



Presented to:



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PREFACE

This document serves as the Town of Tillsonburg's Fire Services Master Plan. The primary motivation for developing this document is for the community in establishing a long-term strategy to protect life and property based on community risk, safety, corporate priorities, and council-approved budget allocations. This document will be used as a tool to evaluate and forecast the immediate and future emergency service needs of the community.

ACKNOWLEDGEMENTS

Behr would like to acknowledge the leadership of Town Council, Senior Leadership Team and the dedicated members of Tillsonburg Fire Rescue Service for their participation in the development of this plan. While challenges lay ahead, Tillsonburg Fire Rescue Services remains committed in their efforts to improve fire protection services to enhance public safety in the community. It is abundantly evident that fire service members are highly dedicated and engaged in all facets of their community and their pride in delivering fire protection services to the community is commendable.

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ACRONYMS

AHJ	Authority Having Jurisdiction
ASP	Area Structure Plan
CAD	Computer Aided Dispatch
CRA	Community Risk Assessment
ERF	Effective Response Force
FSMP	Fire Services Master Plan
FUS	Fire Underwriters Survey
MAP	Mutual Aid Plan
MVC	Motor Vehicle Collision
NFPA	National Fire Protection Association
OBC	Ontario Building Code
POC	Paid-On-Call (Volunteer Firefighter)
PSAP	Public Safety Answering Point
QMP	Quality Management Plan
RMS	Record Management System
SOC	Standard of Cover
SOG	Standard Operating Guideline
WUI	Wildland Urban Interface

TABLE OF CONTENTS

EXECUTIVE SUMMARY	I
Introduction	i
Strategic Goals	i
Project Approach and Outcomes.....	i
Fire Services Master Plan Process.....	ii
Community Overview	iii
Community Risk Assessment	iii
Department Overview	iv
Summary of Observations and Recommendations	v
Conclusion	xxv
SECTION 1 INTRODUCTION	1
1.1 Background and Significance	1
1.2 Goals and Objectives	1
1.3 Project Scope	2
1.4 Standards and References	2
1.5 Fire Services Master Plan Process	3
1.6 Consultative Process.....	3
1.6.1 Community and Fire Station Tour.....	3
1.6.2 Targeted Interviews	3
1.6.3 Online Firefighter Survey	4
1.6.4 Municipal Comparative Analysis.....	5
1.7 Study Considerations	6
SECTION 2 COMMUNITY PROFILE AND RISK OVERVIEW.....	7
2.1 Community Overview	7
2.2 Economic Indicators.....	8
2.3 Growth Projections.....	9
2.4 Key Community Demographics	10
2.5 Community Planning and Development.....	11
2.6 Community Risk Assessment	11
2.6.1 Factors Contributing to Risk.....	12
2.6.2 Risk Management	13
2.7 Risk Evaluation vs. Service Levels	13
2.7.1 Assigning Risk Level.....	17
2.8 Structural Fire Risk Analysis	17

2.9	Ontario Building Code Occupancy Classifications	18
2.9.1	Building Stock Profile	18
2.10	OFM Fire Risk Sub-Model Occupancy Classifications	19
2.11	Town of Tillsonburg Existing Major Building Classification Summary	19
2.12	Potential High-Fire Risk Occupancies	20
2.12.1	Fuel Load Concerns	20
2.13	Occupancies with Potential High Fire Life-Safety Risk.....	22
2.13.1	Registered Vulnerable Occupancies	22
2.14	Community Risk Analysis Overview	23
2.15	Impacts of Hazards on Fire Protection Services	24
2.15.1	Fire Station Response Demand Zone.....	26
2.16	Water Infrastructure.....	29
SECTION 3	DEPARTMENT PROFILE	30
3.1	Department Overview	30
3.1.1.	Mission, Vision, and Values	31
3.2	Human Resources	32
3.2.1	Thematic Summary of Interview and Survey Results	33
3.2.2	Staffing Complement	34
3.2.3	Department Leadership, Management and Operations	37
3.3	Remuneration, Recruitment, Selection, Retention, Promotion	41
3.3.1	Remuneration	41
3.3.2	Recruitment	41
3.3.3	Selection and Training of New Staff.....	42
3.3.4	Retention	43
3.4	Training	44
3.4.1	Industry Recommended Qualifications	46
3.5	Health and Wellness	47
3.6	Core Services.....	49
3.6.1	Structural Firefighting	49
3.6.2	Medical First Response	50
3.6.3	Motor Vehicle Collisions, Vehicle Extrication	50
3.6.4	Dangerous Goods Response	51
3.6.5	Technical Rescue Services.....	52
3.6.6	Fire Prevention Services.....	52
3.6.6.1	Fire Code Inspection Services	52
3.6.6.2	New Developments Plan Reviews.....	53

3.6.6.3	Fire Cause and Origin Services	53
3.6.6.4	Fire Public Education Services.....	53
3.6.6.5	Pre-Emergency Planning	53
3.6.7	Citizen Assist and Public Services.....	55
3.6.8	911 and Fire Dispatch	55
3.7	Emergency Management Program and Emergency Operation Centre.....	56
3.8	Mutual Aid and Other Service Agreements.....	57
3.9	Facilities	58
3.9.1	Firehall Overview and Assessment	58
3.10	Equipment.....	66
3.10.1	Apparatus and Emergency Vehicles.....	66
3.10.1.1	NFPA Standards for Fire Apparatus	66
3.10.2	Fire Apparatus Design and Procurement.....	68
3.10.3	Fire Apparatus Maintenance and Repair	69
3.10.4	Fire Apparatus Replacement and Dispersal.....	69
3.10.5	Apparatus and Emergency Vehicle Fleet Inventory	72
3.11	Ancillary Equipment.....	74
3.12	Personal Protective Equipment	74
3.13	Specialized Operations Equipment.....	75
3.14	Asset Management.....	75
3.15	Municipal Comparative Analysis.....	75
3.15.1	Department Profile	77
3.15.2	Budgets	78
3.15.3	Industry Standards.....	78
3.15.4	Response Data	78
SECTION 4	INCIDENT STATISTICS AND RESPONSE PERFORMANCE ANALYSIS	81
4.1	Industry Standards and Provincial Legislation.....	81
4.1.1	National Fire Protection Association (NFPA) Standards	81
4.1.2	Ontario Regulatory Framework Regarding Community Fire Safety	81
4.2	Incident Types and Frequency Analysis.....	82
4.3	Response Performance.....	88
4.3.1	Intervention Time	88
4.3.2	NFPA 1720 Performance Standards.....	90
4.4	TFRS Emergency Response Performance Analysis	91
4.4.1	Alarm Handling	92
4.4.2	Assembly Time	93

4.4.2.1 Data Limitation	93
4.4.3 Travel Time Performance.....	95
4.4.4 Total Response Time	96
4.5 Response Coverage Mapping	98
4.6 Effective Response Force	111
4.7 Critical Task Analysis	112
4.8 Measuring, Managing and Reporting Performance	116
SECTION 5 CONCLUSION.....	120
APPENDICES	122
Appendix A: Glossary of Terms	123
Appendix B: List of Figures, Maps, Images, and Tables	125
Appendix C: Theoretical Response Mapping Methodology	127
Appendix D: Online Firefighter Questionnaire Results.....	131
Appendix E: Town of Tillsonburg Job Descriptions.....	144
Appendix F: Tillsonburg Fire Apparatus and Light Duty Fleet	155

EXECUTIVE SUMMARY

Introduction

Today's fire and emergency services are continually being challenged by budget constraints, unprecedented growth, rising call volumes, and increasing and unusual risks against a backdrop of expectations to do more with less. The demand for emergency response and emergency management services has expanded, causing the role to shift and for services to diversify. Effective management of an emergency services department requires a clear understanding of risk and the ability to provide an appropriate response to mitigate the risks. Failing to realize and address these challenges could leave the community and its responders vulnerable.

Modern fire, rescue and emergency services have evolved into a critical component of a community's social safety net. Whereas early fire departments were established specifically to combat structure fires that, at the time, were often devastating. Today's fire departments are also called upon to respond to medical emergencies, rescues of all sorts, motor vehicle incidents, dangerous goods releases, wildland fires and natural disasters etc. As a result, fire departments must be adequately resourced and equipped to provide these services safely, efficiently, effectively with a great deal of competency.

The goal of developing this Fire Service Master Plan is to provide strategic direction for the fire service. This plan will provide a systematic and comprehensive approach to evaluate current response capabilities by identifying and mitigating risks through a community risk assessment. The Fire Service Master Plan will also assist in formulating and communicating strategic directions for the fire service, while highlighting opportunities for improved service delivery. This plan can also be used in conveying information to the public, staff, and municipal council about what to expect in the municipality's approach to fire and emergency service planning, service delivery model, policy, and development.

Ultimately, the outcome of this project determines options towards an optimum service delivery model and serves as a blueprint for the municipality to be more effective and efficient in the delivery of emergency services through current and future challenges.

Strategic Goals

The Town of Tillsonburg Fire Rescue Services will utilize the Community Risk Assessment (CRA) to identify the fire safety risks with the Town, as the basis to inform the development of goals and objectives for the delivery of fire protection and emergency response provided. Optimizing the methodology of the three lines of defense (Public Education, Fire Prevention and Code Enforcement, and Emergency Response) will allow TRFS to provide a comprehensive fire protection program.

Project Approach and Outcomes

While risks are the basis for triggering response decisions, our analysis has also investigated the needs of the community and will provide a point of reference upon which future decisions and priorities can be evaluated and implemented. This includes identifying priorities, challenges, and opportunities for the improvement of the delivery of emergency services to the community

businesses, and overall public safety. Along with risks, this plan also, considers applicable legislation, industry-leading and best practices, and standards to provide unbiased analysis and evidence-based recommendations.

Key aspects in the development of this plan included a community and station tour that focused on the overall footprint, topography, and transportation infrastructure of the community along with the various response zones for each of the two responding stations. Touring each station also provided an opportunity to conduct a general condition and operational functionality assessment on each station.

Targeted interviews and an online survey were also used to collect data and information. This process was used to promote an open discussion about the community, risks, general concerns related to the community and municipal operations.

An industry peer municipal comparative analysis¹ of the fire service was conducted as a method of benchmarking the performance of departments to similar municipalities. These benchmarks include budgets, performance, effectiveness, and efficiencies. Although fire and emergency services ultimately have the same goal of protecting life and property, each community has its unique features in how to accomplish their goals. Our main criteria for the comparative analysis are indicators of effectiveness and efficiencies amongst the communities for risk and mitigation.

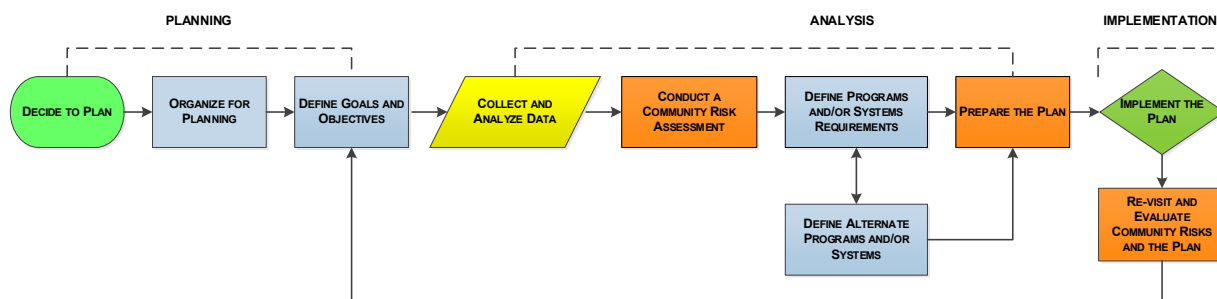
Fire Services Master Plan Process

The following diagram illustrates the process used to complete this plan. A Fire Service Master Plan is sometimes referred to as a ‘road map’ for the future and used as a guiding document for current and future department leaders and decision makers.

As described in the implementation phase, it is highly recommended that this plan be reviewed and evaluated, at minimum, on an annual basis or when there are unusual changes, such as in population, and residential and/or industrial development activity that could affect changes in risk.

When reasonably possible, we also recommend a third-party update of the plan at the five-year mark to apply an unbiased review into the operation and provide further credibility to the master plan process.

Fire Services Master Plan Process



¹ Please see Section 3.15 Municipal Comparative Analysis, Page 75

Community Overview

The Town of Tillsonburg is in Oxford County, roughly 30 kms north of Lake Erie, 50 kms southeast of London, Ontario and 170 kms southwest of Toronto, Ontario. It is also conveniently located 156 km east of the US/Canada Blue Water Bridge border crossing².

The town has a land-based area of 22.2 km², with a population of 18,615 and population density of 838.6 per km².³ The land use area is predominantly residential, with a small central business district and pockets of service commercial area, and a large industrial sector encompassing most of the southern portion of the community. Once geared towards the tobacco industry, the area is now home to several branch plants of major US and international automotive parts suppliers.

The town is located within the Long Point Region watershed, which provides the area with wetlands, woodlands, agricultural lands, as well as fish and wildlife habitat. A popular recreational site for the local rowing club and water park, Lake Lisgar is a small lake located in the centre of the town.

Community Risk Assessment

Every municipality has unique challenges and characteristics contributing to the overall risk profile of the community. In accordance with the Ontario Regulation 378/18: Community Risk Assessments (O. Reg. 378/18), under the authority of the Fire Protection and Prevention Act, 1997 (FPPA), O.Reg. 378/18 “requires that each municipality and every fire department in a territory without municipal organization complete a community risk assessment and use it to:

inform decisions on the provision of fire protection services.”⁴ A community Risk Assessment (CRA) is a comprehensive evaluation of potential risks and vulnerabilities within a specific community. It is a vital process designed to identify, assess, and prioritize various risks, such as natural disasters, industrial accidents, public health emergencies, and other hazards that impact the safety and well-being of the community residents.

The introduction of O. Reg. 378/18 is also now a core component to satisfy the FPPA requirements of developing an in-depth analysis of a community’s fire related risks through a comprehensive analysis of nine mandatory profiles which include:

1. Geographic Profile
2. Building Stock Profile
3. Critical infrastructure Profile
4. Demographic Profile
5. Hazard Profile
6. Public Safety Response Profile
7. Community Services Profile

² As retrieved from Google Maps

³ Statistics Canada. Statistics Canada Catalogue no. 98-316-X2016001. Ottawa. Released November 29, 2017. <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/index.cfm?Lang=E> (accessed June 15, 2023).

⁴ Community Risk Assessment: Office of the Fire Marshal OFM-TG-02-2019, 2019.

8. Economic Profile
9. Past Loss and Event History Profile

A CRA was developed for the Town of Tillsonburg using technical guidelines provided by the Office of the Fire Marshal (OFM). A series of data was collected and analyzed to identify risks to the community from the perspective of each of the nine profiles. Key data sources were obtained from Tillsonburg Fire Rescue Services, Office of the Fire Marshal (OFM) Standard Incident Reporting Data, Statistics Canada Population Census, Municipal Property Assessment Corporation (MPAC) and desktop research. The lens of the risk assessment was focused on risk outcomes and how they relate to the fire service. The results of the CRA were then used to inform the development of this fire service master plan to mitigate the identified risks and improve fire safety and emergency response capabilities for the community.

The evaluation of fire and rescue-related risks consider both the probability and consequence of emergency event types. The probability of an event is quantified by analyzing historical, current, and projected data. The consequence of the event type or risk is based on an informed assessment of the potential impact on a community should the event occur. As a result of this analysis, the top hazards in the town include the following:

- Fire and explosion
- Winter weather (blizzard, freezing rain, snowstorms)
- Human health emergency (pandemic)
- Hazardous materials (HAZMAT) spill – fixed site/transportation
- Tornadoes and windstorms
- Cyber Security Breach.

In addition to the overall highest risks to the community, certain events pose an increased risk specific to firefighting. To better understand the risks of hazards as they pertain to fire protection services, the top five hazards have been assessed to identify possible impacts on fire protection services.

Department Overview

The Tillsonburg Fire and Rescue Services (TFRS) was initially established in 1888 and has been a highly regarded emergency response service over the course of the last 135 years. Today TFRS relies on a roster of 34 trained paid-on-call (POC) volunteers to provide fire, rescue, and medical first response services to the town. TFRS is also staffed by 13 professional tele-communicator operators that provide fire dispatch and communications services (FireComm) to the town and 28 other municipalities representing 55 additional fire stations throughout Ontario. FireComm also provides after-hour call support for the town.

The TFRS team is led by a full-time fire chief and two full-time assistant fire chiefs. TFRS organizational structure, has the following full-time equivalent (FTE) and POC volunteer positions:

- 1 FTE fire chief
- 1 FTE assistant chief – communications and administration

- 1 FTE assistant chief - prevention and training
- 1 POC Public Educator/firefighter position
- 2 POC platoon chiefs
- 4 POC captains
- 27 POC firefighters
- 5 FTE telecommunicator
- 8 PT telecommunicator

Note: TFRS staffing levels within the department all are subject to change depending on resignations and/or retirements of POC volunteer and telecommunicator staff that may occur during the year.

TFRS can request or be requested for additional fire/rescue resources with mutual aid partners within the Oxford, Norfolk, and Elgin County's through mutual and automatic aid agreements. Resources may also be requested through the OFM where necessary.

Summary of Observations and Recommendations

The intent of this fire services master plan is to provide a series of recommendations to be implemented over a ten-year timeframe. However, the recommendations in this plan were prioritized in such a way that it was felt all should be completed within seven years. The following recommendations are drawn from findings presented throughout the report. They are grouped into three categories according to priority: critical, short-term, and long-term.

Progress on the implementation of recommendations should be monitored and potentially adjusted to reflect available funding and administrative capacity that may go beyond the five years identified. Most of the recommendations presented in this report are achievable using existing staff or members' time and will therefore not pose significant additional costs to the community, however some recommendations are substantial and will require review of potential funding or financial strategies. Costs are rough order of magnitude estimates only and will require further investigation.

'Cost neutral' refers to the use of internal staff through a normal work schedule. This would include support from volunteers and other internal departments that may or may not require additional resources (costs) to complete. Undertaking of these cost neutral recommendations are also contingent upon staff availability.

A timeframe within 1 – 96 months (1 – 8 years) has been assigned to each recommendation, recognizing that the start and completion of any recommendation is based on annual corporate priorities and council approved budget allocations.

Critical	Short Term	Long-Term
1 -12 months	12 - 48 months	48 - 96 months

Note: Observations and recommendations are numbered based on how they appear in the report.

Observation #1: The Tillsonburg Fire and Rescue Services Establishing & Regulation Bylaw is the establishing and regulating bylaw for TFRS. It references services to be delivered however it does not include specific emergency response time performance service levels. Furthermore, response performance such as the number of firefighters responding either directly or converging on scene, or the time increment to achieve a safe ERF and complete the critical tasks is not being tracked or monitored. All these components would be included in a standard of cover or service level policy.

Reference: Section 2.15.1 Fire Station Response Demand Zone, Page 26

Recommendation #1: Revise the current Establishing and Regulating Bylaw to provide for a Council supported core service levels that are informed by the current Community Risk Assessment and providing for TFRS to meet all applicable provincial legislation and regulations.

(Suggested completion: 6-12 months)

Recommendation #2: Define deployment models to best mitigate risk identified in the CRA.

(Suggested completion: 6-12 months)

Recommendation #3: Outline service delivery as follows:

Public Education:

- a. Develop targeted public education programs informed by the CRA.*
- b. Provide smoke alarm and home escape planning for all residential classifications.*

Fire Prevention and Code Enforcement

- a. Develop a proactive code enforcement inspection program informed by risks identified in the CRA.*
- b. Provide Fire Investigations to determine origin and cause.*
- c. Examine and provide comments (or approve) Ontario Building Code fire safety sections on new construction plans submitted for permit.*
- d. Review and approve subdivision and development agreements.*

Emergency Response:

- a. Provide a full-service fire department as defined by O Reg 343/22 (Table 1, item 8) Including interior attack with rescue; hazardous material response at operations level; auto extrication.*
- b. Provide ice and water rescue at operations level.*
- c. Provide rope rescue (slope) at operations level.*
- d. Provide medical response as defined by tiered response agreement.*
- e. Provide confined space at awareness level.*
- f. Provide machine rescue at operations level.*
- g. Provide trench rescue at awareness level.*

Emergency Telecommunications:

- a. *Call-taking of emergency calls*
- b. *Dispatching and incident radio transmissions of emergency incidents*

Training of Fire Service personnel.

Training:

- a. *Coordination of all internal training ensuring that all fire service personnel are trained and certified to the service levels defined by Council and required under the FPPA.*
- b. *Ensure all staff meet the requirements of O Reg 343/22 Fire Fighter Certification*

Maintenance of Fire Service vehicles and equipment:

- a. *All vehicles and equipment are maintained and serviced to ensure reliable and available for emergency response.*

(Suggested completion: 6-12 months)

Rationale: *Developing formalized policy statements regarding fire department service levels is considered a leading practice. In the absence of established service levels, it is difficult for a fire chief to determine whether fire department response performance meets community and council service expectations. Further, the anticipated growth planned for the town will increase demands for service. Increases in service demands are correlated with increases in population and related risks such as increased traffic flow, building stock and community profile. Furthermore, a comprehensive emergency response service level policy will confirm the essential core services for TFRS based upon statistic demands.*

It should be noted that technical/ specialized rescue is based on the likelihood that fire will respond to these type of calls and must be trained to a minimum standard of awareness level so best to understand the situation, size up and request the appropriate additional resources required. Those identified as operations level are indications that there is experience in delay with emergency requiring these skills and fire fighters must be trained to the appropriate level. The Fire Chief should review these annually to determine if the current level is appropriate to deal with the needs and circumstances identified.

NFPA 1201: Standard for Providing Emergency Services to the Public suggests all fire departments should have policy identifying service types and service levels. Section 4.5.3.1 states:

“The fire and emergency services (FESA) leader shall develop and adopt a formal policy statement that includes the specific types and levels of services to be provided by the organization, the service area, and the delegation of authority to subordinates.”

Observation #2: TFRS leadership does not have administrative support that provides the capacity to manage the business aspects of the fire service. In addition to assisting with implementation of the strategic recommendations identified in this FSMP, administrative support would include, at minimum, records management, emergency response performance and tracking, trend analysis, business management of FireComm contracts, fire prevention services support, business plans, and budget support.

Reference: Section 3.2.3 Department Leadership, Management and Operations, Page 37

Recommendation #4: Establish a dedicated administrative support position for TFRS to provide critical assistance with ongoing daily activities to allow the fire chief and assistant fire chiefs to focus on leading the department to meet future demands and challenges.

(Suggested completion: 6-12 months)

Rationale: Dedicated administrative support would provide critical assistance with ongoing daily activities such as financial and business planning, strategic management, and organizational tasks.

Observation #3: During the interview process and the results of staff surveys, a theme emerged over the ability of the Assistant Chief of Prevention and Training to continue to perform activities for the increasing demands required of training and fire inspections. Several factors support this theme in terms of the requirement to comply with OFM firefighter certification regulation, the FPPA regulations for public education and fire prevention, and the projected growth for the town. These factors combined emphasize the need to provide additional capacity for fire prevention and training.

Reference: Section 3.2.3 Department Leadership, Management and Operations, Page 37

Recommendation #5: Establish two officer positions to provide capacity for training, fire prevention, and public education requirements.

(Suggested completion: 12-24 months)

Rationale: Providing support for increasing operational demands for the delivery of fire inspections and training will allow the Assistant Chief of Prevention and Training to focus on the administrative responsibilities of this position.

These dedicated positions would be engaged as part of the initial implementation of the recommended transition to a composite staffing model. The addition of ten full time firefighters over the next 2 to 7 years will have these positions integrated for peak demand daytime emergency response.

Observation #4: The staff turnover rate in the FireComm division is creating operational challenges with retaining trained and experience telecommunicators. In the last 18 months, 8 staff member have moved on to other services for full-time positions. This equates to a turnover rate of over 50%. All but one of these positions were part time telecommunicators.

Reference: Section 3.3.2 Recruitment, Page 41

Recommendations #6: Conduct a staffing review for TFRS to ensure resources are available in the emergency communications centre to address workload at any given 24-hour cycle and ensure appropriate numbers of dispatchers including adjustments for peak periods.

(Suggested completion: 6-12 months)

Recommendation #7: Work with the Town's human resource department to determine the costs of high turnover rates and review schedules and remuneration to develop a more sustainable retention program.

(Suggested completion: 12-24 months)

Rationale: The costs in terms of staff time and budget for the recruitment, hiring, training and equipment of the part time staff emphasizes the need to conduct a complete review of the FireComm staffing model.

Observation #5: TFRS utilizes limited on-line learning offered through the OFM and feedback has confirmed that these types of learning opportunities are effective when combined with practical exercises. During the consultation process and a theme emerged regarding communication between administration and the firefighters. Specifically, the town has not provided the POC volunteer firefighter with remote access to their email system. To offset this challenge the use of the personal or business email addresses is utilized. Most online learning management systems include the ability to communicate with the entire group or individually.

Reference: Section 3.4 Training, Page 44

Recommendation #8: Enhance the use of technology to utilize on-line learning and learning management systems, records management and online communication and coordination capabilities.

(Suggested completion: 24-36 months)

Recommendation #9: Ensure all firefighters and fire service staff are certified to the appropriate levels defined under O Reg 343/22 for duties they are required to perform as key responsibilities.

(Suggested completion: 12-72 months)

Rationale: Modern training processes incorporate a learning management software program that assists with the administration, documentation, tracking, reporting, automation, communication, coordination, and delivery of educational courses. Most learning management systems typically focus on online learning and support several delivery processes. There are commercial learning management software programs specifically designed for the fire service that are capable of assigning, delivering, tracking, and reporting firefighter training requirements.

Observation #6: Health and safety initiatives and measures are a high priority for the protection of all employees. Opportunities to enhance the safety of staff from injury or illness should be implemented where possible.

Reference: Section 3.5 Health and Wellness, Page 47

Recommendation #10: Conduct a review and implement the addition of a decontamination area including a shower on or near the apparatus floor. Additionally pursue the approval for sealing of bay floors from the remainder of the fire hall.

(Suggested completion: 12-24 months)

Recommendation #11: Conduct a review of policies and procedures to ensure that they are conforming with Occupational Health and Safety requirements and guided by Section 21 Guidance notes. This includes decontamination for post fire incidents, reduction of environmental concerns in fire stations.

(Suggested completion: 12-36 months)

Rationale: For the safety and health of TFRS staff, initiatives including necessary renovations, additions including applicable standard procedures should be implemented where possible.

Observation #7: There are several fire prevention service shortfalls that need to be addressed to comply with the FPPA regulations, and risk reduction best practices. This includes the following:

- cyclical fire prevention and code inspections
- development site plans & zoning reviews
- fire safety plan reviews
- formal emergency preplanning and building stock assessments.
- enhanced public education and prevention programs to target identified community risks.
- false alarm reduction programs
- enhanced smoke alarm program and process for recording smoke alarm data
- enhanced fire investigation with additional qualified staff

Reference: Section 3.6.6.5 Pre-Emergency Planning, Page 53

Recommendation#12: Establish dedicated fire and life safety education staff with a mandate to develop, implement and measure fire and life safety programming based on identified risks in the CRA.

(Suggested completion: 12-36 months)

Recommendation #13: Develop a community outreach program to establish relationships with key stakeholders to assist in providing educational programming to target high-risk demographics.

(Suggested completion: 12-24 months)

Recommendation #14: Utilize fire cause determination to identify trend in fires to inform programming. This will require trained fire investigators (NFPA 1033) and a robust records management system to capture and provide detailed reports.

(Suggested completion: 18-24 months)

Recommendation # 15: Establish dedicated Fire Code inspection and enforcement positions to provide a proactive inspection program addressing identified risks in the CRA.

(Suggested completion: 18-36 months)

Recommendation #16: Review and develop, as required, new bylaws to align with current legislation and address any rising issues such as increased false alarm incidents.

(Suggested completion: 18-24 months)

Recommendation #17: Work with municipal building department to establish appropriate process for Ontario Building Code trained and qualified fire staff to review, comment and approve appropriate Ontario Building Code sections related to fire safety for all new building applications for permits.

(Suggested completion: 24-36 months)

Recommendation #18: Develop a pre-incident pre-planning program utilizing the principles of NFPA 1620 for fire crews to address pre-incident planning informed by risks in the CRA.

(Suggested completion: 24- 96 months, Ongoing)

Rationale: The addition of ten fulltime firefighters over the next two to seven years, as identified in recommendation #29, will provide the capacity to conduct rigorous fire prevention services and comply with the FPPA regulations. Furthermore, these ten positions would be responsible for peak demand daytime emergency response.

Observation #8: During consultation with staff, a theme emerged over the need for enhanced IT support. It was identified that Oxford County's centralized IT division was providing best possible support to TFRS however the number of systems, complexity including fire dispatch services to 55 municipalities, and ongoing maintenance requires additional IT support.

Reference: Section 3.6.8 911 and Fire Dispatch, Page 55

Recommendation #19: Work with Corporate IT to ensure dedicated and appropriate IT support for implementation of new systems and on-going and timely support of existing and future systems.

(Suggested completion: 1-12 months)

Rationale: These technologies are often supported across two or more individual system analysts on a part-time allocation of their full-time Corporate IT position. This helps ensure continuity when a person leaves the organization, provides surge support to the larger organization, and supports the dispatch centre for unexpected system downtime given the 24/7 critical nature of the systems.

Technological enhancement with emergency communication systems such a NG 9-11 require specialized and ongoing technical support to ensure these systems are always fully operational. The cost for the addition additional IT support should be included in the costing formula among the contracted municipalities. Specialized knowledge of complex systems that operate 911 telephone, radio, dispatch, and fire department records management systems should not be concentrated in a single resource.

Observation #9: The fire dispatch centre is located on the top floor of the fire hall and is marginally meeting the minimal operational requirements and constrained for any future growth or expansion.

Reference: Section 3.9 Facilities, Page 58

Recommendation #20: *Conduct a review of primary and back-up communications centres to ensure they meet the current and future needs of the community and staff working in centres as well as align to standards set out in NFPA 1225 Standard for Emergency Services Communications.*

(Suggested completion: 24-48 months)

Recommendation #21: *Develop a detailed implementation plan for upgrades to a new NG-911 system. Ensure that required NG-911 are appropriately funded and municipality to utilize all provincial grant opportunities.*

(Suggested completion: 1-6 months)

Rationale: *The current location of the TFRS Dispatch Centre is constraining present operational requirements. Future growth requirements for both the dispatch centre and the fire operations cannot be undertaken within the current fire station. The space utilized by the communications currently could be repurposed to expand area to operations and prevention staff.*

Observation #10: There has been two condition assessment conducted on the fire station in 2022 (Roth IAMS Ltd August 10, 2022, and Balan Engineering Corp November 3, 2022). The Roth assessment identifies the overall condition of the facility to be in good to fair condition however there are immediate, short term and capital and maintenance renewal cost projections that range from an immediate \$5,000 to assess the roof drainage to approximately \$2.4 M over the next 25 years to maintain the fire station. It is important to note that these condition assessments do not assess the functional and operational aspects to support TFRS's core services. During the interviews and survey there was considerable feedback regarding the station condition and not meeting functional or operational requirements.

During the site visit the absence of an exhaust extraction system to ensure the air quality throughout the station is maintained to acceptable levels was of particular concern. Tillsonburg Fire has indicated that the installation of this system is in the queue.

Factors that need to be included with this assessment include the future growth projections, community risk assessment, established core services and levels, preferred staffing model and the one or two station location concepts. Operational and functional analysis would typically include the following:

- Sufficient apparatus bay to safely and effectively garage and maneuver emergency response vehicles and apparatus.
- Firefighter staging and personal protective equipment storage.
- Equipment storage, maintenance, and decontamination areas
- Training and fitness areas including an exterior hard surface apron.

- Staff support areas such as workstations, offices, kitchen, rest areas, washrooms, and showers (non-gender or gender specific)

Reference: Section 3.9 Facilities, Page 58

Recommendation #22: Undertake a complete operational and functional assessment of the fire station.

(Suggested completion: 24-48 months)

Rationale: *Conducting an operational and functional assessment will determine if renovation, repairs and updating of this facility, or relocation and replacement, is the most prudent approach to managing the current and future of the town and TFRS. For example, the refinishing and repairs required to the apparatus floors and drain systems.*

Observation #11: The primary EOC is in the basement of the firehall. This room is also used for fire training and for firefighters' association meetings. Fire dispatch is also located at the firehall which contributes to the limited space availability at this location. During peak times of activity around the firehall (fire dispatch, training, fire calls, etc.), parking is limited and can further be exacerbated during activation of the of the EOC.

Recommendation #23: Review the feasibility of relocating the primary EOC along with dispatch to the new location of the town hall.

(Suggested completion: 1 – 12 months)

Rationale: *While at the early stages of planning for the new town hall, consideration should be made to adding space for the primary EOC and dispatch. Early planning for purpose-built space for these two services will only add to effectiveness and efficiencies. While at the planning stage, growth, and expansion for these two spaces should also be considered, which is not currently available in the existing firehall.*

Observation #12: There is an established apparatus and emergency vehicle replacement schedule. This schedule anticipates the retirement of all apparatus and emergency vehicles at 18 years. Financial resources are allocated during the budget cycle process, however there are no dedicated reserve funds for lifecycle replacement. There should be a regular review for the optimal timelines of apparatus and vehicle replacement along with a defined financial strategy or reserve fund to ensure there are sufficient funds to meet the life cycle replacement needs of the fire service.

Further, the development of a comprehensive reserve fund process that accounts for necessary criteria to establish ideal replacement timelines for all fire apparatus and emergency vehicles. A yearly review of this plan should be undertaken to evaluate whether the schedule remains on track. Necessary adjustments to individual apparatus or emergency vehicles can be made at that time.

Reference: Section 3.10.5 Apparatus and Emergency Vehicle Fleet Inventory, Page 72

Recommendation #24: Determine the number and types of apparatus required to meet the service levels identified by Council.

(Suggested completion: 12-24 months)

Recommendation #25: Work with corporate finance to develop a long-term capital asset and reserve fund program with appropriate sustainable funding models for apparatus, equipment, and facilities.

(Suggested completion: 18-24 months)

Rationale: Given the nature of emergency services and the reliance on safe and dependable equipment and vehicles, the need for regular and a critical review of these assets is important to determine if the intended life cycle is both achievable and financially responsible. Fire apparatus is routinely utilized under extreme conditions for long periods of time. The reliability of these critical pieces of equipment cannot be suspect. As stipulated in NFPA 1901, frontline apparatus is required to maintain a 95% in service status.

In addition to maintaining a current fleet capable of providing reliable service, meeting insurance (ULC) guidelines favourably impacts municipal insurance ratings. While the life expectancy of any piece of equipment or vehicle is contingent on proper use, maintenance and repair, fire apparatus life cycles are subject to adjustments more frequently than normal service vehicles. Annual reviews of all apparatus in TFRS, including mileage, call volume, maintenance records, testing results and salvage values should be carefully done with subsequent adjustments to the original life cycle, whether reduced or extended as warranted.

Updating all apparatus and emergency vehicle replacement schedules will assist with ensuring sufficient timelines for replacement process and necessary funds are there when needed.

Observation #13: A significant portion of incidents are related to alarms ringing with a majority related to malfunctioning fire or CO Alarm equipment.

Reference: Section 4.5 Response Coverage Mapping, Page 98

Recommendation #26: Conduct an in-depth analysis to determine the current trends of alarms ringing with the view to initiating preventative measures to reduce the occurrence and costs of false alarms.

(Suggested completion: 12-24 months)

Rationale: High volume of alarms ringing (false alarms) incidents can create apathy and low turnout numbers. This results in lower resources in the instances where a real emergency exists. Effective public education, as well bylaws including proper enforcement penalties and fees for recurring and/or nuisance alarms will assist with minimizing unnecessary draw on resources. There is an already pre-existing bylaw enacted to assign fees but allows for one free false alarm per calendar year. Further public education on the false alarm bylaw and the impact to the fire department as well as re-evaluation of the

subsequent fine amounts may enhance the bylaws effectiveness in reducing false incidents.

Observation #14: As detailed at Section 2, during the period 2021-2036 it is projected the town will experience 16.5% growth. This level of growth combined with the current assembly time and effective response force shortfall will further challenge TFRS. This growth will likely increase call volumes and pressure on the volunteer staffing model to meet emergency response performance targets that are based upon the identified risk factors. Total response time for volunteer staffing models has the assembly time as the largest limiting factor towards achieving performance targets.

Reference: Section 4.7 Critical Task Analysis, Page 112

Recommendation #27: Implement Option 3 and transition to a composite fire department with the staffing of 10 firefighters (5 per platoon) to cover 12-hour day shifts when activity is at its peak.

(Suggested completion: 12-96 months)

Recommendation #28: Develop a part-time firefighter program, utilizing existing qualified volunteers to maintain on-duty numbers. This will allow for provisions of vacation, sick-time, and enhance training, inspection, administration, education, and initial emergency response. The goal is to transition to a full-time composite staffing model, supporting the immediate term.

(Suggested completion: 12-24 months)

Rationale: Due to the increased risk to the public at large as population density increases, the frequency of events will increase but also the possibility of escalating emergencies that can spread faster. Early intervention by a full-time day shift would allow additional time for volunteer resources to arrive to fully control the incident. A full-time crew may also be able to handle smaller incidents requiring only an ERF of 4 firefighters such as minor MVC's, alarm conditions, small fires, medical calls, and/or citizen assists. The 10 firefighter positions can be hired in stages to minimize the tax impact in a single year. This in turn reduces the workload for the volunteer staff and response pressure during daytime peak periods and reduced availability of the volunteers. Furthermore, implementation of option 3 during the intermediate period of two to seven years will provide the timeline to monitor areas of growth and the potential need for a second fire station.

Observation #15: TFRS' standard operating guidelines do not identify the number of firefighters and resources required to complete tactical or critical tasks. Critical task analyses will clarify incident resource requirements and identify the critical tasks to clarify firefighter tasks and manage an incident efficiently and safely. A common practice for POC services is to have one officer and three firefighters either onboard before exiting the station for the first alarm assignment, or fully established on scene before attempting the required critical tasks.

Reference: Section 4.8 Measuring, Managing and Reporting Performance, Page 116

Recommendation #29: Complete critical task analyses for common incident types in response SOGs. Additionally, tactical ERF objectives in SOGs should be scaled to the resources available in the event there are not adequate firefighters available to complete all critical tasks.

(Suggested completion: 12-18 months)

Rationale: POC volunteer staffing models are limited by firefighter availability and ability to respond. Occasionally this limitation can result in inadequate staffing for more complex and larger incidents. As a result, tactics and critical tasks should be scaled to reflect available resources. This may cause a fire fighter to be conflicted if a potential rescue is needed but staffing on scene does not support this action. For example, if the number of assembled firefighters or water supply are not sufficient to support an interior fire attack or rescue, fire tactics should be limited to exterior and defensive operations. Critical task analyses should be used to identify operational limitations in policy to clarify incident command objectives and maintain safe operations.

Observation #16: TFRS reports quarterly activity to council on a variety of topics including call volume, public education events, firefighter turnout, incident types, ongoing fire department projects. The current report does not contain performance goals or historical information, the ability to identify benchmarks. Monitoring changes in service demand, and response performance is an important management function.

Reference: Section 4.8 Measuring, Managing and Reporting Performance, Page 116

Recommendations #30: Utilize a purpose-built fire service records management system to ensure support to all programs required to meet the service levels.

(Suggested completion: 12-24 months)

Recommendation #31: Implement performance goals and regular reporting using established benchmarks to service levels approved by Council.

(Suggested completion: 1- 12 months)

Rationale: Changes in service demand, and response performance is an important management function. In particular, the incorporation of spatial data (latitude and longitude) into reports will allow enhanced understanding of where risk exists within Tillsonburg. Furthermore, the ability to measure and report performance is critical in maintaining department accountability and transparency for response performance.

The first step in performance measurement is to develop the processes to collect reliable and valid data. As already discussed, fire and emergency services are typically data rich agencies. Use of integrated computer aided dispatch (CAD) and records management systems can improve the accuracy of the data captured and streamline the reporting process. These technologies simplify the conversion of data into useful information. Performance measurement and reporting is at the core of moving toward a databased culture and moves it away from mere opinion for fire services.

Quarterly reports to council are likely sufficient but may need to be more frequent for operational staff to recognize gaps in service and turnout when they present. Although activity is important to report, the inclusion of historical trends can better communicate changing demands on the fire department. An RMS can typically be programmed to produce reports and queries to investigate specific topics or incidents.

	Recommendation	'23	'24	'25	'26	'27	'28	'29	'30	Source	Est. Cost	Comments
1	Revise the current Establishing and Regulating Bylaw to provide for a Council supported core service levels that are informed by the current Community Risk Assessment and providing for TFRS to meet all applicable provincial legislation and regulations.									Staff time	Cost neutral	
2	Define deployment models to best mitigate risk identified in the CRA.									Staff time	Cost neutral	
3	Outline service delivery as follows: (Please refer to list)									Staff time	Cost neutral	
4	Establish a dedicated administrative support position for TFRS to provide critical assistance with ongoing daily activities to allow the fire chief and assistant fire chiefs to focus on leading the department to meet future demands and challenges.									Operating budget	Estimated \$80,000 per year	Based upon full time equivalent and corporate cost factors
5	Establish two officer positions to provide capacity for training, fire prevention, and public education requirements.									Operating budget	Estimated \$250,000 per year	Based upon two full time equivalents at \$125,000 each including corporate cost factors
6	Conduct a staffing review for TFRS to ensure resources are available in the emergency communications centre to address workload at any given 24-hour cycle and ensure appropriate numbers of dispatchers including adjustments for peak periods.									Staff time	Cost neutral	costs are contingent on review findings

	Recommendation	'23	'24	'25	'26	'27	'28	'29	'30	Source	Est. Cost	Comments
7	Work with the Town's human resource department to determine the costs of high turnover rates and review schedules and remuneration to develop a more sustainable retention program.									Staff time	Cost neutral	Contingent upon recommend staff increases, remuneration strategies, etc.
8	Enhance the use of technology to utilize on-line learning and learning management systems, records management and online communication and coordination capabilities.									Operating budget	Estimated \$140.00/user per year, \$500 annual maintenance, and \$800 initial setup fee.	Based upon costs provided by vendor. www.vectorsolutions.com
9	Ensure all firefighters and fire service staff are certified to the appropriate levels defined under O Reg 343/22 for duties they are required to perform as key responsibilities.									Operating budget	Cost neutral	Costs are contingent on the level of service provided and the requirement for additional training. OFM provides certification at no additional cost.
10	Conduct a review and implement the addition of a decontamination area including a shower on or near the apparatus floor. Additionally pursue the approval for sealing of bay floors from the remainder of the fire hall.									Operating/ Capital budget	Estimated \$30-50K	Third-party contract to complete analysis and costs

	Recommendation	'23	'24	'25	'26	'27	'28	'29	'30	Source	Est. Cost	Comments
11	Conduct a review of policies and procedures to ensure that they are conforming with Occupational Health and Safety requirements and guided by Section 21 Guidance notes. This includes decontamination for post fire incidents, reduction of environmental concerns in fire stations.									Staff time	Cost neutral	
12	Establish dedicated fire and life safety education staff with a mandate to develop, implement and measure fire and life safety programming based on identified risks in the CRA.									Operating budget	\$125,000 / year	Based upon full-time equivalent at \$125,000 including corporate cost factors.
13	Develop a community outreach program to establish relationships with key stakeholders to assist in providing educational programming to target high-risk demographics.									Staff time	Cost neutral	
14	Utilize fire cause determination to identify trend in fires to inform programming. This will require trained fire investigators (NFPA 1033) and a robust records management system to capture and provide detailed reports.									Staff time	Cost neutral	Contingent on the need for additional training. Cost per person approximately \$1500.00 (Ontario OFM)
15	Establish dedicated Fire Code inspection and enforcement positions to provide a proactive inspection program addressing identified risks in the CRA.									Operating budget	\$250,000 annually	Based on 2 full-time equivalents at \$125,000 each including corporate cost factors.

	Recommendation	'23	'24	'25	'26	'27	'28	'29	'30	Source	Est. Cost	Comments
16	Review and develop, as required, new bylaws to align with current legislation and address any rising issues such as increased false alarm incidents.									Staff time	Cost neutral	Could result in increase in revenue depending on the number of violations under the by-law.
17	Work with municipal building department to establish appropriate process for Ontario Building Code trained and qualified fire staff to review, comment and approve appropriate Ontario Building Code sections related to fire safety for all new building applications for permits.									Operating budget	Approx. \$1000 per course per person.	Cost to provide required Ontario Building Code training to existing staff. Required training and certification to conduct the reviews/ inspections. Ontario Building Officials Association, www.oboa.on.ca
18	Develop a pre-incident pre-planning program utilizing the principles of NFPA 1620 for fire crews to address pre-incident planning informed by risks in the CRA.									Staff time	Cost neutral	
19	Work with Corporate IT to ensure dedicated and appropriate IT support for implementation of new systems and on-going and timely support of existing and future systems.									Operating budget	TBD	Contingent on what additional resources or new scheduling options requiring potential overtime are required.
20	Conduct a review of primary and back-up communications centres to ensure they meet the current and future needs of the community and staff working in centres as well as align to standards set out in NFPA 1225 Standard for Emergency Services Communications.									Staff time – potential capital budget	Cost neutral	Contingent on outcome of reviews and any requirements identified

	Recommendation	'23	'24	'25	'26	'27	'28	'29	'30	Source	Est. Cost	Comments
21	Develop a detailed implementation plan for upgrades to a new NG-911 system. Ensure that required NG-911 are appropriately funded and municipality to utilize all provincial grant opportunities.									Capital budget	TBD	Contingent on provincial funding available. Full implementation required by March 2025.
22	Undertake a complete operational and functional assessment of the fire station.									Operating budget	TBD	In house or third-party review
23	Review the feasibility of relocating the primary EOC along with dispatch to the new location of the town hall.									Operating budget	TBD	In house or third-party review
24	Determine the number and types of apparatus required to meet the service levels identified by Council.									Staff time	Cost neutral	Cost contingent on additional apparatus, if identified.
25	Work with corporate finance to develop a long-term capital asset and reserve fund program with appropriate sustainable funding models for apparatus, equipment, and facilities.									Capital budget	TBD	Contingent on the long-term strategy and the funding needed to support the plan.
26	Conduct an in-depth analysis to determine the current trends of alarms ringing with the view to initiating preventative measures to reduce the occurrence and costs of false alarms.									Staff time	Cost neutral	May result in cost avoidance not requiring additional emergency response call-out.

	Recommendation	'23	'24	'25	'26	'27	'28	'29	'30	Source	Est. Cost	Comments
27	Implement Option 3 and transition to a composite fire department with the staffing of 10 firefighters (5 per platoon) to cover 12-hour day shifts when activity is at its peak.									Operating budget	\$1.25M annually once fully implemented.	Based upon fulltime equivalents at \$125,000 each including corporate cost factors. Includes two positions recommended in 2024/25
28	Develop a part-time firefighter program, utilizing existing qualified volunteers to maintain on-duty numbers. This will allow for provisions of vacation, sick-time, and enhance training, inspection, administration, education, and initial emergency response. The goal is to transition to a full-time composite staffing model, supporting the immediate term.									Operating budget	Estimated at \$100,000 annually once full implementation of recommendation 28	Cost to cover vacation, sick-time, and training. Approx 290 hrs. per FTE
29	Complete critical task analyses for common incident types in response SOGs. Additionally, tactical ERF objectives in SOGs should be scaled to the resources available in the event there are not adequate firefighters available to complete all critical tasks.									Staff time	Cost neutral	
30	Utilize a purpose-built fire service records management system to ensure support to all programs required to meet the service levels.									Operating budget	TBD \$100,000-\$500,000 depending on vendor selected	Cost dependent on vendor and features

	Recommendation	'23	'24	'25	'26	'27	'28	'29	'30	Source	Est. Cost	Comments
31	Implement performance goals and regular reporting using established benchmarks to service levels approved by Council.									Staff time	Cost neutral	

Conclusion

The goal of developing this Fire Services Master Plan is to conduct a comprehensive review of the Town of Tillsonburg fire service and produce a strategic plan for the next 7 years. This will provide a systematic and comprehensive approach to evaluate current response capabilities by identifying and mitigating risks and assist in formulating and communicating strategic directions for the fire service, while highlighting opportunities for improved service delivery. The FSMP will also assist in conveying information to the public, staff, and municipal council about what to expect in the municipality's approach to fire and emergency service planning, service delivery model, policy, and development.

The TFRS is functioning remarkably well with no evidence of the typical challenges with volunteer services such as turnover, retention and recruitment. The emergency response capabilities analysis indicates that the total response time 90th percentiles are well beyond of the leading practice of nine minutes for an urban demand zone. Further, TFRS was not able to assemble and effective response force of fifteen firefighters within the 90th percentile to perform the critical tasks required in a structural fire. It is extremely important to note that TFRS is providing the best possible emergency response service given the limitations of the volunteer staffing model, the community risk factors, and the current built up areas within the town's boundaries.

There are several observations and recommendations provided in this master plan to improve operational effectiveness and efficiencies and enhance administrative and operational processes. Key among the 31 recommendations is:

- Establish service levels for emergency response that includes the analysis and risk factors identified in the community risk assessment.
- Establish dedicated fire and life safety education and dedicated inspection and enforcement positions with a focus on risk reduction through lines 1 and 2.
- Ensuring all fire fighters and fire service staff are certified to appropriate levels as identified by the Council approved service levels.
- Conduct a staffing review of the FireComms division to determine a more efficient and effective staffing model. Conduct a feasibility study for a stand-alone Fire Communications Centre facility.
- Development of capital asset and reserve fund program to ensure sustainable funding models for future replacement of apparatus and equipment.
- Undertake a complete functional and operational assessment of the TFRS fire station.
- Transition to a composite staffing model with full time firefighters during peak periods,

Although each recommendation has a corresponding timeframe, it is important to note this FSMP needs to be revisited on a regular basis to confirm that the observations and recommendations remain relevant. The recommendations outlined in this FSMP will better position TFRS to mitigate and manage community risks, monitor response capabilities and performance, and maintain excellent community relationships and value for money.

Notwithstanding operational observations around emergency response performance, achievement of an effective response force and the TFRS is an exemplary fire service that is serving the community very well.

Finally, our interactions with the Town of Tillsonburg elected officials and staff revealed a highly professional and dedicated organization that is committed to providing the best possible service to the citizens of the town.

SECTION 1 INTRODUCTION

1.1 Background and Significance

Community leaders across Canada continue to search for innovative approaches to improve the efficiency and effectiveness of service delivery. Effectiveness refers to the ability to achieve the desired results or outcomes. Efficiency refers to optimizing the use of available resources – whether it is time, money, or effort. The notion of efficiency in service delivery is often described as ‘doing more for less’ or ‘value for money’.

Elected officials, CAO's, directors and managers are often faced with the ongoing challenge of achieving efficient and effective service delivery models. Public safety is most often one of the top priorities within most communities, but achieving this goal comes at a relatively high cost. The services charged with achieving this outcome, including police, fire, EMS, and emergency management services, are essential components of any community's social safety net. Service effectiveness is not an option. However, the need for fiscal prudence and to review operational efficiency and effectiveness cannot be ignored. Senior community officials must continue to be vigilant in their search for innovative and sustainable practices and finding the balance between service levels and expenditures to ensure their citizens are getting ‘value for money’.

1.2 Goals and Objectives

The goal of developing this Fire Master Plan (FSMP) is to create a strategic plan by conducting a comprehensive community risk assessment and review the current capacity of the fire service. The goal of the FSMP is to provide a systematic and comprehensive approach to evaluate current response capabilities by identifying and mitigating risks and assist in formulating and communicating strategic directions for the fire service, while highlighting opportunities for improved service delivery. The FSMP will also assist in conveying information to the public, staff, and municipal council about what to expect in the municipality's approach to fire and emergency service planning, service delivery model, policy, and development.

While risks are the basis for triggering response decisions, our analysis has also investigated the needs of the community and will provide a point of reference upon which future decisions and priorities can be evaluated and implemented. This includes identifying priorities, challenges, and opportunities for the improvement of the delivery of emergency services to the community, businesses, and overall public safety. This plan has considered applicable legislation, industry-leading practices, and standards, along with current and anticipated risks to provide unbiased analysis and evidence-based recommendations.

Ultimately, this project FSMP has determined options towards an optimum service delivery model(s) and serves as a ‘blueprint’ for the municipality to be more effective and efficient in the delivery of emergency services through current and future challenges. The detailed project scope is available at Section 1.3 of this document.

1.3 Project Scope

The FSMP will consider and achieve the following benefits:

- Enhanced firefighter safety
- Improved cost control and containment
- Increased efficiency and effectiveness
- Identification of the right sized service to meet the current and future needs of the community.

At minimum, we completed the following items:

1. Community Risk Assessment (CRA) addressing the nine (9) mandatory profiles outlined in Ontario Reg 378/18 to make informed decisions regarding the current service capabilities.
2. A review of all current fire services and programs, based upon the above risk assessment. Our analysis included an examination of the department's core functions, including, but not limited to:
 - Fire administration fire prevention, fire inspection, public education, training, fire suppression, apparatus, facilities, and emergency management.
 - How are services currently being provided and to identify areas needing improvement?
 - Fire station locations and apparatus deployment
 - Recruitment and retention of volunteer firefighters.

1.4 Standards and References

This plan considers the following references and standards:

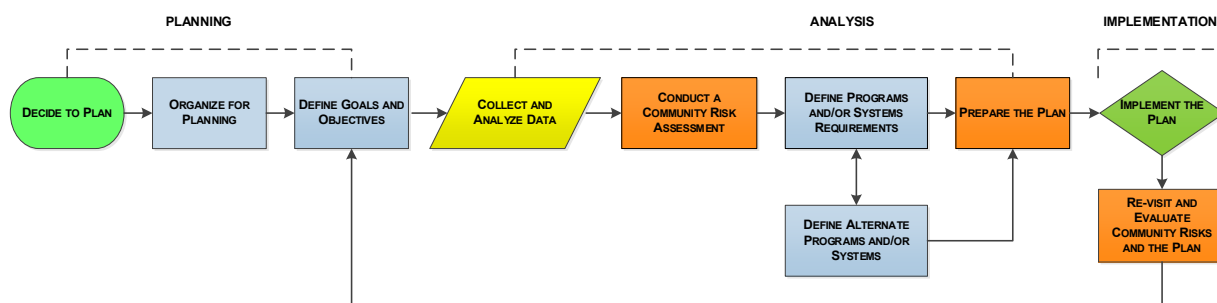
- Commission on Fire Accreditation International
- Canadian Standards Association (CSA)
- Fire Underwriters Survey (FUS)
- Ontario Emergency Management and Civil Protection
- Ontario Fire Protection and Prevention Act
 - O. Reg. 213/07: Ontario Fire Code
 - O. Reg. 378/18: Community Risk Assessments
 - O. Reg. 364/13: Mandatory Inspection – Fire Drill in Vulnerable Occupancy
 - O. Reg. 365/13: Mandatory Assessment of Complaints and Requests for Approval
- Fire Marshal Directives
- National Fire Protection Association (NFPA)
- Ontario Occupational Health and Safety Act
- Ontario Building Code
- Underwriters Laboratories (UL/ULC)

1.5 Fire Services Master Plan Process

The following diagram illustrates the process used to complete this plan. A Fire Services Master Plan (FSMP) is sometimes referred to as a 'road map' for the future and used as a guiding document for current and future department leaders and decision makers.

As described in the 'implementation' phase, it is highly recommended that this plan be reviewed and evaluated, at minimum, on an annual basis or when there are unusual changes in risk, response demands, population and residential or industrial development activity. When reasonably possible, we also recommend a third-party update of the plan FSMP at the five-year mark to apply an unbiased review into the operation and provide further credibility to the master plan process.

Figure 1: Fire Services Master Plan Process



1.6 Consultative Process

1.6.1 Community and Fire Station Tour

The community and station tour focused on the overall footprint, topography, transportation infrastructure of the municipality and the various response zones. Touring the station provided an opportunity to conduct a general condition and operational functionality assessment on each station.

1.6.2 Targeted Interviews

Targeted interviews were part of the data and information collection process. Participants were asked questions related to their areas of purview and expertise. An interview guide was used to conduct the interviews. The interview itself was used to promote an open discussion about the community, risks, general concerns related to the community and municipal operations.

Table 1: Targeted Interview List

No.	Name	Job Title
1	Kyle Pratt	Chief Administrative Officer
2	Sheena Pawliwec	Chief Financial Officer, Treasurer
3	Renato Pullia	Director of Strategic Initiatives
4	Joanna Kurowski	Manager, Human Resources
5	Bob Parsons	Councillor
6	Dave Beres	Deputy Mayor
7	Jadie Scaman	Assistant Chief, Fire Prevention and Training
8	Vanessa Devolin	Assistant Chief, Communication and Administration
9	Cephas Panschow	Economic Development
10	Julie Columbus	Fleet and Facilities
11	Richard Sparham	Fleet and Facilities
12	Karen Patenaude	Fleet and Facilities
13	Lynette Facey	Communications
14	Kristen Fansher	Communications
15	Ron Demarest	Communications
16	Terry Hilbrant	Association President, Acting Captain
17	Ted Sanders	Captain
18	Barry Lasook	Captain
19	Jarred Miller	Firefighter
20	Pat Stephenson	Firefighter

1.6.3 Online Firefighter Survey

To obtain balanced input, we also employed an online firefighter survey. Our survey methodology offers several unique benefits. First, it offers an opportunity to gather opinions from an entire group as opposed to a limited sample of opinions from a select few. The online survey also offers an extremely flexible approach to the collection of data as respondents can complete the survey questions when it is convenient for them. Additionally, the anonymity of participants is relatively easy to control and therefore may yield more candid and valid responses. Finally, surveys are also extremely time and cost-efficient methods to engage large groups while capturing extensive data.

Invitations to participate in the survey were emailed to staff and 17 participated in the survey. Nearly three quarters of the survey respondents (71%) agreed that the community received adequate fire protection, while 12% were neutral and 18% disagreed. Nearly all (94%) agreed that the demand for fire and emergency services would increase in the future, however only 29% agreed that currently the response model is adequately staffed, while 47% were neutral and the remaining disagreed.

Half of the participants (49%) agreed that the current level of theoretical and leadership training was adequate while 35% were neutral (neither agreed or disagreed) and the

remainder (18%) disagreed. Most however, 71% felt the amount of live-fire and speciality training was adequate.

When asked, the top five perceived community risks were as follows:

1. Response time
2. Aging demographics
3. Growing population and recruitment
4. No consensus. Answers included: retention, waterbodies, and poor construction practices.
5. Rail

All respondents felt (to varying degrees) that the greatest risks to the community was response time, recruitment, and the changing demographics of the population (age and number).

(See Appendix D for online survey results).

1.6.4 Municipal Comparative Analysis

An industry peer comparative analysis⁵ was conducted as a method of benchmarking the performance of departments to similar municipalities. These benchmarks include budgets, performance, effectiveness, and efficiencies. Although fire and emergency services ultimately have the same goal of protecting life and property, each community has its unique features in how to accomplish their goals. Our main criteria for the comparative analysis are indicators of effectiveness and efficiencies amongst the communities for risk and mitigation.

⁵ Please see Section 3.15 Municipal Comparative Analysis, Page 75

1.7 Study Considerations

The following factors that affected both the assessment and effective mitigation of risk were considered and assessed:

Community-Specific Considerations

- Total area of review
- Population and future growth
- Community risk factors
- Community demographic information
- Development and area structure plans
- Multi-jurisdictional requirements and cooperation
- Current and future development impact on risks and response
- Financial resources and constraints
- Impacts of government legislation
- Bylaws affecting the emergency services.
- Economic factors
- Tourism
- Construction
- Industrial activity
- Utilities
- Retail businesses and other services
- Agriculture
- Buildings and structures concentrating on high-risk demands, including business, assembly occupancies, etc.
- Municipal emergency management plans

Department-Specific Considerations

- Geographic and physical boundaries for response
- Fire service annual reports
- Fire service focused reports previously conducted.
- Standard of cover
- Budgets
- Current staff rosters with qualifications
- Fire station locations and other infrastructure
- Support services
- Department structure
- Service delivery models
- Apparatus and equipment inventory, and future needs
- Building space requirements
- Operation staffing and administrative needs
- Bylaw, policies, and procedures
- Reporting structure and requirements
- Fire prevention & public education
- Emergency core service response
- Health and wellness
- Training and recruitment records and standards
- Succession planning
- Prevention programs such as inspections, education, and enforcement
- Records and data management
- Emergency services standard operating guidelines and procedures

The town is located within the Long Point Region watershed, which provides the area with wetlands, woodlands, agricultural lands, as well as fish and wildlife habitat. A popular recreational site for the local rowing club and water park, Lake Lisgar is a small lake located in the centre of the town.

2.2 Economic Indicators

Once known for its thriving tobacco industry, Tillsonburg is now home to large manufacturing of automotive supplies, metal fabrication and food processing. Tillsonburg is also a bedroom community for other surrounding communities, along with a strong agricultural community thereby also serving a commercial hub for shopping, restaurants, banking, and other services. Tillsonburg also has thriving tourism industry that attracts thousands of visitors annually for music festivals, recreational camping, farmers markets and cultural events.

Tillsonburg has a strong and diverse labour force. A large percentage tend to be skilled in the trades sectors, related to the automotive sector. The top manufacturing and non-manufacturing employers and economic sectors in the town are summarized in the following tables.

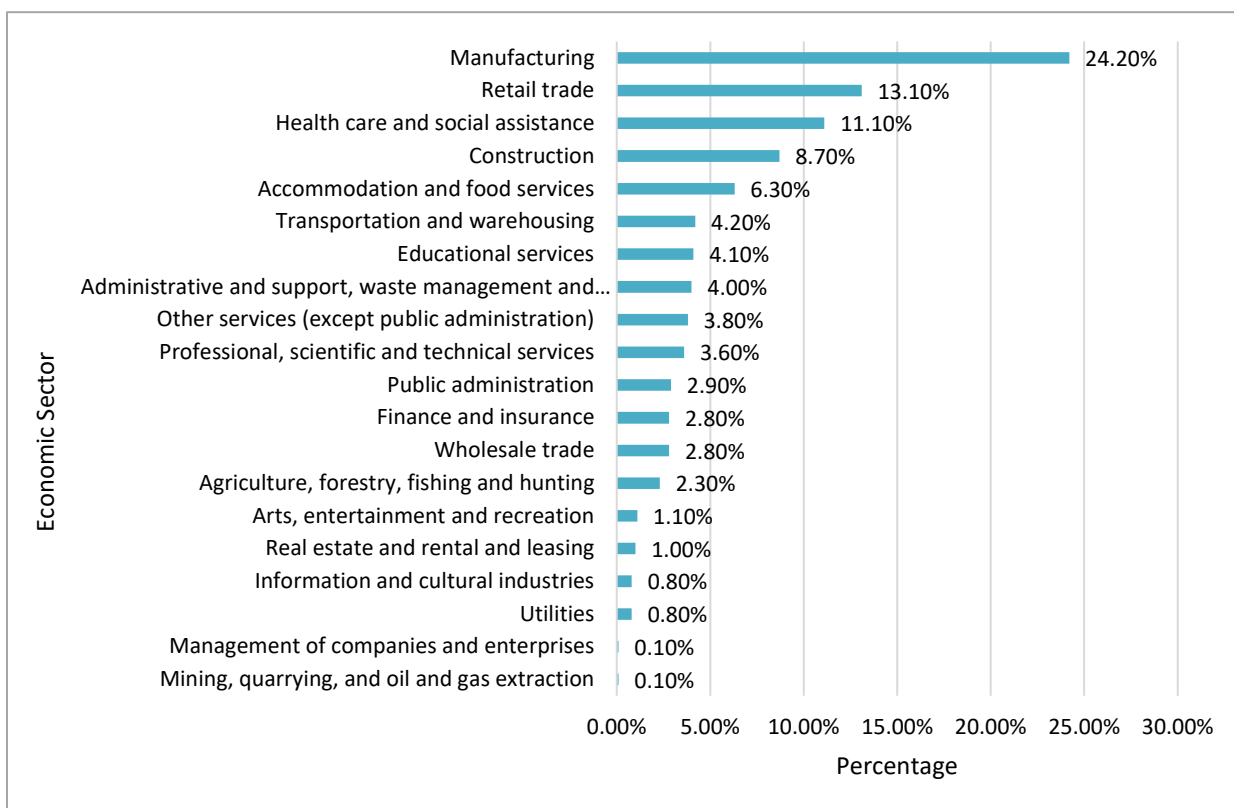
Table 2: Major Manufacturing Employers in Tillsonburg

Company	Product/Service	Number of Employees
Marwood International	Manufacturer of stamped automotive components	450
THK Rhythm Automotive Canada	Steering components	345
Autoneum Canada Ltd.	Noise control and thermal insulation systems for automobiles	340
Inovata Foods	Frozen food entrees	259
Fleetwood Metal Fabrication	Metal stampings	200
Adient Seating Canada LP	Foam seating 200	180
Electrical Components International	Electrical component services	150
Freudenberg – NOK	Elastomeric seals and custom molded products	135
Martinrea International Inc	Automotive component	100
Hoover Enterprises	Fabrication and weld shop	78

Table 3: Major Non-Manufacturing Employers in Tillsonburg

Company	Product/Service	Number of Employees
Tillsonburg District Memorial Hospital	Medical services	305
Community Living	Health care & social services	158
Metro	Retail	150
Walmart Tillsonburg	Retail	150
Town of Tillsonburg	Government	135
Maple Manor Nursing Home	Health care & social services	132
Sobeys	Retail	118
Ontario Provincial Police	Government	110
Glendale High School	Education	81

Figure 2: Economic Sectors (2021)



2.3 Growth Projections

The Town of Tillsonburg has experienced steady growth since 2001, averaging a rate of growth of 7.2% with a notable increase between 2016 and 2021 of 17.9%. Table 4 shows that over the last 20 years, the number of total private dwellings has also changed considerably, with the highest increase occurring between 2016 and 2021 by 17.30%. This trend is seen in similar parts

of Ontario, as affordability and availability for new developments outside larger city centres is a popular and cost-effective choice for commuters.

Table 4: Population and Private Dwellings Change (2001 to 2021)⁸

Year	Population	% Change	Total Private Dwellings	% Change
2001	14,052	6.4	6,153	Not available
2006	14,822	5.5	6,519	5.95
2011	15,301	3.2	7,072	8.48
2016	15,872	3.7	7,297	3.18
2021	18,615	17.3	8,229	12.77

2.4 Key Community Demographics

Population Growth

2021	2016	% Change
18,615	15,872	17.3%

Average & Median Age

	Total	Male	Female
Average Age	46.9	45.4	48.2
Median Age	49.2	47.2	51.6

Population Distribution

Age Range	Total	Male	Female
0 to 14 Years	2,630	1,330	1,300
15 to 64 Years	10,535	5,155	5,380
65+ Years	5,450	2,395	3,055

Age Distribution in Percentages

Age Range	Total	Male	Female
0 to 14 Years	14.1%	15.0%	13.4%
15 to 64 Years	56.6%	58.1%	55.3%
65+ Years	29.3%	27.0%	31.4%

⁸ Profile table, Census Profile, 2021 Census of Population - Tillsonburg, Town (T) [Census subdivision], Ontario (statcan.gc.ca)

2.5 Community Planning and Development

The Town of Tillsonburg's Official Community Plan is integrated within the Oxford County Official. A comprehensive review of this plan was conducted in 2020 and identified several key factors:

- The outlook going forward is for a continuation of relatively high levels of net immigration to the County compared to the past periods. Growth and development in this decade to date indicates a changing role for the County within Southwestern Ontario and its adjacency to the Greater Golden Horseshoe. The result is a much higher growth outlook than prior forecasts prepared for the County. The County is forecast to grow to 161,000 in total population and 62,000 households by 2046, representing growth of 47,200 residents and 18,300 households from a 2016 base.
- Consistent with Provincial planning policy, most of the growth is planned to be accommodated in the County's fully serviced settlement areas. All Area Municipalities are anticipated to experience some growth in population, households, and employment over the forecast period.
 - The County's urban centres, of Towns of Ingersoll and Tillsonburg, are also anticipated to experience continued growth going forward, accounting for roughly 25% of the housing and employment growth forecast.

Based upon this comprehensive review of the Oxford County Plan, Tillsonburg population projections indicate during the period 2021-2036 the town will experience 16.5% growth. This level of growth will challenge all the services provided by the town including fire and emergency services.

In contrast, Tillsonburg believes that the Oxford County projections are ultra conservative and have indicated a population growth rate of 19,193 in 2022 to 26,670 in 2031. This represents approximately 39 percent increase over the next 9 years or on average 4.3 percent per year.

Regardless of which projection proves to be more accurate, the overarching fact is that Tillsonburg's growth will challenge all municipal services including TFRS⁹.

2.6 Community Risk Assessment

Risk can be managed by either accepting the risk, insuring against damages, or investing in risk prevention and mitigation strategies. Local governments typically employ a combination of these approaches. In general, the risks and management strategies of a community are relative to a municipality's financial capacity, geography, population demographics, fixed assets, and critical infrastructure, as well as overall service delivery.

Conducting a risk assessment is the first step towards establishing a strategic plan to manage community risks based upon local fire department response capabilities. The results are used to assist the municipality in making informed decisions regarding the allocation of limited fire prevention and fire response resources.

⁹ Phase One Comprehensive Review Oxford County Hemson Consulting Ltd. March 2020

Community Risk Assessments are required pursuant to Ontario Regulation 378/18 and allow fire departments to make informed decisions about the types and levels of fire protection services provided based on identified risks. Specifically, the following nine (9) profiles will be reviewed:

1. Geographic profile
2. Building stock profile
3. Critical infrastructure profile
4. Demographic profile
5. Hazard profile
6. Public safety response profile
7. Community services profile
8. Economic profile
9. Past loss and event history profile

The information and data gathered to address each of the profiles will assist in determining and prioritizing risks to public safety in the community and determining the fire protection services to be provided by municipalities to address those risks.

Risks were identified using historical response data, hazard risk vulnerability assessments and information from our interviews to develop a risk profile for the community. The evaluation of fire and rescue risks considers both the probability and consequence of emergency event types. The probability of an event is quantified by analyzing historical, current, and projected data. The consequence of the event type or risk is based on an informed assessment of the potential impact on a community should the event occur.

The Community Risk Assessment (CRA) must consider the following:

- The format is approved by the Ontario Fire Marshal by reviewing the nine mandatory profiles.
- The Technical Guideline TG-02-2019: Community Risk Assessment Guideline will be used as guidance in formatting the risk assessment.
- Utilization of the charts as provided in the technical guideline or as a minimum, all the points outlined in the guideline.
- The CRA document will be made readily available if the Ontario Fire Marshal conducts a review of the municipality under the FPPA(Part III, 9.(1)(a)).

2.6.1 Factors Contributing to Risk

As mentioned, every municipality has unique challenges and characteristics contributing to the overall risk profile of the community. Examples of community risks include:

- Fire/rescue service model and response capacity
- Population and demographics
- Population growth rate
- Industry types

- Economy
- Rate of development
- Transportation corridor types
- Topography
- Weather
- Historical response data

2.6.2 Risk Management

All communities require a process to identify and actively manage high-priority risks. As previously discussed, there are approaches to managing risk. The focus of this report is to identify and discuss specific risks, and unique community characteristics that contribute to risk, typically managed through fire prevention or fire department response. Image 1 describes the risk management cycle. The first step in the risk management process includes the assessment of the probability and consequence of specific risks. The next step is the assessment to identify key risks which are then evaluated against the current prevention or response strategy to identify potential service gaps. The third step in this cycle includes adjusting fire prevention and response service levels to manage the resources necessary to pre-emptively mitigate or respond as determined by approved service levels. The last step in the cycle is to measure and report results to key policy makers. This cycle should be repeated periodically to address changes in the risk profile and make thoughtful and informed decisions regarding strategies to manage any changes.

Image 1: Risk Management Cycle Process



In Canada, local governments are charged with delivering fire and rescue response services for their citizens. Elected officials are the 'authority having jurisdiction' (AHJ) who determines the level of service required to manage fire and rescue risks to an acceptable level. The challenge for elected officials lies in determining the best balance between investing in adequate emergency services and accepting a certain level of risk.

2.7 Risk Evaluation vs. Service Levels

The evaluation of fire or rescue risks considers both the probability and consequence of emergency event types. The probability of an event is quantified by analyzing historical, current, and projected data. The consequence of the event type or risk is based on an informed assessment of the potential impact on a community should the event occur.

Probability – The probability of a risk, or event type, is the determined likelihood that an event will occur within a given time. The probability is quantified by considering the frequency of event type data. An event that occurs daily is highly probable and therefore higher risk. An event that occurs only once in a century is assessed as a lower risk as it may never occur.

Consequence – There are three types of consequences when considering fire/rescue response requirements:

- **Life safety impact:** Life safety risk for victims and responding emergency personnel are the highest order of consequence when considering the risk associated with specific event types. Events with a high likelihood of injury/death occurring and even a moderate probability of occurring require close examination to ensure adequate resources required to safely rescue or protect the lives of occupants from life-threatening are accessible to respond. Incidents that risk life safety include motor vehicle accidents, extreme weather, flooding, fire, release of hazardous materials, medical emergencies, and all types of rescue situations.
- **Economic impact:** Events with high negative impact on the local economy are devastating to a municipality. For example, recovering from the fire loss of a large employer's property or key public infrastructure in smaller municipalities can be difficult. Therefore, providing adequate response capacity necessary to manage these types of events must be considered.
- **Environmental impact:** Negative environmental consequences resulting in irreversible or long-term damage to the environment must also be considered in the analysis. Events with risk of negatively impacting water, soil and air quality are also likely to impact life safety as well as the economy and therefore must be considered.

Social and cultural impacts as experienced with the loss of historic buildings, recreation facilities or non-critical community infrastructure, are considered but do not typically affect how fire department resources are deployed.

As discussed, the risk evaluation process is used to identify high-priority risks and the appropriate risk management strategy. Where a fire department response is determined to be the most appropriate management strategy, the appropriate services and service levels should be established to safely manage the risks. Elected officials are responsible for determining which services are delivered and setting service level goals. The service level goals determine the necessary concentration and distribution of either fire prevention or emergency response resources to safely manage the identified risks.

Distribution refers to the number of fixed resources, such as fire stations, and where they are placed throughout the community. Distribution varies depending on factors related to the number of incidents and types of calls for service in the defined area.

Concentration refers to the assembling of resources, such as a specialized work force and equipment, needed to effectively respond to an incident in each area within the community. It must also identify the availability of additional response resources including the reliability and time of arrival of a secondary responding unit.

The risk evaluation matrix (see Figure 3.) can be divided into four levels of risk based on the probability and consequence, each with specific implications for the concentration and distribution of resources. It is provided as a reference and context for use of the matrix to quantify fire response risks in your municipality. Different quadrants of the risk matrix need different response requirements.

Table 5 offers examples of categories of types of structural fires and general hazards commonly found in communities. As described above, these risks are categorized by considering the probability and consequence of the fire or hazard. This qualitative analysis is based on experience and expertise, and should be completed with input from fire, building and emergency management officials. Every community will have a unique risk inventory contributing to its risk profile.

Figure 3: Risk Evaluation Matrix

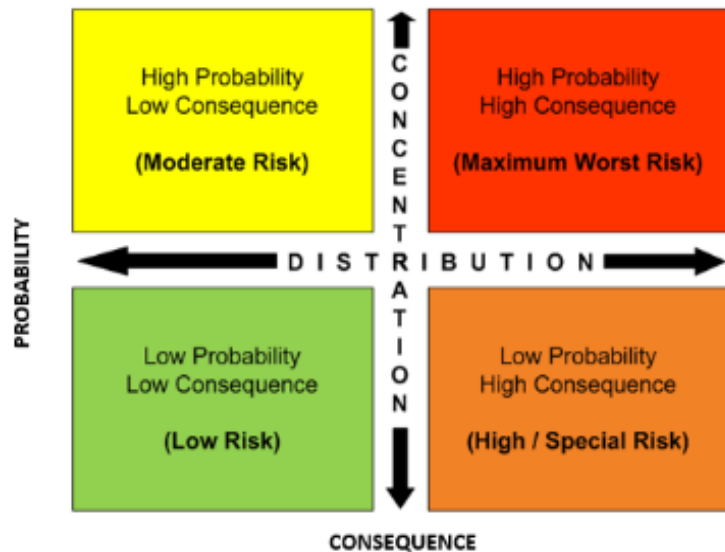


Table 5: Sample Risk Inventory

Low Risk = Low Probability and Low Consequence

This category is limited to areas or incidents having a low probability of fire risk and low consequence for the potential for loss of life or economic loss. Some low risks include:

- Outdoor fire pits
- Non-structure lightning strikes
- Vacant land
- Parks without structures
- Isolated structures such as sheds

Moderate Risk = High Probability and Low Consequence

Most responses fall under this category. Moderate risks include:

- Motor vehicle collisions
- Carbon monoxide detection (emergency medical co-response)
- Monitoring/local alarms
- Vehicle fires
- Dangerous goods incidents with small quantities of a known product (20 litres or less), outdoor odours (natural gas or unknown)
- Miscellaneous explosions
- Emergency standbys
- Smoke
- Odours
- Fires:
 - garbage
 - detached garages
 - single or multi-family residential fires
 - small non-residential buildings less than 600 square metres

High Risk = Low Probability and High Consequence

There are very few properties/responses that are considered high probability, high consequence. These properties are categorized as large properties, over 600 square metres, without adequate built-in fire protection systems, or that has large concentrations of people or has a significant impact on the local economy. High risks include:

- Commercial, industrial warehouse
- Dangerous goods incidents with large quantities of known products (75 litres or more), unknown products or large exposure
- Hospitals, care homes, institutions
- Derailments & transportation of dangerous goods
- Aircraft crashes on or off the airport
- Bulk fuel storage facility fire/explosion

Maximum Risk = High Probability and High Consequence

This category of risk can be generally categorized as properties over 600 square metres that have high economic value in the form of employment or are not easily replaceable, or natural disasters occurring in highly populated areas, creating high life and property loss potential and strains on the department and other agency resources. Damage to properties in this category could result in temporary job loss or permanent closure of the business. Such properties are highly regulated or possess built-in fire protection systems. Some maximum risks include:

- Wildland fires
- Weather related events (floods, tornadoes, severe storms etc.)
- Large vehicle accidents, pileups, derailments
- Quantities of known flammable products (500-1000 litres)
- Explosions or substation electrical fires
- Confirmed natural gas leak

2.7.1 Assigning Risk Level

Once probability and consequence are determined, the level of risk is calculated by multiplying the numerical values for probability and consequence. The relationship between probability and consequence as it pertains to risk levels can be illustrated in a risk matrix (below). In a risk matrix, probability and consequence are defined on separate scales with varying descriptors providing direction on how to assign the probability and consequence of an event. Figure 4 shows the risk matrix from the CRA appended to this report¹⁰.

Figure 4: Risk Matrix Template

Almost Certain 10,000	Moderate Risk	Moderate Risk	High Risk	High Risk	High Risk
Likely 1,000	Moderate Risk	Moderate Risk	Moderate Risk	High Risk	High Risk
Possible 100	Low Risk	Moderate Risk	Moderate Risk	Moderate Risk	High Risk
Unlikely 10	Low Risk	Low Risk	Moderate Risk	Moderate Risk	Moderate Risk
Rare 1	Low Risk	Low Risk	Low Risk	Moderate Risk	Moderate Risk
	Insignificant 1	Minor 10	Moderate 100	Major 1,000	Catastrophic 10,000

The purpose of assigning a risk level is to assist in the prioritization of the range of risks that are identified in the CRA.

Where possible, quantitative data was used to inform the risk assignment as described in the rationale in the table. It is important to recognize that with the availability of new or updated data, the probability levels could change or be refined. It should also be recognized that, as identified in OFM T.G.-02-2019, “professional judgment based on experience should also be exercised in combination with historical information to estimate probability levels. Similarly, OFM T.G.-02-2019 acknowledges the role of professional judgment and reviews of past occurrences in determining consequence levels. The rationale provided for both probability and consequence consider information from the CRA’s nine profiles, as OFM T.G.-02-2019 supports consideration of the profiles together to inform decision-making about the provision of fire protection services in the specific municipality/community.

2.8 Structural Fire Risk Analysis

It is critical to use careful planning and consider alternative solutions when managing risk because the ability to increase the distribution of resources and add capacity is always limited. Spending

¹⁰ See Appendix F

substantial amounts of time and resources to manage a risk with low frequency/low consequences will have limited impact and make a minimal improvement to community safety. When planning for fire department response, the planning process includes a detailed review of the frequency of events and their potential consequence(s) to ensure prevention and response efforts maximize life safety and minimize negative consequences for high-priority events.

The Office of the Fire Marshal (OFM) have developed guidelines to assist municipalities with conducting community risk assessments to inform decisions about the provision of fire protection services, in accordance with Ontario Regulation 378/18 and the Fire Protection Act 1997 (FPPA).

As referenced in O. Reg. 378/18, the building stock profile assessment includes analysis of the types and uses of building stock of a municipality. Important considerations include the number of buildings of each type, the number of buildings of each use and any building related risks known to the fire department. There are potential fire risks associated with different types and uses of buildings given the presence or absence of fire safety systems and equipment at time of construction and maintenance thereafter. This section considers these building characteristics within the municipality.

2.9 Ontario Building Code Occupancy Classifications

2.9.1 Building Stock Profile

The Ontario Building Code (OBC) categorizes buildings by their major occupancy classifications. Each classification has definitions that distinguish it from other occupancy classifications. Using the OBC as the source for defining the occupancy classifications provides a recognized definition and baseline for developing the community risk profile. The OBC major classification groups and divisions are presented in Table 6 below.

Table 6: OBC Major Occupancy Classification

Group	Division	Description
A	1	Assembly occupancies intended for the production and viewing of the performing arts
A	2	Assembly occupancies not elsewhere classified in Group A
A	3	Assembly occupancies of the arena type
A	4	Assembly occupancies in which occupants gather in the open air
B	1	Detention occupancies
B	2	Care and treatment occupancies
B	3	Care occupancies
C	--	Residential occupancies
D	--	Business and personal services occupancies
E	--	Mercantile occupancies
F	1	High hazard industrial occupancies
F	2	Medium hazard industrial occupancies
F	3	Low hazard industrial occupancies

2.10 OFM Fire Risk Sub-Model Occupancy Classifications

The Fire Risk Sub-model developed by the OFM utilizes the major building occupancy classifications (i.e., Group A, B, C, D, E and F), but does not use the detailed division classifications as included in the OBC. This strategy provides the opportunity for further analysis of a specific occupancy group. Subject to any site-specific hazards or concerns, occupancies within a group can be assessed individually and then included where required within the scope of the broader community risk assessment.

Analyzing structural fire risk begins by developing an exhaustive inventory of existing building stock and monitoring changes to the inventory. This process should include staff from the planning and development departments, as well as building and fire prevention officers. This provides the fire service with an opportunity to evaluate the Ontario Fire Code requirements in the design, construction, and operation phases of the building.

The building inventory database becomes the foundation of assessing fire risk in the community. This inventory provides a count of all property types including single and multi-family residential, assembly (including schools, churches, hospitals, personal care homes, etc.), mercantile, commercial, and industrial properties.

Once the inventory is assembled, fire department response capability is measured against the identified property risks. This simple identification of the high numbers of specific high-risk property types may identify gaps in the current response model, resulting in the reorganization or addition of fire department resources. As building stocks increase, fire departments should continue to monitor response capability and capacity to ensure service levels are maintained.

2.11 Town of Tillsonburg Existing Major Building Classification Summary

Analysis of the town's major building occupancy types was conducted using data provided by the Municipal Property Assessment Corporation (MPAC). Table 7 summarizes the town's existing major building occupancy classifications.

The majority of the town's existing property stock is comprised of Group C - Residential Occupancies (96.17%) representing 12,984 residential units. The second largest occupancy type within the town is Group D&E- Commercial Occupancies accounting for 2.21% of the town's property stock. There are 32 occupancies that are not classified within the OBC.

Table 7: Town of Tillsonburg Total Existing Property Stock¹¹

OBC Occupancy Classification	OFM Fire Risk Sub-Model Major Building Classifications	Number of Occupancies	Percentage of Occupancies
Group A	Assembly Occupancies	51	0.38%
Group B	Care or Detention Occupancies	5	0.04%
Group C	Residential Occupancies - Total	7,369	54.58%
Group C	Single Family	5,575	41.29%

¹¹ Difference between MPAC and Census occupancy totals is related to MPAC classifications vs Census Groupings

OBC Occupancy Classification	OFM Fire Risk Sub-Model Major Building Classifications	Number of Occupancies	Percentage of Occupancies
Group C	Multi-unit Residential	33	0.24%
Group C	Hotel / Motel	6	0.04%
Group C	Mobile Homes / Trailers (park)	1	0.01%
Groups D & E	Commercial	299	2.21%
Group F (all Divisions combined)	Industrial Occupancies	130	0.96%
Other	Not classified in Ontario Building Code - Farm	28	0.21%
Other	Not classified in Ontario Building Code - Government	4	0.03%
Total Occupancy Classification		13,501	100.00%

Consistent with most other municipalities in Canada, Group C - Residential Occupancies represent the most prominent type of building occupancy type within Tillsonburg. Within Ontario, information provided by the OFM indicates that the majority of structure fires loss over the five-year period from January 1, 2018, to December 31, 2022, occurred within Group C - Residential Occupancies (67%). It is also important to note that 93% of the civilian fire related injuries, 100% of the civilian fire related fatalities and 74% of the dollar loss also occurred in residential occupancies.

2.12 Potential High-Fire Risk Occupancies

Potential high-fire risk occupancy is another factor for consideration within a town's building stock. High fire risk can be linked to a combination of factors such as building density (exposures), building age, and construction. Fuel load typically refers to the amount and nature of combustible content and materials within a building. This can include combustible contents, interior finishes as well as structural materials. Combustible content tends to create the greatest potential fire loss risk. Higher fuel loads results in increased fire loss risk due to increased opportunity for ignition and increased fire severity. In many communities, large amounts of fuel load can be contained within a single occupancy, such as a building supply business, within a large multi-unit residential building, or within a historic downtown core.

2.12.1 Fuel Load Concerns

Buildings with potential fuel load concerns are identified in Table 8. These include buildings housing materials such as oxidizers and flammable and combustible liquids and chemicals.

Table 8: Potential High-Fire Risk Occupancies

Address	Facility Name/Organization	Risk Description
1265 Jackson Side Road RR#2	Townsend Lumber Inc.	Sawmill
301 Tilson Ave	Martinrea International Inc.	Automotive Industry Supplier
22 Clark St E	Kissner Milling Company	Salt and Packaged Ice Melt Bagging Facility
21 Clearview Dr	Fleetwood Metal Industries Inc.	Metal Stamping
1417 Bell Mill Side Road	THK Rhythm Automotive Canada Limited	Automotive Industry Supplier
95 Spruce Street	Inovata Foods Corp.	Food Processing Plant
105 Spruce St	Marwood International	Automotive Industry Supplier
1451 Bell Mill Side Road	Autoneum Canada Ltd.	Automotive Industry Supplier
65 Spruce Street	Freudenberg-NOK, Inc.	Sealing Technology
91 Lincoln Street	Electrical Components Canada, Inc	Electrical Distribution Systems Manufacturer
68 Spruce Street	J/E Bearing & Machine Ltd.	Machine Shop
81 Lincoln Street	Hoover Enterprises Inc	Metal Fabricator
1494 Bell Mill Side Road	Wellmaster Pipe and Supply Inc.	Pipe Manufacturer
1250 Jackson Side Road	Breeze Dried Inc.	Lumber Industry Manufacturer
24 Clearview Drive	Xcel Fabrication & Design Ltd.	Returnable Packaging Manufacturer
131-B Townline Road	Foldens Machine Works Ltd.	Machine Shop
111 Townline Road	Tillsonburg Recreation & Industrial Products ULC	Metal Fabricator
102 Spruce Street	MIL-SIM-FX International Inc	Air Battlefield Simulator Manufacturer
47 Clearview Drive	Tillsonburg Tube Inc	Metal Furniture Manufacturer
20 Clearview Drive	Wise Line Metal Sales Inc	Metal Roofing Manufacturer
30 Clearview Drive	Dyco Tool Inc	Machine Shop
45 Clearview Drive	Kraushaar Machine Services Inc	Machine Shop
61 Townline Road	CedarCrest Wood Products Limited	Wood Products Manufacturing
21 Watson Mill Road	DBK Machine & Tool	Tool Manufacturer
3 Rouse Street	Future Transfer	Distribution Warehouse
50 Clearview Drive	Future Transfer	Distribution Warehouse

Address	Facility Name/Organization	Risk Description
281 Tilson Avenue	Future Transfer	Distribution Warehouse
51 Clearview Drive	Future Transfer	Distribution Warehouse
291 Tilson Avenue	Future Transfer	Distribution Warehouse

In addition to ensuring compliance to the requirements of the OBC and the OFC, there are operational strategies that a fire service can implement to address fuel load concerns. These include regular fire inspection cycles and pre-planning of buildings of this nature to provide an operational advantage in the event of fire. It should be noted that some of these companies do routinely update emergency response plans and share them with the fire services.

2.13 Occupancies with Potential High Fire Life-Safety Risk

Fire risk does not affect all people equally. Those who are at an increased risk of fire injury or fatality are known as vulnerable individuals. In the event of a fire, these individuals may be unable to self-evacuate and/or require assistance in their evacuation efforts. Identifying the location and number of vulnerable individuals or occupancies within the community provides insight into the magnitude of this demographic within a community.

2.13.1 Registered Vulnerable Occupancies

From an occupancy perspective, vulnerable occupancies contain vulnerable individuals who may require assistance to evacuate in the event of an emergency due to cognitive or physical limitations, representing a potential high-life safety risk. As part of its registry of vulnerable occupancies, the OFM defines vulnerable occupancy as any care occupancy, care and treatment occupancy, or retirement home regulated under the Retirement Homes Act.

These occupancies house individuals such as seniors or people requiring specialized care. It is important to note, however, that not all vulnerable individuals live in vulnerable occupancies; for example, some seniors who are vulnerable due to physical limitation can live on their own or in subsidized housing, making them a key demographic to reach.

Ontario Regulation 150/13: Fire Code, which amends Ontario Regulation 213/07: Fire Code, identifies vulnerable occupancies as care, care and treatment and retirement homes. This includes hospitals, certain group homes and seniors' residences and long-term care facilities. The regulation requires fire service to perform annual inspections, approve and witness fire drill scenarios and file certain information regarding the occupancy with the Fire Marshal's office. A list of vulnerable occupancies is presented in Table 9. There are 12 vulnerable occupancies in Tillsonburg. These include care occupancies, care and treatment occupancies and retirement homes.

Table 9: Vulnerable Occupancies

Property Name	Occupancy Type	Location
Tillsonburg District Memorial Hospital	Hospital	161 Rolph Street
Maple Manor Nursing Home	Nursing Home	73 Bidwell Street
Woodingford Lodge	Long-term Care	52 Venison Street W
Tillsonburg Retirement Residence	Retirement Home	4866 Old Highway 2
Aspira Harvest Crossing Retirement Living	Group Home	5103 Old Highway 2
Tillsonburg District Association for Community Living	Supported Living	10 Allen Street
Tillsonburg District Association for Community Living	Supported Living	59 Potters Road
Tillsonburg District Association for Community Living	Supported Living	4 & 6 John Street
Tillsonburg District Association for Community Living	Supported Living	95 Tilson Avenue
Tillsonburg District Association for Community Living	Supported Living	23 Queen Street
Tillsonburg District Association for Community Living	Supported Living	71 Queen Street
Tillsonburg District Association for Community Living	Supported Living	30 Lisgar Avenue

2.14 Community Risk Analysis Overview

The town's HIRA was reviewed and updated in 2022 indicating that Tillsonburg has complied with its legislative requirements. As a component of the risk assessment and risk analysis process, the top risks in Tillsonburg were identified. The HIRA assigned likelihood and consequence levels to a list of hazards based on the potential for impacts to people, property, and the environment. As a result of this analysis, the top hazards in the town include the following:

- Fire/explosion
- Winter weather (blizzard, freezing rain, snowstorms)
- Human health emergency (pandemic)
- HAZMAT spill – fixed site/transportation
- Tornado/windstorm

In addition to the overall highest risks to the community, certain events pose an increased risk specific to firefighting. The risk to firefighting responders to the most hazardous events are identified below, as well as the most hazardous events they may encounter that pose a specific risk to them and their ability to respond.

2.15 Impacts of Hazards on Fire Protection Services

To better understand the risks of hazards as they pertain to fire protection services, the top five hazards have been assessed to identify possible impacts on fire protection services (excluding fire/explosion). Many of the potential impacts are not unique to a jurisdiction. The results of this review as they pertain to the top four hazards in the town are presented in Table 10.

- Snowstorms/hail/freezing rain
- Hazardous materials release/spill/fire
- Critical infrastructure failure
- Motor vehicle incident
- Industrial fire
- Dust explosion
- Swift water rescue

Table 10: Impacts of Hazards on Fire Protection Services

Hazard	Possible Impact
Winter Weather	<p>In 2023, a major ice storm in Ontario and Quebec knocked out power for over one million people, caused fatalities and severe damage to property and infrastructure. On average the town receives 4 feet of snow during the winter. A major snow event can produce accumulation of up to 40 cm¹²</p> <p>Overall Impact (from HIRA) Above ground power lines could be impacted along with road treatments, debris clearing; salt gravel or other road treatment supplies. Visibility can cause traffic accidents on roadways or prevent movement of goods and services. Accidents on roadways may lead to leaking/spill of hazardous materials.</p> <p>Fire Services Depending on the severity of the debris on roads and downed power lines, access to various sections of the road network could be limited to fire service response delaying emergency response times. Interruptions to communication towers could impact fire service communications. The number and severity of motor vehicle collisions will increase. This could include hazardous material response.</p>

¹² As retrieved from <https://www.tillsonburg.ca/living-here/roads-sidewalks-and-parking/snow-and-ice-control/>

Hazard	Possible Impact
Human Health Emergency (Pandemic)	<p>The 2020 COVID 19 Pandemic implications are still having a negative impact on communities.</p> <p>Overall Impact (from HIRA) Medically vulnerable persons are at risk. Increased use of non-recyclable PPE for staff. Critical infrastructure must be maintained with planning for staffing and acquisition of critical supplies.</p> <p>Fire Services Epidemic or pandemic breakout can present significant challenges to first responders causing potential fire service workplace absenteeism, and an increased demand for medical response and supplies as was illustrated during COVID 19. PPE was severely limited and supply chain issues for all equipment impacted operations. In many cases planned programming related to inspections and public education had to be delayed or modified.</p>
HAZMAT spill – fixed site/transportation	<p>In 2022 a chemical spill in the town resulted in the evacuation of homes and road closures.</p> <p>Overall Impact (from HIRA) Serious injury or fatality. Possible secondary emergencies such as fire or explosion when chemicals mixed with air, water, or other agents. Could require small- or large-scale evacuation of homes, businesses, school etc.</p> <p>Fire Services Depending on the severity and type of release, could pose secondary risk to firefighters on-scene. Must have proper knowledge of chemical release. May not be able to access the scene until proper back-up arrives or have proper information.</p>
Tornado/Windstorm	<p>The Tillsonburg and surrounding area have had tornado warnings (last known 2023) in effect and funnel clouds have been reported (2009).</p> <p>Overall Impact (from HIRA) Above ground power lines, toppled trees could impact buildings or roads and winds could take down communication towers.</p> <p>Fire Services Depending on the severity of the debris on roads and downed power lines, access to various sections of the road network could be limited to fire service response delaying emergency response times. Interruptions to communication towers could impact fire service communications.</p>

2.15.1 Fire Station Response Demand Zone

As detailed at section 4 of this FSMP, the town of Tillsonburg has a population of 18,615 with an area of 22.2 km². This translates to 2171 people/2.6km² and falls into the highest category demand zone of NFPA 1720 as an urban area. NFPA 1720 identifies that urban demand zones shall have 15 firefighters on scene within 9 minutes (540s), 90 percent of the time.

This category contains performance objectives that can be very challenging for a volunteer or combination fire department and in many ways. The intent of the aggressive response goals in NFPA 1720 is to minimize total intervention time. Increased intervention time can have the following important impacts on a property owner/patient/victim:

- Decreased survivability
- Increased property loss in the event of fire
- Building design restrictions for response times beyond 10 minutes
- Potentially higher property insurance premiums based on extended response times and proximity to water supply
- Longer-term economic impacts resulting from increased recovery time

Over the five-year period, the TFRS was effectively not able to meet NFPA 1720 demand zone goals. Given the current deployment model achievable emergency response time performance service levels need to be established.

Observation #1: The Tillsonburg Fire and Rescue Services Establishing & Regulation Bylaw is the establishing and regulating bylaw for TFRS. It references services to be delivered however it does not include specific emergency response time performance service levels. Furthermore, response performance such as the number of firefighters responding either directly or converging on scene, or the time increment to achieve a safe ERF and complete the critical tasks is not being tracked or monitored. All these components would be included in a standard of cover or service level policy.

Recommendation #1: Revise the current Establishing and Regulating Bylaw to provide for a Council supported core service levels that are informed by the current Community Risk Assessment and providing for TFRS to meet all applicable provincial legislation and regulations.

(Suggested completion: 6-12 months)

Recommendation #2: Define deployment models to best mitigate risk identified in the CRA.

(Suggested completion: 6-12 months)

Recommendation #3: Outline service delivery as follows:

Public Education:

- c. Develop targeted public education programs informed by the CRA.*
- d. Provide smoke alarm and home escape planning for all residential classifications.*

Fire Prevention and Code Enforcement

- e. Develop a proactive code enforcement inspection program informed by risks identified in the CRA.*
- f. Provide Fire Investigations to determine origin and cause.*
- g. Examine and provide comments (or approve) Ontario Building Code fire safety sections on new construction plans submitted for permit.*
- h. Review and approve subdivision and development agreements.*

Emergency Response:

- h. Provide a full-service fire department as defined by O Reg 343/22 (Table 1, item 8) Including interior attack with rescue; hazardous material response at operations level; auto extrication.*
- i. Provide ice and water rescue at operations level.*
- j. Provide Rope Rescue (slope) at operations level.*
- k. Provide Medical response as defined by tiered response agreement.*
- l. Provide Confined space at awareness level.*
- m. Provide Machine Rescue at operations level.*
- n. Provide Trench rescue at awareness level.*

Emergency Telecommunications:

- a. Call-taking of emergency calls*
 - b. Dispatching and incident radio transmissions of emergency incidents*
- Training of Fire Service personnel.*

Training:

- c. Coordination of all internal training ensuring that all fire service personnel are trained and certified to the service levels defined by Council and required under the FPPA.*
- d. Ensure all staff meet the requirements of O Reg 343/22 Fire Fighter Certification*

Maintenance of Fire Service vehicles and equipment:

- a. All vehicles and equipment are maintained and serviced to ensure reliable and available for emergency response.*

(Suggested completion: 6-12 months)

Rationale: Developing formalized policy statements regarding fire department service levels is considered a leading practice. In the absence of established service levels, it is difficult for a fire chief to determine whether fire department response performance meets community and council service expectations. Further, the anticipated growth planned for the town will increase demands for service. Increases in service demands are correlated with increases in population and related risks such as increased traffic flow, building stock and community profile. Furthermore, a comprehensive emergency response service level policy will confirm the essential core services for TFRS based upon statistic demands.

It should be noted that technical/ specialized rescue is based on the likelihood that fire will respond to these type of calls and must be trained to a minimum standard of awareness level so best to understand the situation, size up and request the appropriate additional resources required. Those identified as operations level are indications that there is experience in delay with emergency requiring these skills and fire fighters must be trained to the appropriate level. The Fire Chief should review these annually to determine if the current level is appropriate to deal with the needs and circumstances identified.

NFPA 1201: Standard for Providing Emergency Services to the Public suggests all fire departments should have policy identifying service types and service levels. Section 4.5.3.1 states:

“The fire and emergency services (FESA) leader shall develop and adopt a formal policy statement that includes the specific types and levels of services to be provided by the organization, the service area, and the delegation of authority to subordinates.”

2.16 Water Infrastructure

Water supply is a critical infrastructure that is essential for firefighting. Having access to the town's water delivery systems is critical to service delivery. The system consists of 5 treatment facilities, 11 production wells, 4 reservoirs/towers and 144,869 m of pipe. The system overall is rated good with 56.7% of assets rated in good or excellent condition and 11.9% rated as poor or critical. The asset conditions however are steadily declining due to age. Many of the assets are approaching their expected useful life.

Fire flow, which is the available water supply for fire protection purposes, is available to 100% of properties. There are a total of 661 hydrants in the town. The average age of hydrants in the town is 28 years with an expected useful life of 40 years, and 40% of the hydrants in the town are rated to be in critical condition.¹³ In addition to the hydrant and distribution system, water availability must be considered. The production wells are rated as being in good condition, however the reservoir system has been rated as fair. In dry summer months, water use restrictions have been put in place to ensure adequate water availability. As expected with climate change and increasingly hot and dry conditions, these restrictions have become more frequent and more restrictive.

Alternate water supply sources can include fire services access to ponds, streams and alternative water supplies, and the use of fire suppression apparatus that have portable tanks that can support a tanker shuttle and a continuous supply of water to support fire suppression activities. According to the Fire Underwriter's Survey, an Accredited Superior Tanker Shuttle Service is a recognized equivalent to a municipal fire hydrant protection system if it meets all the requirements for accreditation. In areas without reliable municipal water supply, a fire service should consider a water servicing strategy or formal plan for those areas requiring water flow for firefighting. Tillsonburg currently has mutual aid agreements with Norfolk, Oxford, and Elgin County for shuttle tank operations.

¹³ Oxford County Asset Management Plan 2022

SECTION 3 DEPARTMENT PROFILE

3.1 Department Overview

The Tillsonburg Fire and Rescue Services (TFRS) was initially established in 1888 and has been a highly regarded emergency response service over the course of the last 135 years. Today TFRS relies on a current roster of 34 trained POC volunteer (Captains and Firefighters), to provide fire, rescue, and medical first response services to the Town.

TFRS is also staffed by thirteen professional communicator operators that provides fire dispatch and communications services (FireComm) to the town and 55 other contracted fire stations throughout central Ontario. FireComm provides after-hour call support for the town. The TFRS team is led by the full-time fire chief and two full time assistant fire chiefs.

TFRS can request or be requested for additional fire/rescue resources with partners within the Oxford, Norfolk, and Elgin County's through mutual and automatic aid agreements. Resources may also be requested through the OFM where necessary.

Modern fire departments have evolved into a critical component of a community's social safety net. Whereas early fire departments were historically established specifically to combat structure fires that, at the time, were often devastating. Today, fire departments are also called upon to respond to medical emergencies, technical rescues, and dangerous goods releases, often working together with other response agencies. As a result, fire departments must be properly structured, adequately resourced and equipped to deliver these services safely and competently.

Tillsonburg Council has developed an official Community Strategic Plan that provides for the orderly growth and development of the municipality while remaining flexible to ensure opportunities remain available to succeed and prosper within the overall scope of the shared collective vision.

As detailed at section 2, the projected growth in development and population within the municipality will further challenge TFRS and the level of services going forward. It is desirable to ensure current services and infrastructure are in step with future development. In the case of a fire service, the lead-time to have firehalls, staffing and equipment in place at the appropriate time is validating the need to develop a master plan that is aligned with the Tillsonburg community strategic plan and council priorities.

While volunteer fire departments have a long-valued service history with their respective communities throughout North America, there may be a point that necessitates a transition toward a hybrid full-time/volunteer staffing model, typically referred to as a composite delivery model. TFRS has not yet moved in that direction however the increasing call volume, incident complexity and resource demands require that the town formally establishes service levels for emergency response (see section 2, recommendation 1). The response performance analysis in section 4 provides options to address service level shortfalls and includes the move towards a composite staffing model currently.

3.1.1. Mission, Vision, and Values

A mission statement declares concisely the purpose of an organization, why it exists and how it provides service. A vision statement offers insight into where the department strives to be in the future. Values are the beliefs and principals that drive the organization forward.

Town of Tillsonburg Mission, Vision and Values statements were captured from the Tillsonburg Community Strategic Plan.

Town of Tillsonburg Mission Statement

The Town of Tillsonburg strives for excellence in local government by providing efficient and effective municipal services, facilitating partnerships, attracting, and supporting businesses, promoting local heritage and identity, advancing the community as a regional centre, and demonstrating results to the community.

Town of Tillsonburg Vision Statement

Our vision for Tillsonburg is to grow a vibrant and engaged community built on partnerships and entrepreneurial spirit. The vision includes diverse housing, employment options, modern amenities and sustainable growth that remains true to our culture and heritage and positions the community as a regional centre.

Town of Tillsonburg Corporate Values

- *Serving our community*
- *Working as one team*

A fire service may align with their municipality's mission, vision, and values, or build upon those with fire service specific statements.

Tillsonburg Fire and Rescue Services Mission, Vision, and Values statements, including the Communications Division statements were captured from the Tillsonburg Fire and Rescue Services 2022 Annual Report.

Tillsonburg Fire and Rescue Mission Statement

To Protect Life and Property

Tillsonburg Fire and Rescue Vision Statement

A fire safe Tillsonburg. Eliminating fire loss in our community through fire service excellence in education, codes and standards enforcement and emergency response.

Tillsonburg Fire and Rescue Values

- *Courage*
- *Integrity*
- *Service*
- *Community*

Tillsonburg Fire and Rescue Fire Communications Division Mission Statement

To ensure our communities and first responders get the help they need, when they need it, always.

Tillsonburg Fire and Rescue Communications Division Vision Statement

People communicating through technology to enhance public and first responder safety.

Tillsonburg Fire and Rescue Communications Division Values

- *People*
- *Partnerships*
- *Technology*
- *Safety*
- *Communication*
- *Redundancy*

3.2 Human Resources

Whether full-time (career), volunteer (not paid) or POC volunteer; a fire department's employees are its most valuable asset. Emergency services are often delivered under difficult and stressful circumstances, with little room for error. Fire departments must be adequately resourced with staff, equipment, and training to be effective in delivering the highly technical services to achieve service excellence. As a result, a considerable effort is warranted to ensure that only highly committed, team-oriented, and physically able employees are recruited, trained, and retained.

An effective organizational structure must promote and support strong, effective leadership, sound business management and continuity, and effective communication with opportunities for staff development.

The Town of Tillsonburg Corporation Human Resources Department (HR) partners with each of the municipality's departments, programs, and services to assist with achieving their human resources goals and objectives. Services provided include:

- Recruitment and selection
- Compensation and benefits
- Employee relations
- Performance management
- Employee wellness
- Contract implementation and interpretation

The HR Specialists works together with the TFRS administration to assist with providing consistent delivery of fire services. During the period of Behr's involvement in developing this fire service master plan the staff demonstrated a commitment to their mandate and consistently provided a high level of service to the municipality while maintaining the safety and health of the members.

The Town of Tillsonburg HR Department maintains all contracts and job descriptions for positions currently in the organization.

3.2.1 Thematic Summary of Interview and Survey Results

The Fire Services Master planning process was initiated by providing TFRS firefighters, fire administration and select Town of Tillsonburg senior administration an opportunity to comment on numerous aspects of TFRS operations. Fourteen interview participants and 17 survey respondents provided responses to similar questions and constructive feedback. The following key themes emerged from this process:

1. TFRS is a well-managed organization with strong leadership and a highly committed group of POC volunteer fire staff. Almost all survey and interview participants felt that Tillsonburg is receiving a good level of fire and rescue services, however shared concern that this current level of service is not sustainable with the anticipated community and economic growth. Most survey participants felt that the number of volunteer firefighters should be increased to meet demand.
2. Fire prevention activities have significantly improved with the addition of the Assistant Chief, however, feel that this is an area of the service that should be further promoted including public education and enforcement of fire code requirements.
3. Most participants agree that the service is adequately resourced with necessary modernization, apparatus, and equipment to perform their tasks safely and effectively. Concern was expressed regarding the functionality or reliability of the radio network and portable radios within certain structures.
4. The paid-on-call volunteer model was well supported but some concerns were reported. Recruitment and retention of new firefighters was occasionally a challenge. Additional limitations such as low daytime and weekend response of firefighters were identified.
5. The current firehall was reported to be well positioned to provide services across the municipality. Most participants felt it is marginally functional and past capacity with limited to no space for conducting training, personal comforts, and storing apparatus and equipment. The loss of the volunteer's training/meeting room to accommodate FireComm was particularly troublesome for the firefighters. There were numerous comments regarding the sustainability of the firehall noted and the need for immediate and ongoing maintenance repairs and renovations.
6. A strong sense from participants indicated that the current level of training was sufficient to meet current competencies and necessary certifications. Live-fire training was limited and should be increased. Implementation of an effective learning management system would be a benefit. The increased demands for training will start to strain capacity and there were numerous supporters of the need to have a dedicated training officer position and a local training area.

3.2.2 Staffing Complement

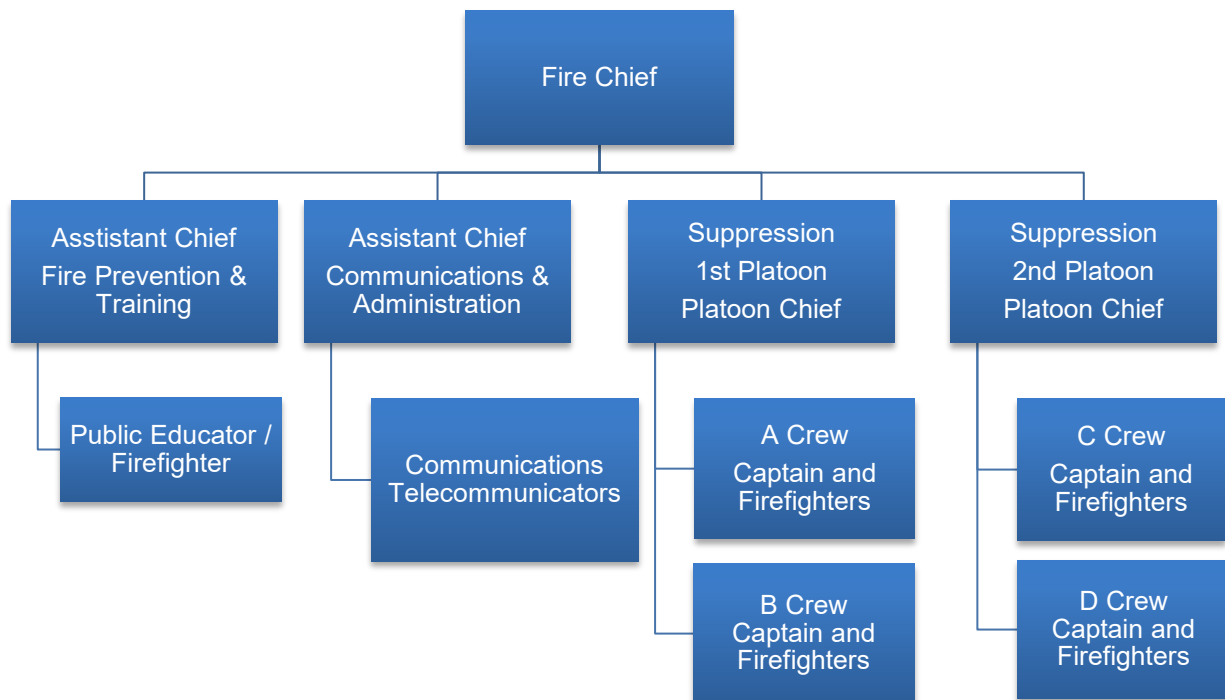
TFRS has an effective administrative structure with support from the municipality. Led by the fire chief, there are two assistant chiefs with assigned portfolios supporting POC officers, firefighters, and fire dispatch staff to deliver emergency services, fire prevention, public education activities and fire dispatching.

As illustrated in Figure 5 TFRS Organizational Structure, TFRS has the following full-time equivalent and POC volunteer positions:

- 1 FTE fire chief
- 1 FTE assistant chief – communications and administration
- 1 FTE assistant chief - prevention and training
- 1 POC fire prevention/firefighter position
- 2 POC platoon chiefs
- 4 POC platoon captains
- 26 POC firefighters
- 5 FTE telecommunicator
- 8 PT telecommunicator

Note: TFRS staffing levels within their firehall are subject to change depending on resignations and/or retirements of POC volunteer and telecommunicator staff that may occur during the year.

Figure 5: Tillsonburg Fire and Emergency Services Organization Chart.



Volunteer/POC fire departments rely on a strong complement of trained firefighters, recognising that frequently all their firefighters may not be able to respond when called upon. Primary work or family issues can impede or limit a firefighter's ability to respond. Most POC volunteer departments will establish rules or expectations for both emergency response and training attendance for their firefighters. These typically require that firefighters live or work near the firehall and include response or attendance expectations.

TFRS does not have a formal residency policy. As a result of the fire response area, the current practice is to have some of the POC firefighters respond to the scene from their respective dwelling or place of employment when it is advantageous to do so. While this practice may carry some additional liability to the municipality, it is a common practice in many volunteer fire services. Individual firefighter PPE is carried on the responding fire apparatus.

Results of feedback from the fire chief and firefighters have confirmed that the station location and distribution of the volunteers throughout the town is providing the best possible geographic coverage given the limitations of the volunteer staffing model and the current built up areas within the town's boundaries.

Performance data including firefighter response times, assembly, and achievement of an effective response force is further discussed in Section 4.4.

Many volunteer/POC fire departments in North America struggle to attract dependable staffing levels to ensure safe and effective response levels at all times of the day is difficult to maintain. This is compounded when the firehall is in a small rural community with limited residents willing or able to take on this obligation. This again can be more challenging when the firehall has low call volumes that are often discouraging members to maintain the necessary training and attendance expectations asked of them.

The reliance on POC volunteer firefighters and their ability to routinely fill staffing requirements is something that should be consistently evaluated. While there are financial and community advantages to relying on POC volunteer staff to fill positions, the need for sufficient and reliable firefighting resources is critical for community safety.

The TFRS FireComm relies on 13 fire/emergency communicators (full and part time) to provide fire dispatch services 24/7/365 with a minimum of two on-duty and more if necessary.

3.2.3 Department Leadership, Management and Operations

Effective leadership and management start at the top of an organization to guide it towards success. With increasing pressure to find value for money, elected officials are relentlessly looking for ways to increase the value for money proposition for their citizens. Department managers are challenged to maintain or increase services while avoiding services cost increases. This environment generates the need for communities to adopt more business-like approaches for delivering public safety services. Managers of fire and emergency services are required to develop private sector-like business practices such as:

- Conducting regular market (external) cost analysis
- Developing performance measures and objectives for core services including emergency response, fire prevention, public education and health and safety
- Regularly monitoring and reviewing performance
- Ensuring value for service

In some cases, this requires a shift from the historical approach of a focus on day-to-day service delivery to scanning the future and moving towards a department that is responsive to change, sustainable and efficient.

Fire department leaders must also adopt a business-like approach to leading and managing their departments. Along with their municipality's senior administration, they need to be proactive and examine all aspects of their service delivery systems to look for innovation in efficiencies and effectiveness.

The following theoretical figure suggests how to allocate leadership time to effectively operate a fire department, scan for improvement opportunities and implement system improvements:

Figure 6: Fire Service Time Management

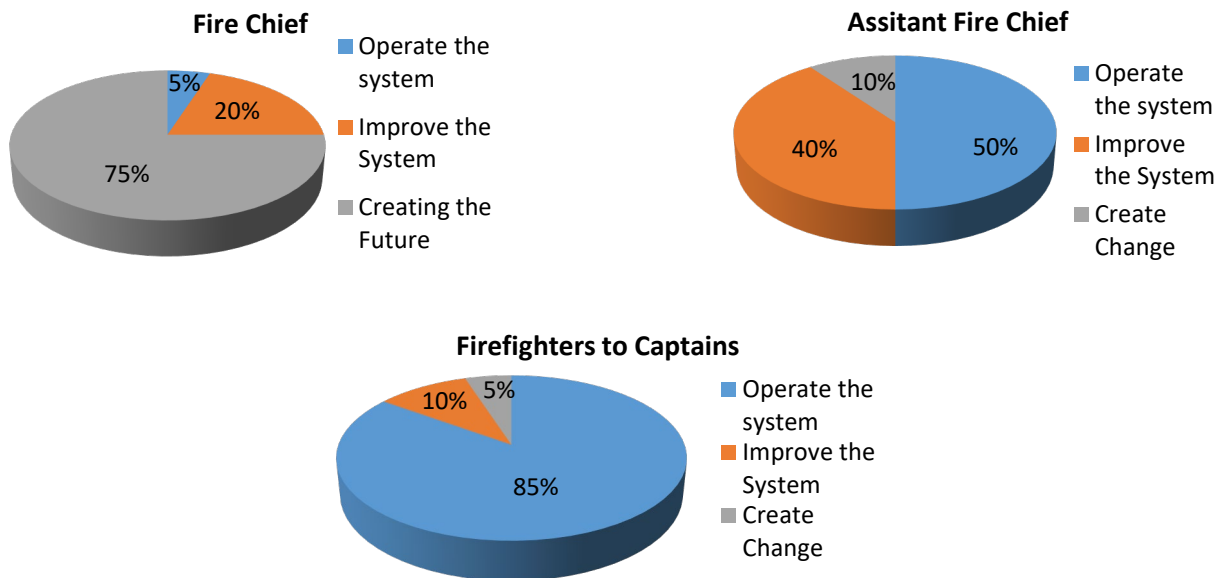


Figure 6 illustrates two important points: one, the amount of time allocated to operating, improving, and identifying strategy varies at different levels in the organization; two, senior leadership positions in TFRS must retain the capacity to identify and implement change.

The leadership team appears sufficient in structure and competency to deliver the high level of leadership required for a fire service. The number of positions accurately reflect their responsibilities; however, relying on the increasingly demanding workload appears to be of concern. All administrative positions have core responsibilities detailed within the respective job descriptions.

Based upon our review of TFRS organizational structure, there are concerns expressed regarding the assistant chiefs' operational capacities that require additional support specifically with managing the business aspects of the fire service. Shortfalls include the increasing demands for fire prevention and training, and the management of the FireComm division. These observations are based upon review of the current job descriptions, POC volunteer limitations, emergency response performance analysis, interviews and survey data, the towns strategic plan, and the comparative community analysis. These limitations are further discussed within this section.

It is extremely important that senior management continue to work closely as a team. A highly functioning team is one that understands each person's roles and responsibilities and brings their skills together in a collaborative manner to lead the organization in achieving their vision, mission, and goals. Therefore, it is important to ensure that accurate and updated job descriptions are made available and respected for each team member to promote role clarity.

Traits of a high performing team include:

- Trust
- Strong communication
- Transparency
- Collaboration
- Support
- Clarity
- Adaptive
- Reflective

Leadership is a function of all members of TFRS. Chief officers to firefighters contribute to the leadership required to achieve service excellence in a fire department. Day-to-day hall leadership is the responsibility shared with each platoon chief and platoon officer. These positions play a critical role in leading, managing, and mentoring firefighters. These roles are crucial in ensuring firefighter practice is aligned with department policy, as well as being the critical link in the chain of command between firefighters and administration. Within the current TFRS organizational structure it is imperative that the administration continues to work closely with each assistant chief, platoon chief and captains to provide direction and support while allowing for engagement including constructive feedback.

Current community growth projections, risk factors, volunteer attrition and increasing management demands associated with maintaining a diverse POC volunteer service will require increasing management staff capacity. The chief officers should be focusing most of their time on improving the current system and creating change to meet future challenges. An effective organization structure allows for roles and responsibilities to be evenly distributed. The TFRS leadership team requires the capacity to undertake and complete fire service management and strategic level requirements, including those recommended in this FSMP.

Observation #2: TFRS leadership does not have administrative support that provides the capacity to manage the business aspects of the fire service. In addition to assisting with implementation of the strategic recommendations identified in this FSMP, administrative support would include, at minimum, records management, emergency response performance and tracking, trend analysis, business management of FireComm contracts, fire prevention services support, business plans, and budget support.

Recommendation #4: *Establish a dedicated administrative support position for TFRS to provide critical assistance with ongoing daily activities to allow the fire chief and assistant fire chiefs to focus on leading the department to meet future demands and challenges.*

(Suggested completion: 6-12 months)

Rationale: *Dedicated administrative support would provide critical assistance with ongoing daily activities such as financial and business planning, strategic management, and organizational tasks.*

Observation #3: During the interview process and the results of staff surveys, a theme emerged over the ability of the Assistant Chief of Prevention and Training to continue to perform activities for the increasing demands required of training and fire inspections. Several factors support this theme in terms of the requirement to comply with OFM firefighter certification regulation, the FPPA regulations for public education and fire prevention, and the projected growth for the town. These factors combined emphasize the need to provide additional capacity for fire prevention and training.

Recommendation #5: Establish two officer positions to provide capacity for training, fire prevention, and public education requirements.

(Suggested completion: 12-24 months)

Rationale: *Providing support for increasing operational demands for the delivery of fire inspections and training will allow the Assistant Chief of Prevention and Training to focus on the administrative responsibilities of this position.*

These dedicated positions would be engaged as part of the initial implementation of the recommended transition to a composite staffing model. The addition of ten full time firefighters over the next 2 to 7 years will have these positions integrated for peak demand daytime emergency response.

TFRS officers and firefighters are responsible for the delivery of most operational services. They are the primary point of interaction between a fire department and someone in crisis or the public. Their leadership is exhibited by their professionalism and commitment to service excellence. Although their influence may be limited to their immediate coworkers, their role in forming public perceptions regarding the value and support of their services is critical.

Finally, the importance of maintaining a team atmosphere across the department and commitment to common goals cannot be overstated. Despite the varying roles and responsibilities assigned to managers, administrative, senior officer and more junior staff, the characteristics of a successful team should be promoted at every level in the organization. As strategic direction and vision are identified, they should be openly shared across the department.

Officers and firefighters often work in isolation from the administration. This heightens the need for leadership positions, including the chiefs and officers to communicate frequently and bridge perceived gaps regarding commitment to mission and service excellence. It also highlights the need to recruit only the best candidates to join TFRS team.

Based upon our review, TFRS is positioned to continue a high level of service in the future. Led by the fire chief, the leadership team needs to work closely together to guide and manage the department through the municipality's growth and development while continuing to demonstrate the high degree of pride and commitment to the fire service and their community.

3.3 Remuneration, Recruitment, Selection, Retention, Promotion

3.3.1 Remuneration

Volunteer fire departments typically are structured to either be a totally volunteer fire service, but more typically are referred to as a 'paid-on call' or 'paid-per-call' fire service where some amount of stipend or hourly remuneration is given for emergency response and/or training. Additionally, depending on the size and complexity of the community, they will often be led by a full-time fire chief. Additional managerial or administrative positions may also be required either in a full-time or part-time basis with a resulting compensation formula.

The Town of Tillsonburg is committed to recruiting the best candidates possible. Competitive salaries and benefits are offered to all their full-time positions. The municipality maintains two agreements within TFRS that details working conditions and compensation for its employees. These agreements are:

- Tillsonburg Dispatchers Firefighters Association agreement dated September 27, 20221, and
- Tillsonburg Firefighters Association agreement dated December 31, 2022

Most employer-employee issues are handled through discussion up to and including the grievance procedures stipulated in each agreement. The salaries, benefits and working conditions for each position within each of the agreements are negotiated and ratified by Council. The TFRS Fire Chief's working conditions, remuneration and other terms of conditions of employment are determined by the Corporation and approved by Council.

The compensation provided to POC firefighters and full or part-time dispatch staff, while not usually the main attracting component for new potential hires, is an important component that must be considered, and becomes more of a factor for retention of existing POC firefighters including officers and firefighters and part-time dispatch staff. This is further discussed in recruitment and retention below.

3.3.2 Recruitment

Recruitment is a key function of all emergency service agencies. The community places a tremendous amount of faith in their fire department personnel, trusting them to provide the highest level of service when the public is most vulnerable. As such, the process used to select personnel should be very comprehensive.

Experience within the emergency services industry has shown that relaxing the requirements for entry-level positions is not the answer for recruiting any employee. Instead, most departments have had the greatest success when qualified applicants are encouraged to apply. This process often involves targeted advertising and promotional campaigns aimed at demonstrating the benefits, as well as the personal satisfaction of becoming part of the fire service. The expected requirements for residency, required training, and attendance must

be clearly explained early in the process. Existing staff should be encouraged to participate in any such campaign.

TFRS, like other fire services in North America, train, maintain, and equip their firefighters and dispatch staff to the recognised NFPA standards for the services being delivered. As this is typically provided at no financial cost to the recruit it requires substantial investment in both financial and resource commitments, recruit selection should be carefully managed.

The process for recruiting applicants for vacant positions is established. Job postings including minimum requirements and process are listed on the municipal website.

Most interview and survey participants suggested that TFRS recruiting efforts were successful in attracting quality applicants, however thought that broadening recruitment initiatives and earlier anticipation of staffing requirements would be a benefit.

Observation #4: The staff turnover rate in the FireComm division is creating operational challenges with retaining trained and experience telecommunicators. In the last 18 months, 8 staff member have moved on to other services for full-time positions. This equates to a turnover rate of over 50%. All but one of these positions were part time telecommunicators.

Recommendations #6: *Conduct a staffing review for TFRS to ensure resources are available in the emergency communications centre to address workload at any given 24-hour cycle and ensure appropriate numbers of dispatchers including adjustments for peak periods.*

(Suggested completion: 6-12 months)

Recommendation #7: *Work with the Town's human resource department to determine the costs of high turnover rates and review schedules and remuneration to develop a more sustainable retention program.*

(Suggested completion: 12-24months)

Rationale: *The costs in terms of staff time and budget for the recruitment, hiring, training and equipment of the part time staff emphasizes the need to conduct a complete review of the FireComm staffing model.*

3.3.3 Selection and Training of New Staff

3.3.3.1 Firefighters

TFRS has a detailed selection process for POC firefighter positions. After submitting their application and meeting the minimum qualifications, firefighter candidates are required to move through a multi-stage process. Applications are only accepted when there is an open competition and candidates meet all the initial requirements begin the following process:

- Completed applications must contain all the minimum qualifications.
- Once the complete application package is received and reviewed by the fire chief and the assistant chief, the candidate may be selected to begin the process.

- Performance will be reviewed after each stage and a decision will be made regarding suitability to move on to become a recruit firefighter.
- New recruits are assigned to one of the platoons where their development and performance is carefully monitored.
- Competencies and performance criteria are consistent with the requirement of the OFM and applicable NFPA standards.
- Recruit firefighters are not eligible to perform complete firefighter duties until the successful completion of the Joint Training Volunteer Program (JTAG) with NFPA 1001 certification.

3.3.3.2 Telecommunicators

TFRS has a detailed selection process for telecommunicator positions. After submitting their application and meeting the minimum qualifications, candidates are required to move through a multi-stage process. Applications are only accepted when there is an open competition and candidates meet all the initial requirements begin the following process:

- Completed applications must contain all the minimum qualifications.
- Once the complete application package is received and reviewed by the fire chief and the assistant chief, the candidate may be selected to begin the process.
- Recruit telecommunicators are carefully mentored and monitored throughout their probationary period. All are required to successfully complete the NFPA 1061 level I and II within a year of hire.

3.3.4 Retention

Career full-time employee retention is not generally an issue for TFRS. The highest turnover typically exists in the POC volunteer firefighter and part-time telecommunicators. The reason for resignation from the volunteer/part-time groups are typically because of:

- A physical move of residence or workplace out of the municipality
- Career/primary work demands
- Family commitments
- Childcare
- Obtain a career position in another service
- Increased training demands of firefighter positions up to NFPA 1001 and NFPA 1061 for telecommunicators, and other training requirements
- Increased demands on department time obligations
- Occupational and safety requirements

As detailed at section 3.3.2 the constant turnover of trained staff results in critical staffing shortages and increased costs of recruitment and training. Feedback from the Assistant Chief Communications and Administration and the staff surveys have validated the turnover rate and that relying on part-time fire telecommunicators to maintain the minimum staffing levels is not sustainable.

3.3.5 Promotions and Advancement

The promotional policy for administrative, full-time, and POC volunteer firefighter officer positions are filled through a competitive process and appointment. Promotions up from probationary firefighter to platoon chief rank is contained in the Association Agreement between the Town of Tillsonburg and the Tillsonburg Fire Fighters Association.

Fire chief and assistant chief shall review all applicants for promotion and the successful applicant shall be chosen based on the applicant's experience, firehall record, training record, and any tests and interviews as may be required by the fire chief.

3.4 Training

Training and competency development are essential and ongoing activities for all contemporary fire departments. A prepared and competent workforce reduces risk and safely optimizes service delivery. An effective workforce-training program aligns the growth and development of personnel to the organization's mission and goals.

The recent closing of the Ontario Fire College and the change to regional training centres resulted in a partnership agreement between Middlesex and Elgin Counties to develop a regional training facility under the purview of the Office of the Fire Marshal. TFRS training utilizes in-house training and regional training programs as necessary.

The Ontario Firefighter Certification regulation filed April 14, 2022, and enacted on July 1, 2022, introduces mandatory minimum certification standards for firefighters that align with fire protection services being provided. This regulation will help ensure that firefighters have consistent training according to the level of service set by a municipality supporting firefighter and public safety.

Training and education program activities are identified by assessing the Knowledge, Skills, and Abilities (KSAs) needed for the firefighters to perform their duties as outlined in the department's SOGs and procedures. When firefighters are competently trained and possess the KSAs for the services they are expected to provide, they reduce risk and increase their own safety and the safety of the public they serve. All training programs should be measured against and tailored to the core services and identified risk assessments for the community.

The training program of a fire service is a very important and demanding portfolio. The scheduling of instructors, facilities and participants is a daunting task to ensure safe and consistent training, while not negatively impacting the operational capacity.

The Assistant Chief of Prevention and Training is the primary person who oversees the training needs of the firefighters through the officers, while also assisting with delivering a schedule of standardized training based on the TFRS core training syllabus.

TFRS relies on bi-weekly and ad hoc training sessions for the delivery of core competency and related training consistent with the requirements established by the OFM including:

- NFPA 1001/1072 – Recruit Training
- NFPA 1041 – Fire Service Instructor Level I
- NFPA 1021 – Officer Training Level I
- Structural search, victim removal, survival, and fire behavior
- Scene lighting and scene safety
- Auto extrication
- Emergency medical care and first aid
- Driver training
- Water and ice rescue
- High and low angle rescue
- Firefighter safety and health
- Personal protective equipment (PPE)
- FD communications
- Pumper and tanker operations
- Equipment familiarization
- Water supply and fire streams
- Ladders
- Pre-planning
- Ropes, webbing, and knots
- Hose lays and proper uses
- Loss controls
- Rescue tools
- Rescue tools
- Technical rescue

Supplemental or specialized training is scheduled through the regional training centre or other accredited agencies.

The FireComm Division training is managed by the Assistant Chief of Communications and Administration. Ongoing training is provided as staffing allows. They presently attempt to have one training night per quarter and ongoing testing including call reviews.

Observation #5: TFRS utilizes limited on-line learning offered through the OFM and feedback has confirmed that these types of learning opportunities are effective when combined with practical exercises. During the consultation process and a theme emerged regarding communication between administration and the firefighters. Specifically, the town has not provided the POC volunteer firefighter with remote access to their email system. To offset this challenge the use of the personal or business email addresses is utilized. Most online learning management systems include the ability to communicate with the entire group or individually.

Recommendation #8: Enhance the use of technology to utilize on-line learning and learning management systems, records management and online communication and coordination capabilities.

(Suggested completion: 24-36 months)

Recommendation #9: Ensure all firefighters and fire service staff are certified to the appropriate levels defined under O Reg 343/22 for duties they are required to perform as key responsibilities.

(Suggested completion 12-72 months)

Rationale: Modern training processes incorporate a learning management software program that assists with the administration, documentation, tracking, reporting, automation, communication, coordination, and delivery of educational courses. Most learning management systems typically focus on online learning and support several delivery processes. There are commercial learning management software programs specifically designed for the fire service that are capable of assigning, delivering, tracking, and reporting firefighter training requirements.

3.4.1 Industry Recommended Qualifications

NFPA certification is required by the OFMEM and FPPA. Position profiles and associated KSAs should prepare staff to competently provide the services necessary to address the risks in their community.

Further, organizational size and structure will often change the breadth of tasks and competencies required by specific positions. For example, large career fire departments tend to have a higher degree of specialization for senior positions and less need for senior officers to be directly involved in fire suppression or rescue operations. In contrast, smaller volunteer POC or paid-per-call volunteer department senior officers may lead or be directly involved in fire suppression and rescue operations.

The following list of NFPA standards is offered as a general guideline for NFPA training standards aligned with most fire department positions:

<p><u>Deputy and Assistant Chiefs and Fire Chief</u></p> <ul style="list-style-type: none"> - NFPA 472 Dangerous Goods Operations - NFPA 1001 Firefighter (Level 2) - NFPA 1002 Pump Operator - NFPA 1021 Fire Officer (Level 2) - NFPA 1041 Instructor (Level 1) - NFPA 1403 Standard on Live Fire Training Evolutions - NFPA 1521 Incident Safety Officer <p><u>Captain</u></p> <ul style="list-style-type: none"> - NFPA 472 Dangerous Goods Operations - NFPA 1001 Firefighter (Level 2) - NFPA 1002 Pump Operator - NFPA 1021 Fire Officer (Level 1) - NFPA 1041 Instructor (Level 1) - NFPA 1403 Standard on Live Fire Training Evolutions - NFPA 1521 Incident Safety Officer <p><u>Safety Officer</u></p> <ul style="list-style-type: none"> - NFPA 1521 Incident Safety Officer 	<p><u>Lieutenant</u></p> <ul style="list-style-type: none"> - NFPA 472 Dangerous Goods Operations - NFPA 1001 Firefighter (Level 2) - NFPA 1002 Pump Operator - NFPA 1021 Fire Officer (Level 1) NFPA 1041 Instructor (Level 1) <p><u>Firefighter</u></p> <ul style="list-style-type: none"> - NFPA 472 Dangerous Goods Operations - NFPA 1001 Firefighter (Level 1) - NFPA 1002 Driver/Pump Operator - NFPA 1006 Vehicle extrication Level 1 <p><u>Operator</u></p> <ul style="list-style-type: none"> - NFPA 472 Dangerous Goods Operations - NFPA 1001 Firefighter (Level 1) - NFPA 1002 Driver/Pump Operator - NFPA 1002 Aerial Operator - NFPA 1006 Vehicle extrication Level 1 <p><u>Training Officer</u></p> <ul style="list-style-type: none"> - NFPA 1041 Instructor (Level 1) - All Qualifications required to instruct firefighters and recruits - NFPA 1403 Standard on Live Fire Training Evolutions <p><u>Telecommunicator</u></p> <ul style="list-style-type: none"> - <u>NFPA 1061 Standard for Public Safety Telecommunications Personnel Professional Qualifications</u>
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3.5 Health and Wellness

The active pursuit of employee health and wellness is extremely important to an organization. The benefits may include but not be limited to:

- Early recognition and treatment of illness
- Reduction in absenteeism due to short/long-term illness
- Decreased injuries during normal duties
- Decreased workers' compensation board (WCB) premiums
- Increased employee career longevity
- Improved work/life balance

The Town of Tillsonburg offers:

- Opportunities to enroll in the corporation medical and dental plans
- Participation in the corporate group life insurance program

- 24/7 accident insurance
- Participate in corporate health and wellness programs
- Gym memberships that are offered at the Tillsonburg Community Centre

The TFRS has an established Occupational Health and Safety committee. Health and wellness initiatives are in place and/ or being developed. Procedures established to assist with gross decontamination procedures are in place, including a commercial washer/extractor and drier that is installed in the firehall, however there is not an identified decontamination area or shower facility on or near the apparatus.

The on-site assessment of the fire station and concerns raised by both the firefighters and telecommunicators identified a potential health and safety risk to staff. There is not a proper exhaust ventilation system installed on the apparatus bay. These systems are designed to remove dangerous diesel fumes from the building.

The mental health of first responders, whether career, part-time, or POC volunteer, is an issue that has garnered considerable attention over the past 10 years. As identified in the International Association of Firefighters Wellness-Fitness Initiative Manual¹⁴, “a firefighter’s work is characterized by long hours, shift work, disruptions in sleep patterns, sporadic high intensity situations, strong emotional involvement, life and death decisions and exposure to extreme human suffering.” Over time, this type of work can impose considerable stress on some individuals.

Observation #6: Health and safety initiatives and measures are a high priority for the protection of all employees. Opportunities to enhance the safety of staff from injury or illness should be implemented where possible.

Recommendation #10: Conduct a review and implement the addition of a decontamination area including a shower on or near the apparatus floor. Additionally pursue the approval for sealing of bay floors from the remainder of the fire hall.

(Suggested completion: 12-24 months)

Recommendation #11: Conduct a review of policies and procedures to ensure that they are conforming with Occupational Health and Safety requirements and guided by Section 21 Guidance notes. This includes decontamination for post fire incidents, reduction of environmental concerns in fire stations.

(Suggested completion: 12-36 months)

Rationale: For the safety and health of TFRS staff, initiatives including necessary renovations, additions including applicable standard procedures should be implemented where possible.

¹⁴ Joint Labor Management Wellness-Fitness Initiative, 4th Edition, p.48

3.6 Core Services

Modern fire services typically provide a broad range of services to their municipality. Any services provided should align with the identified community risks and the needs of the citizens. Cyclical evaluation of community risks and fire department response capability is necessary to support ongoing emergency planning. Most citizens will not have the need to access fire department services. However, when emergencies occur, service expectations are high. Good planning processes are necessary to ensure citizens get the services they expect, and the community gets good value for their investment.

TFRS provides several core services and programs that are approved and detailed in Bylaw 3190.

3.6.1 Structural Firefighting

Fire department resources should be adequate to manage the most probable risks. Structural fire suppression encompasses a wide range of tactics for the control and extinguishment of fires originating from several sources. Single-family dwellings are the most prevalent building type in most communities. As a result, these types of structure fires are typically the most probable, but only rated as a low to moderate risk as the consequence are limited to one or two properties. Residential fires are a leading cause of fire-related death, injuries, and property loss in Canada.

While in many communities, structure fires are not the most frequent emergency response request, they require a significant investment in resources (equipment and staffing), training and coordination to manage safely and effectively. TFRS trains and maintains their firefighters to the NFPA 1001 Level I and II standard.

Structure fires are an infrequent type of fire encountered by TFRS (6%), however has a large degree of risk to both the public and the firefighters where time and resources are paramount considerations for safe and effective resolution of the emergency. Available staffing and equipment should be adequate for firefighters to be able to safely perform the task expected of them. For TFRS the recommended NFPA standard for fire suppression operations is NFPA 1720 or a composite model that includes 1710. These standards are further covered in Section 4.

Structure fires that require entry into the building for fire suppression and rescue require many critical tasks to occur simultaneously for the safety of both the victims and the firefighters. Each of these tasks may require one or more companies of firefighters to accomplish them safely and effectively. Without enough companies of firefighters on scene, entry may be delayed until some of these tasks are completed.

TFRS maintains a fleet of emergency response apparatus and equipment along with a committed team of POC volunteer firefighters available for emergency structural fire response.

Structural fire suppression encompasses a wide range of tactics for the control and extinguishment of fires originating from several sources. Sufficient firefighters arriving on-scene in a timely manner are paramount to facilitate safe and effective rescue and

suppression tactics for the control and extinguishment of fires. The current practice for emergency response is a combination of one or more firefighters responding from the firehall on the appropriate apparatus, while additional firefighters respond directly to the scene of the emergency from their home or place of employment.

Most interview and survey participants agreed that TFRS was adequately trained and minimally staffed to safely manage most structural fire incidents, however a degree of concern was expressed regarding ability to establish an effective response force (EFR) during the normal daytime workday hours.

The staffing level constraints consistent with most POC volunteer fire services is the most significant limiting factor in determining the actual effectiveness of any given emergency response.

3.6.2 Medical First Response

Medical co-response is a valuable service provided by TFRS. The number of medical responses requested amounts to a 23% of the total call volume for the 2018-2022 period. The distribution of fire department resources often exceeds that of ambulance resources and as a result, firefighters are often able to respond to medical emergencies faster, or in support of, ambulance services.

Tillsonburg maintains a tiered medical agreement with Central Ambulance Communications Centre (CACC) that outlines the medical protocols that may need the assistance of TFRS. Current protocols will dispatch TFRS to medical emergencies that involve “vital signs absent” (VSA), choking and unconscious determinants only. TFRS response will also be requested when the ambulance is on a delayed or extended response.

Survey and interview participants felt this service was not over-taxing the department’s response capacity and was valued by the community.

3.6.3 Motor Vehicle Collisions, Vehicle Extrication

Motor vehicle collisions (MVCs) with or without trapped persons can pose unique hazards to both the victims and responders. Vehicle extrication requires specialized training and equipment. Close coordination with police and ambulance services is necessary for the safety of both victims and responders. Weather conditions also contribute significantly to both the severity of the incident and the effectiveness of the response.

Many of modern vehicles have added risks to firefighters, such as airbag deployment and hybrid vehicles containing fuel cells or batteries. Vehicle collisions or events involving transport vehicles often pose the additional challenge of involving dangerous goods or requiring heavy equipment to manage.

TFRS is well equipped and trained to manage vehicle collision and extrication incidents (services provided to the NFPA 1001 and NFPA 1006 Standard). Depending on the nature of the incident, fire engines and/or tankers are typically deployed to these events. MVCs was a common incident type (11% of total call volume) over the 2008-2022 period within the municipality. High-speed roadways are common throughout and around the municipality.

Responses on these roadways may present hazardous conditions for all responders. TFRS resources must work closely together with partner agencies at the scene of an MVC. These types of incidences may require the resources and expertise of TFRS staff including:

- Scene safety
- Fire suppression
- Extrication
- Stabilization
- Medical first aid
- Dangerous goods control
- Special rescue

Additional apparatus and staff are often required to provide support to other agencies for equipment and roadway safety.

3.6.4 Dangerous Goods Response

Response capabilities should align with service levels defined in the NFPA 1072: Standard for Competence of Responders to Hazardous Materials Weapons of Mass Destruction Incidents service level matrix. It requires departments without advanced hazmat (dangerous goods) training to take only a limited role in hazardous materials (dangerous goods) response. There are three dangerous goods response service levels.

The first level of service is the awareness level. This level is the most basic and is for persons who could be the first on the scene of emergency involving dangerous goods. Responders at the awareness level are expected to recognize the presence of hazardous materials, protect themselves, call for trained personnel and secure the area to the best of their abilities. It does not involve donning protective suits to enter the contaminated zone to stop the flow of hazardous materials or conducting decontamination.

The second level of response is the operations service level. Responders are trained to be part of the initial response and control the impact of the release in a defensive fashion. Crews are expected to take a more hands-on approach than considered at the awareness level. They will use absorption, damming and diking to stop or redirect the flow of the hazardous material. Firefighters are trained to don protective suits, enter the hot zone to conduct rescue activities and control the product release. They must also establish a decontamination zone for responders and equipment. Crews also lead the evacuation in the hot zone.

The third level of response is the technician level. Technical-level responders must be certified hazmat technicians, trained in the use of specialized chemical protective clothing and control equipment. Responders at this level take offensive action in responding to releases or potential releases of dangerous goods. Given the required training, cost of equipment and limited community need, this level of service is normally provided by provided by larger communities or private companies through contract.

TFRS does not have a dangerous goods response unit. While incidents involving hazardous or dangerous materials are infrequent (13% of 2018-2022 total call volume), these types of events can result significant environmental and life-threatening consequences. In addition, a dangerous goods release was identified and discussed as a community risk factor. Given that the on-duty response of TFRS is provided at the awareness level of service, a mutual aid or OFM request is necessary to provide advanced dangerous goods response when requested.

3.6.5 Technical Rescue Services

Rescue operations are often unique situations that require specialized equipment and training to ensure the responders maintain the competencies to safely execute the rescue. The challenge in maintaining these skills is the low frequency of the events. As a result, fire departments offering technical rescue services must provide adequate training to maintain competencies and equipment.

TFRS is equipped and trained to provide and maintain competencies for:

- Ice rescue – land-based technician
- Water rescue – land-based technician
- High and low angle rescue to operations level plus select advanced procedures.

3.6.6 Fire Prevention Services

As departments increase their emphasis on fire prevention activities, communities are seeing a significant reduction in fire-related losses. In Canada alone, deaths caused by fire have been reduced over the last 100 years from an average of 350 deaths per year to 150 each year. Although difficult to measure, effective fire prevention programs generally reduce fire-related deaths and property loss proportionately to the resources committed. Data collection and analysis will determine the effectiveness of these programs and their impact on the overall reduction of losses.

TFRS relies on the Assistant Chief of Prevention and Training along with one of the captains as assistants to the Fire Marshal to carry out all directives required within the Fire Protection and Prevention Act, 1997 to the municipality. As previously identified the FPPA regulations for public education and fire prevention, and the projected growth for the town emphasize the need to provide additional capacity for fire prevention services.

3.6.6.1 Fire Code Inspection Services

Modern building codes including life safety design and operating requirements are key component of risk management. Cyclical fire inspection programs for high-risk buildings ensure these systems continue to function throughout the life of the building. This is especially important for high occupancy and special purpose buildings such as apartment buildings, hospitals, seniors housing and schools.

While the benefits of an effective fire prevention program are sometimes difficult to fully quantify, the reduction of fire deaths and injuries in Canada following the implementation

and enforcement of modern building and fire codes illustrates the value. These services are fundamental elements of a broader community fire reduction and life safety strategy. Fire inspections are critical services in identifying fire hazards and maintaining life safety systems.

3.6.6.2 New Developments Plan Reviews

Working with the three municipalities planning and development services departments, the fire prevention officer is involved in development and construction plans review. The fire prevention officer together with the planning and development staff review building and site plans to ensure the construction process complies with Ontario Building Code and Fire Code requirements. This is a key public safety function as the fire risk during the framing phase of wood-framed development is relatively high.

3.6.6.3 Fire Cause and Origin Services

All fires causing injury, death and property loss are to be investigated in Ontario. The Ontario's Office of the Fire Marshall and Emergency Management maintains a fire incident database and provides trend analysis that can be utilized by TFRS to identify specific fire and injury prevention campaigns based upon leading fire and other incident causes. Examples include cooking safety, wood burning appliance safety, smoke alarm testing and maintenance, and fire prevention, carbon monoxide alarm installation, home escape planning and fire prevention week.

3.6.6.4 Fire Public Education Services

Public education programs and active involvement in the community are important efforts that inform and engage citizens to think about fire safety and risk reduction. Most recently, public education opportunities including firehall tours and public appearances was limited because of COVID-19 restrictions. As the pandemic risks lessen, the opportunities and requests for additional fire prevention activities can be expected to increase from schools and community groups.

3.6.6.5 Pre-Emergency Planning

Pre-emergency or incident plans are intended to provide emergency responders with advanced knowledge and processes for a safe and effective response. These pre-plans include information regarding the construction type, occupancy, building status, emergency contacts, utility shutoffs, fire suppression and detection systems installations and locations exposure information, water supply availability, access problems and any other hazards.

Pre-planning programs are not necessarily tied directly to the fire inspection program, but rather include operationally relevant information that was gained on a site visit. Pre-planning should also include potential responses to areas of concern that are not captured in the formal fire inspection program.

Observation #7: There are several fire prevention service shortfalls that need to be addressed to comply with the FPPA regulations, and risk reduction best practices. This includes the following:

- cyclical fire prevention and code inspections
- development site plans & zoning reviews
- fire safety plan reviews
- formal emergency preplanning and building stock assessments.
- enhanced public education and prevention programs to target identified community risks.
- false alarm reduction programs
- enhanced smoke alarm program and process for recording smoke alarm data
- enhanced fire investigation with additional qualified staff

Recommendation #12: Establish dedicated fire and life safety education staff with a mandate to develop, implement and measure fire and life safety programming based on identified risks in the CRA.

(Suggested completion 12-36 months)

Recommendation #13: Develop a community outreach program to establish relationships with key stakeholders to assist in providing educational programming to target high-risk demographics.

(Suggested completion 12-24 months)

Recommendation #14: Utilize fire cause determination to identify trend in fires to inform programming. This will require trained fire investigators (NFPA 1033) and a robust records management system to capture and provide detailed reports.

(Suggested completion 18-24 months)

Recommendation # 15: Establish dedicated Fire Code inspection and enforcement positions to provide a proactive inspection program addressing identified risks in the CRA.

(Suggested completion 18-36 months)

Recommendation #16: Review and develop, as required, new bylaws to align with current legislation and address any rising issues such as increased false alarm incidents.

(Suggested completion 18-24 months)

Recommendation #17: Work with municipal building department to establish appropriate process for Ontario Building Code trained and qualified fire staff to review, comment and approve appropriate Ontario Building Code sections related to fire safety for all new building applications for permits.

(Suggested completion 24-36 months)

Recommendation #18: Develop a pre-incident pre-planning program utilizing the principles of NFPA 1620 for fire crews to address pre-incident planning informed by risks in the CRA.

(Suggested completion: 24- 96 months, Ongoing)

Rationale: The addition of ten fulltime firefighters over the next two to eight years, as identified in recommendation #29, will provide the capacity to conduct rigorous fire prevention services and comply with the FPPA regulations. Furthermore, these ten positions would be responsible for peak demand daytime emergency response.

3.6.7 Citizen Assist and Public Services

Fire departments play an important but often unrecognized role in the social safety net of communities. When citizens perceive an emergency or an urgent request for assistance, the agency most frequent called to help is the fire department. These types of requests can vary broadly - from a request to rescue a pet to help with flooding. In reviewing TFRS response data, this response type occurs on a relatively infrequent basis in the municipality (approximately 1% of total call volume). TFRS should continue to provide this service where practical to help in their communities. It is a value-added service of considerable value for citizens making the request.

3.6.8 911 and Fire Dispatch

The Public Safety Answering Point (PSAP) is provided by the Strathroy-Caradoc Police Dispatching Bureau. Fire rescue related calls for Tillsonburg and contracted service areas are forwarded to the Tillsonburg Fire Rescue Dispatch (FireComm) Division to provide emergency fire dispatching services (including information and communications technology). A back-up dispatch area is in the town customer service centre.

Observation #8: During consultation with staff, a theme emerged over the need for enhanced IT support. It was identified that Oxford County's centralized IT division was providing best possible support to TFRS however the number of systems, complexity including fire dispatch services to 55 municipalities, and ongoing maintenance requires additional IT support.

Recommendation #19: Work with Corporate IT to ensure dedicated and appropriate IT support for implementation of new systems and on-going and timely support of existing and future systems.

(Suggested completion: 1-12 months)

Rationale: *These technologies are often supported across two or more individual system analysts on a part-time allocation of their full-time Corporate IT position. This helps ensure continuity when a person leaves the organization, provides surge support to the larger organization, and supports the dispatch centre for unexpected system downtime given the 24/7 critical nature of the systems.*

Technological enhancement with emergency communication systems such as NG 9-11 require specialized and ongoing technical support to ensure these systems are always fully operational. The cost for the additional IT support should be included in the costing formula among the contracted municipalities. Specialized knowledge of complex systems that operate 911 telephone, radio, dispatch, and fire department records management systems should not be concentrated in a single resource.

3.7 Emergency Management Program and Emergency Operation Centre

Ontario's Emergency Management and Civil Protection Act lays out obligations and standards for emergency management programs required of all levels of government. In Ontario, each municipality must develop and implement an emergency management program to protect the lives and property of its citizens.

The Town of Tillsonburg Emergency Management Response Plan and Emergency Operations Centre has been developed under the authority of the Corporation of the Municipality's By-Law 2022-083 and maintained under the direction of the emergency control group (ECG). This plan enables a centralized controlled and coordinated response to emergencies in the municipality.

In the event of an emergency, the Town of Tillsonburg Emergency Management Plan guides the municipality's response, mitigation, and recovery. This Bylaw assigns designated corporate positions to the Emergency Management Program Committee (EMPC) including the position of Emergency Management Program Coordinator (CEMC) as well as ad Hoc members from other agencies based on the nature of the emergency.

The town's EOC is in the basement of the fire station. This area also is the fire service training room and is the room that the firefighters' association utilizes for their meetings.

3.8 Mutual Aid and Other Service Agreements

Large emergency events quickly overwhelm the response capacity of most municipal fire departments. This is especially true for smaller fire departments with limited resources. As a result, mutual aid and automatic aid agreements are a necessary component in adding response capacity for these low frequencies but potentially high or extreme consequence events.

Mutual aid agreements between fire departments allow them to assist each other across jurisdictional boundaries. Typically, this happens when local emergencies exceed local resources. They may include fire response, and/or specialty response services including rescue, dangerous goods. Any response would be made by the requesting agency and is not pre-determined in the case of automatic aid. The requested agency may or may not be able to fulfill the request.

Automatic aid agreements ensure a provision of initial or supplemental response to fires, rescues, and emergencies where a fire department situated in a neighbouring municipality can provide a response quicker than any fire department situated in the requesting municipality.

The Province of Ontario through the Office of the Fire Marshall has developed a provincial wide mutual aid plan (MAP) to formalize and maintain mutual aid and automatic aid agreements for identified areas coordinated through an Ontario Fire Marshall appointed fire coordinator. Each area will develop and maintain their respective MAP consistent with the Ontario plan.

The principle of operation of MAPs is to promote and ensure adequate and coordinated efforts to minimize loss of human life and property, as well as damage to the environment through the efficient utilization of fire department and provincial resources in the event of a mutual aid activation during times of natural or human-made emergencies.

In the event an emergency over tasks the resources of the municipality, and requires additional assistance, the EOC Commander may request assistance from neighbouring municipal or the Office of the Fire Marshal and/or Emergency Management through the Provincial Emergency Operations Centre (PEOC). The Town of Tillsonburg participates in mutual aid with Oxford, Norfolk, and Elgin Counties. Automatic aid is provided by TFRS to Bayham in the Elgin County.

3.9 Facilities

TFRS provides fire and emergency response to the Town of Tillsonburg as well dispatching fire rescue dispatching services out of a single firehall that is centrally located within the municipality.

3.9.1 Firehall Overview and Assessment

Tillsonburg Fire and Rescue - 80 Concession Street E, Tillsonburg, Ontario, N4G 4Z8	
Overview:	<ul style="list-style-type: none"> Built in 1979 this firehall houses TFRS administration, fire operations personnel, apparatus, and equipment, along with the Fire Communications Centre – 2nd floor Total of 49 personnel 3 Bay Drive through 1 Bay non-drive through initially designated for ambulance Gated outside storage area Designated shared parking with OPP, FR and EOC (not secure)
Unit Inventory:	<ul style="list-style-type: none"> 1 Command Vehicle 2 Support Vehicles 1 Pumper 1 Pumper Tanker 1 Aerial 1 Rescue



Front of Tillsonburg Fire Hall



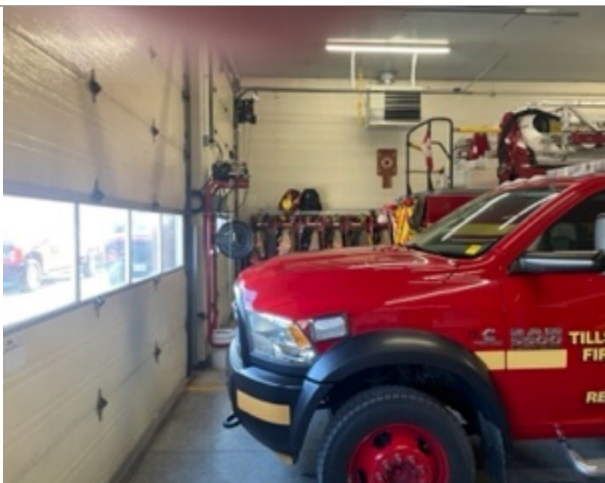
Front of Tillsonburg Fire Hall



Exterior Storage



Apparatus Bay



Apparatus Bay



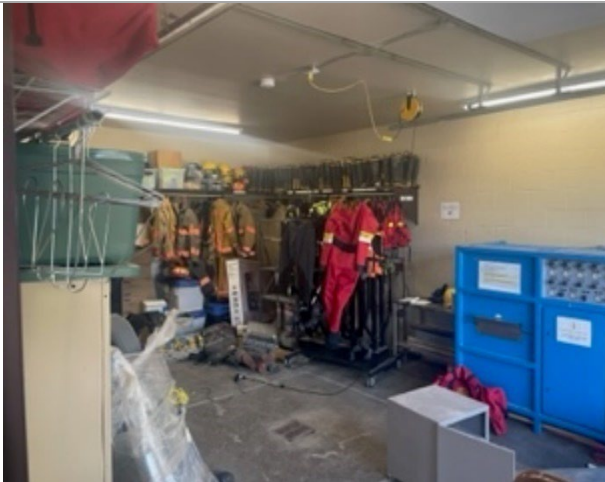
Apparatus Bay



Apparatus Bay – Bunker Gear Rack



Apparatus Bay



Previous Ambulance Bay – Now Storage



Commercial Extractor



SCBA and PPE Maintenance Area



Homemade SCBA Cleaning Station



Storage Underneath Old Ambulance Bay



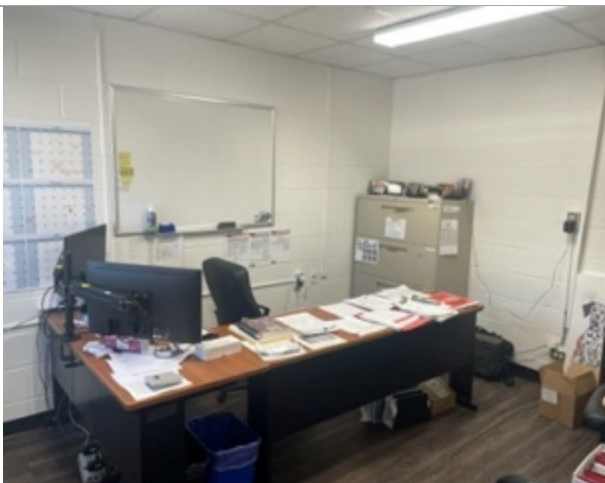
Utility Room



Fire Chief Office



Assistant Chief Communications and
Administration Office



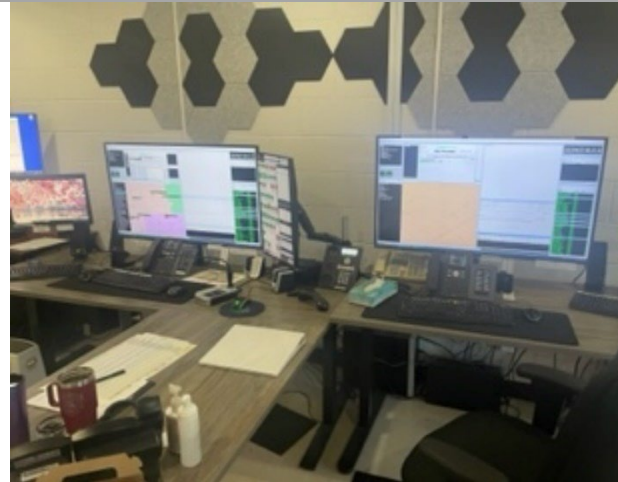
Assistant Chief Training and Prevention Office



Primary EOC and Training Room for Firefighters



Communications Centre Located on Second Floor



Total of Four Dispatch Pods



Lockers Separate Dispatch Pods from Kitchen and Lunchroom



Showers/Washroom Located adjacent to Dispatch

To operate all Divisions of TFRS effectively and efficiently, all the following features are key to a fully functioning firehall:

Item	Description	Does have	Does not have
1	Site security		✓
2	Adequate parking for staff and visitors		✓
3	Internet and intranet connectivity	✓	
4	Adequate space for training – training props, hydrant		✓
5	Back-up power supply	✓	
6	Fire Chiefs' office	✓	
7	Assistant Chief's offices	✓	
8	Emergency management office	✓	
9	Administrative support office/space		✓
10	Training room / meeting room	✓	
11	Office security		✓
12	Dorm rooms		✓
13	Day use area	✓	
14	Kitchen	✓	
15	Fitness / wellness area		✓
16	Unisex bathrooms and showers		✓
17	Space to safely garage and do minor maintenance on vehicles (recommend 3-bay tandem, drive-thru – must be properly ventilated)		✓
18	Hose drying area	✓	
19	Small equipment storage and maintenance room	✓	
20	Air filling station room complete with proper ventilation		✓
21	Industrial washer and dryer room	✓	
22	Bunker gear storage room complete with proper ventilation		✓
23	Consumables storage room	✓	
24	Sufficient workstations	✓	
25	Sufficient supervisor space	✓	
26	Breakout or quiet room		✓
27	Washrooms	✓	
28	Kitchen/ lunchroom	✓	
29	Locker room		✓
30	Lighting	✓	
31	Security	✓	

Observation #9: The fire dispatch centre is located on the top floor of the fire hall and is marginally meeting the minimal operational requirements and constrained for any future growth or expansion.

Recommendation #20: Conduct a review of primary and back-up communications centres to ensure they meet the current and future needs of the community and staff working in centres as well as align to standards set out in NFPA 1225 Standard for Emergency Services Communications.

(Suggested completion: 24-48 months)

Recommendation #21: Develop a detailed implementation plan for upgrades to a new NG-911 system. Ensure that required NG-911 are appropriately funded and municipality to utilize all provincial grant opportunities.

(Suggested completion: 1-6 months)

Rationale: The current location of the TFRS Dispatch Centre is constraining present operational requirements. Future growth requirements for both the dispatch centre and the fire operations cannot be undertaken within the current fire station. The space utilized by the communications currently could be repurposed to expand area to operations and prevention staff.

Observation #10: There has been two condition assessment conducted on the fire station in 2022 (Roth IAMS Ltd August 10, 2022, and Balan Engineering Corp November 3, 2022). The Roth assessment identifies the overall condition of the facility to be in good to fair condition however there are immediate, short term and capital and maintenance renewal cost projections that range from an immediate \$5,000 to assess the roof drainage to approximately \$2.4 M over the next 25 years to maintain the fire station. It is important to note that these condition assessments do not assess the functional and operational aspects to support TFRS's core services. During the interviews and survey there was considerable feedback regarding the station condition and not meeting functional or operational requirements.

During the site visit the absence of an exhaust extraction system to ensure the air quality throughout the station is maintained to acceptable levels was of particular concern. Tillsonburg Fire has indicated that the installation of this system is in the queue.

Factors that need to be included with this assessment include the future growth projections, community risk assessment, established core services and levels, preferred staffing model and the one or two station location concepts. Operational and functional analysis would typically include the following:

- *Sufficient apparatus bay to safely and effectively garage and maneuver emergency response vehicles and apparatus.*
- *Firefighter staging and personal protective equipment storage.*
- *Equipment storage, maintenance, and decontamination areas*
- *Training and fitness areas including an exterior hard surface apron.*
- *Staff support areas such as workstations, offices, kitchen, rest areas, washrooms, and showers (non-gender or gender specific)*

Recommendation #22: Undertake a complete operational and functional assessment of the fire station.

(Suggested completion: 24-48 months)

Rationale: *Conducting an operational and functional assessment will determine if renovation, repairs and updating of this facility, or relocation and replacement, is the most prudent approach to managing the current and future of the town and TFRS. For example, the refinishing and repairs required to the apparatus floors and drain systems.*

Observation #11: The primary EOC is in the basement of the firehall. This room is also used for fire training and for firefighters' association meetings. Fire dispatch is also located at the firehall which contributes to the limited space availability at this location. During peak times of activity around the firehall (fire dispatch, training, fire calls, etc.), parking is limited and can further be exacerbated during activation of the of the EOC.

Recommendation #23: Review the feasibility of relocating the primary EOC along with dispatch to the new location of the town hall.

(Suggested completion: 1 – 12 months)

Rationale: While at the early stages of planning for the new town hall, consideration should be made to adding space for the primary EOC and dispatch. Early planning for purpose-built space for these two services will only add to effectiveness and efficiencies. While at the planning stage, growth, and expansion for these two spaces should also be considered, which is not currently available in the existing firehall.

3.10 Equipment

3.10.1 Apparatus and Emergency Vehicles

Fire apparatus and emergency vehicles are typically the largest asset expenditures for any fire department. Purchasing and managing these assets requires strong fiscal responsibility to endure public and local government scrutiny. Currently, TFRS has considerable monies invested in vehicles and equipment. The lifespan of apparatus varies depending on its type and use, along with regular maintenance and testing standards. Fire services typically designate a lifecycle to each piece of apparatus and other emergency vehicles and contribute to a capital reserve fund to ensure enough funds are available when the replacement is needed.

3.10.1.1 NFPA Standards for Fire Apparatus

NFPA has developed standards to assist a fire service with the design, maintenance, inspection, testing, life cycling, and dispersal for their fire apparatus. Fire departments may choose to adopt these standards or utilize them as a reference in their own standards and practices.

NFPA 1901: Standard for Automotive Fire Apparatus

The NFPA 1901 standard defines the requirements for new automotive fire apparatus and trailers designed to be used under emergency conditions to transport personnel and equipment and to support the suppression of fires and mitigation of hazardous conditions. This standard recommends that fire apparatus should respond to first alarms for the first 15 years of service, with the expectation that they perform as designed 95% of the time. For the next five years, it should be held in reserve for use at large fires or used as a temporary replacement for out of service first line apparatus.

NFPA 1911: Standard for the Inspection, Maintenance, Testing and Retirement of In-Service Emergency Vehicles

The NFPA 1911 standard defines the minimum requirements for establishing an inspection, maintenance, and testing program. Also included are guidelines for emergency vehicle refurbishment and retirement.

The Underwriters Laboratory of Canada utilizes many of the provisions within these NFPA standards which are referenced by Fire Underwriters Survey (FUS) for determining fire insurance ratings for a community. For example, it follows the life cycle program with the exception that it may award full credit for a fire apparatus older than 15 years, but not more than 20 years, in remote locations only if the piece of equipment is deemed in excellent condition and all necessary upgrades are done. The value of the additional credit in this case which is only a portion of the total grading for a final FUS rating may well be overshadowed by the cost of maintaining an older unit. In addition, the NFPA 1901: Standard for Automotive Fire Apparatus recommends the following:

D.1 General

To maximize firefighter capabilities and minimize risk of injuries, it is important that fire apparatuses be equipped with the latest safety features and operating capabilities.

In the last 10 to 15 years, much progress has been made in upgrading functional capabilities and improving the safety features of fire apparatus. Apparatuses more than 15 years old might include only a few of the safety upgrades required by the recent editions of the NFPA fire department apparatus standards or the equivalent Underwriters Laboratories of Canada (ULC) standards. Because the changes, upgrades, and fine-tuning to NFPA 1901 have been truly significant, especially in safety, fire departments should seriously consider the value (or risk) to firefighters of keeping fire apparatus more than 15 years old in first line service. It is recommended that apparatus more than 15 years old that have been properly maintained and that are still in serviceable condition be placed in reserve status; be upgraded in accordance with NFPA 1912; and incorporate as many features as possible of the current fire apparatus standard (See Section D3 of Standard). This will ensure that, while the apparatus might not totally comply with the current editions of the automotive fire apparatus standards, many of the improvements and upgrades required by the current editions of the standards are available to the firefighters who use the apparatus. Apparatuses that were not manufactured to the applicable NFPA fire apparatus standards or that are over 25 years old should be replaced.

Underwriters Laboratories of Canada

Current Underwriters Laboratories of Canada (ULC¹⁵) and NFPA 1901: Standard for Automobile Firefighting Apparatus Standards recommend using apparatus on the front line for up to 15 years, then as a backup for another four to five years. Of course, this timeline is dependent on the frequency of use, scheduled maintenance, and budgets. As

¹⁵ Underwriters Laboratories of Canada (ULC) is an independent product safety testing, certification, and inspection organization. www.canada.ul.com

indicated in Table 11, some emergency vehicles life cycles can be extended due to low usage or serviceable condition. A leading practice is to have a complete condition survey conducted to determine if there is usable life cycle remaining. This condition survey must consider the NPFA and FUS standards along with the maintenance and cost records of the respective vehicle.

Table 11: Fire Apparatus Service Schedule (Fire Insurance Grading)

Apparatus Age (Yrs.)	Major Cities ³	Medium Sized Cities ⁴	Small Communities ⁵ and Rural Centres
0 – 15	First Line Duty	First Line Duty	First Line Duty
16-20	Reserve	2 nd Line Duty	First Line Duty
20-25 ¹	No Credit in Grading	No Credit in Grading or Reserve ²	No Credit in Grading or 2 nd Line Duty ²
26-29 ¹	No Credit in Grading	No Credit in Grading or Reserve ²	No Credit in Grading or Reserve ²
30+	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 recognized testing agency on an annual basis to be eligible for grading recognition (NFPA 1071).			
² Exceptions to age status may be considered in a small to medium sized communities and rural centres conditionally, when apparatus condition is acceptable, and apparatus successfully passes required testing.			
³ Major Cities are defined as an incorporated or unincorporated community that has: <ul style="list-style-type: none"> a populated area (or multiple areas) with a density of at least 400 people per square kilometer; AND a total population of 100,000 or greater. 			
⁴ Medium Communities are defined as an incorporated or unincorporated community that has: <ul style="list-style-type: none"> a populated area (or multiple areas) with a density of at least 200 people per square kilometer; and/or a total population of 1,000 or greater. 			
⁵ Small Communities are defined as an incorporated or unincorporated community that has: <ul style="list-style-type: none"> no populated areas with densities that exceed 200 people per square kilometer; AND does not have a total population more than 1,000. 			

3.10.2 Fire Apparatus Design and Procurement

Fire apparatus is designed and tendered based on the unique requirements of the fire service and the community needs that it serves. With the design, tender and procurement processes typically taking two to three years or longer as well as with the expected life cycles of these apparatus of 20 years or more, it is important that the initial decisions accurately reflect the immediate needs and those in the future.

3.10.3 Fire Apparatus Maintenance and Repair

In Ontario, all fire apparatus with a gross weight, registered gross weight, or manufacturers gross vehicle weight rating exceeding 4500 kilograms must be inspected on an annual basis in accordance with regulations made under the Highway Traffic Act. These vehicles are required to display an inspection sticker as evidence of compliance with this requirement.

Daily driver inspections for commercial vehicles are a requirement under the Act. Fire vehicles are not included in this requirement, however most fire departments in Ontario mandate daily inspections either at the beginning of a shift, or post-trip at a minimum.

A sound and reliable preventative maintenance program is a vital component of the overall fleet management process ensuring each piece operates reliably in the way it was intended safely and effectively while assisting in making it to the anticipated life cycle. Poor maintenance scheduling or neglect on required checks and repairs can lead to accidents, breakdowns, and life safety issues. A fire apparatus pre-maintenance program should consist of the following components:

- Trip inspections (daily, pre-trip, post trip)
- Regular preventative maintenance scheduling
- Annual preventative maintenance comprehensive check

The maintenance and repair of all TFRS heavy and light emergency vehicles is skillfully handled through the Municipalities Fleet Services.

Required speciality testing and certifications are successfully handled through contract by a third-party vendor utilizing fire industry emergency vehicle technicians (EVTs).

Daily inspection sheets and post trip inspections are reviewed to ensure any necessary repairs are made as soon as possible. Recommended service schedules, testing and certifications are coordinated with TFRS administration to ensure compliance with as little disruption to service as possible. Through interviews with TFRS staff and review of records, the maintenance and upkeep of all fire vehicles are maintained to a very high standard.

3.10.4 Fire Apparatus Replacement and Dispersal

The Town of Tillsonburg has a policy for the replacement of capital equipment and vehicles. A list of all TFRS apparatus and their anticipated replacement dates has been developed and maintained. TFRS apparatus have a target replacement date of twenty years. The Town of Tillsonburg has an established capital corporate equipment and vehicle reserve fund for anticipated vehicle, apparatus and equipment including those in the TFRS. The next fire apparatus scheduled to be replaced under this schedule is 2024.

There are several assumptions that should form the criteria for fire apparatus replacement. This process for determining the appropriate dollar value required to be placed in a reserve fund to ensure sufficient monies are available at the time of replacement is based on the identified life cycle, forecasted inflation, depreciation, and salvage value of current assets. Calculating the yearly contributions is based on the number of years of expected life in the

fleet inventory. Although both NFPA and FUS have criteria on re-classifying or retiring apparatus, modifications or upgrades may be required based on age or heavy usage.

For example:

- Engines: 16-20 years frontline (FUS & NFPA), but can be reduced due to high usage
- Rescue Truck: 15 years frontline (NFPA) but can be reduced due to high usage.

Replacement lifecycles for TFRS vehicles are not consistent with lifecycles recommended by NFPA 1901 and the FUS body reporting to the Canadian General Insurance (CGI). For example (as detailed in Table 12) first line apparatus are to be utilized for up to 15 years and then serve as a backup, or in reserve capacity for up to five additional years. TFRS heavy apparatus have a planned life cycle of 20 plus years with no defined reserve status.

In review of current apparatus, a study of the original purchase price minus market depreciation is compared to the anticipated replacement cost, taking into consideration the trend in inflationary increases. The salvage or trade-in value of the original apparatus can be estimated based on industry trends. This value is subject to several considerations including:

- Age of the vehicle
- Kilometers
- General condition
- Certifications
- Annual test results

Through careful analysis the optimal replacement year can be determined. The table below shows an example of an apparatus purchased in 2007 with a 25-year replacement timeline. Assumptions need to be determined for a particular piece of apparatus to consider the type of factors above, as well as the type of requirements for the replacement apparatus to meet the needs for the next 20 plus years. Annual reserve contributions should be made to ensure sufficient funds are available at the time of anticipated replacement.

Table 12: Fire Apparatus Life Cycle Cost Projection Example

Vehicle	Year	Replacement cost based on 6.5% increase per year	Difference between original and replacement	Depreciated value
1	2007	\$240,000.00	\$0.00	\$240,000.00
2	2008	\$255,840.00	\$15,840.00	\$223,200.00
3	2009	\$272,725.44	\$32,725.44	\$207,576.00
4	2010	\$290,725.32	\$50,725.32	\$193,045.68
5	2011	\$309,913.19	\$69,913.19	\$179,532.48
6	2012	\$330,367.46	\$90,367.46	\$166,965.21
7	2013	\$352,171.71	\$112,171.71	\$155,277.64
8	2014	\$375,415.05	\$135,415.05	\$144,408.21
9	2015	\$400,192.44	\$160,192.44	\$134,299.63
10	2016	\$426,605.14	\$186,605.14	\$124,898.66
11	2017	\$454,761.08	\$214,761.08	\$116,155.75
12	2018	\$484,775.31	\$244,775.31	\$108,024.85
13	2019	\$516,770.48	\$276,770.48	\$100,463.11
14	2020	\$550,877.33	\$310,877.33	\$93,430.69
15	2021	\$587,235.24	\$347,235.24	\$86,890.55
16	2022	\$625,992.76	\$385,992.76	\$69,512.44
17	2023	\$667,308.28	\$427,308.28	\$55,609.95
18	2024	\$711,350.63	\$471,350.63	\$44,487.96
19	2025	\$758,299.77	\$518,299.77	\$35,590.37
20	2026	\$808,347.56	\$568,347.56	\$28,472.29
21	2027	\$861,698.50	\$621,698.50	\$22,777.84
22	2028	\$918,570.60	\$678,570.60	\$18,222.27
23	2029	\$979,196.26	\$739,196.26	\$14,577.81
24	2030	\$1,043,823.21	\$803,823.21	\$11,662.25
25	2031	\$1,112,715.54	\$872,715.54	\$9,329.80
26	2032	\$1,186,154.77	\$946,154.77	\$7,463.84

Figure 7: Fire Apparatus Life Cycle Cost Projection Example

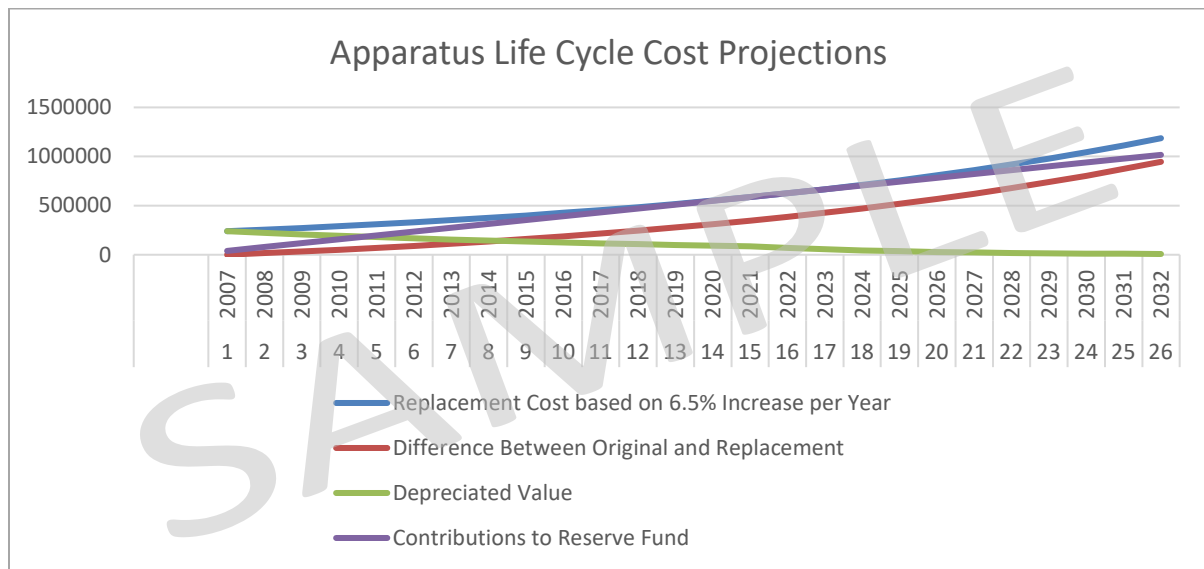


Table 12 and Figure 7 show that the monies put into the replacement reserve fund is close to the projected replacement cost in year 15 and requires additional contributions to extend past. Note the following key points:

- Five-year increase to replacement cost from 15-20 years = \$182,533
- Five-year decrease in depreciation value from 15-20 years = \$58,415
- Total increased costs to retain apparatus for additional 5 years (15-20) = \$240,948
- Additional contributions to reserve fund \$195,500
- Difference between 15 and 20 years is $\$240,948 - \$195,500 = \$45,448$ or an additional \$9,090 of contribution per year
- Changing from 15 to 20-year replacement cycle requires an increase of \$1,818 per year.

A fire service that utilizes a similar process as above, taking into consideration local conditions to determine the optimal replacement time for each major piece of apparatus will be able to accurately ensure sufficient funds are available when required.

3.10.5 Apparatus and Emergency Vehicle Fleet Inventory

TFRS through the Town of Tillsonburg, owns and maintains 3 heavy apparatus (1 engine, 1 tanker, and 1 aerial), 3 light emergency vehicles (1 command and 2 support vehicles) that are housed in their firehall. Each piece of apparatus has specific roles in anticipation of the risks in their response zone. This mobile equipment is supported by similar types of apparatus deployed out of mutual aid fire departments when requested.

TFRS inventory of apparatus and equipment is modern and well maintained. A detailed table of the current fleet is in table 13 below.

Table 13: TFRS Apparatus and Planned Life Cycle

Unit # and Type	Manufacturer	Year Built	Planned Yr. Replacement	Current kms.
Unit 70 Pumper	Pierce Saber	2016	2036	18959 KM
Unit 71 Pumper Tanker	KME Predator	2012	2032	23294 KM
Unit 72 Aerial Truck	E-One Cyclone	2018	2038	31938 KM
Unit 36 Command	Ford Explorer	2011	N/A	156 KM
Unit 35 Support Vehicle	Chevrolet 2500	2021	N/A	34821 KM
Unit 65 Support Vehicle	Chevrolet 2500	2022	N/A	2382 KM
Unit 72 Rescue	Dodge Ram 5500	2016	N/A	6342 KM

Observation #12: There is an established apparatus and emergency vehicle replacement schedule. This schedule anticipates the retirement of all apparatus and emergency vehicles at 18 years. Financial resources are allocated during the budget cycle process, however there are no dedicated reserve funds for lifecycle replacement. There should be a regular review for the optimal timelines of apparatus and vehicle replacement along with a defined financial strategy or reserve fund to ensure there are sufficient funds to meet the life cycle replacement needs of the fire service.

Further, the development of a comprehensive reserve fund process that accounts for necessary criteria to establish ideal replacement timelines for all fire apparatus and emergency vehicles. A yearly review of this plan should be undertaken to evaluate whether the schedule remains on track. Necessary adjustments to individual apparatus or emergency vehicles can be made at that time.

Recommendation #24: Determine the number and types of apparatus required to meet the service levels identified by Council.

(Suggested completion: 12-24 months)

Recommendation #25: Work with corporate finance to develop a long-term capital asset and reserve fund program with appropriate sustainable funding models for apparatus, equipment, and facilities.

(Suggested completion: 18-24 months)

Rationale: *Given the nature of emergency services and the reliance on safe and dependable equipment and vehicles, the need for regular and a critical review of these assets is important to determine if the intended life cycle is both achievable and financially responsible. Fire apparatus is routinely utilized under extreme conditions for long periods of time. The reliability of these critical pieces of equipment cannot be suspect. As stipulated in NFPA 1901, frontline apparatus is required to maintain a 95% in service status.*

In addition to maintaining a current fleet capable of providing reliable service, meeting insurance (ULC) guidelines favourably impacts municipal insurance ratings. While the life expectancy of any piece of equipment or vehicle is contingent on proper use, maintenance and repair, fire apparatus life cycles are subject to adjustments more frequently than normal service vehicles. Annual reviews of all apparatus in TFRS, including mileage, call volume, maintenance records, testing results and salvage values should be carefully done with subsequent adjustments to the original life cycle, whether reduced or extended as warranted.

Updating all apparatus and emergency vehicle replacement schedules will assist with ensuring sufficient timelines for replacement process and necessary funds are there when needed.

3.11 Ancillary Equipment

Equipment needed for field response operations such as vehicle extrication tools, hand tools and blowers, etc. are current and appropriate for the needs of TFRS. The ancillary equipment is designed and maintained to meet the department's current core service, goals, and objectives. As the response needs change or grow, additional equipment to match the service must be considered.

3.12 Personal Protective Equipment

TFRS personnel are supplied with NFPA, NIOSH and CSA approved personal protective equipment (PPE) including turnout (bunker gear), gloves, helmets, boots and any specialized gear for specific rescue and EMS operations. TFRS has installed a commercial washer for PPE and has been following a cleaning and maintenance program in compliance with NFPA 1971: Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and

Proximity Fire Fighting for the health and safety of their firefighters. As discussed previously, feedback from the interviews and surveys have raised the concern that an appropriate decontamination area within the firehall is not available. Firefighters are required to transit through the living quarters in the upper floor to access a shower facility. This is a limitation within the current building envelope.

The PPE provided is current, appropriate, and designed to meet the department's safety goals and objectives.

3.13 Specialized Operations Equipment

Effective and efficient response to an incident requires equipment designed for a specific purpose. TFRS responds with specialized equipment to incidents involving motor vehicles, Hazmat/DG incidents, technical rope rescue, ice rescue, water rescue and wildland interface fires. This equipment is typically kept on the apparatus or in-hall in anticipation of the known risks in each response zone.

The equipment currently meets the goals and objectives of the department, however, may need upgrading or replacement based on usage or change in response risks in their response zone.

3.14 Asset Management

In some municipalities, the municipal corporation manages fire and emergency services assets to take advantage of synergies with other fleet and facilities management programs. The Town of Tillsonburg maintains a commercial asset management software program with associated standard operating guidelines (SOGs). TFRS is in the process of fully integrating into the municipal asset management program.

3.15 Municipal Comparative Analysis

Comparing the TFRS to that of similar municipalities is a good way to identify relative service levels, costs, and trends. It must be noted that all communities have different attributes such as risk factors, historical decisions, and community profiles. For this reason, the comparative community analysis should be used as a base reference, not a suggestion or intention of something to be replicated in Tillsonburg. These benchmarks include budgets, service areas, service levels, and staffing levels.

For the purposes of this municipal comparator review, we used 2018-2022 information to obtain common information from each community. Although fire and emergency services have the same goal of protecting life and property, each community has its unique features in how to accomplish those goals. Therefore, there are no ideal or identical comparators for Tillsonburg.

Our main criteria for collecting information were:

- Population
- Budgets
- Department size
- Type (full-time, part-time or combination)
- Department staffing

Additional information for evaluation was:

- Number of fire stations
- Call volume
- Call types

Table 14: Participating Community Comparatives

Community	Population	Land Area (km ²)	Area of Response (km ²)
Town of Tillsonburg	19,193	22.2	25*
Town of Wasaga Beach	25,000	60	60
Town of Ingersoll	13,693	12.73	12.73
City of Kawartha Lakes	79,247	3,033.66	3,033.66

* Including Bayham automatic aid agreement

3.15.1 Department Profile

Department profile, staffing models and levels of service are based on community risk, risk tolerance and the ability for a community to pay for and sustain desired service levels.

Table 15: Community Comparative Departments' Profile

Community	Department Type	No. of Stations	Total Staff	Fire Chief (FT)	Deputy (DC) Assistant Chief (AC)	Support Staff (FT)	Suppression Staff	Fire Prevention Staff (FT)	Training Staff (FT)	Dispatch	Mechanical (FT)	Other
Town of Tillsonburg	Composite	1	49	1-FT	2(AC) - FT	0	31	1	1	5-FT 8-PT	0	0
Town of Wasaga Beach	Composite	2	38	1-FT	1(DC)-FT	1-FT	35	0	0	0	0	0
Town of Ingersoll	Composite	1	26	1 FT	1(DC)-FT	0	24	2	0	0	0	1
City of Kawartha Lakes	Composite	19	33FT 350 Vol	1	2Deputy 1District 1Platoon	4	18FT 350Vol	4	1	0	1	0

FT: Full-time PT: Part-time POC: Paid-On-Call

Note: Tillsonburg suppression staff consists of 34 volunteers.

3.15.2 Budgets

Department budgets are of specific concern to most communities. In some instances, budgeting for fire and emergency services make up a considerable portion of a community's operating budget. We evaluated the budgets for each community, and it is important to note that each is unique in how each municipality allocates their budgets.

Table 16: Community Comparative Budget Ranking

Community	Municipal Budget 2022	Emergency Services Operating Budget	% of Municipal Budget	Cost Per Capita
Town of Tillsonburg	\$27,734,900	\$2,219,600	8%	\$115.65
Town of Wasaga Beach	\$44,000,000	\$4,022,000	9%	\$160.00
Town of Ingersoll	\$16,800,000	\$1,253,667	6%	\$91.55
City of Kawartha Lakes	\$222,588,885	\$8,382,610	4%	\$105.78
Tillsonburg Per Capita Net Expenditure Fire: \$115.65				
Mean/Average Per Capita Net Expenditure Fire: \$118.25				

3.15.3 Industry Standards

Table 17: Community Comparative Standard of Cover

Community	Standard of Cover	Standard of Cover approved by Council	Is the standard based on a leading practice such as NFPA 1710/ 1720 and or the Ontario OHS Regulations for firefighters?
Town of Tillsonburg	No	No	No
Town of Wasaga Beach	Yes	Yes	Yes
Town of Ingersoll	Yes	Yes	Yes
City of Kawartha Lakes	Yes	Yes	Yes

3.15.4 Response Data

For the purposes of this municipal comparator analysis, we used 2018–2022 information to get common information from each community. Breakdowns are divided into the two following categories:

Table 18: Examples of Incident Types for Statistical Analysis

INCIDENTS BY TYPE		
EMS Related Calls		
Call Types	Pre-Hospital Care: Alpha, Bravo Charlie Delta Echo	
	Lift Assist	
	False Alarms	
Fire-Related Calls		
Fire Emergency	Alarm Burning Complaint Structure Fire Minor Fire Smoke	Car Fire Re-check Wildfire – Grass, Brush, Outdoor Oven/Pot on Stove Explosion
MVI (Motor Vehicle Incident), aka MVC (Motor Vehicle Collision)	Extrication	No Extrication
Rescue	Stalled Elevator Lake/Marine Rescue High Angle	Swift Water Building Collapse Ice
Hazmat/Dangerous Good	Highway Incident Rail Incident	Industrial Incident Resident Incident
Non-Emergency	Carbon Monoxide Gas/Oil Smell/Spill Power/Telephone/Cable Line Down Natural Gas Leak	Aircraft Standby Incident Bomb Threat Hazardous Materials Propane Leak/Smell
Other	Inspection Burning Pile Inspection Assist Other Agency Public Service	Needle Pick-up Flood Assessment Water Problem (in structure)

Note: Description and category names may not be common terminology in all jurisdictions.

Table 19: Municipal Comparative Response Call Volume

Community		Town of Tillsonburg	Wasaga Beach	Ingersoll	Lindsay*
Total Call Volume	2018	352	1562	284	817
	2019	344	1498	272	827
	2020	331	1470	186	822
	2021	328	1852	250	834
	2022	380	2037	285	1022
Fire Related Calls	2018	338	592	228	157
	2019	312	507	245	165
	2020	234	552	177	118
	2021	205	547	211	130
	2022	267	551	217	170
EMS Related Calls	2018	14	970	565	138
	2019	32	991	27	158
	2020	97	918	9	170
	2021	125	1305	39	160
	2022	113	1486	68	235

**Lindsay (an urban settlement within Kawartha Lakes) has been used a comparative based on size and department makeup. Please refer to Kawartha Lakes for other comparative information.*

There is no standard for categorizing incidents so it must be understood that these statistics are broadly based and are only general reference when comparing fire departments. The community comparative analysis can only be interpreted from an indirect basic level due the disparity from each of the surveyed communities' organizational structure, core services and levels, emergency response categorization, and financial systems. Direct comparison is strongly discouraged.

SECTION 4

INCIDENT STATISTICS AND RESPONSE PERFORMANCE ANALYSIS

4.1 Industry Standards and Provincial Legislation

The following section provides an overview of relevant industry standards and provincial legislation with respect to fire department response performance in Ontario. This section also includes a detailed analysis of the trends in incident types occurring within Tillsonburg Fire and Rescue Services (TFRS) response performance.

4.1.1 National Fire Protection Association (NFPA) Standards

The most widely accepted standards for the fire service are developed by the National Fire Protection Agency (NFPA). Established in 1986, “the NFPA is a self-funded non-profit organization devoted to eliminating death, injury, property and economic loss due to fire, electrical and related hazards (NFPA, 2021).” The NFPA has developed over 300 consensus-based codes and standards designed to improve fire department effectiveness and firefighter safety. NFPA research is applied in establishing industry benchmarks for fire department operations, training, and equipment. Many of these standards form the basis of and are referenced throughout the Ontario Fire Protection and Prevention Act, 1997 and related firefighting regulations and guidelines the Ontario Occupational Health and Safety Act, R.S.O. 1990.

The NFPA has done considerable research in developing standards and ensuring they reflect the primary value of life-safety in emergency response for responders and victims. The NFPA standard identifying firefighting operations and response performance objectives for paid-on-call departments such as TFRS is 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. This standard provides the framework for the fire department emergency response performance analysis and will be discussed in detail further in this section of this master plan.

Additionally, NFPA 1201: Standard for Providing Emergency Services to the Public outlines several practices in establishing and managing an effective and efficient fire service. It provides standards regarding governance, organizational structure, planning, and resource deployment. It will be referenced throughout this section.

4.1.2 Ontario Regulatory Framework Regarding Community Fire Safety

Ontario municipalities are required to provide a public education and fire safety program but may or may not elect to do that by establishing a fire department. The *Fire Protection and Prevention Act, 1997, S.O. 1997, c. 4* states the following:

“Municipal responsibilities

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.

Methods of providing services

(2) In discharging its responsibilities under subsection (1), a municipality shall,

(a) appoint a community fire safety officer or a community fire safety team; or

(b) establish a fire department.”

In the event a fire department is established, municipalities are required to meet the numerous requirements regarding fire department equipment, training and certification standards identified in the regulations of this act and the *Occupational Health and Safety Act, R.S.O. 1990*. Many of these requirements are based on NFPA standards. However, municipalities are not required to provide specific services or meet the service level standards identified in NFPA 1720. The response time goals and the number of required firefighters to respond identified in NFPA 1720 are an industry leading practice but not mandated.

Establishing service types and associated service levels is the responsibility of the authority having jurisdiction (AHJ). For most municipalities, the AHJ is the municipal council. Formalizing service types and service levels in policy is also considered a best practice. Fire department service types and service levels are typically established to mitigate identified community risks. However, service levels should also be achievable and affordable.

The Centre for Public Safety Excellence and International Association of Fire Chiefs developed a standard of cover framework to support the process of establishing fire department service types and service levels. It is a comprehensive process to identifying community risks, assessing fire department capability, and establishing appropriate emergency response service levels to mitigate community risks. The outcome of this process results in a standard of cover policy including service level recommendations to be considered for approval by the AHJ.

4.2 Incident Types and Frequency Analysis

Fire and rescue services typically have access to large amounts of incident and response data. Incident data can be used and reported for several purposes. Incident type and frequency data is used to analyze department activity levels and identify trends in demand for fire services. The breadth of services provided by the modern fire service is often surprising. Fire departments have evolved from responding primarily to fires to responding to a broad range of public service and emergency incidents and becoming a critical component of a community's social safety net.

Incidents are commonly evaluated at two different times during an emergency. First, the 911 call taker evaluates the information provided by the caller to categorize the incident to be dispatched. This category can determine the initial number of resources assigned to the incident including firefighters, apparatus, as well as automatic aid from neighbouring fire stations. It is beneficial to understand the breakdown of Dispatched Incident Types and consider the impact it may have had to staff turnout, assembly time, and assignment, particularly in combination and volunteer fire departments.

A second categorization occurs after the incident is resolved based on what was occurring on scene or actions taken. In Ontario, Incident Response Types must be reported through the

provincial Standard Incident Reporting (SIR) system using pre-determined codes and reporting procedures. These SIR Incident Types are further grouped into common descriptors and subtotaled to provide aggregated fire data provincially. These types and categories are particularly useful when examining compliance with NFPA standards, total number of resources on scene, and community risks.

Five years of response data provided by TFRS was analysed. The data includes all incidents from January 2018 to December 2022. Incident data is aggregated into broader categories and more specific incident categories. For example, all types of fire incidents including structural, vehicle and wildland/brush/garbage/cropland fires may be combined into a single category. This differentiation is made to provide varying levels of information as stakeholder reporting and information needs vary depending on their level of interest in TFRS activities.

Table 20 identifies all unique incidents occurring within the municipal boundary. This analysis provides a general overview of the types of emergencies that the fire department was dispatched to and their respective frequency. It does not include counts of mutual aid responses which are outside of Tillsonburg. These incident types will be discussed in further detail in this section.

Table 20: Unique Incidents within Tillsonburg (2018 to 2022)

Dispatched Incident Type	2018	2019	2020	2021	2022	Total	%
Alarm	88	94	66	107	88	443	27%
Medical	14	32	96	124	113	379	23%
Fire	49	63	59	109	72	352	22%
Hazardous Materials	42	41	41	48	43	215	13%
Rescue	33	41	37	34	52	197	12%
Other/Unclassified	10	9	7	15	10	51	3%
	236	280	306	437	378	1637	100%

The following observations regarding unique incident types within Tillsonburg were noted:

- 27% (443) of all incidents were Alarm calls.
 - 234 (53%) were due to system malfunction
 - 153 (34%) were due to accidental activation
 - 7 (1.5%) were actual emergencies
- Medical incidents accounted for 23% of all incidents which relatively low percentage of responses in comparison to many fire services providing first medical response where the percentage often exceeds 50%
- Fire related incidents were 22% of dispatched events (352). The top 4 SIR Incident Types in this category were: Power Lines Down Arcing (74), Controlled Burning (60), Fire (52), No loss Outdoor fire (44).
- Motor Vehicle Collisions (MVCs) made up 147 (75%) of dispatches to Rescue incidents.

Table 21 identifies all unique incidents occurring within the municipal boundary. This analysis provides a general overview of the types of emergencies that the fire department was dispatched

to and their respective frequency. It does not include counts of mutual aid responses which are outside of Tillsonburg. These incident types will be discussed in further detail in this section.

Table 21: SIR Incident Types within Tillsonburg (2018 to 2022)

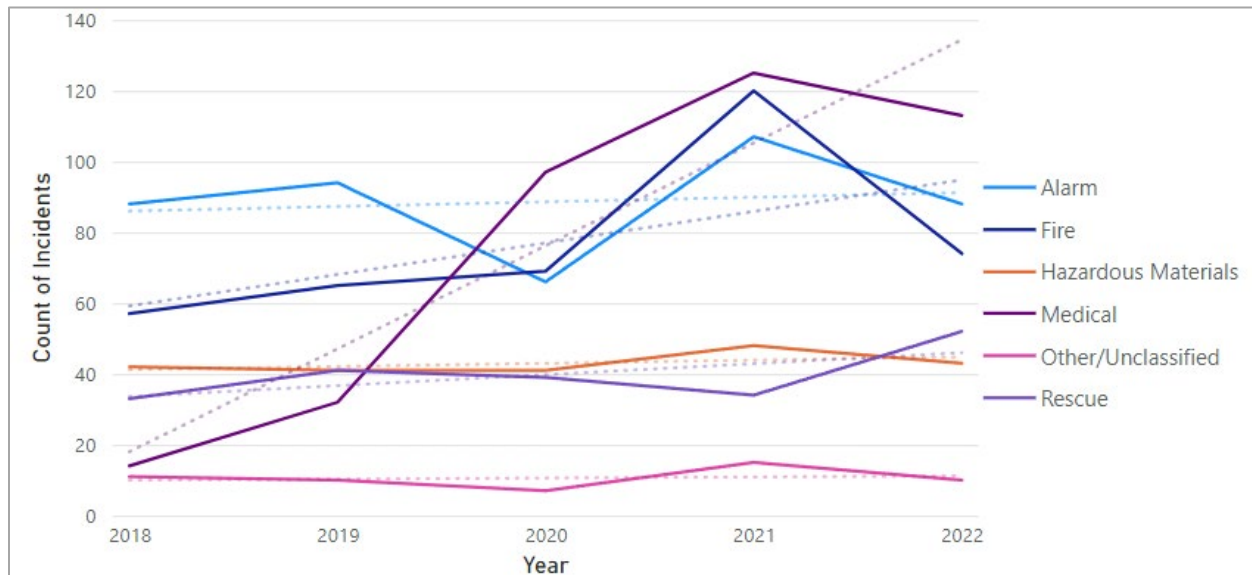
SIR Incident Type	2018	2019	2020	2021	2022	Total	%
False Fire Calls	75	83	74	108	84	424	26%
Other Response	11	28	38	99	47	223	14%
Medical/ Resuscitator	16	21	66	42	70	215	13%
Rescue	35	38	33	31	57	194	12%
Public Hazard	22	27	33	60	22	164	10%
CO False calls	32	38	24	27	28	149	9%
Property Fires/Explosions	13	17	23	25	22	100	6%
Pre-Fire Conditions (no fire)	22	16	4	19	23	84	5%
Burning (Controlled)	10	12	11	25	25	83	5%
Overpressure Rupture/explosion (no fire)	0	0	0	1	0	1	0.1%
	236	280	306	437	378	1637	100%

The following observations regarding unique incident types within Tillsonburg were noted:

- 26% (424) of all incidents were false fire calls. These were composed of System malfunction (234), Accidental activation (138), Human perceived emergencies (23), Other False Fire Calls (16), and Malicious intent (13).
- Other Responses accounted for 14% (223) of SIR incident types. The majority of these were comprised of Cancelled on route/No longer required (130), Assistance to other Agencies (51), and Other (33)
- 116 of “Cancelled Calls” or “Assistance Not Required” by other agency were initially dispatched with a medical event type.

Figure 8 illustrates the general trends seen in the broad categories of unique incidents occurring in Tillsonburg during this period. This analysis is intended to draw attention to the incident categories that are changing rapidly. A positive trend (increasing) may forecast a future need for additional resources to respond to these incidents or new mitigation strategies to address this type of community risk. A negative trend (decreasing) may identify successful mitigation efforts or a decreasing risk resulting from other changes in the community risk profile.

Figure 8: Unique Incidents by Incident Type (2018 to 2022)



The following general trends regarding Dispatched event types within Tillsonburg were noted:

- Most incident types experienced a low positive trend year over year.
- Medical incidents have saw a significant increase in 2020 and have become the highest dispatched event category the last 2 years.
- Motor vehicle collisions were relatively stable but increased in 2022 to 50 from 24 in 2021 causing a slight upward jump in the last year of the analysis.

General or broad incident type categories can be broken out into subcategories of incident types to provide more specific information regarding community risks. For example, fire incidents may be categorized into specific fire types such as brush, structure fires, garbage fires or vehicle fires. This level of detail is useful in analyzing more specific trends in community risk and service requirements. It may also be useful in identifying the need for specific risk mitigation strategies such as increased property inspections, reduced speed limits or targeted public education.

Table 22 reflects all dispatched incident types in greater detail that occurred in Tillsonburg from 2018 to 2022. This dataset included mutual aid and second-station responses to reflect the response activity from a department-wide response perspective. It is useful to include these categories to acknowledge and reflect the additional demand on the fire response system these types of incidents create.

Table 22: All Incidents/Responses by Incident Subcategory Type

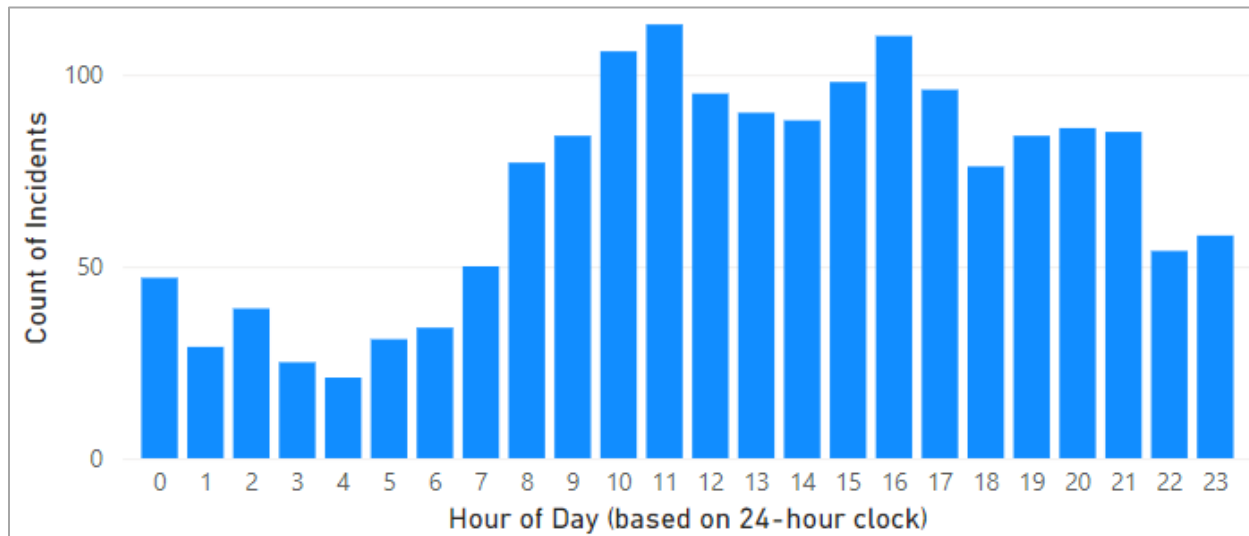
Dispatched Incident Subtype	2018	2019	2020	2021	2022	Total	Total %
Alarm	88	94	66	107	88	443	26%
Medical	14	32	97	125	113	381	23%
MVC	31	34	34	29	49	177	11%
CO	35	31	24	32	32	154	9%
Fire - Other	14	21	14	33	33	115	7%
Fire - Structure	16	16	19	25	21	97	6%
Electrical	15	14	15	38	5	87	5%
Hazmat	7	11	17	16	11	62	4%
Other / Unclassified	10	9	5	11	7	42	3%
Fire - Outdoor / Grass	3	6	7	11	9	36	2%
Mutual/Automatic Aid	8	2	10	10	2	32	2%
Rescue - Other than MVC	2	7	5	5	3	22	1%
Fire - Vehicle	1	5	4	3	4	17	1%
Assist - Outside Agencies / Public	1	1	2	4	3	11	1%
Total	352	344	331	328	380	1735	100%

The following observations regarding all incident types/all responses were noted:

- Alarms comprise a high number of incidents (26%)
- Carbon monoxide (CO) related incidents accounted for 9% of all station responses, which is a relatively high number that warrants consideration of alternative strategies such as increased public education
- Medical incidents saw a significant sustained increase in 2020

The time incidents occur is useful in identifying periods of peak and lower demand for services. Typically, demand for emergency services is lowest in the early hours of the morning. The horizontal axis in Figure 9 Incidents by Time of Day begins with 0 hours (12 p.m. – 1 a.m.) and ends at 23 hours (11 p.m. to 12 p.m.).

Figure 9: 2018-2022 Incidents by Time of Day

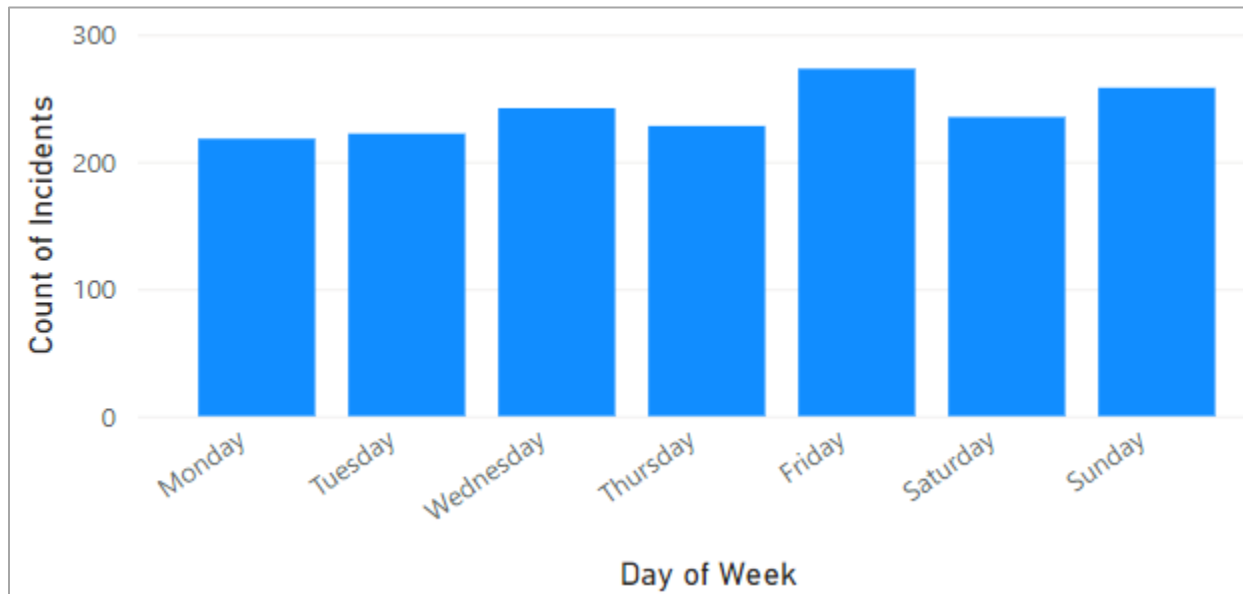


The following observations regarding the time incidents occurred were noted:

- Most incidents are occurring during the daytime hours when people are most active and or traffic flow is highest, and the majority of POC volunteer firefighters are likely to be at work
- Incidents began to increase around 5 a.m. and peaked around 11 a.m. and then again around 4 p.m.
- This two-peaked pattern is common in fire and emergency service although we see a sustained plateau later into the evening than the more common decline.
- Beginning at 10 p.m., the number of incidents declines until 4 a.m.

Similarly, monitoring the days of the week in which TFRS respond most and least frequently provide additional insight into potential pressures in service delivery. Typically, emergency services respond most frequently on Friday and Saturday.

Figure 10: 2018-2022 Incidents by Day of Week



The following observations were noted in service demands for different days of the week:

- In general, incidents occurred with similar frequency throughout the week.
- The fewest incidents occurred on Mondays and the most occurred on Fridays, but the variation was very minimal

4.3 Response Performance

The following sections provide an analysis of the response performance of TFRS. The response performance is assessed based on two key elements – the length of time taken to respond and the adequacy of resources responding to safely manage an emergency incident. The response performance goals applied in the analysis are identified in the NFPA 1720 standard. Some additional references to the NFPA 1710 standard for Career departments are provided as reference for best practice where applicable.

4.3.1 Intervention Time

Total intervention time is the elapsed time between the incident occurring and the time incident management begins. The discovery of the incident and initiation of the emergency response system, typically by calling 911. From a community perspective, this time segment can be partially managed by implementing cyclical life-safety system inspections and promoting residential fire alarms and sprinkler systems.

After the 911 call is made, the emergency response system is engaged to manage the incident and minimize its impact. Simplified, the system is composed of an emergency dispatching centre and the first responding agency. Although many of the requests for service may not require an urgent intervention, when it is, the main purpose of this system is to respond and manage the incident as quickly as is safely possible. As a result, the times taken to get all the relevant caller and incident information (Alarm Processing time), notify first responders and

have them prepare to respond (Assembly/Chute time), and drive to the incident (Travel time) are all critical elements of an effective response. These time segments are the focus of this section and are the key indicators of total response time performance.

Total response time is the best indicator of how the entire system is functioning. It also reflects the experience of the person making the 911 call. System performance can be managed and improved by implementing best practices and supporting technologies. As a result, total response time performance should be monitored and reported to the authority having jurisdiction (AHJ) regularly. The causes of significant changes in response time performance should be identified and discussed with the AHJ.

Incident management time is variable and depends on the type of incident and the resources required to safely manage it. Fire department resource availability is determined by the concentration (how many and what types of resources there are in one station) and distribution (where are those resources located relative to the incident) of fire department equipment and firefighters. Resource requirements are based on community risks. An adequately resourced response system should provide an effective response force (ERF) to safely manage commonly known risks as effectively and efficiently as possible.

Figure 11 provides an overview of the incident intervention timeline from NFPA 1710. The definitions and descriptions of the actions taken in each time segment are provided below.

Figure 11: Incident Intervention Continuum

Notification	Intervention Time			
Incident Discovery and 911 Call	Alarm Processing	Assembly / Chute Time	Travel Time	Set-up
Time unknown (Time varies with every incident)	64 Seconds	80 Seconds Fire 60 seconds medical	240 Seconds	May vary by event
Time indirectly manageable	Time directly manageable			
<div><div></div><div>Time Values</div><div></div></div>				

Discovery: This is the time between the start of the emergency incident and when a person or an engineered system has detected the incident.

Emergency 911 Call: This is the time taken dial 911 and notify the 911 call centre for the need for emergency services.

Alarm Handling: This is the time segment begins when the 911 call is answered and ends with the notification of firefighters. It is the time taken to extract the necessary information from the 911 caller to allow the proper response to be initiated.

Assembly Time: This is the time segment begins when dispatch notifies the firefighters until the vehicle leaves the station for response. Time is required for POC volunteer firefighters to respond to the station, dress in proper personal protective equipment (PPE) and safely egress the station.

Travel Time: This time segment begins when an apparatus leaves the station or otherwise begins the response to the scene of the emergency and ends at the time when the assigned vehicle arrives on scene. This time segment is a function of distance and the speed traveled.

Total Response Time (Common Definition): This time segment begins when the 911 call is answered and ends when the first apparatus capable of commencing the incident management arrives.

Total Response Time (NFPA 1710 Definition): This time segment begins when the 911 call is answered and ends when the first apparatus capable of commencing the incident management arrives and initiates to control the incident. Identified as Intervention Time in the diagram above.

Total Response Time (NFPA 1720 Definition): This time segment begins when fire department is dispatched and ends when the first apparatus capable of commencing the incident management arrives.

Setup Time: This is the time it takes (on-site) to evaluate the necessary actions, position the required resources, and commence the intervention. In the case of a fire, completing size-up, assigning the necessary tasks, and deploying resources can provide delays on scene. A well-trained crew can minimize these delays while providing a safe, successful response.

4.3.2 NFPA 1720 Performance Standards

Recognizing that POC volunteer fire departments serve a variety of community types with varying population densities and geography, NFPA developed response time and staffing standards relative to regional and individual demand zone conditions. NFPA 1720 response standards are lowered as population density decreases and travel distances increase within a demand zone increase. For example, the response goal for urban areas is to respond within nine minutes 90% of the time with 15 firefighters whereas the rural response standard is within 14 minutes 80% of the time with six firefighters. It is important to note that depending on the geography of a fire department's total response area and demand zone(s), levels of service may vary across demand zones for a fire department. Additionally, the response standards identified in NFPA 1720 are based on a structure fire of a single residence and are considered a leading practice and not a legislated requirement.

Table 23: NFPA 1720 Staffing and Response Time Standards

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

^a A jurisdiction can have more than one demand zone.

^b Minimum staffing includes members responding from the 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 town of Tillsonburg has a population of 18,615 with an area of 22.2 km². This translates to 2171 people/2.6km² and falls into the highest category of 1720 as an urban area. This category contains performance objectives that can be very challenging for a volunteer or combination fire department and in many ways is comparable to NFPA 1710 standard for career departments.

The intent of the aggressive response goals in NFPA 1720 is to minimize total intervention time. Increased intervention time can have the following important impacts on a property owner/patient/victim:

- Decreased survivability
- Increased property loss in the event of fire
- Building design restrictions for response times beyond 10 minutes
- Potentially higher property insurance premiums based on extended response times and proximity to water supply.
- Longer-term economic impacts resulting from increased recovery time.

4.4 TFRS Emergency Response Performance Analysis

The time segments identified above are calculated by the dispatching service capturing individual response timestamps throughout an incident. The timestamps are recorded by the dispatching agency and used to compile a complete history for all responding emergency vehicles to every incident. Examples of typical incident timestamps include:

- Incident begins
- Station or firefighter notification
- Apparatus responding

- Apparatus arrived
- Loss stopped
- Leaving scene
- Returned to station

The response performance analysis for TFRS focuses on emergency responses from 2018 to 2022. The timestamps are used to calculate alarm-handling time, assembly time, travel time and total response time. Emergency response performance information can be used by the fire chief and senior administration for several purposes including but not limited to:

- Monitoring response efficiency and effectiveness
- Reporting response performance to community and elected officials
- Evaluating the effectiveness and compliance with national and provincial codes
- Evaluating the effectiveness and compliance with Council policies and local bylaws
- Identifying possible improvement strategies
- Developing or modifying service level standards
- Planning for future resource needs (operational and capital)

Historically, fire departments typically reported their average performance. Average performance can be misleading as it is only achieved approximately 50% of the time. Contemporary fire and emergency services report 80th or 90th percentile performance times to provide a more precise representation of response reliability depending upon whether they are POC volunteer or career fire departments.

Emergency response time analyses typically begins with the timestamp identifying the point at which the 911 call is answered by the primary service answering point (PSAP). Once the 911 call is taken, it is transferred to the appropriate dispatching centre. All requests for service provided by TFRS are transferred and dispatched by the communications team within the TFRS dispatch centre. The incident begin time captured by the PSAP was not included in the available data. As a result, all the emergency response time segments in this analysis begin with the timestamp identifying when the alarm was answered in the TFRS dispatch centre.

4.4.1 Alarm Handling

Alarm handling time is typically the cumulative time taken for alarm answering and alarm processing in the dispatching process. The initial time stamp available for the identifying the incident begin time in the PSAP was not available. Therefore, only alarm processing was analysed. Alarm processing time begins at the point of time the alarm is transferred and answered in the TFRS dispatch centre and ends when the fire department is dispatched.

NFPA 1720 suggests this should be achieved within 60 seconds, 90% of the time for high priority fire incidents such as Structure Fires, explosions, or other response types as determined by the AHJ. Alarm handling performance is somewhat manageable by implementing best practice processes and supporting technologies. This benchmark should be monitored with the aim of ensuring this process is as efficient as possible to achieve

optimal total response time performance. However, non-emergency requests for service, identifying rural addressing and remote locations, callers requiring language translation, TTY, or Text-To-911 services may delay the interrogation time required to gather the appropriate information for first responders. NFPA allows for additional time and sets a 90 second target for these situations. No data was available to identify these scenarios as part of the analysis.

Table 24 provides a summary of times for exclusively structure fires as well as overall alarm processing performance.

Table 24: Alarm Processing Performance (in secs)

Alarm Processing	2018	2019	2020	2021	2022	5 Year
Structure Fire 90 th Percentile	53	48	90	58	70	60
60 sec Structure Fire compliance	94%	100%	83%	95%	82%	52%
50 th percentile (All Incidents)	48	44	48	45	44	45
80 th percentile (All Incidents)	65	63	64	62	59	62
90 th percentile (All Incidents)	80	75	81	78	68	77

The following observations regarding alarm processing performance were noted:

- The 90th percentile alarm processing time for structure fires met the standard exactly over the 5 years at 60 seconds.
- 2020 saw the highest times but due to the small sample size of incidents dispatched as structure fires, only 5/37 exceeded the 60 second threshold.
- Overall, the dispatch centre is performing well, and the median of all events are being dispatched in 45 seconds.

4.4.2 Assembly Time

Assembly time is calculated from the point of notification of an alarm to the point at which firefighters begin traveling to the incident. For TFRS firefighters, assembly time begins when paged and includes travel to the firehall as well as the time taken to dress in their personal protective equipment and safely seat themselves on the responding fire apparatus. NFPA 1720 does not include an assembly time standard.

Assembly time is influenced by several factors including time of incident, availability of firefighters, road conditions and distance to the fire station. As a result, it is difficult to assess whether assembly time performance can be improved given the range of factors influencing it. However, assembly time should be monitored to assess its impact on total response time and establishing achievable service levels.

4.4.2.1 Data Limitation

The data provided by TFRS are the timestamps used to calculate alarm-handling time, assembly time, travel time and total response time of the first arriving unit including the number of firefighters and their arrival time on scene. There are several limitations in this analysis that may not facilitate a full evaluation of the current response performance.

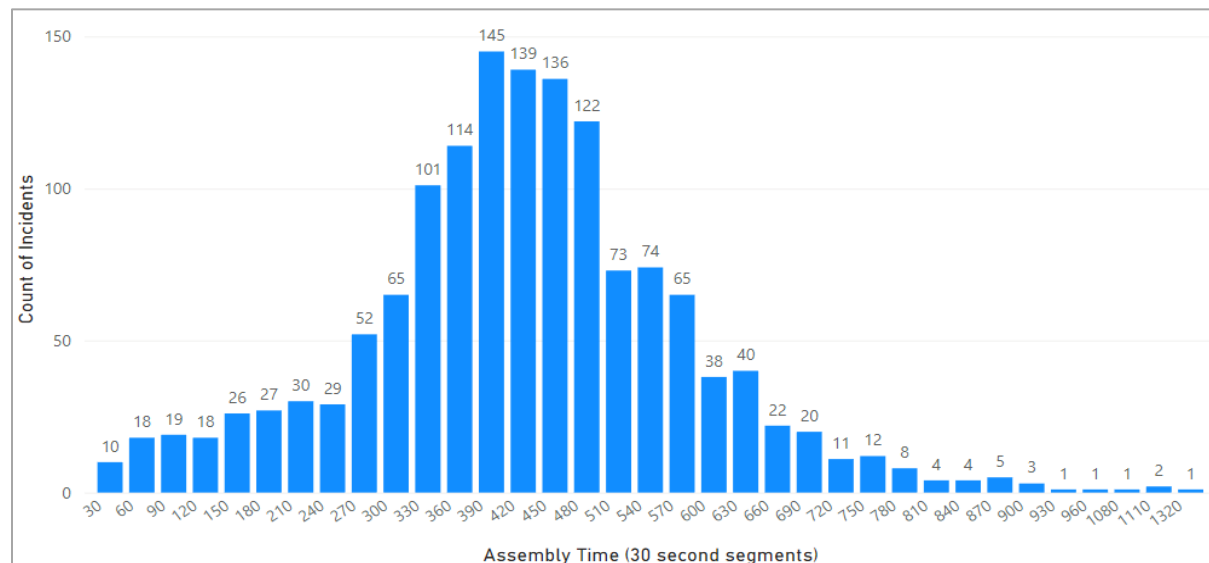
TFRS utilizes a direct ERF configuration where the firefighters assemble at the station and dress in their personal protective equipment and safely seat themselves on the responding fire apparatus before departing the station to the scene. As additional firefighters arrive at the station, additional apparatus is taken to the emergency. Therefore, the following tables regarding assembly time, travel time, and total response time is solely based upon the first responding fire apparatus only. The data measured for the highest risk category of structure fires (97 out of 1640) was significantly better than overall performance and was determined to be worthy of inclusion as a separate line.

Table 25: Assembly Performance – First Departing Only (in secs) (excluding mutual aid)

Station 80 th Percentile	2018	2019	2020	2021	2022	5 Year
Structure Fires	475	492	483	455	413	480
All other Incident Types	561	552	552	550	541	552
Overall 80 th percentile	559	549	552	544	536	547
50 th percentile	443	428	453	427	410	430

Further exploration of assembly times between the ranges 30s to 1320s in thirty-second segments shows the expected normal distribution of times and major groupings from 380 to 510 seconds.

Figure 12: Assembly Performance Distribution – First Departing Only (in secs) (excluding mutual aid)



The following observations regarding assembly time performance were noted:

- Structure fires at the time of dispatch resulted in firefighters assembling 67 seconds faster than the 80th percentile overall. Similar performance gains were noticed during analysis for vehicle fires and MVCs as well.
- The 50th percentile overall was 430 seconds (7mins 10 secs)
- Assembly times represent the largest opportunity to reduce to the overall response time to emergencies within Tillsonburg

As previously indicated, assembly time was calculated using the fire department notification and first responding apparatus timestamps. It did not include the time taken for a second or third apparatus to respond. As a result, the assembly times reported only reflect the time taken for the first apparatus. Additionally, the number of firefighters responding on the initial apparatus was not available. The assembly time is useful generalizing the time taken to respond at least one apparatus following notification. However, it is not a measure of how long it took for an Effective Response Force (ERF) to assemble and respond.

When volunteer or combination departments have staffed stations, NFPA sets an assembly standard of 90 seconds for fire incidents, 90% of the time. As departments progress and begin to hire additional career staff, NFPA 1710 decreases the time to 80 seconds assembly time for fire events.

4.4.3 Travel Time Performance

Travel time is the time taken to drive to the location of the incident. It is measured from the point at which the responding vehicle leaves the station until the point of arrival on scene. Travel time is a function of distance from the fire station to the incident and the speed travelled to the incident. It can be managed to a certain degree by distributing fire resources in optimal response locations within demand zones. Travel time should be monitored to assess the distribution and concentration of resources and assess whether additional resources are required in different locations to maintain service levels.

NFPA 1720 acknowledges the considerable variations in size and population densities of the demand zones of many POC volunteer fire services. Depending upon the specific geography, the standard offers several different response time goals, but it does not identify a specific travel time standard. Similar to assembly times the travel times for historical Structure fires was different enough than the overall performance to include separately.

Table 26: 80th Percentile Travel Performance by Station (in secs)

Station	2018	2019	2020	2021	2022	5 Year
Structure Fires (90 th)	188	239	257	213	209	230
All other Incident Types (90 th)	300	274	332	354	292	310
90 th percentile	298	274	330	353	287	305
80 th percentile	236	239	257	274	245	249
50 th percentile	169	156	156	157	154	156

The following observations regarding 90th percentile travel times were noted:

- Structure fires required 230 seconds or less travel time from the fire station.
 - This time is excellent and also meets the NFPA 1710 standard for first arriving engine.
- The remaining travel time percentile for all other incidents was 310 seconds at the 90th percentile which indicates the station is well positioned to provide overall good coverage to the town

For future reference, it may be beneficial to compare NFPA 1710 performance standards for travel time in this section. That standard defines three travel times at the 90th percentile for career fire services. The first due engine should travel 240 seconds or less, the second engine 360 seconds or less, and the full assignment of resources for the hazard should be no more than 480 seconds travel distance away. For a single-family residence, that is 16 firefighters (17 with an aerial responding). For Medium hazard occupancies such as smaller apartment buildings, the required minimum staffing under 1710 is 28 firefighters.

4.4.4 Total Response Time

The common method when measuring response time would be from the point at which the emergency call is answered in the 911-dispatching centre to the time the first fire or rescue apparatus arrives at the incident. This time best reflects the emergency system's overall response performance and the experience of the person requesting the service. For the purposes of measuring compliance with NFPA 1720 response standards, total response time is measured from the point of fire department notification to the point of the first arriving fire apparatus to Structure Fire or similar major incidents. The rationale for this approach is to acknowledge that most volunteer fire departments contract dispatch services and are not in control of the time taken for alarm handling.

As the population, geographic footprint of developed areas and community risk increase, a fire department will experience an increase in concurrent requests for service, longer travel distances and a higher frequency of complex incidents. As a result, emergency response times will gradually increase as demand for service increases.

Table 27 and Table 28 identify the 90th percentile emergency response time performance for TFRS from the time of dispatch until the apparatus arrives on scene. NFPA 1720 identifies that urban demand zones shall have 15 firefighters on scene within 9 minutes (540s), 90 percent of the time. These standards are based on the effective response force for a single family 2000 sq. ft. house with no basement. Given that resources are deployed to match the dispatched incident type, it would be unfair to consider incidents in this analysis where resources were withheld at station or didn't respond in order to measure a department's ability to muster the ERF necessary to meet NFPA 1720. The 50th percentile and 80th percentile times are offered purely for comparison as part of this analysis. In addition, the median of number of firefighters on scene at the 9-minute mark and median total number of firefighters is included as a reference.

Given the difficulty in achieving NFPA 1720 in an urban setting for a volunteer department, compliance with a 10-, 12- and 14-minute response time goals were provided to give some insight to achievable response time service levels. These times ultimately, it is left to the AHJ to decide on service level and performance targets.

Table 27: NFPA 1720 Structure Fire Response Performance (in secs)

Station	2018	2019	2020	2021	2022	5 Year
90 th percentile	681	847	758	709	720	736
80 th percentile	630	740	664	641	595	672
50 th percentile	549	612	574	539	478	539
Structure Fires Dispatched	17	19	15	14	22	97
# of FFs on scene once all units arrive (50 th)	16	17	14	14	17	15
# of events with 15 FFs < 540 seconds	0	0	1	0	1	2
NFPA 1720 compliance	0%	0%	6%	0%	5%	2%

Table 28: Overall Response Performance (in secs) From Dispatch to First Unit Arriving on scene.

Station	2018	2019	2020	2021	2022	5 Year
90 th percentile	823	823	911	844	853	854
80 th percentile	762	746	757	771	747	759
50 th percentile	609	606	608	602	570	599
600 sec compliance	49%	47%	48%	50%	57%	50%
720 sec compliance	74%	71%	74%	71%	76%	73%
840 sec compliance	91%	91%	87%	90%	89%	89%

The following observations regarding TFRS emergency response performance were noted:

- Over the five-year period, the department was effectively not able to meet NFPA 1720
 - This standard is very aggressive and effectively not achievable in a volunteer system.
 - The two events in five years where this was met had assembly times of 88 seconds and 206 seconds. This likely indicates firefighters were already present at the station when the incident was dispatched.
- Although response times were improved for structure fires and reflects an increased haste of firefighters to arrive at the station and mount apparatus, assembly time will be the largest barrier to improving response performance.
- Given the current deployment model, an extended response time goal from dispatch until apparatus arrival of 14 mins (840 seconds) is achievable using a strictly volunteer model.
- Cumulatively, response times remained relatively stable over the 5 years.

Included in this FSMP at section 2 is a recommendation to formally establish emergency response time performance service levels. In addition, this recommendation includes the

monitoring and tracking of the current emergency response system capabilities in terms of the number of firefighters responding either directly or converging on scene, or the time increment to achieve a safe ERF and completion of the critical tasks.

4.5 Response Coverage Mapping

This section provides mapping of the response coverage for Tillsonburg Fire and Rescue Services. The methodology used to calculate the theoretical travel time and area coverage was based on the following formula:

Response Time Goal – Assembly Time = Theoretical Travel Time

For example:

600 secs (10 min), 720 secs (12 min) or 840 secs (14 min) - (80th percentile assembly time of 547 seconds) = theoretical travel time (in secs)

Given that assembly time is the largest limiting factor to achieving NFPA 1720 standards, several options have been generated for establishing longer response time goals as well as moving towards more of a combination department with full-time firefighters in station during peak times and supplemented by the larger volunteer team.

The theoretical travel time and road network travel speed data were applied to generate the response area of each station in the geographic information system (GIS) mapping program.

The calculated theoretical travel time using this approach is a conservative calculation. Use of the 80th percentile assembly times to calculate theoretical travel time and corresponding area coverage for 10, 12 and 14-minute response time goals is highly reliable. When the 50th percentiles times are used, the associated assembly times would only be achieved 50% of the time. In other words, the theoretical travel time and area coverage would only be achieved about 50% of the time. Whereas by using the 80th percentile times, the mapped area coverage is somewhat smaller but should be achieved 80% of the time and is therefore a more reliable representation of response area coverage within a given time.

Table 29: Theoretical Travel Time Calculation (in secs)

	5-Year 80 th Percentile Assembly Time	Theoretical 600 Second Response Travel Time	Theoretical 720 Second Response Travel Time	Theoretical 840 Second Response Travel Time
Tillsonburg	547	53	173	293

The following maps are provided to indicate emergency calls densities (heat map), current response performance and options for consideration:

- Map 2: emergency call density map
- Map 3: 10 minutes response coverage based upon 53 seconds travel time (based upon actual response performance)
- Map 4: 12-minute response coverage option 1 (based upon 173 seconds travel time)
- Map 5: 14-minute response coverage option 2 (based upon 293 seconds travel time)

- Map 6: NFPA 1710 option 3 (based upon single station with composite staffing response and 240 seconds travel time)
- Map 7: NFPA 1710 option 4 (based upon 2 station coverage with composite staffing response and 240 seconds travel time)

Table 30 below provides an analysis of the response various options depicted in the maps provided:

Table 30: Response Performance and Options

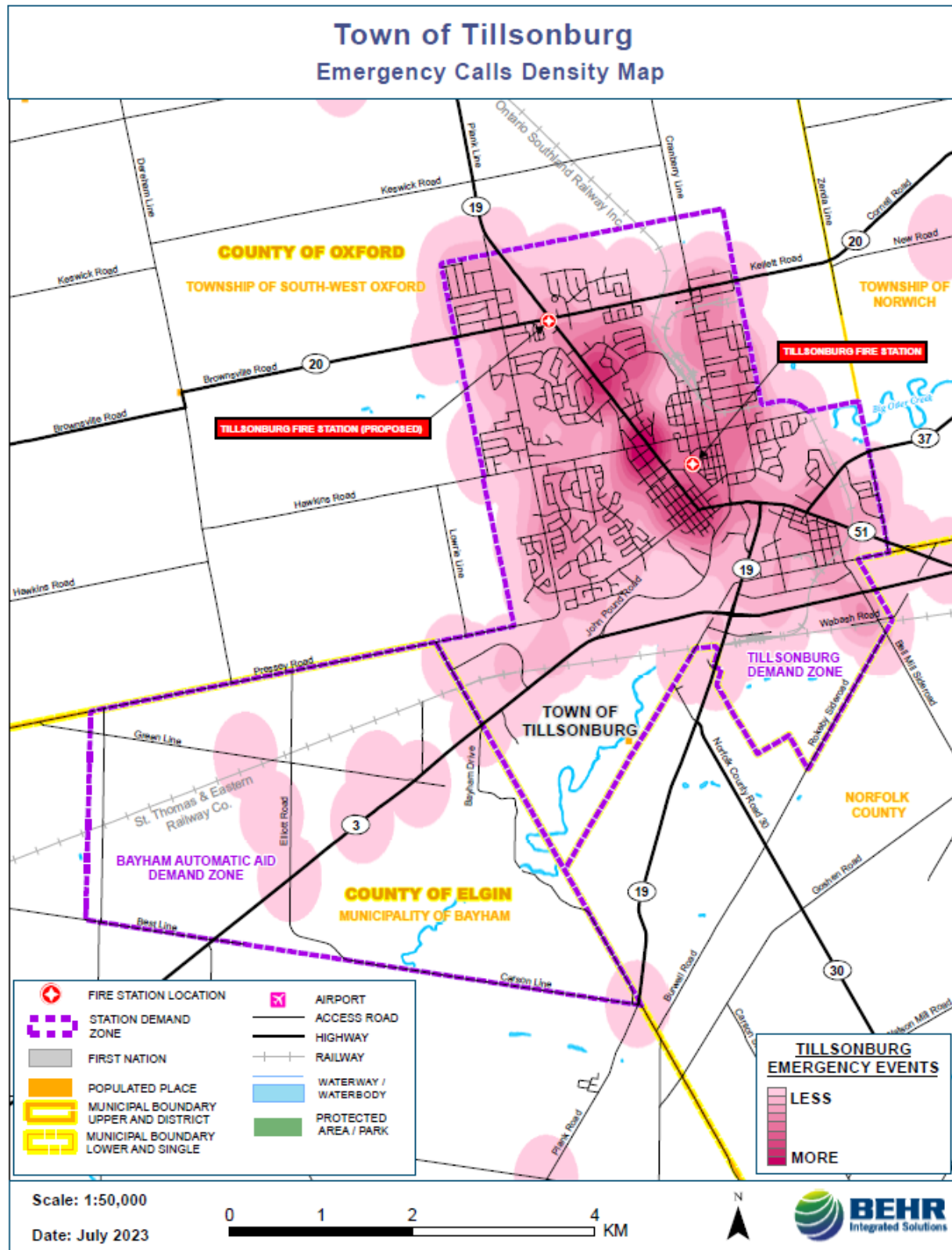
Option	Pros	Cons
Option 1: Maintain Status quo and establish extended response time goals	<ul style="list-style-type: none"> • No change in budgetary impact • Response time performance can be measured against achievable benchmarks. • May choose to define different goals based on different demand zones and resident expectations. 10-, 12-, and 14-minute response coverage mapping provided as potential options in Map 3, 4, and 5. 	<ul style="list-style-type: none"> • May experience increase in future response challenges, as well as challenges with recruitment and retention. • Longer response times and increased demand for resources as community growth increases the potential impact of emergency incidents. • Extended response time goals will negatively impact survivability of occupants and firefighter safety for structure fires
Option 2: Open a second deployment location in the north side of town and retain the volunteer staffing model	<ul style="list-style-type: none"> • May improve assembly times by locating a deployment location closer to firefighter residences. May see assembly times improve by a few minutes depending on time of day. • Creates opportunities to address other space concerns for training and other required facilities. • A location north of the train tracks provides guaranteed response if a train is blocking the crossing and preventing travel north 	<ul style="list-style-type: none"> • Increase capital costs. • The transition and subsequent operation need to be guided carefully to avoid negative cultural impacts if the primary station “loses” equipment to the new station. • Administration of two stations becomes logistically harder when leadership is in one location. Organizational structure would need to include an additional frontline manager to oversee routine and day to day operations of a second station. • Response times will improve for the initial alarm assignment. The achievement of the required full alarm assignment and ERF will remain a challenge.

Option	Pros	Cons
Option 3: Maintain one station and hire full-time firefighters during peak periods, with future expansion to 24x7. <i>(Recommended option)</i>	<ul style="list-style-type: none"> Assembly time target becomes 90 seconds or less, and the 5.5-minute or less (assembly + travel time) target allows 94.8% of building coverage and 94.7% of road network coverage within the Town. Peak time coverage can be implemented over a few years to reduce the tax impact to the operating budget. Early intervention in an emergency is known to save lives, reduce property loss, and shorten the duration of the emergency. Map 6 illustrates the NFPA 1710 standard travel distance goal of 240 seconds in a full-time station. 	<ul style="list-style-type: none"> Significant operational budget impact of approximately \$1,250,000 (10 full time staff at full implementation) Increased demand for administration resources and scheduling. Would require additional renovations of existing station to support staffing transition. Assembly times for additional firefighters would remain a challenge for low frequency, high impact incidents (e.g., structure fires).
Option 4: Combination of Option 2 and 3.	<ul style="list-style-type: none"> Reduced assembly times in the north combined with full-time response out of primary station would decrease the amount of time it takes to assemble 15 firefighters on scene. Map 7 shows two station configuration with a 240 second travel time for both stations. This allows for a 300 second assembly time to meet the 1720 standard in the north and aligns to the 1710 standard for travel time out of the south station. Building coverage and road network coverage improved to 99.5% and 96.9% respectively within 5.5 minutes (assembly + travel time). 	<ul style="list-style-type: none"> Highest budget impact with both capital and operational budget impacts Would need additional administrative support to oversee two station operations.

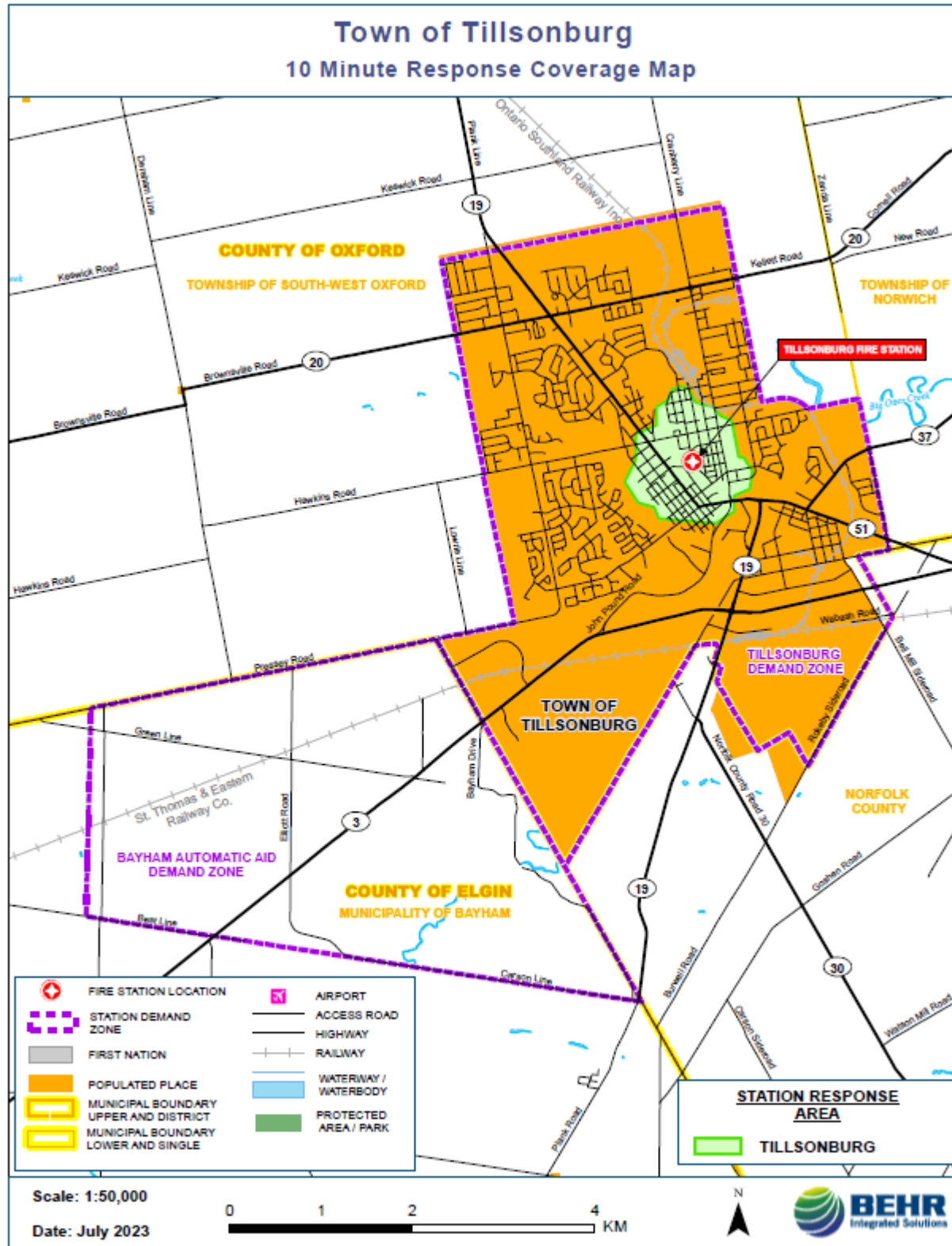
An incident heat map can provide insight into the historical occurrence of incidents and provide a visual representation of higher demand zones for services. When used in conjunction with response coverage mapping, the areas of highest demand should be located closest to a fire station, if possible.

The following map depicts the relative density of historical incidents and plots both the current station as well as the proposed station location in mentioned in option 2 and 4.

Map 2: Incident Density Map



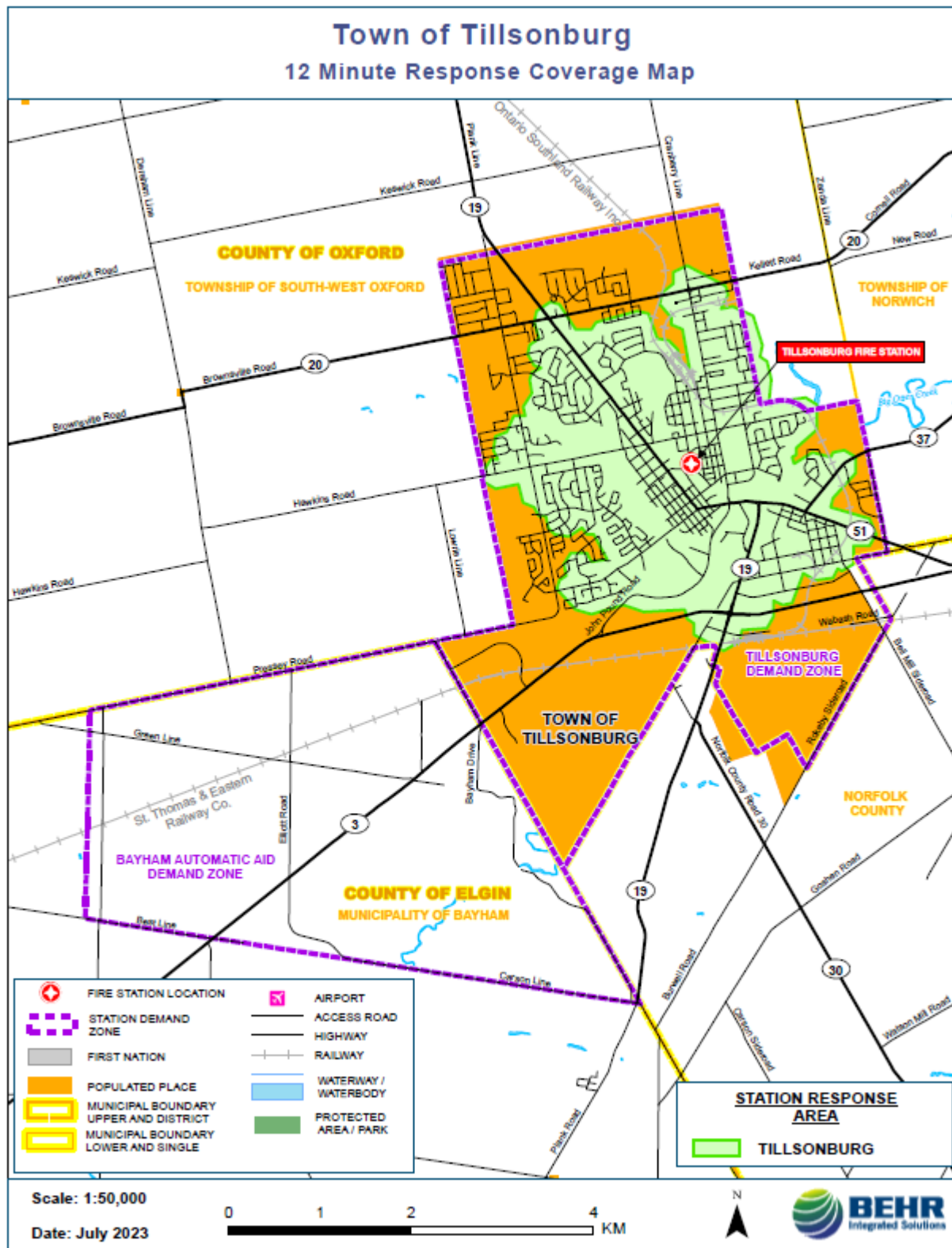
Map 3: Option 1: 10-Minute Response Coverage Map (53 second travel time)



Observations on response coverage based on a 10-minute response goal:

- Station response coverage is relatively limited as the potential travel time to achieve the 10-minute goal is 53 seconds for the first unit to arrive on scene.

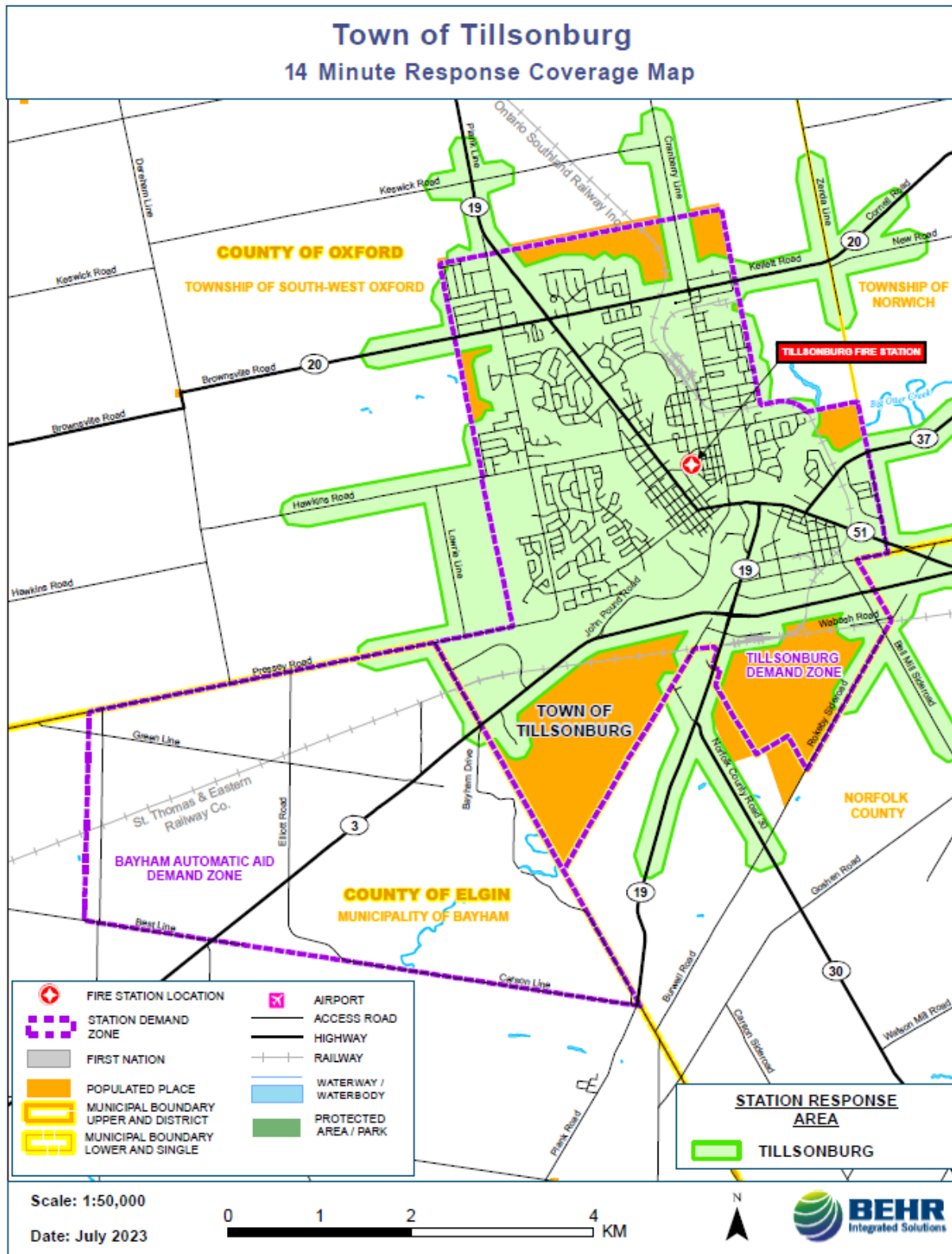
Map 4: Option 1: 12-Minute Response Coverage Map (173 second travel time)



Observations on response coverage based on a 12-minute response goal:

- Considerable improvement in the coverage of the town
- Limited coverage in the southwest commercial/industrial area of town which represents areas of higher dollar loss and risk.

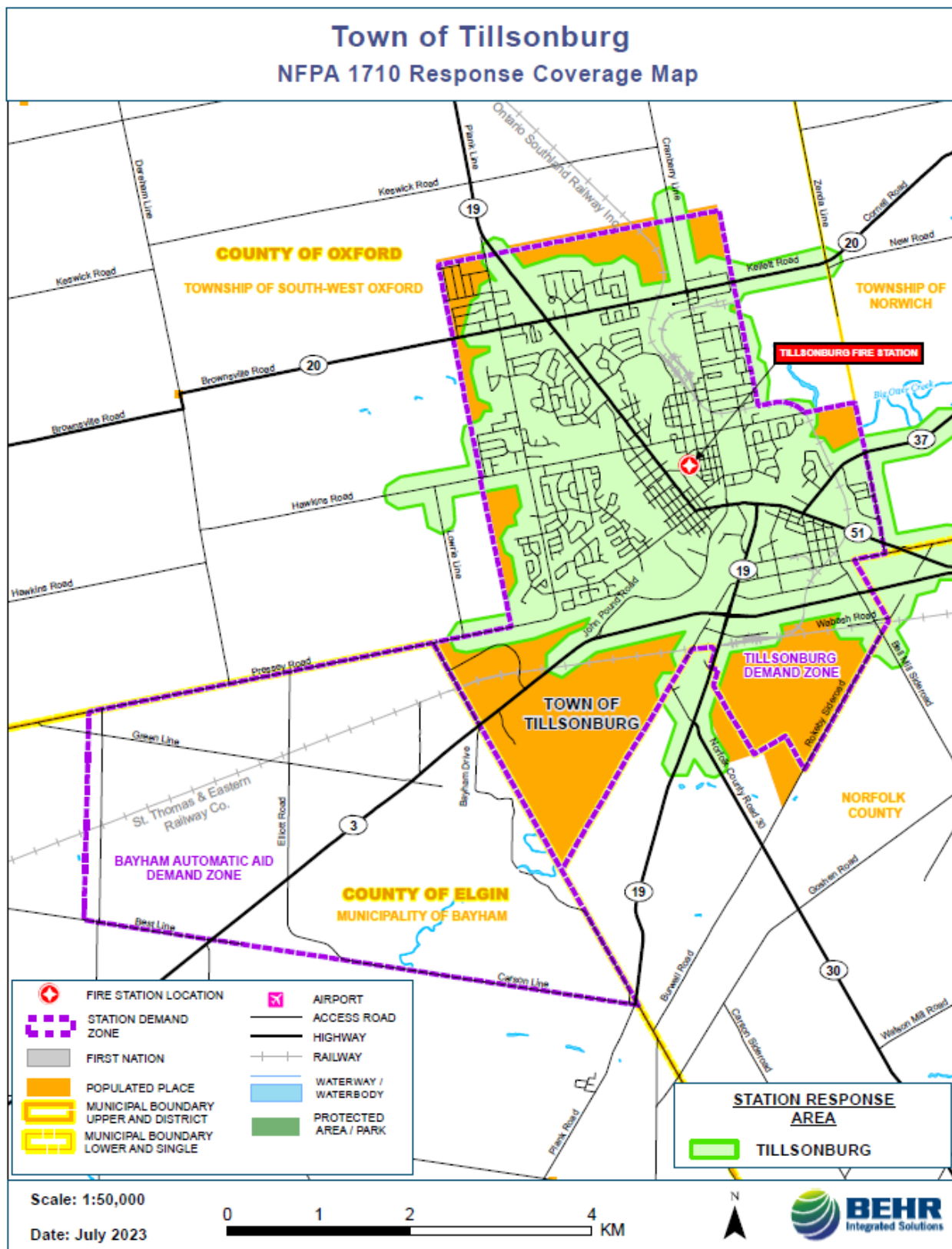
Map 5: Option 2: 14-Minute Response Coverage Map (293 sec travel time)



Observations on response coverage based on a 14-minute response goal:

- Achieved full coverage of the town using the longest benchmark option
- This option extends well beyond the recommended standard for response time for a community with the population density of Tillsonburg.

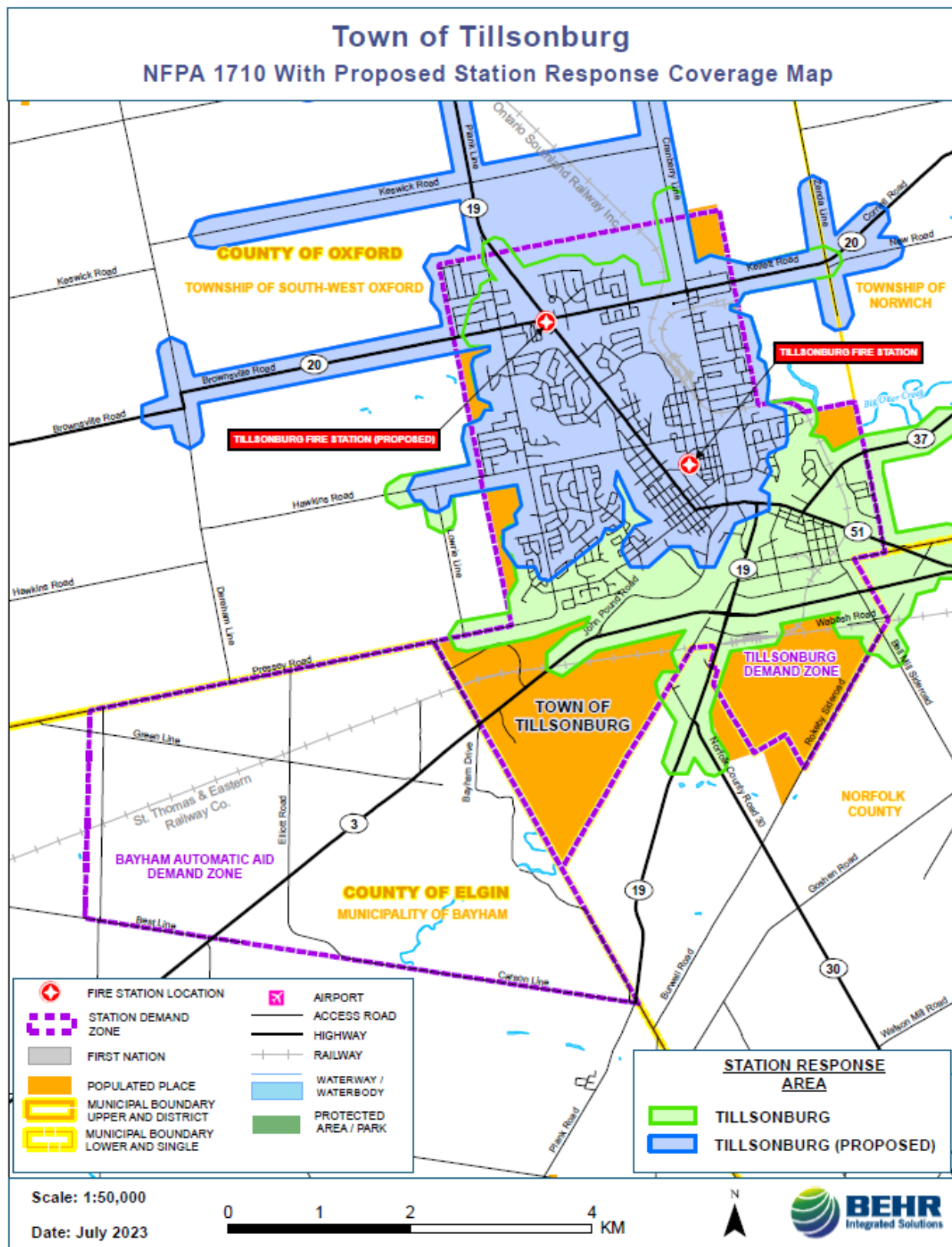
Map 6: Option 3: NFPA 1710: 2 Response Coverage Map (240 second travel time)



Observations on NFPA 1710 coverage map:

- Achieved nearly complete coverage of the town when station is staffed and located in its current location
- Current station is well positioned for a transition to a combination department and eventually career department.
- Additional units staffed by career staff could be located out of this station and still achieve 1710 benchmarks for full alarm travel time

Map 7: Option 4: NFPA 1710 with Proposed Station Response Coverage Map (240 second travel time)



Observations on NFPA 1710 coverage map with Proposed Station:

- The 240 second travel time from the second station in the north covers a good portion of Tillsonburg. This travel time allows for 300 seconds to assemble at the station to arrive within 9 mins under the NFPA 1720 standard.
- Depending on work and home locations of firefighters, this may provide a significant improvement to assembly times.
- For incidents in the north, you are likely to have simultaneous arrival of units from both stations for increased ability to intervene and mitigate the evolving incident.

Observation #13: A significant portion of incidents are related to alarms ringing with a majority related to malfunctioning fire or CO Alarm equipment.

Recommendation #26: *Conduct an in-depth analysis to determine the current trends of alarms ringing with the view to initiating preventative measures to reduce the occurrence and costs of false alarms.*

(Suggested completion: 12-24 months)

Rationale: *High volume of alarms ringing (false alarms) incidents can create apathy and low turnout numbers. This results in lower resources in the instances where a real emergency exists. Effective public education, as well bylaws including proper enforcement penalties and fees for recurring and/or nuisance alarms will assist with minimizing unnecessary draw on resources. There is an already pre-existing bylaw enacted to assign fees but allows for one free false alarm per calendar year. Further public education on the false alarm bylaw and the impact to the fire department as well as re-evaluation of the subsequent fine amounts may enhance the bylaws effectiveness in reducing false incidents.*

4.6 Effective Response Force

This section provides further explanation on the importance of assembling an effective response force (ERF) comprising of adequate firefighters and equipment to manage emergency incidents safely and effectively.

ERF standards are based on fire response research completed by organizations such as NFPA and the National Institute of Standards and Technology (NIST). These standards are established to ensure adequate resources are available to complete critical tasks in a safe and timely manner. NIST research identified over 22 essential fire ground tasks at a typical single-family house fire. Ideally, NFPA 1710 suggests a minimum of 16 firefighters, or four companies of four firefighters, are required for a full alarm assignment (17 if an aerial device is used) for residential house fire. This goal is typically only achieved by urban metropolitan fire departments. However, the key point is that even a low-risk structure fire requires considerable resources to complete concurrent tasks and initiate interventions as quickly as possible.

NFPA 1720 identifies the minimum number of firefighters that should respond to a fire incident within a specific timeframe. For urban responses, a minimum of 15 firefighters should arrive within 9 minutes, 90% of the time. Rural responses require a minimum of six firefighters to

respond within 14 minutes, 80% of the time. timeframe however they did meet the 15 firefighters for structure fires 50% of the time. Table 31 summarizes the median number of firefighters that responded to different incident types.

Table 31: Median Number of Personnel on Scene by Incident Type

Incident Type	2017	2018	2019	2020	2021	5 Year
Alarm	8	8	8	6	8	8
Assist - Outside Agencies / Public	0	0	2	4	9	4
Carbon Monoxide	8	8	5	4	5	6
Electrical	8	8	5	4	9	4
Fire - Other	4	5	4	4	4	4
Fire - Outdoor / Grass	12	9	4	7	9	8
Fire - Structure	16	17	14	14	17	15
Fire - Vehicle	9	10	10	8	10	9
Hazmat	8	10	8	8	9	8
Medical	8	5	4	4	4	4
MVC	7	6	8	8	8	8
Other	7	4	7	8	6	6
Rescue	6	9	9	14	14	9

4.7 Critical Task Analysis

A critical task analysis for common incident types illustrates the resources required to achieve tactical objectives based on resource availability. The rationale for completing a critical task analysis is to identify whether response policies and guidelines align with available resources. In other words, are enough firefighters typically responding to complete the critical tasks on emergency scenes in a safe and timely manner.

However, the optimal number of firefighters are not always available. Response policies and guidelines should identify critical task assignments and tactical objectives based on available resources. The optimum numbers of firefighters to manage larger and more complex incidents may not be dispatched initially due to the availability of firefighters. As a result, tactical objectives should be scaled to reflect these limitations. For example, an interior fire attack or rescue may not be possible with a single engine company and a limited water supply. Response policies or guidelines should also identify a contingency plan to call-in of off-duty firefighters or initiate mutual aid resources/automatic aid for larger incidents complex incidents.

The following tables provide examples of critical task analyses that should be embedded in fire department standard operating guidelines or policies. The purpose of completing a critical task analysis is to establish the ERF response requirements and embed task assignments in standard operating guidelines. The examples provided are intended to illustrate leading practices with respect to the ERF required to safely manage commonly occurring emergency incidents. They

are provided as a guide and not intended to specifically represent TFRS response capacity or apparatus.

Table 32: Low Risk: Small fire (no exposures): garbage, vehicle – private, grass, investigate (external), monitoring alarm (w/o confirmation)

Initial Deployment	No. FF	Task Assignment
Engine	4	Incident Command, Scene Safety, Size up, IAP Development, Accountability, Resource Determination, Water Supply, 360 assessment, Forcible Entry, Primary Search, Fire Control, Incident Stabilization
Total Personnel	4	

Table 33: Moderate Risk: Grass/wildland/brush fire (with exposures)

Initial Deployment	No. FF	Task Assignment
UTV (Support vehicle requested as required)	4	Incident Command, Scene Safety, Size up, IAP Development, Accountability, Resource Determination, Water Supply, Fire Control, Incident Stabilization
Tender	2	Water Supply
Engine	4	Firefighters for Operations
District Chief	1	Transfer of Command, Scene Safety, IAP Confirmation and Evaluation, Accountability, Resource Management
Total Personnel	11	

Table 34: Moderate Risk: Attached garage, single family residential (detached/duplex)

Initial Deployment	No. FF	Task Assignment
Engine	4	Incident Command, Scene Safety, Size up, IAP Development, Accountability, Resource Determination, Water Supply, 360 assessment, Forcible Entry, Primary Search, Fire Control, Incident Stabilization
Ladder (if available)	4	Scene Safety, Water Supply, Aerial Operations, On-deck Assignment, Primary Search, Fire Control
Rescue	4	Scene Safety, On-Deck, Primary/Secondary Search, Fire Control
2 nd Engine	4	Scene Safety, Water Supply, On-deck Assignment, Primary Search, Fire Control
District Chief	1	Transfer of Command, Scene Safety, IAP Confirmation and Evaluation, Accountability, Resource Management.
RDU & Pickup truck		Rehab, Command area, protection from elements
Total Personnel	17	

Table 35: Moderate Risk: Medical incident, cardiac arrest (VSA)

Initial Deployment	No. FF	Task Assignment
Engine or Rescue	4	Scene safety, Patient Assessment/CPR, Patient History, Apply Automatic External Defibrillator, Assist with Patient Packaging
Total Personnel	4	

Table 36: Moderate Risk: Medical incident, vehicle vs. pedestrian

Initial Deployment	No. FF	Task Assignment
Engine	4	Incident Command, scene safety, patient assessment / Care, patient packaging, Traffic Management
Rescue	4	Stabilization, Extrication, Traffic Management
Total Personnel	8	

Table 37: Moderate Risk: Motor vehicle crash (1-3 private vehicles)

Initial Deployment	No. FF	Task Assignment
Rescue	4	Incident command and size-up, safety, establish outer perimeter, pump operation, 2 FFs prepare hand line.
Engine	4	Establish inner perimeter, triage patients, patient care, extrication, patient packaging.
Total Personnel	8	

Table 38: Moderate Risk: Surface water, swift water or ice rescue, animal rescue

Initial Deployment	No. FF	Task Assignment
Water Rescue Unit	4	Officer of first arriving unit on scene assumes command, size up, scene safety and communications, patient contact, shore rescue if possible or water/ice rescue if required.
Rescue	4	Addition Resources for Shore operations, On Deck, Patient care
Squad	4	Addition Resources for Shore operations, On Deck, Patient care
District Chief	1	Overall Incident Command, safety, accountability, resource management.
Total Personnel	13	

Table 39: Moderate Risk: Small quantity (<20 L) of known product (gasoline, anti-freeze), open space natural gas smell or odor from unknown source

Initial Deployment	No. FF	Task Assignment
Engine	4	Incident Command, Scene Safety, Size up, IAP Development, Accountability, Resource Determination, Water Supply, 360 assessment, Forcible Entry, Incident Stabilization
HAZMAT Unit	4	<ul style="list-style-type: none"> • Hazard and risk evaluation • Selection of personal protective equipment • Information management and resource coordination • Implement response objectives • Decontamination and clean-up operations • Terminate the incident
Total Personnel	8	

Table 40: High Risk: Commercial, industrial, strip mall, warehouse, mid-rise residential

Initial Deployment	No. FF	Task Assignment
Ladder (if available)	4	Incident Command, Scene Safety, Size up, IAP Development, Accountability, Resource Determination, Water Supply, 360 assessment, Aerial Operations, Forcible Entry, Primary Search, Fire Control, Incident Stabilization
Engine	4	Scene Safety, Water Supply, On-deck Assignment, Primary Search, Fire Control
Rescue	4	Scene Safety, On-Deck, Primary/Secondary Search, Fire Control
3 rd Engine	4	Scene Safety, Water Supply, On-deck Assignment, Primary Search, Fire Control
District Chief	1	Transfer of Command, Scene Safety, IAP Confirmation and Evaluation, Accountability, Resource Management
RDU & Pickup	2	Rehab, Command area, protection from elements
Total Personnel	19	

Observation #14: As detailed at Section 2, during the period 2021-2036 it is projected the town will experience 16.5% growth. This level of growth combined with the current assembly time and effective response force shortfall will further challenge TFRS. This growth will likely increase call volumes and pressure on the volunteer staffing model to meet emergency response performance targets that are based upon the identified risk factors. Total response time for volunteer staffing models has the assembly time as the largest limiting factor towards achieving performance targets.

Recommendation #27: Implement Option 3 and transition to a composite fire department with the staffing of 10 firefighters (5 per platoon) to cover 12-hour day shifts when activity is at its peak.

(Suggested completion: 12-96 months)

Recommendation #28: Develop a part-time firefighter program, utilizing existing qualified volunteers to maintain on-duty numbers. This will allow for provisions of vacation, sick-time, and enhance training, inspection, administration, education, and initial emergency response. The goal is to transition to a full-time composite staffing model, supporting the immediate term.

(Suggested completion: 12-24 months)

Rationale: Due to the increased risk to the public at large as population density increases, the frequency of events will increase but also the possibility of escalating emergencies that can spread faster. Early intervention by a full-time day shift would allow additional time for volunteer resources to arrive to fully control the incident. A full-time crew may also be able to handle smaller incidents requiring only an ERF of 4 firefighters such as minor MVC's, alarm conditions, small fires, medical calls, and/or citizen assists. The 10 firefighter positions can be hired in stages to minimize the tax impact in a single year. This in turn reduces the workload for the volunteer staff and response pressure during daytime peak periods and reduced availability of the volunteers. Furthermore, implementation of option 3 during the intermediate period of two to seven years will provide the timeline to monitor areas of growth and the potential need for a second fire station.

4.8 Measuring, Managing and Reporting Performance

Performance measurement and reporting is key to moving towards a databased culture of performance improvement and away from mere opinion. Performance measurement and reporting supports the following:

- Determining a baseline performance level according to the indicators
- Establishing achievable service goals based on current performance.
- Identifying the gap between desired goals and current performance levels
- Tracking progress toward achieving goals.
- Benchmarking performance between departments

- Identifying problems and root causes
- Planning for the future

Performance data must be valid and reliable to generate useful and trusted performance reports. When interviewing 911 and non-emergency callers, the dispatcher identifies the incident type and captures a series of incident response time benchmarks. This information is then passed on to TFRS officer and used to complete their incident report. The report data is entered into the department's record management system (RMS). Manual entry of response timestamp data is time consuming and prone to have more errors.

Operational performance data and service level expectations should be regularly reported to staff. Timely performance reporting reflecting operational performance metrics and service levels is key to implementing performance management and system improvements. One approach to providing timely information to fire staff is develop a performance dashboard. CAD and RMS technologies must be integrated to support this tool.

Observation #15: TFRS' standard operating guidelines do not identify the number of firefighters and resources required to complete tactical or critical tasks. Critical task analyses will clarify incident resource requirements and identify the critical tasks to clarify firefighter tasks and manage an incident efficiently and safely. A common practice for POC services is to have one officer and three firefighters either onboard before exiting the station for the first alarm assignment, or fully established on scene before attempting the required critical tasks.

Recommendation #29: *Complete critical task analyses for common incident types in response SOGs. Additionally, tactical ERF objectives in SOGs should be scaled to the resources available in the event there are not adequate firefighters available to complete all critical tasks.*

(Suggested completion: 12-18 months)

Rationale: *POC volunteer staffing models are limited by firefighter availability and ability to respond. Occasionally this limitation can result in inadequate staffing for more complex and larger incidents. As a result, tactics and critical tasks should be scaled to reflect available resources. This may cause a fire fighter to be conflicted if a potential rescue is needed but staffing on scene does not support this action. For example, if the number of assembled firefighters or water supply are not sufficient to support an interior fire attack or rescue, fire tactics should be limited to exterior and defensive operations. Critical task analyses should be used to identify operational limitations in policy to clarify incident command objectives and maintain safe operations.*

Observation #16: TFRS reports quarterly activity to council on a variety of topics including call volume, public education events, firefighter turnout, incident types, ongoing fire department projects. The current report does not contain performance goals or historical information, the ability to identify benchmarks. Monitoring changes in service demand, and response performance is an important management function.

Recommendations #30: Utilize a purpose-built fire service records management system to ensure support to all programs required to meet the service levels.

(Suggested completion: 12-24 months)

Recommendation #31: Implement performance goals and regular reporting using established benchmarks to service levels approved by Council.

(Suggested completion: 1- 12 months)

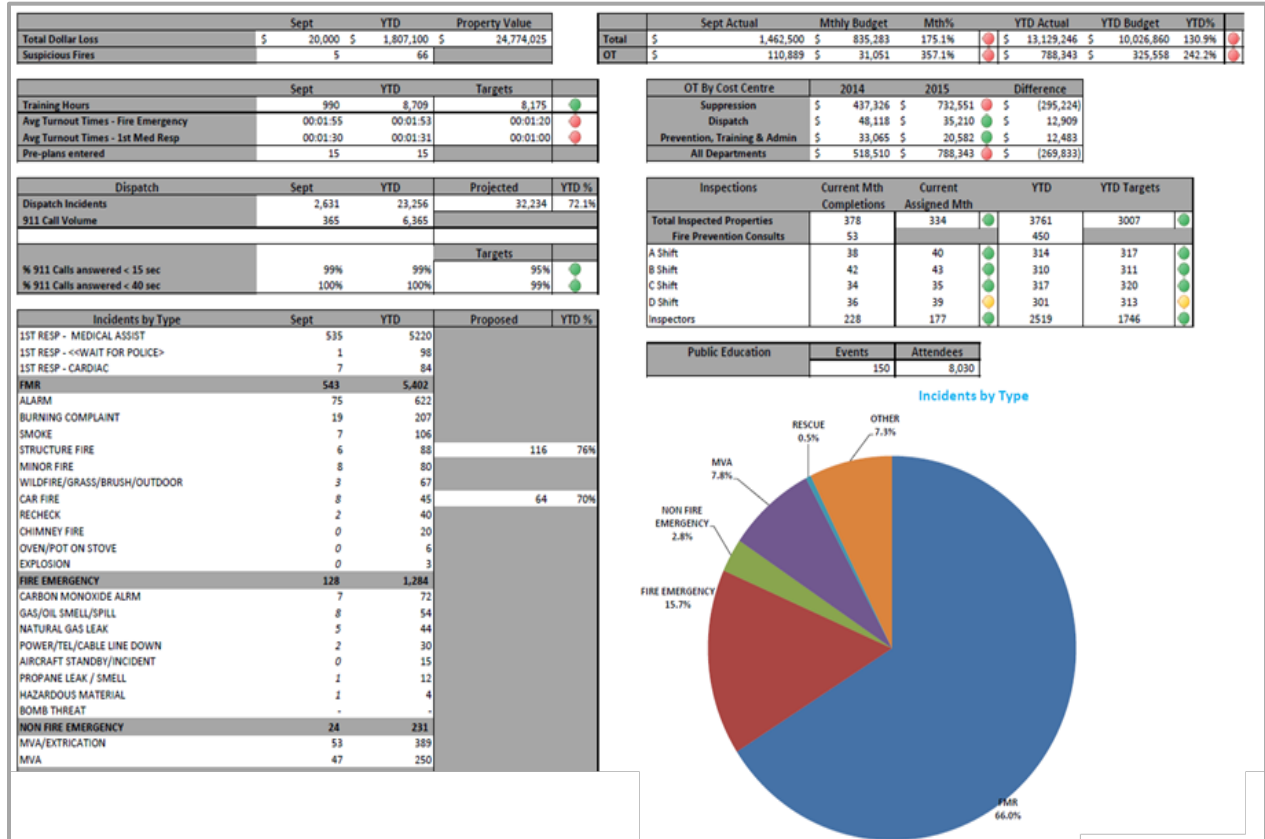
Rationale: *Changes in service demand, and response performance is an important management function. In particular, the incorporation of spatial data (latitude and longitude) into reports will allow enhanced understanding of where risk exists within Tillsonburg. Furthermore, the ability to measure and report performance is critical in maintaining department accountability and transparency for response performance.*

The first step in performance measurement is to develop the processes to collect reliable and valid data. As already discussed, fire and emergency services are typically data rich agencies. Use of integrated computer aided dispatch (CAD) and records management systems can improve the accuracy of the data captured and streamline the reporting process. These technologies simplify the conversion of data into useful information. Performance measurement and reporting is at the core of moving toward a databased culture and moves it away from mere opinion for fire services.

Quarterly reports to council are likely sufficient but may need to be more frequent for operational staff to recognize gaps in service and turnout when they present. Although activity is important to report, the inclusion of historical trends can better communicate changing demands on the fire department. An RMS can typically be programmed to produce reports and queries to investigate specific topics or incidents.

One approach to providing timely information to fire staff is to develop a performance dashboard. CAD and RMS technologies must be integrated to support this tool. Figure 13 provides an example of the information that could be reported on a performance dashboard.

Figure 13: Performance Dashboard



SECTION 5 CONCLUSION

The goal of developing this Fire Services Master Plan is to conduct a comprehensive review of the Town of Tillsonburg fire service and produce a strategic plan for the next 7 years. This will provide a systematic and comprehensive approach to evaluate current response capabilities by identifying and mitigating risks and assist in formulating and communicating strategic directions for the fire service, while highlighting opportunities for improved service delivery. The FSMP will also assist in conveying information to the public, staff, and municipal council about what to expect in the municipality's approach to fire and emergency service planning, service delivery model, policy, and development.

The TFRS is functioning remarkably well with no evidence of the typical challenges with volunteer services such as turnover, retention and recruitment. The emergency response capabilities analysis indicates that the total response time 90th percentiles are well beyond of the leading practice of nine minutes for an urban demand zone. Further, TFRS was not able to assemble and effective response force of fifteen firefighters within the 90th percentile to perform the critical tasks required in a structural fire. It is extremely important to note that TFRS is providing the best possible emergency response service given the limitations of the volunteer staffing model, the community risk factors, and the current built up areas within the town's boundaries.

There are several observations and recommendations provided in this master plan to improve operational effectiveness and efficiencies and enhance administrative and operational processes. Key among the 31 recommendations is:

- Establish service levels for emergency response that includes the analysis and risk factors identified in the community risk assessment.
- Establish dedicated fire and life safety education and dedicated inspection and enforcement positions with a focus on risk reduction through lines 1 and 2.
- Ensuring all fire fighters and fire service staff are certified to appropriate levels as identified by the Council approved service levels.
- Conduct a staffing review of the FireComms division to determine a more efficient and effective staffing model. Conduct a feasibility study for a stand-alone Fire Communications Centre facility.
- Development of capital asset and reserve fund program to ensure sustainable funding models for future replacement of apparatus and equipment.
- Undertake a complete functional and operational assessment of the TFRS fire station.
- Transition to a composite staffing model with full time firefighters during peak periods,

Although each recommendation has a corresponding timeframe, it is important to note this FSMP needs to be revisited on a regular basis to confirm that the observations and recommendations remain relevant. The recommendations outlined in this FSMP will better position TFRS to mitigate and manage community risks, monitor response capabilities and performance, and maintain excellent community relationships and value for money.

Notwithstanding operational observations around emergency response performance, achievement of an effective response force and the TFRS is an exemplary fire service that is serving the community very well.

Finally, our interactions with the Town of Tillsonburg elected officials and staff revealed a highly professional and dedicated organization that is committed to providing the best possible service to the citizens of the town.

APPENDICES

Appendix A: Glossary of Terms

Appendix B: List of Figures, Maps, and Tables

Appendix C: Theoretical Response Mapping Methodology

Appendix D: Town of Tillsonburg Online Firefighter Questionnaire Results

Appendix E: Tillsonburg Job Descriptions

Appendix F: Tillsonburg Apparatus and Light Duty Fleet

Appendix A: Glossary of Terms

Apparatus	Any vehicle provided with machinery, devices, equipment, or materials of the Fire department for firefighting as well as equipment used to transport firefighters or supplies.
Assembly Time	From the time the notification sounds in the fire station until the first vehicle leaves the station. In a full-time department this is expected to be within 80 seconds but for volunteer departments the time to collect a response crew can vary widely depending on location and time of emergency as well as all the factors that impact travel time.
Chute Time	See Assembly Time
Dangerous Goods	This term is synonymous with the terms hazardous materials and restricted articles. The term is used internationally in the transportation industry and includes explosives and any other article defined as a combustible liquid, corrosive material, infectious substances, flammable compressed gases, oxidizing materials, poisonous articles, radioactive materials, and other restrictive articles.
Discovery	This is the time between the start of the emergency and when someone or an engineered system has detected the incident.
Dispatch Time	This is the time required to extract the necessary information from the caller to allow the proper response to be initiated. The dispatcher identifies the correct fire location and initiates the dispatch by paging the appropriate fire station.
Emergency Call	This is the period between discovery and the actual notification of emergency services.
Emergency Communications Centre (ECC)	A facility dedicated to service receives calls, processes them, and then dispatches emergency units to the correct location in the appropriate time period.
Emergency Operations Centre (EOC)	The protected sites from which civil officials coordinate, monitor, and direct emergency response activities during an emergency or disaster.
Emergency	Any occasion or instance that warrants action to save lives and to protect property, public health, and safety. A situation is larger in scope and more severe in terms of actual or potential effects.
Fire Suppression	The application of an extinguishing agent to a fire at a level such that an open flame is arrested; however, a deep-seated fire will require additional steps to assure total extinguishment.
Hazard Analysis	A document, which identifies the local hazards that have caused, or possess the potential to adversely affect public health and safety, public and private property, or the environment.
Impact	The effect that each hazard will have on people such as injury and loss, adverse effects on health, property, the environment, and the economy.

Incident	A situation that is limited in scope and potential effects.
Intervention Time	The time from fire reporting to the point where the first arriving pumper, or other apparatus providing comparable functions, arrives at the fire scene and directs an extinguishing agent on the fire.
Mutual Aid Agreement	An agreement between jurisdictions to assist each other during emergencies by responding with available manpower and apparatus.
National Fire Protection Association	The National Fire Protection Association (NFPA) is an internationally recognized trade association established in 1896 that creates and maintains standards and codes for usage and adoption by local governments to reduce the worldwide burden of fire and other hazards. This includes standards and guidelines to which many fire departments utilize to carry on day-to-day operations.
Response	Those measures undertaken immediately after an emergency has occurred, primarily to save human life, treat the injured, and prevent further injury and losses. They include response plan activation, opening and staffing the EOC, mobilization of resources, issuance of warnings and direction, provision of aid, and may include the declaration of a State of Local Emergency.
Risk	The chance or likelihood of an occurrence based on the vulnerability and known circumstances of a community.
Setup Time	This is the time necessary on site to evaluate the necessary actions, position the required resources and commence the intervention. In the case of a fire, completing size-up, assigning the necessary tasks, and deploying resources can provide delays on scene. A well-trained crew can minimize these delays while providing a safe, successful response.
Standard Operating Guidelines (SOG)	A written organizational directive that establishes or prescribes specific operational or administrative methods to be followed routinely, which can be varied due to operational need in the performance of designated operations or actions.
Standard Operating Procedures (SOP)	A written organizational directive that establishes or prescribes specific operational or administrative methods to be followed routinely for the performance of designated operations or actions.
Travel Time	Once a vehicle leaves the station, it must negotiate the best route between that point and the location of the emergency. Factors to consider for travel time are driver skill, weather, traffic, topography, road conditions and vehicle capabilities.

Appendix B: List of Figures, Maps, Images, and Tables

Figures

Figure 1: Fire Services Master Plan Process	3
Figure 2: Economic Sectors (2021)	9
Figure 3: Risk Evaluation Matrix	
Figure 4: Risk Matrix Template	17
Figure 5: Tillsonburg Fire and Emergency Services Organization Chart.	36
Figure 6: Fire Service Time Management	38
Figure 7: Fire Apparatus Life Cycle Cost Projection Example	72
Figure 8: Unique Incidents by Incident Type (2018 to 2022)	85
Figure 9: 2018-2022 Incidents by Time of Day	87
Figure 10: 2018-2022 Incidents by Day of Week	88
Figure 11: Incident Intervention Continuum	89
Figure 12: Assembly Performance Distribution – First Departing Only (in secs) (excluding mutual aid)	94
Figure 13: Performance Dashboard	119

Maps

Map 1: Town of Tillsonburg Overview	7
Map 2: Incident Density Map	101
Map 3: Option 1: 10-Minute Response Coverage Map (53 second travel time)	102
Map 4: Option 1: 12-Minute Response Coverage Map (173 second travel time)	104
Map 5: Option 2: 14-Minute Response Coverage Map (293 sec travel time)	106
Map 6: Option 3: NFPA 1710: 2 Response Coverage Map (240 second travel time)	108
Map 7: Option 4: NFPA 1710 with Proposed Station Response Coverage Map (240 second travel time)	110

Images

Image 1: Risk Management Cycle Process	13
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Tables

Table 1: Targeted Interview List	4
Table 2: Major Manufacturing Employers in Tillsonburg	8
Table 3: Major Non-Manufacturing Employers in Tillsonburg	9
Table 4: Population and Private Dwellings Change (2001 to 2021)	10
Table 5: Sample Risk Inventory	16
Table 6: OBC Major Occupancy Classification	18
Table 7: Town of Tillsonburg Total Existing Property Stock	19
Table 8: Potential High-Fire Risk Occupancies	21

Table 9: Vulnerable Occupancies	23
Table 10: Impacts of Hazards on Fire Protection Services	24
Table 11: Fire Apparatus Service Schedule (Fire Insurance Grading)	68
Table 12: Fire Apparatus Life Cycle Cost Projection Example	71
Table 13: TFRS Apparatus and Planned Life Cycle	73
Table 14: Participating Community Comparatives	76
Table 15: Community Comparative Departments' Profile	77
Table 16: Community Comparative Budget Ranking	78
Table 17: Community Comparative Standard of Cover	78
Table 18: Examples of Incident Types for Statistical Analysis	79
Table 19: Municipal Comparative Response Call Volume	80
Table 20: Unique Incidents within Tillsonburg (2018 to 2022)	83
Table 21: SIR Incident Types within Tillsonburg (2018 to 2022)	84
Table 22: All Incidents/Responses by Incident Subcategory Type	86
Table 23: NFPA 1720 Staffing and Response Time Standards	91
Table 24: Alarm Processing Performance (in secs)	93
Table 25: Assembly Performance – First Departing Only (in secs) (excluding mutual aid)	94
Table 26: 80th Percentile Travel Performance by Station (in secs)	95
Table 27: NFPA 1720 Structure Fire Response Performance (in secs)	97
Table 28: Overall Response Performance (in secs) From Dispatch to First Unit Arriving on scene.	97
Table 29: Theoretical Travel Time Calculation (in secs)	98
Table 30: Response Performance and Options	99
Table 31: Median Number of Personnel on Scene by Incident Type	112
Table 32: Low Risk: Small fire (no exposures): garbage, vehicle – private, grass, investigate (external), monitoring alarm (w/o confirmation)	113
Table 33: Moderate Risk: Grass/wildland/brush fire (with exposures)	113
Table 34: Moderate Risk: Attached garage, single family residential (detached/duplex) ...	113
Table 35: Moderate Risk: Medical incident, cardiac arrest (VSA)	114
Table 36: Moderate Risk: Medical incident, vehicle vs. pedestrian	114
Table 37: Moderate Risk: Motor vehicle crash (1-3 private vehicles)	114
Table 38: Moderate Risk: Surface water, swift water or ice rescue, animal rescue	114
Table 39: Moderate Risk: Small quantity (<20 L) of known product (gasoline, anti-freeze), open space natural gas smell or odor from unknown source	115
Table 40: High Risk: Commercial, industrial, strip mall, warehouse, mid-rise residential....	115

Appendix C: Theoretical Response Mapping Methodology

Response travel times are directly influenced by station location and can be varied based upon a cost/risk analysis and the development of performance targets.

Base Data Layers Requested

- Hydrology
- Single Line Road/Transportation Network
- Railways
- Municipal Boundaries
- Parks
- Projection File
- Orthophoto (GeoTIFF, Mr.SID), if available
- Emergency Services Locations

Data Formats

- Preference of ESRI Shapefiles

Purpose of Files

- A. Hydrology
 - i. Identify needs for response to water locations (if dependent on a water response unit)
 - ii. Can be identified and analyzed with the rail network to locate spill contaminations, as well as containment for overland flow & flooding to water spills
 - iii. Locations of bridge crossings which can convert to varying incidents, as MVC/MVA, spill contaminants, etc.
 - iv. Assists in the definition of the map for locational awareness by others
 - v. Completes the map
- B. Single Line Road/Transportation Network
 - i. Used to determine response times from emergency locations to determine a network based on road speeds
 - ii. Roads are created into a network for response
- C. Railways
 - i. Identified risk areas for impeding response time when crossing a roadway or proximity to municipal areas will also determine the response and apparatus used for a derailment response or other rail emergency or risks, such as chemical spill evacuations.
- D. Municipal Boundaries
 - i. Identifies the limits to response for mutual aid and responsibilities when overlaps occur within a response area. Also identifies sub areas for specific mapping and identification of municipal and regional response zones. Provides information for gap analysis for future state locations or refinement of locations.

E. Parks

- i. Identifies the potential risk areas due to accessibility issues for tracts of land, as well as constraints and opportunities for new locational analysis for or against new stations within a municipality. Ability to determine development of new locations due to proximity. Parks are identified as local, regional, provincial, and national.

F. Projection File

- i. To ensure that we have the same data set up as being used by the Municipality or Client, measurements (both distance and time) and spatial location are correct when determining analysis.

G. Orthophoto (GeoTIFF, Mr.SID), if available

- i. We typically do not use the ortho on the output maps, but the analysis sometimes needs clarification of what is on the ground, and we use it to quickly ground truth locations and information needed prior to asking clients for clarification, or to substantiate clarification of an area.
- ii. Is a nice to have, yet hard to use, as it takes up a lot of memory/space and is difficult to ship/transfer.

H. Emergency Services Locations

- i. Identify the actual location rather than a theoretical location based on an address match to ensure that the data location is as correct as possible, and no mis-locations are identified on the initial running of the theoretical response times.
- ii. Locations may be moved from within a parcel to the front of the parcel whereby it touches the road network. Ensures the response from the station is captured. There are no corrections made to the movement of station to time, as it is typically within 50 metres.

Theoretical Response Zone

A. Assumptions

- i. Weather is average – no storms, rain, snow etc.
- ii. Roadway segments contain a node/junction at intersections
 - If not available, road network needs to be cleaned and fixed
- iii. Roadways need to sometimes extend beyond some municipalities
- iv. Emergency responders are trained on response vehicles
- v. Response vehicles are in good condition
- vi. Roads are dry and in good condition
- vii. Left turns are not reduced by a time %
- viii. Road speeds are provided by client, if not
 - Road class table used to populate speeds based on road classification
 - Road speeds are reduced from the posted sign, typically no more than 5%

- ix. Traffic volume is average, there is no congestion or there is a free-flowing lane to be used
- x. Rail crossings are free to cross and do not impede response
- xi. Time of day is based on an average time from 9 am – 9 pm
- xii. Opticom (or similar product for traffic light manipulation) are present to allow for free moving response
- xiii. Intersections of roads are not reduced (the roads are reduced from other project limits and averaged over time for generality of best fit)
- xiv. School zones are not adjusted unless identified, then changes to road net are made

B. Response Time

- i. Customized response based on Emergency Services Input
- ii. Response time includes 80% of all calls for service
- iii. Total drive time along roads (determined above by road speeds)
- iv. Variances are identified and are tweaked based on known data or other trends

C. Response Polygons

- i. Identify general area of response from the outer most limits driven
- ii. Also identify response zones for mutual aid
- iii. Identify gaps in response
- iv. Aid in the development of Fire Zones for response
- v. Assist in the identification of new stations
- vi. Also identifies needs to move stations to another location, as required

Additional Analysis

A. Out of Scope Analysis (needs further discussion with client)

- i. Transition from project to operationally based:
 - Specific distance and travel
 - Based on time of day
 - Based on time of year
 - Call volume
 - Call types
 - Modeling
 - Scripting for batch work

B. Data Availability

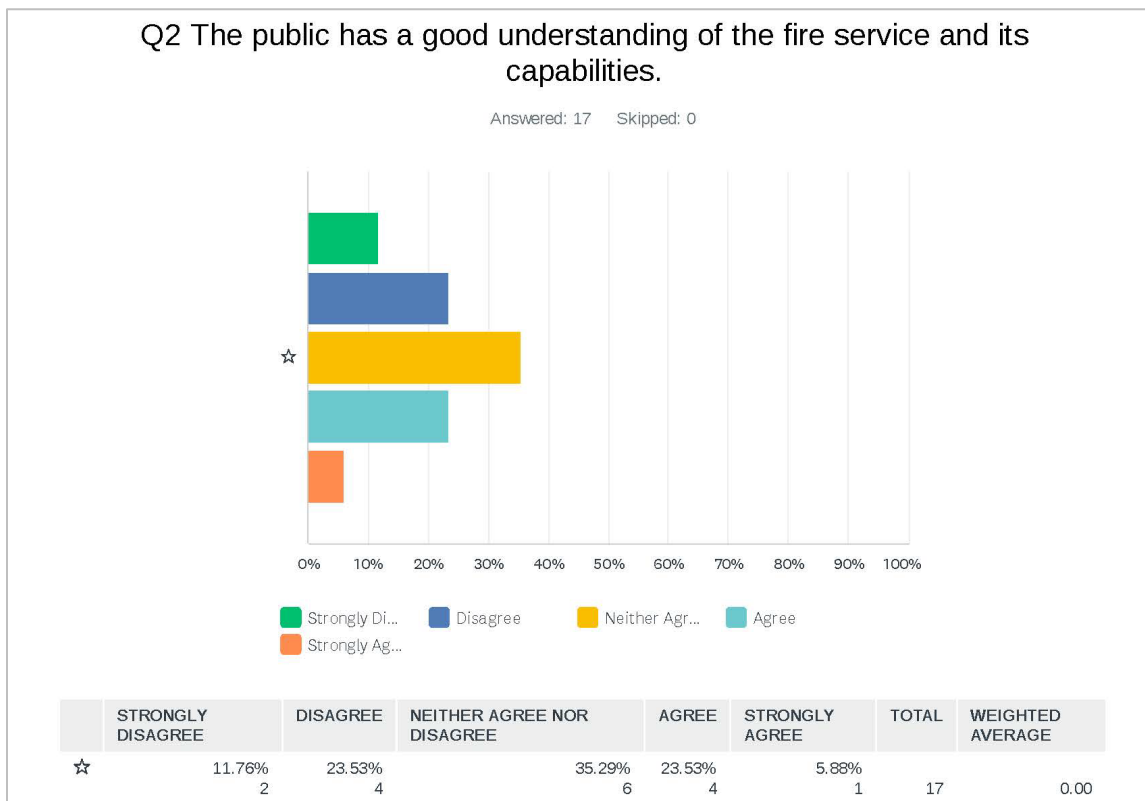
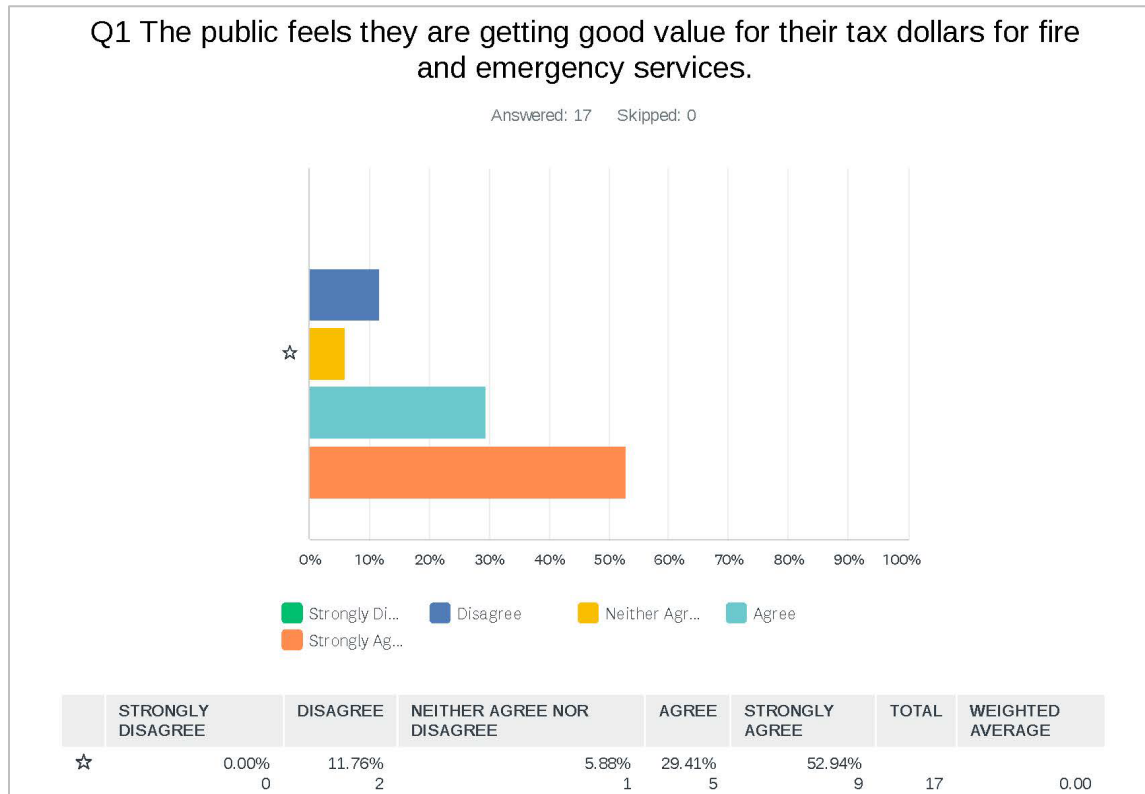
- i. When data available from clients is detailed enough, it is used
- ii. Not all data is detailed enough, and assumptions are made

C. Analysis

- i. Additional analysis can be performed (as reduction of road speeds to an intersection)

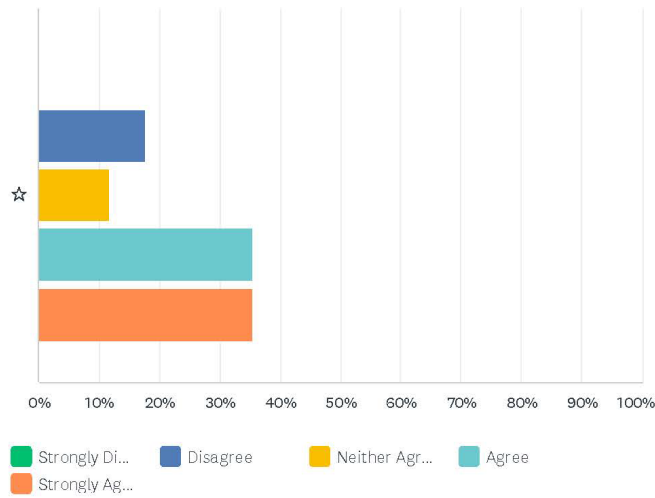
- For above example, identification of intersections can be complex, and data not always available:
 - Stop Sign
 - 3-Way Stop
 - Yield
 - Lights
 - Flashing Light
- ii. Tends to be time consuming
 - Clients not willing to engage cost of this project
 - Levels of data may not be accessible
 - Missing detail
 - Usually is a one-off project and new data is typically not leveraged

Appendix D: Online Firefighter Questionnaire Results



Q3 Your community receives adequate fire/rescue protection.

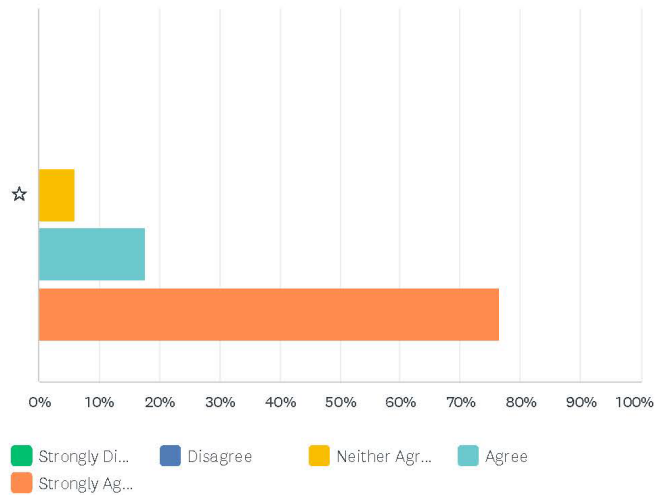
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	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00%	17.65%	11.76%	35.29%	35.29%	17	0.00
	0	3	2	6	6		

Q4 Based on the rate of community and economic growth, fire service demands will increase in the future.

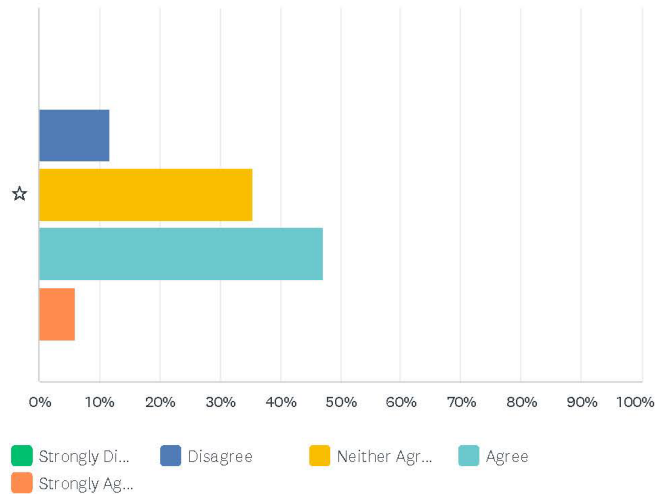
Answered: 17 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE OR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00%	0.00%	5.88%	17.65%	76.47%	17	0.00
	0	0	1	3	13		

Q5 The community has adequate alternate fire risk reduction strategies (e.g. residential sprinklers, FireSmart program, public education).

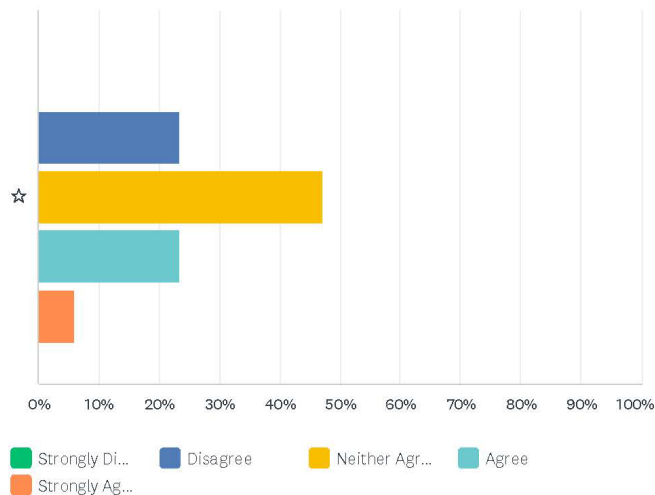
Answered: 17 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00%	11.76%	35.29%	47.06%	5.88%	17	0.00
	0	2	6	8	1		

Q7 The fire service's current response model is adequately staffed for fire/rescue response.

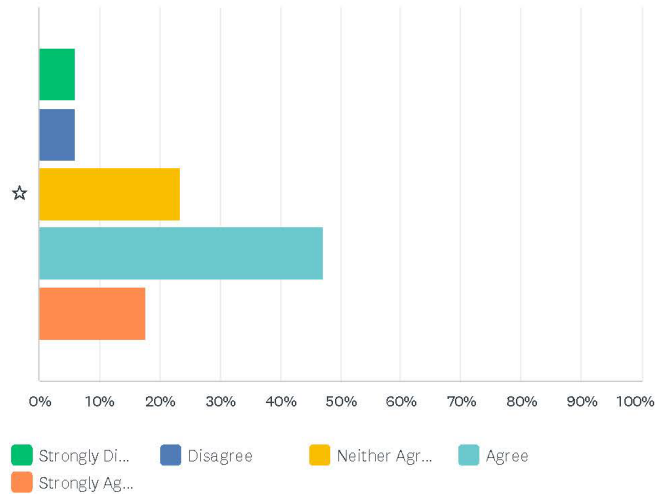
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	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00%	23.53%	47.06%	23.53%	5.88%	17	0.00
	0	4	8	4	1		

Q8 The fire service's policies/procedures reflect fire/rescue industry best practices.

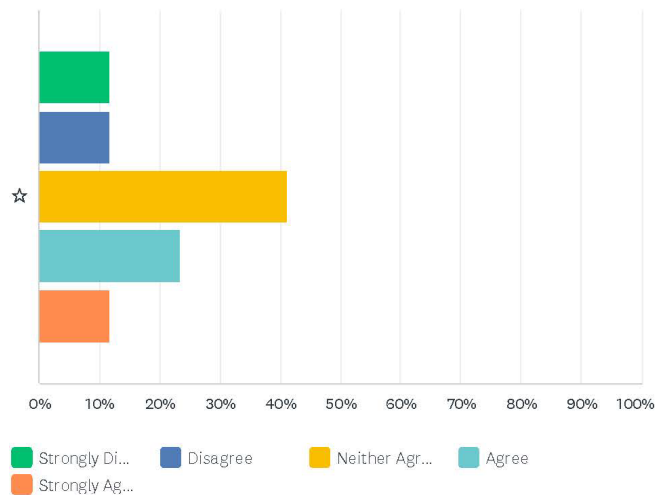
Answered: 17 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	5.88% 1	5.88% 1	23.53% 4	47.06% 8	17.65% 3	17	0.00

Q9 Medical responses are over tasking the service's response capacity.

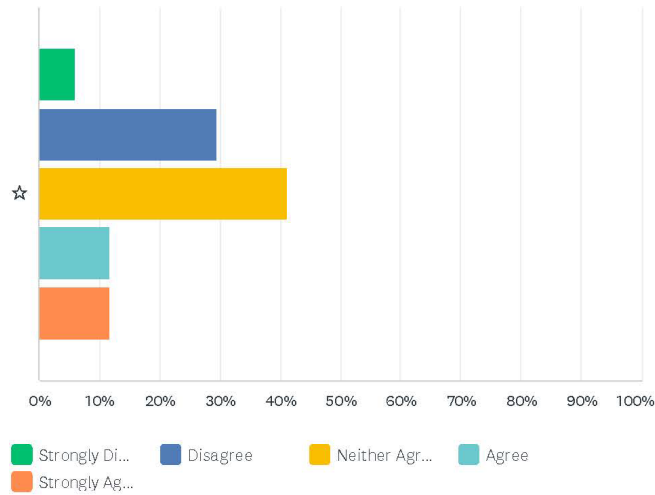
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	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	11.76% 2	11.76% 2	41.18% 7	23.53% 4	11.76% 2	17	0.00

Q10 Your fire service experiences a high rate of turnover.

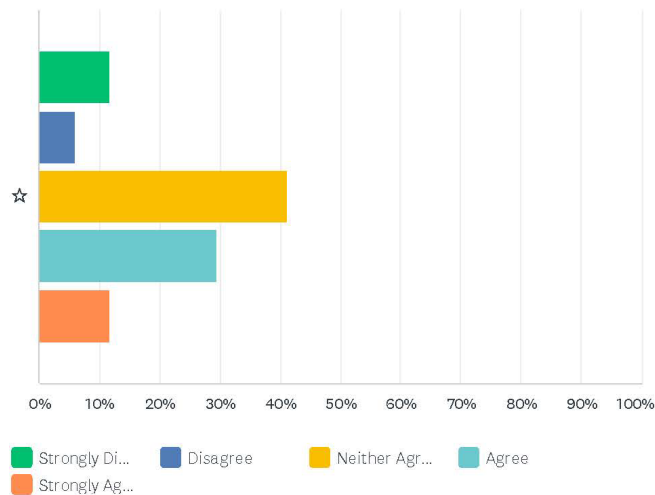
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	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	5.88%	29.41%	41.18%	11.76%	11.76%	17	0.00
	1	5	7	2	2		

Q11 Your current recruiting program is effective.

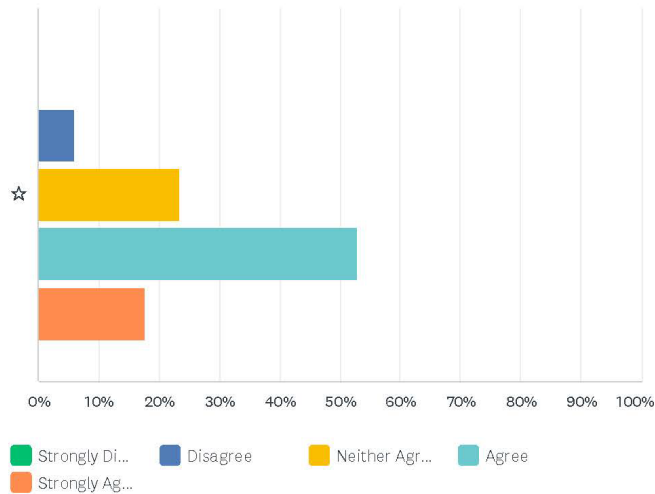
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	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	11.76%	5.88%	41.18%	29.41%	11.76%	17	0.00
	2	1	7	5	2		

Q12 The current level of live-fire and specialty team training is adequate for the services provided.

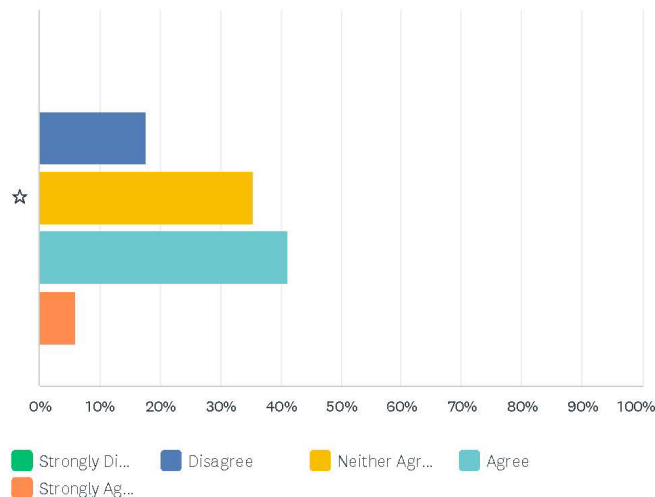
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	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00%	5.88%	23.53%	52.94%	17.65%	17	0.00
	0	1	4	9	3		

Q13 The current level of theoretical fire/rescue or leadership training you receive is adequate.

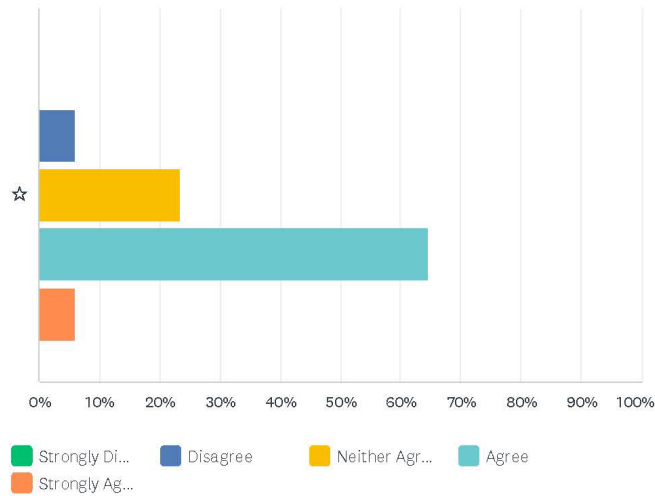
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	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00%	17.65%	35.29%	41.18%	5.88%	17	0.00
	0	3	6	7	1		

Q14 You receive adequate training to maintain competencies and certifications.

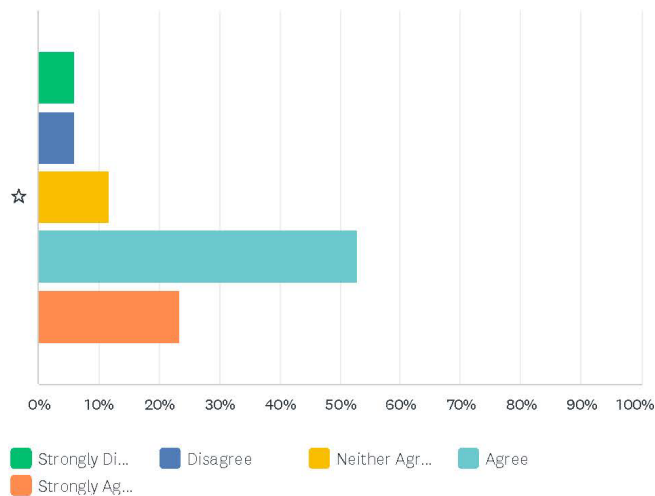
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	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00%	5.88%	23.53%	64.71%	5.88%	17	0.00
	0	1	4	11	1		

Q15 Recruits are adequately trained before they are assigned to full duty.

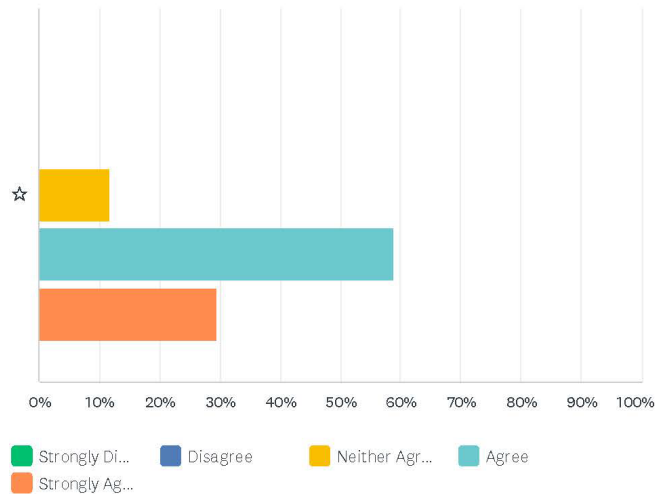
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	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	5.88%	5.88%	11.76%	52.94%	23.53%	17	0.00
	1	1	2	9	4		

Q16 The service is adequately resourced with small equipment (i.e. SCBA, light duty vehicles, loose equipment and consumables).

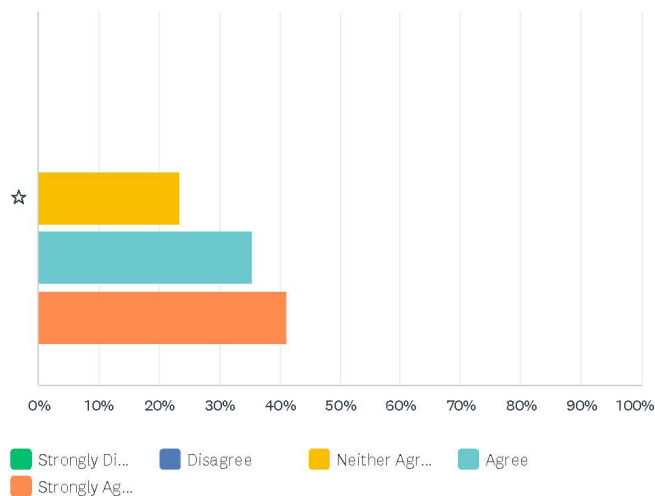
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	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00%	0.00%	11.76%	58.82%	29.41%	17	0.00
	0	0	2	10	5		

Q17 The current vehicle fleet of fire apparatus provides the capacity/capability necessary to meet the demands and types of responses.

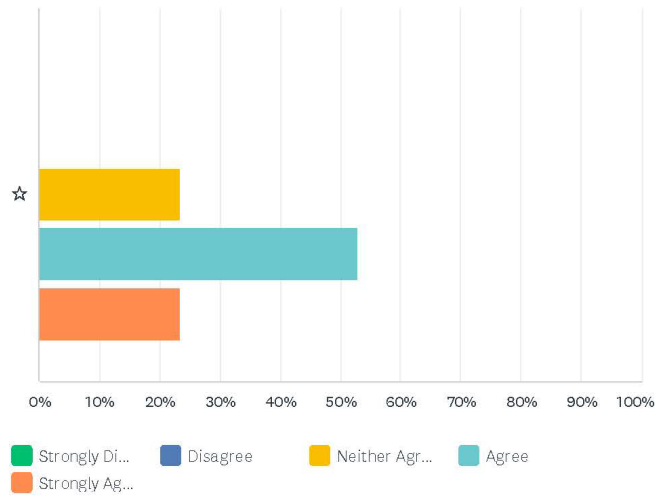
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	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00%	0.00%	23.53%	35.29%	41.18%	17	0.00
	0	0	4	6	7		

Q18 Fire apparatus are appropriately life-cycled.

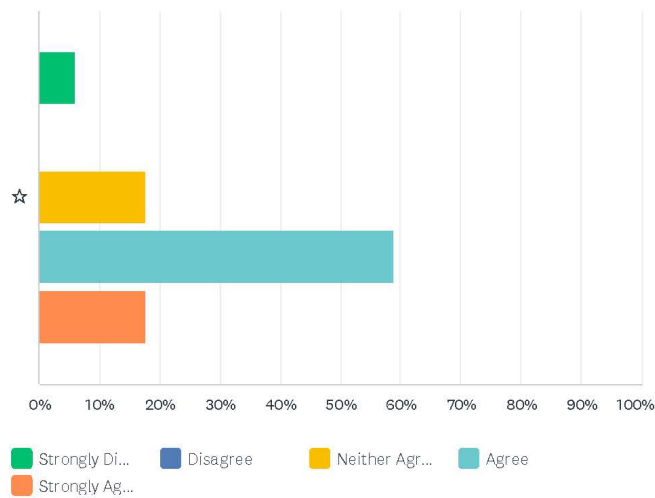
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	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	0.00% 0	23.53% 4	52.94% 9	23.53% 4	17	0.00

Q19 The maintenance of fire apparatus is adequate.

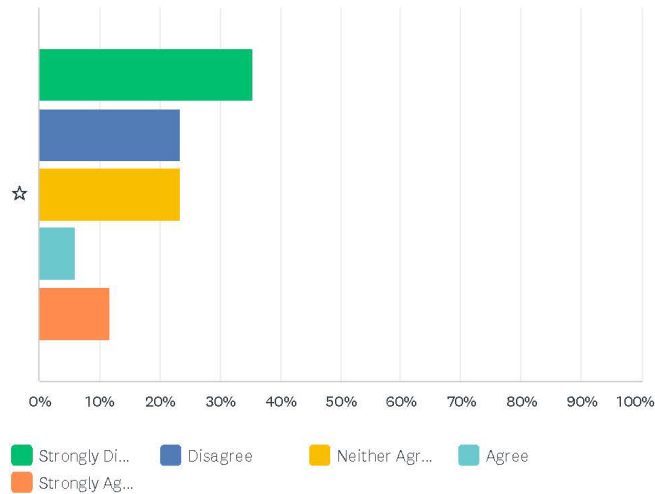
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	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	5.88% 1	0.00% 0	17.65% 3	58.82% 10	17.65% 3	17	0.00

Q20 The current fire station is functional and meet the operational requirements of the department.

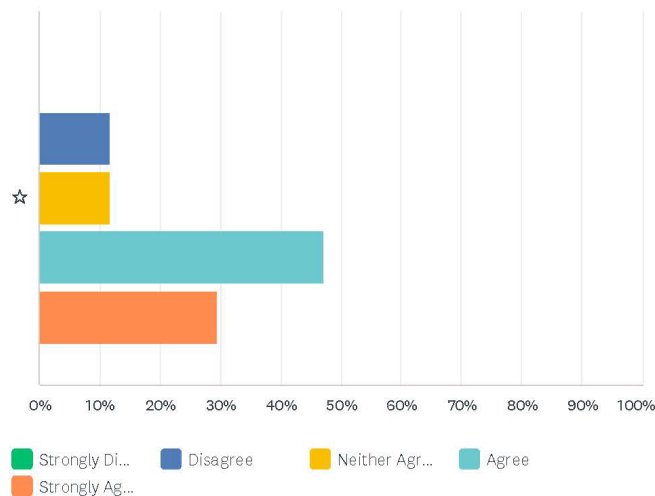
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	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	35.29% 6	23.53% 4	23.53% 4	5.88% 1	11.76% 2	17	0.00

Q21 The current fire station is strategically located for adequate geographic coverage.

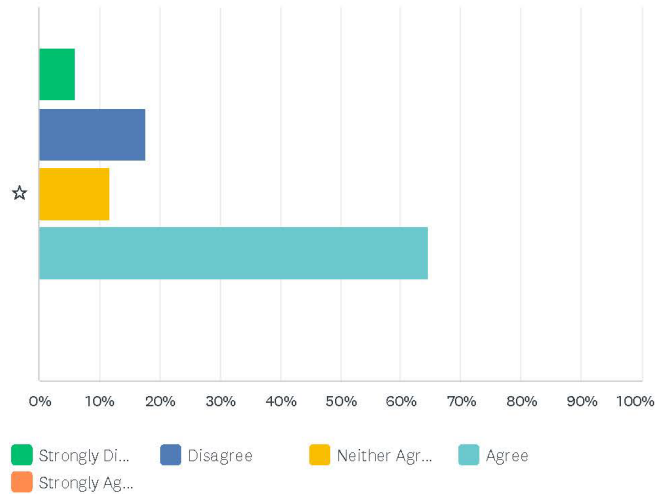
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	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00% 0	11.76% 2	11.76% 2	47.06% 8	29.41% 5	17	0.00

Q22 The service keeps pace with leading technology in communications systems.

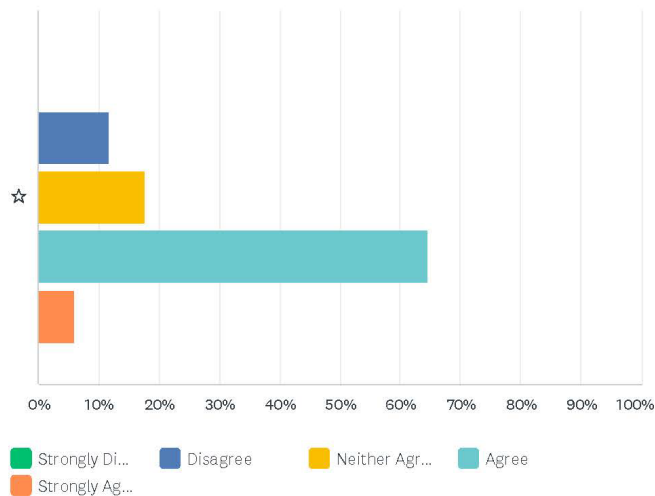
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	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	5.88%	17.65%	11.76%	64.71%	0.00%	17	0.00
	1	3	2	11	0		

Q23 The service keeps pace with leading technology in records management system and mobile CAD systems.

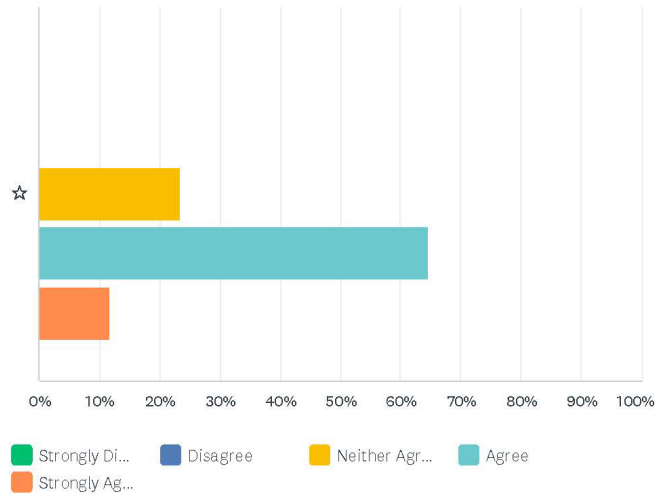
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	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00%	11.76%	17.65%	64.71%	5.88%	17	0.00
	0	2	3	11	1		

Q24 The service keeps pace with leading technology in station alerting and pre-alerting.

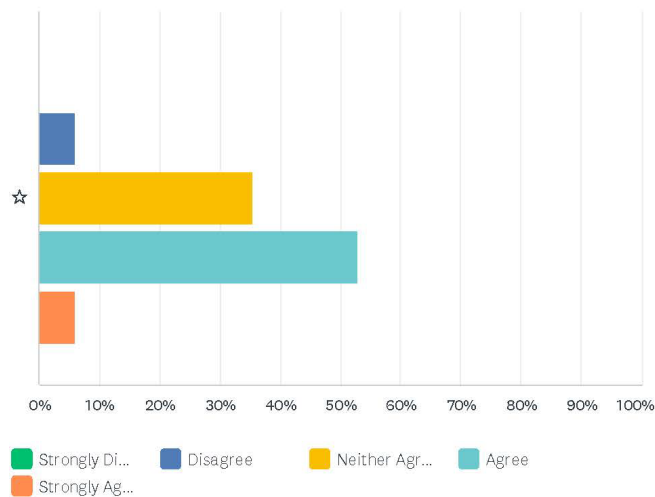
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	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00%	0.00%	23.53%	64.71%	11.76%	17	0.00
	0	0	4	11	2		

Q25 The service keeps pace with leading technology in records management and fire reporting systems.

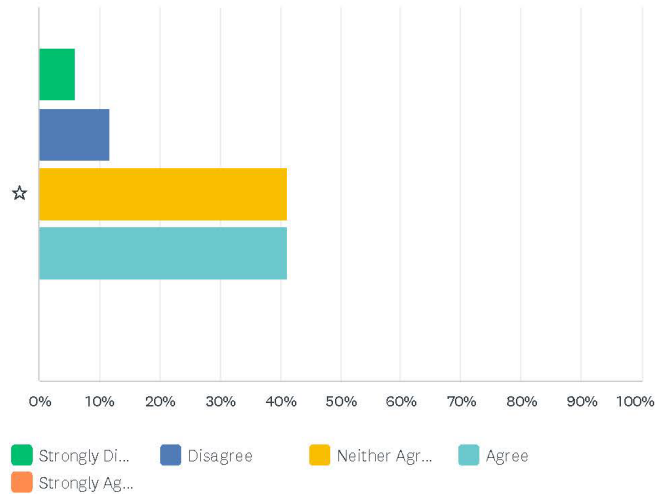
Answered: 17 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	0.00%	5.88%	35.29%	52.94%	5.88%	17	0.00
	0	1	6	9	1		

Q26 The service keeps pace with leading technology in online learning management systems (LMS).

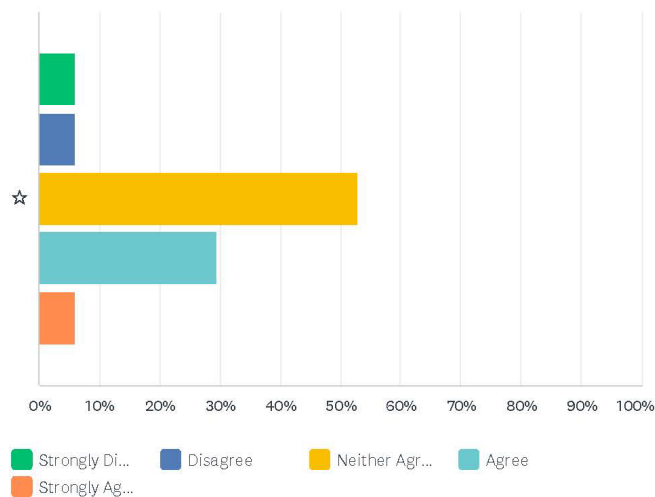
Answered: 17 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	5.88%	11.76%	41.18%	41.18%	0.00%	17	0.00
	1	2	7	7	0		

Q27 The service keeps pace with leading technology in traffic pre-emption system.

Answered: 17 Skipped: 0



	STRONGLY DISAGREE	DISAGREE	NEITHER AGREE NOR DISAGREE	AGREE	STRONGLY AGREE	TOTAL	WEIGHTED AVERAGE
☆	5.88%	5.88%	52.94%	29.41%	5.88%	17	0.00
	1	1	9	5	1		

Appendix E: Town of Tillsonburg Job Descriptions

Fire Chief

The Fire Chief participates as a member of the Senior Leadership Team and is responsible for the overall operation of the fire department. The Fire Department of Tillsonburg also delivers fee-for-service fire communications.

Responsibilities:

- Provides strategic vision to Fire Services Department.
- Act as Chief Fire Official for the Town of Tillsonburg.
- Evaluates and measures municipal fire risk.
- Acts as an assistant to the Ontario Fire Marshal and performs all duties associated with the position.
- Manages and administers the fire safety, suppression, and emergency services for the Town of Tillsonburg.
- Applies the provisions of the *Fire Protection and Prevention Act* and the *Ontario Fire Code* through fire safety inspections and fire code enforcement activities.
- Assumes command at major emergencies and as required.
- Develops, plans, implements, and manages a fire prevention inspection program.
- Reviews, updates, implements, and maintains the Department's *Establishing and Regulating By-law*.
- Updates and maintains the Town's Emergency Plan and is appointed as the Community Emergency Management Coordinator.
- Administers and enforces the provisions of the *Ontario Fire Code* related to conducting fire safety inspections and related processes and acts as Provincial Offences Officer through Inspection Orders and judicial proceedings.
- Develops new business opportunities for the Fire Communications Division.
- Responsible for ensuring that a culture supportive of both customer service and continuous improvement is prevalent within the department.
- Responsible for ensuring that a culture supportive of both customer service and continuous improvement is prevalent within the department.
- Management, coaching, development, and performance management of staff, as well as team building.
- Development of an annual department and business plan for areas of responsibility, including measurement tools for same.
- Providing direction, guidance, and leadership to managers within the Fire Services department.
- Maintain effective working relationships with employees in compliance of the personnel policies and legislation.

- As part of the senior leadership team, develops corporate goals, policies, programs, new work methods and objectives.
- Plan, organizing, scheduling and co-coordinating work of town and other government staff, contractors, consultants, volunteers, government grant employees, etc.
- Prepare reports to CAO/Council, and others regarding a wide variety of operational and capital issues.
- Oversees and reviews operating procedures for all responsible areas.
- Responsible for ensuring that all statutory licenses and certification of staff is maintained.
- Manage and control both the operational and capital activities within budgetary guidelines.
- Correspond, communicate, and meet with public regarding operational and all town issues as required.
- Attend Council, committee and public information centre meetings as required.
- Member of Emergency Management Team.
- Ensures the training and implementation and compliance with the Occupational Health and Safety Act and regulations.
- Aware of safe work practices relating to job responsibilities and have basic understanding of the Occupational Health & Safety Act as it relates to the work environment.
- Adheres to all policies and procedures for the Town.
- Performs other duties as assigned.

Qualifications:

- Post-secondary education preferably at the university level or an equivalent.
- Achieved the Ontario Fire Service Standard for Fire Chief.
- Ontario Fire Service Standard for Training Officer and Fire Prevention Officer would be an asset.
- Valid DZ driver's licence. Minimum of five (5) year's senior management experience.
- Proven progressive record of municipal leadership.
- Excellent interpersonal skills.
- Excellent organizational skills.
- Excellent communication and customer service skills.
- Good working knowledge of current municipal government legislation, issues, and strategies.
- Ability to prioritize problem solve, motivate, coach, train and supervise staff.
- Ability to establish and maintain effective working relationships.
- Excellent team building skills.

- Knowledge of relevant legislation, policies, and guidelines.
- Excellent leadership skills.

Assistant Chief, Communications and Administration

The Assistant Chief of Communications and Administration reports to the Fire Chief and acts as Fire Chief and CEMC in the absence of the Fire Chief. Key accountabilities include; leading and managing the Communications, Administration and Public Education divisions and assisting with the Emergency Management program for the Town of Tillsonburg Fire and Rescue Services.

Responsibilities:

- Lead and manage Communication, Public Education, and Administration Divisions
- Coach, mentor, develop and inspire assigned personnel
- Maintain compliance with legislation, council approved service levels and industry standards and best practices,
- Develops, monitors, and evaluates Communications, Administration, and Public Education Programming
- Direct and coordinate the work of communications and public education personnel
- Administers accounts receivable and accounts payable functions
- Administers Emergency Reporting Records Management Software
- Administers payroll function
- Administers Fire Department Correspondence
- Liaise with internal and external agencies and stakeholders
- Research, formulation and implementation of programs, policies, and procedures
- Develops and administers divisional operating and capital budgets
- Develops, negotiates, and administers service, employee, and maintenance contracts
- Develops and administers annual work plan objectives
- Develops training plans, programs and learning materials for areas of responsibility
- Researches and develops policies, procedures, techniques
- Researches and implements technologies and equipment to enhance service delivery
- Demonstrated ability to manage employee attendance program
- Project management
- Inspects and maintains technology and equipment
- Develops responses to Requests for Proposals/Quotations
- Resolves conflicts, finds solutions to complex problems
- Demonstrated continuous improvement abilities
- Compiles data for reports for business intelligence and decision support
- Maintains positive labour relations
- Excellent report writing and presentation skills

- Exceptional customer service knowledge and skills
- Maintains Professional Competency and development
- Other duties as assigned

Qualifications:

- Post-Secondary education in communications, education, technology, business administration or related field and/or equivalent as determined by the Fire Chief
- Minimum 5 years related work experience.
- NFPA 1061 related certifications
- NFPA 1035 certification
- Demonstrated ability to develop, negotiate and administer service, employee, and maintenance contracts.
- Experience, hiring, training, evaluating, personnel.
- Valid G driver's licence in good standing
- Comprehensive knowledge of fire service administration, public education, and emergency fire communications processes, standards, and best practices
- First Aid/CPR certificate.
- Project Management experience
- Make decisions, solve problems, resolve conflicts.
- Principles of supervision, training, and performance evaluation.
- Excellent verbal, written and presentation communication skills.
- Superior interpersonal and customer service skills
- Ability to work effectively maintaining a positive team environment.
- Ability to lead, manage, coach, mentor, and develop staff.
- Ability to handle matters of a confidential or politically sensitive nature.
- Comprehensive Knowledge of NFPA 1061 – Telecommunicator I & II, Tactical Dispatcher, Training Officer & Coordinator, Quality Assurance & Continuous Improvement, Communications Supervisor, Manager & Director
- Comprehensive knowledge of Fire Communications related technology, CAD Symposium, Radio Motorola Avtec, RMS FirePro/Emergency Reporting, 911/NG-911, telephone system Avaya, GIS, Back-up equipment and emergency power.
- Proficient in use of computer technology, CAD, Windows O/S, Microsoft Office Suite, Fire RMS, CAD, Radio, etc.

Assistant Chief, Fire Prevention and Training

The Assistant Chief, Fire Prevention and Training is responsible for planning, leading, and managing all activities related to fire prevention and training and assists with activities related to emergency management and emergency response.

Responsibilities:

- Maintain compliance with legislation, council approved service levels, and industry standards and best practices in all areas of fire prevention, training, and professional qualifications.
- Conduct inspections ensuring compliance with legislation, codes, standards and where necessary issue orders, notices and administers the prosecution process.
- Prepare reports in order to provide detailed analysis of infractions pertaining to codes, legislation and by-laws and ensuring that owner(s)/occupant(s) of a property is/are aware of those infractions and/or requirements.
- Evaluate, approve, monitor, and provide guidance for fire safety plans and evaluates occupant loads.
- Read and interpret building plans, blueprints, installation guides, construction plans and specifications as well as conducts inspections, pursuant to the requirements and powers prescribed in the Building Code Act.
- Conducts and monitors fire investigations, documents fire scenes, and reports on origin, cause, and circumstances.
- Conducts Community Risk Analysis and develops prevention and training programs accordingly.
- Manages fire prevention programs and activities so that fire inspections and life safety studies meet the requirements of relevant legislation, codes and standards, and fire risk analyses are completed.
- Manages, creates, and promotes public relations and public education programs and activities focusing on public safety in an effective manner, and ensures compliance with relevant legislation.
- Fosters a positive, supportive, and collaborative team approach, manages conflict, and provides coaching and mentoring.
- Provides technical support and expertise to fire department personnel.
- Organizes initial response to emergency situations, initiates ICS, coordinates and controls emergency operations and resources, manages safety at the emergency site, supervises crew, and accounts for all personnel.
- Assess and ensure efficient and effective operation and maintenance of fire stations, apparatus, and equipment.
- Assigns, oversees, and assists in the delivery of internal training to Fire Service employees to ensure all personnel are fully competent in both fire suppression and the delivery of high-quality public education and fire prevention programs and activities;

- Delegates responsibility and accountability and ensures that personnel professional development needs and succession planning requirements are met.
- Under the direction of the Chief, establishes performance criteria and oversees performance evaluations.
- Researches and evaluates policies, procedures, techniques, technology, and equipment for fire suppression.
- Acts as the Fire Chief and as the Alternate Community Emergency Management Coordinator for the municipality and assumes the duties and responsibilities of the CEMC in absence of the Fire Chief.
- Assists with the development, maintenance, and implementation of the Town's Emergency Management Program to ensure compliance with emergency management legislation.
- Liaises and collaborates with other Town departments, partner agencies, stakeholders, and community organizations.
- Assists in the development of long-term and short-term operating and capital budget plans in accordance with established guidelines that align with the strategic direction of the Town Strategic Plan.
- Participates in the planning and execution of Fire Service projects.
- Performs administration duties, compiles data, and prepares reports for the Chief and to present to Town Council.
- Ensures a respectful and harassment-free working environment.
- Ensures that all statutory licenses, qualifications, and certification of employees are maintained.
- Maintains professional competency and personal professional development.
- Ensures every reasonable precaution is taken to protect employees in accordance with the Occupational Health and Safety Act and regulations and ensures compliance with Town Health and Safety policies/procedures.
- Adheres to all policies and procedures for the Town.
- Performs other related duties as assigned.

Qualifications:

- Comprehensive knowledge of fire suppression and fire prevention typically acquired through post-secondary education in Fire Protection Technology, Administration, Education, or a related field.
- Five (5) years of experience in a Fire Service preferably with specific experience in Fire Prevention, Training, and emergency response; an equivalent combination of education and experience may be considered.
- Proven people leadership skills with a commitment to employee development, coaching, and collaborative team building.

- Superior communication skills required; must be comfortable with public speaking, working collaboratively with community partners/stakeholders and have polished presentation skills.
- Strong analytical, critical thinking, and problem-solving skills.
- Excellent time management and organizational skills; ability to prioritize multiple initiatives and re-adjust priorities, oversee the development of a project/work schedules, monitor progress towards goals, and address challenges as they arise.
- Knowledge of principals of adult learning to design and develop training programs for fire personnel.
- Demonstrated resilience under pressure with comprehensive knowledge of crisis management.
- Knowledge of relevant legislation including the Ontario Fire Code, Ontario Building Code, and municipal by-laws
- Valid standard First Aid and CPR Level C
- NFPA 1001 – Firefighter I & II
- NFPA 1021 – Fire Officer I & II
- NFPA 1031 – Fire Inspector I, II
- NFPA 1041 – Fire Instructor I & II
- Qualified as a Certified Fire & Explosion Investigator (CFEI) or NFPA 1033
- Proficient in use of technology including Microsoft Office Suite and Fire RMS
- Strong research, writing, and communication skills with the ability to produce formal reports for Town Council.
- A valid DZ driver's licence in good standing with no more than six (6) demerit points.
- Successful completion of a Criminal Background check and Vulnerable Sector screening and the ability to maintain discretion and confidentiality.
- Ability to participate as an effective team member and to support and project values compatible with the Town.

Fire Communicator

Responsible for the effective and timely flow of emergency telecommunications to the public, customers, and staff.

Responsibilities:

- Answers all incoming calls to the Fire Communications Centre.
- Facilitates immediate dispatch of required fire services.
- Gathers as much complete and accurate information as possible from caller through the use of clear questions, a calm demeanor, and empathy/understanding.
- Adjusts communication style to meet caller needs, to quickly determine how to route response.

- Interviews and probes callers rapidly to acquire complete address (location) information, using effective descriptors.
- Data enters location, caller information and details pertaining to the call.
- Monitors firefighter response and provides logistical support to the Fire Service Incident Commander.
- Maintains Radio Communication for the duration of an incident.
- Ensures all incident documentation is complete and accurate in applicable computer systems.
- Maintains Emergency Communication Centre equipment and supplies.
- Performs Fire Service-related public relations within the Town providing related information as required.
- Perform administrative duties and monitors station security.
- Provide administrative support services for other Town departments as required.
- Acts as a call centre agent for all other municipal services and selected county services, as required.
- Responds to off-duty calls staffing requests during an emergency situation where additional support is required.
- Adheres to all policies and procedures for the Town.
- Performs other related duties as assigned.

Qualifications:

- Two (2) year community college diploma in a related field of study or equivalent experience and/or training in Communications or a related field is required. A diploma in Emergency Telecommunications is preferred.
- Prior emergency services dispatching is an asset.
- Ability to obtain NFPA 1061 Level I & II accreditation.
- Excellent communication skills (oral and listening) despite communication barriers of a caller and the ability to respond concisely and clearly.
- The ability to demonstrate resiliency and remain calm in a high stress, demanding, fast paced environment.
- Ability to work cooperatively and respectfully within a team environment.
- Ability to learn and apply knowledge/skills in a fast-paced environment.
- Excellent organizational skills, able to prioritize tasks.
- Excellent keyboarding skills (45 WPM) and demonstrated proficiency in Microsoft Word and Excel. The ability to learn new software applications as required.
- Must be able to type and enter data with exceptional accuracy.
- Professional, respectful, and courteous demeanour with a willingness and commitment to working with and helping members of the public and other staff.
- Ability to maintain composure with individuals who are emotionally upset, or frustrated.

- Ability to multi-task and adapt to continuous change.
- Ability to accurately follow policies, procedure, directives, and standard operating procedures.
- Ability to deescalate and resolve conflict as well as answer questions and address concerns/complaints promptly.
- Must demonstrate a commitment to continuous improvement by exploring innovative or unique approaches to completing position responsibilities.
- Must be able to work rotating shifts and have flexibility to report to work on short notice in the event of an emergency.
- Ability to meet testing requirements of the position.
- Ability to participate as an effective team member and to support and project values compatible with the Town.

Volunteer Firefighter

Performs firefighting, emergency response, and fire inspection duties with a requirement to participate in ongoing mandatory training, with a commitment to public engagement and education.

Responsibilities

- Responds promptly to fire and rescue emergencies so that lives are protected and property loss and damage to the environment is minimized.
- Participates in regular training in all aspects of firefighting/suppression, fire prevention, fire equipment/vehicle maintenance, health, and safety, and first aid.
- Performs work of a hazardous nature involving fighting fires, salvaging, rescue, and administering first aid.
- Performs communication duties so that required information is transmitted or received through the appropriate emergency communications system.
- Ensures that victims are safely removed from an area of danger to an area of safety while securing the perimeter of the area from members of the public.
- Provides emergency first aid care so that victims are assessed and stabilized, emergency care is initiated, and patients are transferred to emergency medical services for further care and transport.
- Performs hazardous materials and chemical operations so that injury or loss of life is prevented, and environmental and property damage is minimized.
- Operates and maintains fire vehicles such as engines, ladder trucks, aerial platform, rescue trucks and support vehicles as required by the Ontario Highway Traffic Act and that preventable mechanical breakdowns are avoided.
- Maintains fire equipment to ensure safe functionality and operational readiness.
- Participates in fire safety inspections to ensure that a premises meets an acceptable degree of life safety as specified by the Town of Tillsonburg Fire Department and the Ontario Fire Code and refers fire safety infractions/violations as required.

- Performs public education and public relations activities to engage the community and promote fire and emergency safety.
- Collectively develops pre-incident plans so all pertinent information is available to fire suppression personnel for determining initial response and establishing incident management requirements.
- Ensures all legislation, safety procedures, and practices are adhered with working knowledge of Occupational Health and Safety Act (OHSA) as it relates to fire suppression and rescue activities (PPE, Fall Arrest, Confined Space, and Aerial Platform).
- Performs administrative duties in accordance with fire department operating guidelines.
- Demonstrates a commitment to personal and professional development to remain current with new legislation, standards, techniques, and procedures.
- Adheres to all policies and procedures of the Town.
- Performs other related duties as assigned.





Qualifications

- Reside within or in close proximity to the Town of Tillsonburg. Preference will be given to those residing in closest proximity to the Fire Hall and candidates who have the greatest flexibility to attend calls.
- Completion of secondary school education or an equivalent is preferred.
- Be at least 18 years of age.
- Possess a valid Class 'G' Driver's Licence with driver's abstract acceptable to the Town.
- Ability to obtain a class DZ Driver's Licence during the probationary period.
- Have visual acuity, minimum requirement of 20/30 corrected OR 20/40 uncorrected both eyes tested together, have normal depth perception, and have colour vision.
- Proficiency to communicate effectively in English both in speaking and writing.
- Ability to complete and maintain a Standard First Aid and CPR Level C certification.
- Ability to physically and mentally perform the duties of a firefighter having regard for one's own safety and the safety of the public.
- Ability to meet performance levels as outlined in the Association agreement including emergency responses, weekly training session requirements, and regularly scheduled station duties.
- Ability to work in adverse conditions for prolonged periods of time and comfortable working at heights and in confined spaces.
- Ability to conduct routine maintenance and cleaning of the station and all equipment.
- Ability to work in a highly structured work environment and follow the regulations and procedures of the Tillsonburg Fire Department.
- Dedication and capability of learning and performing the various methods and techniques used in extinguishing and preventing fires and in executing rescues.

- Commitment to acquiring knowledge of hazardous materials, poisonous substances, arson detection, life safety systems and other job-related subjects, and be familiar with the procedures associated with these subjects.
- Ability to make sound decisions, provide clear direction/information, and remain calm in high pressure, emotionally charged, emergency situations.
- Possess no criminal convictions for which a pardon has not been granted.
- Successful completion of the new recruit training program.
- Ability to participate as an effective team member and to support and project values compatible with the Tillsonburg Fire Department.

Appendix F: Tillsonburg Fire Apparatus and Light Duty Fleet

Pump 1		Pump 2	
			
Unit Number:	70	Unit Number:	71
Year/Make:	2016 Pierce Saber	Year/Make:	2012 KME Predator
Type:	Pumper Truck	Type:	Pumper Tanker Truck
Odometer (kms.):	18959 KM	Odometer (kms.):	23294 KM
Pump Capacity:	1050 GPM @ 150 PSI 394 LPM @ 1000 KPA	Pump Capacity:	1600 GPM @ 150 PSI 6051 LPM @ 1000 KPA
Tank Capacity: (Water)	820 Gallons 3104 Litres	Tank Capacity: (Water)	2010 Gallons 7611 Liters
Foam Capacity:	3 GPM 11 LPM	Foam Capacity:	95 GPM 360 LPM
Delivery Method:	Centrifugal Force Pump	Delivery Method:	Centrifugal Force Pump
Usage:	Suppression/Rescue Services	Usage:	Suppression/Rescue Services
Aerial 4			
			
Unit Number:	73		
Year/Make:	2018 E-One Cyclone		
Type:	Aerial Truck		
Odometer (kms.):	31938 KM		
Pump Capacity:	2006 GPM@ 150 PSI 7593 LPM @ 1000 KPA		
Tank Capacity: (Water)	300 Gallons 1135 Liters		
Foam Capacity:	N/A		
Delivery Method:	Centrifugal Force Series/Parallel Pump		
Usage:	Suppression/Rescue Services		

Chief 3		Truck 35	
			
Unit Number:	3	Unit Number:	35
Year/Make:	2023 Ford Police Intercept	Year/Make:	2021 Chevrolet Silverado 2500
Type:	Command	Type:	Support Vehicle
Odometer (kms.):	100 KM	Odometer (kms.):	34821 KM
Pump Capacity:	N/A	Pump Capacity:	N/A
Tank Capacity:	N/A	Tank Capacity:	N/A
Foam Capacity:	N/A	Foam Capacity:	N/A
Delivery Method:	N/A	Delivery Method:	N/A
Usage:	Command	Usage:	Support Services
Rescue 3		Truck 65	
			
Unit Number:	72	Unit Number:	65
Year/Make:	2016 Dodge Ram 5500	Year/Make:	2022 Chevrolet Silverado 2500
Type:	Rescue Truck	Type:	Support Vehicle
Odometer (kms.):	6342	Odometer (kms.):	2282 KMS
Pump Capacity:	N/A	Pump Capacity:	N/A
Tank Capacity: (Water)	N/A	Tank Capacity:	N/A
Foam Capacity:	N/A	Foam Capacity:	N/A
Delivery Method:	N/A	Delivery Method:	N/A
Usage:	Rescue Services	Usage:	Support Services