request is evaluated on whether it is a forced growth request that is a need based upon the ability to provide a level of service. The recommended projects are then consolidated into a report for council to deliberate and approve or deny.

9.3 Revenues

The Township identifies fire department revenues within the Operating Budget. These revenues are further broken down into User Fees; Licenses/Permits/Rentals; Cost Recoveries; and Other Revenues.

The fire department is potentially looking at significant expenditures in the coming years. As noted previously, staffing costs associated with provision of training and development to meet standards and ensure adequate service provision, as well as interoperability with neighboring jurisdictions should be a priority. Additionally, next generation radio platform and alerting/dispatching costs have the potential for significant costs increase. The amount to be directed for fire protection from both the municipal operating and capital budget should continue to be reviewed, and opportunities for additional revenues to support an appropriately resourced fire department should be examined to lessen the impact on the tax base.

It is worth noting that providing direct comparisons to other local jurisdictions regarding the fire department budget as a percentage of the municipal budget can be challenging. However, EM&T notes that the Township has done a good job of positioning UFD regarding budgeting and funding.

9.4 Fees By-Law

A means of fire services in generating revenue to offset the operating costs of the fire department is through a Fees By-Law for services provided. The Township of Uxbridge is permitted to charge for services provided, as outlined in the *Municipal Act* of Ontario (2001), Part XII.

The township has by-laws in place for the charging of fees for several municipal services provided, primarily in the form of agreements with partner entities and agencies. During this review it was found that the list of fees for service currently being charged is thorough. Regular reviewed and enhancement will potentially capture more invoicing opportunities for the services provided by the fire department.

Another form of revenue generation is the invoicing of all fire responses to the property owners' insurance companies through a third-party company specializing in these services. Many fire services in the province have implemented such means to aid in offsetting the cost of operating the fire service. Within insurance policies for both vehicles and structures, there are provisions for the payment of services provided by fire departments.

The following are examples of services that fire services may charge for:

COMMERCIAL PERMITS AND INSPECTION FEES

- Single occupancy less than 20,000 ft²
- Single occupancy greater than 20,000 ft²
- Multi-tenant Building. Fee covers the first three units. A fee of ½ of the current hourly rate will be charged for each additional unit.
- Fireworks & Pyrotechnics Display Inspections

RESIDENTIAL PERMITS AND INSPECTION FEES

- Multi-tenant (up to and including 12 units)
- Multi-tenant (over 12 units)
- Two-unit House Registration Ontario Fire Code Inspection - The fee covers the cost of the initial inspection and follow-up inspection to a maximum of two (2) working hours. If subsequent inspections are required, the current hourly rate will be billed to the applicant.

OTHER INSPECTIONS

- Liquor Licence
- Day Care, Foster Care and Group Homes
- Business Licence Inspection Fee (hourly rate)
- Fire Inspection Fee (hourly rate)
- Shows, Exhibitions, Special Events (hourly rate)
- 3rd or subsequent review of Fire Safety Plans

FIRE APPARATUS STANDBY

- Shows, Exhibitions, Demonstrations - Current overtime rates per hour for the entire time fire department is in attendance and includes all assigned apparatus at the scene. \$500 per apparatus per hour. Full cost recovery for 1 Captain & 3 Fire Fighters, minimum of 3 hours per apparatus.
- Respond to all vehicle fires: (vehicles as described in the OFM Standard Fire Report). No charges to permanent residents and businesses. Current MTO* hourly rate per hour.
- Fire Watch - Current rates per hour for the entire time fire department is in attendance and includes all assigned apparatus at the scene. \$500 per apparatus per hour. Full cost recovery for 1 Captain & 3 Fire Fighters, minimum of 3 hours per apparatus.

TECHNICAL RESCUE

- Technical Rescue (such as ice/water rescue, confined space, high angle, trench, elevator,
- Hazmat and vehicle extrication). Full Cost Recovery.
- Motor Vehicle Collisions (all) Cost equally divided by all parties involved. No charges to permanent residents and businesses. Current MTO* hourly rate per hour.

MISCELLANEOUS FEES

- Administrative charge for invoices
- File Search
- Fire Report (Copy)
- Training other Fire Departments and Agencies - by the hour per trainer plus course materials and expenses, i.e., fire extinguisher training
- Environmental - Service Call: Permanent residents and businesses. If fire department required on scene greater than two (2) hours, or failure of companies for persons to obtain service locates. Current MTO rates per hour per apparatus.
- Environmental - Service Calls: Non-Residents - fee charged from time fire department receives the call. Current MTO hourly rate per hour
- Burn permit – annually, for trailer parks
- Outdoor Solid Fuel Burning Appliances Annual Permit
- Review and approval of Risk and Safety Management Plans submitted by propane operators related to the storage and handling of propane (hourly rate)

ADDITIONAL EXPENSES

If it is necessary to retain a private contractor, rent special equipment not normally carried on a fire apparatus to determine origin and cause, suppress, or extinguish a fire, preserve property, prevent fire spread, make safe or otherwise eliminate an emergency (actual costs).

By exploring additional opportunities for revenue generation/cost recovery, UFD can ensure resources required to support effective and efficient fire service delivery remain available. From the review completed by EM&T, the UFD currently employs a sound approach to budget management, and the recommendation to investigate alternative funding sources will simply support the growth and development of this critical community service.

Section 9: Recommendations

Rec #	Recommendation	Estimated Cost	Suggested Timeline
22	Uxbridge Fire Department include a review of all fees for services provided as part of the comprehensive review recommended for the fire service agreements and mutual aid plans.	Staff time	Short-term (1-3 years)
23	The Township of Uxbridge develop a Bylaw that would require the insurance company or policy holder (property owner) for payment of fire department response fees. If not paid, the municipality in turn would add the amount to the property owner's tax bill.	Staff time	Short-term (1-3 years)

SECTION

10

Review of Previous Plans

- 10.1 Status of Previous Recommendations
- 10.2 Review of Previous FUS Report

SECTION 10: REVIEW OF PREVIOUS FIRE MASTER PLAN AND FUS REPORT

10.1 Status of Previous Recommendations

EM&T reviewed the 2012 Uxbridge Fire FMP recommendations. It was crucial to review the document as it provides a measurement of what recommendations have been acted on and what changes the UFD has undergone since 2012 as well as benchmark any recommendations identified in the 2022 FMP. Generally, the UFD has endeavoured to successfully address most of the recommendations in the 2012 FMP.

Recommendations from the 2012 Uxbridge Fire Department FMP have been, or are in the process of being, actioned. A few recommendations are no longer applicable or are part of regular financial planning (e.g., new or replacement of apparatus, etc.), while some have been outstanding and are covered by recommendations in this 2022 FMP. In the Summary of Recommendations from the 2012 FMP there were thirty-four (34) recommendations sorted into the following categories:

- Administration
- Prevention and Public Education
- Suppression
- Training
- Apparatus and Equipment
- Communications

The following outlines the outstanding recommendations, where applicable, from the 2010 FMP along with an update to ensure previous and new FMP recommendations are tracked and addressed in a timely manner over the term of the new 2022 FMP:

Administration

Recommendation: A process be implemented to review all Fire Protection Agreements on an annual basis to ensure they continue to meet the needs of the involved municipalities.

Update: Ongoing. Reference recommendation # 17 2022 FMP with specific revision tracking recommendation.

Prevention and Public Education

Recommendation: The vacant position of full-time firefighter be reassigned as a new position of a full-time Public Education/training Officer.

Update: Reference recommendation #7 2022 FMP. The proactive activities of OFM's Line #1 of the Three Lines of Defense – Public Education lends significant risk management and cost value to resourcing staffing in this regard.

Fire Safety Standards & Enforcement

Recommendation: Utilizing the Community Risk Profile develop a comprehensive inspection cycle of performance measures for consideration and approval by Council. Consideration should be given to prioritizing the two lines of defense as strategic priorities of the department.

Update: Reference recommendation #5 2022 FMP. With the risks to township identified, CRRP will aid in prioritizing the risks mitigation.

Suppression

Recommendation: Consideration be given to revising the current Dispatch Agreement to include a performance measure of NFPA 1221.

Update: Reference recommendation #10, #11, and #19 2022 FMP. Firefighters call taking and dispatching emergency vehicles require the now mandatory NPFFA training and certification for telecommunications. Along with review and revision of Dispatching/Alerting agreement, NPFA Standards criteria inclusion can be included in the process.

Training

Recommendation: A full-time staff position is recommended to be added to the department to divide duties equally between training and public education.

Update: Reference recommendation #8 2022 FMP. Given the now mandatory NFPA training and certification requirements as well as the risk management of FF training for service level delivery, this position has become increasingly critical and requires the appropriate staff resourcing.

Recommendation: Live fire training be included in the department's training schedule and be completed at minimum on an annual basis for all fire suppression staff.

Update: Reference recommendation #9 2022 FMP. The purpose of live fire training is to provide realistic fire training evolutions under safe and controlled conditions.

Recommendation: Investigate opportunities for live fire training. This could include partnerships with other local fire departments in neighbouring communities.

Update: Reference recommendation #9 2022 FMP. NFPA Professional Qualification standards require fire service members to "remain current" with the knowledge and skills related to their qualifications or certifications.

Apparatus and Equipment

Recommendation: Targeting an apparatus cycle of 15 years as a front-line apparatus with an additional five years as a reserve vehicle.

Update: Reference recommendation #15 2022 FMP. Funding and initiating procurement processes in advance of the 20-year replacement benchmark ensures vehicles arrive and are placed in-service by year 20.

Recommendation: Life cycle replacement plans be developed and incorporated into the capital budget planning process for apparatus and equipment costs.

Update: Reference recommendation #15 2022 FMP. This ensures up-to-date equipment technological, operating, and operator safety factors addressed on a managed and funded basis.

Communication

Recommendation: In coordination for implementation of the NextGen Regional Communications Interoperability Project consideration should be given to expanding the current Dispatch Agreement to include all functions of call taking, dispatching, and call handling.

Update: Not complete.

10.2 Fire Underwriters Survey

The FUS is a national organization that provides data on public fire protection for fire insurance statistical work and underwriting purposes of subscribing insurance companies. Subscribers of FUS represent approximately 85% of the private sector property and casualty insurers in Canada.

FUS Certified Fire Protection Specialists conduct detailed field surveys of the fire risks and fire defences maintained in built up communities including incorporated and unincorporated communities of all types across Canada. To complete this task, the specialists at FUS perform a detailed analysis of the overall fire protection by adding four key areas: fire department, water supplies, fire prevention and emergency communications. The results of these surveys are used to establish a Public Fire Protection Classification (PFPC) for each community. While the FUS is not involved in setting rates, the information provided through the Fire Insurance Grading Index is a key factor used in the development of commercial lines property insurance rates. The PFPC is also used by underwriters to determine the amount of risk they are willing to assume in each community or section of a community.

The overall intent of the PFPC system is to provide a standardized measure of the ability of the protective facilities of a community to prevent and control the major fires that may be expected to occur. This is done by evaluating, in detail, the adequacy, reliability, strength, and efficiency of the protective facilities and comparing the level of protection against the level of fire risk in the built environment.

The FUS also uses PFPC information to develop the Dwelling Protection Grade (DPG), which is used by personal lines insurers in determining property insurance rates for detached dwellings, with not more than two dwelling units. The DPG is a measure of the ability of the protective facilities of a community to prevent and control the structure fires in detached dwellings by evaluating the adequacy, reliability, strength, and efficiency of the protective facilities and comparing the level of protection against the level of fire risk associated with a typical dwelling.

The fire insurance grading system used does not consider past fire loss records, but rather fire potential based on the physical structure and makeup of the built environment. When a community improves its PFPC or DPG, insurance rates may be reduced while the underwriting capacities may increase. Every insurance company has its own formula for calculating their underwriting capacities and insurance rates;

however, the PFPC and DPG classifications are extremely useful to insurers in determining the level of insurable risk present within a community.

Historically, community assessments were conducted by FUS on a predetermined basis, varying from 10 to 25 years. Best practice and changing industry standards suggest that moving to a grade update every five years would better reflect ongoing changes to fire protection and communities at large.

It should be noted that Fire Underwriters Survey (FUS) fire insurance classification assessment review was conducted in 2019 and indicated *improvements* in Dwelling Protection Grades as well as Public Fire Protection Classifications (ref: Fire Underwriter Survey – Township of Uxbridge, dated June 27, 2019).

Fire Underwriters Survey has introduced the FUS Municipal Fire Portal that would provide the UFD the ability to access and update data relevant to Uxbridge and forward updates in a timely fashion. By accessing this system regularly, UFD can provide frequent updates from which FUS Specialists will analyze and publish grade updates as deemed necessary. EM&T generally recommends that once a FUS assessment is complete, that fire administration regularly access and provide input to the FUS Municipal Fire Portal.

Section 10: Recommendations

Rec #	Recommendation	Estimated Cost	Suggested Timeline
24	Once a FUS assessment has been completed that fire administration regularly access and provide input to the FUS Municipal Fire Portal to communicate improvements and/or updates. This data could relate to new fire apparatus replacements, new fire stations, new construction, hydrants in new sectors, etc.	Staff time	Mid Term (3-5 years)

SECTION

11

Recommendations,
Timelines, &
Associated Costs

SECTION 11: RECOMMENDATIONS, TIMELINES, & ASSOCIATED COSTS

11.1 Conclusion

During the review conducted by EM&T, it was demonstrated that the full-time staff and volunteer/paid-on-call firefighters are truly dedicated to the community they serve. It is evident that Council, Chief Administrative Officer, and the Fire Chief are sincerely committed to ensuring the safety of the community and the firefighters.

Based on the proactive activities of fire prevention, public education, and training as well as present staffing, equipment, vehicles, and facilities, the Uxbridge Fire Department is endeavoring to offer the most efficient and effective service possible and is doing so admirably.

All costs and associated timelines noted in this report are approximate estimates that can be implemented through prioritization.

This FMP 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.

11.2 Recommendations and Estimated Costs

The following chart provides a detailed overview of the recommendations found throughout this report along with any estimated costs and suggested timelines for implementation. A section has also been added to the chart identifying potential efficiencies upon implementation of the recommendations presented by EM&T.

This FMP document is a culmination of 24 recommendations.

Uxbridge Fire Department Recommendations Chart

Rec #	Recommendation	Estimated Costs	Suggested Timeline	Rationale
Section 1 – Community & Fire Department				
1	That the fire chief bring forth a revised version of the Establishing & Regulating By-Law for Council’s approval and going forward the fire chief annually review and update, the By-Law as necessary.	Staff time	Short-term (1-3 years) ongoing	Having an up-to-date E&R By-Law will guide the operations of the MLFD and identifies response guidelines, fire prevention and public education programs and levels of training.
2	The Fireworks By-Law was passed by council on January 24 th , 2011. While many areas are still current, the by-law is outdated and it should be reviewed, updated, and presented to Council for their approval.	Staff time	Short-term (1-3 years)	Having an up-to-date By-Law identifies fire prevention and public education to ensure safe sale and operation of fireworks.
3	That UFD work collaboratively with Planning and Building Department and bring forth a by-law that regulates second units including the requirement for them to be licensed.	Staff time	Short-term (1-3 years)	Having an up-to-date By-Law identifies fire prevention and public education to ensure safe and monitored second units.
Section 2 – Planning				
4	That UFD continues to survey the Community and considers for action, external stakeholder suggestions and comments.	Staff time	Short-term (1-3 years) ongoing	Constant and regularly contact with community ensures UFD maintains relevance of its services and engagement with all stakeholders.

Township of Uxbridge Fire Master Plan

Section 3 – Risk Assessment				
5	That Uxbridge develops a comprehensive Community Risk Reduction Plan that falls in line with the Community Risk Assessment.	Staff time	Short-term (1-3 years) ongoing	The CRRP will aide in prioritizing and coordinating emergency operations with prevention and mitigation efforts throughout the community and at the fire station level
Section 4 – Non -Suppression				
6	A full-time Deputy fire chief position be created and that the fire chief closely monitor the present staffs’ ability to manage this increase in administrative record keeping and other role demands with a plan to implement full-time position(s) in the short term to long term timeframe.	\$120,000 to \$140,000	Short-term (1-3 years) ongoing	By monitoring and measuring the department’s staffing resources, the fire chief will be better able to report the level of effectiveness of the department to council as well as effectively manage the increase in mandatory reporting as well as increased administrative and operational duties expected over the term of the FMP.
7	The part-time Public Educator position be evaluated along with expected deliverables and service expectations and converted to a full-time position over the term of this Fire Master Plan.	\$100,000 to \$120,000	Short-term (1-3 years) ongoing	This position, given its proactive activities and significant value in reducing or eliminating negative fire and life safety behaviours in the community, should be considered transitioning to a full-time
8	Striking a stakeholder SOP and SOG committee with clear direction, timelines, and resourcing would ensure this significant matter is addressed in a timely and effective manner. This would be an opportunity for the Training Officer to supervise and manage this important matter, under the direction of the fire chief.	Staff Time	Short-term (1-3 years)	These documents give to all staff on matters of process, safety, accountability, service delivery, and in-particular training, it is important to ensure all aspects of fire department operations are addressed

Township of Uxbridge Fire Master Plan

9	The present part-time Training Officer position should be transitioned to a full-time position.	\$115,000 to \$130,000	Short-term (1-3 years) ongoing	Given the mandatory NFPA training and certification requirements as well as the risk management of FF training for service level delivery, this position has become increasingly critical and requires staffing resourcing.
10	<p>All firefighters receive live fire training on a regular basis. At a minimum, all recruit firefighters receive during initial training phase and incumbent firefighters receive live-fire refresher training, assuming they have received live-fire training previously.</p> <p>In consideration of above, EM&T recommends consideration of a training facility/mobile training unit that provides live-fire and other training opportunities internally. The other option is to secure the use of an outside facility on a regularly scheduled basis to ensure that all firefighters are provided with this critical life saving training.</p>	\$200,000 to \$700,000	Short-term (1-3 years)	The purpose of live fire training is to provide realistic fire training evolutions under safe and controlled conditions. The current editions of the NFPA Professional Qualification standards require fire service members to “remain current” with the knowledge and skills related to their qualifications or certifications.
Section 5 – Fire Suppression, Communications and Health & Safety				
11	That the fire chief present a response time goal for the approval of council, which may reference NFPA 1720 (2020 Edition) – the expectation of 6 staff in 14 minutes, 80 th percent of the time as a start.	Staff Time	Immediate (0-1 year) ongoing	UFD needs monitor its ability to meet effective response times and NFPA 1720 standards of response

Township of Uxbridge Fire Master Plan

12	Uxbridge Fire Department should consider this new mandatory NFPA 1061 Standard requirement and review the Agreement to ensure adherence to the mandatory standards by Oshawa dispatch centre as part of the Agreement terms and conditions.	Staff Time	Immediate (0-1 year) ongoing	To ensure adherence to the mandatory standards by Oshawa dispatch centre as part of the Agreement terms and conditions
13	The Township review the requirements under the updated NFPA training and certification legislation, determine applicability and affects to UFD operations and staff, develop a funding model to cover expected future agreement, training and operating costs for the standards regarding Public Safety Telecommunications Personnel Qualification and Emergency Services Communications.	Staff Time	Immediate (0-1 year) ongoing	To ensure adherence to the mandatory NFPA standards regarding dispatching of emergency vehicles
14	UFD develop a formal health and wellness program that includes all facets relating to fitness, cancer prevention, PTSD and EAP peer support.	Staff Time	Immediate (0-1 year) ongoing	Firefighters are the greatest asset of any fire service, and it is imperative that their mental well being is addressed in a genuine, consistent, and professional manner.
Section 6 – Facilities, Vehicles, Equipment and Water Supply				
15	UFD works with Township Finance and begins the budgeting and procurement approval process for 20-year replacement several years prior to year 20.	Staff Time and Costs Dependant on Vehicle Type	Mid-term (4-6 years)	This would ensure that replacement vehicles are purchased and received prior to exceeding the 20-year mark.
16	Given the cost of major equipment such as heavy hydraulics, auto-extrication, defibrillators, speciality rescue equipment, and SCBA to name a few, there should be a life-cycle program in place.	Staff Time and Costs Dependant on Equipment Type	Mid-term (4-6 years)	Equipment inventories would always be in good condition and with up-to-date technological, operating, and operator safety factors addressed on a managed and funded basis.

Section 7 – Emergency Management				
17	<p>The 2021 ERP when next updated, include a revision tracking page be included at front of document outlining the sections updated and confirming council approval as minimum. Update ERP and insert a page at the front of the document to include the following:</p> <ul style="list-style-type: none"> • The date changes were completed. • A brief outline of the changes and the sections involved. • Name of individual completing the updates. • Whether the revised document requires council approval. 	Staff time	Short-term (1-3 years)	It is a legislative requirement for emergency response plans to be reviewed and updated each year.
18	<p>Due to the importance of staff understanding their roles and responsibilities in the EOC, it is recommended that a policy be implemented that identifies IMS 100 for all staff, IMS 200 as the minimum standard for staff required to be in the EOC with IMS 300 minimum for all department heads.</p>	Staff time (courses are offered at no charge)	Short-term (1-3 years) ongoing	To ensure the Township has organizational depth with IMS trained staff
19	<p>Review and consideration of the Emergency Management Program regarding training and funding to ensure the Township has organizational depth with IMS trained staff as well as adequate funding to ensure training (external resourcing if and as necessary) regarding training and exercises.</p>	Staff time with Funding TBD	Short-term (1-3 years) ongoing	Ensures support regarding adequate training and exercise annual objectives

Township of Uxbridge Fire Master Plan

20	The ERP should have a section dedicated to domestic terrorism.	Staff time	Short-term (1-3 years)	With so many acts of domestic terrorism taking place each year throughout the world, including Canada, a municipality must plan for the possibility of such events within their own community.
Section 9 – Fire Service Agreements				
21	That all Automatic Aid, Mutual Aid and Fire Protection/Service Agreements continue to be annually reviewed and revised if necessary. Particular attention should be paid to, adherences to regular defined review periods and/or expiry dates identified. Also, a page listing the dates of review and areas revised should be an addendum to any of the revised Bylaws.	Staff time	Immediate (1years) ongoing	Ensures programmed, scheduled reviews and tracked revisions
Section 9 – Finance, Budget, Fees & Cost Recovery				
22	Uxbridge Fire Department include a review of all fees for services provided as part of the comprehensive review recommended for the fire service agreements and mutual aid plans.	Staff time	Short-term (1-3 years)	Ensure resources required to support effective and efficient fire service delivery remain available.
23	The Township of Uxbridge develop a Bylaw that would require the insurance company or policy holder (property owner) for payment of fire department response fees. If not paid, the municipality in turn would add the amount to the property owner's tax bill.	Staff time	Short-term (1-3 years)	Ensure funding resources required to support effective and efficient fire service delivery remain available.

Section 10 – Review of Previous Plans				
24	Once a FUS assessment has been completed that the fire chief regularly access and provide input to the FUS Municipal Fire Portal to communicate improvements and/or updates. This data could relate to new fire apparatus replacements, new fire stations, new construction, hydrants in new sectors, etc.	Staff time	Short-term (1-3 years) ongoing	Provides UFD the ability to access and update data relevant to Uxbridge and forward updates in a timely fashion.

APPENDICES

Appendix A: Five-Step Staffing Process

Appendix B: FUS Document on Elevated Devices

Appendix C: Call and Response Data for 2019 to 2021

Appendix D:

SECTION 12: APPENDICES

Appendix A – 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 capital; 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 capital
- (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 B- Fire Underwriters Survey Technical Document on Elevated Devices



Fire Underwriters Survey™

TECHNICAL BULLETIN

FIRE UNDERWRITERS SURVEY™

A Service to Insurers and Municipalities

LADDERS AND AERIALS: WHEN ARE THEY REQUIRED OR NEEDED?

Numerous standards are used to determine the need for aerial apparatus and ladder equipment within communities. This type of apparatus is typically needed to provide a reasonable level of response within a community when buildings of an increased risk profile (fire) are permitted to be constructed within the community.

Please find the following information regarding the requirements for aerial apparatus/ladder companies from the Fire Underwriters Survey Classification Standard for Public Fire Protection.

Fire Underwriters Survey

Ladder/Service company operations are normally intended to provide primary property protection operations of

- 1.) Forcible entry;
- 2.) Utility shut-off;
- 3.) Ladder placement;
- 4.) Ventilation;
- 5.) Salvage and Overhaul;
- 6.) Lighting.

Response areas with 5 buildings that are 3 stories or 10.7 metres (35 feet) or more in height, or districts that have a Basic Fire Flow greater than 15,000 LPM (3,300 IGPM), or any combination of these criteria, should have a ladder company. The height of all buildings in the community, including those protected by automatic sprinklers, is considered when determining the number of needed ladder companies.

When no individual response area/district alone needs a ladder company, at least one ladder company is needed if the sum of buildings in the fire protection area meets the above criteria."

The needed length of an aerial ladder, an elevating platform and an elevating stream device shall be determined by the height of the tallest building in the ladder/service district (fire protection area) used to determine the need for a ladder company. One storey normally equals at least 3 metres (10 feet). Building setback is not to be considered in the height determination. An allowance is built into the ladder design for normal access. The maximum height needed for grading purposes shall be 30.5 metres (100 feet).

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Exception: When the height of the tallest building is 15.2 metres (50 feet) or less no credit shall be given for an aerial ladder, elevating platform or elevating stream device that has a length less than 15.2 metres (50 feet). This provision is necessary to ensure that the water stream from an elevating stream device has additional "reach" for large area, low height buildings, and the aerial ladder or elevating platform may be extended to compensate for possible topographical conditions that may exist. See Fire Underwriters Survey - Table of Effective Response (attached).

Furthermore, please find the following information regarding communities' need for aerial apparatus/ladder companies within the National Fire Protection Association.

NFPA

Response Capabilities: The fire department should be prepared to provide the necessary response of apparatus, equipment and staffing to control the anticipated routine fire load for its community.

NFPA Fire Protection Handbook, 20th Edition cites the following apparatus response for each designated condition:

HIGH-HAZARD OCCUPANCIES (schools, hospitals, nursing homes, explosive plants, refineries, high-rise buildings, and other high-risk or large fire potential occupancies):

At least four pumpers, two ladder trucks (or combination apparatus with equivalent capabilities), two chief officers, and other specialized apparatus as may be needed to cope with the combustibles involved; not fewer than 24 firefighters and two chief officers.

MEDIUM-HAZARD OCCUPANCIES (apartments, offices, mercantile and industrial occupancies not normally requiring extensive rescue or firefighting forces):

At least three pumpers, one ladder truck (or combination apparatus with equivalent capabilities), one chief officer, and other specialized apparatus as may be needed or available; not fewer than 16 firefighters and one chief officer.

LOW-HAZARD OCCUPANCIES (one-, two-, or three-family dwellings and scattered small businesses and industrial occupancies):

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At least two pumpers, one ladder truck (or combination apparatus with equivalent capabilities), one chief officer, and other specialized apparatus as may be needed or available; not fewer than 12 firefighters and one chief officer.

In addition to the previous references, the following excerpt from the 2006 BC Building Code is also important to consider when selecting the appropriate level of fire department response capacity and building design requirements with regard to built-in protection levels (passive and active fire protection systems).

Excerpt: National Building Code 2012

A-3 Application of Part 3.

In applying the requirements of this Part, it is intended that they be applied with discretion to buildings of unusual configuration that do not clearly conform to the specific requirements, or to buildings in which processes are carried out which make compliance with particular requirements in this Part impracticable. The definition of "building" as it applies to this Code is general and encompasses most structures, including those which would not normally be considered as buildings in the layman's sense. This occurs more often in industrial uses, particularly those involving manufacturing facilities and equipment that require specialized design that may make it impracticable to follow the specific requirements of this Part. Steel mills, aluminum plants, refining, power generation and liquid storage facilities are examples. A water tank or an oil refinery, for example, has no floor area, so it is obvious that requirements for exits from floor areas would not apply. Requirements for structural fire protection in large steel mills and pulp and paper mills, particularly in certain portions, may not be practicable to achieve in terms of the construction normally used and the operations for which the space is to be used. In other portions of the same building, however, it may be quite reasonable to require that the provisions of this Part be applied (e.g., the office portions). Similarly, areas of industrial occupancy which may be occupied only periodically by service staff, such as equipment penthouses, normally would not need to have the same type of exit facility as floor areas occupied on a continuing basis. It is expected that judgment will be exercised in evaluating the application of a requirement in those cases when extenuating circumstances require special consideration, provided the occupants' safety is not endangered.

The provisions in this Part for fire protection features installed in buildings are intended to provide a minimum acceptable level of public safety. It is intended that all fire protection features of a building, whether required or not, will be designed in conformance with good fire protection engineering practice and will meet the appropriate installation requirements in relevant standards. Good design is necessary to ensure that the level of public safety established by the Code requirements will not be reduced by a voluntary installation.

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Firefighting Assumptions

The requirements of this Part are based on the assumption that firefighting capabilities are available in the event of a fire emergency. These firefighting capabilities may take the form of a paid or volunteer public fire department or in some cases a private fire brigade. If these firefighting capabilities are not available, additional fire safety measures may be required.

Firefighting capability can vary from municipality to municipality. Generally, larger municipalities have greater firefighting capability than smaller ones. Similarly, older, well established municipalities may have better firefighting facilities than newly formed or rapidly growing ones. The level of municipal fire protection considered to be adequate will normally depend on both the size of the municipality (i.e., the number of buildings to be protected) and the size of buildings within that municipality. Since larger buildings tend to be located in larger municipalities, they are generally, but not always, favoured with a higher level of municipal protection.

Although it is reasonable to consider that some level of municipal firefighting capability was assumed in developing the fire safety provisions in Part 3, this was not done on a consistent or defined basis. The requirements in the Code, while developed in the light of commonly prevailing municipal fire protection levels, do not attempt to relate the size of building to the level of municipal protection. The responsibility for controlling the maximum size of building to be permitted in a municipality in relation to local firefighting capability rests with the municipality. If a proposed building is too large, either in terms of floor area or building height, to receive reasonable protection from the municipal fire department, fire protection requirements in addition to those prescribed in this Code, may be necessary to compensate for this deficiency. Automatic sprinkler protection may be one option to be considered.

Alternatively, the municipality may, in light of its firefighting capability, elect to introduce zoning restrictions to ensure that the maximum building size is related to available municipal fire protection facilities. This is, by necessity, a somewhat arbitrary decision and should be made in consultation with the local firefighting service, who should have an appreciation of their capability to fight fires.

The requirements of Subsection 3.2.3. are intended to prevent fire spread from thermal radiation assuming there is adequate firefighting available. It has been found that periods of from 10 to 30 minutes usually elapse between the outbreak of fire in a building that is not protected with an automatic sprinkler system and the attainment of high radiation levels. During this period, the specified spatial separations should prove adequate to inhibit ignition of an exposed building face or the interior of an adjacent building by radiation. Subsequently, however, reduction of the fire intensity by firefighting and the protective wetting of the exposed building face will often be necessary as supplementary measures to inhibit fire spread.

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In the case of a building that is sprinklered throughout, the automatic sprinkler system should control the fire to an extent that radiation to neighbouring buildings should be minimal. Although there will be some radiation effect on a sprinklered building from a fire in a neighbouring building, the internal sprinkler system should control any fires that might be ignited in the building and thereby minimize the possibility of the fire spreading into the exposed building. NFPA 80A, "Protection of Buildings from Exterior Fire Exposures," provides additional information on the possibility of fire spread at building exteriors.

The water supply requirements for fire protection installations depend on the requirements of any automatic sprinkler installations and also on the number of fire streams that may be needed at any fire, having regard to the length of time the streams will have to be used. Both these factors are largely influenced by the conditions at the building to be equipped, and the quantity and pressure of water needed for the protection of both the interior and exterior of the building must be ascertained before the water supply is decided upon. Acceptable water supplies may be a public waterworks system that has adequate pressure and discharge capacity, automatic fire pumps, pressure tanks, manually controlled fire pumps in combination with pressure tanks, gravity tanks, and manually controlled fire pumps operated by remote control devices at each hose station.



For further information regarding the acceptability of emergency apparatus for fire insurance grading purposes, please contact:

Western Canada	Quebec	Ontario	Atlantic Canada
Fire Underwriters Survey 3999 Henning Drive Burnaby, BC V5C 6P9 1-800-665-5661	Fire Underwriters Survey 255, boul. Crémazie E Montreal, Quebec H2M 1M2 1-800-263-5361	Fire Underwriters Survey 175 Commerce Valley Drive, West Markham, Ontario L3T 7P6 1-800- 268-8080	Fire Underwriters Survey 238 Brownlow Avenue, Suite 300 Dartmouth, Nova Scotia B3B 1Y2 1-877-634-8564

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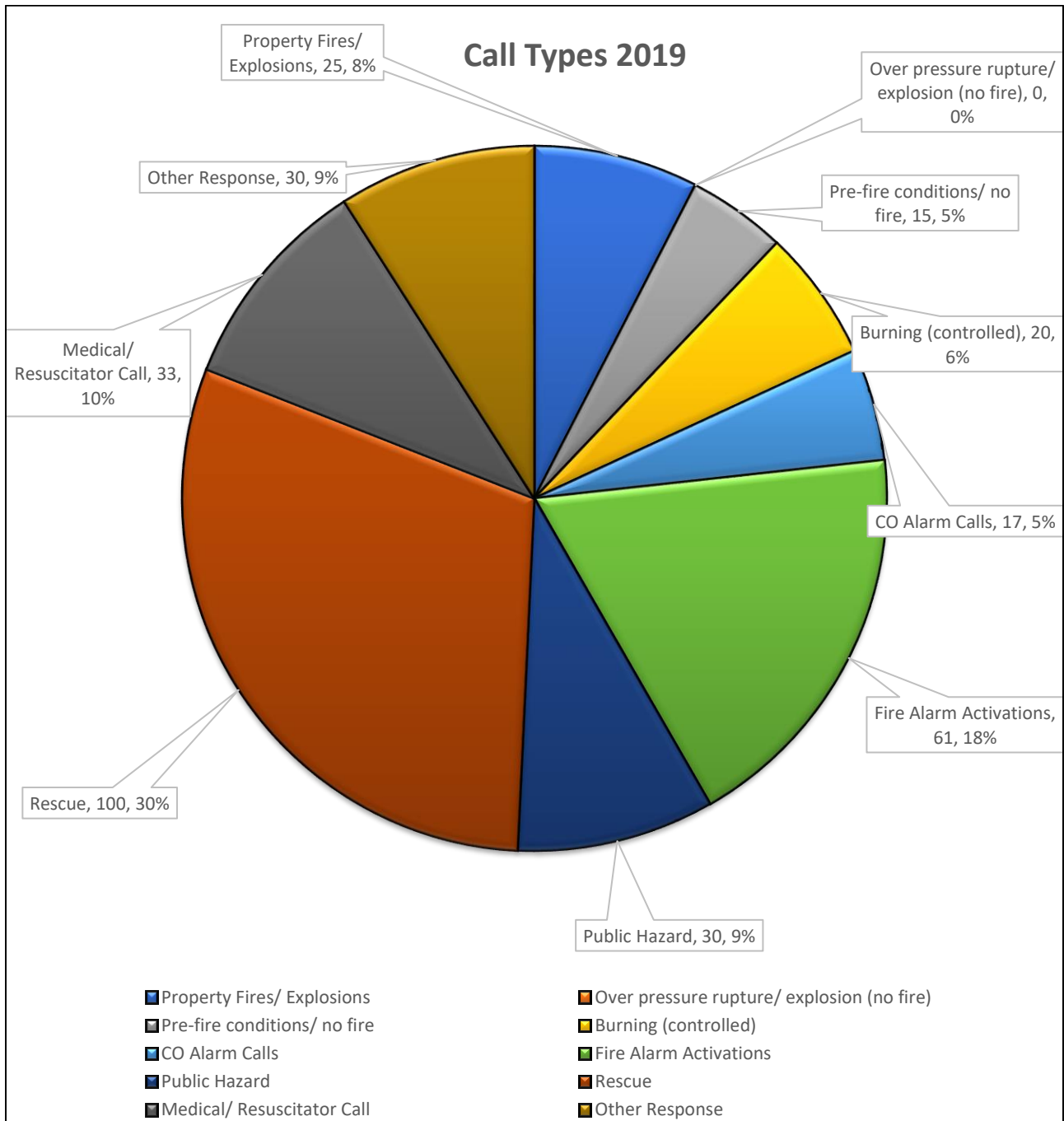
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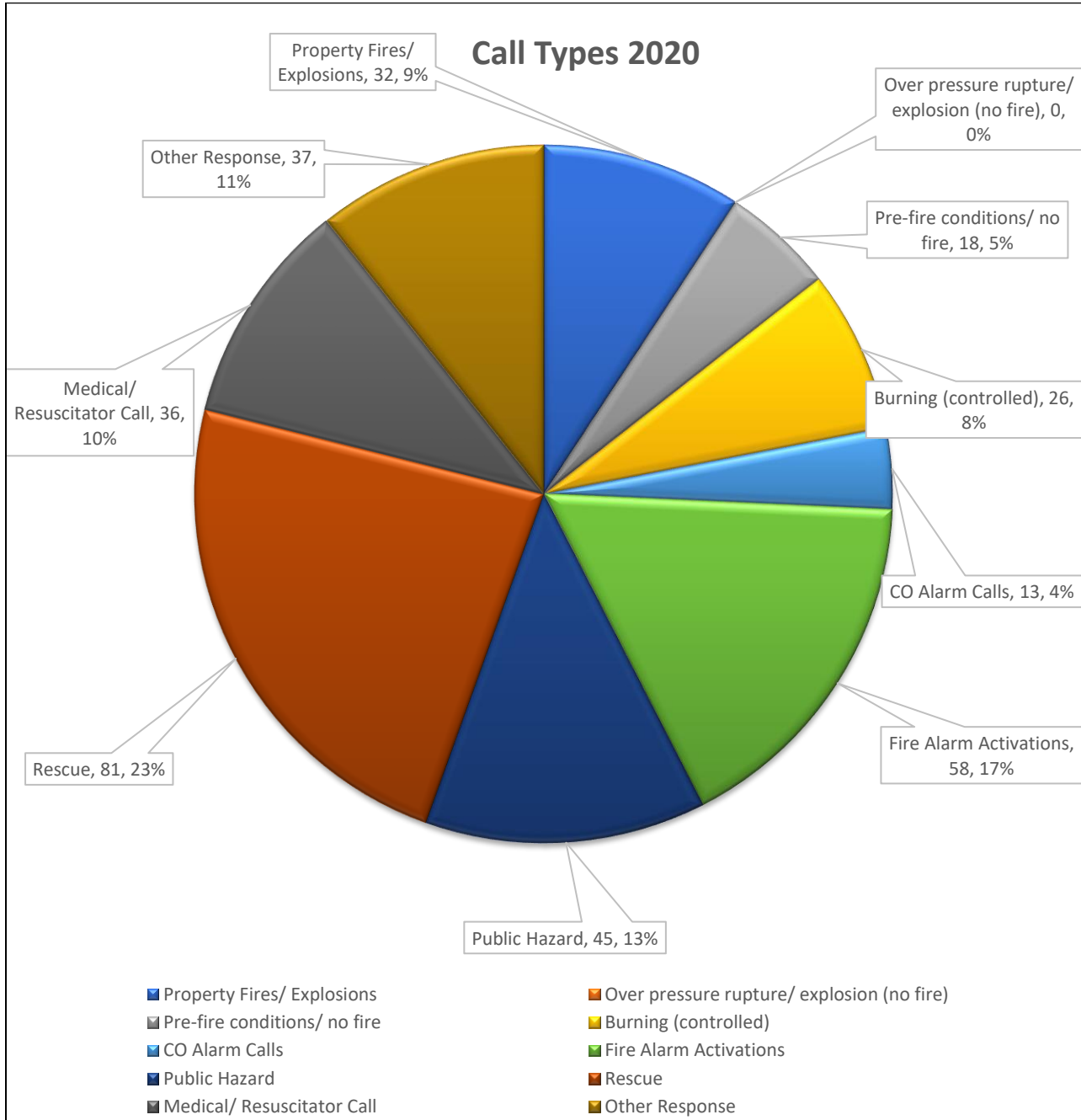


Appendix C – Call and Response Data for 2019 to 2021

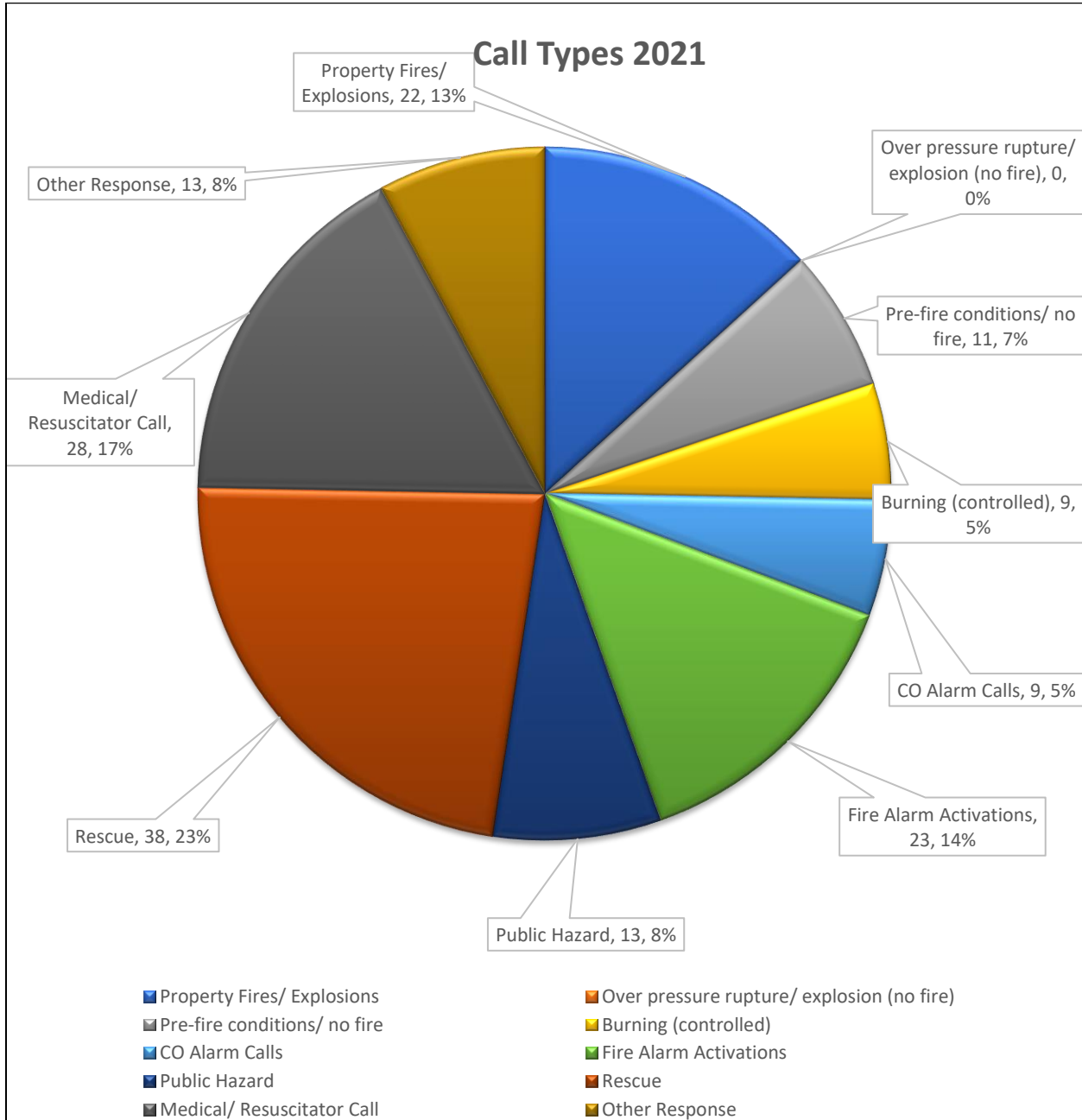
2019 - Yearly Comparisons of All Calls Type



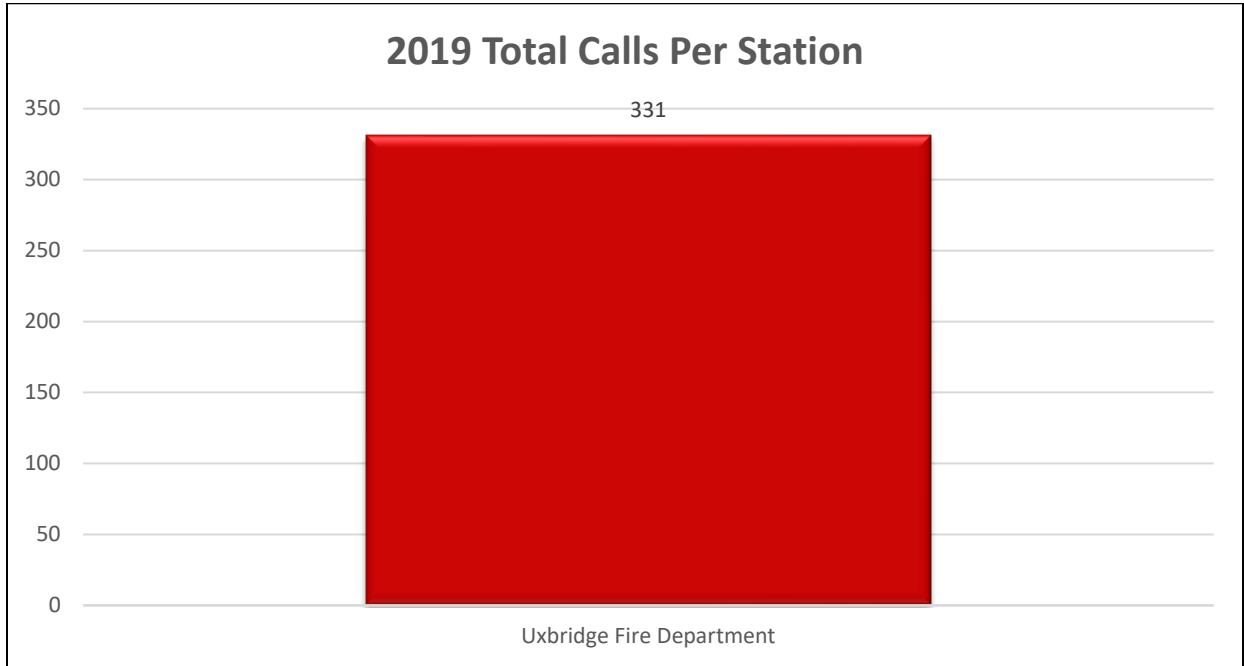
2020 - Yearly Comparisons of All Calls Type



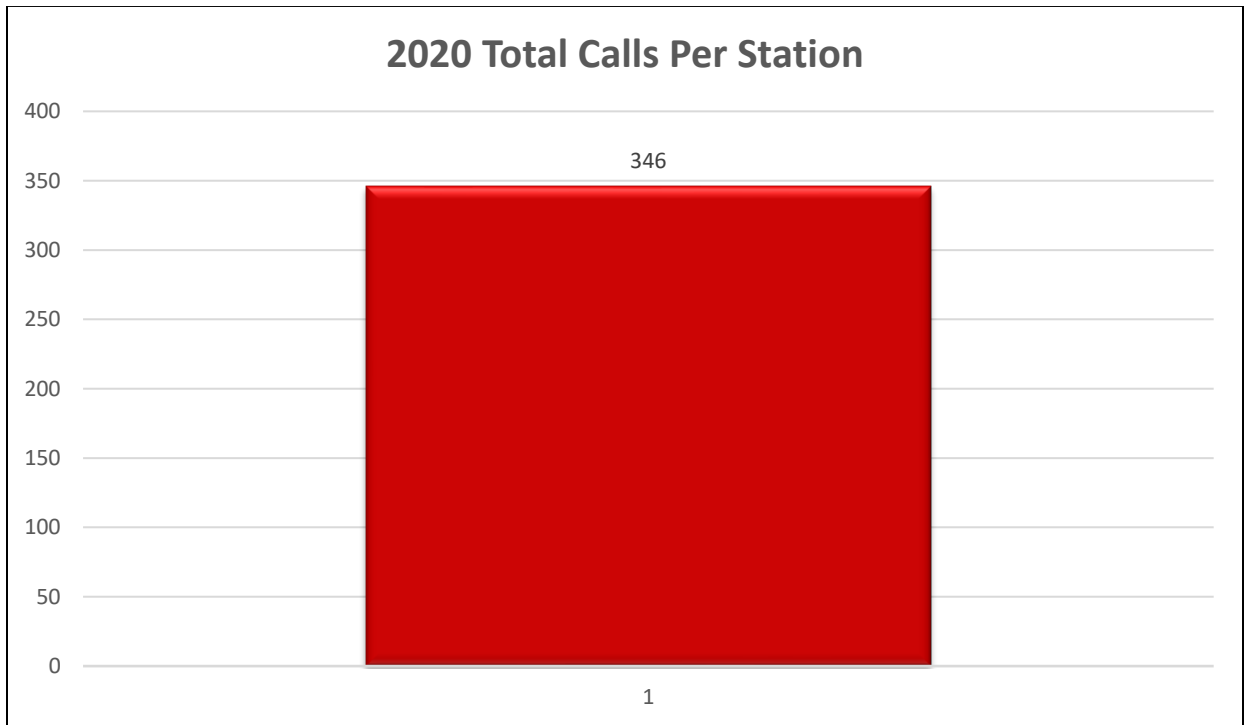
2021 - Yearly Comparisons of All Calls Type



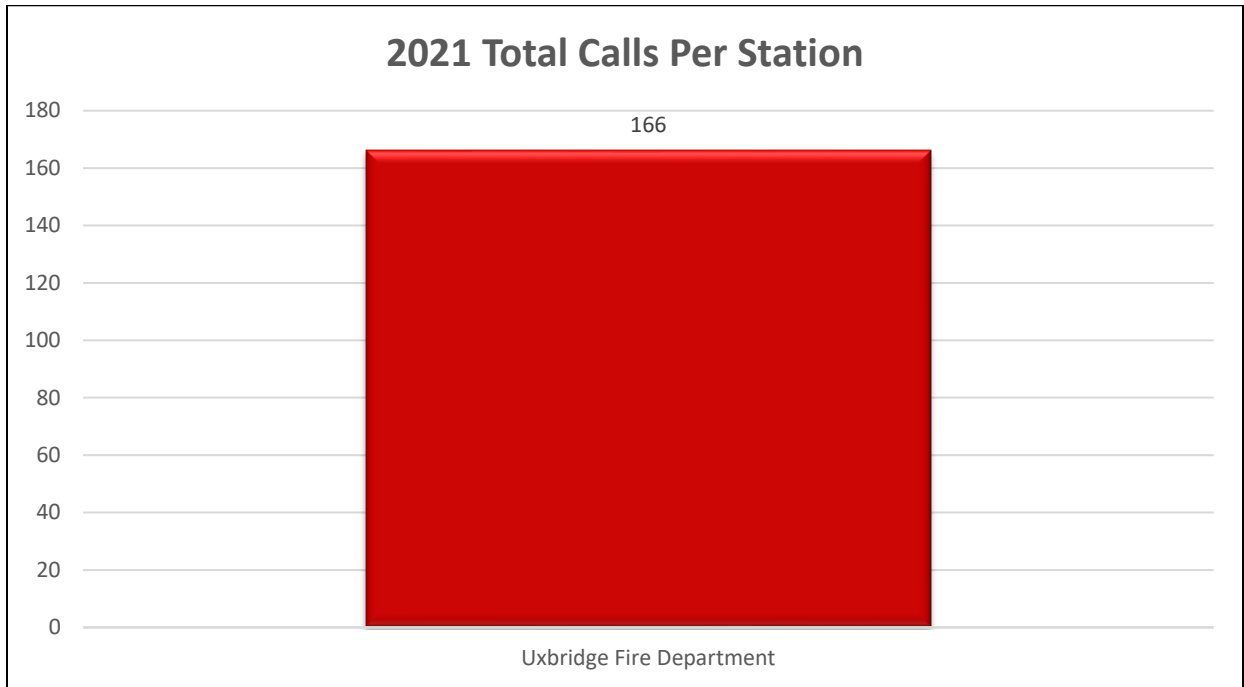
2019 - Total Calls Per Station



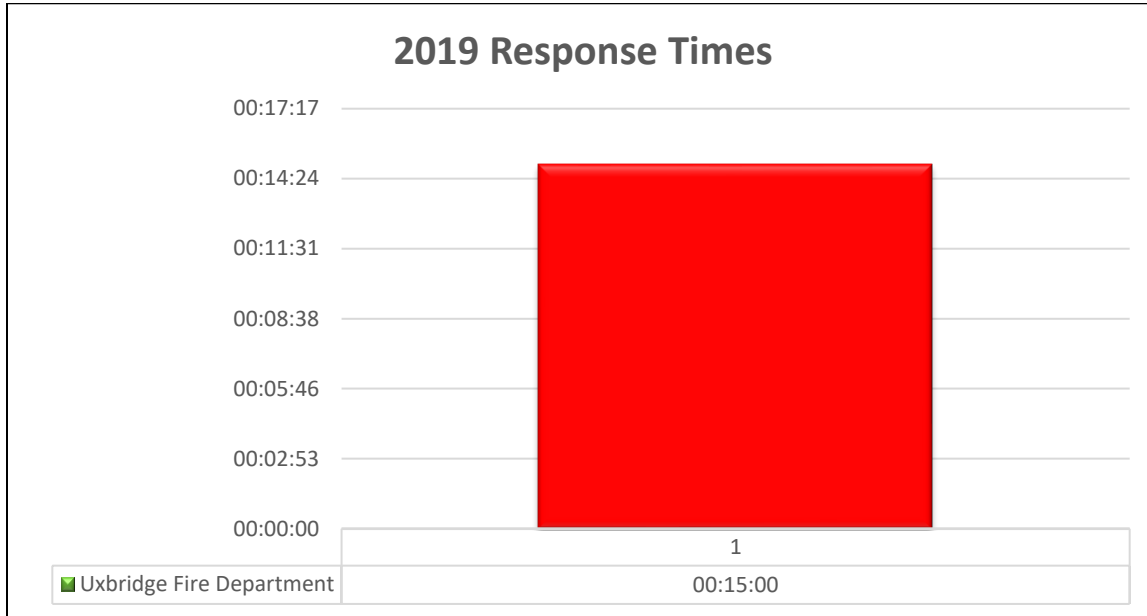
2020 - Total Calls Per Station



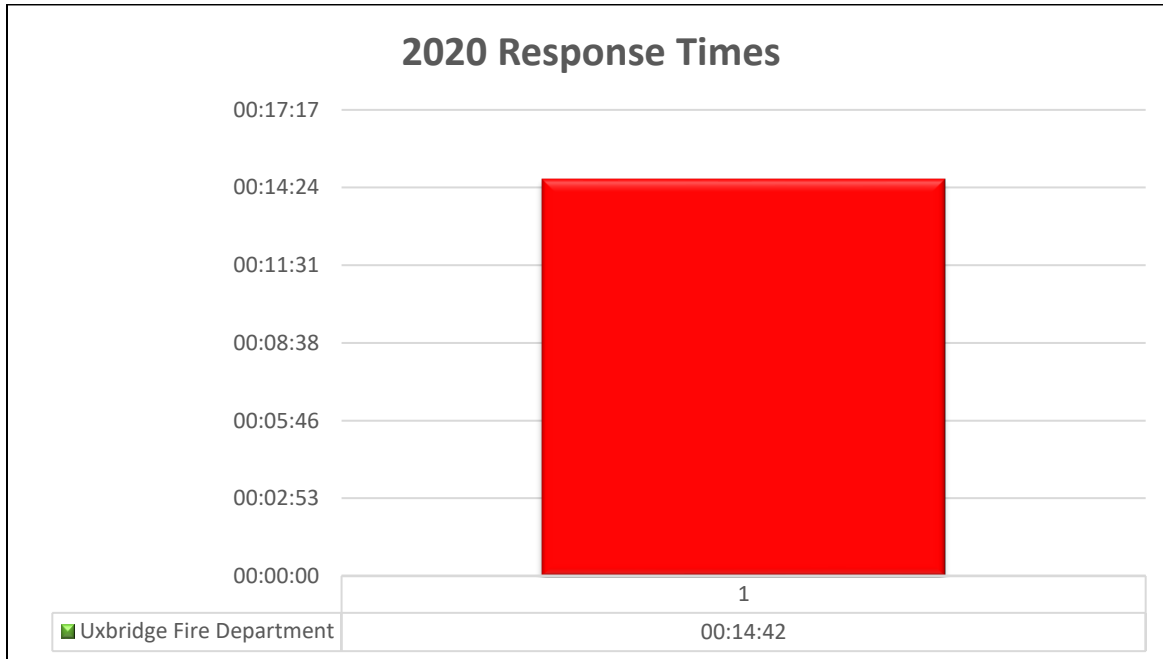
2021 - Total Calls Per Station



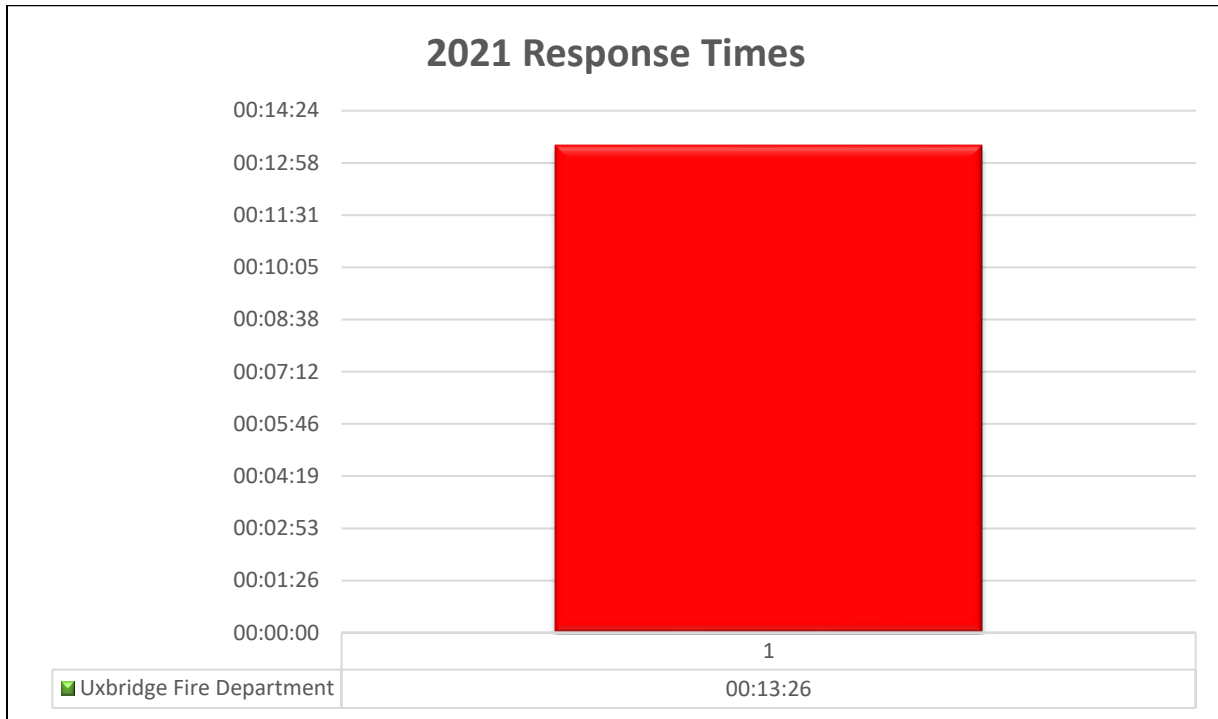
2019 - Response Times



2020 - Response Times



2021 - Response Times



Yearly Comparisons of 80th Percentile Response Times

Note: The 80th 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 80 percent of the calls, as opposed to averaging the times at the 50th percentile. For example:

8 out of 10 times the fire department arrives on scene in 14 minutes or less. Which means that only 20 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.