Emergency Management Group

City of Thorold

Fire and Emergency Services Fire Master Plan

City of Thorold

2024

www.emergencymgt.com
info@emergencymgt.com
705.719.9007
888.421.0665
Darryl Culley, President

EXECUTIVE SUMMARY

This Fire Master Plan (FMP) encompasses a comprehensive review of the Thorold Fire and Emergency Services' (TFES) strengths, weaknesses, opportunities, and challenges. This FMP also consists of a review of the City of Thorold, along with identifying present and future population statistics and anticipated growth of the communities. By conducting these reviews, the Emergency Management Group Inc. (EMG) was able to develop this 10-year fire master plan for the TFES.

Benefits of Master Planning

The benefits of master planning are many, but the key advantages are:

- Having a clearer vision of what future needs are to be implemented and when,
- A guide that includes options and budgetary estimates for implementation,
- Prioritization of each project, and
- The ability to communicate with staff, internal, and external stakeholders about the future goals of the organization.

The recommendations contained within this FMP document have been submitted to provide a set of strategies and goals for implementation that are aimed at assisting the City of Thorold in making decisions relating to the efficient allocation of TFES resources and staffing. The recommendations provided by EMG have been broken down into the following timelines:

- Immediate: 0 – 1 year; should be addressed urgently due to legislative or health and safety requirements
- Short-term: 1 – 3 years
- Mid-term: 4 – 6 years
- Long-term: 7 – 10 years

Ultimately, the implementation of the recommendations will depend on the direction the Council provides, as well as the allocation of associated resources and the ability to move forward with the associated recommendations contained within the document.

Scope of Work

As noted in the original Request for Proposal (RFP) #FES-2024-01, the following describes the responsibilities of the Consultant in developing the FMP for the Municipality.

- The development of a Community Risk Assessment (CRA) that will be based on the requirements of the *Fire Protection and Prevention Act, 1997 Ontario Regulation 378/18 Sections 1 – 4* and Schedule 1.
- Fire Master Plan (FMP) that will include an analysis of current and forecasted fire service delivery needs and provide a detailed 10-year implementation strategy for the Council's consideration.
- The report will consider the Fire Underwriters Survey (FUS) municipal grading system and opportunities per FUS category to improve those ratings.

The Fire Master Plan will address each of the following critical areas:

Administration

- Evaluate all aspects of Thorold Fire and Emergency Services to ensure optimal service levels, including legislative compliance, technology integration, mutual aid agreements, and considerations for population growth and regional dynamics.
- Conduct trend analysis to identify opportunities for improvement and innovation in fire and emergency services.
- Assess current fire communications agreements, technology, and operational formats for future optimization.
- Review staffing capabilities and administrative needs, along with budgetary assessments and fee recommendations.

Community Risk Reduction

- Assess Public Fire Safety Education programs and Fire Prevention inspection strategies for effectiveness and efficiency.
- Evaluate fire investigation practices against legislative requirements and best practices.

Fire Operations

- Review service delivery levels and response times against industry standards and community needs.

- Examine current and emerging technologies to enhance service efficiency and effectiveness.

Training and Development

- Review existing training practices against relevant standards and identify opportunities for improvement.
- Enhance training delivery methods and infrastructure to elevate training effectiveness.

Facilities

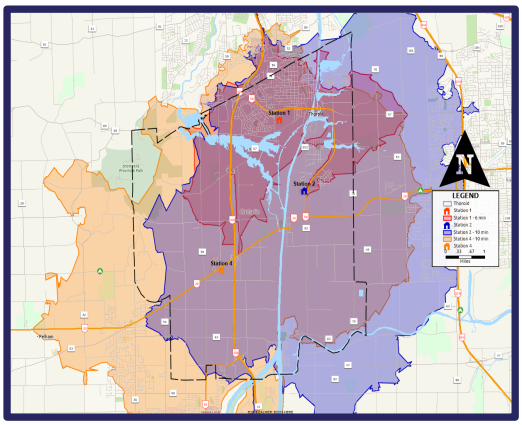
- Evaluate TFES facilities' effectiveness, response times, and station locations, considering growth projections and resource distribution.
- Assess Records Management and Information Technology systems for efficiency and future readiness.
- Apparatus and Equipment:
- Analyze long-term vehicle acquisition and equipment replacement strategies.
- Evaluate apparatus conditions, maintenance programs, and repair standards to optimize efficiency.

Emergency Planning

- Review emergency plans against standards and identify opportunities for enhancing effectiveness.
- Assess Emergency Management Program oversight and evaluate Emergency Operations Centre capabilities.
- Additional Information: Explore any other areas of the current fire service that could be reviewed for further service delivery effectiveness.

The primary objective is to offer recommendations for achieving optimal service levels and pinpoint opportunities for improvement across diverse functions within the Thorold Fire and Emergency Services.

Geographic Information System Mapping



Geographic Information System (GIS) is a framework for gathering, managing, and analyzing data/statistics. GIS integrates many types of data, analyzing spatial location and organizing layers of information into visualizations using maps.

GIS mapping proves invaluable in aiding fire personnel in evaluating risks across a spectrum of scales, from large to small. EMG's GIS software will be employed to generate models that essentially predict the likelihood of fires in specific geographical areas. This software will enhance planning, preparedness, and response capabilities, empowering the fire service to make strategic decisions based on comprehensive data and analysis.

Furthermore, the comprehensive review encompasses high-level analysis, long-term planning, and, where applicable, recommendations on the following key areas:

- Governance including municipal by-laws, policies, procedures, provincial and federal legislation.
- Administration, including organization, policies and procedures, customer service, administrative support, record keeping, purchasing, etc.
- Service delivery – consider current and future service delivery expectations and needs.
- Communications, including dispatch, paging, telephone radio systems, and internal departmental communications.
- Emergency response including call volume and trends, adequate staffing, and deployment, as well as mutual aid, automatic aid, and fire protection agreements.
- Fire Suppression and Rescue operations.
- Fire Prevention Programs including inspections, enforcement, and investigations.
- Public Education Program including presentations, events, demographics, website, etc.
- Training and education for all divisions.
- Firefighter safety, health, and wellness.
- Station facility and locations including existing condition and functionality, as well as legislative compliance, response, and cover mapping.
- Apparatus and equipment, including replacement cycles, utilization, and suitability.
- Maintenance programs for apparatus, vehicles, and equipment.

- Human Resources/ leadership, including staffing, organizational chart, job descriptions, workload, recruitment and retention, succession planning, promotional processes, etc.
- Internal and external resources for implementation.
- Reporting structure and requirements.
- Finance/ budget, including operational, capital, and reserve budgets and potential revenue generation strategies.
- Revise findings and recommendations upon gathering feedback.
- Opportunities for innovative solutions.

The recommendations include options for various service levels and associated funding models for the City Council to consider.

Summary Overview of Recommendations

Based on the information received during the meetings, the review of supplied documentation, and references to industry standards and best practices, there are 54 recommendations for consideration and inclusion by the Fire Chief, senior management, and Council to assist in developing the plan.

More information surrounding each recommended option can be found within the section from which it is derived. It must be emphasized that any cost estimates noted in this document can vary significantly based on when the option is implemented and the level of implementation, along with what is eventually recommended by the Fire Chief.

Note: A chart entailing all the recommendations, timelines for implementation, estimated costs and rationale in the order that they are presented in the document can be found in Section 9.

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ACRONYMS

CAO	Chief Administrative Officer
CEMC	Community Emergency Management Co-Ordinator
CRA	Community Risk Assessment
CRRP	Community Risk Reduction Plan
EAP	Employee Assistance Program
EMCPA	Emergency Management and Civil Protection Act
EMG	Emergency Management Group Inc.
ERP	Emergency Response Plan
EOC	Emergency Operation Centre
FMP	Fire Master Plan
FPO	Fire Prevention Officer
FUS	Fire Underwriters Survey
HAZMAT	Hazardous Material
ICS	Incident Command System
IMS	Incident Management System
NFPA	National Fire Protection Association
OBC	Ontario Building Code
OFC	Ontario Fire Code
OFM	Office of The Fire Marshal
OHSA	Ontario Occupational Health and Safety Act
OPP	Ontario Provincial Police
PPE	Personal Protective Equipment
RMS	Records Management System
SCBA	Self-Contained Breathing Apparatus
SOG	Standard Operating Guidelines
SOP	Standard Operating Procedures

ACRONYMS

SWOT	Strengths, Weaknesses, Opportunities, and Threats
TFES	Thorold Fire and Emergency Services
WSIB	Workplace Safety & Insurance Board

Introduction

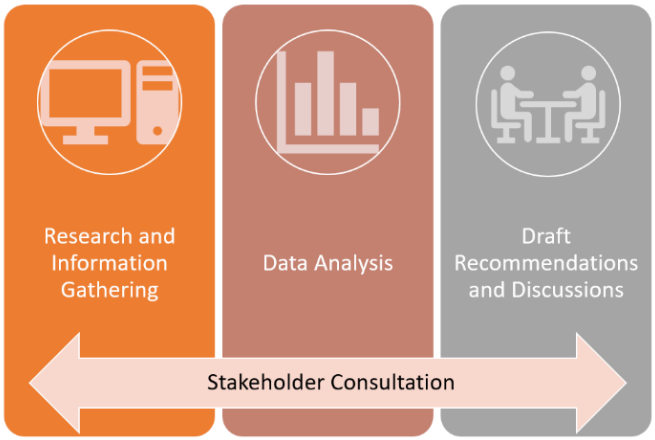
EMG Emergency Management Group

INTRODUCTION

Project Methodology

EMG has based its review process on the City of Thorold's initial RFP and proposal response document. The specific scope of work noted in the RFP was reviewed and included in each section of this document. The FMP review was completed by utilizing best practices, current industry standards, and applicable legislation as the foundation for all work undertaken.

EMG also utilized quantitative and qualitative research methodologies to understand the community's current and future needs and circumstances.



Overall, the methodology involves a considerable amount of research, documentation review, and data analysis, along with stakeholder consultation. From that, the draft report and recommendations are derived. The final product is a living document that provides a high-level strategic direction for the TFES and the Council.

To accomplish the scope of requirements, EMG has:

- Reviewed the Establishing and Regulating by-law.
- Reviewed applicable municipal, provincial, and federal legislations.
- Reviewed planning department documents regarding the community and areas of growth projections over the next 10-20 years.
- Reviewed any previous risk assessment, council's strategic priorities, and other pertinent documents.
- Prepared a CRA and considered the Community Risk Profile, including community building stock, industry, care occupancies, transportation networks, etc.
- Reviewed current service agreements with neighbouring municipalities and any other current documents.
- Gathered information on operational requirements, including past and current response statistics (call volumes/response times) to analyze trends, staff availability/needs and response capabilities, etc.

- Reviewed service administration, including staffing, organizational structure, policies and procedures, administrative support, record keeping and information management/technology, purchasing and inventory control, public and media relations, and customer service.
- Toured the fire stations, conducting a location/ response analysis.
- Examined fire vehicles, apparatus and equipment, including the maintenance program.
- Reviewed fire service policies, procedures, and emergency response operational guidelines, training programs and records.
- Collected information on the fire prevention program, including education programs, inspection reports/data, enforcement data, and investigations.
- Identified and compared industry best practices relating to fire and emergency services performance measurement.
- Reviewed current staff recruitment and retention practices, promotional policy, succession planning and demographics.
- Reviewed the operational and capital budgets along with reserves and current revenue generation programs within the emergency services and the Municipalities (development fees).

Based on these criteria, through meetings with the Council, the City's senior leadership team, the TFES and its firefighters, and community stakeholders, the consulting team was able to complete a thorough review of elements that are working well and areas requiring improvement within the TFES.

Performance Measures and Standards

This FMP 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, 1997 (FPPA)*
- The Office of the Fire Marshal (OFM) Communiqués
- The *Ontario Occupational Health and Safety Act* (OHSA), with reference to the National Institute for Occupational Safety and Health (NIOSH)
- The Ontario Fire Service, Section 21, Advisory Committee Guidance Notes
- The National Fire Protection Association (NFPA) standards
- The FUS technical documents

Project Consultants

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

- Lyle Quan, Fire Service Consultant/VP of Operations - Project Sponsor
- Guy Degagné, Fire Service Consultant – Project Lead
- Rick Monkman, Fire Service Consultant
- Greg Hankkio, Fire Service Consultant
- Steve Lambert, Fire Service Consultant
- Darryl Culley, President

The team has amassed considerable experience in all areas of fire and emergency services program development, review, and training. The EMG team has worked on projects that range from fire service reviews to the creation of strategic and master fire plans and the development of emergency response programs for clients.

Section 1

Community & Fire Department Overview

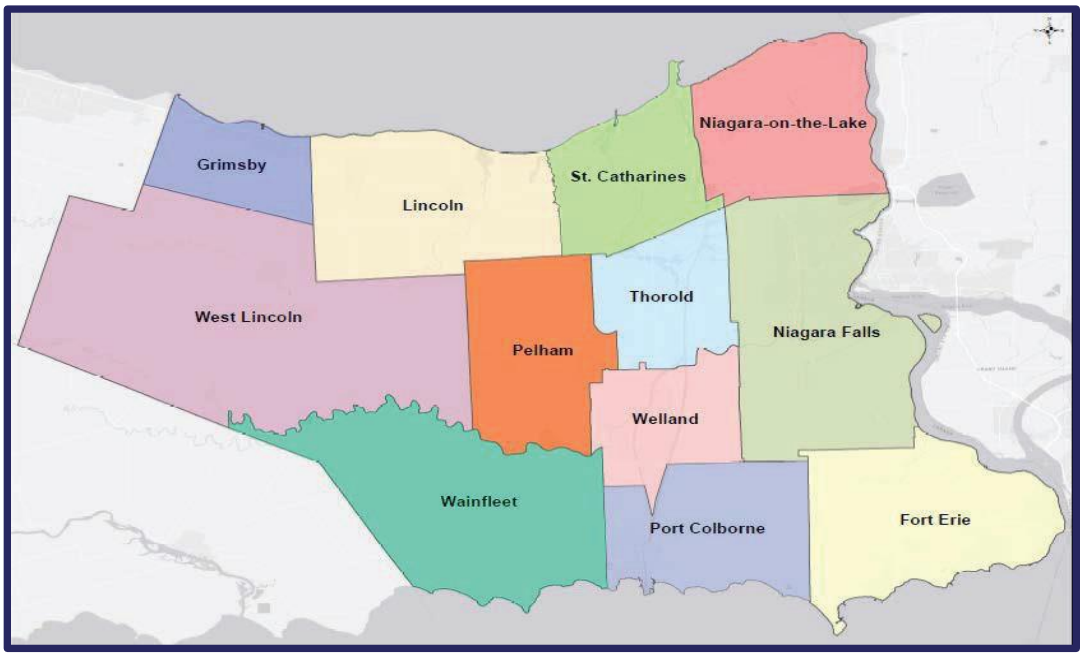
Emergency Management Group

SECTION 1: COMMUNITY & FIRE DEPARTMENT OVERVIEW

1.1 Community Overview

1.1.1 The City of Thorold

The City of Thorold is in the center of the Niagara Region. The city is comprised of urban and rural areas. The City of Thorold is bordered by the City of Niagara Falls, City of Welland, Town of Pelham, City of St Catharines and a touch of Niagara on the Lake. The City of Thorold is a lower-tier municipality within the upper-tier Regional Municipality of Niagara[1].



In the 2021 Census Population conducted by Statistics Canada, the City of Thorold had a population of 23,816 living in 9,095 of its 9,856 total private dwellings, a change of 26.7% from its 2016 population of 18,801. With a land area of 83.29 km^2 (32.16 sq mi), it had a population density of 285.9/km^2 (740.6/sq mi) in 2021[2].

[1] The City of Thorold Request for Proposal Consultant Services For A Community Risk Assessment, Standard of Cover Analysis and a Fire Master Plan – RFP #FES-2024-01, accessed February 23, 2024

[2]Statistics Canada, "Census Profile 2021 Population," accessed on October 06, 2024, https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/details/page.cfm?Lang=E&SearchText=Thorold&DGUIDlist=2021A00053526037&GENDERlist=1,2,3&STATISTIClist=1,4&HEADERlist=0

Year	2016	2021	2031
Population	18,801	23,816	24,086
Population Increase/ Decrease		+26.7%	+1.13%

The City of Thorold is the fastest-growing municipality in Niagara, the 4th fastest growing City in Ontario and the 8th fastest in Canada.

1.2 Fire Service Overview

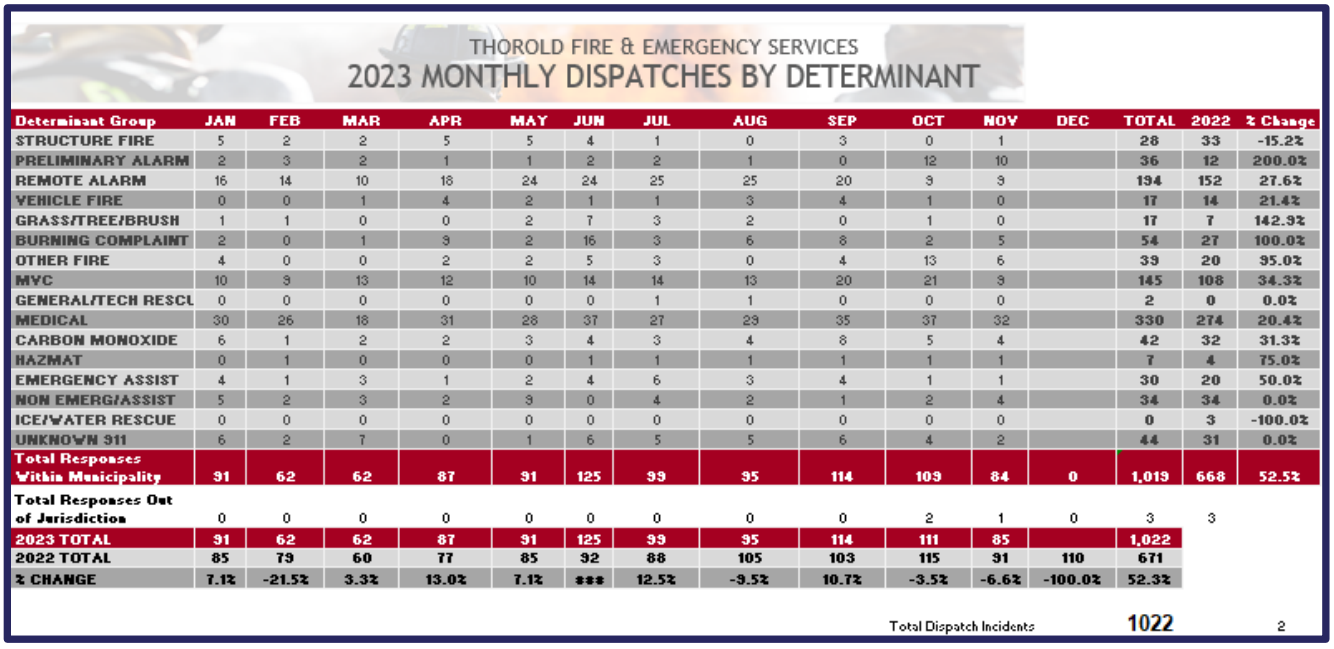
Thorold Fire and Emergency Services consist of one full-time FIRE CHIEF, one full-time Deputy FIRE CHIEF, two full-time Fire Prevention and Education Officers, one full-time Training Officer, one full-time Administrative Assistant, 16 suppression career firefighters and 69 Volunteer Firefighters.

Medical-related types of calls account for approximately one-third (33%) of all calls for service, while remote alarm calls account for twenty percent (20%) of all emergency responses (Figure #1). The TFES responded to approximately 1100 emergency incidents yearly (Figure #2).

The Thorold Fire and Emergency Services operates four Fire Stations across the City of Thorold, including one composite and three volunteer stations, with the administrative staff operating out of Station 1 Headquarters. As per the formulation of this report, Station 3 is closed due to infrastructure and staffing issues. TFES Station 2 as taken over calls for service from the Station 3 response zone.

Further, in October 2024, the TFES Station 1 headquarters moved to its new state-of-the-art location. The fire service maintains a fleet of nine apparatus and five administrative vehicles. Thorold Fire and Emergency Services provides suppression, prevention and education to all areas of the municipality.

FIGURE #1: TFES 203 CALL TYPES



THOROLD FIRE & EMERGENCY SERVICES

2023 MONTHLY DISPATCHES BY DETERMINANT

Determinant Group	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	2022	% Change
STRUCTURE FIRE	5	2	2	5	5	4	1	0	3	0	1		28	33	-15.2%
PRELIMINARY ALARM	2	3	2	1	1	2	2	1	0	12	10		36	12	200.0%
REMOTE ALARM	16	14	10	18	24	24	25	25	20	9	9		194	152	27.6%
VEHICLE FIRE	0	0	1	4	2	1	1	3	4	1	0		17	14	21.4%
GRASS/TREE/BRUSH	1	1	0	0	2	7	3	2	0	1	0		17	7	142.9%
BURNING COMPLAINT	2	0	1	3	2	16	3	6	8	2	5		54	27	100.0%
OTHER FIRE	4	0	0	2	2	5	3	0	4	13	6		39	20	95.0%
MVC	10	9	13	12	10	14	14	13	20	21	9		145	108	34.3%
GENERAL/TECH RESCU	0	0	0	0	0	0	1	1	0	0	0		2	0	0.0%
MEDICAL	30	26	18	31	28	37	27	29	35	37	32		330	274	20.4%
CARBON MONOXIDE	6	1	2	2	3	4	3	4	8	5	4		42	32	31.3%
HAZMAT	0	1	0	0	0	1	1	1	1	1	1		7	4	75.0%
EMERGENCY ASSIST	4	1	3	1	2	4	6	3	4	1	1		30	20	50.0%
NON EMERG/ASSIST	5	2	3	2	9	0	4	2	1	2	4		34	34	0.0%
ICE/WATER RESCUE	0	0	0	0	0	0	0	0	0	0	0		0	3	-100.0%
UNKNOWN 911	6	2	7	0	1	6	5	5	6	4	2		44	31	0.0%
Total Responses Within Municipality	91	62	62	87	91	125	99	95	114	109	84	0	1,019	668	52.5%
Total Responses Out of Jurisdiction	0	0	0	0	0	0	0	0	0	2	1	0	3	3	
2023 TOTAL	91	62	62	87	91	125	99	95	114	111	85		1,022		
2022 TOTAL	85	79	60	77	85	32	88	105	103	115	91	110	671		
% CHANGE	7.1%	-21.5%	3.3%	13.0%	7.1%	***	12.5%	-9.5%	10.7%	-3.5%	-6.6%	-100.0%	52.3%		

Total Dispatch Incidents 1022 2

FIGURE #2: TFES 2018-2022 TOTAL CALLS

2018	2019	2020	2021	2022	2023
1,175	1,092	712	1,005	1,094	1,019

1.3 Assessment of Current Fire Services By-Laws and Agreements

When reviewing a fire department and its operations, a review of fire service-related by-laws provides a good overview of the goals and expectations of the fire department. EMG reviewed the fire service-related by-laws and made recommendations where necessary.

1.3.1 Governance and Establishing & Regulating By-law

To assist the fire administration in meeting the needs and expectations of council, the Establishing and Regulating By-law (E&R By-law) is reviewed and updated to identify changes based on the municipality's needs and the fire department's overall operational needs. The E&R By-law must align with the expectations of the *Fire Protection and Prevention Act*, 1997.

The E&R By-law is Council's direction to the TFES and prescribes what services to provide. The current E&R By-law was last updated on the 19th day of January 2021, making this a three-year and eleven-month-old document. It is recommended that by-laws affecting fire department operations be reviewed annually or as significant changes occur in the community or fire department. Doing so will ensure that the Fire Chief's noted service levels, expectations, and authority are correctly aligned with the community's needs.

As part of any by-law update process, drafts should be vetted by the municipality's solicitor before being presented to council for approval. The Fire Chief should also consider bringing the E&R By-law forward to newly sitting councils every four years. Doing so will allow new council members to understand the level of service provided to the community and the Council's responsibility to fund this level of service as set by the Council.

In collaboration with the Fire Chief, the council needs to establish an objective, definitive response time to be included in the E&R By-law. The National Fire Protection Association (NFPA) recommends completing some assessments to evaluate a baseline for a department's response time goal. This review would offer an understanding of how the department is performing and identify areas for possible improvement in station location, fire apparatus complement, and staffing distribution.

The E&R By-law should reflect new legislation, changes in the types and levels of response, and training expectations. Consideration should also include reference to such guidelines and standards as:

- Section 21 Firefighter Guidance Notes
- *OHSA*
- OFM Guidelines concerning staffing and response recommendations.
- *FPPA* 1997
- Related NFPA Standards that deal with:
    - Training
    - Fire prevention and public safety programs
    - Fire department response goals and objectives
    - Communications and vehicle dispatching
    - Response times.
    - Fleet and Maintenance

By incorporating these guidelines and standards, the council could support the TFES's efforts to ensure that staffing, training programs, fire prevention, public education initiatives, and response to the community adhere to industry best practices.

The TFES has developed a Mission, Vision, and Primary Goals of the Fire Department statement that can be found in Appendix "A" to the City of Thorold E&R By-law No. 11-2021; it would be wise for the TFES to update Appendix "A" with a Value statement to complete the guiding pillars behind the fire department. The following is a definition of a "Value Statement" and what it includes:

Values Statement – This should reflect the fire department's core principles and ethics.

- The questions to be answered in developing the values statement could include:
    - What does the TFES stand for?
    - What behaviours does the TFES value over all else?
    - How will the TFES conduct its activities to achieve what the Mission and Vision Statements stand for?
    - How will the TFES treat its members and the citizens of the community it serves?

The updated by-law should refer to the Office of The Fire Marshal (OFM), *Regulation 378/18*, CRA, which came into effect on July 1st, 2019.[3] It should also specify the need for an annual review and a new document produced every five years. It should also identify the Community Risk Reduction Plan (CRRP) that should be initiated as part of the CRA.

The *FPPA* requires fire departments to have a smoke alarm program. The program, including its purpose, goals, and expected outcomes, should be included in the new document.

To TFES's credit, it was noted that Appendix "B" of the City of Thorold's E&R By-law 11-2021 sub-section B.2.2 refers to the smoke alarm and carbon monoxide initiatives "***facilitating smoke alarm and carbon monoxide alarm initiatives***." Although EMG applauds the proactive intent of fire safety, it does not meet the intent of the Office of the Fire Marshal's smoke alarm program, which is made under subsection 2 (1) (a) of the FPPA. A well-defined smoke alarm program would benefit the TFES.

Other items to consider changing within the current by-law include:

[3] Ontario, "O. Reg. 378/18: Community Risk Assessments", accessed December 14, 2022, https://www.ontario.ca/laws/regulation/180378

- The levels of service prescribed in By-law 11-2021, which align with Table #1 of the Ontario Regulation 343/22, made under the FPPA, 1997, should use the exact wording to avoid confusion as to the levels of service provided by the City of Thorold.
- In 2020, the NFPA's Standards Council undertook the consolidation of standards that apply to emergency response and responder safety. References to NFPA standards should be reviewed to ensure reference to the new consolidated standard names and numbers. For instance, NFPA 472 is now part of NFPA 470, and NFPA 1670 is now part of NFPA 2500.
- Where it applies, the By-law 11-2021 should refer to the Ministry of Labour's Section 21 Guidance Notes.
- At the next review, the City of Thorold should consider updating the name "volunteer firefighters" to "paid-on-call" firefighters to reflect that they receive an hourly wage for their participation in the department's activities.
- The By-law should include Mental Wellness and Respiratory programs.
- The By-law should include a baseline response time, and goals based on NFPA 1720.
- The By-law should identify who is responsible for fire investigations.
- The by-law should mention asset and record management programs and retention policies.

1.4 Assessment of Other Current Fire Services Related By-Laws and Agreements

The following fire service-related by-laws are also reviewed for this FMP:

City of Thorold

- Fees and Charges By-Law 06-2017 (*Discussed in Section7*
- Open Air Burning By-law 2012-41 (*Discussed in Sections 1 and 7*)
- Fireworks By-law 37-2024 (*Discussed in Section 1*)
- Licensing, Regulating and Inspection of Residential Rental Property By-law 109-2017 (*Discussed in Sections 1 and 7*)
- Licensing, Regulating and Inspection of Bed & Breakfast Accommodation other than a Hotel or Motel in the City of Thorold By-law 21-2020 (*Discussed in Sections 1 and 7*)
- Medical Assistance Tiered Response Protocol By-law 30-2016 (*Discussed in Section 3*)
- Tiered Medical Response Agreement September 26, 2022 *(Discussed in Section 3)*
- Fire Dispatch Services Agreement. *(Discussed in Section 3)*

- Provision of Computer Aided Fire Dispatch Services (*Discussed in Section 3)*
- Development Charges By-law 41-2024 (*Discussed in Section 7*)
- Fees and Charges By-law 06-2017 (*Discussed in Section 7*)
- Emergency Response Plan By-law 74-2022 *(Discussed in Section 8)*

1.4.1 City of Thorold: Open Air Burning By-Law – 2012-41

The Open-Air Burning By-law stipulates the parameters for outdoor burning within the City of Thorold, which came into effect in 2012. This by-law is 12 years old and should be reviewed and updated in preparation for being presented to Council for consideration.

The following needs to be considered for inclusion in the revised by-law:

- The amended By-law should reference the Ontario Fire Code Article 2.4.4.4.
- The Amended By-law should also reference O. Reg 256/14, amendments to the *FPPA.*
- The amended By-law should also reference O. Reg. 207/96, Outdoor Fires, from the *Forest Fires Prevention Act*.
- Section 3.1 of the By-law should prescribe the need for adequate suppression mechanisms.
- The administration of the Open-Air Burning By-law rests on the TFES Fire Chief. The By-law should be updated to give enforcement authority to the TFES Fire Chief.
- The updated By-law should note the necessity of ensuring proper installation and use of wood-burning outdoor furnaces, which are becoming quite popular. If not correctly installed and used, they can be a fire hazard.
- The updated By-law should include approved manufactured burning appliances with spark arrestors, as found in chimineas.
- It should also state that manufactured appliances that use propane or natural gas as fuel supply cannot be placed and used on wooden surfaces such as decks and porches.

1.4.2 City of Thorold: Fireworks By-law 37-2024

Most municipalities have a stand-alone by-law specific to selling and discharging fireworks. The City of Thorold currently has a by-law to regulate the sale and discharge of fireworks. The City of Thorold Fireworks By-law is comprehensive; however, EMG suggests that the following clauses should be considered:

The by-law should include specifics regarding recreational usage, public high-hazard displays, and those released during a show or music concert (pyrotechnics).

The municipal authority to control fireworks rests within the Ontario Fire Code (OFC) O. Reg. 213/07, Division B, Part 5, ss 5.2.

The following needs to be considered for inclusion in a stand-alone Fireworks By-law:

- Reference the federal regulation regarding the training required to set off commercial and pyrotechnic fireworks.
    - Doing so will direct those who need this training and education and assist them in locating the supporting information. The by-law should list the differentiation between the consumer, display, and pyrotechnic fireworks, as listed in the *Explosives Act, R.S. c. E-15*.
- The by-law should include the importance of fire safety while setting off fireworks. Therefore, it would also be appropriate to have safety information on the proper method of setting off fireworks and the equipment worn by those setting off consumer fireworks.
    - Along with this document, it will also be essential to outline the need for some form of extinguishment that should be readily available, such as a pail of water and a fire extinguisher or garden hose.
- Include a requirement that all those involved in discharging high-hazard fireworks have completed the National Fireworks Certification Program (NFCP) on discharge.
- The document should include when fireworks should not be discharged, such as during wind gusts exceeding a pre-determined speed.
- A guide on how to set off "Family Fireworks" should be written, i.e., use a pail of sand to place the firework in, have a charged garden hose close by or a fire extinguisher, keep children away from the discharge area, etc.
- For discharging high-hazard ordinances, the TFES should conduct a pre-event inspection of the site to ensure it complies with the application by a member of the TFES who has completed the NFCP course.

- Included in the by-law is a fire apparatus with four firefighters standing by at the site of high-hazard firework displays.
- There should be at least two post-event inspections of the area adjacent to the discharge zone to look for unexploded ordinances. One takes place the night of the display, and the second the morning of the following day during daylight hours.
- The Fees and Services By-law will include pre-and post-discharge inspections and the stand-by fire crew.

1.4.3 Licensing, Regulating and Inspection of Residential Rental Property By-law 109-2017

The Province of Ontario's Housing Supply Action Plan supports second-dwelling units to relieve some affordable housing shortages. Second Dwelling Units are an essential part of Ontario's rental housing landscape. They offer affordable housing solutions throughout the province. Second Dwelling Units are self-contained residential units generally allowed in single detached, semi-detached, and row houses. The Plan also states that second dwelling units may also be in ancillary structures (i.e., garage, laneway house, or garden suite).

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

A by-law is required to establish a registry and license the identified living quarters, allowing the Municipality to inspect renovations or new constructions involving a second dwelling unit.

The City of Thorold has a comprehensive By-law dealing with residential rental properties. EMG would suggest that the City of Thorold investigate the opportunities to implement a means of reporting unregistered or illegally built residential rental units, such as an anonymous tip line.

1.4.4 Licensing, Regulating and Inspection of Bed & Breakfast Accommodation other than a Hotel or Motel in the City of Thorold By-law 21-2020

This City of Thorold By-law governs Bed and Breakfast accommodation. Given the recent exponential rise of short-term accommodations (STAs), it may be appropriate for the City of Thorold to include STAs in its By-law 21-2020.

A few points to be considered about short-term accommodations:

- An unknown number of short-term accommodations are operating in The City of Thorold.

- STA Property owners may not understand their responsibilities regarding fire safety and the fire code.
    - TFES should review its fire prevention and enforcement resources regarding adequate staffing to inspect all the municipality's short-term accommodations for OFC violations.
        - Due to the number of short-term accommodations, TFES may not have the resources to correctly complete these inspections along with the other inspection requirements of the municipality.
    - TFES and the Building Department should establish and advertise a method (reporting line) to identify possible illegal locations in cooperation with by-law enforcement.
    - Inground-related dwellings (basements) must meet Ontario Building Code and Ontario Fire Code requirements.
    - While new residential developments are in progress, some may become designated as short-term accommodations.
- Many short-term accommodations may have wood-burning appliances installed. Consideration should be given to requiring a Wood Energy Technology Transfer (WETT) inspection. These could be completed by municipal staff or through a third party.
- This By-law should prescribe the responsibilities of the fire department.

1.5 Policies, Guidelines, & Procedures

Fire department policies and guidelines have immense value for a department. They are the foundation of a fire department's success. The backbone of any fire service is its policies, SOPs, and SOGs, which govern and provide direction on its operations.

- Policy - A high-level statement that expects consistent compliance. It permits very little to no flexibility.
- Guideline - A standard with an acceptable level of quality or attainment. It provides direction on how to act in each situation with non-mandatory controls.
- Procedure - A requirement with an acceptable level of quality or accomplishment in a series of detailed steps to accomplish an end. There are step-by-step instructions for execution and completion.

The TFES has many SOGs in place. To ensure all the SOGs are current, they need to be reviewed and revised on an ongoing basis as circumstances change. A cursory review of the TFES SOGs' revised dates indicates that most of the SOGs have been updated within the past four years.

Reviewing the SOGs can be an incredibly detailed and very involved process. Writing new SOGs and maintaining existing ones is a daunting task to be the sole responsibility of the Fire Chief. Establishing

a committee that meets regularly to develop new SOGs and review older ones would relieve some of the pressures placed on the Fire Chief. The development of a structured SOG Committee that creates its Terms of Reference would be a great benefit to the TFES in several ways:

- Updated and current SOGs
- Staff would be more involved in the fire department operations.
- Safer environment for members to work.

Some fire departments review a third of their SOGs annually. Adopting this procedure provides the entire set of documents to receive a full review every three years.

The Section 21 Committee is part of the *OHSA* initiative for firefighter safety. A good source of information is Section 21 Guidance notes, which are kept current by a provincial team of fire service personnel. The many NFPA Standards are also a good resource for developing SOGs. Where applicable, Section 21 Guidance Notes and relevant NFPA standards should be referenced in the SOGs.

For a fire department to operate in a safe and efficient manner, it is imperative that all members adhere to all policies, SOGs, and SOPs, and those who fail to do so should be held accountable.

Section 1 - Recommendations

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
1	By-laws should be reviewed annually	Immediate (0 to 1 year) ongoing	Staff Time	EMG's review demonstrated that some By-laws were outdated.

Section 2

Risk Assessment

Emergency Management Group

SECTION 2: RISK ASSESSMENT

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

A SWOT analysis's strengths and weaknesses portion is based on an internal review that identifies what is working well, along with recognizing areas for improvement. The opportunities and threats portion of the SWOT is related to external influences and how these influences affect an emergency service's operations and response capabilities. The SWOT analysis looked at the overall operational functions of the TFES from the lens of the senior staff. The SWOT encompasses a review of all divisions, including administration, suppression, prevention and public life safety education, training, communication, fleet, and equipment.

2.1.1 Strengths

Administration

- Ability to maintain the fleet for FUS
- Created a Deputy Chief position as of July 2023
- Well-formulated team and ability to work together

Suppression

- Engaged staff wanting to make a difference
- Staff wanting to have hands-on training, less white board training
- Excellent complement of volunteers to the career staff

Prevention & Public Life Safety Education

- Two staff with a good amount of knowledge base

Training

- Continued growth of the Volunteer FF Recruit program
- Promotional processes are in place for both Volunteer and Career fire staff
- Training is well organized and laid our yearly for both Volunteer and Career fire staff
- Ability to adapt training to needs that may come up throughout the year

Communication

- St. Catharines Fire Department has transferred over to Next Gen 911 with Niagara Regional Police Services

Fleet

- Currently, most vehicles are in line with FUS requirements
- Cyclical reviews and replacement are almost completed

Equipment

- Apparatus are being brought into FUS, and a cyclical rotation
- All major equipment is on a 10-year replacement life cycle
- Bunker gear is life-cycled every five years (two sets per firefighter)

2.1.2 Weaknesses

Administration

- Being involved in many different aspects of the City's organization (building, bylaw, planning, etc.)
- Residential Rental Licencing has become challenging to maintain and follow up, as needed
- Public Education and Public relations due to Residential Rental Licencing time constraints and struggles to maintain

Suppression

- Building consistent programs for both volunteer and career staff
- An officer development program is nonexistent
- Need initiative for decontamination for all staff

Prevention & Public Life Safety Education

- No public education programming for schools, seniors, etc.
- Prevention staff are bogged down with Residential Rental Licensing overload
- Difficulty with prevention staff to get a hold of for fire investigations "outside of work hours."

- Residential Rental Licencing programs take away from other FPO programs that could be completed (PR, Pub Ed, internal follow-up inspections, preplanning, plans reviews, site-specific reviews, etc.)

Training

- Officer development (career and volunteer) lacking in programming and career path charting
- Difficulty in coordinating group training with career staff due to increasing overtime costs
- Accountability for training is always placed on the Training Officer (Suppression Captains limited involvement in training)
- Career staff express interest of "more training" than the VFF receives

Communication

- TFES is currently analog – it needs to transition to digital
    - Thorold tunnel offers dispatching/communications challenges
- Currently, there is an issue with run number vs. run printouts from the dispatching program

Facilities

- Station 4 – highest concern for decontamination capabilities
- Station 4 – slow response times
- Station 1 – low paid-on-call responses during the day

Fleet

- The inability for a truck to be put into service if another vehicle is "down for maintenance"
- Lack of supplemented hose stock for trucks post fire calls

Equipment

- Appliances on all apparatus are at the end of their life cycle and should start replacement

2.1.3 Opportunities

Administration

- Targeting recruitment of volunteer (paid-on-call) firefighters
- The need to focus on the retention and recognition of all staff

Prevention & Public Life Safety Education

- Increase time allotted to other programmes
- Revisit the Residential Rental Licensing program

Training

- Ability to create more robust programming for staff at all levels throughout the department
- Increase overall officer training, mentorship and opportunities for education
    - An increase in the training budget is essential

Communication

- Ability to integrate with NG911
- The need to go digital for the effectiveness of communications, along with streamlining communications

Facilities

- Implement more vital decontamination processes, involve all stations, and make all stations able to self-decontaminate (washers, dryers, extractor machines, enclosed bunker gear rooms, showers, etc.)

Fleet

- Possibly relocate the aerial to HQ for a more central response

Equipment

- Use Firepro2 to help with the life cycle of equipment

2.1.4 Threats/ Challenges

Administration/Staff

- Decreasing volunteer numbers
- increased workload for administration

Prevention & Public Life Safety Education

- Potential challenges for after-hours fire investigations
- Fire Prevention Division staff are not engaged in other aspects of fire service needs/initiatives due to the Residential Rental Licensing program.

Training

- No cost analysis capabilities to show training vs overtime costing
- No in-house training facility

Communication

- Cost to upgrade to digital
- Cost to maintain digital dispatch

Fleet

- the large amount of development throughout different pockets of the city - the inability to get the required trucks to those pockets in a specified amount of time (NFPA standards)
- higher density high rises in the Station 2 area – may eliminate the need for aerial to be at HQ

Equipment

- Rising costs
- Supply chain issues

The SWOT exercise is part of the data collection phase that informs the development of the recommendations found in all the sections of this TFES's Fire Master Plan document.

2.2 Community Risk Assessment

The process used to identify the level of fire protection required within the City of Thorold is completing a Community Risk Assessment. The advantage of having a current Community Risk Assessment is that it measures the probability and consequence of an adverse effect on health, property, organization, environment, or community due to an event, activity, or operation.

The Council of the City has the authority to establish levels of fire protection that the Thorold Fire and Emergency Services will provide. The levels are within the Establishing and Regulating By-law, which identifies that the City has chosen to support a fire department. Under Ontario's *Fire Protection and Prevention Act*, the Fire Chief is responsible to the Council.

6*(3) 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*[4].

While a municipality may choose to have the Fire Chief report through an administrative, organizational structure, the Fire Chief remains accountable directly and individually to the Council for all aspects of fire safety and the delivery of fire protection services within the city.

During this interaction, they can inform the Council of all risks existing within the community. The completed Community Risk Assessment outlines an overview of the risks identified within the city. Included in the document are suggested options for mitigating the risks. Through an analytical exercise, the Council, in discussion with the Fire Chief, will be in a better position to determine the best levels of fire protection for the city. This Fire Master Plan will aid in guiding those decisions.

O. Reg. 378/18 CRA states that *"…every municipality shall complete a CRA by July 2024, with renewal to occur every five years."*[5] It further states that an annual review and update of the CRA is required.

Identifying potential risks through accumulating and analyzing nine risk factors will assist in applying this information in various scenarios. 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:

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[4] Legislative Assembly of Ontario, Bill 84 – "Fire Protection and Prevention Act, 1997," accessed August 16, 2024, https://www.ola.org/en/legislative-business/bills/parliament-36/session-1/bill-84

[5] Ontarion e-laws, "O.Reg.378/18: Community Risk Assessment," accessed August 16, 2024, https://www.ontario.ca/laws/regulation/180378

- What could happen?
- When could it happen?
- Where could it happen?
- To whom could it happen?
- Why could it happen?
- How likely could it happen?
- How bad would it be if it happened?
- What programs can TFES develop and implement to mitigate or prevent any or all the above?

Upon answering the questions, the Fire Chief can formulate and prioritize the risk, which leads to developing a plan to manage the risks. Another advantage of having a risk assessment is that it identifies gaps and areas where the conditions may vary from the preferred outcomes.

Data reviewed for each mandatory profile include:

Geographic Profile – Considers the waterways, highways, canyons and other landforms, railroads, wildland-urban interface, bridges, and other specific community features.

Building Stock Profile – Potential high-risk occupancies, whether residential, commercial, or industrial, building density, building code classifications, structure(s) age, occupancies that could be a high life safety risk, and historic buildings. Inventory the building stock and identify each incorporating lightweight construction practices.

Critical Infrastructure Profile – The facilities and services that contribute to the interconnected networks, services and systems that meet vital human needs, sustain the economy, and protect public safety and security.

Demographics Profile – Includes age, gender, educational attainment, socioeconomic makeup, vulnerable individuals or occupancies, transient population, and ethnic and cultural considerations.

Hazard Profile – Human, technological, or natural hazards.

Public Safety Response Profile – How are resources distributed within the community, their deployment and usage, types of incidents responded to and the frequency of such incidents, including the seasonal variations and time of day.

Community Service Profile – Existing planning and zoning committees, schools, seniors' organizations, ratepayers' associations, mental health organizations, faith-based groups, and cultural/ethnic groups.

Economic Profile – Review the infrastructure, local employers and industries, institutions, community's tax base, and local attractions.

Past Loss/ Event Profile – Consideration of the impact and frequency of an event; identify significant acute events with a low frequency but a high impact or small chronic events with a high frequency and a low impact.

While the Community Risk Assessment is a separate document from the Fire Master Plan, it is an essential reference for completing the master plan. Once the Fire Chief reviews the documents, they should discuss their findings with the Council, senior management, and the CAO. As mentioned, completing the Fire Master Plan comes through the Community Risk Assessment. Completing the Community Risk Reduction Plan will identify any additional shortcomings and gaps in service levels of the fire department while developing a course of action to reduce, if not eliminate, the risk.

2.3 Community Risk Assessment

2.3.1 Identified Risks

The following information outlines some identified risks to life safety and property. Now that the Community Risk Assessment and this Fire Master Plan are complete, the Fire Chief can implement strategies to address the risks, including public education and Fire Code enforcement.

A thorough review coupled with sound strategic planning will garner successes in the form of fewer fires, reduced fire-related injuries, and lower dollar property loss through ongoing fire prevention initiatives. These fire prevention initiatives include early warning detection systems (i.e., smoke alarms), proactive inspections, and public education.

Note: *The following are a few risks discussed in* the *Community Risk Assessment. They are not in the order of their level of risk.*

Industries – The Municipality is a mix of rural and urban, with several industries to employ its citizens. Each sector presents risks, which TFES will identify as they complete fire inspections.

Hazardous Material Incidents – Hazardous materials (HAZMAT) incidents threaten the city. While moving towards responding at the Operations Level to mitigate these incidents, TFES

complies with NFPA 1072, the Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications.

Technical Rescues – Trench, Confined Space, High and Low Angle, and Elevator. The mitigation of technical rescues requires that SOGs, Policies and Procedures, equipment, and training specific to each discipline are in place. TFES responds at the minimum awareness level for each type of technical rescue. Some, like ice and surface water, are at the technician level and Los-slope at the operations level. There is a need for a mitigation strategy for every type of technical rescue that may require response agreements with outside fire services.

Mitigation of elevator rescues must be at a minimum at the awareness level, which restricts what firefighters can perform. The firefighters must train to the standards established by the Technical Standards and Safety Authority (TSSA).

Bodies of Water – Another threat to the city is localized flooding caused by either spring thaw or significant rain events, which are becoming the norm. The Welland Canal is a primary shipping lane between Lake Erie and Lake Ontario and presents a specific risk.

Weather Events – This area of Southern Ontario is known to receive severe weather events ranging from snowstorms, namely snow squalls and storms, to extreme wind events, including tornadoes during thunderstorms. Consider a public notification early warning system, i.e., an app residents could install on their cell phones or convert the sirens on the fire stations to storm sirens. Incorporating the fire sirens on the stations as an early warning system may require the purchase of additional units to ensure coverage of the larger urban/built-up areas.

Domestic Terrorism - The threat of domestic terrorism exists in Canada, with numerous incidents producing havoc and terror among the populace. Active shooter incidents may occur in factories, schools, supermarkets, seasonal facilities and within the family home. Situations have appeared in several Canadian cities with catastrophic consequences.

Municipalities often lack a plan for staff to follow when caught in an active shooter or aggressive clients threatening staff. A safe room that could resist munitions if fired upon has not been identified, nor has staff practiced an action plan.

A barrier must be in place to protect staff engaging the public at the counters, as the risk of objects thrown towards the staff member is not uncommon.

Demographics – Demographic statistics show an increase in permanent residency and student population. Each present risk is primarily related to cooking, smoking, and the lack of working smoke and CO alarms.

Building Stock - The lack of attainable and affordable housing throughout Southern Ontario could lead to illegal additional dwelling units and apartments. The city licenses additional dwelling units as they require their registry with the city. The fire department should inspect each to ensure compliance with the Ontario Fire Code.

There is also an unknown number of short-term accommodations in the city. No by-law regulates these accommodations. Owners of these businesses must be aware that they must comply with the Municipality's By-laws, such as Property Standards and Open-Air Burning.

A requirement should be for those with wood-burning appliances to complete a Wood Energy Technology Transfer (WETT) inspection to ensure compliance with building and manufacturers' installation requirements, which will aid in preventing a fire.

Building Stock – The OFM has identified the risks associated with occupancies using lightweight construction practices. Municipalities are to inventory all building stock except houses, including those with lightweight construction (LWC) practices. Failure to comply with this requirement is illegal. TFES and the Building Department should collaborate to develop an ongoing list of all building stock based on the Ontario Building Code's Occupancy Classifications. The Fire and Building Departments should collaborate and bring forth a By-law requiring all occupancies with LWC to affix an identifier to the outside of the occupancy near the main entrance except houses.

2.4 Community Risk Reduction Plan

One of the last tasks is the development of a Community Risk Reduction (CRR) Plan, and it is this Plan that aids in completing the Fire Master Plan. The City of Thorold's Community Risk Assessment offers in-depth steps to developing a CRR Plan. When properly applied, the Plan coordinates emergency operations with all aspects of fire prevention. It identifies mitigation strategies for making the community safer in ways not customarily realized, including at the fire station level. Critical to successfully implementing the Plan is the cooperation and participation of suppression personnel. The involvement of fire station personnel is for gathering local risk data and performing activities necessary to execute the CRR Plan.

Aside from the primary benefits to the community, a CRR Plan can positively impact the fire department by identifying possible gaps in staff development and response capabilities. A properly applied CRR Plan can improve firefighters' and emergency responders' health and safety in the station, at home and on the fire ground. This is partly due to enhancements in the number of fire inspections and fire and life safety education events completed, enforcement of the Ontario Fire Code, 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 CRR Plan, including the following:

- Identifying new and emerging hazards and managing risks makes the community safer.
- Declining budgets among fire departments and local governments; a CRR Plan can improve resource allocation.
- It results in improved community engagement with direct involvement in the Plan's development and implementation.
- Beyond just fighting fires, it better defines the fire department's purpose and value within the community.

In developing the Plan, additional questions need answers, and viable strategies need designing. The following outlines the steps taken in developing the project.

Identification and Prioritization – Upon completing the Community Risk Assessment and identifying risks, priorities can be determined and assigned for mitigation. The results are itemized and analyzed for use in the remaining planning process. The document does not need complexity 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, sometimes, when.
- Whom does the risk affect the most, and why?
- How are the community and the fire department affected by the threat?
- What about this risk necessitates its ranking to be higher than others?

Develop Mitigation Strategies & Tactics – This step requires input from various individuals involved, including those most affected by the risk. At this point, stakeholder involvement is paramount and should always be part of the decision-making process. The Fire Chief needs to decide what tactics and strategies are necessary to prevent and mitigate those risks, beginning with those with the highest risks.

Implementing the Community Risk Reduction Plan – The completed Community Risk Reduction Plan usually involves several steps. The process should include timelines, which can be quick and focused or slow and methodical. At no time should the plan implementation be rushed and not provided due attention to detail. Reliance on the fire department, community partners, or a combination is vital for successful implementation and performance.

Monitor the Progress, Evaluate Your Findings, and Modify the Community Risk Reduction Plan – The previous steps culminate in the final stage, which involves monitoring and evaluating the Plan's effectiveness and adjusting as necessary. During this process, not every strategy will be successful, and a willingness to modify and, in some cases, start over identifies a determination to have a successful program. This final process will enable the organization to determine if they are achieving the desired outcomes and if the program is or is not impacting them. Ongoing monitoring allows for prompt modifications to the Plan.

A thriving CRR Plan will bring additional resources to the effort through partnerships within the fire department and the community it serves. It is not uncommon for fire departments to miss public/private partnerships in program development and delivery. 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.

2.5 Mission, Vision, and Values statements

Most fire services develop department-specific Mission, Vision, and Values Statements. TFES has developed its own set, known as the Mandate of the Fire Department (Mission), the Vision of the Thorold Fire and Emergency Services, and the Primary Goals of the Fire Department (Values). It is in the Establishing and Regulating (E&R) By-law 11-2021. The Department should ensure they are in every fire station. Statements such as these remind the members of what the fire department is about, its purpose, and its goals for the future. The difference between a Mission and a Vision statement is that a Vision describes an ideal, aspirational future state that the fire department wants to achieve.

In contrast, the Mission describes its purpose and what it does today. A Mission statement tells what the Department does now, and the Vision is what its long-term goals may be. The following is an excerpt from the E&R By-law.

Appendix A of By-Law No. 11-2021

Mandate of the Fire Department

The mandate of the Thorold Fire and Emergency Services is to provide public fire and life safety education and fire safety standards and enforcement and fire protection services and emergency response, to protect the lives and property of the citizens, businesses and visitors to the City of Thorold.

Vision of the Thorold Fire and Emergency Services

The Vision of the Thorold Fire and Emergency Services is to be a well-planned, well-trained and a well-equipped emergency response agency where the safety and wellbeing of all involved in any emergency response is paramount.

Primary Goals of the Fire Department

The primary goal of the Fire Department is to;

- *Provide appropriate public fire and life safety education and other fire prevention programs and measures as legislated by the FPPA,*
- *Provide exceptional training to its members through well planned programs followed by appropriate testing and documentation,*
- *Provide effective, timely and adequately staffed emergency response and assistance as appropriate to the needs and circumstances of the municipality and as required by the FPPA and other applicable legislation.*

The following are definitions of what a Mission, Vision and Values statement is and could consist of:

Mission Statement – They need brevity and conciseness in a sentence or a few paragraphs. It needs to identify what the TFES does and what its purpose is.

They serve the fire department in two crucial ways:

- Guides the management team in defining and implementing strategies to reinforce the Department's identity and achieve its goals.
- It helps stakeholders understand what the Department does, what it strives to achieve, why it exists, and its manner of operation.

Questions to answer in developing a *Mission* statement could include the following:

- What does the TFES do?
- Why does it do it?
- Who does the TFES do it for?
- What would happen if the TFES did not do this?
- Why is the work of the TFES so essential, and why does it matter?

Vision Statement – Provides insight into the fire department's hopes to achieve both now and in the future.

Questions to answer in developing a *Vision* statement could include the following:

- Where is TFES going forward?
- What goals does TFES wish to achieve in the future?
- What will society look like in the future?

Values Statement – This should reflect the fire department's core principles and ethics.

The questions to answer in developing the *Values* statement could include:

- What does the TFES stand for?
- What behaviours does the TFES value over all else?
- How will the TFES conduct its activities to achieve what the Mission and Vision Statements stand for?
- How will the TFES treat its members and the citizens of the community it serves?

Mission, Vision and Values statements are not unlike other documents of the Fire Department in that they need to be reviewed periodically and updated to reflect changes in the Department and the community it serves.

2.6 Fires in Thorold vs the Province of Ontario

While this section discusses various risks in the city, the most significant risk is fires. They occur at the most inopportune time, place, day of the week, time of the year and occupancy. The most proactive means of preventing fires from occurring is through a robust fire prevention program that includes inspections and enforcement along with public education. This cannot be left entirely to the Fire Prevention Division as resources are scarce and in high demand. The suppression crews can aid in reducing the risk by completing inspections that are not in a complex occupancy and attending to public education.

As a comparison, the following tables outline the fires occurring in the City of Thorold vs the province.

TABLE #1: SUMMARY OF TOTAL EMERGENCY CALLS (FIRES AND NON-FIRE CALLS)

Year	City of Thorold		Province of Ontario	
	Total of all Calls	Non-Fire Calls	Total of all Calls	Non-Fire Calls
2018	1,175	1,138	546,337	525,759
2019	1,092	1,064	536,860	518,539
2020	712	664	450,018	429,216
2021	1,005	952	492,638	470,793
2022	1,094	1.036	579,343	555,738
2023	1,114	1,073	2023 Data is not available until late 2024.	

TABLE #2: OVERVIEW OF PROPERTY CLASS, INJURIES, CAUSE, IGNITION SOURCE IN THE CITY OF THOROLD

				2019	2020	2021	2022	2023*
Structure	Total		Loss Fires	6	15	23	18	9
			Est $ Loss	168,500	1,644,100	1,028,200	4,680,805	1,771,500
	Intentional	Total	Loss Fires	0	3	3	5	5
			Est $ Loss	0	600,100	401,500	6,005	5,500
		Arson	Loss Fires	0	3	2	1	1
			Est $ Loss	0	600,100	400,500	5,000	5,500
		Vandalism	Loss Fires	0	0	1	4	0
			Est $ Loss	0	0	1,000	1,005	0
	Unintentional	Total	Loss Fires	4	10	13	11	9
			Est $ Loss	63,000	841,000	163,700	4,653,800	1,766,000
		Design / Construction / Maintenance Deficiency	Loss Fires	0	0	0	1	0
			Est $ Loss	0	0	0	1,000	0
		Mechanical / Electrical Failure	Loss Fires	0	1	3	2	0
			Est $ Loss	0	170,000	45,500	5,600	0
		Misuse of Ignition Source / Material First Ignited	Loss Fires	3	6	7	3	3
			Est $ Loss	13,000	219,000	45,200	135,000	235,000
		Other Unintentional	Loss Fires	1	1	1	1	0
			Est $ Loss	50,000	2,000	30,000	1,200	0
		Undetermined	Loss Fires	0	2	2	4	5
			Est $ Loss	0	450,000	43,000	4,511,000	1,531,000

				2019	2020	2021	2022	2023*
	Other	Total	Loss Fires	0	1	5	1	0
			Est $ Loss	0	3,000	56,000	5,000	0
		Other	Loss Fires	0	1	5	1	0
			Est $ Loss	0	3,000	56,000	5,000	0
	Undetermined	Total	Loss Fires	2	1	4	1	0
			Est $ Loss	105,500	200,000	407,000	16,000	0
		Undetermined	Loss Fires	2	1	4	1	0
			Est $ Loss	105,500	200,000	407,000	16,000	0
	Total Injuries			3	1	2	3	0
	Total Fatalities			1	2	0	0	0
	Total of No-Loss Fires			0	1	1	8	3

When comparing the causes of the fires in the City of Thorold vs the province, the following was in 2022 (2023 data from the province is unavailable).

TABLE #3: STRUCTURE FIRE CAUSES – CITY OF THOROLD VS. THE PROVINCE IN 2022

	City of Thorold		Ontario	
Fire Causes	**Number of Fires**	**Percentage of Total Fires**	**Number of Fires**	**Percentage of Total Fires**
Arson	1	6%	498	7%
Intentional Other	0	0%	2	0%
Vandalism	4	22%	121	2%
Children Playing	0	0%	33	0%
Design / Construction / Maintenance Deficiency	1	6%	416	6%
Mechanical / Electrical Failure	2	11%	1,100	15%
Misuse of Ignition Source / Material First Ignited	3	17%	1.889	25%
Other Unintentional	1	6%	567	8%
Unintentional Undetermined	4	22%	710	9%
Vehicle Collision	0	0%	8	0%
Other	1	6%	414	6%
Undetermined	1	6%	1.715	23%
Unknown, not reported	0	0%	9	0%

Note: *The percentage figures indicated in TABLE #3 were obtained from OFM and did not include no-loss or vehicle fires.*

TABLE #4: FIRES BY IGNITION SOURCE IN THE CITY OF THOROLD

			2019	2020	2021	2022	2023*
Structure	Total	Loss Fires Est $ Loss	6 168,500	15 1,644,100	23 1,028,200	18 4,680,805	9 1,771,500
	Appliances	Loss Fires Est $ Loss	0 0	0 0	0 0	2 6,600	0 0
	Cooking Equipment	Loss Fires Est $ Loss	3 13,000	1 1,000	2 3,000	2 31,200	1 1,000
	Electrical Distribution Equipment	Loss Fires Est $ Loss	0 0	0 0	1 5,500	1 5,000	0 0
	Heating Equipment, Chimney, etc.	Loss Fires Est $ Loss	1 50,000	1 170,000	0 0	2 1,501,000	1 200,000
	Lighting Equipment	Loss Fires Est $ Loss	0 0	0 0	2 40,000	0 0	0 0
	Open Flame tools, smoker's articles	Loss Fires Est $ Loss	0 0	4 90,000	2 5,000	5 106,005	1 5,500
	Processing Equipment	Loss Fires Est $ Loss	0 0	0 0	1 30,000	0 0	0 0
	Miscellaneous	Loss Fires Est $ Loss	1 5,500	5 863,000	2 31,000	1 0	1 30,000
	Exposure	Loss Fires Est $ Loss	0 0	0 0	3 56,000	1 5,000	0 0

			2019	2020	2021	2022	2023*
	Undetermined	Loss Fires Est $ Loss	1 100,000	4 520,100	10 857,700	4 3,026,000	5 1,535,000
	Total Injuries		3	1	2	3	0
	Total Fatalities		1	2	0	0	0
	Total of No-Loss Fires		0	1	1	8	3

TABLE #5: STRUCTURE FIRE IGNITION SOURCE – CITY OF THOROLD VS. THE PROVINCE IN 2022

	City of Thorold		Ontario	
Ignition Source	Number of Fires	Percentage of Total Fires	Number of Fires	Percentage of Total Fires
Appliances	2	11%	306	4%
Cooking Equipment	2	11%	1,019	14%
Electrical Distribution Equipment	1	6%	604	8%
Heating Equipment, Chimney, etc.	2	11%	518	7%
Lighting Equipment	0	0%	179	2%
Open Flame tools, smoker's articles	5	28%	1,037	14%
Other electrical/mechanical	0	0%	393	5%
Processing Equipment	0	0%	78	1%
Miscellaneous	1	6%	701	9%
Exposure	1	6%	391	5%
Undetermined	4	22%	2,256	30%
Unknown, not reported	0	0%	0	0%

Note: *The provincial totals may have inaccuracies due to improperly coded fire reports sent to the OFM.*

TABLE #6: NON-FIRE EMERGENCY CALLS

Non-Fire Emergency Calls*	2020		2021		2022		2023	
	Total # of Calls	% Of All Calls	Total # of Calls	% Of All Calls	Total # of Calls	% Of All Calls	Total # of Calls	% Of All Calls
Outdoor Burning – Controlled	68	10%	81	8%	36	3%	61	5%
CO Remote alarms	39	5%	49	5%	39	4%	30	2%
False Fire Calls	149	21%	222	22%	253	23%	112	10%
Medical/Resuscitator Calls	105	15%	247	25%	327	30%	319	28%
Other Response	110	15%	151	15%	145	13%	157	14%
Overpressure Rupture/Explosion	3	0%	1	0%	0	0%	0	0%
Pre-Fire Conditions	44	6%	35	3%	43	4%	53	4%
Public Hazard	37	5%	36	4%	31	3%	28	2%
Rescue	109	15%	130	13%	162	15%	150	13%
Total of All Calls	**712**		**1,005**		**1,094**		**1,114**	

**Note:* *Not all call types are listed*

Upon review of the data, there are a few notables:

- There are some arson or vandalism-related fires each year.
- Another notable cause was the misuse of the ignition source/material that was first ignited. This cause is often related to wood-burning appliances, candles and smoking.
- Upon review of the ignition source, it was found that most originated in either heating equipment, chimneys, open flame tools, or smoker's articles.
- Even though the origin and cause were identified in several fires, a number remained undetermined.
- TFES needs to analyze the reason behind the undetermined fires. Was it due to the lack of resources, training, or time to complete a thorough investigation or a combination of all?

2.7 Thorold Fire and Emergency Services (TFES) Surveys

To understand how well TFES is meeting the needs of the community and its composite force, community, Council members, and staff input were canvassed in the form of an anonymous survey via Survey Monkey or online interviews. This input was helpful in developing recommendations to assist the City of Thorold council and the TFES with future strategic decision-making as it relates to the fire service.

Online surveys are one of the most effective surveying methods. Anyone can use them for just about anything and are easily customized for a particular audience[6]. Statistics show that age bias is no longer a concern with using online surveys as a research methodology.

The External survey consisted of nine questions. The types of survey questions included open-end questions and ordinal scale questions. Different types of questions were use because each type of question collects a different type of data to inform a more comprehensive understanding of TFES level of service delivery to its constituents. Open-end questions allowed us to gain more insight into how the respondent feels about the TFES. Ordinal scale questions allowed EMG to order and rank the range of service delivery provided by TFES.

The Internal survey consisted of twenty-four questions. The survey questions included open-ended, nominal, and ordinal scale questions. Open-ended questions providing opinions,

[6] Survey Legend, "18 Different Types of Surveys," accessed January 29, 2023, https://www.surveylegend.com/types-of-surveys/types-of-survey-methods/.

feelings, impressions, and/or suggestions to evaluate the state of mind of staff and the attitude of TFES staff towards the fire service. One question was an interval scale question gauging the opinion of the firefighters vis-à-vis fire protection services most valued by the community, on a scale from most important to least important. One question was a nominal scale question to identify respondents who received services from the TFES and the respondents who did not. The internal survey allows for evaluation of how public education, standard and enforcement, or suppression as lines of defence, is perceived as the overarching purpose of TFES.

The CAO and Council members survey consisted of nine questions. All questions were open-ended. The open-ended question type allows EMG to gather valuable insight and gain detailed, valued, and descriptive information, given the target group's knowledge and understanding of the TFES, the municipality, and their constituents.

The tool used to distribute the surveys was Survey Monkey. Internal and Council member respondents were informed of the survey link via individual emails. Council members were given the option for a face-to-face online interview with the EMG Lead Consultant. The surveys were ethically providing respondents with anonymity. The community at large were provided a link to the survey through an announcement on the municipal website. The survey links were accessible from any device. Data was collated, compiled, and analyzed by EMG staff to ensure confidentiality.

2.7.1 Community Surveys

EMG cautions the readers that the Community Survey responses may not represent a fair sample of the population of the City of Thorold. Only 85 community members participated in the survey.

Q1: What is your general impression of the Thorold Fire and Emergency Services concerning its level of professionalism, community safety, education, and fire prevention awareness programs?

Question 1 asked respondents their opinion regarding their individual satisfaction for the TFES based on their general impression given a statement regarding their feelings about the level of fire service based on the three lines of defence provided by the TFES. There was a total of 79 respondents for question 1.

fifty-three percent of the respondents expressed a high level of satisfaction with the TFES. The remainder of the respondents had mixed feelings. A few themes grew from the responses, including the need for more full-time staff, the frustration with the closure of station three, and a lack of visibility and public education emphasis.

Q2: Has the Thorold Fire and Emergency Services staff approached you concerning their Smoke Alarm Program, and if so, how did you find this interaction?

Question 2 evaluated the TFES Smoke Alarm program based on the number of respondents that the TFES staff has approached regarding the program. 78 of the 85 respondents answered this question. 72 % of the community members who answered this question indicated that TFES had not approached them regarding their Smoke Alarm program. Most of the 28% of the respondents who indicated that the TFES approached them concerning their Smoke Alarm program had a positive experience. Respondents who reported negative interactions from their experience found the encounter to be intrusive and awkward.

Q3: How important are the following statements to you?

Question 3 ranked the constituents' opinion of their perception of TFES in performing fire protection service functions. Only one respondent skipped question 3. The results provide a lens into the current health of TFES and their ability to provide expected fire protection services to the community at large. By far, the respondents felt that a timely response in case of emergency was the most important statement.

Overall, the respondents favour emergency response (third line of defence) functions of the TFES over public fire safety education (first line of defence) and fire safety standards and enforcement (second line of defence).

The results suggest that the community at large is less concerned about being consulted or receiving safety advice from the TFES than adequate response to emergency calls from highly competent (properly training) personnel. There are opportunities with this 10-year fire master plan to promote the first two lines of defence to improve fire protection services to the municipalities served by the TFES.

Q4: Based on your knowledge/understanding of the TFES, what are the top three issues facing our fire service today (i.e., barriers to providing service)?

Eighty-seven percent of the respondents provided their opinion regarding what they felt were the top three issues facing the TFES. Overwhelmingly, staffing, recruitment and retention, and response time were identified as the top issues facing the TFES. Recruiting or retaining career and volunteer personnel was perceived as an issue, as many expressed concerns over inadequate staffing in responding to emergency calls. Inadequate daytime response was the most common theme with respect to staffing and response time.

Aging equipment was another common theme expressed in the responses. However, there was no explanation regarding the concern over aging equipment.

Community respondents were also concerned about the costs of providing fire protection services. Comments were made regarding the closure of station 3 and the construction of a new headquarters.

Lastly, with respect to response time, many respondents had concerns about train delays and the Welland canal.

Q5: The Thorold Fire and Emergency Services delivers 36 core services. Which services are most important to you? Please rank in order of priority from Extremely Important to Not Important at All.

When asked to rank TFES core fire protection services in order of priority from "Extremely Important to "Not Important at All," respondents prioritized fire suppression services as the most important core services provided by TFES. The respondents perceived fire inspection and public fire safety education as their least important services. The results are consistent with the respondents' opinions that emergency response is the most important function of the TFES.

Q6: Are there any additional services that you believe should be provided? If so, please specify.

Only 38% of the respondents provided input into this question. It could be inferred that most respondents are not fully aware of the fire protection service delivered by the TFES. Interestingly, although public education was not ranked high as a fire protection service provided by the TFES, it was strongly identified as additional services that should be provided. The results can be interpreted from the frustration of many respondents with the closure of Station 3 and the perceived lower fire protection services received by the neighbourhood residents because of the closure.

Q7: Over the next ten years, if you could recommend/implement up to three things to improve how the Thorold Fire and Emergency Services provide the current services, what would those things be?

There is a definite polarity regarding the support for full-time and volunteer firefighters. Opinions expressed appeared to be from misinformation or disinformation rather than based on facts. There are opportunities through this Fire Master Plan to solve this crisis. Location of stations, response time, recruitment and retention are biased by loyalty to volunteer or full-time staffing.

Aside from the career versus volunteer workforce issue, the need for improved fire prevention and public education outreach was the second most addressed theme related to improving the TFES in the next ten years.

Q8: Have you directly received service from the Thorold Fire and Emergency Services?

Question 8 looks at the respondents' personal experience with the TFES delivery of services. There is almost a 50-50 % split of the respondents who received direct or did not receive direct fire protection services from the TFES.

Q9: Could you share some details about your experience and any recommendations for fire service improvements?

Generally, the respondents indicated a positive experience from their interaction with the TFES. Staffing and response time are of concern to the respondents. This is a common theme expressed throughout the survey. The career versus volunteer workforce dilemma is taking a toll on the general population. The Fire Master Plan is an opportunity to address this conundrum and develop a communication strategy to alleviate the concerns regarding staffing and response time.

2.7.2 Internal Surveys

A total of 22 staff members participated in the departmental survey. Five career firefighters and 16 volunteer firefighters participated in the survey. One participant did not identify as either a career or volunteer member of the TFES. The respondents almost equally represented stations 1, 2/3, and 4, 38%, 33%, and 29% respectively. %05 of the respondents have less than 6 years with TFES, and 36% of the participants have over 20 years with the TFES. These two-target group encompassed the bulk of the participants in the survey. The participants' distribution represents a fair sample population from the targeted population and an adequate sample group, providing significant, valid, and reliable results.

Q4: What are your expectations of the roles and responsibilities of your Fire Chief?

Staff perceive the duties roles and responsibilities of the Fire Chief in the context of overall administration of the fire department. Most respondents indicated that the Fire Chief was responsible for the "overall best interest of the TFES" and "overall operation of the TFES." Only one respondent suggested that the duties of the Fire Chief were operational in nature. The Fire Chief is seen as the "Champion" of the TFES, advocating for the TFES with the Council and the

community in general. Most respondents see the Fire Chief as a representative of the TFES rather than a City Administrator, a position that is hard to navigate.

Q5: How can the current roles and responsibilities of your Fire Chief be improved?

Most of the respondents were satisfied with the current performance of the Fire Chief. Respondents felt the current Fire Chief was doing a "great job." To improve the position, most respondents indicated that an emphasis should be given to internal and external communication. This is a common theme throughout the surveys. Community members and staff feel that there is insufficient communication within the ranks and with the community at large. There is a sentiment that the career versus volunteer conundrum could be alleviated with better communication between staff and management.

Q6: What are your expectations of the roles and responsibilities of the Deputy Chief?

Respondents perceived the roles and responsibilities of the Deputy Chief as operational in nature. The position is said to be responsible for the day-to-day operations. In addition, the Deputy Chief position is seen as a liaison between staff and the Fire Chief. Many respondents see the position as having "hands-on" functions with respect to suppression, prevention, and training.

Q7: How can the current roles and responsibilities of the Deputy Chief be improved?

Most respondents felt that the position was too new within the TFES to be able to provide feedback to improve the position. Some members felt that the Monday to Friday daytime position was not conducive to building rapport with the volunteer force, given that the Deputy Chief is a recent new position.

Q8: What are your expectations of the roles and responsibilities of the District Chief(s)?

Unanimously, the respondents felt that the District Chiefs' roles and responsibilities pertain to the direct supervision of volunteer staff and the day-to-day operation of their respective stations. The District Chiefs are perceived as the first direct supervisory rank at the station level. They are also seen as the liaison between the full-time (career) and volunteer staff. As one respondent said: "*they get orders from the full-time staff and delegate to the volunteer staff*". They are perceived as a bridge between the career and volunteer staff.

Q9: How can the current roles and responsibilities of the District Chief(s) be improved?

The district chief position is the first direct supervisory report for volunteer staff, and communication appears to be an issue due to inconsistent messaging. Another improvement identified by most respondents pertains to one district chief managing several stations. Respondents would like to see one district chief for each fire station. Finally, respondents would like to see a succession plan for promotion to district chief positions.

Q10: What are your expectations of the roles and responsibilities of the Prevention captain?

Most respondents see this position as overseeing all prevention and public education duties. Interestingly, all respondents felt that the prevention captain is to provide support to suppression. Respondents do not see prevention as their duty but as an external division providing support to them. There are opportunities in the Fire Master Plan to correct this behaviour to ensure that Prevention and Public Education is a fabric of their duties and functions as members of the TFES.

Q11: How can the current roles and responsibilities of the Prevention captain be improved?

There is a disconnect between the Prevention Division and the volunteer workforce. The Prevention Division should be more active and interact with the volunteer workforce. Most respondents expressed frustration at the little engagement by or with the Prevention Division. As respondents expressed it: "*Fire Prevention always seems to be a secondary thought… I would like to see our fire prevention captain at least more than once a year.*"

Q12: What are your expectations of the roles and responsibilities of the Training captain?

This is evident in the opinions expressed on how highly regarded the training officer position within the TFES is. All respondents see the position as extremely important in ensuring competency with equipment and competency to perform all functions of firefighting. There is also a strong expectation of direct reports and interaction with the staff. However, the position is seen as suppression centric. There are opportunities to showcase all aspects of fire protection services through the training leadership. Currently, training appears one-dimensional in the planning, scheduling, and delivery of training curricula in relation to suppression-based content.

Q13: How can the current roles and responsibilities of the Training captain be improved?

Most respondents are very impressed with the current Training captain, who is new in the position and feel that they are doing a great job. No improvements were suggested.

Q14: What are your expectations of the roles and responsibilities of the Suppression captains?

All respondents feel that the suppression captains' roles and responsibilities are operational in nature. They are seen as the gatekeepers of safety and training, and they are responsible for all fire ground operations. It is the first rank in the scalar organizational structure that is not seen as supervisory or management but rather as an operational leader in the performance of duties toward the successful outcome of any given incident. The position is seen as essential to build rapport rather than report between the rank and file.

Q15: How can the current roles and responsibilities of the Suppression captains be improved?

The lack of officer training is systemic in the fire service. All respondents felt that suppression captains would benefit from a better officer training program to improve their leadership and communication skills. Most respondents felt that the captains were competent in their knowledge of firefighting skills but felt that training for soft skills related to communication, leadership, and mentoring would be beneficial and significantly improve the suppression captains' overall competence.

Q16: What things make you most proud of the Thorold Fire and Emergency Services (e.g. the level of professionalism, community involvement or making a positive difference within the community)?

Making a difference in the community is by far what makes the respondents proud of the TFES. Although the respondents did not expand on their rationale, a "vast improvement over the past five years" is a common theme that makes the respondents most proud of the TFES. It appears that there has been a bridging of the relationship between the career and the volunteer members over the years and a culture change that is reflected in the answers provided.

There are opportunities in this fire master plan to nurture this cooperative culture that is often problematic within a composite fire department structure.

Q17: How do you think most people in the community perceive the TFES, and why?

This question addressed how staff feel about community support for TFES. All the respondents believed TFES was perceived in positive ways (as a professional, well-trained, dedicated pillar in the community) by the community. The responses suggest a healthy relationship between the TFES and the community at large. Similar sentiments were registered from the community survey. There are opportunities to further nurture the relationship between the TFES and the community in the development of this 10-year fire master plan.

Q18: Based on your experience with the TFES, what are the department's top three issues today?

All respondents answered this question. This shows the respondents' commitment, dedication, and caring for the TFES. The respondents were candid in their answers which warrants the TFES to pay close attention to the issues identified. The following is a list of issues identified. It should be noted that the top three issues identified by the respondents are (1) staffing - by far the issue most concerning to the respondents, either retention of volunteers or part-time staff or recruitment of either volunteers or career staff, staffing response at calls for emergency is identified as the top issue facing the TFES; (2) internal communication – no rationale provided; (3) radio communication (technology) at emergency calls - no rationale provided.

Volunteer retention	Top-down communication
Poor radio communication	Promotion and succession plan
Officer training	Broken down equipment
Onboarding	Firefighter dress code
Physical fitness	Anticipated urban growth
Response time	Unstandardized equipment on trucks
Lack of technical rescuer training	Lack of DECON at emergency calls
Training	No incentive program for staff
Daytime staffing	Lack of TFES vision statement
Illegal apartments	Vacant District Chief at STN 1 affecting STN 2/3
No follow up from PIARs	Lack of promotion of firefighter health and safety

Regrouping the issues mentioned, we can identify an overarching theme pertaining to administration needs rather than operation needs. With respect to the administration of the TFES, there are opportunities in the fire master plan to address the need for daytime staffing, improving communication, and improving technology affecting radio communication.

Q19: Which services do you believe are most valued by the community? Please rank in order of priority from Extremely Important to Not Important at All.

When asked to rank in order of priority from 1 (extremely important) to 5 (not important at all) what fire protection services are most valued by the community, members of TFES agreed with the public at large from the community survey results. The most valued services were "how quickly the TFES respond in case of emergency" and "how well trained are the TFES personnel." The staff identified the third most important timeliness for any request for services or assistance from the TFES. Also worth noting is the state of readiness of the TFES equipment. The aging equipment is a theme of concern expressed by both the TFES staff and the community at large.

An asset management plan is an integral part of risk management to proactively identify potential risks to an organization's assets, including physical failure, and to implement effective mitigation strategies that are sustainable and cost-effective. The 10-year Fire Master Plan is a tool to maximize the value of each piece of equipment to extend its life expectancy and decrease the overall cost of operations.

The ranking suggests that a suppression-centric culture exists with the TFES and within the City of Thorold community. There are opportunities to affect a paradigm change in favour of the first two lines of defence, including public life safety education, fire safety standards, and enforcement.

Q20: The Thorold Fire and Emergency Services deliver 36 core services. Which services are most important to you? Please rank each service in order of priority from Extremely Important to Not Important at All.

The prioritization of core services that focus on responding to and extinguishing fires and responding to emergency calls for service, such as vehicle collision and extrication, reflects the suppression-centric organizational culture that prevails within the Ontario fire service. The 10-year fire master plan is an opportunity to design a new paradigm for the TFES, where prevention is as much a priority as suppression.

Keeping in mind the suppression-centric culture of the TFES, it is interesting that technical rescuer services are ranked very low in order of importance. This can be attributed to the

training requirement to maintain currency, given that the respondents indicated in this survey that the workload was somewhat unmanageable and impacted training commitments.

Again, there are opportunities with the 10-year fire master plan to promote the paradigm change where firefighters can be equally adept at fire prevention and public education as they are at fire suppression. No longer can most fire departments afford to spend the bulk of their entry-level firefighter training hours on fire suppression topics at the expense of fire prevention topics[7].

Q21: Are there any other services that you believe the TFES should provide or increase the level of the present service? Why and what would be the outcome/benefit?

When members of the TFES were asked if other services TFES should provide, half the respondents believed that the TFES was providing adequate fire protection services. Interestingly, of the few respondents who felt that the TFES should provide other services, technical rescue was identified. However, the respondents also identified in the previous question that technical rescue ranked the lowest of the 36 core services the TFES provides.

Q22: What improvements, if any, could the Thorold Fire and Emergency Services implement to make it better? What do you believe would be the outcome by implementing these changes?

When inquiring about what the TFES can implement to make itself better. The respondents were forthcoming with constructive initiatives. The following is a list of suggested improvements:

Staff one apparatus at Station 4	Increase the FTE for full-time firefighters
Improve technical rescue training for volunteer staff	Provide competitive wages for volunteer staff to promote retention
Air compressor should be available on both side of the Welland Canal to fill cylinders.	Address nepotism
Have two fully equipped reserve apparatus.	Improve the REHAB at large-scaled incidents.

[7] Fire Rescue 1, "Stop training firefighters like they're Marines," accessed July 30, 2024, https://www.firerescue1.com/firefighter-training/articles/stop-training-firefighters-like-theyre-becoming-marines-7zWofA1KP2gA7R61/

Q23: If it were up to you, what would the Thorold Fire and Emergency Services be like in 5 to 10 years from today, and why? How do you propose we get there?

The respondents are divided as to whether the future of the TFES should include more full-time staff or more volunteer staff. Whether the respondents are pro- career personnel or pro-volunteer personnel, they all agree that to meet the growing volume of emergency calls, it is in the best interest of the TFES and the City of Thorold to have a coherent and harmonious composite fire service. The high turnover of volunteer staff must be addressed, and respondents believe that the work schedule between the career and the volunteer staff is a contributing factor in the high turnover.

Q24: Are there any other comments or suggestions you would like to add to help improve the services the TFES delivers to the community?

Staffing is a recurring concern throughout the survey. Section 3 of the Fire Master Plan will address this concern in detail.

2.7.3 Council/CAO Survey

The City of Thorold is governed by a Mayor and eight City Councillors who serve a four-year term. During the canvassing of the City Council, three councillors were interviewed via Zoom, and two councillors opted to complete the online survey.

Q1: Do you think the residents are getting fair value for their tax dollars concerning the fire services provided? If so, why? If not, why?

When asked if the respondents believe that the public is getting value for their dollar from the TFES, three of the five respondents thought that the residents were getting fair value for their tax dollars in relation to the fire protection services provided. One respondent felt that civil servants were overpaid and that systemically municipal services, in general, were not getting "fair value."

Q2: Do you believe the number of fire stations and apparatuses adequately protects the community? If so, why? If not, why?

All the respondents expressed concerns about the port Robinson station (station 3). The aging facility and the issue with recruitment and retention are alarming for the respondents. The railway and the Welland Canal are also a concern for the strategic location of fire stations. Some respondents felt that with the anticipated city growth, the need for station 3 will be re-evaluated.

Q3: Based on the community's future growth do you feel that the TFES can keep up with the demands in its present state? If not, what is missing?

Most of the respondents felt that future growth would impact fire protection services and that the current TFES could not keep with the increase in call volumes and complexity and types of emergency calls. Additional staffing, equipment, apparatus, as well the re-evaluation of the status of station 3 will be required to meet future demands for fire protection services.

Q4: What do you believe are the greatest strengths of the Thorold Fire and Emergency Services?

All respondents were categorical about the current management, the volunteer workforce of the department, and the positive relationship between the career and the volunteer firefighters as the TFES's greatest asset. The sentiments expressed reflect the dedication and professionalism of the workforce and complement the internal survey, which affirmed the commitment of the membership to TFES.

Q5: What are the top risks/issues facing the TFES (i.e., barriers to response/delivery of service, recruitment, and retention)?

Recruitment and retention of volunteer firefighters is an issue for all respondents. Respondents felt that the TFES needs to develop a recruitment strategy. Others felt that competitive wages may be an incentive for retention. One respondent spoke of a lingering negative relationship between the career and the volunteer workforce as a catalyst for retention failure with the volunteer workforce. The career versus volunteer strained relationship has been mentioned several times by staff as well as Council respondents.

Q6: How would you like to see the Thorold Fire and Emergency Services in the next 5 to 10 years in relation to serve the communities, keeping in mind the growth of the community?

Most respondents foresee the success of the TFES in meeting the anticipated growth through a coherent composite fire service, with the right mix of career and volunteer firefighters harmoniously working together for a common goal. One respondent sees the need for evidence-based data to inform the sustainability and affordability of the TFES, given the anticipated growth.

Q7: Can you share any input from your constituents or staff concerning the Thorold Fire and Emergency Services, whether they are cost-related, service-related, or fire safety and education-related?

Two respondents referred to fire protection services' continuously increasing costs, especially wages. Another two respondents believe that prioritizing prevention and public life safety education functions over suppression functions would pay dividends in the long run for the TFES and the City of Thorold regarding fire protection services. Finally, one respondent felt that the closure of station 3 was a vital issue with constituents of the Port Robinson area.

Q8: Are there any other aspects or factors you believe should be considered that we have not touched on already?

The respondents identified the following as topics not addressed in the survey:

The TFES needs to invest energy in increasing its revenue opportunities, such as inspection for short-term accommodations and part one fines
The TFES should investigate opportunities for shared services with surrounding municipalities.
The City of Thorold should engage the Niagara Region in a study of the benefits and drawbacks of the regionalization of the fire protection services.
The City of Thorold needs to invest in a robust composite fire service to mitigate creeping costs and ensure continued community safety.

Q9: Are there any other aspects or factors you believe should be considered that we have not touched on already?- For example, fire station closures or additions, a reduction in services by the fire department, or even an increase in the level of fire services by hiring more fire personnel.

All respondents are concerned about the impact of rapid growth on the cost of fire protection services and the impact on staffing needs. Most respondents feel that a balanced composite fire service is a necessity to meet the future needs of the City's fire protection services. The challenge is the recruitment and retention of the volunteer workforce. This is a factor that weighs heavily on the minds of the respondents.

The cost of fire protection services, given the anticipated and rapid growth, is equally concerning for the respondents. Many respondents indicated or inferred that fire protection services are the highest cost to the taxpayers of all the municipal departments.

2.8 Next Steps

As the community grows, the frequency of calls and the need for service will grow. Based on this growth, there will be a future need for additional staff in the Fire Prevention Office, the Fire Suppression Division, Training, and administration support staff. Supporting information relating to the staffing needs of each division can be found in the sections associated with this FMP document.

The provincial government has recently introduced updates to the *FPPA*, *1997*, which outline the responsibilities of a community and its fire department in terms of service level expectations. The updates to the *Act* are:

- Mandatory certification for firefighters, fire service instructors (training officers), and fire service inspectors (fire prevention inspectors).
- Mandatory annual review of CRAs, and a new one to be completed every five years.
- Mandatory inventory of all building stock, including identifying those with LWC components.

These amendments are significantly impacting the Ontario Fire Service in ensuring proper training and completion of CRAs.

2.9 Residential Fire Sprinklers and Monitoring Fire Alarm Systems

The NFPA, along with the Canadian Association of Fire Chiefs (CAFC) and the Ontario Association of Fire Chiefs (OAFC), strongly support residential sprinkler systems to reduce the risk to life and property from fire. Because fire sprinklers react so quickly, they can dramatically reduce the heat, flames, and smoke produced in a fire. Properly installed and maintained fire sprinklers help save lives, reduce damage, and make it safer for firefighters.

Fire sprinklers have been around for more than a century, protecting commercial and industrial properties and public buildings. Many people do not realize that the same life-saving technology is also available for homes, where roughly 85% of all civilian fire deaths occur.

2.9.1 Facts About Home Fire Sprinklers

Our research has shown a lack of Canadian statistics, therefore requiring the utilization of American statistics for our report. Since there are so many similarities in building construction, the statistics are an accurate reflection of the Canadian experience. Automatic sprinklers are a highly effective and reliable element of total system designs for fire protection in buildings.

According to a report by the NFPA, "Some type of sprinkler was present in an estimated average of 51,000 (10%) of the reported structure fires during 2015 – 2019.[8]

Source: U.S. Experience with Sprinklers

- 85% of all U.S. fire deaths occur in the home.
- The civilian death rate of 1.4 per 1,000 reported fires was 81% lower in homes with sprinklers.
- The civilian injury rate of 25 per 1,000 reported fires was 31% lower in homes with sprinklers. Many injuries occurred in fires too small to activate the sprinkler or in the first moments of a fire before the sprinkler operated.
- The average firefighter injury rate of 13 per 1,000 reported home fires was 89% lower where sprinklers were present.
- Where sprinklers were present, flame damage was confined to the room of origin in 97% of the fires compared to 74% without sprinklers.

In 2021, some fire safety statistics[9] were released, including:

- 40% of fire deaths happen in homes with no smoke alarm.
- 17% of home fire deaths occur due to a non-functional smoke alarm.
- 25% of smoke alarm failures with a deadly outcome occur due to a dead battery.
- $235 million per year in property damage is caused by children starting fires.
- Smoke alarms decrease the risk of dying in a home fire by 50%
- Electric space heaters are the cause of 80% of house fires with a deadly outcome.
- Fire sprinklers can reduce the chance of death in homes by 80%
- According to the NFPA, firefighters in the US respond to a fire every 24 seconds.
- Fire sprinklers use less water than fire hoses.
- Sprinklers activate on an individual basis.

[8] "NFPA Research - U.S. Experience with Sprinklers, Marty Aherns, October 2021", accessed December 2022, https://www.nfpa.org/News-and-Research/Data-research-and-tools/Suppression/US-Experience-with-Sprinklers

[9] Safeatlast - The Latest Fire Safety Statistics - Stay Safe in 2021, Published January 30, 2021, accessed December 2022, https://safeatlast.co/blog/fire-safety/

- The risk of property loss is reduced by 70% in homes with sprinklers.

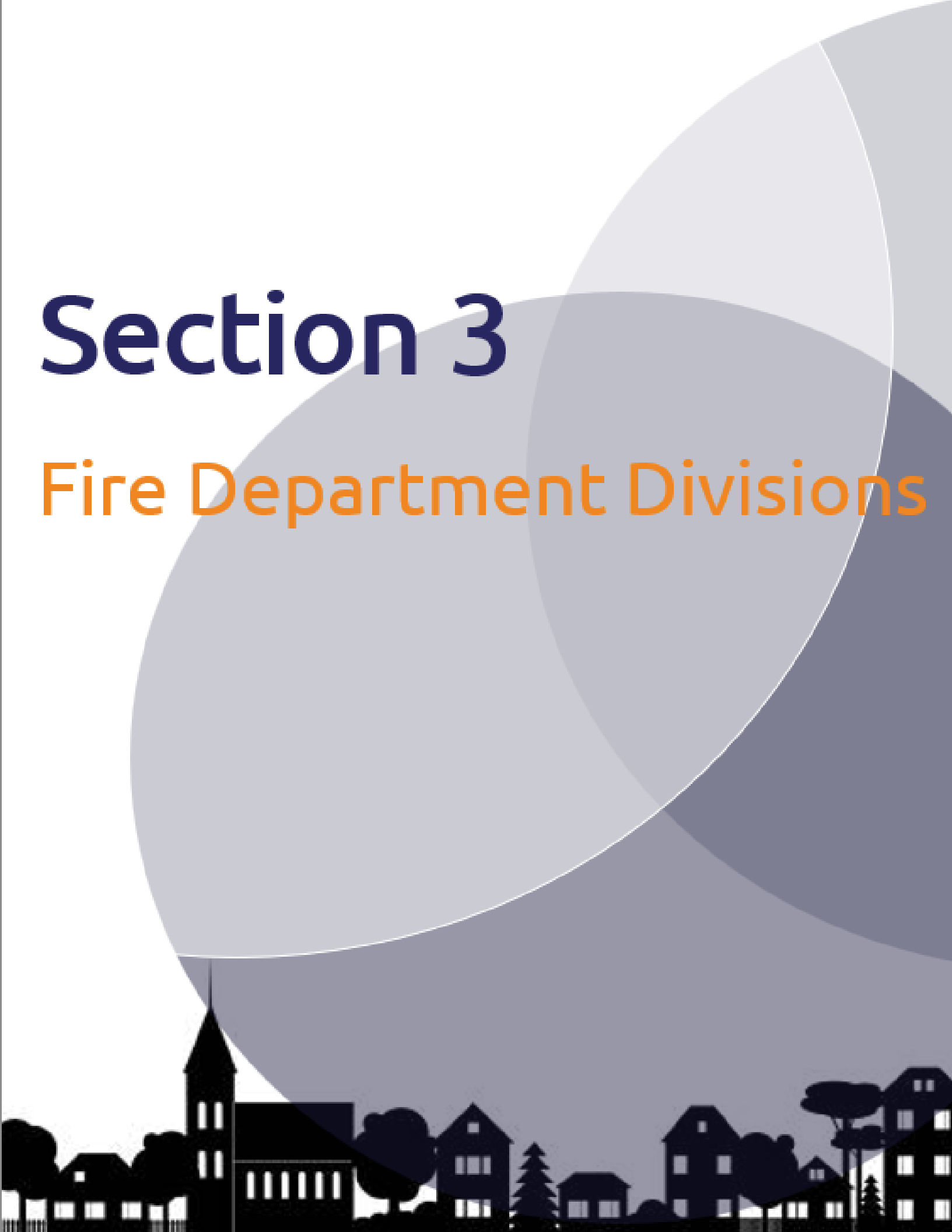
The Home Fire Sprinkler Coalition (HFSC) is a leading resource for accurate non-commercial information and materials about home fire sprinklers for consumers, the fire service, builders, and other professionals.

By working with the developers and the public to promote the installation of home sprinkler systems, the TFES would be demonstrating a proactive approach to educating the public on another viable option for homeowners to help reduce the fire risk. As such, it is recommended that TFES investigate this safety initiative as part of its fire prevention and fire and life safety education initiatives.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
2	TFES should investigate the Home Sprinkler program as part of its fire prevention and public life safety education initiatives	Short-Term (1 to 3 years)	Staff Time	By working with the developers and the public to promote the installation of home sprinkler systems, the TFES would be demonstrating a proactive approach to educating the public on another viable option for homeowners to help reduce the fire risk.
3	With the completion of the Community Risk Assessment and this Fire Master Plan, the Fire Chief should utilize the components of the two documents' recommendations for developing and implementing the Community Risk Reduction Plan.	Short-Term (1 to 3 years)	Staff time, but some may include associated costs	Keeping track of the Community Risk Assessment and Fire Master Plan recommendations, along with implementation and outcomes resulting from the recommendations, will ensure proper tracking and accountability.

Section 3

Fire Department Divisions



SECTION 3: FIRE DEPARTMENT DIVISIONS

The purpose of a comprehensive Fire Master Plan is to guide the Thorold Fire and Emergency Services through the next 10 years of population and municipal growth. The final Plan will review the department's overall operations and assess the current resources against existing and future needs. The final report will aim to align with the Thorold Fire and Emergency Services' Strategic Plan and assist in a planning framework to guide policy, organizational, capital, and operational decisions and ensure that current and future needs are met in a fiscally feasible and responsible manner. The plan will provide flexibility to adapt to future community needs and circumstances.

3.1 Community Safety – Four Lines of Defence

The OFM community safety model identifies three lines of defence - Public Education, Safety Standard and Enforcement, and Emergency Response. EMG views Emergency Management as the fourth, inclusive line of defence and has added this into the overall concept of community safety. Reference to these lines of defence helps to set the goal of this divisional review.

i. Public Education – educating residents has proven to be the most effective means in reducing and preventing fire and property damage incidences. 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.

ii. Safety Standards and Enforcement – ensuring that the inspection and enforcement of fire codes occur so buildings meet the required safety standards.

iii. Emergency Response – the availability of well-trained and well-equipped firefighters to respond and effectively mitigate the incident is the last defence identified by the OFM. The staff, equipment, and fire station locations impact how the emergency is mitigated.

iv. 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 5.

Along with these four lines of defence, the following industry best practices help to inform a fire department of industry expectations. Neither the National Fire Protection Association (NFPA) nor the FUS are legislated requirements, but EMG strongly encourages utilizing them to improve a community's fire service.

3.2 National Fire Protection Association1201

The NFPA 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 notes:

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

To accomplish this, an FESO must ensure open and timely communications with the CAO and governing body (Council in this case), create a masterplan for the organization, and ensure mutual aid and automatic aid programs are in place, along with an asset control system and maintenance program.

To provide an emergency service clearer focus on the ultimate goals for emergency response criteria, the NFPA suggests that response times should be used as a primary performance measure in emergency services. NFPA 1720: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments* (NFPA 1720) refers to goals and expectations for volunteer emergency services that have been incorporated into the evaluation of the emergency services' response and staffing needs.

3.3 Administration Division

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 with senior management (CAO) on issues/updates that need to be conveyed to council.

The Administration Division in the Thorold Fire & Emergency Services comprises the Fire Chief, deputy Fire Chief, administrative assistant, and two volunteer district chiefs. These positions are identified on the departments organizational chart.

The administrative assistant works under the direction of the Fire Chief at Thorold fire station one. It is a full-time position. She provides support services to the career station on duty for that day. It is staffed with four firefighters each day. She assists the Deputy Chief, captain of training, captain of fire prevention, and fire prevention officer as needed administratively along with the volunteer stations two and three, which have 110 paid-on-call firefighters.

- The Administrative Assistant's duties include but are not limited to any Freedom of Information Act (FOIA) requests.
- Maintains confidentiality and security of confidential information about personnel and other private information within the city and department.
- Must have in-depth knowledge of how the fire department operates daily, administratively and operationally.
- Maintaining all payroll and finance records. Whether it be helping to develop or maintaining a budget or calculating annual payments to the volunteers for their services provided to the city.
- Along with maintaining all documents, forms, standard operating procedures and other pertinent documents utilized by the department.
- Provides support when the Emergency Operations Center is open for a large event or for the annual training exercise.
- Prepares all meeting agendas, and attends meetings as needed or requested by the Fire Chief.
- Basically, she works for a lot of different people doing whatever they may request her to do. A very busy position.

- The chief listed as one of her strengths in the SWOT analysis for administration was her work ethic. She kept working until she had completed what was requested of her. Their only weakness was needing more administrative help.

It was noted that after talking with the Fire Chief and administrative assistant, there is a need for another administrative assistant due to the heavy workload and day-to-day operations of both a career and volunteer department. It was noted that consideration about HIPPA requirements might need to be considered in relation to the position's functions and type of employment.

It is recommended that another administrative assistant be hired due to the heavy workload and day-to-day operations of both the career and volunteer departments. Also, that consideration about HIPPA requirements should be considered in relation to the position's functions and type of employment.

It was noted that all firefighters' personnel records were kept as paper copies in their own folders with the administrative assistant, under lock and key. They are in the process of trying to digitize everything new that comes in for personnel. It is recommended that the department digitize all old employee personnel records that are kept by the department.

3.3.1 Budget Preparation and Maintaining

The Fire Chief is the person who oversees the development, maintenance, and overall, the person in charge of the fire department budget. He gets his direction from the Chief Administrative Officer, who reports directly to the City Council members. He must follow a written purchasing policy. The career station can not have any fund-raising events to solicit funds from outside sources. However, the volunteer stations are allowed to solicit funds from outside sources.

- The Fire Chief must identify the needs and resources needed by the department for the upcoming year. This will allow them to meet their stated levels of response, which have been approved by the City Council members.
- Budget requests must pass local government and public comments and reviews.
- It must be able to be adopted by the City Council members.
- He must administer the approved budget with periodic reviews and revisions as needed throughout the budget year.
- Must be able to close out the budget year appropriately while following the guidelines set forth by the council

The Deputy Chief assists the Fire Chief in his over all developing, maintaining, and executing of the current year's budget. Other officers submit their budget requests to him for review and comments.

The Administrative Assistant's main task in dealing with the Department's budget is to keep the Fire Chief advised of any concerns, changes, or discrepancies within the current years budget. The Administrative Assistant's duties include the following items but are not limited to these only.

- Tracking expenditures regularly
- Identifying any discrepancies or overspending.
- Communicating budget information to the Chief and Deputy Chief on planning accordingly.
- Recommend adjustments to the budget if circumstances arise or if initial amounts are not enough to cover the expenses.
- She tracks all spending within the budget to ensure items are bought and records are kept for each transaction.
- Helps in the development and maintaining of the annual budget, along with calculating annual payments to the volunteers for their services provided to the city.

The volunteer District Chiefs stated they had no part in the budget process. They could make suggestions only.

3.3.2 Policies and Procedures

Current job descriptions are in place for every position within the fire department, which are listed in the current fire department organizational chart. Each one is current with a date put in service and any reviewed date associated with them.

All department Standard Operating Guidelines (SOGs) were last updated in 2019. It is recommended that the department do another update of all SOGs. It has been several years since the last update. It appears there are SOGs in place that direct all aspects of the department and its day-to-day operations.

There is one mutual aid agreement in place. It is with the Niagara Regions Departments that assist the Thorold Fire & Emergency Services as needed. And they assist the other departments as needed. The Fire Chief had no idea when this agreement was last reviewed. It is recommended that all agreements used by the department, including maintenance on equipment or any other type agreements be reviewed at a specific time frame established by the department.

The volunteer stations have access to these policies and procedures as well.

3.3.3 Record Keeping, Information Management

There are public records maintained that the department uses, such as written fire reports, inspection reports and other records that citizens can request a copy of. All records are maintained and disposed

of per local and provincial mandates. There is a records retention policy in place that is used by the department, which follows city policy. The Deputy Chief periodically reviews all reports to ensure they are accurate.

The officer in charge of each call enters each fire report into the FirePro2 record management system after each call at station one. At the volunteer stations, they fill out a paper copy and fax it to the captain at station one, and they enter it into the Fire Pro2 RMS. This is where all records kept by the department are stored. All three of the stations are connected via each station's record management system. The volunteer stations have only read access to the Fire Pro2 RMS. All records go into the same FirePro2 records management system. It is recommended that the district chief and captains at the volunteer level have access to the Fire Pro2 RMS, where they can enter their own reports.

The City of Thorold has an Information Technology (IT) department that ensures the fire department has the software and equipment needed to do all aspects of their job. This keeps all hardware and software up to date and what the department needs.

There is an SOG that addresses data governance, data accuracy, and data analysis that the department uses to ensure that all data collected is accurate and what is needed by the department.

Only the district chiefs have an email address assigned to them through the City IT department. It is recommended that the captains at the volunteer station be given a business email address through the city. They do a lot of work through the department and need one. By using their personal one, their emails may go to a spam folder.

3.3.4 Inventory Control and Purchasing

The department does not have an inventory control program in place. There are only check sheets used to determine what is on all apparatuses. There is an option in Fire Pro2 Records Management System (FPRMS) to add all equipment, tools, apparatus, and any items used by the department. It will also include all maintenance and testing as needed. When you have all items placed in the inventory section of Fire Pro2, you can set it to alert you when service or testing is due for a specific piece of equipment. It is recommended that all equipment, tools, apparatus, and any items used by the department be placed into the FPRMS used by the department. The volunteer stations did not have an inventory of all equipment, tools, and apparatus.

3.4 Fire Prevention and Public Education

Part II of the *Fire Protection and Prevention Act (FPPA), 1997*, requires that every municipality in the province of Ontario establish a program that includes public education with respect to fire safety and specific components of fire prevention. In addition, Part II states that every municipality shall provide such other fire protection services as it determines may be necessary in accordance with its needs and

circumstances.[10] The focus of these programs should be based on community risk reduction, and it is the Community Risk Assessment (CRA) process that identifies these risks. Including emergency response, these necessary programs are referred to as the *Three Lines of Defence*.

1. Public Fire Safety Education
2. Fire Safety Standards and Code Enforcement
3. Emergency Response

Using the information provided, EMG reviewed the risk reduction practices in the City of Thorold against legislated requirements and recommended minimum standards. EMG conducted a Strengths, Weaknesses, Opportunities, and Threats (SWOT) Analysis of the current fire prevention and public education programs to best inform the recommended strategic direction for TFES. This analysis identified opportunities for improvement related to fire prevention and public education programs in the community. Enhancing the first two lines of defence will provide meaningful fire life safety benefits to the City of Thorold.

The Fire Chief should be commended for the development of Safe Operating Guideline (SOG) 3.2 Fire Prevention and Public Education Policy, which establishes the framework for a Fire Prevention Organization (FPO) that is consistent with the recommendations contained in NFPA 1730 *Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations.*

3.4.1 Legislative Requirements and Technical Guidelines

The *FPPA, 1997,* establishes the framework for fire protection services in Ontario and in doing so identifies minimum requirements and municipal responsibilities under the legislation. *The Ontario Fire Code*, a regulation under the *FPPA,* establishes the minimum life safety requirements for both within occupancies and, when required, for areas around occupancies for such things as maintaining fire routes and building access points. Considered to be an "owners code", the building owner is legally responsible for complying with the *Fire Code*, except where otherwise specified. In addition to the *Fire Code*, the following regulations provide mandated direction to fire departments for the provision of fire prevention and community risk reduction activities, as well as mandatory training requirements for those tasked with these activities.

[10] Ontario, "Fire Protection and Prevention Act, 1997, S.O. 1997, c. 4". accessed August 2024, https://www.ontario.ca/laws/statute/97f04

Regulations

- O. Reg. 364/13 Mandatory Inspection – Fire Drill in Vulnerable Occupancy
- O. Reg. 150/13 Enhancing Fire Safety in Occupancies Housing Vulnerable Ontarians
- O. Reg 343/22 Firefighter Certification
- O. Reg. 378/18 Community Risk Assessments
- O. Reg. 365/13 Mandatory Assessment of Complaints and Requests for Approval

In addition to the above noted regulations, the Fire Marshal for the Province of Ontario also provides guidance to the fire service in the form of Fire Marshal Directives, and through the publication of technical guidelines and reports. This information is available on the Ontario Office of the Fire Marshal website, and these documents provide best practice directions for fire departments.

The Ontario Building Code ensures that when buildings are constructed, they are built in a manner that makes the building safe for people once occupancy is granted. While buildings must always comply with the Ontario Building Code, once occupied, the Ontario Fire Code is the primary reference for fire and life safety. Regulations such as the Fire Code and Building Code rely on other supporting standards and codes such as the Underwriters Laboratories of Canada (ULC), the National Fire Protection Association (NFPA and the Canadian Standards Association (CSA). NFPA standards, for example, are widely accepted as consensus standards that are referenced by fire departments for direction on organizational and program competency.

3.4.2 National Fire Protection Association Standard on Fire Prevention

Using the CRA as a foundation, fire prevention programs and their associated activities should be measured against industry best practices and standards. NFPA 1730 provides direction to the authority having jurisdiction for these activities.[11] Organized into the following sections, NFPA 1730 establishes the minimum requirements relating to the organization and deployment of fire prevention inspection and code enforcement, plan review, investigation, and public education operations.

[11] NFPA, accessed July 2024, https://www.nfpa.org/for-professionals/codes-and-standards/list-of-codes-and-standards/free-access

Organization

- The authority having jurisdiction (AHJ) shall maintain a written statement or policy that establishes the following:
    1. Existence of the Fire Prevention Organization (FPO)
    2. Services that the FPO will provide
    3. Basic organizational structure
    4. Expected number of FPO members
    5. Functions that FPO members are expected to perform

Community Risk Assessment

- Establishes a process to identify and analyze community risks that impact the services of the FPO and assists in the development and implementation of a community risk reduction plan.

Fire Prevention Inspection and Code Enforcement

- Establishes the organization and deployment of fire prevention resources for fire prevention inspection and code enforcement activities and specifies the minimum frequencies for fire prevention and code enforcement inspections and the minimum staff necessary to perform those inspections in existing occupancies.

Plan Review

- Establishes the organization and deployment for plan reviews and field acceptance inspections for new construction and renovations with a focus on emergency vehicle access, water supply and changes to, or additions of, life safety systems.

Investigations

- Establishes the organization and deployment of investigation activities related to origin and cause, and circumstances of any fire, explosion, hazardous materials incident, or other hazardous condition.

Public Education Programs

- Establishes the organization and deployment of the FPO for public education activities that reduce community risk, demonstrate the value of public education activities, and implement appropriate prevention and intervention activities.

As illustrated in Figure 7, NFPA 1730 identifies four classifications for minimum inspection frequency related to occupancy risk.

FIGURE #3: NFPA 1730 MINIMUM INSPECTION FREQUENCY

Occupancy	NFPA 1730
High-Risk	An occupancy that has a history of high frequency of fires, high potential for loss of life or economic loss, or that has a low or moderate history of fires or loss of life, but the occupants have a high dependency on the built-in fire protection features or staff to assist in evacuation during a fire or other emergency. High risk occupancies should be inspected annually.
Moderate-Risk	An occupancy that has a history of moderate frequency of fires or a moderate potential for loss of life or economic loss. Medium risk occupancies can be inspected every 2-years.
Low-Risk	An occupancy that has a history of low frequency of fires and minimal potential for loss of life. Low risk occupancies can be inspected every 3-years.
Critical Infrastructure	The assets, systems, and networks, whether physical or virtual, that are so vital to the community that their damage or destruction would have a debilitating effect. To be determined by the Authority Having Jurisdiction (AHJ).

Thorold is experiencing extreme growth in all areas of residential occupancies, including dethatched, semis, row, and high rises. Estimates anticipate that once what is currently under development is completed, it will result in over 10,000 new residents. The City is one of the fastest growing municipalities in the country, and with this growth, some services will not meet demands. The TFES will see increased calls for service and demands on inspection and public fire safety education activity.

The development and assessment of the profile data for The City of Thorold has identified the risks facing the community and created the foundation for fire inspection and public safety education schedules and programs to be prioritized and developed. Fire inspections and public education are critical factors in reducing risk and fires in a community.

Although the Department must enhance public education efforts, a heavy workload and division-related matters that have been prioritized before public education are limiting factors. Implemented

in 2019, the Fire Pro Records Management System (RMS) continues to be used more broadly across the service. However, statistical information regarding public fire safety educational activity is limited, so assessing existing programs' effectiveness is difficult.

3.4.3 Fire Underwriters Inspection Frequency

Fire Underwriters Survey (FUS) is a national organization that provides data on public fire protection for fire insurance statistical work and underwriting purposes of subscribing insurance companies and represents approximately 85 percent of private sector property and casualty insurers in Canada.[12] To establish fire insurance rates for residential and commercial properties, insurance companies need a reliable representation of a community's fire protection services. To obtain this information, FUS examines the effectiveness of fire service programs and the associated impact these programs have on property losses as a result of fires. One element of the FUS evaluation is an assessment of the FPO's fire safety control and community risk mitigation efforts. As part of this process, FUS will assess the following recommended inspection frequencies against existing inspection practices.

FIGURE #4: FUS INSPECTION FREQUENCY CHART BASED ON OCCUPANCY TYPE

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

[12]Fire Underwriters Survey, History of the Fire Underwriters Survey, accessed July 2024, https://fireunderwriters.ca/about.html

Each occupancy type will have different fire code requirements, and each will have its own inherent risks and degree of complexity. Each building has its unique characteristics and differing Fire Code requirements based on size, occupant load, construction, use, age, and maintenance.

3.4.4 Fire Inspection and Fire Code Enforcement

Fire safety standards and enforcement are the second line of defence against reducing the occurrence of preventable fires. The FPPA mandates that every municipality establish a program that includes public education with respect to fire safety and certain components of fire prevention.[13] Using the CRA as the foundation and NFPA 1730 as a minimum requirement reference, Technical Guideline TG-01-2012 – Fire Safety Inspections and Enforcement offers direction on fire code inspection and enforcement programs to the FPO.

Conducting fire inspections of all occupancies can be a factor in reducing the occurrence of fire and thus protecting people, property, and the environment from the negative impacts of fire should one occur. By regularly conducting inspections, fire code infractions can be identified and corrected prior to a fire starting. Regular inspections safeguard occupants by ensuring that the necessary fire detection equipment in buildings has been installed and maintained according to the Ontario Building Code and the Ontario Fire Code requirements and that records supporting the mandated schedule for testing and maintenance exist.

Fire inspectors should routinely collaborate with municipal building officials on fire safety plans and building occupancy requirements for new construction, as well as planned renovations to ensure that buildings comply with the *Building* and *Fire Codes*.

The necessity for fire inspectors to maintain thorough and accurate records associated with inspections of properties, as well as interactions with occupancy owners or managers, is vital. Records of inspections should include references to fire code violation findings, actions to be taken, and the results specific to compliance. In some instances, this may include the issuing of orders, the resulting outcome of the orders, and preparing and filling court documents.

For a proactive inspection program to be successful, an up to date and accessible database of municipal building stock information is necessary for assuring buildings are safe for the public, appropriate use, and all fire and life safety features are in place and function as intended. Maintaining this database is typically collaborative between the Building Division and the Fire Department.

[13] Ontario, "Fire Protection and Prevention Act, 1997, S.O. 1997, c. 4", accessed July 2024, https://www.ontario.ca/laws/statute/97f04

From 2011 to 2020, there were approximately 220 fire-related deaths in Canada each year, with most of these deaths, 81% were classified as unintentional (accidental). Additional circumstances surrounding unintentional fire related deaths during the same period are as follows:[14]

- Residential fires are the leading type of unintentional fire-related death in Canada.
- The four-month period between December and March saw more than twice as many unintentional residential fire-related deaths as the warmer months.
- Most unintentional residential fire-related deaths were a result of smoke inhalation.
- Males and adults aged 45 and older are more likely to die in a residential fire.
- At least one modifiable risk factor was present in approximately half of unintentional residential fire-related deaths.
- At least 1 in 7 unintentional residential fire-related deaths occurred in residences without a working smoke alarm.
- At least 1 in 5 unintentional residential fire-related deaths were caused by cigarettes or other smoking material.

The importance of a proactive fire inspection program that is geared toward reducing the occurrence of fires and limiting the resulting negative impacts cannot be overemphasized. One must look no further than the fact that from 2011 to 2020, 23% of unintentional residential fire-related deaths in Canada occurred in multi-unit dwelling units.

MPAC data indicates that The City of Thorold has 111 multi-unit residential occupancies that range from 3 to 7 or more separate dwelling units. Statistically, these properties are at greater risk, and considering the more stringent requirements of the Ontario Fire Code for these types of properties indicates that multi-unit dwelling units should be proactively inspected on a regular basis for compliance with the fire code.

The safety of the residents of Thorold and its firefighters can be positively impacted by an inspection program that is focused on ensuring code-compliant buildings within the community that perform as intended under fire conditions. Educating building owners about the fire safety features of their buildings and motivating them to embrace a culture of fire safety are key components to a successful program.

[14] Statistics Canada, "The Daily - Circumstances surrounding unintentional fire-related deaths, 2011 to 2020", accessed October 2024. https://www150.statcan.gc.ca/n1/daily-quotidien/220616/dq220616b-eng.htm

Appropriately trained fire inspectors can help reduce a municipality's risk by implementing a proactive inspection program. Alternatively, failing to identify hazards resulting from non-fire code compliance or ensuring code infractions are rectified once identified can significantly increase a municipality's liability risk when a fire occurs. The use of the Provincial Offences Act for the enforcement of the fire code is an appropriate component of an effective fire safety program and is detailed in the OFM Technical Guideline Fire Safety Inspections and Enforcement (TG-01-2012). A fire service that endorses the use of the Provincial Offences Act can achieve much success in achieving fire code compliance.

In addition to using the Provincial Offences Act, the Province of Ontario is implementing a process which will provide municipalities with a method of applying penalties for regulatory violations to the *Ontario Fire Code* through the ability to establish Administrative Monetary Penalties. Applying these penalties, when possible, vs using the Provincial Court system will provide a more flexible, cost-effective and quick process to enforce the fire code while avoiding the court system for more minor offences.

Current Status

The TFES has established a formal Prevention Division and currently employs a full-time Captain Fire Prevention Officer (FPO) and an FPO. Both members are certified to NFPA 1031 *Standard for Professional Qualification for Fire Inspector and Plan Examiner*, and NFPA 1035 *Standard on Fire and Life Safety Educator, Public Information Officer, Youth Firesetter Intervention Specialist and Youth Firesetter Program Manager Professional Qualifications.* SOG – 3.4 Fire Safety Inspections and Fire Code Enforcement provides clear direction to staff regarding these activities and defines the responsibilities of all officers within the service. Except for providing significant latitude for the issuance of Inspection Orders for Fire Code violations, the SOG is sound in all other respects.

The TFES Prevention Division conducts fire inspections based on complaints and requests, mandatory vulnerable occupancies, and some higher-risk occupancies such as apartment buildings, schools and restaurants. EMG's review of the data required for the CRA revealed that the TFES cannot meet NFPA 1730 or FUS inspection frequency, thus leaving many occupancies uninspected. It is possible that fire risks could exist in these buildings, and not identifying and enforcing violations of the OFC leaves these risks outstanding. The current size of the city, existing building stock, and anticipated development requires robust fire inspection and code enforcement programs. Current workload and a lack of resources are limiting factors.

Opportunities for Improvement

The City of Thorold has over 9000 inspectable properties. EMGs review of the prevention division activity logs indicates that 778 inspection/public education activities were conducted in 2023. The activities are categorized as follows and vary in nature with respect to complexity and the amount of time each occurrence requires on the part of fire prevention staff.

- Notice to Building Owner
- Plans Review – Building
- Complaint
- Licensing
- Request
- Public Education
- Fire Safety Plan Review
- Post Incident Follow-Up
- Site Plan Review
- File Search

The City should be commended for taking a proactive approach to inspecting and licensing residential rental units as detailed in By-law 109-2017. The by-law, which does not apply to occupancies that are classified as apartment buildings, is designed to protect the health and safety of the persons residing in residential rental properties. While it must be noted that the TFES is meeting its statutory obligation to conduct complaints and request inspections, the staff time commitment associated with inspections of residential rental properties is a limiting factor with respect to the department assuming a proactive posture regarding a more comprehensive inspection program.

Of the 778 inspection activities that were conducted in 2023, 321 or 41.2% were residential rental property inspections. Due to the on-going pressure associated with the need for additional economical housing and funding opportunities being provided by upper levels of government to expand this housing market, it should be anticipated that increased pressure on the residential rental property inspection program will take place.

By-law 109-2017 indicates the fire service will collect a Fire Plan Review fee for each inspection conducted. EMGs review of Schedule "A" to the By-law, Rates and Fees 2024, was not able to clearly identify a specific reference to such a fee. EMG was also unable to determine if the fees are being collected and appropriately flowing back into the fire department revenue budget line.

The body of work directly associated with Residential Rental Licensing warrants the immediate addition of one FTE Fire Prevention Officer. The Chief should confirm that the fees are being collected as per the By-law, that there is a direct reference to the fee for this service in Schedule "A" to By-law No. 06-2017, and that the revenue being collected is flowing back to the fire service. The fees collected for Residential Rental Licensing will offset the cost of an additional FPO.

During the research conducted for this report, EMG learned that a Building Division Report, supported by the Fire Chief requesting the addition of an FPO, will be before Council for consideration in the fall of 2024. Based on the assessment of the Fire Prevention Division workload, EMG is supportive of the Council's approval of this position.

Until the present and future staffing needs can be assessed according to Annex "C" of NFPA 1730, as is discussed in the Public Education section, an option for the TFES is to adopt the hybrid inspection schedule that is detailed on page 30 or the CRA while working towards meeting either NFPA 1730 or the schedules of the FUS.

3.4.5 Fire Investigation, Origin and Cause

The CPSE Community Risk Assessment: Standards of Cover states that the agency operates an adequate, effective, and efficient program directed toward the origin and cause investigation and subsequent classification of fires, explosions, and other emergencies that endanger life or property. The agency should conduct a thorough risk analysis to determine the need for a fire investigation program. A formal review of the program should be conducted annually to determine the impacts of the fire investigation, origin, and cause program and its efforts to reduce fires based on community assessment, standards of cover, and measures of performance. [15]

A primary goal of any fire prevention division is to identify areas of deficiency and apply corrective actions to prevent future fires. To meet this goal, the fire service should endeavour to investigate the origin and cause of fires within the community. NFPA *1033 Standard for Professional Qualifications for Fire Investigator* identifies the minimum job performance requirements (JPRs) for fire investigators. A fire investigation conducted by a trained FPO to determine the fire's origin, cause and circumstances provides the opportunity to support public fire safety education efforts, obtain important statistical information, support criminal investigations, and ultimately prevent future injuries and loss of life as the result of fires.

Not all fire departments will have the resources to adequately conduct fire investigations. In this regard, the OFM is a support function for municipal fire services. It is responsible for investigating all fatal fires, fires that cause severe injuries, intentionally set fires, explosions, multi-unit dwelling fires that spread beyond the unit of origin, large loss fires, and fires that may draw significant public attention.

[15] CPSE Community Risk Assessment Standards of Cover (2) (1).pdf,. accessed on October 18, 2024. https://strategicfire.org/wp-content/uploads/2016/12/2016-rogers-ppt-pdf.pdf

It is vital that the local fire service be an engaged participant in the investigation proceedings as in many instances, a fire investigation as the result of one or more of these circumstances may include the involvement of multiple agencies such as the following:

- Law enforcement
- Technical Standards and Safety Authority
- Electrical Safety Authority
- Ministry of Labour
- Ministry of the Environment
- Office of the Coroner
- Insurance Industry

Current Status

Currently, both the Captain FPO and the FPO are certified to the NFPA 1033 standard. Their investigation activities are supported by two additional suppression division members who are also certified. Standard Operating Guideline (SOG) 3.6 Fire Cause Determination provides all TFES personnel with a guideline for determining fire origin and cause determination and the investigation of fires. The SOG is well structured and includes a criterion-based notification process for normal working hours and after hours. The determination of cause, origin and circumstances is to be conducted in accordance with NFPA 921 *Guide for Fire and Explosion Investigations,* and when necessary, based on the circumstances, may involve support from the OFM, Niagara Regional Police, TSSA, ESA, Hydro One and the Thorold Building Department. In addition to the documented findings of Prevention Division personnel, fire suppression crews are required to complete a Firefighter Observation Form.

Opportunities for Improvement

Fire investigations can range from short duration to taking days to complete, depending on the circumstances surrounding the event. In 2023, TFES FPOs conducted 107 Post Incident Follow-Ups. These activities also include fire code-related matters identified by the firefighters during response to incidents, passed on to the Prevention Division for investigation. The activities also include fire-related investigations, and although EMG was not able to identify the exact number of fire investigations that were conducted, the extent of post-incident activity supports the need for additional staff.

To understand the number of fire investigations conducted annually and the associated staff time commitment, the Fire Chief should separately and thoroughly track these activities.

3.4.7 Fire Prevention Officer Professional Qualifications

Introduced in April 2022, Ontario Regulation 343/22 Firefighter Certification details the qualification requirements for fire prevention officers. Municipalities have until July 1, 2026, to ensure that personnel performing these activities achieve the necessary certification. It should be noted that this certification is the minimum requirement to perform this activity. In the opinion of EMG, further training, as offered through the Ontario Fire College[16] and supporting organizations such as the Ontario Fire Prevention Officers Association[17] and the Canadian Association of Fire Investigators,[18] should be accessed through memberships in these organizations.

In accordance with Regulation 343/22, personnel performing activities which include fire inspection, fire and life safety education, and fire investigation require, as a minimum, the following training and certification:

- NFPA 1031 Fire Inspector I
- NFPA 1031 Fire Inspector II (if inspections include a facility which stores, handles or uses flammable or combustible liquids)
- NFPA 1072 Haz Mat Awareness
- NFPA 1035 Fire and Life Safety Educator I
- NFPA 1033 Fire Investigator (for personnel whose regular work assignment includes fire investigation)
- Ontario Fire Code Parts 2 & 6
- Ontario Fire Code Part 9 Retrofit
- Ontario Fire Code Parts 3 & 5 (for personnel who require NFPA Fire Inspector II certification)
- Ontario Fire Code Part 4 Flammable Liquids (for personnel who require NFPA Fire Inspector II certification)

[16] Ontario Fire College, Contact North - All courses", accessed June 2024, https://ofc.contactnorth.ca/course/index.php

[17] Ontario Municipal Fire Prevention Officer's Association, accessed June 2024, https://omfpoa.com/

[18] Canadian Association of Fire Investigators, accessed June 2024, https://www.cafi.ca/

Ontario Regulation 150/13[19] requires the Chief Fire Official responsible for approving fire safety plans for buildings containing a care occupancy, a care and treatment occupancy, or a retirement home must have completed a program or course acceptable to the Fire Marshal.

Current Status

TFES Prevention Division staff are certified to NFPA 1031 *Standard for Professional Qualifications for Fire Inspector and Plan Examiner,* NFPA 1033 *Professional Qualification for Fire Investigator* and NFPA 1035 *Standard on Fire and Life Safety Educator, Public Information Officer, Youth Firesetter Program Manager Professional Qualifications.*

EMG was not able to determine if the Fire Chief or any other staff has completed the training required by Ontario Regulation 150/13 to approve fire safety plans in vulnerable occupancies. This training is designed to prepare Chief Fire Officials and Assistants to the Fire Marshal to effectively evaluate and approve Fire Safety Plans that meet the regulatory requirements and thus ensure fire safety in occupancies housing vulnerable people in Ontario.

Opportunities for Improvement

The introduction of 24-hour shifts for suppression firefighters has contributed to the increasing inability of fire departments to recruit internal candidates for Fire Prevention Officer positions. An opportunity exists for TFES to establish a professional development program for personnel who may be interested in conducting fire code inspections and enforcement, fire investigations, and public education activities in the community.

Additional opportunities exist to provide suppression officers with NFPA 1031 Level I training. Conducting this training would provide TFES with additional capacity to conduct less complex inspections, such as food vendors and business licenses, thus alleviating some of the workload on the FPOs.

3.4.8 Public Education

Public education is the first line of defence in reducing the occurrence of fires. For the citizens of a community to fully embrace a culture of fire safety, the fire department must be seen as proactive and sincere with its public fire safety programming. When resources are appropriately allocated and program activities focus on demographic-specific educational initiatives, the reliance on the last line of defence, fire suppression, can be lessened. By law, and at a minimum, every municipality in Ontario must establish a public education program concerning fire safety and include specific components

[19] Ontario, "O. Reg. 150/13: Fire Code", accessed June 2024, https://www.ontario.ca/laws/regulation/r13150

such as a smoke alarm program. Based on the needs and circumstances of the community, fire departments are left to determine any additional programming that is required. Statistical information related to fire causes, such as cooking related fires, the time-of-day fires occur, the demographics of those experiencing fires, and the location of fires within the community as some examples, can be very helpful with program development.

Most fatal fires investigated by the OFM between 2012 and 2021 had no working smoke alarm or no evidence of any smoke alarms. Despite significant efforts on the part of Ontario Fire Services to educate people on the importance of working smoke alarms, complacency among citizens continues to plague the fire service. A previously conducted Ipsos Reid poll for the Canadian Association of Fire Chiefs and Kidde Canada found that 55 percent of Canadians who currently own and reside in a house admitted to temporarily removing batteries from a smoke alarm or taking it off the ceiling to silence a remote alarm caused by cooking steam. Among the respondents, 51 percent acknowledged forgetting to reinsert the batteries or reattach the alarm, with 40 percent indicating a short period and 11 percent said for a long time.

It continues to be statistically evident that the most critical public education message is the requirement for working smoke alarms in residential occupancies. It is proven that properly installed working smoke alarms provide occupants ample time to escape their homes in the event of a fire. The public requires regular reminders of the importance of installing, testing and maintaining smoke alarms. Along with promoting the need for functioning smoke alarms, other fire safety programs are designed to target specific segments of the population or general in nature with a focus on safe cooking practices and home fire escape planning as examples. The following are examples of public education programs:

- Adopt a school program – geared toward kindergarten to grade 6 or 8 students, with a focus on an introduction to general fire safety. This type of program is an excellent opportunity for fire suppression division involvement.
- Older and Wiser are designed for seniors and focus on the unique hazards they face.
- Babysitter Program – focuses on fire safety for youth babysitters
- Apartment Safety – explains tenant and landlord responsibilities and specific hazards in multi-unit residential occupancies.
- Fire Extinguisher Training – presents an opportunity for revenue generation while teaching the general use of fire extinguishers.
- Home Escape Planning – typically applied in conjunction with Smoke/CO alarm programs.
- Juvenile Fire Setters Program (previously known as TAPP-C, The Arson Prevention Program for Children.

- Farm Safety – many comprehensive programs have been developed by fire services with a significant agricultural fire risk.
- Heating and Wood Burning Safety – geared toward the maintenance of heating and wood-burning appliances.

The goal of public fire safety programs is to not only educate the public, but, when necessary, to alter behaviours and attitudes toward the importance fire safety. The following organizations have resources available to assist fire departments with the development of public education programs.

- National Fire Protection Association (NFPA)
- Ontario Office of the Fire Marshal (OFM)
- Ontario Municipal Fire Prevention Officers Association (OMFPOA)
- Fire Marshal's Public Fire Safety Council (FMPFSC)
- Ontario Association of Fire Educators (OAFE)

Current Status

Like other program areas, TFES has sound SOGs regarding public fire safety education. SOG – 3.1 Smoke Alarms, CO Alarms and Home Escape Planning in Residences provides staff with direction regarding smoke and CO alarm installation regulations and public education initiatives. Previously mentioned, SOG – 3.2 provides direction on fire and life safety education activities. An effective fire service will embrace a culture where public fire safety education is a shared responsibility among all staff and within all divisions. Recruit training programs should, as a priority include certification to NFPA 1035 *Standard on Fire and Life Safety Educator, Public Information Officer, Youth Firesetter Intervention Specialist and Youth Firesetter Program Manager Professional Qualifications.* A lack of well-documented public education activity made it difficult for EMG to thoroughly evaluate the extent and impact of these programs. EMG was able to determine that the smoke alarm program, as mandated by the OFM does exist. However, the door-to-door campaign is primarily limited to the training nights during Fire Prevention Week, which also includes an open house where fire safety material is provided to the public. Additional public education activities include cooking safety and smoke/CO alarm safety for seniors, as well as educational events with pre-high school children.

Opportunities for Improvement

As previously mentioned, workload and staff are the limiting factors regarding risk reduction efforts associated with public education activities. NFPA 1730 outlines a process within Annex "C" of the standard to assist fire departments in determining present and future staffing needs. Ultimately, the Council determines the level of Fire Prevention based on the needs and circumstances of the community.

Annex "C" is not part of the requirements of NFPA 1730 but is included for informational purposes only. To determine present and future staffing needs, including the addition of a dedicated Public Fire Life Safety Educator, the Fire Chief should complete the five-step process, which includes the following steps:

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

Completing this process will assist the TFES Fire Prevention Division in identifying the services it wants to offer and what can be delivered based on present staffing levels.

3.4.9 Records Management System

A fire department's Records Management System (RMS) is critical to every aspect of its operation. The ability to thoroughly track departmental activities for future assessment with respect to program success is vital for continued improvement. Having timely access to appropriately documented records ensures a seamless flow of information between the fire department and those seeking information regarding the service's activity associated with specific properties. A robust RMS should include modules that allow for recording information about incidents, training, properties and inspection activity, public education activity, personnel management, asset management, fire hydrants, scheduling, per-incident plans, and more.

Current Status

The TFES is currently using the Fire Pro 2 RMS. Acknowledged by TFES during EMG's research for this report, current records management practices specifically related to the need for more detailed documentation is a recognized deficiency.

Fire Pro is an adequate RMS with the ability to record all inspection activity, public education activities, fire safety plan information, pre-incident plans, property contact information, and orders issued under the fire code related to each property.

The Fire Chief should add detailed criteria to existing SOG's, providing direction for record-keeping practices associated with all fire prevention and public education activities.

3.5 Training and Career Development

Whatever services the fire department provides, training is required to teach new skills and improve and maintain existing skills. The Fire Chief is responsible for ensuring that firefighters are trained to the level of services identified in the establishing and regulatory bylaws.

The training captain is a new position that has been in existence since February 2024. The Fire Chief stated that the Department's training program has made considerable progress since his hiring. The Deputy Chief stated that the training was more organized and the buy-in was better for both the career and volunteer firefighters. All firefighters receive the same training and educational opportunities regardless of whether they are career or volunteer.

NFPA 1500 states that "training programs should include but not be limited to the following: community risk reduction (fire prevention, public education, investigation, etc.), health and safety, fire suppression, emergency medical, human resources (leadership, supervision, interpersonal dynamics, equal employment opportunity, etc.), incident management system, hazardous materials, technical rescue, information systems and computer technology, position-specific development (firefighter, company officer, chief officer, telecommunicator, investigator, inspector, driver/operator, etc.)."[20]

Current Status

The Thorold Fire & Emergency Services (TFES) has a unique training program. Station one is the career-staffed station with volunteers, which operates 24/7. The other two stations are stations two and four, which are staffed with only volunteer firefighters. One full-time Training Captain oversees the training for all three stations that make up the Thorold Fire & Emergency Services. The volunteer District Chiefs oversee the training at their stations with assistance from the Training Captain. The training captain has only been in this position since February 2024.

Even though the Department does not have a dedicated training center for live burn training, they conduct annual live burn training at the Niagara Falls Training Tower every September, October, and November. Every firefighter is required to attend one of these live burn training events. The annual recruit live burn training is held at the Fort Erie Training Tower, where they receive fire training. It is recommended that in the future, as the City continues to grow and more money becomes available, the City investigates the building and development of a Class fire training center for the Department. A sea container tower would be beneficial and cost-effective for the department's training needs.

The Department has automatic aid and mutual aid agreements with outside departments. When asked if they had trained with these departments, they stated that they had not. It is recommended

[20] NFPA 1500 Annex A.5.1.1

that the department conduct annual training with its mutual aid departments to ensure a more coordinated response when more than one fire department is working at a fire or emergency scene.

Annually, the Training Captain, the two District Chiefs from each station, and a union representative from the volunteer stations sit down and discuss their training programs from the previous year and plan the following year's training. The Training Captain has developed an annual training calendar for the Department. He puts it out quarterly for the firefighters to see and plan their schedule. All training is for both the career and the volunteer stations. This ensures everyone is trained to the same level. A Standard Operating Guideline (SOG) in place details the minimum hours of training a firefighter must have annually. If they do not obtain the minimum annual hours, disciplinary action can take place.

All training records are kept in the FirePro2 record management system (FPRMS). The records include Job Performance Requirements (JPR's) and standards that all firefighters are to be trained to. The Captains at station one input all the training. At the volunteer stations, they fill out paper training records and fax them to the Captains at station one that records their training in the FPRMS. It is recommended that the District Chiefs and Captains at the two-volunteer stations be given access to the FPRMS and be allowed to enter their training records for their respective stations.

It was noted that the career station had certified levels of specialty training for these disciplines, but the volunteers lacked all levels of certification. It is recommended that the Training Captain develop plans to aid the volunteer firefighters in obtaining their required and needed certifications.

- Firefighting (including rescue): Level 2
- Vehicle collision and extrication: None
- Grass, brush and forest firefighting: None
- Emergency Medical Intervention (including defibrillation): First Aid, CPR/AED Naloxone.
- Hazardous Materials Response: Awareness level. By the end of year operations level.
- Fire Prevention: Officer Level 4
- Fire Code Enforcement: Officer Level 4
- Public Fire Safety Education: Officer Level 4
- Confined Space Rescue: None
- Water/Ice Rescue: Yes
- High/Low Angle Rope Rescue: None

It is recommended that the department obtain training certifications for vehicle collision and extrication, confined space rescue, and high and low-angle rope rescue for both career and volunteer firefighters.

The Thorold Fire Stations two and four have incorporated best practices as outlined by Fire Underwriters Survey (FUS) to achieve and maintain the superior tanker shuttle service accreditation. Their accreditation dates are June 4, 2022, through June 4, 2027.

The present-day training is focused on ensuring that all members are trained according to the NFPA 1001, *Standard, Level I* by July 1, 2026. Ensure that all members have completed the theoretical and practical skills needed for obtaining this certification. Along with this, they should develop plans to address any firefighters who do not meet this standard. All firefighters at the career station have this certification. Numerous volunteer firefighters at all three stations do not have his certification. It is recommended that the Fire Chief and the training officers identify a training path for members to attain certification in NFPA 1001 Level I by July 1, 2026. And have plans in place to address any firefighters who do not meet this standard.

3.5.1 Auto Extrication

There is no current auto extrication certification program for the Thorold Fire & Emergency Services. It is just part of what they do. As such, it is recommended that the Department adopt a current auto extrication certification program that aligns with the Ontario Regulation 343/22, to ensure everyone has the proper training and that all stations are trained in similarly and consistently

3.5.2 Officer Training

Other than officer development, there does not appear to be a clear path to becoming an officer. The Fire Chief stated that they were working on development for other ranks within the department.

There is no formal officer training program for the district chiefs and captains at the two volunteer stations. It is recommended that the TFES develop a formal officer training program for each position within the department that is based on associated NFPA 1021 standards. This will also provide a succession planning path for those wanting to be promoted. This would ensure that all the volunteer officers in the TFES are trained to the same standard regardless of the station where they work.

It was noted that all three stations had updated job descriptions in place for all positions offered by the department. These job descriptions include minimum levels of training for every position in the department.

3.5.3 Health & Safety Officers

It was noted that most of the career firefighters are trained to NFPA 1521 certified incident safety officer at station one. Only five firefighters from the volunteer stations were certified. It is recommended that all officers, career or volunteer be trained to NFPA 1521 for an incident safety officer. This would ensure that there are fully trained and certified incident safety officers available for every incident, no matter how small or large.

3.5.4 Career Development

Career development is a key component of succession planning as it prepares firefighters for the future and provides a foundation for members to possess the knowledge, skills, and abilities to be promoted and take on formal management and leadership roles in the fire department. Not every member will want to be promoted, but providing education and training opportunities for those who wish to attain specific levels of certification is a proactive way of developing corporate competency and creating a sound succession plan that helps retain members.

As members participate in the career development program and take the education and training for their role, they should also be placed into acting positions within each station. Having members act in the desired capacity for temporary assignments allows them to see if the position is a fit for them, and it allows the senior staff to observe the members to see if they are the right fit and if further training is required. The process needs to be implemented on a consistent basis throughout the department as it is "one department."

Every position should have a clear job description that identifies the roles and responsibilities, education, training, and prerequisites for the position. Currently, the career and volunteer staff go through a written promotional process and a practical component as well during their respective promotional opportunities.

3.6 Fire Suppression/ Emergency Response

As previously noted, the TFES is a composite fire department comprised of career and paid-on-call (volunteer) staff. Currently responding out of three fire stations, the fire suppression division consists of 16 career firefighters and four career captains, all assigned to Station 1. Career staff are supported by a contingent of paid-on-call firefighters (consisting of 56 firefighters and 12 captains). Paid-on-call staff are assigned to Station 2 and Station 4. It is important to note that when the crew is available and not committed to another incident, the current deployment model requires career staff from Station 1 to respond to every emergency incident in the city.

Prior to 2019, the TFES deployment model consisted of four Fire Response Areas, with each having one fire station. Based on health and safety issues stemming from a 2021 facility assessment, Station

3, which is in the southeast area, was ordered to be closed by the fire chief, and paid-on-call staff were relocated to Station 4 for deployment. At the time of writing this report, Station 3 continued to be closed. The necessity for re-establishing Station 3 as an operational fire station through rehabilitation or new construction is assessed in Section 4.

To conduct an accurate staffing and response analysis for any fire service, a benchmark, or standard, to which the existing deployment and response model is measured against must be identified. Additionally, to make an informed decision regarding appropriate staffing requirements, consideration must be given to the following points:

- Does the TFES have an approved response criterion as a benchmark?
    - Has Council provided direction to the Fire Chief (based on the chief's informed recommendations) on the expected response times that are to be achieved by the fire department?
    - If so, is the department meeting this response criterion consistently, or is it struggling to do so?
- Is the department experiencing challenges with getting the required number of career and paid-on-call firefighters to respond consistently and ensure an appropriate level of response?
- What impacts will future population growth and associated occupancy development have on changes in the number of fire stations and staffing levels?

3.6.1 National Fire Protection Association (1720)

NFPA 1720 provides an organized approach to defining levels of service, deployment capabilities, and staffing levels for volunteer fire departments. The purpose of the standard is to specify the minimum criteria addressing the effectiveness and efficiency of the volunteer and the combination of public fire suppression operations, emergency medical service, and special operations delivery to protect citizens of the jurisdiction.[21]

Chapter 4 of the NFPA 1720 (2020) Standard identifies the number of response personnel for the deployment of volunteer firefighters:

[21] NFPA, accessed September 2024, https://www.nfpa.org/NFPA-Solutions?gad_source=1&gclid=CjwKCAiA0rW6BhAcEiwAQH28ItyU5it85gk4iVpUTVbu6Ng255DaFVZmKczZrzh74peAQUJQVtAjPRoCfB4QAvD_BwE&gclsrc=aw.ds

- *Section 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.*
- *In Urban areas with a population greater than 1,000 per square mile or 2.6 km2, there should be a minimum response of 15 staff within 9 minutes, 90 percent of the time.*
- *In Suburban areas with a population of 500 – 1,000 per square mile or 2.6 km2, there should be a minimum response of 10 staff within 10 minutes, 80 percent of the time.*
- *In Rural areas with a population of less than 500 per square mile or 2.6 km2, there should be a minimum response of 6 staff within 14 minutes, 80 percent of the time.*
- *In Remote areas with a travel distance of greater than or equal to 8 miles or 12.87 km, there should be a minimum response of 4 staff directly dependent on travel distance, 90 percent of the time.*

As previously mentioned, Thorold falls under the Suburban demand zone criteria, which is the staffing and response time objectives for structural firefighting, based on a low-hazard occupancy such as a 2000 ft2 two-story, single-family home without a basement and exposures and the percentage accomplishment of those objectives for reporting purposes which is 80%.

3.6.2 NIST

Studies conducted by the National Institute of Standards and Technology (NIST) and the NFPA concluded that no interior attack is to be made by firefighters until sufficient personnel arrive on the scene. The exception is when a minimum of three firefighters and one officer arrive on the scene to form the initial fire suppression attack team.

The study conducted by NIST conducted over 60 fireground experiments to measure 22 essential firefighting and rescue tasks in a typical residential structure. The finding demonstrated that the size of firefighting crews substantially affects the fire service's ability to protect lives and property in residential fires. Performed by a broad coalition in the scientific, firefighting and public-safety communities, the study found that four-person firefighting crews were able to complete the 22 tasks 30 percent faster than two-person crews and 25 percent faster than three-person crews. The report is the first to quantify the effects of crew size and arrival times on the fire service's lifesaving and firefighting operations for residential fires. The study provides quantitative data to Fire Chiefs and the council responsible for determining safe staffing levels, station locations, and appropriate fire service funding.

The most frequent and deadly fires in Ontario remain those in single-family residential structures, where fire risks increase exponentially. Every minute of delay is crucial to the safety of both occupants and firefighters and directly impacts the extent of property damage. In this context, the NIST study

directly focused on the fire service's two main objectives: extinguishing the fire and rescuing occupants.

The four-person crews could complete search and rescue 30 percent faster than the two-person crews, and 5 percent faster than three. Five-person crews were faster than four-person crews in several key tasks. Other researchers have also documented the benefits of five-person crews for fires in medium- and high-hazard structures, such as high-rise buildings, commercial properties, factories, and warehouses.

This study explored fires in a residential structure, where most fatal fires occur. The researchers built a "low hazard" structure as described in National Fire Protection Association Standard 1710 (NFPA 1710), a consensus standard that provides guidance on the deployment of career firefighters. The two-story, 2000-square-foot test facility was constructed at the Montgomery County Public Safety Training Academy in Rockville, Md. Fire crews from Montgomery County, Md., and Fairfax County, Va., responded to live fires within this facility.

NIST researchers and their collaborators conducted more than 60 controlled fire experiments to determine the relative effects of crew size, the arrival time of the first fire crews, and the "stagger," or spacing, between the arrivals of successive waves of fire-fighting apparatus (vehicles and equipment). The staggered time simulates the typically later arrival of crews from more distant stations compared to crews from nearby stations.

Crews of two, three, four and five firefighters were timed as they performed 22 standard firefighting and rescue tasks to extinguish a live fire in the test facility. Those standard tasks included occupant search and rescue, time to put water on fire, and laddering and ventilation. Apparatus arrival time, the stagger between apparatus, and crew sizes were varied.

Researchers also performed simulations using NIST's Fire Dynamic Simulator to examine how the interior conditions change for trapped occupants and the firefighters if the fire develops more slowly or rapidly than observed in the actual experiments. The fire modelling simulations demonstrated that two-person, late-arriving crews can face a fire twice the intensity of the fire faced by five-person, early arriving crews. Additionally, the modelling demonstrated that trapped occupants receive less exposure to toxic combustion products—such as carbon monoxide and carbon dioxide—if the firefighters arrive earlier and involve three or more persons per crew. [22]

[22] NIST, "Landmark Residential Fire Study Shows How Crew Sizes and Arrival Times Influence Saving Lives and Property", accessed September 2024, https://www.nist.gov/el/fire-research-division-73300/firegov-fire-service/landmark-residential-fire-study-shows-how-crew

Regardless of the fire size, there was a notable difference in toxicity, measured as fractional effective dose (FED), for occupants during rescue, depending on the arrival times of the crews. Occupants rescued by crews that arrived early were exposed to fewer combustion products than those rescued by crews that arrived later.

The fire modelling showed clearly that two-person crews could not complete essential fireground tasks in time to rescue occupants without subjecting them to an increasingly toxic atmosphere. For a slow-growth rate fire with two-person crews, the FED was approaching the level at which sensitive populations, such as children and the elderly, are threatened. For a medium-growth rate fire with two-person crews, the FED was far above that threshold and approached the level affecting the general population. For a fast-growth rate fire with two-person crews, the FED was well above the median level at which 50 % of the general population would be incapacitated. Larger crews responding to slow-growth rate fires can rescue most occupants prior to incapacitation, along with larger crews responding to medium-growth rate fires that are early arriving. The result for late-arriving (two minutes later than early arriving) larger crews may result in a threat to sensitive populations for medium-growth rate fires. Statistical averages should not, however, mask the fact that there is no FED level so low that every occupant in every situation is safe.

3.6.3 Sudbury Arbitration Award

Citing clear health and safety risks to deploying fewer than four firefighters to structure fires, on August 31, 2020, an arbitrator decided the City of Sudbury was required to add more on-duty personnel at its fire station in the Val Therese community. In its decision, the board of arbitration accepted that the risk is not only to the two firefighters on duty staffing the apparatus but also to later arriving firefighters because a fire will grow exponentially and more dangerous with fewer personnel available on scene to combat it during its early stages. The final award ordered Sudbury to increase the number of firefighters on duty in Val Therese from two to four. Testimony during the hearing focused on applicable standards, when flashover occurs, the flammability of modern building materials and home contents and the moral dilemma firefighters face when they must wait outside a burning structure where people are trapped because fewer than four personnel are on scene. The Sudbury award is consistent with science-based international standards, including National Fire Protection Association (NFPA) 1500, which addresses firefighters' occupational health and safety, and NFPA 1710, which addresses firefighter deployment in urban areas. [23]

[23] Internation Association of Fire Fighters, "Minimum of Four Fire Fighters Required for Health and Safety, Rules Ontario Arbitration Panel, accessed September 2024, https://www.iaff.org/news/minimum-of-four-fire-fighters-required-for-health-and-safety-rules-ontario-arbitration-panel/

3.6.4 Response Data

Based on the needs and circumstances of the community, to assist the fire department in determining what its goals are for fire protection services, NFPA 1720 suggests that response time and on scene staffing should be used as a primary performance measure for determining response to structural fires. Other than the NFPA 1720 reference to Structural Firefighting in the E&R By-law, EMG was not able to clearly identify a council-approved response time criterion for TFES.

When considering the response times and needs of a community, the fire response curve presents the reader with a general understanding of how rapidly a fire can grow within a compartment in 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. The response time of a fire department is a function of several factors including, but not limited to:

- Call handling time, or the time it takes for the dispatch communicators to assess a call and notify the fire department.
- The assembly time of career firefighters at the station, and the time it takes paid-on-call staff to attend the station prior to departure. Assembly time also considers time after arrival on the scene while preparing to work on the fire.
- The time it takes to move between the station and the location of the incident, or travel time. There are several factors that will influence travel time, such as distance, weather, road conditions and closures, traffic, level rail crossings, and lack of direct routes due to water courses.

As illustrated in the following fire propagation diagram, the necessity for early intervention of fire suppression efforts is critical. Similarly, time is of the essence when responding to other life-threatening situations such as medical events, motor vehicle collisions, and technical rescues, for example.

FIGURE #5: TIME VS. COMBUSTION

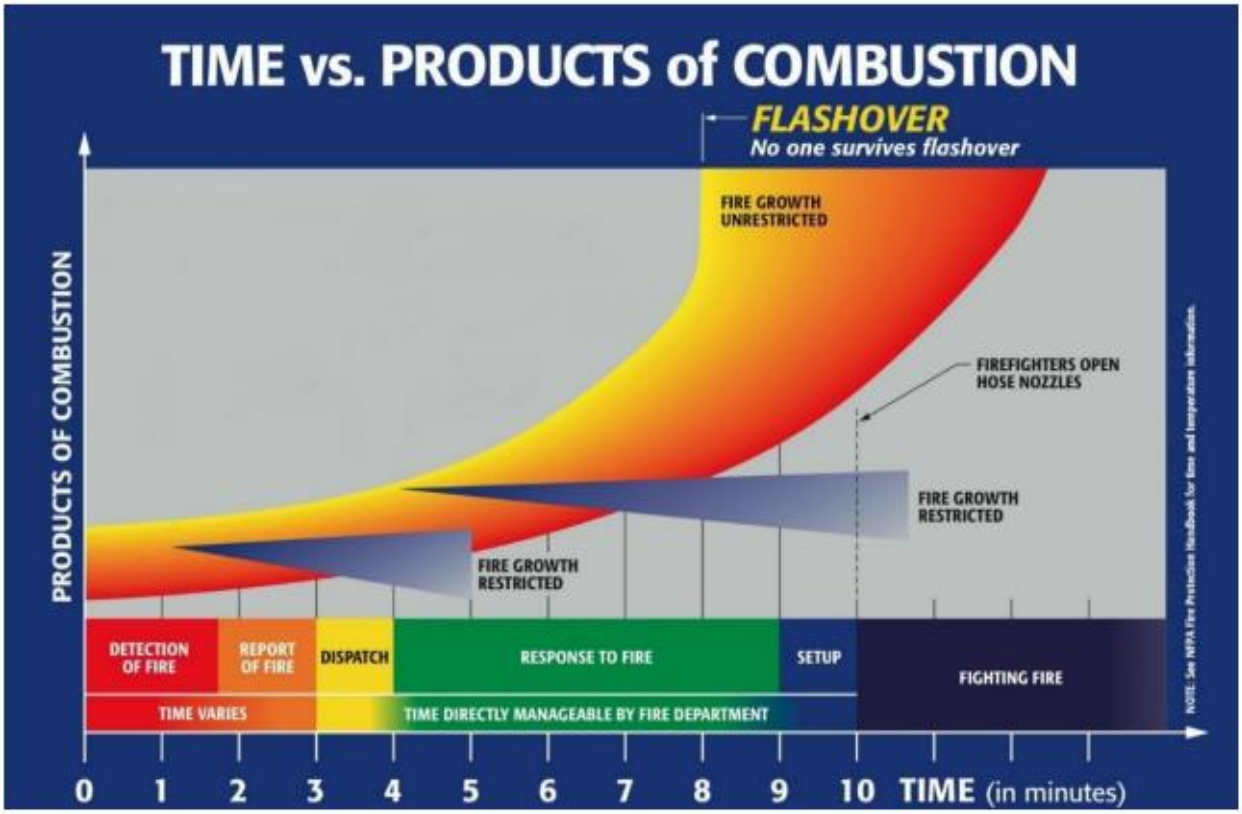


Figure #5 shows the time intervals in the fire propagation curve:

- Detection Of Fire – this is when an occupant or passerby discovers that there is a fire. When discovered, the fire may be in the incipient phase or may have been burning for quite some time before being detected.
- Report Of Fire – this is the time it takes for someone to call 9-1-1 and report the fire.
- Dispatch – this is the time it takes for the dispatch communicator to process the information being received and dispatch the appropriate resources.
- Response To The Fire – response time is a combination of the following:
    - Turnout Time – how long it takes career firefighters to don their PPE, board the apparatus, fasten seat belts and respond or how long it takes paid-on-call firefighters to get to the station to respond on an apparatus. (A composite fire department such as the WBFD should track and analyze turnout time for career and paid-on-call firefighters).

- Travel Time – the time it takes from when the officer notifies dispatch that they are responding until the time it is reported that the crew is on the scene.

- Setup Time – the time it takes for the IC to conduct a size-up and formulate an incident action plan while the firefighters prepare to act on the fire. (NFPA 1410 Standard on Training for Emergency Scene Operations can be used to exercise basic evolutions to evaluate minimum acceptable performance during training for fire suppression activities).
- Fighting Fire – the time between the application of an agent on the fire and extinguishment.

TFES should track all response times from the time of dispatch to the time of arrival on the scene of incidents. When tracking time measurements, the 80th percentile criterion is the NFPA 1720 recommended practice.

The travel time polygons in Figure 6, depict a six-minute drive time from Station 1 (career), with a ten-minute drive time for Station 2 and 4 (paid-on-call), respectively.

***Note**: six- and ten-minute response zones for Stations 1, 2 and 4 are calculated by the NFPA recommended response guidelines, noted in the respective NFPA Standards (1710 and 1720).*

The travel time polygons as follows were calculated using GIS software, which uses the road network in the City of Thorold with the posted speed limits. Also factored in is the direction of travel, traffic lights and stop signs. While the posted speed limit is used, fire apparatus may sometimes exceed the speed limit when responding to calls if it is safe to do so. Conversely, there will be times due to traffic congestion, weather conditions, or construction that fire apparatus will be required to travel at speeds lower than the posted speed limit. Therefore, using the posted speed limit is an appropriate calculation in determining travel time.

The polygons establish what are known as first-due response zones, which is the geographical areas surrounding a fire station in which a company from that station is projected to arrive first on the scene of an incident. An analysis of the geographical coverage generated by the polygons indicates the TFES theoretically satisfies the NFPA 1720 Suburban Criteria response time requirement of 10 minutes.

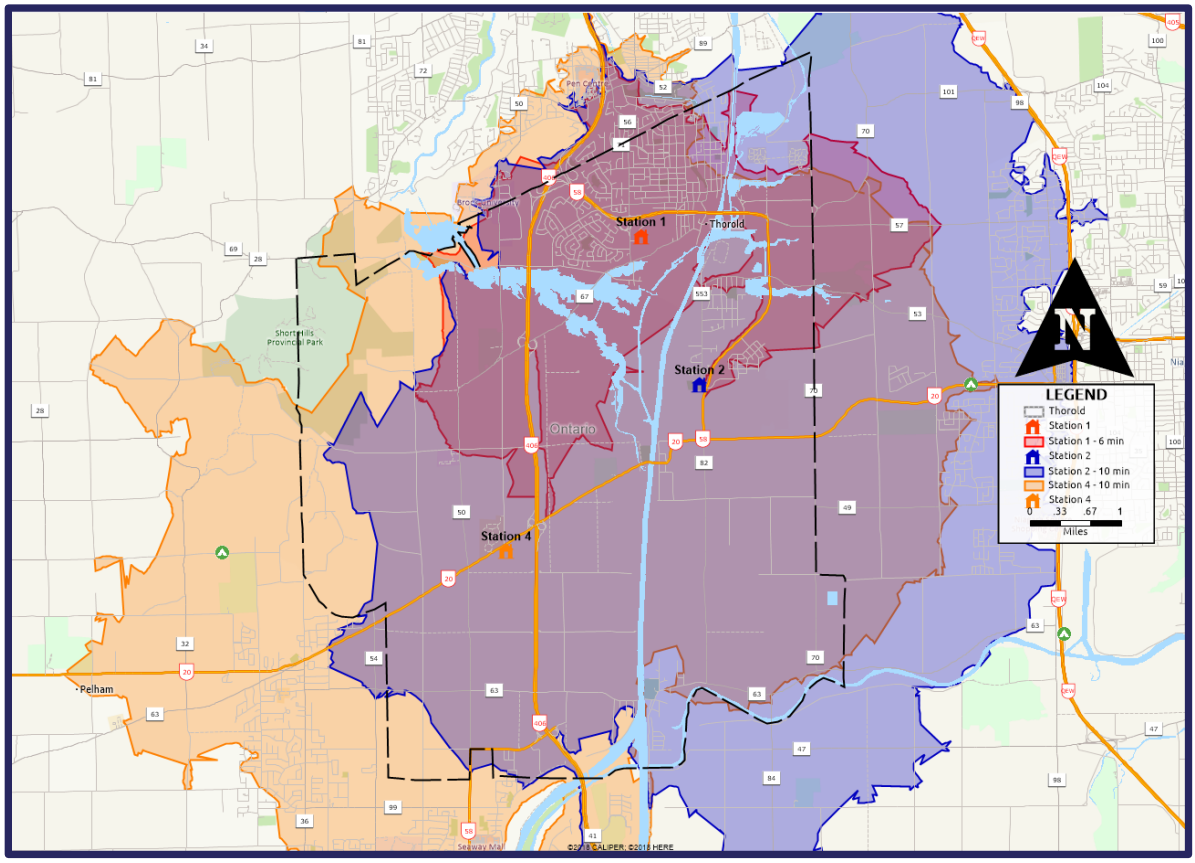
A further comparison of the GIS-generated response coverage against actual incident response data for fire related incidents for the years 2021, 2022, and 2023, shows that the average response time of the first apparatus on the scene meets the NFPA 1720 Suburban Criteria. The second apparatus on the scene met the 10-minute requirement in 2021 and was very close to meeting the requirement in 2022, and 2023.

A further analysis of 2023 TFES structural fire response data indicates that the average number of firefighters, including both career and paid-on-call, that turned out to 20 fire related incidents was 12.7 firefighters. The lowest turnout reported was four and the highest turnout was 30. Although an

average turnout of 12.7 firefighters satisfies the Suburban criteria of NFPA 1720, it can be concluded that response time is the limiting factor in TFES regularly meeting the Suburban Criteria response time standard on a regular basis and not that of on-scene staffing.

It should also be noted that many emergency incidents, such as medical as an example, can be effectively mitigated by a single engine (pumper) company crew. Other incidents, such as motor vehicle collisions, technical rescues, and hazardous materials incidents, will require additional staff on the scene. TFES response data indicates that the average firefighter turnout for all recorded incidents was 5 in 2023. To ensure an adequate number of firefighters arrive at the scene of an incident, TFES SOG – 6.1 Minimum Staffing for Responding on Fire Apparatus requires that pumper apparatus shall respond with a minimum of three firefighters and tanker apparatus shall respond with a minimum of two firefighters. Discretion is provided to the on-duty Captain or the Fire Chief to authorize fire apparatus to respond without the required minimum,

FIGURE #6: DRIVE TIMES FOR STATIONS 1, 2 AND 4



As noted in Figure 6, the City is presently well covered by the three fire stations.

TABLE #7: APPARATUS ANNUAL AVERAGE RESPONSE TIME OR FIRE RELATED INCIDENTS

Year	Pump 1	Pump 1A	Pump 2	Pump 3	Pump 4
	Average Response Time				
2021	8:52	10:54	9:39	18:33	20:39
2022	8:11	20:56	10:54	25:58	24:49
2023	7:01	17:02	10:19	50:50	25:34

TABLE #8: APPARATUS AVERAGE RESPONSE TIME ALL INCIDENTS

Year	1st Apparatus On The Scene Average Response Time	# Of Incidents	2nd Apparatus On The Scene Average Response Time	# Of Incidents Requiring Two Pumpers	3rd Apparatus On The Scene Average Response Time	# Of Incidents Requiring Three Or More Pumpers
2021	7:52	1,006	12:36	327	17:10	46
2022	9:40	1,094	16:33	336	20:00	60
2023	7:40	1,114	11:39	344	15:20	47

3.6.6 Workload

Fire department workload, or demand for service, can be correlated with population growth and identified risk within the municipal jurisdiction. As the City of Thorold grows, one can reasonably anticipate that call volumes will increase. According to the Development Charges Report published by Watson and Associates Economists Ltd., the population will increase by nearly 6,000 between 2021 and 2024, from 24,420 to 30,090. When all lands designated for development have been, the population could be as high as 51,312.

The 2023 preliminary response data indicates that the TFES responded to 1,114 incidents. Historical response information obtained from the OFM shows that between 2018 and 2022, property fire and explosion incidents accounted for 4.4% of total call volume, while medical/resuscitator incidents accounted for 32.1% of the calls and rescues for 14.2%. A summary of this information is detailed in Figure 7.

FIGURE #7: TFES 2023 EMERGENCY CALLS

THOROLD FIRE & EMERGENCY SERVICES

2023 MONTHLY DISPATCHES BY DETERMINANT

Determinant Group	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	TOTAL	2022	% Change
STRUCTURE FIRE	5	2	2	5	5	4	1	0	3	0	1		28	33	-15.2%
PRELIMINARY ALARM	2	3	2	1	1	2	2	1	0	12	10		36	12	200.0%
REMOTE ALARM	16	14	10	18	24	24	25	25	20	9	9		194	152	27.6%
VEHICLE FIRE	0	0	1	4	2	1	1	3	4	1	0		17	14	21.4%
GRASS/TREE/BRUSH	1	1	0	0	2	7	3	2	0	1	0		17	7	142.9%
BURNING COMPLAINT	2	0	1	3	2	16	3	6	8	2	5		54	27	100.0%
OTHER FIRE	4	0	0	2	2	5	3	0	4	13	6		39	20	95.0%
MVC	10	9	13	12	10	14	14	13	20	21	9		145	108	34.3%
GENERAL/TECH RESCU	0	0	0	0	0	0	1	1	0	0	0		2	0	0.0%
MEDICAL	30	26	18	31	28	37	27	29	35	37	32		330	274	20.4%
CARBON MONOXIDE	6	1	2	2	3	4	3	4	8	5	4		42	32	31.3%
HAZMAT	0	1	0	0	0	1	1	1	1	1	1		7	4	75.0%
EMERGENCY ASSIST	4	1	3	1	2	4	6	3	4	1	1		30	20	50.0%
NON EMERG/ASSIST	5	2	3	2	3	0	4	2	1	2	4		34	34	0.0%
ICE/WATER RESCUE	0	0	0	0	0	0	0	0	0	0	0		0	3	-100.0%
UNKNOWN 911	6	2	7	0	1	6	5	5	6	4	2		44	31	0.0%
Total Responses Within Municipality	91	62	62	87	91	125	99	95	114	109	84	0	1,019	668	52.5%
Total Responses Out of Jurisdiction	0	0	0	0	0	0	0	0	0	2	1	0	3	3	
2023 TOTAL	91	62	62	87	91	125	99	95	114	111	85		1,022		
2022 TOTAL	85	79	60	77	85	92	88	105	103	115	91	110	671		
% CHANGE	7.1%	-21.5%	3.3%	13.0%	7.1%	####	12.5%	-9.5%	10.7%	-3.5%	-6.6%	-100.0%	52.3%		
											Total Dispatch Incidents		1022		2

Response data for the years 2018 to 2022 shows that the TFES experiences approximately three calls for service per day on average. Most structural fires with losses, 41 of 132 reported fires, occurred between 3:00 pm and midnight. These incidents can range from short in duration, less than one hour, too long in duration, resulting in apparatus and equipment being committed for hours depending on the size and scope of the incident. Considering the anticipated population growth, Table #9 provides a comparison of 2022 call volumes, career staffing levels represented by the OPFFA, and percentage calls by response type (medical, rescue and property fires) for municipalities with similar populations as anticipated by the City of Thorold. At the 2021 population of 23,816, the TFES is already approaching call volumes of much larger municipalities. Table #10 provides additional comparative incident response information with the same municipalities for the years 2018 to 2023.

TABLE #9: 2018 -2022 TIME OF DAY LOSS STRUCTURAL FIRES WITH INJURIES AND FATALITIES

Time of Day	Loss	2018	2019	2020	2021	2022	Total
Total	Loss Fires Injuries Fatalities	26 2 0	11 4 1	27 3 2	35 2 0	33 3 0	132 14 3
Midnight to 2:59am	Loss Fires Injuries Fatalities	2 1 0	2 0 0	1 0 0	2 0 0	1 0 0	8 1 0
3am to 5:59am	Loss Fires Injuries Fatalities	3 0 0	0 0 0	4 0 1	1 1 0	1 0 0	9 1 1
6am to 8:59am	Loss Fires Injuries Fatalities	0 0 0	1 0 1	1 0 0	2 0 0	1 0 0	5 0 1
9am to 11:59am	Loss Fires Injuries Fatalities	0 0 0	0 0 0	2 1 1	2 1 0	3 0 0	7 2 1
Noon to 2:59pm	Loss Fires Injuries Fatalities	1 0 0	2 3 0	2 0 0	4 0 0	0 0 0	9 3 0
3pm to 5:59pm	Loss Fires Injuries Fatalities	4 1 0	1 0 0	1 0 0	5 0 0	6 2 0	17 3 0
6pm to 8:59 pm	Loss Fires Injuries Fatalities	3 0 0	0 0 0	2 0 0	3 0 0	4 1 0	12 1 0
9pm to 11:59 pm	Loss Fires Injuries Fatalities	3 0 0	0 0 0	2 0 0	3 0 0	4 1 0	12 1 0

TABLE #10: 2018 -2023 POPULATION/OPFFA STAFF/CALL VOLUME COMPARATORS

City/Town	2021 Population	2022 Call Volume	# Of OPFFA Career Staff	2022 Calls by Response Type %		
				Medical	Rescues	Property Fires
Thorold	23,816	1,094	23	32.10%	14.20%	4.40%
Collingwood	24,811	1,106	27	33.90%	11.70%	2.60%
Wasaga Beach	24,862	2,035	21	67.60%	5.20%	1.40%
St. Thomas	42,840	1,355	56	41.30%	2.80%	3.30%
Innisfil	43,326	2,610	42	61%	11.30%	2.50%
Woodstock	46,296	1,490	51	31.40%	19.20%	4.10%
Quinte West	46,560	1,227	16	26%	11.50%	7.20%
Georgina	47,642	2,590	44	56.80%	7.10%	2.70%
Cornwall	47,845	1,355	61	8.90%	11.70%	7.00%
North Bay	52,662	2,032	74	28.60%	12.60%	5.80%
Bellville	55,071	2,328	62	28.60%	7.80%	6.10%

TABLE #11: 2018 – 2023 CALLS BY RESPONSE TYPE COMPARISON

City	2021 Population	2018 - 2023 Calls by Response Type		
		Loss Structure Fires	Medical	Rescues
Thorold	23,816	77	1,629	722
Collingwood	24,811	61	1,548	534
Wasaga Beach	24,862	58	5,667	439
St. Thomas	42,840	99	5,466	366
Innisfil	43,326	100	7,206	1,332
Woodstock	46,296	113	2,169	1,328
Quinte West	46,560	128	1,419	627
Georgina	47,642	166	6,551	815
Cornwall	47,845	198	545	722
North Bay	52,662	214	2,648	1,171
Bellville	55,071	180	2,876	690

The current deployment model requires career staff from Station 1 to respond to all calls for service within the City. In addition to responding to emergency incidents, full-time staff are responsible for daily training, conducting apparatus and equipment checks, participating in community risk reduction events, and maintaining operational readiness to respond. Although not always the case, career staff are housed at Station 1, 24/7 and have a shorter assembly time than paid-on-call personnel, so they typically arrive first at incident scenes. These staff either mitigate the incident shortly after arrival or begin operations such as scene stabilization, size up, establishing a water supply, etc.. At the same time, they wait for additional paid-on-call resources to arrive.

It is important to reiterate that interior firefighting and/or rescue operations, irrespective of the occupancy type the fire is occurring in, cannot be performed safely with minimal firefighters at the scene. Such activities can only commence once additional personnel arrive.

3.6.7 Station 1 Utilization Data

An apparatus utilization analysis can be used to determine the amount of time fire department apparatus are committed to emergency incidents during an identified time. Once committed at an emergency scene, the apparatus and staff are often unable to respond to a concurrent incident should one occur. In situations where this does happen, and a timely response is necessary, the Incident Commander may be forced to prioritize or triage the incidents based on the information that is available. It should be anticipated that as the City expands, these occurrences will become more common. As previously mentioned, when available, Station 1 is responsible for responding to all incidents in the City. According to response information provided to EMG, during the years 2021 to 2023, the average incident duration for career staff from Station 1 was approximately 40 minutes. Multiplying this time by the number of incidents responded to during the respective years provides the reader with the utilization data for Station 1.

The conclusion of this analysis is that the utilization data for Station 1 from 2021 to 2023 was approximately 8%. During EMG's research, TFES did not express concerns about managing concurrent incidents. With stagnant municipal growth, an 8% utilization rate for a career apparatus that is required to respond on the initial deployment to every emergency incident may be sustainable. Thorold, however, is anticipated to have significant growth, with population projections estimated to reach approximately 50,000.

Based on the population projections, Table #12 provides a modest estimate of the anticipated call volume increase for TFES out to 2035. Using the projected call volume increase, and the current deployment model, it should be anticipated that the utilization rate for Station 1 will double to 16%, or more during this time. Notwithstanding career staff are effectively supported by a contingent of dedicated paid-on-call firefighters, any increase in the utilization of Station 1 and the career staff will increase the risk to the city when the response times of paid-on-call firefighters is further measured against NFPA 1720.

As call volume increases, the probability of concurrent incidents (where multiple emergency calls occur simultaneously) will also rise. Since Station 1 is currently responsible for responding to every emergency in the city, this could lead to situations where the apparatus is unavailable for other incidents because they are already committed to one.

TABLE #12: TFES HISTORICAL AND PROJECTED CALL VOLUME 2023 - 2035

Year	Number of Calls	Projected Number of Calls	Increase / Decrease from the Previous Year	Percentage Increase / Decrease of Calls
2019	1,092			
2020	712		-380	-35%
2021	1,005		293	41%
2022	1,094		89	9%
2023	1,073		-21	-2%
2024		1,126	53	5%
2025		1,182	56	5%
2026		1,241	59	5%
2027		1,303	62	5%
2028		1,368	65	5%
2029		1,436	68	5%
2030		1,508	72	5%
2031		1,583	75	5%
2032		1,663	80	5%
2033		1,746	83	5%
2034		1,833	87	5%
2035		1,925	92	5%

3.6.8 Two In – Two Out/Rapid Intervention Team (RIT)

Section 4.6.1 Initial Firefighting Operations of NFPA 1720 states the following:

"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."

Section 21 Guidance Note 6-11 Rapid Intervention Teams (rescue) states that; "Employers should provide written operational procedures for establishing rapid intervention teams of at least two firefighters." [24]

Guidance Note 6-11 goes on to list the key elements to consider when developing the operational procedures as follows:

- Rapid Intervention Teams (RITs) should be implemented as part of the incident command and accountability system to ensure firefighters have rescue available.
- Provide RIT teams with appropriate personal protective equipment, self-contained breathing apparatus, portable radios and any specialized equipment needed for the specific operation.
- When emergency rescue activities are necessary before a full RIT has assembled:
    - Initial RIT should be designated before a crew enters a controlled area.

A Rapid Intervention Team (RIT) is defined as; "a dedicated crew of at least one officer and three members, positioned outside the IDLH, trained and equipped as specified in NFPA 1407, who are assigned for rapid deployment to rescue lost or trapped members."

To the department's credit, TFES SOG – 7.10 Two In – Two Out provides direction to staff regarding on-the-scenes staffing levels required for interior firefighting and rescue operations consistent with NFPA 1720. SOG 7 – 1.8 details the procedures for establishing and deploying a RIT.

3.6.9 Proposed Phased in Staffing Options

Several factors, including the timing of incidents and the availability of off-duty personnel, compound the challenges associated with staffing at fire scenes. From 2018 to 2022, most structure fires occurred between 3:00 PM and 5:59 PM, coinciding with a time when many paid-on-call firefighters were either at work, commuting or out of the City. Additionally, the second-greatest number of fires occurred on Sundays, when many paid-on-call firefighters may be unavailable due to personal commitments or other obligations.

To address these staffing shortages during critical times, TFES has implemented SOG 7.21, which requires off-duty career firefighters to maintain their pagers in recall mode during weekday daytime hours (6:30 AM – 6:30 PM, Monday through Friday). This allows the on-duty captain or Incident

[24] Ontario, "6-11 Rapid Intervention Teams (Rescue), accessed October 2024. https://www.ontario.ca/document/firefighter-guidance-notes/6-11-rapid-intervention-teams-rescue

Commander (IC) to request the recall of off-duty personnel if there is an identified shortage of firefighters to manage the incident.

While this procedure helps mitigate staffing gaps during high-risk times, it does not fully resolve the issue, especially given the projected growth in population and the increasing demands on the fire department. To ensure that TFES can meet NFPA 1720 Suburban Criteria for effective fire ground staffing, especially in the face of these increasing challenges, additional career staffing is necessary.

The NFPA 1720 Suburban criteria stipulates that a fire department must be able to assemble enough trained personnel on the scene of a fire within a designated time frame to provide effective suppression, rescue, and other critical operations. However, under the current staffing model, TFES struggles to meet these criteria, particularly regarding:

- Timely Assembly of Firefighters: It has been noted that the fire department often cannot assemble the required minimum of four firefighters on scene early enough in the fire propagation curve, forcing the service to take a defensive posture during structural fires instead of an offensive, interior attack.
- Daytime Staffing Gaps: As previously mentioned, daytime staffing levels remain a challenge, especially during peak fire risk times (late afternoon and Sundays), when many paid-on-call firefighters are unavailable.

Given these challenges, incrementally increasing career staffing is seen as a critical step in improving the fire department's ability to meet response time requirements and enhance operational capabilities on the fire ground. If not addressed, these staffing issues could lead to unsafe conditions for firefighters and the public as the city continues growing and the fire department is stretched thinner.

3.6.10 Recommendations for Phased Career Staffing Increases

Considering the projected growth of Thorold, which is expected to reach a population of 50,000 people, and the challenges the fire department faces in meeting NFPA 1720 Suburban criteria, EMG recommends a phased-in approach to increase career staffing levels. This strategy addresses staffing gaps, improves response times, and ensures the fire department is adequately prepared for future demands.

Key Considerations for Staffing Increases

Population Growth and Increased Demand

- With an anticipated population increase, the demand for fire services will inevitably rise, both in terms of incident volume and complexity. This necessitates a proactive approach to ensuring that the department has enough trained personnel to handle emergencies effectively.

NFPA 1720 Suburban Criteria Compliance

- The department must work toward regularly meeting the NFPA 1720 Suburban criteria, which requires the timely assembly of enough trained firefighters on scene to conduct interior suppression and rescue operations early in the fire propagation cycle.
- In its current state, TFES is limited in its ability to meet these criteria and is forced into defensive fire tactics during structure fires, delaying effective intervention.

Daytime Staffing Challenges

- The department's current reliance on paid-on-call firefighters during daytime hours places significant pressure on the system, especially when these personnel are unavailable due to work or other commitments.
- To address these gaps, increasing career staffing will be critical, particularly during peak hours when the highest number of structure fires occur.

Role of Paid-On-Call Firefighters

  - Despite the challenges with daytime staffing, paid-on-call firefighters will remain an integral part of the response force. However, their response time and availability during critical hours must be factored into the overall staffing strategy to ensure that career firefighters can be quickly recalled when needed.

Phased Staffing Increase Approach

To mitigate the risks associated with under-staffed responses and meet NFPA 1720 standards, EMG recommends a phased approach to increasing career staffing. This approach should be tied to the City's projected growth and designed to enhance the department's operational capacity in a manageable way.

Phase 1 – Immediate Staffing Enhancements (Years 2025 - 2026):

- Increase the number of career firefighters on shift during peak daytime hours (especially 3:00 PM to 6:00 PM) to ensure a quicker response and the ability to conduct interior suppression operations early.

- Review notification, dispatching and response procedures for paid-on-call staff to achieve improvements in chute and response times.
- Implement a departmental attendance support program.

Phase 2 – Mid-Term Staffing Expansion (Years 2027-2030):

- Expand career staffing further to cover more shifts during evening and weekend hours, when response times are more likely to be impacted by paid-on-call availability.
- Explore the possibility of adding additional career firefighter positions at Station 1, Station 2 and Station 4.

Phase 3 – Long-Term Staffing and Infrastructure Growth (Years 2031-2035):

- As the city reaches a population of 50,000, additional career staffing may be necessary to ensure adequate coverage and response times across the entire municipality.
- Continue to work with paid-on-call personnel, but ensure they are effectively supported and augmented by career staff during critical high-demand times.

As the City of Thorold grows, so must the fire department's staffing capacity. The phased increase in career staffing, particularly during high-demand periods, is essential to ensuring that the department can effectively respond to emergencies in a timely manner while meeting NFPA 1720 Suburban criteria. Failure to address these issues incrementally, as growth occurs, will result in an increased risk to both firefighters and the public, potentially compromising safety and operational effectiveness.

By implementing these recommendations, the fire department will not only improve its ability to respond to fires but will also ensure a safer environment for both its personnel and the residents of Thorold as the city continues to grow.

3.6.11 Technical Rescue

NFPA 1006: Standard for Technical Rescue Personnel Professional Qualifications consist of 23 chapters which identify the job performance requirements (JPRs) for each technical rescue discipline at the Awareness, Operations and Technician Level.

Based on its needs and circumstances and community risk assessment, a municipality can determine what types of technical rescue incidents the fire service will respond to and to what level they will respond. For a fire service to be properly trained and adequately equipped to respond to multiple technical rescue incidents requires an ongoing funding and time commitment.

Appendix B to By-law No. 11-2021 Thorold Fire & Emergency Services Approved Core Services and Programs defines the following levels of technical rescue response, and staff will require certifications in these disciplines by 2028:

- Vehicle Extrication – Technician Level
- Surface Water Rescue – Technician Level
- Swift Water Rescue – Technician Level
- Ice Rescue – Technician Level
- Dive Rescue – Awareness Level
- Urban Search and Rescue – Awareness Level
- Rope Rescue – Awareness Level
- Confined Space Rescue – Awareness Level
- Trench Rescue – Awareness Level
- Cave, Mine, and Tunnel Rescue – Awareness Level
- Industrial and Machinery Rescue – Technician Level

Table #13 details the number of rescue incidents per year attended by TFES, and it is worth noting that at 13% - 15% of the department's overall response, performing rescues is a vital core service. Bodies of water are of importance and identified as an area of high risk to the City. Thorold has a history of flooding during severe weather events and during the spring thaw. These conditions enhance the possibility of water rescue incidents occurring. The Welland Canal is a significant tourist attraction, and the risk of people falling in should be of concern. As noted in the CRA, in cooperation with the Niagara Peninsula Conservation Authority, the City should post signs along the shoreline of inland bodies of water warning of the dangers.

TABLE #13: NUMBER OF RESCUE INCIDENTS PER YEAR

Year	# of Rescue Incidents	% of Total Incidents
2018	153	13%
2019	168	15%
2020	109	15%
2021	130	13%
2022	162	15%
2023	150	14%

Also identified by EMG is that the TFES does not currently have the equipment or training to respond to swift water of flood water rescue incidents and should develop a mitigation strategy until they begin to perform these services. TFES needs to achieve self-sufficiency in all areas of water technical rescue per NFPA 1006.

Given the significant cost and training time commitment associated with what is a core service, TFES values the Council's continued support in providing a high level of expertise to technical rescue incidents.

3.6.12 Hazardous Materials

With primary highways, county roads and rail lines running through the city, hazardous materials incidents are probable and have been identified as an area of high risk. Industries within the City will also have unknown quantities of hazardous materials being used in the production or distribution of products. By the end of 2025, TFES aims to have personnel trained and able to respond at the Operations Level for NFPA 1072 Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Professional Qualifications.

NFPA 1072 defines Operations Level Personnel as:

> *"Operations level responders are those persons who respond to hazardous materials/weapons of mass destruction incidents for the purpose of implementing or supporting actions to protect nearby persons, the environment, or property from the effects of the release."*

Although provincial assets can be requested via the District Fire Coordinator through the Provincial Emergency Operations Centre (PEOC), in the event of a significant hazardous materials incident, and until TFES is prepared to respond at the Operations Level, a partnership with a private agency, or neighbouring fire department should be explored.

3.6.13 Tiered Medical Response

Tiered medical response agreements are a commonly used method for coordinating the delivery of rapid first-response medical services to the public by emergency response agencies. The goal of these agreements is to deploy the most appropriate agency, with consideration of training, equipment, and time, to aid at the scene of a medical emergency, with the recognition that the primary response agency may not always be the first to arrive on the scene.

TFES is a member department in the Medical Assistance Tiered Response protocol between the Niagara Emergency Medical Service (NEMS) and the local municipal fire department situated within the geographical boundaries of the Regional Municipality of Niagara. Under the terms of the agreement, NEMS agrees to notify TFES of emergency medical calls within their geographical area of responsibility. TFES agree to provide a Tier Level 1 response in line with NEMS policy IV-3.5.

Like other municipalities that have a comparable tiered response agreement, a large overall percentage of the calls for service for the TFES are medically related. Obtained from the Office of the Fire Marshal's (OFM) Standard Incident Report (SIR) database, the following table provides the percentage of medical incidents responded to by the TFES compared to the total annual number of incidents.

TABLE #14: 2018 – 2023 MEDICAL RESPONSE FROM THE OFM

Year	Medical Incidents	Total Incidents	Percentage
2018	532	1,175	45%
2019	418	1,092	38%
2020	105	712	15%
2021	247	1,005	25%
2022	327	1,094	30%
2023*	319	1,073	30%

Given that the goal of tiered medical response is to deploy the most appropriate agency to assist at the scene of a medical emergency, with the recognition that the primary response agency may not always be the first to arrive on the scene, the TFES plays a significant role in pre-hospital care within the community. As the City continues to grow, calls for service will also increase. Any incident response category that comprises over 30% of call volumes must be considered a core service and should continue to be provided with the necessary resources, funding and organizational focus.

Soon, simultaneous dispatch will be introduced to the member fire departments operating under the Medical Assistance Tiered Response protocol. Simultaneous dispatch is a bi-directional sharing of

information that benefits fire and paramedics, reducing response times and eliminating the need for manual phone call updates about changes in incident scene situations. The TFES currently logs via radio transmissions when they arrive at the scene of a medical emergency. Conversely, they make a similar announcement when paramedics are already on the scene when they arrive. This information should be more accurately recorded and reviewed to better assess the effectiveness of TFESs role in the tiered response protocol with respect to response time and the resulting impacts on patient outcomes.

The Fire Chief should continue regular consultation with the NEMS Chief to ensure the seamless delivery of medical response to the citizens of Thorold and that the service being provided remains consistent with Council-approved response objectives.

3.6.14 Recruitment and Retention of Career/Paid-on-Call Firefighters

A composite fire service requires a high level of professionalism and commitment from both career and paid-on-call personnel. This is achieved through training, career development, and instilling a sense of self-worth and belonging in the community. Represented by the Thorold Professional Firefighters Association (TPFFA) and the United Steelworkers Local 14241, the TFES has 20 career and 68 paid-on-call suppression firefighters who provide services to the citizens of Thorold.

A 2023 census conducted by the Canadian Association of Fire Chiefs (CAFC) showed that there are 126,000 firefighters in Canada, of which 90,000 are volunteers. Many receive some form of pay-on-call, and honorarium or are given some funding to cover expenses, but they do not draw a living wage from firefighting. The surveys estimated there are currently 15,000 vacant positions in the fire service, with 9845 volunteer firefighters leaving the service in 2023.[25]

A common theme across Canada and the United States is the challenges of recruiting and retaining volunteer firefighters. The goal of any composite fire department is to overcome recruitment barriers and increase retention by adapting to influencing factors such as changing demographics, a lack of affordable housing, and the increased desire for improved work-life balance. The modern fire service must rethink the way it recruits and retains firefighters. The fire service is no different than any other civic organization. Most civic organizations have experienced declines of greater than 63% over the last decade. To attract members, the fire service must be visible, approachable, inviting, inclusive and open minded.[26]

[25] Canadian Association of Fire Chiefs "2022 Census Report" accessed October 2024. https://cafc.ca/page/2022Censusresults

[26] International Association of Fire Fighters, "Breaking Bad Habits: Recruitment and Retention of Volunteer Firefighters accessed October 2024. https://www.iafc.org/topics-and-tools/resources/resource/breaking-bad-habits-recruitment-and-retention-of-volunteer-firefighters

One of the main reasons why members quit is because they do not feel appreciated. People's time and energy are precious commodities; therefore, the fire service must find ways to appreciate its members and their families.[27]

3.6.15 TFES Recruitment and Retention Findings

Paid-on-call firefighters are essential to the overall response capabilities of TFES, playing a critical role in ensuring timely and effective emergency responses. To meet the increasing demands, recruitment efforts for paid-on-call staff must be both strategic and proactive.

An analysis of TFES recruitment and retention efforts indicates that the department is currently struggling in this regard, and it is of concern to the Chief. Over the last four years, the department has hired 60 volunteers but lost 74 to retirements or resignations. To keep pace with this level of attrition, in September of each year, the TFES must conduct a recruitment program. Running a recruitment program is a time consuming but necessary undertaking.

Training and appropriately equipping firefighters with personal protective equipment and fatigue clothing costs the department between fifteen and twenty-thousand dollars. Firefighters that leave the department shortly after being trained and equipped has a significant negative impact on the operating budget. Research indicates the Thorold loses approximately 2 to 3 paid on call staff per year during the year they were hired.

There is not one specific reason why recruitment and retention of paid-on-call firefighters is a challenge for many municipalities, however, community demographics, the desire for full-time employment as firefighter, the necessity for a dual family income and therefore not being able to serve during regular work hours, and the recently mandated training requirements may all be factors in the City of Thorold.

Additionally, should a career position come available, the TFES should grant interviews those paid-on-call staff that pass a physical fitness test and an aptitude test. If the City grows at the projected rate, in the absence of increased staffing levels, both career and paid-on-call, the anticipated increase in call volumes may only compound the current recruitment and retention challenges.

The Fire Chief should maintain targeted recruitment campaigns that incorporate a community-based approach, supported by incentives and benefits to enhance the retention of paid-on-call firefighters.

[27] International Association of Fire Fighters, "Breaking Bad Habits: Recruitment and Retention of Volunteer Firefighters , accessed October 2024. https://www.iafc.org/topics-and-tools/resources/resource/breaking-bad-habits-recruitment-and-retention-of-volunteer-firefighters

3.6.16 Mental Wellness Programs

Mental resilience is crucial for everyone but particularly vital for first responders. It directly impacts their ability to cope with daily stressors and traumatic events encountered in the line of duty, allowing them to maintain well-being. Resilience doesn't erase stress or life's difficulties but instead provides tools to navigate and emerge stronger from these challenges.[28]

First responders, including firefighters, face unique challenges in their line of duty. It is estimated that 30% of first responders will develop behavioural health conditions, including depression and Post Traumatic Stress Disorder (PTSD). In contrast, the prevalence of these conditions in the general population is 20%. Firefighters have been reported to have higher rates of suicide attempts and ideation compared to the general population.[29]

Some of the ways that the fire service can support staff in building psychological strength are as follows:

- Encourage regular Self-Assessments
- Establish a Peer Support Program
- Develop Health Coping Mechanisms
- Encourage Physical Health
- Provide Resiliency Training

Employers of workers covered by the presumption in the Workplace Safety and Insurance Act are required to provide information about their plans to prevent PTSD in their workplaces.[30] The TFES PTSD Prevention Plan outlines an approach to managing PTSD. The goal of the plan is to take a holistic approach across prevention, intervention, recovery, and return to work.[31]

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[28] Canadian Mental Health Association, "Starting Strong: Embracing Mental Resilience for First Responders in 2024", accessed October 2024, https://cmha.ca/news/starting-strong-embracing-mental-resilience-for-first-responders-in-2024/

[29] Bing.com, Copilot with GPT-4, accessed October 2024. https://www.bing.com/search?q=first+responder+ptsd+rates+compared+to+regular+population&form=ANNTH1&refig=ce24a2dcda24465e8e25adfa56585b52&pc=HCTS&showconv=1

[30] Ontario, "Post-traumatic stress disorder prevention plans", accessed October 2024, https://www.ontario.ca/page/post-traumatic-stress-disorder-prevention-plans

[31] Thorold Fire & Emergency Services PTSD Prevention Plan, Pg 3. accessed on October 22, 2024

The financial cost associated with mental health injuries to municipalities is significant. The moral cost to the injured worker and the impact on their family can be very impactful. A common theme in the emergency services industry is the emerging discontent with traditional Employee Family Assistance Programs. Due to these reasons, an increasing number of jurisdictions are seeking emergency service-specific psychological treatment providers for preventative measures, early intervention, recovery and return to work and training programs. Although they come at an operational cost, these types of initiatives have been successfully implemented in municipalities in Ontario. In some cases, these programs have been joint ventures between fire and other emergency service agencies.

To determine the availability of clinical phycologist resources, as well as the parameters and costs associated with such a program, TFES should proceed with a Request for Information (RFI) process as detailed in Section 3.4.9, Phased in Staffing Options.

3.6.17 Cancer Screening/Firefighter Decontamination

The NIST recently undertook two extensive studies focused on firefighter cancer and concluded that firefighters face a 9 percent increase in cancer diagnosis and a 14 percent increase in cancer-related deaths, compared to the general population in the United States.[32] In Ontario, if a firefighter or a fire investigator is diagnosed with a prescribed cancer on or after January 1, 1960, and meets the employment duration and additional criteria for the prescribed cancer, then the disease is presumed to be an occupational disease due to the nature of the worker's employment unless the contrary is shown.[33]

TFES does not have a formal cancer screening program in place. The Ontario Ministry of Labour, Training and Skills Development firefighter's cancer prevention checklist is being used by the Department as a self-audit tool to learn how to protect personnel from exposure to contaminants that may cause cancer or other occupational illnesses. The checklist aims to help fire service employers and workers increase their knowledge about the steps that can be taken to minimize or prevent exposures and keep the workplace healthy and safe.[34]

The checklist guides the employer through the following programs:

- Respiratory protection program

[32] NFPA, "Firefighters and the risks of cancer", accessed October 2024, https://www.nfpa.org/education-and-research/emergency-response/firefighters-and-cancer

[33] WSIB. "Cancers in Firefighters and Fire Investigators", accessed October 2024. https://www.wsib.ca/en/operational-policy-manual/cancers-firefighters-and-fire-investigators

[34] Ministry of Labour, Training and Skills Development Firefighter's Cancer Prevention Checklist. Pg. 2

- Air management program
- Work practices – scene/fire training ground
- Work practices – fire hall
- Inspection of PPE
- Use of PPE during decontamination activities

Using the results from this audit, several SOGs have already been developed or are in the draft stages and address the following areas:

- Apparatus Decontamination and Checklist
- Personal Protective Equipment Decontamination
- Gross Decontamination Procedures
- Laundry Room Cleaning
- Fireground Decontamination Procedures

TFES should be applauded for taking a proactive and fulsome approach to the reduction of firefighter workplace exposures and for providing clear direction to staff in SOGs. Each firefighter has two sets of bunker gear, and the department has an inventory of an additional ten sets of gear that can be used in the event of significant contamination to in-service bunker gear. Despite these efforts, it should be noted that there will be instances when firefighters must abandon decontamination procedures and respond to another emergency.

As a best practice, the Fire Chief should complete the firefighter's cancer prevention checklist in cooperation with the worker members of the Joint Occupational Health and Safety Committee. Upon conclusion, the necessary additional SOGs can be developed as recommended in the checklist or updated as required if they already exist.

3.6.18 Physical Fitness Programs

Being a firefighter extends beyond having the task-related knowledge to do the job. Firefighters must also attain and maintain a certain fitness level to complete the assigned work. Functional fitness is a type of physical capability focusing on the movements and activities associated with a specific task or

job.[35] Firefighters will be required to develop physical capabilities related to specific fireground tasks, including stair and ladder climbing, carrying equipment, dragging charged hose lines, raising ladders, conducting forcible entry activities, and search and rescue. Many of these tasks must be sustained for extended periods of time and are usually performed under adverse conditions. Firefighter fitness should be encouraged, and when time permits and does not interfere with the efficient operation of the service, firefighters should be permitted time to exercise in a manner that is deemed reasonable and safe.

EMG was able to confirm that the exercise equipment is routinely inspected as part of the Joint Health and Safety Committee workplace inspections and that additional equipment is not permitted to enter a fire station without the prior approval of the Chief.

3.6.19 Pre-Incident Plans

An effective pre-incident planning program within a fire department can support a reduction in property loss and enhance the safety of the public and firefighters in the event of a fire or other emergency. Pre-incident planning is often overlooked or deprioritized due to a lack of resources that include both people and technology. Implementing an effective pre-incident planning program will require buy-in and commitment from staff on the importance of the process prior to implementation.

NFPA 1620: Standard for Pre-Incident Planning identifies the process for developing pre-incident plans that will assist personnel in effectively managing incidents and events to protect occupants, responding personnel, property and the environment.[36]

When developing pre-incident plans, fire service personnel should arrange to meet on-site with someone knowledgeable about the building, such as a property manager or owner, to collect the pertinent occupancy information. The Fire Chief should determine the level of detail to be included in the pre-incident plans based on the level of response to be provided.

Pre-incident plan documents should follow a standardized template and can be in paper or electronic form. The necessary floorplans and sketches should be included in the document, a formal distribution process should be established, and personnel should formally record the review of pre-plans as a training event. Pre-incident plans should be readily available to the incident commander

[35]Firefighter Furnace, "Functional Firefighter Fitness: What It Is and Why It's Important", accessed November 2024. https://firefighterfurnace.com/functional-firefighter-fitness-what-it-is-and-why-its-important/

[36] NFPA, accessed October 2024. https://link.nfpa.org/free-access/publications/1620/2020

during an emergency, and the adequacy and accuracy of pre-incident plans should be assessed after an event and adjusted as required.

EMG was not able to identify a pre-incident planning process within the TFES operations. As a best practice, a pre-incident plan process that conforms with NFPA 1620 should be developed.

3.7 Communications and Dispatch

Computer-aided fire dispatch services are provided by the City of St. Catharines Fire Department (SCFD). Through the agreement, St Catharines agrees to provide TFES with emergency communications services and required backup operations for a fifteen-year period that continues to the end of 2037. St. Catharines provides similar services to nine other municipalities, all of whom are members of a Joint Operating Committee (JOC) that meets twice a year and oversees the following aspects of emergency communications services:

- Geographical Information Systems
- Information Technology
- Standard Operating Guidelines
- Performance Targets

The Emergency Communications Centre (ECC) is always staffed with a minimum of two Public Safety Telecommunicators, and the City of St. Catharines Information System support staff and Radio Technician are available Monday to Friday 8:30am to 4:30pm for support, with after-hours assistance coordinated through the on-call St. Catharines Senior Officer if required. Dispatching services are provided 24 hours a day, 7 days a week, and includes receiving, recording and transmitting

Under the terms of the agreement, the City of Thorold is responsible for providing compatible radio systems and hardware to receive the necessary transmissions and for always maintaining all required equipment in good working order. This includes the radio system and hardware and high-speed internet connection.

Subject to the review and recommendations of the JOC, and authorized by Thorold Council, to pay for any additional costs that may arise not identified in the agreement and to upgrade all the radio systems used for communication to a digital standard pursuant to the replacement plan of the Niagara Regional Police Services in the year 2032.

The current rate for dispatching services is approximately $100,000, which is a reasonable cost for the service level. Additional details on the terms of the Computer Aided Fire Dispatch Services Agreement are discussed in Section 5 of this report.

3.7.1 Public Safety Telecommunicator Training

NFPA 1061 *Standard for Public Safety Telecommunications Personnel Professional Qualifications* identifies the minimum job performance requirements for Public Safety Telecommunications Personnel. The intent of the standard is to ensure that persons serving as Telecommunicators are qualified.

To the credit of both parties, on a without prejudice basis, when the agreement was established, they agreed that best efforts for communications personnel to meet the current edition of NFPA 1061will be made. EMG's research indicates that some Communicators are already certified to NFPA 1061, with others working toward certification. The parties to the agreement are encouraged to continue supporting NFPA 1061 training for Communicators.

3.7.1.2 Communications Infrastructure and Dispatching Process

The St. Catharines radio system is a trunked 700MHz system that is designed and maintained to meet existing standards and is compatible with the City of Thorold radio system infrastructure. The backup site is located at the Niagara Regional Police Service (NRPS) and the NRPS serves as the 911 Public Service Answering Point (PSAP) and the Central Emergency Reporting Bureau (CERB).

TFES works on an analog system that has two transmission tower sites and is supported by mobile repeaters on Pumper 1 and Pumper 2. Both transmission sites have generator backup power. EMG was not able to determine if battery backup power is also available at these sites. The City of Thorold is responsible for the maintenance and upkeep of municipal communications infrastructure

When a call for service occurs, career staff are notified of the incident via base radios at the station or portable radios if they are mobile and away from the station at the scene of another incident. Paid-on-call staff are alerted of an incident via Monitor pagers and the "I Am Responding" application. Generally, the overall quality of the system has been reported to be good. However, dead spots in the Thorold tunnel pose a risk to staff. Efforts to reduce unnecessary radio transmission are being addressed through training.

The Mobile Data Terminal (MDT) currently located on Pumper 1 does not provide any valuable information to assist the responding crew with mitigating an emergency. With the arrival of the new Pumper, an iPad will be placed on the apparatus equipped with the mobile application Versaterm and interphase with the SCFD Computer Aided Dispatch System (CAD). With this technology, responding crews will be able to access building pre-plan information. Also, the iPad will include the I Am Responding application, which will assist career firefighters in better determining when support from paid-on-call staff will be on the scene of incidents during resource-critical emergencies.

Given that the Niagara Region transitioned to a fully digital radio system, the TFES ought to upgrade its communication infrastructure from analog to digital. This is vital to ensure interoperability with the Region, as well as to ensure firefighter safety.

3.7.2 Next-Generation Communications (NG 9-1-1)

The Canadian Radio-television and Telecommunications Commission (CRTC) regulates telecommunications providers. These telephone and cell service companies create the networks that connect 9-1-1 calls to emergency call centres. When a 9-1-1 call is received, these centres dispatch emergency responders, such as police, firefighters, and paramedics. Both emergency responders and 9-1-1 call centres fall under the jurisdiction of provincial, territorial, and municipal governments.1

With advancements in telecommunications technology, it is now possible to send text messages, videos and photos to a PSAP. The intent of NG9-1-1 is to be prepared for emergency services to take advantage of this technology.

"NG9-1-1 will make it possible to provide additional details about emergency situations. For example, in the future, Canadians could send a video of an accident, as well as make medical information available to first responders. This will lead to safer, faster and more informed emergency response.

As a first step, the CRTC has directed all phone and cell service companies to update their networks from analog to digital, so they are ready to provide NG9-1-1 voice and text messaging services. This will enable them to carry these NG9-1-1 calls and connect them to call centres. At the same time, provincial, territorial and municipal governments must ensure their emergency call centres are ready for the new service."

The following is an excerpt from the CRTC website regarding the program and its benefits for enhancement to public safety communications.

Establishment Of New Deadlines for Canada's Transition to NG 9-1-1

The Commission sets out determinations concerning new deadlines and other matters for implementing and providing Next-Generation 9-1-1 (NG9-1-1) networks and services in Canada so Canadians can access new, improved, and innovative emergency services with Internet Protocol-based capabilities. The Commission aims to maintain the NG9-1-1 framework roadmap for the establishment of NG9-1-1 networks and the introduction of NG9-1-1 Voice, albeit with new, extended deadlines.

With respect to the implementation and provision of real-time text (RTT)-based NG9-1-1 Text Messaging (NG9-1-1 Text Messaging), the Commission is not establishing new deadlines as part of this decision. Instead, the Commission requests that, once standards are sufficiently advanced with respect to RTT callback and bridging, the CRTC Interconnection Steering Committee file a report with

the Commission with recommendations related to the provision of NG9-1-1 Text Messaging for all stakeholders.

Further, the Commission directs, among other things, incumbent local exchange carriers (ILECs) to decommission their current 9-1-1 network components that will not form part of their NG 9-1-1 networks by 4 March 2025 or earlier if all the TSPs and PSAPs in an ILEC's operating territory have completed their transition to NG9-1-1.

As the TFES receives dispatching services from the SCFD, the transition to NG9-1-1 is the responsibility of the service provider. EMGs research indicates that the transition is being appropriately funded and is on schedule to meet the implementation deadline established by the CRTC.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
4	It is recommended that as the City grows, the other two stations hire a full-time crew.	Long-Term (6 to 10 years) As the City grows	At the present time, the starting salary for a firefighter is $108,331.56	When looking at the optimal service levels for fire protection services to meet the community's future needs, It would be very advantageous for the City to increase its full-time paid complement as the population and call volumes grow.
5	It is recommended that another Administrative Assistant be hired due to the heavy workload and day to day operations of both the career and volunteer Department.	Short-Term (1 to 3 years)	The annual salary for an Administrative Assistant in the fire service is $60,000.00	Due to the heavy workload and day-to-day operations of the Department, there is a need for another Administrative Assistant be hired . HIPPA requirements should be considered in relation to the position's functions and type of employment.
6	It is recommended that the department digitize all old employee personnel records that are kept by the department.	Short-Term (1 to 3 years)	Staff Time	It was noted that all firefighters' personnel records were kept as paper copies in their own folders with the Administrative Assistant, under lock and key.
7	It is recommended that the department conduct an update of all SOGs.	Short-Term (1 to 3 years)	Staff Time	All department Standard Operating Guidelines (SOGs) were updated since 2019. It has been between 3 to 5 years since last update. There are SOGs in place that direct all aspects of the department and their day-to-day operations.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
8	It is recommended that the captains at the volunteer station be given a business email address through the city.	Short-Term (1 to 3 years)	Staff Time	Only the district chiefs have an email address assigned to them through the City IT department. They do a lot of work through the Department and need one. The City can not control the policy for a personal email account.
9	It is recommended that all firefighters are professionally trained on how to deal with and treat the public for any situations they may encounter.	Short Term (1 to 3 years)	Staff Time	Customer service and public relations is an important part of the services provided by the Thorold Fire and Emergency Services. In some cases, you are meeting people you may or may not know. They may be from another country and speak a different language. And they may be having the worst day of their life. So, it is important to have the skills to address each kind of public interaction. This training is a job performance requisite under the NFPA 1001.
10	It is recommended that the Department inform the public through media, public radio, or any social media platform available of a significant incident, as well as the status of that event.	Short-Term (1 to 3 years)	Staff Time	Letting the public know what is happening in their community is essential. Through the media, public radio, or any social media platform available. This will ensure the community that there was an emergency event and that everything is ok now.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
11	It is recommended that all equipment, tools, apparatus, and any items used by the department be placed into the FPRMS used by the department.	Short-Term (1 to 3 years)	Staff Time	The department does not have an inventory control program in place. There are only check sheets used to determine what is on all apparatuses. There is an option in Fire Pro Records Management System (FPRMS) to add all equipment, tools, apparatus, and any items used by the department. It will also include all maintenance and testing as needed.
12	An SOG should be created to document the process to be followed regarding the delegation of the Fire Chief's authority to conduct complaint inspections and requests to personnel other than FPOs.	Immediate (0 to 1 year)	Staff Time	To ensure rights and authorities have been appropriately delegated for legal correctness.
13	One Full Time Employee (FTE) Fire Prevention Officer (FPO) should be added.	Immediate (0 to 1 year)	Cost of the new position will adhere to the Collective Agreement salary. The Rental License fees will offset the cost associated with the additional FTE.	The Fire Prevention Division's overall workload has exceeded the staff's capacity. To minimize risk to the city and continue to meet the statutory requirements of the FPPA, the addition of an FPO is required.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
14	That the Chief confirm the fees are being collected as per By-law 109-2017, that there is a direct reference to this fee for service in Schedule "A" to By-law No. 06-2017, and that the revenue being collected is flowing back to the fire service.	Immediate (0 to 1 year)	Staff Time	EMG was not able to confirm that the fees associated with rental license inspections are being collected, or that the funds, if collected were being allocated to a revenue line in the fire department budget.
15	The Council adopted the hybrid inspection schedule that is detailed on page 30 of the CRA while working towards meeting either NFPA 1730 or the schedules of the FUS.	Short-Term (1 to 3 years)	Staff Time	To provide clear direction to the Fire Chief, municipal Council must make informed decisions regarding the level of service to be delivered.
16	That the Fire Chief establish a process to track the staff time commitment associated with fire investigations that is separate and distinct from other programs.	Immediate (0 to 1 year)	Staff Time	To establish a clear understanding of the time commitment dedicated to each fire prevention program and to inform current and future staffing levels, each program must be tracked and documented separately.
17	That the TFES establish a professional development program for personnel that may be interested in conducting fire code inspections and enforcement, fire investigations, and public education activities in the community.	Short-Term (1 to 3 years)	Staff Time and the cost of course delivery	There exists an increasing inability for Ontario fire departments to recruit internal candidates to Fire Prevention Officer positions.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
18	That the TFES investigates the feasibility and benefit in providing suppression officers with NFPA 1031 Level I training.	Short-Term (1 to 3 years)	Staff Time	With the current demands on Fire Prevention Division staff, there may be an opportunity to shift the responsibility for less complicated fire inspections such as those associated with food vendor carts, and business licence inspections as examples to suppression staff.
19	That the Fire Chief add detailed criteria to existing SOG's providing direction for record keeping practices associated with all fire prevention and public education activities.	Immediate (0 to 1 year)	Staff Time	A fire department's Records Management System (RMS) is critical to every aspect of its operation. The ability to thoroughly track departmental activities for future assessment with respect to program success is vital for continued improvement.
20	It is recommended that in the future, as the City continues to grow, and more monies become available the City investigates the building and development of a Class A and B fire training center for the department. A sea container tower would be beneficial and cost-effective for the department's training needs.	Long-Term (3 to 5 years)	$200,000 - $700,000 (Mobile training unit)	Firefighting professionals agree that live fire training can reduce the number of injuries and deaths of firefighters and civilians. Reduce property damage. Increase fire department efficiency and morale. Having your own facilities for live burn training would allow for more live burn training.
21	It is recommended that the department conduct annual training with its mutual aid departments.	Short-Term (1 to 3 years)	Staff Time	To ensure that all firefighters have annual training with their automatic and mutual aid partners with whom they respond to incidents.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
22	It is recommended that the district chiefs and captains at the two-volunteer station be given access to the FirePro2 RMS and be allowed to enter their training records for their respective stations.	Short-Term (1 to 3 years)	Staff Time	This would help all involved. The district chiefs would gain access to FirePro2 to maintain their records. And it would cut down on the Training Captains workload by having the reports already put in RMS.
23	It is recommended that the department obtain training certifications for vehicle collision and extrication, confined space rescue, and high and low-angle rope rescue for both career and volunteer firefighters.	Short-Term (1 to 3 years)	Staff Time	This would ensure that the department has this additional training where certified firefighters could handle these types of incidents.
24	It is recommended that the Fire Chief and the training officers identify a training path for members to attain certification in NFPA 1001 Level I by July 1, 2026. And have plans in place to address any firefighters who do not meet this standard.	Short-Term (1 to 3 years)	Staff Tome	The Department must ensure that all firefighters meet the needed NFPA certifications before the July 1, 2026, deadline.
25	It is recommended that the department develop an SOG that directs the day-to-day (expectations) operations of the training program.	Short-Term (1 to 3 years)	Staff Time	This would ensure that the training plans are developed and maintained in the direction the Fire Chief wants the training program to go. And that a training path to follow.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
26	It is recommended that the Department adopt a current auto extrication certification program that aligns with what is detailed in table 1 of Ontario Regulation 343/22, to ensure everyone has the proper training, and that all stations are trained in a similar and consistent manner.	Short-Term (1 to 3 years)	Staff Time	It would be beneficial if the department were to obtain this certification. It would ensure firefighters are properly trained for these types of incidents.
27	It is recommended that the TFES develop a formal officer training program for each position within the department that is based on associated NFPA 1021 standards. This will also provide a succession planning path for those wanting to be promoted.	Short-Term (1 to 3 years)	Staff Time	This would ensure that all officers are trained to meet NFPA standards. And develop a succession plan that would meet the Department's needs in the future.
28	It is recommended that all officers career and volunteer be trained to NFPA 1521 for an incident safety officer.	Short-Term (1 to 3 years)	Staff Time	This would ensure that full trained and certified incident safety officers are available for every incident, whether small or large.
29	It is recommended they develop a career path for firefighters who wish to pursue future promotional opportunities.	Short-Term (1 to 3 years)	Staff Time	This would ensure that every firefighter had a path to follow for advancement to other positions in the future.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
30	That TFES track all response times from the time of dispatch to the time of arrival on the scene of incidents based on the suburban area demand zone and the 80th percentile response criterion. When tracking time measurements, the 80th percentile criterion is the NFPA 1720 recommended practice.	Immediate (0 to 1 year) ongoing	Staff Time	Data must be tracked and analyzed to assess response times against the Public Safety Excellence Community Risk Assessment: Standards of Cover and the NFPA 1720 Suburban criteria.
31	That TFES implement a departmental Attendance Support Program.	Immediate (0 to 1 year)	Staff Time	Employee ASPs are designed to assist employees and the corporation in maintaining good health, safety, and productivity. They also help develop a culture of accountability through regular attendance at work that supports the provision of service to the public
32	Expand career staffing further to cover more shifts during evening and weekend hours, when response times are more likely to be impacted by paid-on-call availability.	Mid-Term (3 to 6 years)	The Cost is as per the Collective Agreement	Expanding career staffing to cover more shifts during evening and weekend hours is a strategic response to the growing demands on TFES as the City expands.
33	That TFES initiate a request for information process for retaining a contract clinical psychologist.	Immediate (0 to 1 year)	Staff Time	More jurisdictions are seeking out emergency service specific phycological treatment providers for preventative measures, early intervention, recovery and return to work and training programs. Although they come at an operational cost, these types of initiatives have been successfully implemented in municipalities in Ontario

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
34	That the City of Thorold consider mandating residential sprinklers in the applicable new residential housing developments.	Immediate to Short-Term (0 to 3 years)	The cost is the responsibility of the developer.	Incorporating the value of residential sprinklers into response strategies provides an opportunity to maximize fire suppression services' effectiveness and enhance the health and safety level for emergency responders and the public. Residential sprinklers can have an immediate influence on potential fire damage.
35	That the TFES more accurately record and track the number of times they arrive first at the scene of tiered medical incidents.	Immediate (0 – 1 year)	Staff Time	To better assess the effectiveness of TFESs role in the tiered response protocol with respect to response time and the resulting impacts on patient outcomes, first on scene information should be more accurately recorded and reviewed.
36	That the Fire Chief continue and maintain a targeted recruitment campaigns that incorporates a community-based approach, supported by incentives and benefits to enhance the retention of paid-on-call firefighters.	Immediate (0 to 1 year) ongoing	Staff Time	An analysis of TFES recruitment and retention efforts indicates that the department is currently struggling in this regard, and it is of concern to the Chief. Over the last four years, the department has hired 60 volunteers but lost 74 to retirements or resignations.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
37	That the Fire Chief completes the firefighter's cancer prevention checklist in cooperation with the worker members of the Joint Occupational Health and Safety Committee. Upon conclusion, the necessary additional SOGs can be developed as recommended in the checklist or updated as required if they already exist.	Short-Term (1 to 3 years)	Staff Time	A NIST study concluded that firefighters face a 9 percent increase in cancer diagnosis and a 14 percent increase in cancer-related deaths compared to the general population. In 2023, the World Health Organization's International Agency for Research on Cancer concluded that firefighters' occupational exposures are considered carcinogenic.
38	As a best practice, a pre-incident plan process that conforms with NFPA 1620 should be developed.	Short-Term (1 to 3 years)	Staff Time	An effective pre-incident planning program within a fire department can support a reduction in property loss and enhance the safety of the public and firefighters in the event of a fire or other emergency.
39	Given that the Niagara Region transitioned to a fully digital regional radio system, the TFES ought to upgrade their communication system from analog to digital.	Short-Term (1 to 3 years)	To Be Determined	The upgrade will ensure interoperability and firefighters safety.

Section 4

Facilities, Vehicles and Equipment

SECTION 4: FACILITIES, VEHICLES, & EQUIPMENT

The Thorold Fire & Emergency Services operates out of three stations, and the administration, training and fire prevention operates out of its headquarters, known as Station 1. Currently, Station 3 is out of service, and TFES volunteers (paid-on-call) firefighters' operations are out of Station 2 and 4. Station 1 (Headquarters) is staffed with career and volunteer firefighters, whereas the other stations are staffed solely with volunteer firefighters.

Station 1 (Headquarters) is at 1600 McCleary Drive; Station 2 is at 701 Allanburg Road; Station 4 is at 2189 Highway 20, RR#1 in Fonthill. Station 3, which is located at 7 River Street in Port Robinson, is closed due to the condition of the building, as well as because of recruitment and retention issues with volunteer firefighters.

The following is an assessment of the stations, and the Emergency Management Group completed no destructive testing in the structure.

4.1 Fire Stations Review

Fire stations should be in their community's most efficient and effective response location. Centring them within a determined response zone based on "timed" responses is not always the best implementation option. A fire station's location depends on many factors, such as key risks within the response zone, future growth of the community, and station staffing (full-time or volunteer firefighters). Another consideration is the community's geographical layout, which can include natural barriers or divides, such as water, making it necessary to have some stations close to each other.

Office of the Fire Marshal Public Fire Safety Guideline – PFSG 04-87-13 on Fire Station Location states that fire stations should be situated to achieve the most effective and safe emergency responses. Distance and travel time may be a primary consideration; however, if the community's decision makers set a basic expectation of response time, then a more realistic level of service and fire station location criteria may be required.

Historically, fire stations are a community focal point. They have traditionally been located on main roadways in communities to provide quick access and response by the firefighters. The intent is that they last 30 to 40 years, and as such, the planning and design should not solely address the needs of today but those of the Department in 20 years and beyond.

As time progresses, changes in service levels, geographic response areas, or intensification may facilitate the need for larger apparatuses. Consider future growth when selecting a building location and during the fire station's design. Growth often comes in various factors, including an

increase in call volume, an increase in call types, and the need for additional apparatus, for example.

Current industry standards for designing and constructing a fire station have identified the need for enhancements, amenities, and features a fire service would require. The following is a partial list of what is necessary when building a fire station for a composite fire service like the Thorold Fire and Emergency Services:

- Post-disaster-engineered structure
- Emergency backup power supply that energizes the entire building
- Gender-neutral washrooms, locker rooms, showers, and a dormitory (for career firefighters, when and if they come to the TFES)
- Barrier-free, Accessibility for Ontarians with Disabilities Act, compliant
- Negative pressure bunker gear storeroom
- Connect to the source, vehicle exhaust extraction system
- Water runoff separation tanks in the apparatus floor
- Emergency eye wash and decontamination station on the apparatus floor
- Offices for the station officer and firefighters
- Study room
- Communications Office (radio system to receive fire calls)
- Technologies room (i.e., phone, computer, radio, etc.)
- Kitchen
- Drive-through apparatus bays
- Lounge
- Fitness room
- Tool/repair room
- Station supply storeroom
- Clean maintenance room for cleaning/disinfecting and repairing items such as face masks, self-contained breathing apparatus, medical equipment, etc.
- Bunker gear extraction machine and dryer
- Domestic washing machine and clothes dryer

- Training/meeting room
- Emergency shut-off to cooking equipment.
- Given that the Station would be a 30–40-year investment, a new station must include amenities required for additional full-time staffing.
- Red/green lights are installed at the overhead doors to notify the drivers when the overhead door is fully open.
- Sensors at a low level are installed on overhead doors to prevent their closing if the sensor's beam is blocked, indicating an obstruction in the doorway.
- Smoke and carbon monoxide alarms and, in some instances, fire sprinklers.
- While optional, some new fire stations include a heritage room to store fire department artifacts, including antique fire apparatus.

4.1.1 Fire Station Reviews

During the review of TFES facilities, the Emergency Management Group had access to detailed structural assessments for Stations 2, 3, and 4. Station 1, being a newly constructed facility, serves as both the headquarters for TFES and housing for the career staff and a platoon of volunteers. Since Station 1 is new, the focus of the evaluation will be on Stations 2 and 4, with the goal of making recommendations on the optimal service levels for fire protection to meet both the current and future needs of the community.

4.1.2 Fire Station #2 – 701 Allanburg Road

The in-service date for Station 2 is 1995. The recent structural study graded an exhaustive list of exterior and interior construction elements from foundation and footing, deck, load bearing, exterior finish, doors and windows to interior windows and doors, cabinets and walls, and flooring. The list covered services to the structure, as well as emergency systems and food services equipment. All identified structural and service elements were graded on a quality scale from 1 to 5, where 1 means very poor condition to 5, which means very good condition.

Overall, 110 structural components were graded. On average, Station 2 received a grade of 3.3, which can be associated with the station's structural integrity to be fair to good condition. Apart from some masonry work and some roof issues, the overall exterior received a grade of 4, which means that the structural exterior of the building is in good condition. Poor grading was attributed to exterior doors and windows and the roof structure, such as the lintel and ladder components. The structural study also indicated that the exhaust fans and air handling units were in poor condition.

The interior components evaluated received, on average, a grade of 3, which means that the components are in fair condition. The services, including heating, electrical system, plumbing, and water treatment, on average, received a grade of 3 (fair condition). It should also be noted that the showers in the changerooms were reported to be in poor condition. The washrooms lack gender-neutral facilities.

Issues specific to a fire station identified during the site visit included the lack of a negative pressure bunker gear storeroom. Bunker gear is stored directly off the apparatus bay in a doorless, unenclosed area. The industry's best practice is not to store bunker gear on the apparatus floor. Further, Station 2 does not have a diesel exhaust system.

The National Institute for Occupational Safety and Health (NIOSH) and the Ministry of Labour of Ontario, Section 21 Guidance Note 3-1, identify the dangers of cancer-causing diesel fumes. There are several types of vehicle exhaust (VEX) removal systems, each unique. As one would expect, each has its share of advantages and disadvantages regarding the exhaust's capture, treatment and/or filtration.

There are three primary VEX system options that are available, which include (in no order):

Hose-Based Direct Source Capture

- Direct source capture systems utilize a hose to capture diesel fumes directly from the apparatus exhaust.

Vehicle-Mounted Direct Source Capture

- With vehicle-mounted direct source capture systems, the exhaust is filtered directly on the apparatus and then released within the building atmosphere.

Building-Space Filtration

- Building-space filtration systems typically are ceiling units with a fan that forces air through a series of filters, effectively scrubbing the air of diesel particulates and absorbing other harmful exhaust components. These systems are automatic, self-contained, and hose-less.

When considering each option, it is essential to assess responder safety (moving parts and reliability of staff to follow protocols), system cost (initial purchase vs. maintenance costs) and building configuration (new construction vs. retrofit). Every fire station is unique and presents a different set of challenges.

While other exhaust systems are available on the market, they may not be as efficient at capturing the exhaust at the source.

Even though EMG supports the direct connection at the source system, an extensive analysis of each option must be completed before making a final decision, as these are costly to install. Those making the final decision on which system is best must employ an evaluation process, which includes creating a list of the pros and cons of each system. Below are a few pros and cons of each type:

The pros of a hose-based direct source capture system include:

- Diesel engine emissions are captured before they enter the station
- The technology is time-tested and known to be effective
- Hoses provide a visual reminder to station personnel that the system is connected

The primary advantages of a vehicle-mounted direct source capture system include:

- Automatic capture of the diesel particulates and filtration of the exhaust
- Automatic engagement during departure and return of the apparatus (less room for human error)
- Options for utilization on the scene (specifically, versions that are "always-on")
- No hanging equipment within the apparatus bay, which allows for flexibility for apparatus positions without modifying systems

The primary disadvantages of a home-based direct source capture system include:

- System might need components reconfigured as new apparatus is purchased or acquired
- System might need components reconfigured if the apparatus is moved to different positions within the station, limiting flexibility
- Requires operating guidelines to be followed (i.e., a hose is required to be connected as apparatus pulls/backs into the station) to be effective
- Several moving parts to the system require maintenance and have the potential for failure if not properly maintained

The primary disadvantages of a vehicle-mounted direct source capture system include:

- The need for coordination with vehicle manufacturers and the modifications to the apparatus; prevent the voiding of warranties and/or negatively affect the performance of the apparatus
- Requires adherence to a maintenance schedule, such as changing filters. Filter changes can easily be forgotten because the task requires human intervention.
- The system filters diesel particulates, but exhaust gases are discharged into the station atmosphere; the remaining gases are below permissible exposure limits; however, the effects of combustion exhaust on responders are vague

The primary disadvantages of a building–space filtration system include:

- Engine emission particulates are released into the atmosphere of the apparatus bay before entering the filtration system; occupants are exposed to particulates and emissions during the filtration process
- Maintenance of the filters might be complex because of their location (height above the apparatus floor)
- Requires adherence to a maintenance schedule. For example, air filters need to be changed regularly.

As with many fire services, cooking facilities at the fire station are used to prepare meals. Fire calls can occur at any time, and the firefighter who was cooking may have been distracted from listening to the incoming call and forgot to turn off the appliances. The kitchen has a fire suppression system that is in fair condition. The Station should have an emergency shut-off valve/switch for the cooking equipment. This shut-off may be activated when a call is received to ensure that the power or gas supply to the cooking equipment (bar-B-que) is off until the members return and deactivate the valve/ switch.

When the station was built in 1995, post-disaster engineered features were not a requirement, but they are now for all emergency service structures. Adding such features would be cost-

prohibitive as they are typically part of the original design and not completed after the structure's completion.

It is also worth noting that Station 2 shares its occupancy with the local EMS. This is an excellent utilization of a facility to offer shared services from one location.

4.1.3 Fire Station #3 – 7 River Street, Port Robinson

Station 3 was commissioned in 1953 and has undergone significant renovations in 1978, 1982, 1988, 1990, 1993, 1998, 2003, 2009, 2011, 2019, and 2022. The structural assessment provided a comprehensive evaluation of both exterior and interior construction components, including the foundation and footing, deck, load-bearing elements, exterior finishes, doors and windows, as well as interior features such as windows, doors, cabinetry, walls, and flooring.. The list covered services to the structure, as well as emergency systems and food services equipment. All identified structural and service elements were graded on a quality scale from 1 to 5, where 1 means very poor condition to 5, which means very good condition.

A total of 68 structural components were assessed during the review. On average, Station 3 received a grade of 2.5, indicating that its structural integrity is in poor condition. Station 3 has been out of service since 2021. According to the station review provided to the Emergency Management Group.

The overall exterior received a grade of 3, which means that the structural exterior of the building is in fair condition. Poor grading was attributed to exterior vinyl siding, overhead doors (bay doors), and roof structure.

The interior components evaluated received the lowest grading, including a grade of 1 for the interior finish, leading to the closure of Station 3 due to poor air quality. The services, including heating, electrical system, plumbing, and water treatment, on average, received a grade of 2.25 (poor condition).

The consulting firm that reviewed Station 3 recommended that the City of Thorold complete a survey to determine the scope of work required for retrofit and abatement in the short term. Given that fire protection services have been provided through Station 2 since 2021, EMG evaluated the current Stations 1, 2, and 4 response performance and the impact of service delivery vis-à-vis the quality of service to the community, especially the community of Port Robinson located in the southernmost part of the City of Thorold.

Using a computer-based system that creates, analyzes, and maps data with geographical positions, known as Maptitude, EMG plotted the response time of Stations 1 through 4 to determine coverage. Coverage was created based on the NFPA 1720 recommended response time of a demand zone identified by its population density.

With a population density of 285.9/km^2(740/sq mi), the NFPA 1720 identify the demand zone for the City of Thorold as a "*suburban area,*" and the recommended response time is 10 minutes, 80% of the time (figure 8).

FIGURE #8: NFPA 1720 RECOMMENDED STAFFING AND RESPONSE TIMETABLE FOR VOLUNTEER FIRE DEPARTMENTS

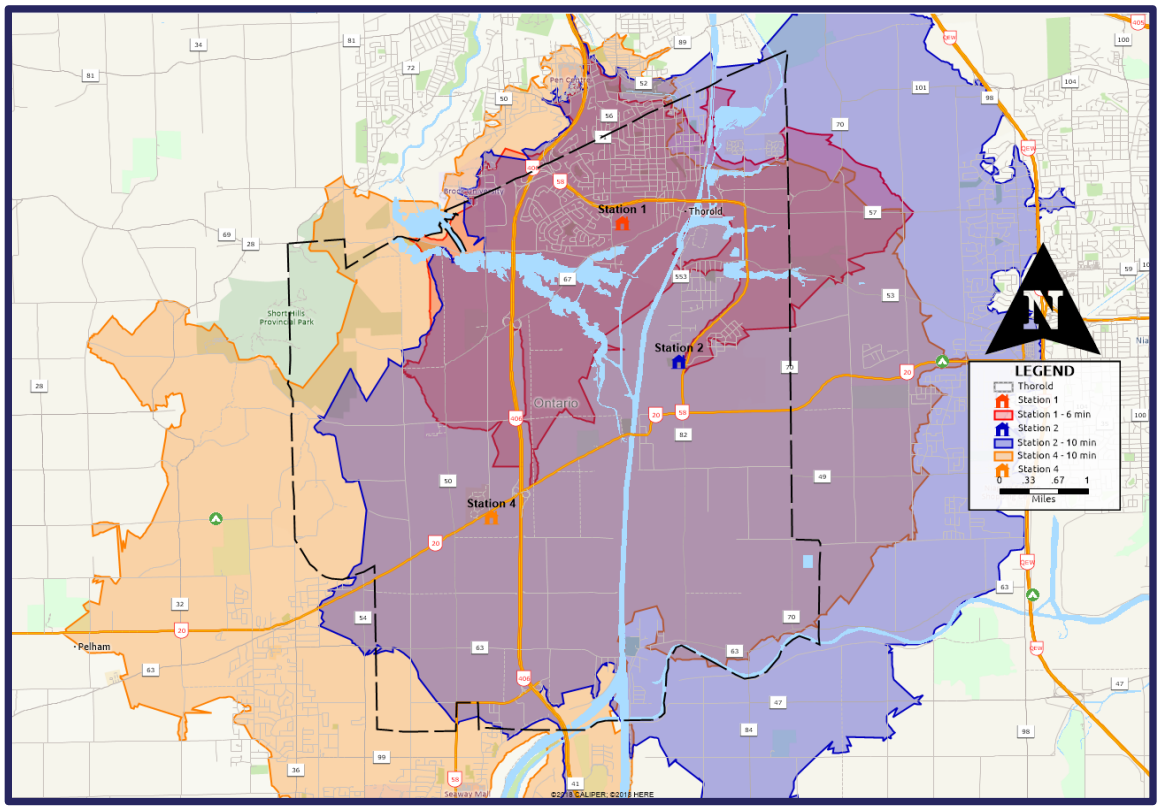
Table 4.3.2 Staffing and Response Time

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

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

The following map depicts the coverage area for the three fire stations. For Station 1, which has a career component for immediate response they can achieve a response coverage of four to six minutes. Whereas, Stations 2 and 4 are the paid on call component and their assumed response coverage would be approximately ten minutes. This is what is depicted in the following map.

FIGURE #9: STATION RESPONSE TIME COVERAGES BASED ON NFPA 1710 AND 1720 (CAREER AND VOLUNTEER)



It is important to note the impact of the Welland Canal and the fact that there is no bridge in the immediate vicinity to connect the two halves of the community of Port Robinson. Due to geographical limitations, the coverage area for the old Station 3 area is limited to the southeast quadrant of the City of Thorold's boundaries. Howver, this area does fall within the recommended ten minute response coverage from Stations 2 and 4.

EMG research indicated that in addition to structural issues with Station 3, there is also a recruitment and retention issue with volunteer firefighters. This issue can be alleviated by reassigning staff to Station 2 and Station 4. Station 2 and Station 4 locations may appeal better for recruitment and retention. Based on GIS analytics data and the condition report, EMG recommends the permanent closure of Station 3 and re-allocating staff between Station 2 and Station 4.

Furthermore, EMG surveyed the City's politicians, TFES staff, and the community at large. The results of the surveys are discussed in section 2. Succinctly, the three target groups surveyed expressed their concerns about the TFES Station 3 closure. Analytics demonstrate that current service delivery from three stations provides adequate coverage that conforms with

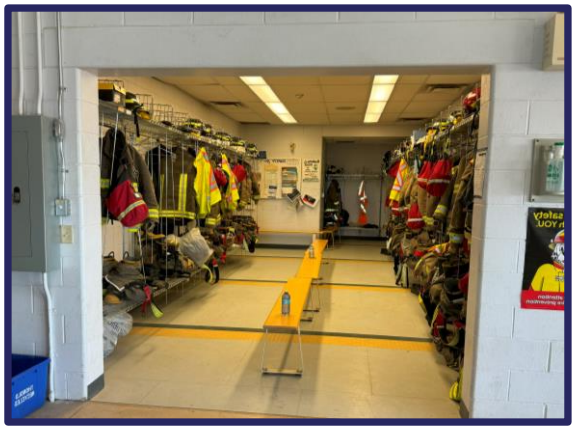
recommendations from the NFPA 1720, based on the "*suburban area"* demand zone and *"response time*" of 10 minutes. EMG recommends that the City of Thorold and the TFES develop a communication strategy to inform concerned residents, especially residents of Port Robinson, of the adequate coverage from the current response model based on three stations and based on the NFPA 1720 recommended staffing and response time for the TFES' organization and deployment operations.

4.1.3 Fire Station #4 – 2189 Highway 20, Fonthill

The in-service date for Station 4 is 1998. There have been considerable renovations from 2002 through 2021. The structural study graded an exhaustive list of exterior and interior construction elements from foundation and footing, deck, load bearing, exterior finish, doors and windows to interior windows and doors, cabinets and walls, and flooring. The list covered services to the structure, as well as emergency systems and food services equipment. All identified structural and service elements were graded on a quality scale from 1 to 5, where 1 means very poor condition to 5, which means very good condition.

Overall, 78 structural components were graded in the review. On average, Station 4 received a grade of 3.4, which can be associated with the structural integrity being in the range of fair to good condition. Poor conditions were identified with respect to the roof structure, including leaking roof and downpipes, causing exterior and interior water damage to the structure. Interior finishing, such as countertops and cabinets, were also found to be in poor condition. Also, changerooms and washrooms require moderate updating. The bay concrete floor and rooftop heating units are the costliest repairs.

The fire hall has a clearly divided clean and dirty area, except for the bunker gear, which is exposed to contamination from a direct opening into the bay area of Station 4.



The apparatus bay area is lacking a proper diesel exhaust system.

The kitchen is small and as previously indicated needs updating. Updates to the kitchen should include an emergency shut-off to the cooking equipment.

4.1.4 Fire Station #1 Headquarters – 1600 McCleary Drive

The TFES moved to their new Headquarters in September 2024. This is a new fire station, which accommodates the career platoon and a volunteer platoon. The entire administrative Division is based at Station 1, including the Administration, Prevention & Public Education, and Training Divisions.

This is a state-of-the-art building with all firefighting-specific amenities. The building also accommodates future growth for the divisions and the suppression crew.

With respect to functionalities, the new station is designed for quick and safe response by personnel and apparatus. As mentioned, the divisions are optimally designed with adequate workspace for all divisional staff. The Training area has sufficient classroom space, allowing for indoor and outdoor training, as well as storage space for audio-visual equipment and training aids.

The new Headquarters has a generous kitchen, eating area, and a lounge. There are gender-neutral washrooms both for the public and for staff. There are separate showers, lockers for firefighters, and sleeping quarters.

There is adequate apparatus space in the bay area. The bay overhead doors have required height and width (14’ wide x 14” tall). The apparatus floor is equipped with a diesel exhaust system.

4.2 Fire Apparatus & Ancillary Equipment

This section assesses the general state of the Thorold Fire and Emergency Services' apparatus, vehicles, and equipment— reviewing existing vehicles and equipment conditions, maintenance programs, capital replacement schedules, and plans relative to existing and expected service demands.

4.2.1 Fire Apparatus - New and Replacement Schedules

When assessing a fire department's ability to respond and meet the community's needs, Fire Underwriters consider the age of a fire truck as one of its guidelines. TFES endeavours to keep fire apparatus on a 15-year replacement cycle. TFES is currently following the Fire Underwriters' recommended replacement schedule to aid in planning capital budgets and create a benchmark for forecasting fire truck replacements. Smaller vehicles, such as pick-up trucks and cars, vary in their replacement schedule, depending on their purpose.

When ordering a new apparatus, many fire departments include all the required ancillary equipment, which helps ensure this equipment also follows a regular replacement schedule. Further, it should remain fully equipped when the apparatus becomes a reserve unit. Whenever an apparatus is no longer in service, its ancillary equipment becomes designated as spare or liquidated.

Some fire services donate their surplus pieces in good condition to Indigenous communities in Northern Ontario or donate to agencies that send them to third-world countries. In 2023, fire departments sent their outdated sets of bunker gear, equipment and apparatus to the fire departments in Ukraine to replace items lost due to the conflict.

It is becoming common in fire services to standardize fleet and ancillary equipment. By doing so, the TFES may realize savings in training hours and repairs as fewer spare parts are needed, and there is a reduced time to train firefighters on the apparatus. Additionally, the firefighters could operate any apparatus in the fleet if they have the same chassis and pump.

Ancillary equipment such as hoses, nozzles, chainsaws, circular saws, extrication tools, self-contained breathing apparatus, ventilation fans, foam equipment, etc., could also be standardized. Again, there are savings in repairs and time required for training. All ancillary pieces requiring repairs, such as fire hoses and nozzles, chain and circular saws, should be included in the asset management system to track repairs and to establish replacement cycles.

For the most part, the TFES is well-equipped with pumpers, tankers and rescues. The Council budgeted for a new aerial device. With provincial guidelines for the need for intensification, applications for higher residential occupancy investment in the aerial enhances community safety. When purchasing tankers in the future, the TFES should acquire units with higher water capacity, such as a unit that carries 11,365 litres (2,500 gallons). A good practice is the identification of replacement schedules in the capital forecast for the fire trucks.

4.2.2 Fire Underwriters – Fire Apparatus Replacement Recommendations

The *Medium-Sized Cities or Communities Where Risk is Significant* section (highlighted in blue) is the recommended schedule for vehicle replacement for a municipality the size of the City of Thorold. This schedule allows up to a 20-year replacement cycle, in which the fire vehicle can be a second-line response status. Due to the anticipated population density and current population growth (table 15), when compared to the Fire Underwriters' recommended replacement schedule, Emergency Management Group recommends that all first-line pumpers be replaced by a new or younger apparatus when it reaches 15 years of age. That unit then becomes a second-line apparatus for the next five years. And a spare for the following five years.

TABLE #15: POPULATION DENSITY OF THE CITY OF THOROLD

City of Thorold		
Year	Population	Population Density
2021	23,816 (+26.7%)	285.9 / km²
2016	18,801	------

Fire Underwriters' definition of first line, second line, and reserve apparatus is:

- First-line is the first fire truck utilized for response at the fire station.
- The second line is the next truck to use if the first line unit is at a call.
- Reserve is the vehicle kept in the fleet to be put into service if a first-line or second-line vehicle is out of service.

TABLE #16: FIRE UNDERWRITERS' VEHICLE REPLACEMENT CHART37

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	2nd 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 2nd 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 centres conditionally when the apparatus condition is acceptable, and the 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/OR
- 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 population more than 1,000.

Insurance companies study Fire Underwriters' reviews, known as Surveys, before setting their insurance rates. If the Department adheres to the recommended replacement timelines through an approved capital replacement schedule, it will retain its fire rating for fire apparatus. Not replacing the apparatus per the recommended schedule could adversely affect insurance rates.

By replacing vehicles on schedule, the Council is also demonstrating due diligence toward ensuring a dependable response fleet for TFES and the communities it serves. This measure will keep the community's fire rating in good standing, which can also reflect on commercial and residential insurance rates.

As noted in the table below, several units need to be replaced due to their age per NFPA guidelines. Pump 1A is outdated by 3 years but meets the NFPA 1910 guidelines. Pump 2 has been replaced this year (2024). Pump 4 was replaced in 2023 and the old Pump 4 is now the “Reserve” pump (Unit 14). Rescue 4 although it is outdated by 5 years, it meets the NFPA 1910 guidelines. Tanker 4 is also outdated by 4 years but meets the NFPA 1910 guidelines. As noted in the NFPA guidelines, if an apparatus has been adequately maintained with documented records that show they have been maintained; the life span of the apparatus may be extended. It is recommended that the department follow NFPA guidelines and replace apparatuses that do not meet this standard.

TABLE #17: TFES APPARATUS REPLACEMENT STATUS

Apparatus Name	Unit Number	Year	Type	Station	Replacement Status
Pump 1	116	2020	Pump	Station 1	OK
Pump 1A	15	2006	Pump	Station 1	Outdated by 3 years
Pump 2	16	2024	Pump	Station2	OK
Old Pump 2		2009	Pump	Station 2	**TO BE SOLD**
Pump 3	34	2019	Pump	Station 2	OK
Pump 4	117	2023	Pump	Station 4	OK
Reserve	14	2002	Pump	Station 4	Outdated by 7 years
Aerial 2	21	2017	Aerial	Station 2	OK
Rescue 1	32	2006	Rescue	Station 1	OK
Rescue 4	33	2004	Rescue	Station 4	Outdated by 5 years
Tanker 2	42	2010	Tanker	Station 2	OK
Tanker 4	41	2005	Tanker	Station4	Outdated by 4 years

4.2.3 NFPA – Vehicle Replacement Recommendations

The NFPA 1910 Standard for Inspection, Maintenance, Refurbishment, Testing, Retirement of In-Service Emergency Vehicles, and Requirements for Marine Firefighting Vessels is a standard that supports a regular replacement schedule of fire vehicle*s*. Like the Fire Underwriters recommendations, this standard includes guidance on retirement criteria for fire apparatus. This standard recommends replacing all front-run vehicles on a 15- to 20-year cycle, depending on the community size. These replacement recommendations are for fire vehicles with pumps. Most communities refer to their Municipality's vehicle replacement policies for general-purpose fire department vehicles.

Although no national standard legally mandates the replacement of emergency vehicles, it is critical to replace these and other apparatus before they become unreliable. Delaying the replacement is inadvisable as it will add to the apparatus's overall maintenance costs and can adversely affect insurance costs based on the fire department's Fire Underwriters rating.

As mentioned previously, fire services are standardizing their fleet and ancillary equipment. By doing so, the TFES may realize savings in training, repairs, and the variety of spare parts to stock. The reduced time required to train firefighters on the apparatus or equipment also places the

new items in service sooner. Additionally, the firefighters could operate any apparatus in the fleet if they have the same chassis and pump.

When standardizing ancillary equipment, such as the hose, nozzles, chainsaws, circular saws, extrication tools, self-contained breathing apparatus, ventilation fans, foam equipment, etc., the time required for training is less, which equates to financial savings.

Concerning vehicle replacement and refurbishment, in Canada, departments also use ULC S-515-12. TFES references these and other related NFPA standards when designing apparatus, identifying their year for replacement and when refurbishing.

When ordering a new apparatus, it should include all the required ancillary equipment, which helps ensure this equipment also follows a regular replacement schedule. Furthermore, it remains fully equipped when the apparatus becomes a reserve unit.

While drawing specifications for new apparatus, fire departments are now establishing an Apparatus Committee to draw up specifications for new apparatus, which includes developing its Terms of Reference. Members of the Committee should consist of the Deputy Chief, Captains, the Training Officer, and firefighters (career and volunteer) who may have a vested interest in the specifications. By having a committee, all aspects of the specifications will be considered, including the purpose and function of the apparatus, its power plant, pump size, compartment configuration and sizes, ancillary equipment, hose loads, chassis safety features, including airbags and health and safety concerns such as clean cab technologies and enhanced chassis stabilization to lessen the risk of a rollover.

Some municipalities in Ontario are choosing to lease some of their fleet vehicles, such as cars, vans and pick-up trucks. Lease payments can be more manageable and less impactful on their budgets. At the end of the lease agreement, they return the vehicle and pick up a new replacement. Taxes are paid monthly on the cost of the lease instead of paying a lump sum at the time of delivery. Maintenance costs are lower as the vehicle comes with a minimum of a three-year warranty, which impacts the budget to a lesser degree.

In the United States, fire departments have turned to leasing their fire apparatus on a five to ten-year lease when they are replaced by new apparatus when the lease ends. This practice reduces costly repairs of aging equipment and one-time capital costs. Canadian municipalities are now exploring lease options as an alternative to purchasing.

4.3 Damage of Salt Brine

Over the last several years, municipalities have been using salt brine on the roads in the winter to reduce the adhesion of snow and ice to road surfaces. This mixture is causing significant

damage to the fire apparatus and advancing the rusting of the vehicle's body. Once the frame rail of an apparatus begins rusting, it may split over time, creating costly repairs and sometimes making the vehicle un-roadworthy. Each spring, the TFES should proactively wash the underbody of every fire apparatus. Upon completion, spray the body with an anti-rusting agent to slow the rusting process and reduce the repair costs associated with this issue.

At the same time, clean electrical connections on the pump panel and apply corrosion inhibitor.

4.4 Maintenance of Apparatus

The Council must initiate and support an aggressive maintenance program for the apparatus to remain in a constant state of readiness and longevity as a frontline apparatus. Apparatus must respond to an emergency at a moment's notice, and reliability is imperative. No fire department wants their apparatus to fail while enroute to a fire call.

The Emergency Vehicle Technician Certification Program offers several certification tracks for technicians working on different emergency vehicle types. This certification is for technicians who service and maintain fire department pumpers, rescues, aerial devices, tankers, and wildland apparatus.

4.5 Maintenance and Testing of Ancillary Equipment

During the review, a program was in place for small equipment testing and evaluation. All equipment, such as ladders, breathing apparatus, small engines, ropes, and hoses, are tested annually or based on manufacturers' recommendations.

- NFPA 1932 Standard identifies the type and frequency of testing for ground ladders.
- NFPA 1983 outlines the testing process for life safety rope.
- NFPA 1914 outlines testing for aerial devices.
- The *Health and Safety Act* and its *Section 21 Committee's Firefighter Guidance Notes* state that all equipment workers use must be in good condition.

TFES is proactively ensuring that testing, inspections and maintenance are carried out for the safety of personnel while securing the equipment in a state of readiness.

4.6 Equipment

An essential tool in fighting fires that involve alcohol-based products is foam. Foam develops a covering layer over the burning product and assists in smothering the flames. The Federal government recently banned forever chemicals in foam concentrate, such as fluorinated aqueous film foams, to suppress flammable liquid-type fires to fluorine-free foams. The reason

for this is that the forever chemicals are carcinogens. TFES needs to ensure that none of its present stock of foam concentrate contains these forever chemicals.

Section 21, Guidance Note 4-9, Respiratory Protection Program and CAN/CSA-Z94.4-18 requires fire services that use respirators to have a Respiratory program. While TFES has the SOGs and policies necessary for a respiratory program, it lacks a dedicated format that contains all the information required as a central resource.

4.7 Asset Management Program (AMP)

Tracking the completion of annual testing in the asset management program should be a fire department's priority to ensure equipment functionality. This tracking capability allows the fire department to confirm that apparatus and equipment testing schedules get completed while minimizing their unavailability. The asset management program should be capable of identifying equipment coming to the end of its life cycle.

The TFES tracks equipment and repairs and has a comprehensive history of its ancillary equipment. Around 2012, the Ontario Government improved asset management planning for municipalities. The TFES needs to update its asset management program to include a master equipment life-cycle plan to ensure that equipment replacement is occurring where applicable. It is a common practice to tie this equipment to the parent apparatus. The department's equipment inventory that requires repairs, testing, or a life cycle should be in the program.

Many pieces of equipment have a predetermined life span as established in the NFPA Standards and or the OH&S Sections 21 Guidance Notes. When it comes to the end of the life span, the items must be decommissioned, replaced with new things, and then disposed of to ensure any other outside interests could not use them for liability reasons. Although the AMP tracks the status of the life span of its equipment, the asset management program should operate to trigger notifications when an item is approaching the end-of-life span, and plans should be in place for replacement (i.e., identified in the budget).

4.8 Water Supply

4.8.1 Hydrants

On January 1, 2018, Ontario Regulation 588/17: Asset Management Planning for Municipal Infrastructure came into effect. The regulation sets out requirements for municipal asset management planning to help municipalities better understand their infrastructure needs and inform infrastructure planning and investment decisions. The regulation requires municipalities to develop a plan for water, wastewater and stormwater assets and ensure they meet the

regulatory requirements. The regulation intends to improve the quality and consistency of municipal asset management planning.

All fire hydrants need to be inspected and tested as required in Articles 6.6.5.2. through 6.6.5.7. of Ontario Regulation 213/07 of the *Ontario Fire Code.* [38] NFPA 24, *Standard for the Installation of Private Fire Service Mains Their Appurtenances,* and NFPA 291, *Recommended Practises of Fire Flow Testing and Marking of Hydrants,* should be followed. The Municipalities must ensure hydrants are flushed annually. The failure of a hydrant to operate as required may present catastrophic results and expose the Municipality to the risk of litigation. Hydrants must comply with the colour scheme per NFPA 291.

4.8.2 Couplings and Hose

Most municipalities install fire hydrants with three ports for attaching a fire hose when required. The two side ports are 65 mm (2.5 inches) in diameter, and the large steamer port on the front may vary from 100 mm to 150 mm (4 to 6 inches). Usually, the large steamer port has threads on it, and fire services attach large-diameter water supply hoses ranging in size from 100 mm to 150 mm. The water supply hoses do not have threads but Storz lugs that, when connected, lock the couplings together to prevent separation when flowing water. Depending on the hydrant, attaching a hose with these couplings may require the use of an adaptor to allow the hose to be connected. Older models have threads, whereas the more modern units have Storz lugs like the water supply lines.

Municipalities are now ordering new or replacement fire hydrants with Storz lugs on the large steamer ports, eliminating the need for an adaptor.

[38] Ontario Fire Code, "Section 6.6 - Water Supplies For Fire Protection", accessed March 2024, https://ontariofirecode.com/ontario-fire-code/ontario-fire-code/division-b-acceptable-solutions/part-6-fire-protection-equipment/section-6-6-water-supplies-for-fire-protection/

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Cost	Rationale
40	EMG recommends the permanent closure of Station 3 and the re-allocation of staff between Station 2 and Station 4.	Immediate (0 to 1 year)	Staff Time	Station 3 is currently inactive due to structural and staffing issues. Service delivery has already been reassigned to Station 2. Due to the Welland Canal, shared responsibilities between Station 2 and Station 4 would optimize service delivery. GIS analytics demonstrate that service delivery from Station 2 and Station 4 to the Port Robinson area meets the recommended response time and staffing from NFPA 1720.
41	City of Thorold and the TFES develop a communication strategy based on recommendation from EMG to close Station 3 and based on EMG's analysis indicating the adequate coverage from the current response model to inform concerned residents, especially residents of Port Robinson	Immediate (0 to 1 year)	Staff Time	EMG surveys of the community showed that residents are not well-informed of response time and staffing requirements recommended by NFPA 1720. The residents of the Port Robinson area would benefit from a communication strategy informing them of the adequate service delivery from the current three-station model.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Cost	Rationale
42	TFES should implement a 15-year replacement schedule for all first-due apparatus	Short-term (1 to 3 years)	Capital Budget Re-structuring with no direct cost	Currently, the TFES implement a 15-year replacement schedule. The replacement schedule is not always followed as some vehicles are beyond their replacement scheduled year. The TFES would benefit from a robust replacement benchmark aligning with FUS. The alignment would also benefit the City's grading, and it would ultimately benefit the insurance rate for fire protection services for the residents.
43	Apparatuses that do not meet the replacement schedule recommended by FUS should follow NFPA 1910 replacement guidelines.	Short-term (1 to 3 years)	Capital Budget Re-structuring with no direct cost	TFES apparatuses that do not conform to FUS do not meet the NFPA 1910 replacement guidelines. It would benefit the TFES and the City with respect to capital budgeting and fleet replacement to adhere to the recommended benchmark set in NFPA 1910.
44	TFES needs to update its asset management program to include a master equipment life cycle.	Short-term (1 to 3 years)	Staff Time	A master equipment life cycle program will ensure equipment is replaced in timely fashion, always current, and in good working condition.
45	All fire hydrants need to be inspected and tested as required in Articles 6.6.5.2. through 6.6.5.7. of Ontario Regulation 213/07 of the Ontario Fire Code	Short-term (1 to 3 years)	Staff Time	The Municipalities must ensure hydrants are flushed annually. The failure of a hydrant to operate as required may present catastrophic results and expose the Municipality to the risk of litigation. Hydrants must comply with the colour scheme per NFPA 291.

Section 5

Emergency Management

SECTION 5: EMERGENCY MANAGEMENT

5.1 Emergency Management Program Overview

The Emergency Management and Civil Protection Act (*EMCPA*) prescribes responsibilities to municipalities to develop and implement an emergency management program, which the council of the municipality must adopt as a by-law. Further, under *EMCPA*, the municipality is required to formulate an emergency plan governing the provision of necessary services during an emergency and to establish procedures detailing how the municipality's employees and other persons will respond to the emergency. The council of the municipality shall by by-law, adopt the emergency plan.[39] .

The City of Thorold adopted By-law 74-2022 to meet the various requirements of the *Emergency Management and Civil Protection Act* and its related regulation 380/04.

May 4th, 2023, the CEMC received a compliance letter from EMO indicating that the City of Thorold had satisfied all 13 program elements required under the EMCPA, including:

- Municipal hazard and identification risk assessment.
- Municipal critical infrastructure list.
- Municipal emergency plan.
- Program By-law.
- Annual Review.
- Annual training.
- Annual exercise.
- Public education program.
- An Emergency Operations Center.
- A Community Emergency Management Coordinator.
- An Emergency Management Program Committee.
- A Municipal Emergency Control Group (MECG) and
- An Emergency Information Officer.

[39] Ontario, "Emergency Management and Civil Protection Act, R.S.O. 1990, c. E. 9," accessed June 28, 2023, https://www.ontario.ca/laws/statute/90e09

The latest version of the ERP was dated 2022. It is a legislative requirement for ERPs to be reviewed and updated each year. In some cases, changes could be minor, not requiring a complete document update. To catalog such changes, the CEMC should update the "record of Amendment" 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.

EOCs are critical coordination hubs during disasters where incident response personnel and the communities and organizations they represent come together. An EOC lacking certain materials or equipment -- or staffed with employees without proper training -- can create a disaster within itself.

The locations of the EOCs include:

- Primary – Station 1
- Secondary – Station 2
- Tertiary – City Hall

The City of Thorold should set up each EOC yearly to ensure the infrastructure is operational as required during a real emergency. Consider an agreement with a neighbouring municipality allowing the City's use of its EOC if all its locations are unavailable.

5.2 Incident Management System

Interagency, multi-jurisdictional, multi-government, and *multi-disciplinary* are terms used when operating in a large-scale emergency environment. The Incident Command System (ICS) is based upon best practices in Canada and the United States and is used for small or large emergency and non-emergency planned events. It identifies roles and responsibilities for a common purpose to improve resource and interagency communications. In the Province of Ontario, the ICS is equivalent to the IMS.

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."[40]

The City of Thorold has implemented the Incident Management System (IMS), with most staff involved with the EOC having completed IMS 100 and a few have also completed IMS 200.

Even though the level of training prescribed to Members of the Municipal Emergency Control Group is not in either the by-law or the ERP, a good practice would be for them to complete IMS 200 as a minimum. All Emergency Control Group members should also complete the Basic Emergency Management course.

There are three key types of incident management levels that the municipality should consider as their basis for staff-related training:

- 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: This level 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.

The IMS doctrine from the Province of Ontario is designed to be consistent with the Canadian Standards Association (CSA) *Z1600 – Canadian Emergency Management and Business Continuity Program Standard*. It is recommended that during the next review of the ERP, the plan implicitly incorporates IMS principles.

5.3 Agreements and Non-Governmental Organizations

As noted, longer-term emergency responses can quickly tax local resources. Utilizing Non-Governmental Organizations (NGOs) will aid in ensuring the maintenance of key functions throughout an event. Many of these NGOs are national and international, and they can pull resources from unaffected areas to assist in a locally impacted area. The processes used by these NGOs of choice should be incorporated within the planning, training, and exercises to ensure a smooth transition from internal staff to the NGO as they arrive and begin to function.

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

These NGOs provide many specialized services, with some focusing on specific areas more than others.

The following is a list of NGOs mentioned in the sub-section 8.4 of the ERP:

- St. Catharines Transit Services
- Enbridge Gas
- Trans-Canada Pipelines
- Niagara Health System (NHS)
- Niagara Peninsula Conservation Authority (NPCA)
- CN Rail Police
- Society for the Prevention of Cruelty to Animals (Lincoln County Humane Society, SPCA)
- Niagara Region District School Board
- Niagara Catholic District School Board
- Provincial and Federal Ministries as required, i.e. EMO, OFMEM, MTO, MNRF

EMG applauds the City of Thorold for its extensive list of NGOs.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Cost	Rationale
46	The City of Thorold ERP should incorporate IMS principles	Short-term (1 to 3 years)	Staff Time	Although some staff have received training to IMS 100, the level of training is not prescribed in the ERP and the MECG staff would benefit from completing IMS 100 and 200, as well as the EMO BEM course.

Section 6

Mutual Aid, Automatic Aid and Fire Service Agreements

SECTION 6: MUTUAL AID, AUTOMATIC AID AND FIRE SERVICE AGREEMENTS

In 1997, the Ontario government created the Fire Protection and Prevention Act, setting out the framework to address fire risks and other public safety hazards across the Province of Ontario. Under the authority of the Act and direction from the Fire Marshal for the Province of Ontario, Provincial Mutual Aid Systems are in place and municipalities that serve a designated area would agree to assist each other in an emergency. The Act also outlined that fire coordinators shall be appointed to establish and maintain the mutual aid plan of each county/region/district across the Province of Ontario.

The Mutual Aid Plan and Program, which the Office of the Fire Marshal must approve, allows a participating department to request assistance from a neighbouring fire department authorized to participate in their Plan. The Plan is to work in cases where the emergency requirements of one municipality exceed the resources available, and the fire coordinator must allocate fire resources to a location.

There are essential requirements that must be in place for a municipal fire department to participate in a Mutual Aid Plan and Program. One is the local Establishing and Regulating By-law, which must grant the Fire Chief or designate the ability to allocate resources outside the municipal boundary, and the fire department must have adequate resources to meet its day-to-day fire protection obligations.

Another is that responding fire departments must meet the Occupational Health and Safety Act regulations and understand that their first obligation is to attend to emergencies in their municipality or jurisdiction. The Fire Chief of the fire department in the municipality where the emergency occurs is responsible for managing the incident.

There are no costs to participate in the Mutual Aid Plan and Program, and assistance is to be reciprocal in both workforce and apparatus. All activations of mutual aid are reported in a prescribed manner and documented by the fire coordinators, who inform the Office of the Fire Marshal.

6.1 Mutual Aid Plan and Fire Protection Agreements

Mutual aid, automatic aid, and fire protection agreements can be adapted to support a community's fire department when local resources are exhausted. These agreements provide a quicker response to areas that may be closer to a neighbouring fire department's response area than that of the host department.

6.1.1 Mutual Aid Plan and By-law

Mutual Aid Plans (MAPs) support the provision of fire service resources and multijurisdictional coordinated efforts at the scene of an emergency to minimize loss of life and property damage. Mutual aid is intended to be a reciprocal agreement among participants in the plan whereby upon request, one department or more aids the requesting department at a major incident, or significant event. A MAP established under Section 7 of the *Fire Protection and Prevention Act (FPPA), 1997*, does not constitute an automatic aid agreement, and therefore mutual aid is not intended to be used as a means of satisfying the established level of fire protection services in a requesting municipality. [41]

Section 7 of the FPPA, 1997, authorizes the establishment and coordination of MAPs based on the following:

Fire co-ordinators

7 (1) The Fire Marshal may appoint fire co-ordinators for areas designated in the appointment. 1997, c. 4, s. 7 (1).

Duties

(2) A fire co-ordinator shall, subject to the instructions of the Fire Marshal,

(a) establish and maintain a mutual aid plan under which the fire departments that serve the designated area agree to assist each other in the event of an emergency and

(b) perform such other duties as may be assigned by the Fire Marshal. 1997, c. 4, s. 7 (2); 2002, c. 18,

In some instances, a fire department's Establishing and Regulating By-law (E&R By-law) will include a clause that authorizes participation in a MAP. Alternatively, the Council of a municipality may pass a separate By-law authorizing participation. This authorization gives the Fire Chief the authority to have resources leave the municipal boundaries to aid another jurisdiction upon request. A municipalities E&R By-law provides council with the opportunity to establish the level of service to be provided by the fire department. Reciprocally, the By-law can

[41] Ontario, "Fire Protection and Prevention Act, 1997, S.O. 1997, c. 4", accessed September 2024, https://www.ontario.ca/laws/statute/97f04

include additional strategies to reduce or mitigate the risks identified in the Community Risk Assessment and this Fire Master Plan under the *FPPA*, 1997.

Part II – Responsibility for Fire Protection Services of the *FPPA* states the following:

2(1) Every Municipality Shall,

(a) Establish a program in the municipality which must include public education with respect to fire safety and certain components of fire prevention and;

(b) provide such other fire protection services as it determines may be necessary in accordance with its needs and circumstances.

In Ontario, fire departments have participated in organised assistance through a formalized MAP since the 1950's and the general principles of operation of mutual aid plans in Ontario are as follows:

- To support a sufficient and coordinated response to minimize loss of life, property damage and impacts to the environment through the efficient utilization of resources.
- To provide an organizational framework necessary to successfully manage multi-jurisdictional resources within an Incident Management System (IMS)

Under the general direction and authority of the fire co-ordinator to;

- Ensure participants in the MAP adhere to the stated responsibilities;
- Provide guidance and direction for the activation of mutual aid.

Section 6, Responsibilities and Authority of Fire Chief, of the Corporation of the City of Thorold By-law No. 11-2021, a By-law to Establish and Regulate the Thorold Fire and Emergency Services (TFES) authorizes the following:

6.2(c) For arranging and implementing automatic aid, mutual aid and other negotiated fire protection and emergency service agreements within the Corporation's borders and/or within the municipal borders of adjoining municipalities.

Through this responsibility and authority, TFES has entered the Region of Niagara Mutual Aid Plan. Developed under the authority of the FPPA, the MAP facilitates the provision of fire protection services to the residents of the Region of Niagara through the 12 fire services under the overarching provincial plan. [42] The intention of a MAP is to permit for a reciprocal level of response from the participant fire departments in the plan. In theory, a responding fire department is only obligated to provide the same resources and technical expertise the

[42] Region of Niagara Mutual Aid Plan 2023, Section 1.0, Pg. 3. accessed September 2024

requesting department can provide. A level of service beyond that which is reciprocal in nature would be delivered via an automatic aid agreement or fire protection agreement. The Region of Niagara Mutual Aid Plan is based on a template provided by the Ontario Office of the Fire Marshall, allowing for the plan to be adjusted from time to time based on the needs of the participating fire departments. With oversight from the Niagara Region District Fire Co-ordinator, the plan should be reviewed annually and amended as determined necessary.

The Niagara Falls Fire Chief currently serves as the coordinator of the plan and is supported by three alternate fire coordinators. The plan itself is well structured and provides clear direction to the participating fire departments regarding conditions for participation in the plan, activation of the plan, roles and responsibilities, the criteria required for being appointed a fire coordinator or alternate, and procedures for contacting the OFM.

Most municipalities or fire services do not have the resources to mitigate every conceivable emergency. If, for example, a risk is identified within a municipality that falls outside of the intended use of the MAP for mitigation, a municipality may choose to enter an automatic aid or fire protection agreement for assistance. These prearranged agreements are an additional means for municipalities to mitigate identified risks that the fire service does not have the means to adequately respond to.

TFES is an active participant in the Region of Niagara Mutual Aid Plan. During the years 2021 to 2023, TFES participated in 16 mutual aid activations, 12 of which the service was asked to aid neighbouring municipalities. TFES requested assistance from other participating departments for the additional four activations.

TFES SOG – 6.15 Notification of Chief or Deputy Chief provides direction to staff in the event of a mutual aid activation and ensures that senior officers are notified of an emergency where TFES are supporting a neighbouring department or, conversely, when TFES has requested support via the MAP.

6.1.2 Multidisciplinary, Highly Specialized Response - Provincial CBRNE/USAR Teams

Most small volunteer or composite fire services are not equipped or trained to mitigate large-scale hazardous materials incidents or structural collapse events. The Office of the Fire Marshall oversees, administers and supports Memorandums of Understanding (MOUs) with six municipal fire services to enable multijurisdictional, highly specialized teams to be deployed as needed throughout Ontario to support local responders. These teams are available on a province-wide

basis to respond to large-scale, complex, natural or human-caused emergencies in a planned and coordinated manner.[43]

CBRNE/HazMat – Ontario has three chemical, biological, nuclear and explosive teams located in Toronto, Windsor and Ottawa and three technician-level hazardous materials teams located in North Bay, Thunder Bay and Peterborough.

USAR – Ontario has one heavy urban search and rescue team located in Toronto and two light teams located in Ottawa and Thunder Bay.

Fire Coordinators for counties, regions and districts may request access to these provincial teams for support by contacting the Provincial Emergency Operations Centre (PEOC).

As identified in the Thorold CRA and Section 2 of this report, hazardous materials incidents have been identified as a high risk to the community. Presently, Schedule "A" to By-law No. 06-2017 Rates and Fees 2024 does not include a cost recovery mechanism for these types of occurrences.

6.2 Automatic Aid and Fire Protection Agreements

Automatic aid agreements fill identified geographical gaps within a community. This is accomplished by establishing an agreement where a neighbouring fire department automatically responds to specific incident types, to defined geographical areas, or to structures of significant importance or value. Depending on the nature of the agreement, the home department may not even respond to these incidents unless the situation is of such significance that a mutual aid activation is necessary. Automatic aid and fire protection agreements are established between fire departments when time and resources are a factor when responding to an incident. These agreements may also be established when a fire department lacks the training and equipment to respond to incidents of identified risk, such as technical rescue emergencies. In most instances, the latter would constitute a fire protection agreement. These types of agreements generally include a fee for service and are focused on the contracted agency providing the service as opposed to a reciprocal agreement. Other examples of fire protection agreements are for the provision of dispatching services or tiered response agreements. Suppose the authorization to establish these types of agreements is not provided for in the fire department E&R by-law. In that case, the Council of a Municipality should enact such agreements through a separate by-law.

[43] Ontario, "The Office of the Fire Marshal", accessed September 2024, https://www.ontario.ca/laws/statute/97f04

Compared to a request for support under a mutual aid plan, the primary benefit of an automatic aid agreement is that the response happens immediately, saving vital time. Before initiating a request for assistance under a mutual aid plan, the incident commander of the home department will typically have to arrive on the scene, conduct a size-up of the situation and evaluate the risk against the resources available to mitigate the problem.

Part II of the *FPPA* charges municipalities with the responsibility for fire protection services within their area of jurisdiction. Accompanying this responsibility is the onus to ensure that neighbouring departments providing support under a mutual aid agreement or fire protection agreement adhere to established legislative requirements and industry best practices for emergency response. Agreements that are entered into should refer to the Occupational Health and Safety Act, O. Reg. 343/22 Firefighter Certification, the Incident Management System, and adherence to the applicable Section 21 Firefighter Guidance Notes, to name some areas.

Another important area of focus should be mutual training related to the terms and conditions of the agreement. Multijurisdictional training events will enhance fire scene operations in the areas of communication, coordination, and familiarity with equipment, thus better preventing injury or death and reducing property loss at fire incidents.

These agreements should also provide for a defined mechanism of collaboration between participating agencies. The needs and circumstances of any municipality are dynamic. As the risks within a community are evaluated against risk mitigation efforts, or alternatively, if additional risks are identified, these agreements may have to be adjusted to match the changes. Regular meetings between the Fire Chiefs of the participating departments, and municipal officials, when necessary, will establish a cooperative means for enhancing fire protection services.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Cost	Rationale
47	That TFES update Schedule "A" to By-law No. 06-2017 Rates and Fees 2024 to include a cost recovery process for hazardous materials incidents.	Immediate (0 to 1 Year)	Staff time	Hazardous materials response incidents have been identified as a high risk to the community. To recover the cost of a request for assistance from another agency to mitigate a hazardous materials incident, a cost recovery mechanism should be in place.

Section 7

Finance & Budgets

SECTION 7: FINANCE, BUDGETING, FEES, & COST RECOVERY MECHANISMS

7.1 Finance

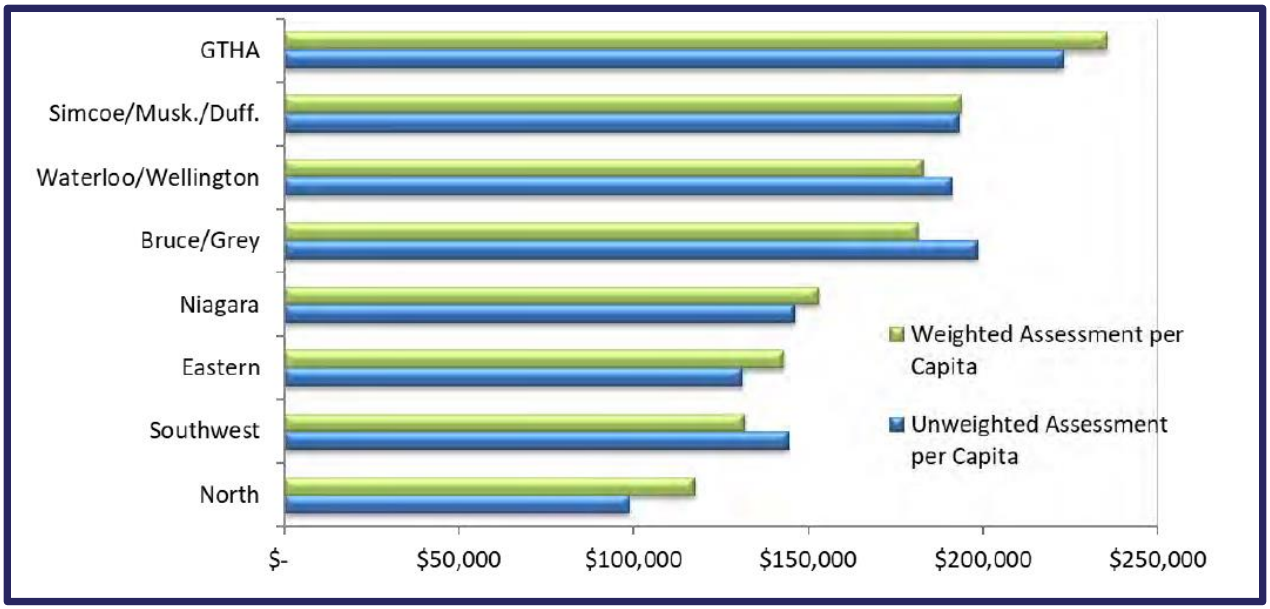
EMG reviewed a variety of documents to prepare for evaluating the finances related to the operation and function of the TFES. These documents included the BMA - Municipal Study 2023, the TFES Operating and Capital Budgets for 2021, 2022, and 2023, the 2024 Watson & Associates Development Charges Background Study, Development Charges By-law 41-2024, Schedule "A" of By-law 06-2017, Parking in Fire Routes By-law 79-2014, the Licensing, Regulating, and Inspecting of Residential Rental Property By-law 109-2017, and the Licensing, Regulating, and Inspection of Bed & Breakfast Accommodation (other than Hotels or Motels) By-law 21-2020.

The current methodology of establishing budgets for the TFES follows a pattern like that of many other Ontario municipalities wherein successive budgets are based on existing budgets with changes proposed based on several factors, primarily Consumer Price Index (CPI)/inflation rate fluctuations.

In the fire service realm, the cost of fire apparatus, for example, has risen over 20% over the last two years, according to some industry experts. A global economy is driving these costs, increasing demands for equipment and machinery (equating to longer delivery times), labour shortages, rising costs for component materials, lasting effects of the COVID-19 pandemic, and even the Russia-Ukraine war. It is not unusual to see a million-dollar price tag on a pumper (the mainstay of any fire fleet) in Ontario now – something unheard of a few short years ago.

The 2023 data compiled by BMA Management Consulting Inc. of 121 Ontario communities identified that, as an indicator of local taxation levels, the Niagara municipalities' weighted assessment per capita ranked in the lower range in the province (Figure 10).

FIGURE #10: 2023 BMA MUNICIPAL STUDY – ASSESSMENT PER CAPITA



The assessment growth for the Niagara region experienced the most significant increase at 2.14 from 2022-2023 (Figure 11). On average, the assessment increased by 1.4% across the 121 Ontario municipalities participating in the study.

FIGURE #11: 2023 BMA MUNICIPAL STUDY – ASSESSMENT CHANGE

Municipalities Grouped by Location	2019-2020	2020-2021	2021-2022	2022-2023
North	3.1%	0.5%	0.5%	0.8%
GTHA	8.0%	1.7%	1.9%	1.5%
Southwest	5.9%	1.6%	2.3%	1.8%
Bruce/Grey	5.4%	1.6%	1.6%	1.8%
Waterloo/Wellington	6.9%	1.5%	1.6%	1.9%
Simcoe/Musk./Duff.	6.4%	1.6%	1.8%	1.9%
Eastern	4.6%	0.7%	1.3%	2.1%
Niagara	5.8%	1.9%	1.9%	2.1%

According to the 2023 BMA Study, sorted by total costs per capita, fire services for municipalities with a population of 15,000 – 29,000, the net costs per capita excluding Amortization and including amortization for the City of Thorold are $171.00 and $187.00, respectively (figure 12). This represents the fourth highest net cost per capita for municipalities, with a population of between 15,000 and 29,000.

FIGURE #12: 2023 BMA MUNICIPAL STUDY – FIRE PROTECTION SERVICES

Municipality	Net Costs per Capita Excl Amort	Net Costs per Capita Incl Amort
Strathroy-Caradoc	$ 44	$ 55
Tillsonburg	$ 58	$ 64
Huntsville	$ 62	$ 69
West Lincoln	$ 57	$ 73
Pelham	$ 64	$ 80
Springwater	$ 65	$ 80
Bracebridge	$ 61	$ 81
Essex	$ 72	$ 84
Woolwich	$ 69	$ 91
Scugog	$ 83	$ 93
Wilmot	$ 76	$ 98
Middlesex Centre	$ 82	$ 108
Amherstburg	$ 94	$ 109
Prince Edward County	$ 98	$ 119
Lincoln	$ 102	$ 126
King	$ 113	$ 133
Niagara-on-the-Lake	$ 108	$ 143
Port Colborne	$ 170	$ 183
Thorold	$ 171	$ 187
Collingwood	$ 197	$ 220
Owen Sound	$ 230	$ 240
Brockville	$ 302	$ 312
Population 15,000 - 29,999		
Average	**$ 108**	**$ 125**
Median	**$ 82**	**$ 103**

From 2021 to 2023, the proportion of the TFES's fire protection services levy showed a decrease in contribution to the TFES operating and capital budgets (figure 13).

FIGURE #13: 2021-2023 FIRE PROTECTION SERVICES OPERATING BUDGET

	2021	2022	2023
Total Consolidated Budget	24,701,746	27,296,207	32,198,144
Fire Protection Services Budget	4,354,010	4,702,286	5,014,312
Percentage of Total Consolidated	17.6%	17.2%	15.6%

The percentage decrease may be attributed to the inactive Station 3 and its merger with Station 2.

7.1.1 Operating Budget

The 2023 operating budget for the TFES was established at $5.01 million compared to $4.70 million in 2022 and 4.35 million in 2021, which is an increase of approximately 2%. A review of the budget allocation for the TFES for the past three years shows a steady increase from budget year to budget year. Salaries and Benefits for the TFES in 2023 accounted for 63.4% of the TFES' budget, typical for most volunteer-based fire services with a complement of career-based staff. For comparison, most full-time/career-based departments experience salaries and wage costs in the 90% range due to notably higher salary costs.

Data analysis of five-year actuals can help determine future budget allocations. However, a complete financial analysis of the performance of all cost centers is more appropriate within the realm of Corporate Services staff other than to suggest that continued improvements in service provision by the TFES are certain to impact tax rates.

EMG commends the TFES Council for its proactive initiatives in addressing anticipated population growth and the evolving needs of the municipalities by investing in the fire department to enhance fire protection services.

7.1.2 Capital Budget

The multi-year capital budget forecast for the TFES is well laid out:

- An apparatus replacement schedule is in place. EMG's review of the replacement costs suggests a tendency to underestimate the replacement costs for apparatus. Given recent inflation and global uncertainties, EMG recommends increasing replacement costs for apparatus by 20%.

- Currently, allocation in the capital budget exists for small equipment replacement or hose replacement, including considerations for SCBA, PPEs, helmets, radios, and other equipment and accreditation). EMG applauds the comprehensive list of equipment included in the TFES capital budget and 10-year forecast. However, again, there is a tendency to underestimate equipment replacement costs. EMG recommends that the TFES take a more conservative approach to costing equipment replacement and allocate a more competitive cost formula to forecast equipment replacement.

The TFES would benefit from a more robust multi-year asset management plan.

7.2 Revenue Opportunities

This section reviews revenue opportunities relating to development charges, fire department fees, and other charges.

Development Charges

EMG applauds the proactive initiative of the City of Thorold to engage a consultant to complete a study of the City of Thorold Development Charges. The development charges are comparable to data found in the 2023 BMA Study. The Development Charges By-law 41-2024 is up to date.

Fire Department Fees

EMG reviewed Schedule "A" of the Fees and Charges By-law 06-2017. The rates and fees were updated in 2024. The fire protection services list is comprehensive and broken down into several categories of fees, including administrative, fire suppression services, inspections – other, risk and safety management plan, inspections – residential (group C), inspections – commercial/assembly (groups A, D, & E), inspections – industrial (group F), and extra ordinary expenses. The fees and charges are competitive for the industry.

However, EMG's investigation revealed that the TFES revenue streams for remote alarms appear low. TFES statistics revealed that between 2018 and 2022, 18% of the emergency calls were for remote alarm-related calls; in 2023, the percentage was 28% of all calls for emergency services. Remote alarm revenue for 2022 amounted to $1,444.00; for 2023, the total amounted to $1,585.00. In 2022, 18% of the total calls translated into 197 remote alarms, whereas in 2023, 28% of emergency calls translated into 255 remote alarms. Although a portion meets Schedule "A" of the Fees and Charges By-law, the revenue stream is underrepresented at the MTO rate.

With respect to inspection fees, Schedule "A" encompasses an exhaustive list of fees for inspection-related matters. Again, the revenue generated for 2022 and 2023 accounts for

2.25% and 11.59% of the total revenue for specific functions. EMG research indicated that fire prevention staff workload has been taken mainly through residential rental licensing functions. The TFES is losing a considerable amount of revenue from inspection-related matters.

EMG recommends that the TFES reviews its revenue generation stream with respect to remote alarm calls and inspection-related matters. There are tremendous opportunities to substantially increase revenue streams for long-term sustainability, given the City of Thorold's rate of growth.

There are opportunities to capture more revenues for the services provided by the TFES. The opportunity to generate revenues could expand with the review and update of the current fee schedule vis-à-vis the fire department's prescribed service levels.

The following are additional fire-related services that can be added to the fire fee schedule:

Fire Apparatus Standby

Shows, Exhibitions, Demonstrations - Current overtime rates per hour for the entire time the fire department is in attendance and includes all assigned apparatus at the scene. $200 per apparatus per hour. Full cost recovery for 1 Captain & 3 Firefighters, a minimum of 3 hours per apparatus.

Fire Watch - Current rates per hour for the entire time the fire department is in attendance and includes all assigned apparatus at the scene. $200 per apparatus per hour. Full cost recovery for 1 Captain & 3 Firefighters, a minimum of 3 hours per apparatus.

Additional Expenses

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

Open Air Burning Fees

Sub-section 5.1 of the Open-Air Burning By-law 2012-41 should be updated to refer to fees as set up in Schedule “A” of the City of Thorold By-law 06-2017. EMG’s review of revenues indicated that the TFES generates revenues for burn permits under “Administrative Fees” and “Open Air Burning Response under the “Fire Suppression Services Fees.” The municipal by-law is outdated and should be updated. There may be missed opportunities for revenue generation. Open-air burning fees and charges can be a substantial source of revenue.

Between 2018 and 2022, the TFES reported responding to an average of 51 open-air burning/unauthorized controlled burning or 5% of their total emergency calls.

Residential Rental Licensing Fees

In 2017, the City of Thorold adopted a by-law with respect to licensing, regulating, and inspecting residential rental properties in the municipality. Part of the By-law is the Schedule "A" Schedule of Fees. The Schedule "A" of the By-law sets fees to be paid with respect to any license application pursuant to the provisions of By-law 109-2017.

As part of EMG's review, it was identified that the Fire Prevention Division spends a considerable amount of time on residential rental licensing matters. It appears that there are again missed opportunities for revenue generation.

EMG recommends that the TFES review its revenue generation stream with respect to residential rental licensing and inspection-related matters. There are tremendous opportunities to substantially increase revenue streams for long-term sustainability, given the City of Thorold's rate of growth.

Licensing, Regulating, and Inspection of Bed & Breakfast Accommodation Fees

In 2020, the City of Thorold adopted a by-law with respect to licensing, regulating, and inspecting bed & breakfast properties in the municipality. Part of the By-law is the Schedule "A" Schedule of Fees. The Schedule "A" of the By-law sets fees to be paid with respect to licensing, appeal process, and inspection of bed & breakfast properties pursuant to the provisions of By-law 21-2020.

EMG research indicated that the number of bed& breakfast establishments in the City of Thorold is unknown. It appears that there is, again, missed opportunities for revenue generation.

EMG recommends that the TFES review its revenue generation stream with respect to bed & breakfast licensing and inspection-related matters. There are tremendous opportunities to substantially increase revenue streams for long-term sustainability, given the City of Thorold's rate of growth.

Other Sources of Revenue

The TFES could also generate revenues from the recovery of fire protection response costs from insurance companies by vendors, such as Fire Marquee Inc. These revenues would be captured under the "Other Revenues" revenue code. To ensure future prosperity for the fire

cost recovery, EMG recommends that the TFES adopt a fire cost recovery by-law elaborating on a third-party cost recovery service agreement and revenue generation.

By exploring additional revenue generation/cost recovery opportunities, the TFES can ensure that the resources required to support effective and efficient fire service delivery remain available. From the review completed by EMG, the TFES currently employs a sound approach to budget management, and the recommendation to investigate alternative funding (revenue sources), along with the other recommendations within this section, will support the growth and development of this critical community service.

7.3 Reserves

The City of Thorold has a robust fire service reserve.

Aside from the remarks previously offered in this section of the report regarding the TFES financial situation, EMG has no additional suggestions for improvement.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Cost	Rationale
48	Replacement costs for apparatus should be increased by 20%	Immediate (0 to 1 year)	Staff Time	EMG's review of the replacement costs suggests a tendency to underestimate the replacement costs for apparatus. Given recent inflation and global uncertainties, the TFES would benefit from a more competitive costing for apparatus to avoid shortfalls in current estimations.
49	Equipment replacement costs should be increased by 20%	Immediate (0 to 1 year)	Staff Time	EMG's review of the replacement costs suggests a tendency to underestimate the replacement costs for equipment. Given recent inflation and global uncertainties the TFES would benefit from a more competitive costing for equipment to avoid shortfalls in current estimations.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Cost	Rationale
50	TFES should review its revenue generation stream with respect to remote alarm calls and inspection-related matters	Immediate (0 to 1 year)	Staff Time	EMG's investigation revealed that the TFES revenue streams for remote alarm appear low. TFES statistics revealed that between 2018 and 2022 18% of the emergency calls were for remote alarm related calls and in 2023 the percentage was 28% of all calls for emergency services. Remote alarm revenue for 2022 amounted to $1,444.00, and for 2023 the total amounted to $1,585.00. In 2022, 18% of the total calls translated into 197 remote alarms, whereas in 2023, 28% of emergency calls translated into 255 remote alarms. Although a portion meets Schedule "A" of the Fees and Charges By-law, at the MTO rate, the revenue stream is underrepresented. With respect to inspection fees, Schedule "A" encompasses an exhaustive list of fees for inspection-related matters. Again, the revenue generated for 2022 and 2023 accounts for 2.25% and 11.59% of the total revenue for specific functions. EMG research indicated that residential rental licensing functions have mostly taken the workload of fire prevention staff. The TFES is losing a considerable amount of revenue from inspection-related matters.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Cost	Rationale
51	TFES should review its revenue generation stream with respect to residential rental and Bed & Breakfast licensing and inspection-related matters	Immediate (0 to 1 year)	Staff Time	As part of EMG's review, it was identified that the Fire Prevention Division spends considerable time on residential rental licensing matters. It appears that there are, again missed opportunities for revenue generation. EMG research indicated that the number of bed& breakfast establishments in the City of Thorold is unknown. It appears that there is again missed opportunities for revenue generation.
52	TFES should seek the adoption of a fire cost recovery by-law elaborating on a third-party cost recovery service agreement and revenue generation.	Immediate (0 to 1 year)	Staff Time	The TFES could also generate revenues from the recovery of fire protection response costs from insurance companies by vendors, such as Fire Marquee Inc.

Section 8

Review of Previous Fire-Related Reports

Emergency Management Group

SECTION 8: REVIEW OF PREVIOUS FIRE-RELATED REPORTS

8.1 Fire Underwriter's Survey Overview

The Thorold Fire & Emergency Services has a Fire Underwriters Survey (FUS) completed in 2020. The Thorold Fire Stations Two and Four have incorporated the best practices as outlined by Fire Underwriters Survey (FUS) to achieve and maintain the Superior Tanker Shuttle Service (TSSS) Accreditation. Their accreditation dates are June 4, 2022, through June 4, 2027.

A FUS was provided for the City of Thorold in 2020. It was based at that time on four stations in operation. At the time of the last FUS report, it was noted that station three was in operation and included in the evaluation. Since they no longer answer calls out of station three, this may affect the response times and other grading components of the FUS report. It should be noted that each of the four stations were given individual grades instead of a single grade for the department. It is recommended that Thorold Fire & Emergency Services have a current Fire Underwriters Survey (FUS) completed on their department.

It should be noted that the FUS letter did not provide an overall "community/fire department" score, but the following scores were noted for each station.

The Public Fire Protection Classification (PFPC) is a numerical grading system scaled from 1 to 10 that is used by Commercial Lines insurers. Class 1 represents the highest grading possible and Class 10 indicates that little to no fire protection is in place. The PFPC grading system evaluates the ability of a community's fire protection programs to prevent and control major fires that may occur in multi-family residential, commercial, industrial, institutional buildings, and course of construction developments.

Noted in the chart below that the department's grades were consistent with the last FUS report the department had. Stations 1 and 2 scored 4 for Hydrant Protected Areas. This is a good score to have achieved. Station 3 received a score of 10. This is the lowest score a department can score. This is due to them not answering calls out of this station. Station 4 scored a 5 on Hydrant Protected Area. This is a mid range score and could be improved on. The other two areas station 4 was graded on received a 9 which was one away from being the worse score you could receive. This one could be improved on. Lastly the area identified as REST was given a score of 10, which is the lowest score you can get. It needs to be improved on.

TABLE #18: PUBLIC FIRE PROTECTION CLASSIFICATION (PFPC) UPDATES FOR THE CITY OF THOROLD

Sub District(s)	Previous PFPC	PFPC	Comments
Thorold – Fire Station #1 (HPA)	4 out of 10	4 out of 10	Hydrant Protected Area – Commercial Lines insured properties
Thorold – Fire Station #1 (HPA)	4 out of 10	4 out of 10	Hydrant Protected Area – Commercial Lines insured properties within 150 m of a hydrant and within 5km of a fire hall.
Thorold – Fire Station #2 (HPA)	4 out of 10	4 out of 10	Hydrant Protected Area – Commercial Lines insured properties within 150 m of a hydrant and within 5km of a fire hall.
Thorold – Fire Station #3 (HPA)	10 out of 10	10 out of 10	Hydrant Protected Area – Commercial Lines insured properties within 150 m of a hydrant and within 5km of a fire hall.
Thorold – Fire Station #3 (FPA)	10 out of 10	10 out of 10	Fire Hall Protected Area – Commercial Lines insured properties within 5km by road of a fire station, but beyond 150m of a fire hydrant.
Thorold – Fire Station #4 (HPA)	-	5 out of 10	Hydrant Protected Area – Commercial Lines insured properties within 150 m of a hydrant and within 5km of a fire hall.
Thorold – Fire Station #4 (FPA)	9 out of 10	9 out of 10	Fire Hall Protected Area – Commercial Lines insured properties within 5km by road of a fire station, but beyond 150m of a fire hydrant.
Fire Hall Protected Area (Rural Area(s))	9 out of 10	9 out of 10	Fire Hall Protected Area – Commercial Lines insured properties within 5km by road of a fire station, but beyond 150m of a fire hydrant.
Rest	10 out of 10	10 out of 10	Unprotected – Commercial Lines insured properties further than 5km by road of a fire hall.

Fire Underwriters Survey also assigns a second grade for fire protection. The second grading system, entitled Dwelling Protection Grade (DPG), assesses the protection available for small buildings such as single-family dwellings and is used by Personal Lines insurers.

The DPG is a numerical grading system scaled from 1 to 5. One is the highest grading possible and five indicates little or no fire protection is present. This grading reflects the ability of a community to handle fires in small buildings.

Noted in the chart below, the department grades were different than the last FUS report the department has. In some cases, it was a better score and not as good as last time in others. It should be noted that the station 1 score for Hydrant Protected Areas was a 1, which is the best you can get. For areas with Limited Protection, it was a 4. Next to the last or worst that you can get. Station 2 had improved from a 4 to a 3A. for the Hydrant Protection Area. This is a good score to have achieved. For STS Residential was just slightly down. They went from a 3A to a 3B(S), which is in the lower part of the grading score. For Fire Hall Protected Area, the score was the same as last time at 3B(S). Station 3 received a score of 5 in all categories. This is the lowest score a department can score. This is because they are not answering any calls from this station. Station 4 scored a 3A in the Hydrant Protected Area, which was an improvement from the last grade of 5. They received a 3B(S) score for STSS Residential out of 5. For Fire Hall Protected areas they went from a 3B to a 5, which is the worse score you can get. Lastly, the area identified as REST was given a score of 5 out of 5, which is the lowest score you can get. It needs to be improved on.

TABLE #19: DWELLING PROTECTION GRADE (DPG) UPDATES FOR THE CITY OF THOROLD

Sub District(s) and (Contract Protection Areas)	DPG Previous	DPG 2022	Comments
Thorold – Fire Station #1 (HPA)		1 Out of 5	Hydrant Protected Area – Personal Lines insured properties within 300m of a fire hydrant and within 8km of a fire hall.
Thorold – Fire Station #1 (FPA)	1 Out of 5	4 Out of 5	Limited Protection – Personal Lines insured properties within 8km by road of a fire station, but beyond 300m of a fire hydrant and assigned to stations without a Tanker Apparatus.
Thorold – Fire Station #2 (HPA)	4 Out of 5	3A Out of 5	Hydrant Protected Area – Personal Lines insured properties within 300m of a fire hydrant and within 8km of a fire hall.
Thorold – Fire Station #2 (FPA)	3A Out of 5	3B(S) Out of 5	STSS Residential – Personal Lines insured properties within 8km of a fire hall, and within 5km of a recognized water supply point.
Thorold – Fire Station #2 (FPA)	3B(S) Out of 5	3B Out of 5	Fire Hall Protected Area – Personal Lines insured properties within 8km by road of a fire station, but beyond 300m of a fire hydrant.
Thorold – Fire Station #3 (HPA)	3B Out of 5	5 Out of 5	Hydrant Protected Area – Personal Lines insured properties within 300m of a fire hydrant and within 8km of a fire hall.
Thorold – Fire Station #3 (FPA)	5 Out of 5	5 Out of 5	Fire Hall Protected Area – Personal Lines insured properties within 8km by road of a fire station, but beyond 300m of a fire hydrant.
Thorold – Fire Station #4 (HPA)	5 Out of 5	3A Out of 5	Hydrant Protected Area – Personal Lines insured properties within 300m of a fire hydrant and within 8km of a fire hall.
Thorold – Fire Station #4 (FPA)	-	3B(S) Out of 5	STSS Residential – Personal Lines insured properties within 8km of a fire hall, and within 5km of a recognized water supply point.
Thorold – Fire Station #4 (FPA)	3B(S) Out of 5	3B Out of 5	Fire Hall Protected Area – Personal Lines insured properties within 8km by road of a fire station, but beyond 300m of a fire hydrant.
Rest	3B Out of 5	5 Out of 5	Unprotected – Personal Lines insured properties further than 8km by road of a fire hall.

Also noted in this report were the ages of all apparatus and their age with respect to when they should be replaced per NFPA guidelines. This information was addressed in the section on Facilities and Equipment.

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 formula for calculating its 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 ten to 25 years. Best practices 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. This will help the City plan future fire service and water delivery infrastructure. It is recommended that in the future, they move to a grade update every five years.

The FUS has also introduced the FUS Municipal Fire Portal, which provides the Thorold Fire & Emergency Services (TFES) the ability to access and update data relevant to RLFRS and forward updates in a timely fashion. By accessing this system regularly, the TFES could provide frequent updates from which FUS Specialists will analyze and publish grade updates as deemed necessary. Once the FUS assessment is complete, the Fire Chief can regularly access and provide input to the FUS Municipal Fire Portal. It is recommended that the Fire Chief access FUS Municipal Fire Portal regularly, to provide frequent updates from which FUS Specialists will analyze and publish grade updates as deemed necessary.

The results of these surveys are used to establish a Public Fire Protection Classification (PFPC) for each community. Underwriters also use the PFPC to determine the risk they are willing to assume in each community or section of a community. The FUS also uses PFPC information to develop the Dwelling Protection Grade (DPG), which is used by personal lines insurers to determine property insurance rates for detached dwellings with no more than two dwelling units. The DPG is a measure of the ability of the fire services of a community to prevent and control structure fires in detached dwellings by evaluating the adequacy, reliability, strength, and efficiency of the fire department and comparing the level of protection against the level of fire risk associated with a typical dwelling.

While the FUS is not involved in setting rates, the information provided through the Fire Insurance Grading Index is a key factor in developing commercial lines property insurance rates.

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 assessing four key areas: fire department, water supplies, fire prevention, and emergency communications.

The overall PFPC score is based on a 100 percent total score and broken down as follows:

- The fire department is graded at 40% of the total score. And is scored on 19 different items (FD-1 to FD-19) that make up the Public Fire Protection Classification (PFPC).
    - They do not answer calls from Station Three currently due to a lack of firefighters to meet the minimum number of staff to respond to emergencies. There is also a problem with the building itself. The building was constructed in 1932 and renovated in 1953. There is a problem with the air quality inside the building along with asbestos found within the building itself.
- Water Supply grading is graded at thirty percent (30%) of the Public Fire Protection Classification (PFPC). And is scored on 15 different items (WS-1 to WS-15) that make up the Public Fire Protection Classification (PFPC).

Overall, the water supply appears to be in pretty good shape. Four areas could be improved upon. Water supply (WS) areas, 6 fire flow delivery by mains, WS 7 reliability of principal mains, WS 8 Installation of pipe, and WS 11 distribution of hydrants.

- Fire Prevention is assigned a weight of 20% in the Public Fire Protection Classification (PFPC). It is evaluated based on four different components (FSC-1 to FSC-4) that collectively contribute to the PFPC score.
- This area shows that there is room for considerable improvement Most notable FSC 1 general program and FSC 2 codes and enforcement.
- Emergency Communications grading is graded at ten percent (10%) of the Public Fire Protection Classification (PFPC). And is scored on 7 different items (Comm-1 to Comm-7) that make up the Public Fire Protection Classification (PFPC).

The emergency communications grading shows a high score with very little to improve on.

8.2 Fire Underwriters Survey Superior Tanker Shuttle Service Accreditation

The Superior Tanker Shuttle Accreditation is a program of the Fire Underwriters Survey that recognizes a fire department's ability to shuttle water by way of tanker trucks to fight fires in areas without municipal hydrants.

Thorold Fire Stations Two and Four have incorporated the best practices as outlined by Fire Underwriters Survey (FUS) to achieve and maintain the superior tanker shuttle service accreditation. Their accreditation dates are June 4, 2022, through June 4, 2027.

The basic requirements for residential accreditation, known as Dwelling Protection Grade (DPG) are:

- Within five minutes of the first pumper arriving at a fire scene, firefighters must be able to deliver a minimum of one thousand (1,000) liters/minute (200 gal/min) of water; and
- Maintain that water flow uninterrupted for two hours.

The basic requirements for commercial lines accreditation, known as Public Fire Protection Classification (PFPC) are:

- Within ten minutes of the first pumper arriving at a fire scene, firefighters must be able to deliver a minimum of two thousand (2,000) liters/minute (400 gal/min) of water; and
- Maintain the water flow uninterrupted for two hours.

How does accreditation benefit residents?

Insurers utilize the information provided by the Fire Underwriters Survey to set property insurance rates in Canada. They are advised that Superior Tanker Shuttle Service Accredited areas may be rated as 'hydrant protected'.

As a result of these accreditations,

- Residents who own detached dwellings within eight kilometers (by road) of a fire station and are five kilometers from an approved water supply may be eligible to receive a cost reduction in their fire insurance rates from insurers in Canada.
- Commercial business owners who own property within five kilometers (by road) to a fire station and are 2.5 kilometers from an approved water supply may be eligible to receive a cost reduction in their fire insurance rates from insurers in Canada.

OFM Review

It was noted that the Thorold Fire & Emergency Services does not currently have an Office of Fire Marshal Review. (OFM). The last OFM Review was completed July 21, 2000. The findings of this evaluation and the recommendations they provided are listed below. Also listed is the current day status of each recommendation.

It is recommended that the Thorold Fire & Emergency Services ask for an Office of Fire Marshal review.

Station Location

OFM Recommendation

The municipal / decision makers should consider the results of the computerized fire station location study during the development of the Master Fire Plan.

> Status: This was completed by building our new station 1 Headquarters, which we moved into on August 1st. Station 4 was completed in 2002 or 2003 on Regional Rd 20. Station 2 was built in 1995 and is still located in the correct spot. Station 3 as you are aware of, they do not answer any calls from (going on 3 years) due to Health and Safety concerns. This station and where it is located is not necessary anymore. They can cover the municipality with 3 stations they will just need staffing.

The administrative facilities in station number 1 are not suitable to the needs of the Fire Chief, training officer and fire prevention officer. Status: Complete – New Headquarters in now open on McCleary Dr. at Collier Rd.

Fleet Rationalization

OFM Recommendation

To avoid potential liability issues, the municipality must be able to demonstrate that equipment maintenance activities are being conducted and produce appropriate documentation.

> Status: We have had a consistent mechanic since 2019 where regular safeties and maintenance is done regularly.

Savings to the public could be achieved by providing an approved water shuttle program to rural areas. Status: We are tanker shuttle accredited through Fire Underwriters Survey. Was completed the testing in 2022.

Delivery System

OFM Recommendation

The municipality must ensure its fire department delivery system is able to continuously provide an adequate fire attach team in a timely manner.

Status: When the OFM recommended this, I am not sure what they were asking. We are a composite fire service. The chief stated that he believes we need a few more career staff to accomplish what I believe they are asking.

Fire Prevention and Public Education

OFM Recommendation

There is a need to interact more closely with the public to identify needs, expectations, attitude towards fire and fire safety awareness levels.

Status: Currently not efficient/effective.

There needs to be a concerted effort by the fire department to identify the properties subject to the Fire Code's retrofit requirements and to make reasonable efforts to ensure that compliance has been achieved.

Status: On going process

There is a demonstrated need to conduct pre-fire planning activities in high-risk buildings or locations.

Status: On going process

Both volunteer and full-time staff should be more effectively utilized in public education and fire prevention activities.

Status: Implemented and occurring when possible.

An appropriate smoke alarm and home escape program needs to be established by policy.

Status: Completed and ongoing yearly process, we do a smoke alarm blitz during fire prevention week annually.

Training

OFM Recommendations:

An appropriate record-keeping system must be developed to track all personnel at every emergency scene.

Status: We currently use Fire Pro 2 to track all our firefighter training. This was implemented in 2019.

An incident management system, including fire ground accountability provisions, must be adopted and delivered to all staff, as required by the Occupational Health and Safety Act, Section 21 guidance notes.

Status: We currently use IMS and accountability provisions on the fire ground.

The Thorold Fire & Emergency Services does not regularly carry out post incident reviews and evaluations of major incidents.

Status: Since 2019 we have consistently done PIAR's for major incidents. Over the last 4 months we have changed to follow the OFM PIAR protocols to be consistent, we are currently working on the follow up piece in perspective of changes that are required from the outcome of the PIAR's. changed, we've had two in the last 4 months – follow OFM PIAR protocols.

A consistent and appropriate training curriculum is not currently in place.

Status: Since 2019 we have had a training curriculum in place, we are currently working with the new training officer to update our training curriculum to make sure we are cover all necessities and data is input into our system.

Management Direction/Policy Development/Accountability

OFM Recommendations

Municipal action is required to implement appropriate recommendations to improve fire protection services in Thorold.

Status: Currently being done with Community Risk Assessment and FMP 2024

The municipality should implement appropriate risk management and risk avoidance policies and activities to minimize exposure to accidents, injuries and potential liability.

Status: On going

There is a need to provide individuals, at every level within the department, with specific. responsibilities, based on approved goals and objectives. The appropriate resources, support services, and accountability systems are also required to ensure the achievement of expected performance levels.

Status: Completed

Strong centralized co-ordinating activities are necessary to ensure consistent activities and resource utilization.

Status: Unknown

Administration

OFM Recommendations

It is essential that an adequate records management system be developed and put in place.

Status: Firepro2

Standard operating guidelines and an appropriate records management system need to be developed to deliver consistent fire prevention programs, inspections and public education activities.

Status: Completed in 2019, but constantly updated and ongoing

EMS Defibrillation

OFM Recommendation

Measures should be taken to enhance existing response times to areas of Thorold beyond the 8-minute threshold or review the policy regarding the delivery of defibrillation services to the community.

Status: In progress – 2024 FMP will hopefully help us in this respect

Mutual / Automatic Agreement

OFM Recommendations:

The Region Fire Services Mutual Aid Agreement should be broadened to include joint preparedness activities, action plans, and training and testing criteria for specialized risks with the Region.

Status: Not completed.

Outside Partnerships

OFM Recommendations:

Additional opportunities to partner with the private sector, the community and regional fire departments should be identified and pursued.

> Status: Some initiatives occur at the Niagara Region Fire Chiefs group – procurement, training, PR initiatives.

City of Thorold Fire Service Review 2013 By Emergency Management Group

Listed below are the recommendations that EMG came up with and their status:

The information obtained during the four-month review (September 2012 to December 2012) was carefully analyzed and weighed, which concluded in the following recommendations:

- The addition of a full-time Deputy Fire Chief should be considered to assist the Fire Chief in administering his responsibilities.

  > Status: Deputy Chief position was added.

- The life expectancy of a master plan is generally set at 10 years as such the fire department should implement a full review and update of its 2000 Master Fire Plan.

  > Status: Has not happened until now.

- The Fire Chief should present a response time recommendation for consideration by the City Council. Once a response time standard has been set, then the Fire Chief will be able to identify what may or may not be required to meet this response goal.

  > Status: Unknown.

- A full structural engineer's review of station #1 should be undertaken to determine the exact cost for any required refurbishing of the station for future use and functionality.

  > Status: New station 1 was currently built.

- A detailed review and annual update on response times and types should be reported to the City Council to offer a clear understanding of where the fire department's resources are being used and how the fire service meets the expectations of the Council and the community.

  > Status: Unknown if this was done or is currently in practice at this time. FMP of 2024 will likely be a part of that once presented to council at the end of this year.

- As prevention is the least costly and yet most effective way of providing loss control, an additional focus on fire prevention is required with a plan to increase staffing by adding one more full-time Fire Prevention Officer in 5 to 10 years, based on the City's size and forecast growth.

  Status: Since 2013 FMP, a second FPO was added in March 2023. Currently, due to the Residential Rental Licensing (RRL) program within the city we are noticing a drastic decrease in FP resources to cover TFES related programming, therefore, hoping to hire a third officer at some point soon.

- Firefighters, career and volunteer, should be utilized as much as possible to assume more responsibility for inspections of existing structures and for educating the public about fire safety.

  Status: Currently, it is not used enough. However, as we continue to grow our FP division, we will likely lean more on career suppression staff to assist with inspections, preplanning, and public education.

- That the Fire Chief be designated as an alternate CEMC who works in a collaborative partnership with the Region's CEMC group. This will create a more harmonious relationship between the City's and Region's emergency preparedness plan; at the same time, it will help to reduce the workload of the Fire Chief in this area.

  Status: Current plan in place is the Fire Chief is the CEMC, and the Deputy Fire Chief is the alternate CEMC. This is something that could be revised and updated if a better solution is available. Currently the City of Thorold upper management team relies heavily on the fire services to keep emergency management under its umbrella.

- Staffing in the training division should be expanded by one additional full time Training Officer within the next 10 years to handle routine training needs and assist in the development of new programs.

  Status: There is a new full-time training officer who was hired in February 2024.

- Career and volunteer firefighters need to jointly participate in training programs and exercises on a regular basis in all fire district areas.

  Status: They train regularly.

- The city should identify and adhere to an appropriate schedule for both the replacement and/or the refurbishing of fire department apparatus that will help to extend the useful life of the fleet.

  Status: They have a schedule for this, but they don't appear to follow it.

- Instead of purchasing a "customized" aerial unit, savings can be accomplished by purchasing a "ready-made" unit from a supplier.

  Status: They have one aerial truck.

- The city may investigate the option of a fire service agreement for the use of neighboring cities' aerial apparatus – but caution is to be used as there is no guarantee that the units will be available when needed.

  Status: TFES currently has a platform device located at Station 2. If required, TFES can request other aerial devices through mutual aid.

- The department should investigate the option of responding career firefighters only to medical assistance calls throughout the city.

  Status: This has not happened yet.

- The department should investigate the option of a demand-based staffing system that can be based on a combination of 10- or 12-hour day shifts (as required), with the utilization of the volunteer firefighters during the "off hours."

  Status: Station 1 has a career 24 – 7 schedules, and the others are volunteers.

- The City of Thorold and City of St. Catharine's, through their Fire Chiefs and legal departments, should investigate the opportunity of a shared fire service agreement.

  Status: This was not completed and is no longer on the table.

- If a merger of fire services with St. Catharine's is successful then the city should consider the closing of two fire stations – station 1 and station 3. This would still leave stations 2 and 4 open, thus still ensuring coverage by having a station on each side of the canal.

  Status: Not completed at that time, nor is it on the table for discussions moving forward into the future.

- The fire department investigates fire service records management and training programs that can create efficiencies, provide more accurate planning data, enhance internal communications, and enhance the ability of the Fire Training Officer and station facilitators to provide consistent and effective training.

  Status: Uses FirePro2 for record management.

- That City Council and senior management make note of the responses and related percentages and consider the comments received from those who submitted the questionnaire.

  Status: Unknown.

City of Thorold Strategic Plan 2024 – 2027 and Beyond

There is a current Strategic Plan in place for the City of Thorold. Unfortunately, it does not mention the Fire Department. The only thing it mentions about any emergency preparedness is. Enhance emergency preparedness in all parts of the city.

City of Thorold Operational Plan Appendix to the Strategic Plan 2024 – 2027 and Beyond City of Operational Plan 2024 – 2027 and Beyond

Prepare the Fire Master Plan and partner with other levels of government and community agencies to enhance emergency preparedness.

City of Thorold Fire Protection Master Plan Dated November 20, 2020

In April 2020 the City of Thorold invited the Fire Marshal's Office (OFM) to assist the Municipality in the completion of a Fire Master Plan. A Fire Services Review Committee (FSRC) was established with a mandate to complete a Master Plan by November 2000. Both groups came up with recommendations. These recommendations can be found in the actual report.

City of Thorold Emergency Response Plan Confidential Version By-Law# 74-2022

- The City of Thorold Emergency Response Plan establishes a framework for responding to several risks the City faces.
- The Emergency Response Plan (ERP) document describes the framework of how the City of Thorold will respond to, recover from and mitigate the impact of an emergency. It describes the legal authorities, concept of operations and functional roles and responsibilities.
  - The purpose of the City of Thorold Emergency Response Plan during an emergency is to facilitate the effective co-ordination of human and physical resources, services and activities necessary to: Protect and preserve life and property.
  - Minimize and/or mitigate the effects of the emergency on the residents and physical infrastructure of the City of Thorold; and

- Quickly and efficiently, enable the recovery and restoration of services.
- It should be noted that the Director of the Emergency Operation Center is the Chief Administrative Officer (CAO). And the Fire Chief is appointed the Community Emergency Management Coordinator (CEMC)
- This Plan appears to meet the needs of the City of Thorold but should be reviewed every five years or as often as the group agrees on.
- The City of Thorold presented their program to the proper authorities. Below is a statement that was sent back to the City of Thorold.

Overall, your compliance submission is well done, and it is evident that substantial effort has been put into the emergency management program at the City of Thorold. Please kindly note that I have recommended that the City of Thorold is compliant for 2023. This recommendation will go to the EMO management team for final approval and official letters acknowledging compliance will be sent to the head of council and CEMCs, usually by spring.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Cost	Rationale
53	The Thorold Fire Department have a current Fire Underwriters Survey (FUS) completed on their department.	Short-term (1 to 3 years)	Staff time	May affect the cost of insurance for the citizens of the Municipality of Thorold.
54	It is recommended that the Fire Chief access FUS Municipal Fire Portal regularly to provide frequent updates from which FUS Specialists will analyze and publish grade updates as deemed necessary.	Short-term (1 to 3 years)	Staff Time	This would ensure that the department could provide frequent updates from which FUS Specialists will analyze and publish grade updates as deemed necessary.

Section 9

Recommendations, Timelines, And Associated Costs

SECTION 9: RECOMMENDATIONS, TIMELINES, AND ASSOCIATED COSTS

9.1 Conclusion

The review conducted by EMG demonstrated that the full-time staff and volunteer firefighters are truly dedicated to the community they serve. The Council and Fire Chief are sincerely committed to ensuring the safety of the community and the firefighters.

TFES is endeavouring to offer the most efficient and effective service possible based on the present staffing, equipment, and fire station locations. Through the development of this FMP, the City of Thorold has demonstrated its desire to improve its services and delivery.

All costs and associated timelines noted in this report are approximate estimates that can be implemented through prioritization between the Fire Chief and the Council.

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

9.2 Recommendations, Estimated Costs, & Rationale

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

This FMP document is a culmination of 54 recommendations.

TFES Recommendations Chart

Section 1: Community, Fire Department Overview

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
1	By-laws should be reviewed annually	Immediate (0 to 1 year) ongoing	Staff Time	EMG's review demonstrated that some By-laws were outdated.

Section 2: Risk Assessment Recommendations

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
2	TFES should investigate the Home Sprinkler program as part of its fire prevention and public life safety education initiatives	Short-Term (1 to 3 years)	Staff Time	By working with the developers and the public to promote the installation of home sprinkler systems, the TFES would be demonstrating a proactive approach to educating the public on another viable option for homeowners to help reduce the fire risk.
3	With the completion of the Community Risk Assessment and this Fire Master Plan, the Fire Chief should utilize the components of the two documents' recommendations for developing and implementing the Community Risk Reduction Plan.	Short-Term (1 to 3 years)	Staff Time, but may include associated costs	Keeping track of the Community Risk Assessment and Fire Master Plan recommendations, along with implementation and outcomes resulting from the recommendations, will ensure proper tracking and accountability.

Section 3: Fire Department Divisions Recommendations

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
4	It is recommended that as the City grows, the other two stations hire a full-time crew.	Long-Term (6 to 10 years) As the City Grows	At the present time, the starting salary for a firefighter is $108,331.56	When looking at the optimal service levels for fire protection services to meet the community's future needs, It would be very advantageous for the City to increase its full-time paid complement as the population and call volumes grow.
5	It is recommended that another Administrative Assistant be hired due to the heavy workload and day to day operations of both the career and volunteer Department.	Short Term (1 to 3 years)	The annual salary for an Administrative Assistant in the fire service is $60,000.00	Due to the heavy workload and day-to-day operations of the Department, there is a need for another Administrative Assistant be hired . HIPPA requirements should be considered in relation to the position's functions and type of employment.
6	It is recommended that the Department digitize all old employee personnel records that are kept by the Department.	Short Term (1 to 3 years)	Staff Time	It was noted that all firefighters' personnel records were kept as paper copies in their own folders with the Administrative Assistant, under lock and key.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
7	It is recommended that the Department conduct an update of all SOGs.	Short Term (1 to 3 years)	Staff Time	All Department Standard Operating Procedures (SOGs) were last updated in 2019. It has been several years since the last update. It appears there are SOGs in place that direct all aspects of the Department and its day-to-day operations.
8	It is recommended that the captains at the volunteer station be given a business email address through the city.	Short Term (1 to 3 years)	Staff Time	Only the district chiefs have an email address assigned to them through the City IT department. They do a lot of work through the Department and need one. The City can not control the policy for a personal email account.
9	It is recommended that all firefighters are professionally trained on how to deal with and treat the public for any situations they may encounter.	Short Term (1 to 3 years)	Staff Time	Customer service and public relations is an important part of the services provided by the Thorold Fire and Emergency Services. In some cases, you are meeting people you may or may not know. They may be from another country and speak a different language. And they may be having the worst day of their life. So, it is important to have the skills to address each kind of public interaction. This training is a job performance requisite under the NFPA 1001.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
10	It is recommended that the Department inform the public through media, public radio, or any social media platform available of a significant incident, as well as the status of that event.	Short Term (1 to 3 years)	Staff Time	Letting the public know what is happening in their community is essential. Through the media, public radio, or any social media platform available. This will ensure the community that there was an emergency event and that everything is ok now.
11	It is recommended that all equipment, tools, apparatus, and any items used by the Department be placed into the FPRMS used by the Department.	Short Term (1 to 3 years)	Staff Time	The Department does not have an inventory control program in place. There are only check sheets used to determine what is on all apparatuses. There is an option in the Fire Pro Records Management System (FPRMS) to add all equipment, tools, apparatus, and any items used by the Department. It will also include all maintenance and testing as needed.
12	An SOG should be created to document the process to be followed regarding the delegation of the Fire Chief's authority to conduct complaint inspections and requests to personnel other than FPOs.	Immediate (0 to 1 year)	Staff Time	To ensure rights and authorities have been appropriately delegated for legal correctness.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
13	One Full Time Employee (FTE) Fire Prevention Officer (FPO) should be added.	Immediate (0 to 1 year)	Cost of the new position will adhere to the Collective Agreement salary. The Rental License fees will offset the cost associated with the additional FTE.	The Fire Prevention Division's overall workload has exceeded the staff's capacity. To minimize risk to the city and continue to meet the statutory requirements of the FPPA, the addition of an FPO is required.
14	That the Chief confirm the fees are being collected as per By-law 109-2017, that there is a direct reference to this fee for service in Schedule "A" to By-law No. 06-2017, and that the revenue being collected is flowing back to the fire service.	Immediate (0 to 1 year)	Staff Time	EMG was not able to confirm that the fees associated with rental license inspections are being collected, or that the funds, if collected were being allocated to a revenue line in the fire department budget.
15	The Council adopted the hybrid inspection schedule that is detailed on page 30 of the CRA while working towards meeting either NFPA 1730 or the schedules of the FUS.	Short Term (1 to 3 years)	Staff Time	To provide clear direction to the Fire Chief, municipal Council must make informed decisions regarding the level of service to be delivered.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
16	That the Fire Chief establish a process to track the staff time commitment associated with fire investigations that is separate and distinct from other programs.	Immediate (0 to 1 year)	Staff Time	To establish a clear understanding of the time commitment dedicated to each fire prevention program and to inform current and future staffing levels, each program must be tracked and documented separately.
17	That the TFES establish a professional development program for personnel that may be interested in conducting fire code inspections and enforcement, fire investigations, and public education activities in the community.	Short Term (1 to 3 years)	Staff Time and the cost of course delivery	There exists an increasing inability for Ontario fire departments to recruit internal candidates to Fire Prevention Officer positions.
18	That the TFES investigates the feasibility and benefit in providing suppression officers with NFPA 1031 Level I training.	Short Term (1 to 3 years)	Staff Time	With the current demands on Fire Prevention Division staff, there may be an opportunity to shift the responsibility for less complicated fire inspections such as those associated with food vendor carts, and business licence inspections as examples to suppression staff.
19	That the Fire Chief add detailed criteria to existing SOG's providing direction for record keeping practices associated with all fire prevention and public education activities.	Immediate (0 to 1 year)	Staff Time	A fire department's Records Management System (RMS) is critical to every aspect of its operation. The ability to thoroughly track departmental activities for future assessment with respect to program success is vital for continued improvement.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
20	It is recommended that in the future, as the City continues to grow, and more monies become available the City investigates the building and development of a Class A and B fire training center for the Department. A sea container tower would be beneficial and cost-effective for the Department's training needs.	Long-Term (3 to 5 years)	$200,000 - $700,000 (Mobile training unit)	Firefighting professionals agree that live fire training can Reduce the number of injuries and deaths of firefighters and civilians. Reduce property damage. Increase fire department efficiency and morale. Having your own facilities for live burn training would allow for more live burn training.
21	It is recommended that the department conduct annual training with its mutual aid departments.	Short-Term (1 to 3 years)	Staff Time	To ensure that all firefighters have annual training with their automatic and mutual aid partners with whom they respond to incidents.
22	It is recommended that the district chiefs and captains at the two-volunteer station be given access to the FirePro2 RMS and be allowed to enter their training records for their respective stations.	Short-Term (1 to 3 years)	Staff Time	This would help all involved. The district chiefs would gain access to FirPro2 to maintain their records. And it would cut down on the Training Captains workload by having the reports already put in RMS.
23	It is recommended that the Department obtain training certifications for vehicle collision and extrication, confined space rescue, and high and low-angle rope rescue for both career and volunteer firefighters.	Short-Term (1 to 3 years)	Staff Time	This would ensure that the Department has this additional training where certified firefighters could handle these types of incidents.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
24	It is recommended that the Fire Chief and the training officers identify a training path for members to attain certification in NFPA 1001 Level I by July 1, 2026. And have plans in place to address any firefighters who do not meet this standard.	Short-Term (1 to 3 years)	Staff Time	The Department must ensure that all firefighters meet the needed NFPA certifications before the July 1, 2026, deadline.
25	It is recommended that the Department develop an SOG that directs the day-to-day (expectations) operations of the training program.	Short-Term (1 to 3 years)	Staff Time	This would ensure that the training plans are developed and maintained in the direction the Fire Chief wants the training program to go. And that a training path to follow.
26	It is recommended that the Department adopt a current auto extrication certification program that aligns with what is detailed in table 1 of Ontario Regulation 343/22, to ensure everyone has the proper training, and that all stations are trained in a similar and consistent manner.	Short-Term (1 to 3 years)	Staff Time	It would be beneficial if the Department were to obtain this certification. It would ensure firefighters are properly trained for these types of incidents.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
27	It is recommended that the TFES develop a formal officer training program for each position within the Department that is based on associated NFPA 1021 standards. This will also provide a succession planning path for those wanting to be promoted.	Short-Term (1 to 3 years)	Staff Time	This would ensure that all officers are trained to meet NFPA standards. And develop a succession plan that would meet the Department's needs in the future.
28	It is recommended that all officers career and volunteer be trained to NFPA 1521 for an incident safety officer.	Short-Term (1 to 3 years)	Staff Time	This would ensure that full trained and certified incident safety officers are available for every incident, whether small or large.
29	It is recommended they develop a career path for firefighters who wish to pursue future promotional opportunities.	Short-Term (1 to 3 years)	Staff Time	This would ensure that every firefighter had a path to follow for advancement to other positions in the future.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
30	That TFES track all response times from the time of dispatch to the time of arrival on the scene of incidents based on the suburban area demand zone and the 80th percentile response criterion. When tracking time measurements, the 80th percentile criterion is the NFPA 1720 recommended practice.	Immediate (0 to 1 year) ongoing	Staff Time	Data must be tracked and analyzed to assess response times against the Public Safety Excellence Community Risk Assessment: Standards of Cover and the NFPA 1720 Suburban criteria.
31	That TFES implement a departmental Attendance Support Program.	Immediate (0 to 1 year)	Staff Time	Employee ASPs are designed to assist employees and the corporation in maintaining good health, safety, and productivity. They also help develop a culture of accountability through regular attendance at work that supports the provision of service to the public
32	Expand career staffing further to cover more shifts during evening and weekend hours, when response times are more likely to be impacted by paid-on-call availability.	Mid-Term (3 to 6 years)	Cost is as per the Collective Agreement	Expanding career staffing to cover more shifts during evening and weekend hours is a strategic response to the growing demands on TFES as the City expands.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
33	That TFES initiate a request for information process for retaining a contract clinical psychologist.	Immediate (0 to 1 year)	Staff Time	More jurisdictions are seeking out emergency service specific phycological treatment providers for preventative measures, early intervention, recovery and return to work and training programs. Although they come at an operational cost, these types of initiatives have been successfully implemented in municipalities in Ontario
34	That the City of Thorold consider mandating residential sprinklers in the applicable new residential housing developments.	Immediate to Short Term (0 to 3 years)	The cost is the responsibility of the developer.	Incorporating the value of residential sprinklers into response strategies provides an opportunity to maximize fire suppression services' effectiveness and enhance the health and safety level for emergency responders and the public. Residential sprinklers can have an immediate influence on potential fire damage.
35	That the TFES more accurately record and track the number of times they arrive first at the scene of tiered medical incidents.	Immediate (0 to 1 year)	Staff Time	To better assess the effectiveness of TFESs role in the tiered response protocol with respect to response time and the resulting impacts on patient outcomes, first on scene information should be more accurately recorded and reviewed.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Costs	Rationale
36	That the Fire Chief continue and maintain a targeted recruitment campaigns that incorporates a community-based approach, supported by incentives and benefits to enhance the retention of paid-on-call firefighters.	Immediate (0 to 1 year) ongoing	Staff Time	An analysis of TFES recruitment and retention efforts indicates that the department is currently struggling in this regard, and it is of concern to the Chief. Over the last four years, the department has hired 60 volunteers but lost 74 to retirements or resignations.
37	That the Fire Chief completes the firefighter's cancer prevention checklist in cooperation with the worker members of the Joint Occupational Health and Safety Committee. Upon conclusion, the necessary additional SOGs can be developed as recommended in the checklist or updated as required if they already exist.	Short Term (1 to 3 years)	Staff Time	A NIST study concluded that firefighters face a 9 percent increase in cancer diagnosis and a 14 percent increase in cancer-related deaths compared to the general population. In 2023, the World Health Organization's International Agency for Research on Cancer concluded that firefighters' occupational exposures are considered carcinogenic.
38	As a best practice, a pre-incident plan process that conforms with NFPA 1620 should be developed.	Short Term (1 to 3 years)	Staff Time	An effective pre-incident planning program within a fire department can support a reduction in property loss and enhance the safety of the public and firefighters in the event of a fire or other emergency.
39	Should the planned transition to a fully digital regional radio system be delayed, consideration be given to conducting a thorough audit of the TFES communications system.	Short Term (1 to 3 years)	To Be Determined	The regional transition to a digital radio system is the next logical infrastructure improvement that should be made. Should this transition be delayed, it is vital to assess the TFES communications system to ensure it continues to function as intended.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Cost	Rationale
40	EMG recommends the permanent closure of Station 3 and the re-allocation of staff between Station 2 and Station 4.	Immediate (0 to 1 year)	Staff Time	Station 3 is currently inactive due to structural and staffing issues. Service delivery has already been reassigned to Station 2. Due to the Welland Canal, shared responsibilities between Station 2 and Station 4 would optimize service delivery. GIS analytics demonstrate that service delivery from Station 2 and Station 4 to the Port Robinson area meets the recommended response time and staffing from NFPA 1720.
41	City of Thorold and the TFES develop a communication strategy based on recommendation from EMG to close Station 3 and based on EMG's analysis indicating the adequate coverage from the current response model to inform concerned residents, especially residents of Port Robinson	Immediate (0 to 1 year)	Staff Time	EMG surveys of the community showed that residents are not well-informed of response time and staffing requirements recommended by NFPA 1720. The residents of the Port Robinson area would benefit from a communication strategy informing them of the adequate service delivery from the current three-station model.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Cost	Rationale
42	TFES should implement a 15-year replacement schedule for all first-due apparatus	Short-Term (1 to 3 years)	Capital Budget Re-structuring with no direct cost	Currently, the TFES implement a 15-year replacement schedule. The replacement schedule is not always followed as some vehicles are beyond their replacement scheduled year. The TFES would benefit from a robust replacement benchmark aligning with FUS. The alignment would also benefit the City's grading, and it would ultimately benefit the insurance rate for fire protection services for the residents.
43	Apparatuses that do not meet the replacement schedule recommended by FUS should follow NFPA 1910 replacement guidelines.	Short-Term (1 to 3 years)	Capital Budget Re-structuring with no direct cost	TFES apparatuses that do not conform to FUS do not meet the NFPA 1910 replacement guidelines. It would benefit the TFES and the City with respect to capital budgeting and fleet replacement to adhere to the recommended benchmark set in NFPA 1910.
44	TFES needs to update its asset management program to include a master equipment life cycle.	Short-Term (1 to 3 years)	Staff Time	A master equipment life cycle program will ensure equipment is replaced in timely fashion, always current, and in good working condition.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Cost	Rationale
45	All fire hydrants need to be inspected and tested as required in Articles 6.6.5.2. through 6.6.5.7. of Ontario Regulation 213/07 of the Ontario Fire Code	Short-Term (1 to 3 years)	Staff Time	The Municipalities must ensure hydrants are flushed annually. The failure of a hydrant to operate as required may present catastrophic results and expose the Municipality to the risk of litigation. Hydrants must comply with the colour scheme per NFPA 291.

Section 5: Emergency Management Recommendations

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Cost	Rationale
46	The City of Thorold ERP should incorporate IMS principles	Short-Term (1 to 3 years)	Staff Time	Although some staff have received training to IMS 100, the level of training is not prescribed in the ERP and the MECG staff would benefit from completing IMS 100 and 200, as well as the EMO BEM course.

Section 6: Mutual Aid, Automatic Aid, and Fire Agreements

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Cost	Rationale
47	That TFES update Schedule "A" to By-law No. 06-2017 Rates and Fees 2024 to include a cost recovery process for hazardous materials incidents.	Immediate (0 to 1 year)	Staff Time	Hazardous materials response incidents have been identified as a high risk to the community. To recover the cost of a request for assistance from another agency to mitigate a hazardous materials incident, a cost recovery mechanism should be in place.

Section 7: Finance

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Cost	Rationale
48	Replacement costs for apparatus should be increased by 20%	Immediate (0 to 1 year)	Staff Time	EMG's review of the replacement costs suggests a tendency to underestimate the replacement costs for apparatus. Given recent inflation and global uncertainties, the TFES would benefit from a more competitive costing for apparatus to avoid shortfalls in current estimations.
49	Equipment replacement costs should be increased by 20%	Immediate (0 to 1 year)	Staff Time	EMG's review of the replacement costs suggests a tendency to underestimate the replacement costs for equipment. Given recent inflation and global uncertainties the TFES would benefit from a more competitive costing for equipment to avoid shortfalls in current estimations.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Cost	Rationale
50	TFES should review its revenue generation stream with respect to remote alarm calls and inspection-related matters	Immediate (0 to 1 year)	Staff Time	EMG's investigation revealed that the TFES revenue streams for remote alarm appear low. TFES statistics revealed that between 2018 and 2022 18% of the emergency calls were for remote alarm related calls and in 2023 the percentage was 28% of all calls for emergency services. Remote alarm revenue for 2022 amounted to $1,444.00, and for 2023 the total amounted to $1,585.00. In 2022, 18% of the total calls translated into 197 remote alarms, whereas in 2023, 28% of emergency calls translated into 255 remote alarms. Although a portion meets Schedule "A" of the Fees and Charges By-law, at the MTO rate, the revenue stream is underrepresented. With respect to inspection fees, Schedule "A" encompasses an exhaustive list of fees for inspection-related matters. Again, the revenue generated for 2022 and 2023 accounts for 2.25% and 11.59% of the total revenue for specific functions. EMG research indicated that residential rental licensing functions have mostly taken the workload of fire prevention staff. The TFES is losing a considerable amount of revenue from inspection-related matters.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Cost	Rationale
51	TFES should review its revenue generation stream with respect to residential rental and Bed & Breakfast licensing and inspection-related matters	Immediate (0 to 1 year)	Staff Time	As part of EMG's review, it was identified that the Fire Prevention Division spends considerable time on residential rental licensing matters. It appears that there are, again missed opportunities for revenue generation. EMG research indicated that the number of bed& breakfast establishments in the City of Thorold is unknown. It appears that there is again missed opportunities for revenue generation.
52	TFES should seek the adoption of a fire cost recovery by-law elaborating on a third-party cost recovery service agreement and revenue generation.	Immediate (0 to 1 year)	Staff Time	The TFES could also generate revenues from the recovery of fire protection response costs from insurance companies by vendors, such as Fire Marquee Inc.

Rec #	Recommendation	Suggested Implementation Timeline	Estimated Cost	Rationale
53	The Thorold Fire Department have a current Fire Underwriters Survey (FUS) completed on their Department.	Short-term (1 to 3 years)	Staff time	May affect the cost of insurance for the citizens of the Municipality of Thorold.
54	It is recommended that the Fire Chief access FUS Municipal Fire Portal regularly to provide frequent updates from which FUS Specialists will analyze and publish grade updates as deemed necessary.	Short-term (1 to 3 years)	Staff Time	This would ensure that the Department could provide frequent updates from which FUS Specialists will analyze and publish grade updates as deemed necessary.

EMG Emergency Management Group

Appendices

Appendix A – Five-Step Staffing Process

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, considering 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, considering 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

The branch of the unassigned personnel hours by the adjustment factor will determine the number 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.