Essex Fire Master Plan

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Prepared by:

THE LOOMEX GROUP

Town of Essex
Fire Master Plan

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Disclaimer

The Loomex Group acted in the role of a third-party consultant to develop this fire master plan. The company conducted impartial reviews and evaluated all findings against established legislation and industry best practices. Every effort has been made to ensure that the information provided in this fire master plan is accurate as of the date the document was finalized.

All findings and recommendations presented in this fire master plan are objective and are intended to represent the best interests of the Town of Essex and its fire protection needs. However, some of the recommendations may require additional study or consideration.

Although this fire master plan provides a long-term strategic vision for the Town of Essex, the town must keep the plan current with the community's needs and circumstances. At a minimum, the Town of Essex should review this document annually to ensure the information it contains remains up to date. In addition, the Town of Essex should completely revise this fire master plan every five years.

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Executive Summary

Purpose

In July 2023, the Town of Essex contracted The Loomex Group to develop a fire master plan ("**FMP**") that identifies and evaluates Essex's current and anticipated fire protection needs.

This FMP has the following goals:

- Assess the fire protection services that Essex currently receives.
- Provide data that Essex can use to make informed decisions about the safety of its residents, businesses, visitors, and firefighters.
- Provide strategies and identify resources that Essex can use to manage its current and anticipated fire protection needs.
- Recommend ways that Essex can address its fire protection needs adequately and cost-effectively.

The Town of Essex and Essex Fire and Rescue ("**the Department**") can reference this FMP when making policy, organizational, capital, and operational decisions for the immediate term (0 to 1 year), short-term (1 to 5 years), and long-term (5 to 10 years).

Process

The FMP development process included the following components:

- Evaluate the Department's organizational structure, programs, and levels of service.
- Analyze Essex's current risks, needs, and circumstances.
- Compare Essex's past fire loss with current trends to estimate future needs.

The Loomex Group also met with stakeholders from Essex and the Department to gain a first-hand perspective about the community and the Department's operations.

After completing all reviews and stakeholder meetings, The Loomex Group consolidated its findings and developed the FMP document. Each section of the document focuses on a specific area of the Department's operations.

Findings

After reviewing the results of the FMP development process, The Loomex Group identified strengths in the Department's operations, as well as challenges affecting its delivery of fire protection services.

The Loomex Group noted that Department has an effective operational model and delivers a high level of service to the community. In addition, the Department's fire management team has promoted a workplace that emphasizes safety, customer service, and pride in ownership.

As of this FMP, the most significant challenges facing the Department are as follows:

- Under its current structure, the Department will find it difficult to prioritize the recruitment and retention of volunteer firefighters.
- The Department's training division lacks the capacity to provide the training that Department's personnel need to obtain applicable certification requirements.
- Station 3 – Harrow is at the end of its life cycle and will not be able to support the Department's anticipated future needs.

In order to present the complete findings of the FMP development process clearly, each section of this FMP highlights ways the Department can maintain its strengths while addressing areas for improvements.

Recommendations

This FMP contains 24 recommendations for the Department and the Essex Town Council ("**Council**") to consider. The recommendations focus on several areas, including the following:

- How to enhance the Department's fire prevention division.
- How the Department can invest in the Harrow community by replacing Station 3 – Harrow. Such an investment will require appropriate funding and planning.
- How to enhance the Department's training division to ensure the Department's personnel can obtain the applicable certification levels.

Unfortunately, there are no easy solutions that allow fire departments to significantly reduce operating costs and still provide sufficient protection from fires and other emergencies. As such, The Loomex Group has developed recommendations that prioritize the safety of Essex's residents and firefighters. However, The Loomex Group has also ensured that the recommendations are within Essex's means to implement and include ways the town can save money wherever possible.

Overall, the recommendations in this FMP outline strategies and resources that will help the Department provide an appropriate level of service to the community now and in the coming years.

Summary of Recommendations

Purpose of Recommendations

The recommendations in this FMP present strategies designed to help the Department accomplish the following objectives:

- Meet legislative obligations.
- Adhere to best practices.
- Enhance operational effectiveness.
- Protect the safety of community residents, visitors, and businesses.
- Protect firefighter safety.

Additional Considerations

In addition to presenting strategies for the Department, the recommendations consider the following questions:

- Does the recommendation need to be implemented in order to satisfy a mandatory compliance requirement?
- Does Council need to approve the recommendation before it is implemented?
- Does the recommendation need to be included in the Department's budget through the regular budgeting process?
- What is the suggested timeframe for implementing the recommendation?
    - Immediately: Implement the recommendation within one year.
    - Short-term: Implement the recommendation within one to five years.
    - Long-term: Implement the recommendation within five to ten years.
    - Ongoing: Incorporate the recommendation into the Department's regular operations.

The answers to these questions give Essex a practical schedule for implementing this FMP's recommendations.

Table 1 collects the recommendations found in this FMP.

List of Recommendations

Table 1. List of recommendations.

#	Section	Recommendation	Considerations
3-1	Overview of Essex Fire and Rescue	The Fire Chief should prepare a report for Council's consideration and approval that recommends changing the administrative assistant role from a part-time position to a full-time position.	Mandatory: No Council approval: Yes Budget impact: Yes Timeframe: Short-term
3-2	Overview of Essex Fire and Rescue	The Fire Chief should prepare a report for Council's consideration and approval that recommends hiring a full-time support firefighter after the contract for the current part-time position ends.	Mandatory: No Council approval: Yes Budget impact: Yes Timeframe: Long-term
5-1	By-laws	The Fire Chief should update the Town of Essex Establishing and Regulating By-law (as needed) if the Department implements any of the recommendations in this fire master plan.	Mandatory: Yes Council approval: Yes Budget impact: No Timeframe: Immediately
5-2	By-laws	The Fire Chief should complete an annual review of the Town of Essex Establishing and Regulating By-law to verify that it remains current with all emergency and non-emergency services the Department provides.	Mandatory: No Council approval: Yes Budget impact: No Timeframe: Ongoing
5-3	By-laws	The Fire Chief should review all fire service by-laws in the Town of Essex and update them to ensure they are current and applicable. The Fire Chief should then present all updated by-laws to Council for consideration and approval.	Mandatory: No Council approval: Yes Budget impact: No Timeframe: Short-term

#	Section	Recommendation	Considerations
5-4	By-laws	The Fire Chief should establish a schedule for reviewing all fire service by-laws in the Town of Essex on a regular basis.	Mandatory: No Council approval: No Budget impact: No Timeframe: Short-term
7-1	Stakeholder Engagement	The Fire Chief should review the results of the public survey to identify ways the Department's services can provide more value to the Town of Essex's residents and businesses.	Mandatory: No Council approval: No Budget impact: No Timeframe: Immediately
7-2	Stakeholder Engagement	The Fire Chief should review the results of the SWOT analysis to determine whether the Department should update its operations to incorporate suggestions provided during the analysis.	Mandatory: No Council approval: No Budget impact: No Timeframe: Immediately
8-1	Emergency Management	The Town of Essex should assign an individual from outside the Department to serve as either the primary or alternate community emergency management coordinator. Ideally, the incumbent should have an administrative background.	Mandatory: No Council approval: Yes Budget impact: No Timeframe: Short-term
8-2	Emergency Management	The Community Emergency Management Coordinator should continue organizing annual emergency management training and exercises for the Town of Essex Municipal Emergency Control Group. Both the training and exercises should continue to incorporate external resources in order to ensure all participants can practise fulfilling their assigned duties.	Mandatory: No Council approval: No Budget impact: No Timeframe: Ongoing
9-1	Occupational Health and Safety	The Fire Chief should form a committee to develop and manage a fitness program to complement the Department's existing wellness programs.	Mandatory: No Council approval: No Budget impact: Yes Timeframe: Short-term

#	Section	Recommendation	Considerations
9-2	Occupational Health and Safety	The Fire Chief and the wellness committee should explore the possibilities of forming a partnership with local fitness facilities to provide the Department's firefighters with better access to fitness equipment.	Mandatory: No Council approval: Yes Budget impact: Yes Timeframe: Short-term
10-1	Fire Prevention	The Fire Chief should prepare a report for Council's consideration and approval that recommends appointing a full-time training/prevention officer who will dedicate half of their work hours to managing the Department's fire prevention division. The officer would also perform suppression duties during daytime hours (as needed).	Mandatory: No Council approval: Yes Budget impact: Yes Timeframe: Short-term
11-1	Levels of Service	The Fire Chief should review the Department's medical tiered response agreement and update it accordingly. The Fire Chief should then submit the revised agreement to Council for consideration and approval.	Mandatory: No Council approval: Yes Budget impact: No Timeframe: Immediately
11-2	Levels of Service	The Fire Chief should keep track of all calls the Department receives for advanced services. If there is a significant number of calls for advanced services that the Department does not currently provide, the Fire Chief should prepare a report for Council's consideration and approval that recommends updating the Department's list of approved advanced services.	Mandatory: Yes Council approval: Yes Budget impact: Yes Timeframe: Short-term
12-1	Training	The Fire Chief should develop a process for having para-trainers assist with the Department's training program.	Mandatory: No Council approval: No Budget impact: No Timeframe: Immediately
12-2	Training	The Fire Chief should establish a training committee to help plan and implement the Department's training program.	Mandatory: No Council approval: No Budget impact: Yes Timeframe: Short-term

#	Section	Recommendation	Considerations
12-3	Training	The Fire Chief should explore opportunities that allow officers to complete training and obtain certifications beyond what the Department currently offers.	Mandatory: No Council approval: No Budget impact: Yes Timeframe: Immediately
12-4	Training	The Fire Chief should prepare a report that recommends appointing a full-time training/prevention officer who will dedicate half of their work hours to managing the Department's training and development program. The Fire Chief should then submit the report to Council for consideration and approval.	Mandatory: No Council approval: Yes Budget impact: Yes Timeframe: Short-term
13-1	Performance Standards and Operational Models	The Fire Chief should continue monitoring the Department's effective response force to determine whether the Department needs to increase its staffing levels, specifically during the daytime.	Mandatory: Yes Council approval: No Budget impact: No Timeframe: Ongoing
14-1	Fire Stations	The Fire Chief should develop a report for Council that recommends replacing Station 3 – Harrow with a new fire station at 2225 Roseborough Road. The report should include a cost analysis and outline the benefits of building a new fire station at the proposed site.	Mandatory: No Council approval: Yes Budget impact: Yes Timeframe: Short-term
15-1	Water Supply	The Fire Chief should ensure that the Department's tanker shuttle service meets all applicable fire service guidelines.	Mandatory: No Council approval: No Budget impact: No Timeframe: Ongoing
16-1	Asset Management	The Fire Chief should prepare a report for Council's consideration and approval that recommends continued investment in the Department's radio communications equipment. The report should address the state of the current radio system and indicate whether the Department should upgrade to fire-quality radios.	Mandatory: Yes Council approval: Yes Budget impact: Yes Timeframe: Short-term

#	Section	Recommendation	Considerations
16-2	Asset Management	The Fire Chief should attempt to form partnerships with external agencies to share the costs of radio purchases and increase interoperability.	Mandatory: No Council approval: No Budget impact: Yes Timeframe: Short-term

1.0 Introduction

1.1 Project Team Selection

The Loomex Group assembled a team of fire service specialists and emergency management professionals to complete this FMP.

Collectively, the members of the project team have decades of experience in the following areas:

- managing fire departments
- managing emergency services providers
- conducting organizational reviews
- developing strategic plans

The project team's range of expertise has ensured that each component of this FMP is informed by technical knowledge and hands-on industry experience.

1.2 Role of the Project Team

The Loomex Group's project team acted in the role of a third-party consultant throughout the FMP development process. In this capacity, the project team completed all reviews from an impartial perspective and evaluated all findings against established legislation and industry best practices.

All findings and recommendations presented in this FMP are objective and are intended to represent the best interests of Essex and its fire protection needs.

1.3 Approach and Methodology

1.3.1 Initial Stakeholder Engagement

Start-up Meeting

The Loomex Group's project team began this FMP by meeting with the Fire Chief to review the project work scope and discuss the project's framework.

Following the start-up meeting, The Loomex Group developed a finalized version of the project framework, which the Fire Chief reviewed and approved.

Stakeholder Meeting

After the start-up meeting, The Loomex Group's project team began its stakeholder engagement sessions.

The project team met with the following stakeholders:

- Doug Sweet (CAO)
- Jake Morassut (Director of Community Services)
- Jason Pilon (Fire Chief)
- Rick Arnel (former Fire Chief)
- Jacey Brockman (Deputy Chief)
- officers and firefighters of the Department
- fire administrative staff

Stakeholder engagement formed an essential part of the FMP development process, as it allowed the project team to meet with the individuals responsible for maintaining the safety of the Essex community and the effectiveness of the Department.

1.3.2 Data Collection and Review

Document Reviews

The FMP development process involved reviewing various administrative, legislative, and operational information about Essex and the Department, such as:

- applicable legislation, by-laws, and agreements
- history of the Department
- organizational structure of the Department
- asset management plans
- response protocols
- operating budgets, capital budgets, and firefighter compensation
- mapping of municipal boundaries, station locations, and response data
- population development data and studies
- Town of Essex Community Risk Assessment (2023)

Site Visits and Engagement Sessions

In addition to document reviews, The Loomex Group’s project team spent time in Essex to observe the community from a first-hand perspective. The project team also conducted a SWOT analysis session with the Department’s personnel.

Overall, the site visits and engagement sessions provided invaluable insights into the Department’s operations, which informed several of the recommendations in this FMP.

1.3.3 Drafting the Fire Master Plan

Core Content

After completing its data collection and reviews, The Loomex Group's project team analyzed its findings and began drafting the FMP. The team ensured that the draft document covered the following core areas:

- current and future community needs
- compliance with legislation, by-laws, and best practices
- firefighter recruitment, training, and retention
- fire stations, apparatus, and equipment
- public education and code enforcement
- fire suppression
- technological needs (including dispatch and radio system needs)

As it completed the draft FMP, the project team kept the following considerations in mind:

- Are there actions the Department can take to better protect firefighter safety?
- Are there actions the Department can take to better protect the community's well-being?
- Are there opportunities for the Department to introduce shared services?
- Are there actions the Department can take to save or avoid costs?

The project team also identified baselines and benchmarks that the Department can use to perform an ongoing self-assessment of its service delivery capabilities.

The FMP development process also involved regular meetings with the Department's staff, which ensured the document benefited from continual stakeholder contributions and review.

Recommendations

Each recommendation in this FMP contains a strategy or action that the Department or Council can implement to address legislation, protect health and safety, or improve the Department's operations. The recommendations also indicate approval, timeline, and budgetary considerations.

By following this FMP's recommendations, the Department and Council will have information they can use to complete the strategic and budgetary planning needed to ensure Essex receives the appropriate fire protection services.

1.3.4 Finalizing the Fire Master Plan

After completing the draft version of the FMP, The Loomex Group provided the document to the Fire Chief for review and comment. The Loomex Group's project team then updated the FMP accordingly.

As per the terms of the project, The Loomex Group will issue the finalized FMP to the Fire Chief. The Loomex Group will then meet with Council to present highlights and recommendations from the finalized document.

2.0 Overview of the Town of Essex

2.1 Formation

The current Town of Essex was created in 1999 through the amalgamation of the former towns of Essex and Harrow and the former townships of Colchester North and Colchester South.

2.2 Location

Essex is one of Canada's most southerly municipalities. According to Essex's official website, the town experiences hot summers and mild winters, and there is rich agricultural land throughout the region.

Essex comprises four urban communities:

- Essex Centre: Essex Centre is the largest urban community in Essex. It contains many local shops and services, and its location provides easy access to the area's main transportation routes.
- Harrow: Harrow contains prime agricultural land and is home to Canada's research centre for greenhouse vegetables and field crops. Harrow also offers several local shops and services, and the community is a hub for some of the region's largest manufacturing companies, such as Sellick and Atlas Tube.
- Colchester: Colchester is a waterfront community on the shores of Lake Erie. The community has several popular attractions, including a marina, a public beach, several wineries, and the Lake Erie Waterfront Trail.
- McGregor: McGregor is a predominantly agricultural community. The area also hosts various outdoor sports and an annual music festival. McGregor is also home to the Essex County Steam and Gas Engine Museum.

Essex is also home to several other smaller communities.

2.3 Land Area

Essex is 277.53 square kilometres in area, with a population density of 76.4 persons per square kilometre.

Figure 1 shows a map of the Town of Essex.

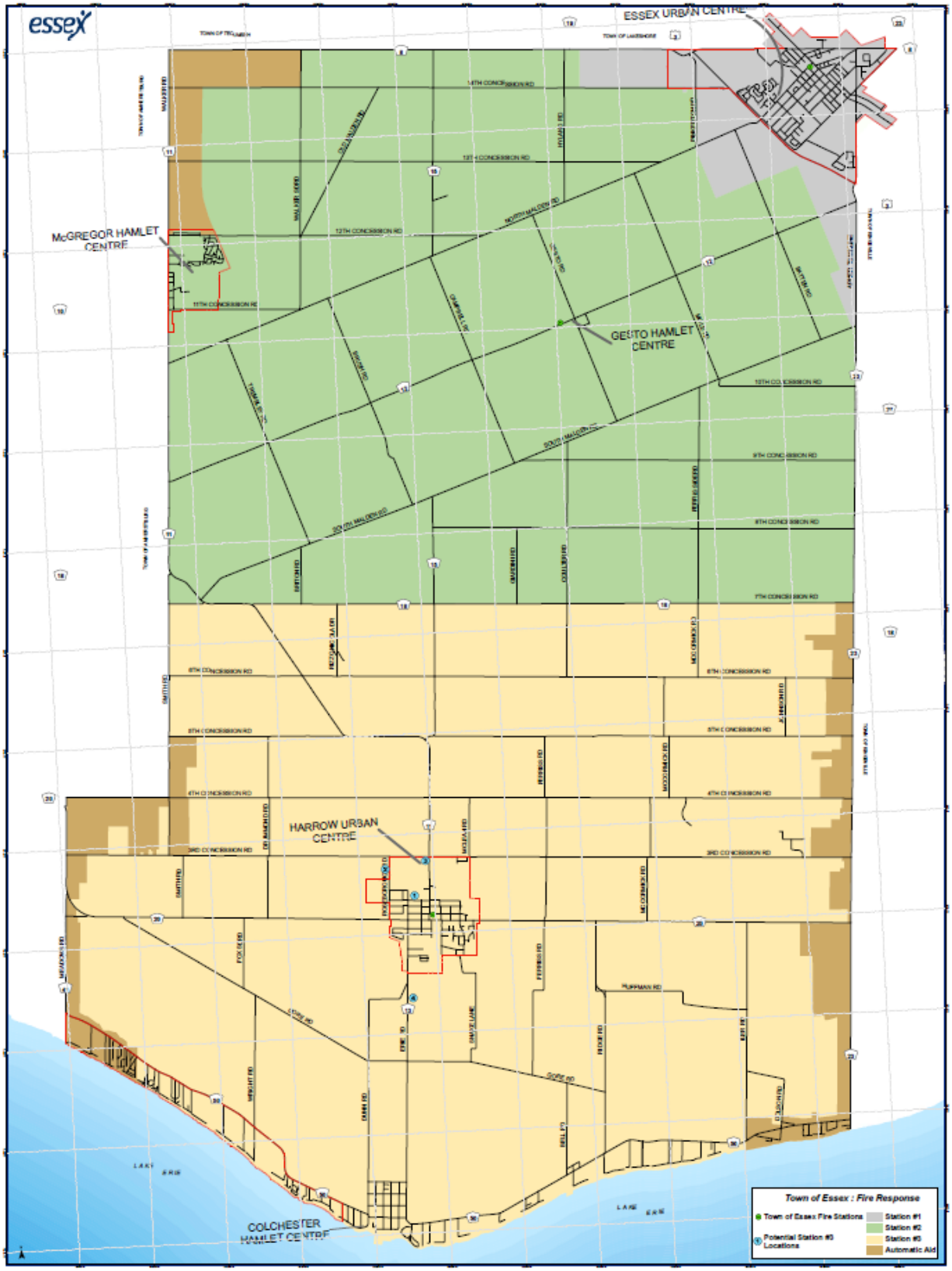

Figure 1. Map of the Town of Essex.

2.4 Population

According to Statistics Canada's 2021 Census of Population, the Town of Essex has a population of 21,216 year-round residents. Essex has the 85th largest population in Ontario and the 213rd largest population in Canada.

Essex's population increased by 3.9 per cent from 2016 to 2021. During this period, Ontario's population grew by 5.8 per cent, and Canada's population grew by 5.2 per cent.

In 2021, there were 8,391 private dwellings occupied by permanent residents of Essex, representing an increase of 3.8 per cent from 2016.

2.5 Age Distribution

Table 2 compares the age distribution in the Town of Essex to the Province of Ontario (based on the findings of the 2021 Statistics Canada census).

Table 2. Age distribution in the Town of Essex vs. the Province of Ontario.

Age Range	Essex	Ontario
0 to 14 years	15.3%	15.8%
15 to 64 years	62.8%	65.6%
65 years and over	21.9%	18.5%
85 years and over	2.6%	2.4%

Based on the census data, the average age in Essex is 44.1 (compared to the provincial average of 41.8). The median age in Essex is 46.8 (compared to the provincial average of 41.6).

The Department must remain aware of the number of older residents in the community, especially when it develops fire prevention and public education programs. If the Department relies solely on newer methods of communication (such as social media) to deliver messages, some older residents may not receive the messages, as seniors are more likely to rely on traditional methods of communication (such as local news broadcasts).

2.6 Language

According to the 2021 Statistics Canada census, Essex is a predominantly English-speaking community, with 92.6 per cent of its population identifying English as their first language. Overall, 99.8 per cent of the town's residents can hold a conversation in English, and 6.9 per cent are bilingual in English and French.

2.7 Level of Education

Table 3 compares the highest level of education in Essex to the provincial average (based on the findings of the 2021 Statistics Canada census).

Table 3. Education levels in the Town of Essex vs. the Province of Ontario.

Education Level	Essex	Ontario
No certificate	12.8%	15.3%
High school	28.9%	27.2%
Some post-secondary	38.5%	57.5%

3.0 Overview of Essex Fire and Rescue

3.1 History of Essex Fire and Rescue

Since its founding in 1883, the Department has provided Essex with high-quality fire protection services. The Department's personnel have always been dedicated to protecting the safety of the town's residents, visitors, and property, especially during disasters such as the 1907 train explosion and the 1980 natural gas explosion.

As evidenced by the items displayed at its fire stations (such as the uniform patches and helmets shown in Figure 2), the Department takes pride in its history.

Figure 2. Items displayed at the fire departments in Essex.

Other items at the fire stations (such as the images of past fire apparatus, as shown in Figure 3) serve as reminders of how the Department has advanced through the decades to remain a modern, progressive organization.

Figure 3. Past fire apparatus used by Essex Fire and Rescue Services.

Overall, the items displayed at the Department's fire stations provide evidence of the Department's respect and admiration for its personnel and achievements, both past and present.

Today, fire departments recognize that preventing fires is a critical part of what it takes to protect a community and its residents and businesses. In recognition of the ultimate goal of the fire service, the Department works hard to ensure that it follows the mission statement that is posted in its fire stations:

> The mandate of Essex Fire and Rescue Services is to provide fire protection services and emergency response, public fire and life safety education, and fire prevention initiatives to protect the lives and property of the citizens, businesses, and visitors to the town of Essex.

3.2 Structure of Essex Fire and Rescue

Essex Fire and Rescue is a volunteer fire department that operates out of three fire stations. Table 4 lists the location of each fire station and the number of personnel and apparatus at each facility.

Table 4. Essex Fire and Rescue: fire station details.

Station	Address	Year Built	# of Staff	# of Apparatus
Station 1 – Essex	55 Alice St. N	2013	1 Fire Chief 1 Deputy Fire Chief 1 Assistant Deputy Chief 18 volunteer firefighters 1 part-time support staff member 0.5 administrative support	6

Station	Address	Year Built	# of Staff	# of Apparatus
Station 2 – Gesto	3575 North Malden Rd.	2022	16 volunteer firefighters	3
Station 3 – Harrow	25 Centre St. E	1980	18 volunteer firefighters	5

For more information about the Department's fire stations and fire apparatus, refer to sections 14 and 16 of this FMP.

3.3 Department Personnel

3.3.1 Number of Personnel

As of this FMP, the Department's full complement of 54 suppression staff includes the following members:

- 3 chief officers
- 3 volunteer district chiefs
- 12 volunteer captains
- 36 volunteer firefighters

Although volunteer numbers fluctuate, the Department strives to maintain a full complement of suppression staff. The Department also has a support staff of two part-time members.

The following subsections provide overviews of the Department's personnel and their respective duties.

3.3.2 Fire Chief

In addition to the overall management of the Department, the Fire Chief's main responsibilities are as follows:

- fire suppression and emergency response
- training
- community relations
- emergency management (including acting as the community emergency management coordinator for Essex)
- budgets and funding allocation (including asset management, equipment purchasing, and volunteer firefighter forecasting and recruitment)

The Fire Chief is also responsible for collaborating with other emergency response agencies and municipal departments (as per the FPPA, corporate policies and procedures, by-laws, and other applicable legislation).

3.3.3 Deputy Chief

The Deputy Chief works under the direction of the Fire Chief and has the following responsibilities:

- Coordinate the Department's training activities.
- Develop the Department's annual training schedule and lesson plans.
- Help the district chiefs and captains facilitate the Department's training program.
- Assume responsibility for managing the Department's compliance requirements with provincial and national standards, including NFPA 1001, levels 1 and 2.
- Ensure the Department is compliant with WHMIS regulations, OHSA requirements, and internal policies and procedures.
- Assist with ongoing recruitment and retention.
- Review the Department's performance standards (such as internal policies, procedures, and disciplinary matters) in accordance with applicable municipal policies and current legislation.
- Manage the Department's officer development program (including applicable course selection and bookings) to ensure the program complies with NFPA 1021, NFPA 1041, NFPA 1521, and NFPA 1561.
- Supervise the Department's personnel on and off the fireground to ensure they are operating in compliance with applicable legislation.
- Serve as an acting fire chief when the Fire Chief is absent.
- Oversee the Department's fire prevention activities.
- Enforce the Ontario Fire Code and related legislation (where applicable).
- Ensure the Department's fire apparatus and equipment comply with applicable safety standards.
- Carry out applicable emergency management duties in Essex (including acting as the town's alternate community emergency management coordinator).

3.3.4 Assistant Deputy Chief

The Assistant Deputy Chief's focuses on the Department's various fire prevention, fire inspection, and public education services. The position also supports the Department's fire operations.

The Assistant Deputy Chief has the following responsibilities:

- Enforce the Ontario Fire Code and related legislation (where applicable).
- Conduct various inspections, including request, mandatory, fire safety, and vulnerable occupancy inspections.
- Conduct building inspections of the vulnerable occupancies in Essex.
- Maintain the Department's inspection records and reporting requirements.
- Use the results of building inspections to develop risk mitigation strategies and risk awareness for applicable occupancies, especially care and treatment occupancies and retirement homes.
- Maintain the Department's smoke/CO alarm awareness programs.
- Provide public education by participating in fairs, community events, station tours, school events, and other related functions.

In addition to these duties, the Assistant Deputy Chief provides support to the Deputy Chief and the Fire Chief as they perform their roles.

3.3.5 District Chiefs

The Department has three district chiefs (one district for each of its fire stations). The district chiefs are volunteers within the organization, and they serve as a vital link between the Fire Chief, Deputy Chief, Assistant Deputy Chief, and firefighters.

Each district chief has the following responsibilities:

- Supervise the captains and firefighters under their command.
- Supervise the activities at their station, including all emergency operations.
- Assist the Fire Chief, Deputy Chief, and Assistant Deputy Chief (as needed) to help the Department operate effectively and compliantly with all applicable policies and legislation.

3.3.6 Fire Suppression Division

The Department's fire suppression division comprises personnel from all three of its fire stations. Except for the Fire Chief, Deputy Chief, and Assistant Deputy Chief, all fire suppression personnel are volunteer firefighters. As of this FMP, the fire suppression division consists of 51 volunteer officers and firefighters.

The fire suppression division is responsible for completing suppression duties, fire prevention duties, and various public education duties.

3.3.7 Fire Prevention and Public Education Division

The Department's fire prevention and public education division provides various fire and life safety education to the residents of Essex. The division has the following goals:

- Help the Department reduce injuries, fatalities, and property damage in Essex through proactive fire prevention initiatives.
- Help the Department meet applicable compliance requirements.

Some of the Department's proactive fire prevention initiatives include smoke/CO alarm programs, as well as events such as Emergency Preparedness Week and Fire Prevention Week.

As part of the fire prevention and public education division, the Assistant Deputy Chief is responsible for completing various inspections, including complaint, request, retrofit, self-initiated, and vulnerable occupancy inspections. The Assistant Deputy Chief is also responsible for verifying that the Department conducts its inspections in accordance with the FPPA and other applicable policies and legislation.

3.3.8 Administrative Assistant

As of this FMP, the Department has one part-time administrative assistant who works 20 hours per week.

The administrative assistant's main responsibilities are as follows:

- Help the Fire Chief with various administrative tasks, such as reviewing insurance invoices and OFM reports.
- Complete data entry using the Standard Incident Reporting System.
- Ensure the Department's training and certification records are up to date and submitted to the proper authority (as required).
- Complete correspondence with various agencies, insurance companies, and the public on behalf of the Fire Chief, Deputy Chief, and Assistant Deputy Chief.
- Complete billing and finance reviews (including reviews of invoices and supplies) on a regular basis.
- Complete other general administrative duties for the Department (as required).

The administrative assistant plays a vital role in the Department. The position provides backup support for the Department's leadership personnel, which allows them to focus on their primary duties. However, a part-time work schedule does not give the administrative assistant enough time to complete all required duties. Going forward, the Department should consider updating the role to a full-time position.

3.3.9 Support Firefighter

As of this FMP, the Department has one part-time support firefighter. The position is funded by the Workplace Safety and Insurance Board through an agreement with the Department. The support firefighter works a five-day, 25-hours-per-week schedule.

The support firefighter is responsible for assisting the Fire Chief, Deputy Chief, and Assistant Deputy Chief with various tasks. The role's main responsibilities include the following duties:

- Complete vehicle movements.
- Inspect equipment and facilities.
- Inspect and repair various assets.
- Check, test, and clean various equipment, including PPE used by the Department's firefighters.

The assistance provided by the support firefighter benefits the Department in several ways:

- The additional support helps the Department complete its day-to-day operations.
- The additional support helps the Department's management team focus on their primary duties.
- The additional support helps reduce the workload assigned to the Department's volunteer firefighters, which supports retention rates.

Going forward, the Department should consider expanding the support firefighter role after the contract for the current position is terminated. For instance, it is in the Department's best interest to hire a full-time support firefighter. Doing so would ensure there is a dedicated staff member to focus on the needs of the Department and the volunteer firefighters.

The Department should also review its operational needs and the needs of its volunteer firefighters to identify other duties that it can assign to a full-time support firefighter. For instance, the support firefighter could serve as a facilities and equipment coordinator to help manage the Department's fire stations and vehicles.

3.4 Recommendations

After assessing the Department's structure, The Loomex Group developed the following recommendations:

3-1. The Fire Chief should prepare a report for Council's consideration and approval that recommends changing the administrative assistant role from a part-time position to a full-time position.

3-2. The Fire Chief should prepare a report for Council's consideration and approval that recommends hiring a full-time support firefighter after the contract for the current part-time position ends.

4.0 Legislation and Standards

4.1 Overview of Legislation and Standards

In Ontario, fire departments must adhere to the following legislation:

- Fire Protection and Prevention Act, S.O. 1997 ("**FPPA**")
- Occupational Health and Safety Act, R.S.O. 1990 ("**OHSA**")
- Emergency Management and Civil Protection Act, R.S.O. 1990 ("**EMCPA**")
- O. Reg. 332/12: Building Code ("**OBC**")
- O. Reg. 213/07: Fire Code ("**OFC**")
- Highway Traffic Act, R.S.O. 1990
- Municipal Act, S.O. 2001
- Municipal Freedom of Information and Protection of Privacy Act, R.S.O. 1990
- applicable municipal by-laws

The following standards and guidelines also influence how fire departments operate:

- National Fire Protection Association ("**NFPA**") standards
- Ontario Fire Marshal ("**OFM**") Public Fire Safety Guidelines
- Ontario Fire Service Health and Safety Committee's firefighter guidance notes

Although it is not mandatory to follow the NFPA standards, OFM guidelines, and health and safety guidance notes, fire departments should strive to adhere to these standards wherever possible. Each set of policies provides benchmarks that fire departments can use to gauge the effectiveness of their operations and firefighter safety initiatives.

4.2 Requirements of the Fire Protection and Prevention Act

Context

The FPPA outlines the minimum standards that fire departments must meet. Various FPPA requirements also relate to other regulations and codes, such as the OFC and OBC, which deal with life safety systems.

Appointing a fire chief is one of the most important requirements a municipality must meet. Section 6 (3) of the FPPA states that a fire chief is the "person who is ultimately responsible to the council of [the] municipality that appointed him or her for the delivery of fire protection services." This requirement means that fire chiefs are responsible for ensuring their fire departments meet the requirements of the FPPA.

Findings

Table 5 lists some of the legislative requirements that all fire departments must meet. The table indicates if Essex is compliant with the stated requirements.

Table 5. Selected requirements the Fire Protection and Prevention Act.

Reference	Requirement	Compliant?
FPPA, 2 (2) (b)	“Establish a fire department.”	Yes
FPPA, 2 (1) (a)	“Establish a program in the municipality which must include public education.”	Yes
FPPA, 6 (1)	“Appoint a fire chief for the fire department.”	Yes
OFC, Div. B, 1.1	Smoke/CO alarm program	Yes
O. Reg. 364/13	Vulnerable occupancy program	Yes
O. Reg. 365/13	Inspections completed upon complaint	Yes
O. Reg. 365/13	Inspections completed upon request	Yes
O. Reg. 378/18	Community risk assessment	Yes

As noted in the table above, the Department is currently compliant with the applicable requirements of the FPPA.

Going forward, the Department should strive to continue allocating the time and resources needed to meet its legislative obligations.

5.0 By-laws

5.1 Importance of By-laws

Over the years, many municipalities across Canada have been challenged in court over the decisions of their municipal councils. The challenges often relate to operational policies that determine how a given municipality's fire department provides its services and operates at fire scenes. One such challenge in the Province of Quebec resulted in a precedent-setting decision by the Supreme Court of Canada ("**SCC**").

In the 1989 case of Laurentide Motel Ltd. v. Beauport, the SCC found that Beauport, Quebec, was liable for a sizable portion of the fire loss that occurred at the Laurentide Motel in 1972. Prior to the 1980s, municipalities and fire departments were largely considered free from civil liability for firefighting efforts. An important aspect of determining liability was the issue of "Policy Decisions v. Operational Decisions." As a result of the SCC's 1989 decision, the City of Beauport had to pay over $500,000, plus interest.

A summary of the Supreme Court Judgments reads as follows:

> A client's negligence led to a fire that damaged the appellants' hotel complex in the city of Beauport. As soon as they arrived, the firefighters sprayed water from the fire truck onto the fire, but the water soon ran out owing to the impossibility of connecting with the hydrants. The latter, which were difficult to reach and covered with snow, were unusable because they were frozen or broken. It was not until some forty minutes later that water was finally obtained from the hydrants. The appellants brought an action for damages against the person who had set the fire and the respondent, alleging fault by the latter in fighting the fire, namely that its equipment had not been maintained and did not function properly, as well as fault by its employees in the performance of their duties.[1]

This FMP includes a summary of the Laurentide Motel Ltd. v. Beauport case as an object lesson for Council to consider when making decisions about fire protection services.

Council should note that the case summary identified water supply and negligence in firefighting operations as crucial issues. While there is no question that a client in the motel was responsible for causing the fire, the city's failure to maintain and operate effective fire protection services meant that the Beauport was partially responsible—and therefore liable—for most of the ensuing costs.

[1] Laurentide Motels Ltd. v. Beauport (City), 1 SCR 705 (1989).

In the Beauport ruling, the SCC determined that policy decisions made by a municipal council are mostly free from liability. The SCC made that decision because a municipal council is an elected body that communicates its decisions in ways that should be familiar and accessible to its community's citizens (such as by-laws, council minutes, or news reports). If most citizens are unhappy with their council's decisions, they can elect different councillors at the next election. Conversely, when operational decisions are made by fire departments, the public may not be aware of the specifics of those decisions. As a result, the public may have limited or no opportunity to question or change decisions that could adversely affect them.

Following the SCC ruling in the Laurentide Motel Ltd. v. Beauport case, many municipalities have updated their fire protection by-laws. The revisions give the local council the authority to make decisions about its community's fire protection services and policies rather than leaving those matters exclusively to the fire department.

5.2 Establishing and Regulating By-laws

Context

An establishing and regulating by-law ("**E&R By-law**") specifies which services the local fire department must provide to its community. The content of an E&R By-law is based on the recommendations of the fire department, which the local municipal council approves.

Findings

As of this FMP, Essex's E&R By-law is By-law No. 2012.

Core Services

Under By-law 2012, Council is responsible for approving the Department's core services, which include the following:

- fire suppression services
- fire prevention services
- fire safety education services
- mitigation and prevention services (regarding risks created by the presence of unsafe levels of carbon monoxide)
- communication services
- training services (regarding persons who provide fire protection services, rescue services, and emergency services, as well as the delivery of such services)

Specific Fire Protection and Emergency Services

According to schedules “C” and “D” of By-law 2012, the Department must provide specific fire protection and emergency services, including:

- basic firefighting services (including structural and rescue services)
- vehicle rescue, extrication, and firefighting services
- grass, brush, and forestry firefighting services
- marine firefighting services (for small vessels)
- marine firefighting services (for large vessels)
- shore-based water and ice rescue services
- basic medical assistance (including CPR and defibrillation services)
- hazardous material response services (at the awareness level)
- emergency assistance (for police crews, ambulance crews, and the public)

Limited/Agreement Services

Under By-law 2012, the Department provides services as part of the following agreements:

- mutual aid
- automatic aid
- fire protection agreements
- transportation incidents involving vehicles, trains, watercraft, and aircraft

Services Not Provided

Under By-law 2012, the Department is not required to provide the following services:

- dive rescue services
- trench rescue services

5.3 Other By-laws

In addition to By-law 2012, Essex has established the following fire protection by-laws:

- By-law 1399, a by-law regarding open-air burning.
- By-law 2040, a by-law regarding false alarms by-laws and applicable fee schedules.

- By-law 2011, a by-law regarding fireworks.
- By-law 299, a by-law regarding fire routes.
- By-law 1854, a by-law regarding a fire dispatch services with Windsor–Essex.
- By-law 2203 – A by-law regarding an emergency response plan for the Town of Essex.

By-law Considerations

Some of the recommendations in this FMP will require Essex to revise its E&R by-law.

If the Department implements any recommendations that require Essex to update its by-laws, the Fire Chief must provide Council with an updated version of the E&R by-law for consideration and adoption.

5.4 Recommendations

After assessing the by-laws in Essex, The Loomex Group developed the following recommendations:

5-1. The Fire Chief should update the Town of Essex Establishing and Regulating By-law (as needed) if the Department implements any of the recommendations in this fire master plan.

5-2. The Fire Chief should complete an annual review of the Town of Essex Establishing and Regulating By-law to verify that it remains current with all emergency and non-emergency services the Department provides.

5-3. The Fire Chief should review all fire service by-laws in the Town of Essex and update them to ensure they are current and applicable. The Fire Chief should then present all updated by-laws to Council for consideration and approval.

5-4. The Fire Chief should establish a schedule for reviewing all fire service by-laws in the Town of Essex on a regular basis.

6.0 Agreements

6.1 Overview of Agreements

Under the authority of Municipal Act, 2001, S.O. 2001, c. 25 and the FPPA, a municipality can enter into an agreement with another municipality to provide or receive a service.

As outlined in the OFM's Public Fire Safety Guidelines, there are several differences regarding the requirements for such agreements. The following subsections discuss those differences.

6.2 Mutual Aid Plans

Context

OFM Public Fire Safety Guideline 04-05-12: Mutual Aid states that mutual aid plans allow a participating fire department to request assistance from a neighbouring fire department that is also authorized to participate in a plan approved by the Fire Marshal.

A mutual aid plan specifies that municipalities providing service to the designated areas agree to assist each other in the event of an emergency. Section 7 of the FPPA states that the Fire Marshal may appoint fire coordinators to "establish and maintain a mutual aid plan under which the fire departments that serve the designated area agree to assist each other in the event of an emergency.

6.3 Automatic Aid Agreements

Context

OFM Public Fire Safety Guideline 04-04-12: Automatic Aid states that automatic aid agreements are considered in municipal areas where a fire department outside of a municipality is closer than the nearest fire department within the municipality.

Automatic aid agreements allow the closest fire department to respond to an incident regardless of municipal boundaries. These agreements reduce the time it takes for firefighters to arrive and extinguish a fire, which helps minimize property loss and maximize the protection of residents.

6.4 Fire Protection Agreements

Context

OFM Public Fire Safety Guideline 04-09-12: Fire Protection Agreements defines fire protection agreements as contracts between participating municipalities that address the specifics of providing or receiving fire services at a cost.

A municipality may enter into a fire protection agreement if it does not have an existing fire department and does not want to establish one. A fire protection agreement can provide a municipality with access to the following support and resources:

- specialized equipment
- staffing
- public education
- code enforcement
- various services

A municipality may also enter into a fire protection agreement to have multiple departments operating and managing a fire department jointly.

It is the responsibility of a municipal council to approve all fire protection agreements its municipality looks to establish.

6.5 Current Agreements

Table 6 presents the Department's current fire service agreements as listed in the E&R By-law 2012.

Table 6. Agreements in place with Essex Fire and Rescue.

Partner	Services Provided
Windsor Fire and Rescue Services	Fire protection agreement Hazardous materials response services
Kingsville Fire and Rescue	Water rescue entry/boat services
Kingsville Fire and Rescue	Ice water rescue services
Kingsville Fire and Rescue	High-angle rescue services
Kingsville Fire and Rescue	Low-angle rescue services
Provincial Heavy Urban Search and Rescue	Structural collapse response services
Tecumseh Fire Rescue Service	Confined space rescue services
Essex-Windsor EMS	Medical tiered response

7.0 Stakeholder Engagement

7.1 Engagement Sessions

The FMP development process included the following stakeholder engagement sessions:

- a series of meetings with the Fire Chief
- a series of meetings with the Deputy Chief
- a series of meetings with the Assistant Deputy Chief
- a series of meetings with the Department's personnel
- a follow-up survey for any firefighters and officers unable to attend the in-person SWOT analysis
- a meeting with the CAO
- a meeting with the Director of Community Services

The purpose of the engagement sessions was to collect first-hand insights about the Department and the Essex community from applicable stakeholders.

7.2 Public Survey

Context

The FMP development process included a short online survey designed to gather the opinions of Essex's residents and business owners regarding the fire protection services they receive.

The survey asked each respondent 15 questions related to the following topics:

- the respondent's previous interactions with the Department
- the respondent's general opinion of the Department
- the respondent's opinion on which fire protection services offered by the Department are most important

Findings

In total, 48 people responded to the online survey. According to the results of the online survey, residents and business owners in Essex have an overall positive impression of the Department.

Survey respondents ranked the importance of the Department's services as follows:

1. Fire responses (average score: 9.8 out of 10)
2. Responses to natural disasters in the community (average score: 9.3 out of 10)
3. Medical response (average score: 9.2 out of 10)
4. Vehicle collision response (average score: 8.9 out of 10)
5. Fire code enforcement (average score: 8.4 out of 10)
6. Conducting fire inspections for businesses (average score: 8.3 out of 10)
7. Fire prevention provided through public education (average score: 7.8 out of 10)
8. Smoke detector and carbon monoxide detector information (average score: 7.8 out of 10)
9. Conducting fire inspections for residences (average score: 6.6 out of 10)
10. Attending community events (average score: 5.9 out of 10)
11. Social media engagement (average score: 5.4 out of 10)

7.3 SWOT Analysis with Firefighters

Context

A SWOT analysis is a planning method that organizations use to identify strengths, weaknesses, opportunities, and threats that affect their ability to achieve their goals. During a SWOT analysis, organizations examine both internal and external factors that may be helping or hindering their operations.

Process

The FMP development process included three SWOT analysis sessions for the Department's officers and firefighters. There were two evening sessions and one daytime session.

If any officers and firefighters were unable one of the three SWOT analysis sessions, they had the option of providing their thoughts and comments through an online survey or a face-to-face meeting. The online survey also allowed personnel to expand on their contributions to the SWOT analysis discussions (if desired).

Findings

Highlights and common themes from the SWOT analysis sessions (and other engagement opportunities) are as follows:

- The Department's officers and firefighters are committed to delivering high-quality emergency services to the Essex community.

- The Department's officers and firefighters feel a deep connection to their individual fire stations, the Department as a whole, and the Essex community.
- The Department is facing ongoing recruitment and retention concerns. To address those concerns, the firefighters suggested enhancing the Department's recognition program, which could potentially entice the Department's current staff to remain with the organization.
    - The firefighters did not identify any initiatives that could possibly bolster the recognition program.
- The Department's personnel are satisfied with the capabilities and leadership provided by the Department's management team.
- The Department's personnel believe that the level of morale in the Department has never been better.
- In general, the Department's personnel are satisfied with their fire apparatus and equipment, and they believe that all equipment requests are treated as high-priority concerns. However, the personnel believe that some apparatus may not be providing the number of "seats" needed to carry responders to the scene of emergency calls. Moreover, personnel have concerns regarding future apparatus purchases to remedy the seating situation.
- Some personnel recognize that the Department provides support through its Road to Mental Readiness program and its peer support programs. However, there is the feeling that the Department should introduce additional programs to address the overall health and wellness of its firefighters.

7.4 Recommendations

After assessing the results of the stakeholder engagement sessions, The Loomex Group developed the following recommendations:

7-1. The Fire Chief should review the results of the public survey to identify ways the Department's services can provide more value to the Town of Essex's residents and businesses.

7-2. The Fire Chief should review the results of the SWOT analysis to determine whether the Department should update its operations to incorporate suggestions provided during the analysis.

8.0 Emergency Management

8.1 Overview of Emergency Management Compliance Requirements

Before they can receive their annual compliance recognition, municipalities must meet specific requirements of the EMCPA and O. Reg. 380/04: Standards.

Under the EMPCA, each municipality has the following obligations:

- Establish an emergency management program ("**EMP**") and an EMP committee.
- Provide annual emergency management training to all members of the municipal emergency control group ("**MECG**").
- Conduct an annual exercise that uses the EMP and involves all members of the MECG.
- Designate a primary and alternate community emergency management coordinator ("**CEMC**").
- Review the community's critical infrastructure annually (making updates as required).
- Review the community's hazard identification and risk analysis annually (making updates as required).

The EMCPA states that municipalities are responsible for fulfilling these obligations, not fire departments. However, many municipalities appoint a member of their fire department's senior management team to serve as their CEMC or alternate CEMC.

8.2 Community Emergency Management Coordinator

Findings

The Fire Chief is the CEMC for Essex, and the Deputy Chief is the town's alternate CEMC.

Although the Department's personnel have the requisite knowledge and skills to serve as the primary and alternate CEMCs for Essex, this setup presents a problem. When an emergency occurs, it is likely that one or both Department members will need to attend the emergency scene. If so, neither of Essex's CEMCs will have the capacity to fulfill their required duties. Therefore, Essex should assign at least one of the CEMC positions to someone from outside the Department. Ideally, Essex should appoint someone with previous administrative experience, as this will help ensure the town can complete all required provincial compliance documentation.

8.3 Emergency Plans and Exercises

Findings

The CEMC organizes all required emergency training and exercises for Essex. The CEMC has incorporated external resources for both the training and exercises, which has allowed all MECG members to practise fulfilling their assigned duties.

Essex has assessed the results of its HIRA to determine appropriate response procedures for the community. Essex has incorporated the Province of Ontario's Incident Management System model into its emergency response procedures.

The Fire Chief follows Essex's approved EMP and ensures that the Department has a prominent role in the administration of the town's ERP.

8.4 Recommendations

8-1. The Town of Essex should assign an individual from outside the Department to serve as either the primary or alternate community emergency management coordinator. Ideally, the incumbent should have an administrative background.

8-2. The Community Emergency Management Coordinator should continue organizing annual emergency management training and exercises for the Town of Essex Municipal Emergency Control Group. Both the training and exercises should continue to incorporate external resources in order to ensure all participants can practise fulfilling their assigned duties.

9.0 Occupational Health and Safety

9.1 Overview of Occupational Health and Safety

Fire departments must take occupational health and safety seriously. Firefighting is a challenging profession, and it is impossible to know what dangers a firefighter will face on any given day. Emergencies may escalate unexpectedly, involve harmful chemicals, or cause serious mental trauma to first responders.

Protecting the health and safety of firefighters is essential. It is imperative for each community to provide their firefighters with access to the necessary support and equipment. For instance, firefighters must always have access to the protective equipment they need to perform their duties, as they often need their gear at a moment's notice. All municipalities must also provide firefighters with respect and appropriate benefits for their service.

Fire departments should also ensure they take steps to protect the safety of their firefighters by implementing health and safety practices that are proactive rather than reactive.

9.1.1 Essential Health and Safety Topics

This section of the FMP discusses the following topics from a health and safety perspective:

- legislation and best practices
- joint health and safety committee ("**JHSC**")
- personal protective equipment ("**PPE**")
- firefighter health and wellness
- competent supervisors and officer development
- driver training and licensing

9.2 Legislation and Best Practices

Context

Fire departments must comply with the OHSA and all associated regulations.

As a best practice, fire departments should also adhere to the firefighter guidance notes developed by the Ontario Fire Service Health and Safety Advisory Committee (which the Minister of Labour is responsible for reviewing and approving). The committee was formed under section 21 of the OHSA and comprises stakeholders from across Ontario.

Findings

The Department takes a proactive approach to promoting and maintaining health and safety in the workplace. For example, the Fire Chief and representatives from the Department's fire stations organize and implement various health and safety initiatives throughout the year.

The Department has also established protocols in response to the requirements of the OHSA and related health and safety legislation. (The following subsections discuss a selection of those protocols.)

9.3 Joint Health and Safety Committee

Context

All fire departments should have a JHSC that includes representation from senior management personnel and firefighter personnel. (In some municipalities, the local fire department and municipal staff share a single health and safety committee.)

Ideally, a JHSC should perform monthly health and safety inspections and meet at quarterly intervals to discuss applicable concerns.

Findings

As of this FMP, the Department has a JHSC that is compliant with applicable OHSA requirements.

The JHSC comprises the Deputy Chief, a human resources manager, and representation from each of the Department's three stations. When the JHSC convenes at Station 2 – Gesto, a municipal staff member will also take part in the meeting, as the station's administrative assistant is a unionized employee of Essex.

As per its terms of reference (which are compliant with applicable regulations and by-laws), the JHSC takes all reasonable efforts to maintain a quarterly meeting schedule. If the JHSC cannot maintain this schedule, it is usually due to circumstances outside of the group's control (such as restrictions implemented during the COVID-19 pandemic). The JHSC also ensures that it completes regular station inspections and documents all relevant findings.

During its meetings, the JHSC will review the Department's operational guidelines and safety-related procedures in order to identify areas that require amendments. By doing so, the JHSC helps ensure that the Department remains up to date with current fire scene procedures, fire station protocols, and equipment recommendations. In addition, the group verifies that the Department is incorporating applicable OHSA requirements into its training program and fire ground operations.

Shortly after each meeting, the JHSC finalizes the minutes from the meeting and posts the information on the Department's health and safety boards, which are located at each of its fire stations. Figure 4 shows an example of the one of the health and safety boards.

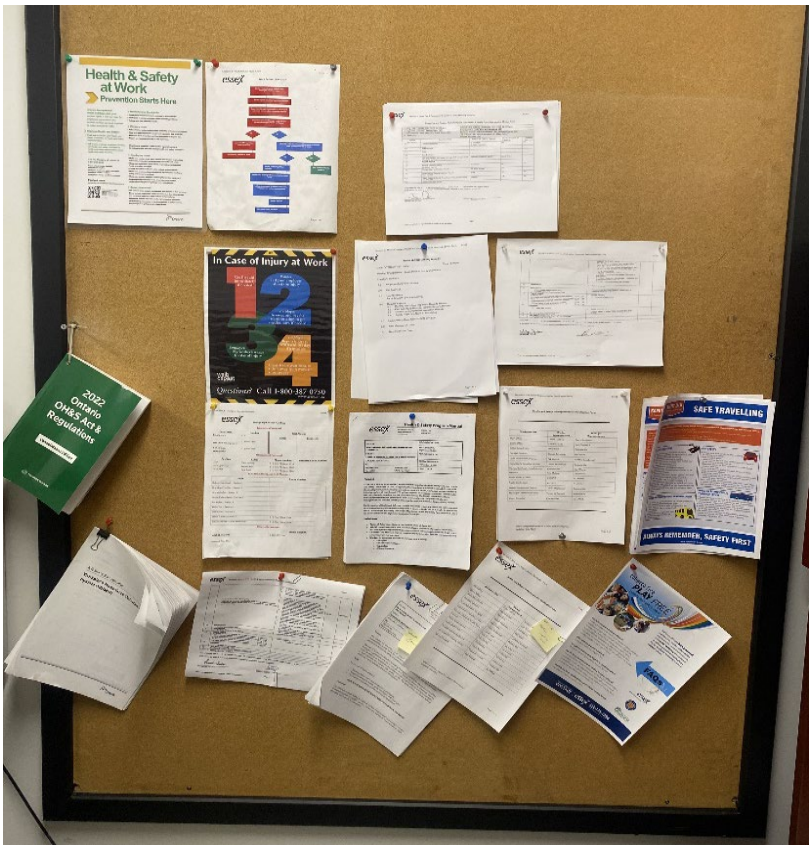

Figure 4. Health and safety board.

Although the JHSC dutifully posts its meeting minutes on the health and safety bulletin boards, some of the boards require housekeeping to make sure all postings are visible and older minutes are removed and indexed accordingly.

In addition to holding meetings and completing station inspections, the JHSC has also implemented a formal complaint process. As per this process, the Department's personnel can fill out a form to submit health and safety concerns. Upon receipt of a complaint, the JHSC will review the noted health and safety concerns and arrange appropriate follow-up actions.

Overall, the JHSC's structure and operations indicate that the Department's personnel understand the roles and responsibilities needed to advance health and safety in the workplace.

9.4 Personal Protective Equipment

Firefighters use many types of PPE, including:

- bunker gear (such as firefighter pants and jackets)
- helmets
- firefighting boots
- gloves
- flash hoods
- self-contained breathing apparatus ("**SCBA**")

These items are the primary equipment firefighters use to protect themselves from injury and death.

9.4.1 Cleaning and Maintenance of Personal Protective Equipment

Context

Over the last few decades, health and safety agencies have conducted studies to find ways of reducing firefighter injuries and deaths. For example, WSIB Ontario has recognized that certain cancers are directly attributable to the by-products of fires and hazardous materials. As a result of these studies, the fire service has revised many of its PPE regulations.

There are now several legislative requirements that fire departments must follow in order to ensure their PPE meets compliance standards. For instance, all firefighter PPE must meet NFPA standards to comply with occupational health and safety regulations. Remaining compliant with PPE regulations is vitally important, given how frequently firefighters use their PPE.

As part of their obligation to meet PPE standards, fire departments must strive to implement robust PPE cleaning measures that limit the chances of their firefighters and fire apparatus becoming exposed to contaminants. Completing proper PPE cleaning will also help fire departments maintain clean environments in their fire stations.

Findings

The Department has established several PPE cleaning protocols. For example, the Department sends all its PPE to an appropriate third-party company for annual cleaning and testing. The Department also follows in-house guidelines regarding the care, cleaning, and inspection of its PPE following any contamination. The Department also instructs firefighters on post-call, inspection, and follow-up procedures. In addition, the Department conducts annual gear inspections and on-demand testing.

Best practices suggest that PPE should be replaced at least every ten years. The Department follows an eight-year replacement schedule. The Department ensures that alternate PPE is available to replace damaged PPE discovered during post-call inspections.

Overall, the Department proactively follows applicable PPE standards and is meeting legislative requirements regarding PPE cleaning and maintenance.

9.4.2 Sizing of Personal Protective Equipment

Context

When firefighters wear PPE that is too long or bulky, it may impede their movement and stability.

In some fire departments, it is common for firefighters to wear PPE that is a “close fit.” However, this practice raises health and safety concerns. For example, when female firefighters wear turnout gear designed for male firefighters, they are at a higher risk of injury or death. The NFPA and other organizations have gathered sizing data that identifies the need for female firefighters to have uniforms designed specifically for them. The sizing data also indicates that female firefighters cannot simply “size down” with their gear, as this option is ineffective and inappropriate.

Ideally, all fire departments should arrange for their firefighters to have PPE that is properly sized by a manufacturer representative. Although there is a cost to acquiring properly sized PPE, it is a necessary cost, as it helps protect firefighter safety.

Findings

As part of its PPE program, the Department ensures that all bunker gear is accurately sized for each individual member and fits appropriately and comfortably.

Overall, the Department proactively follows legislative requirements regarding PPE sizing.

9.4.3 SCBA Testing and Compliance

Context

Firefighters must wear SCBA whenever a toxic atmosphere is present or suspected, such as during fires, carbon monoxide calls, and hazardous material spills.

Findings

The Department contracts a qualified third party to inspect and service its compressor. As part of this maintenance work, a third-party provider also tests the compressor’s air quality.

The Department also sends its SCBA to a qualified third party for annual inspections, tests, and repairs. In addition to this maintenance work, the Department arranges a qualified third party to complete hydrostatic testing of the SCBA cylinders every five years.

9.4.4 Respirator Fit Testing

Context

All firefighters must have fit-tested masks when they wear SCBA during an emergency response or wear an N95 mask for protection against airborne contaminants.

CAN/CSA Z94.4.18, *Selection, Use, and Care of Respirators*, outlines specific fit-testing requirements that all fire departments should follow.

Findings

The Department has a fit-testing policy regarding its respirators. As per the policy, respirator fit testing takes place every two years.

As of this FMP, the Department completed respirator fit testing in 2023. The next round of respirator fit testing is scheduled for 2025.

9.5 Firefighter Health and Wellness Programs

Context

It is crucial for employers to support the well-being of their employees in order to maintain a healthy workplace environment.

Fire departments can support their firefighters through health and wellness programs that address topics such as:

- cancer prevention
- nutrition
- physical activity
- critical incident management
- post-traumatic stress disorder

When fire departments offer physical and mental health support services, firefighters have resources they can use to manage the stresses of working in the fire service.

Health and wellness programs, such as mental wellness programs, critical incident stress management ("**CISM**") programs, and peer support programs, can also help fire departments improve staff retention and reduce costs.

Findings

The Department is clearly committed to health and wellness and has made a good effort to ensure that its firefighters have access to support. As of this FMP, the Department has established two main health and wellness programs: a mental wellness program (called the Road to Mental Readiness program, or R2MR program) and a peer support program.

The R2MR program is designed to improve the overall mental wellness of the Department's firefighters. The program addresses pre-incident education, CISM, and peer support.

The Department may consider forming a mental health committee to manage the R2MR program. Firefighters on the mental health committee would serve as peer support members. Peer support members provide the following services:

- Deliver onboarding training to new recruits.
- Deliver regular mental health training to fire personnel.
- Provide critical incident stress defusing and debriefing.
- Provide peer support to fire personnel.

The Department can also consider supporting health and wellness by creating a wellness committee to oversee a formalized wellness program. The wellness committee should include representation from all levels of the Department. The committee would be dedicated to building a stronger foundation for wellness and may wish to develop programs that deal with firefighter fitness. During the SWOT analysis conducted for this FMP, firefighters indicated that the Department should consider focusing on firefighter fitness as part of its wellness program.

Initially, the Department's wellness committee can consider providing the following health and fitness services:

- Contact local fitness facilities to investigate whether they can provide discounts for the Department's firefighters.
- Work with the Family Services Employee Assistance Program to provide information and training on topics such as proper nutrition, exercise, injury prevention, and general wellness strategies.

The wellness committee could also consider contacting personal fitness trainers to conduct assessments for the Department's firefighters. The fitness trainers could then use the results of the assessments to develop a personal fitness program designed to improve core firefighting performance.

9.6 Competent Supervisors

Context

According to the OHSA, when an employer appoints a worker to a supervisory role, that worker must have the prerequisites needed to qualify as a competent supervisor.

The following excerpt from the Province of Ontario's website paraphrases the OHSA's definition of a competent supervisor:

> The OHSA gives employers and workers duties that help support the role of the supervisor. When appointing a supervisor, the employer must ensure the person is competent. To be competent, a supervisor must have enough knowledge, training, and experience to organize the work and how it is to be performed. He or she must also be familiar with the OHSA and any regulations under it that apply to the workplace and know about any actual or potential health and safety hazards in the workplace.[2]

The legislation about competent supervisors applies across different employment sectors, including the volunteer fire service.

Findings

As of this FMP, the Department has 15 officers. All 15 officers are either certified or have their certifications grandfathered through the OFM.

The Department has provided opportunities for its officers to attend courses and complete the exam and certification processes applicable to their roles and duties. The Department has scheduled courses for individuals to attend in early 2024. In conjunction with third-party trainers from Southwest Fire Academy, the Department will provide officers with training to the following NFPA standards:

- NFPA 1041 – Fire Service Instructor, Level I
- NFPA 1021 – Fire Officer, Level I
- NFPA 1021 – Fire Officer, Level II
- NFPA 1021 – Fire Officer, Level III
- NFPA 1561 – Incident Management System & Command Safety
- NFPA 1521 – Incident Safety Officer

See section 12.4.1 for more on officer training and the Department's officer development program.

[2] Ontario.ca, "Supervisors under the OHSA."

9.7 Driver Training and Licencing

Context

An individual should only operate a large vehicle (such as a fire apparatus) after completing specialized training and attaining either a DZ or AZ licence.

If a fire department allows an unqualified firefighter to operate a fire apparatus, it puts the safety of the driver and others at risk. The risk exists from the time the apparatus leaves the station to the time it returns.

Although a DZ or AZ licence is a requirement for operating large vehicles, the Highway Traffic Act outlines a limited exception for the fire service in Ontario. According to O. Reg. 340/94: Drivers Licences s.22:

> Any class of driver's licence, except a Class G1, G2, M, M1 or M2 driver's licence, is authority for:
>
> (a) a police officer or an officer appointed for carrying out the provisions of the Act to drive a motor vehicle of any class including a vehicle equipped with air brakes, other than a motorcycle, on a highway in an emergency and in the performance of his or her duties under the Act.
>
> (a.1) a firefighter, as defined in subsection 1 (1) of the Fire Protection and Prevention Act, 1997, to drive a motor vehicle of any class including a vehicle equipped with air brakes, other than a motorcycle, on a highway in an emergency and in the performance of his or her duties under that Act; and
>
> (b) a motor vehicle mechanic to drive a motor vehicle of any class including a vehicle equipped with air brakes, other than a motorcycle, on a highway while carrying out a road test of the vehicle in the course of servicing it. O. Reg. 340/94, s. 22; O. Reg. 115/03, s. 1; O. Reg. 83/05, s. 14; O. Reg. 254/21, s. 2.

Under O. Reg. 340/94, firefighters holding a Class G driver's licence can operate a fire apparatus when responding to an emergency scene. However, a firefighter holding a Class G driver's licence cannot operate an apparatus when it is time to return from an emergency scene or if the apparatus is needed to complete any other duties. Although O. Reg. 340/90 allows exceptions around licence certifications while responding to an emergency scene, the OHSA does not:

- Section 25 (2)(a) of the OHSA states that an employer must "provide information, instruction and supervision to a worker to protect the health or safety of the worker."
- Section 25 (2)(h) states that an employer must "take every precaution reasonable in the circumstances for the protection of a worker."

The firefighter guidance notes also address licence certifications. Guidance Note 6-7 recommends having firefighters complete theoretical and practical training if their role involves operating a fire apparatus.

It is critically important for fire departments to understand all licence certifications and regulations. For example, suppose a fire apparatus is involved in a traffic accident that results in an injury or fatality while it is travelling to an emergency site. If the driver of that apparatus does not have a valid DZ or AZ licence—and the fire department doesn't have a recognized driver training program in place—the municipality in question is liable for damages under the OHSA.

The example given in the previous paragraph is more than just a hypothetical scenario. Such an incident has occurred in Ontario before, and the MOL charged the municipality in question under sections 25 (2)(a) and 25 (2)(h) of the OHSA. The municipality eventually pled guilty to one of the charges and was required to develop a recognized driver training program. In addition to those penalties, the municipality lost a considerable sum of money while attempting to defend itself against the charges.

Findings

The Department has implemented a driver training program, which has seen consistent levels of success.

The Department has also arranged for applicable personnel to complete courses and obtain certification to the following NFPA standards:

- NFPA 1002, Level 1: Pump Operations
- NFPA 1002, Level 2: Aerial Apparatus Driver/Operator

The Department's proactive approach to licensing certification will help ensure that the personnel who operate the Department's fire apparatus are also qualified to operate an engine pump or an aerial vehicle.

9.8 Recommendations

After assessing occupational health and safety in Essex, The Loomex Group developed the following recommendations:

9-1. The Fire Chief should form a committee to develop and manage a fitness program to complement the Department's existing wellness programs.

9-2. The Fire Chief and the wellness committee should explore the possibilities of forming a partnership with local fitness facilities to provide the Department's firefighters with better access to fitness equipment.

10.0 Fire Prevention

10.1 Overview of Fire Prevention and the Three Lines of Defence

Fires are extremely dangerous incidents that can lead to fatalities and severe property damage. Due to the risks posed by fires, fire departments have traditionally viewed fire suppression as their primary focus. However, many fire departments now recognize the importance of developing proactive fire prevention initiatives to increase community safety.

Statistics show that most fires—as well as injuries, deaths, and costs resulting from fires—are preventable. For instance, structure fires often occur due to a lack of fire safety knowledge or a disregard for fire safety regulations. To address these issues, the OFM recommends following a fire safety model known as the three lines of defence, first outlined by the Honourable John B. Webber in the Report of the Public Inquiry into Fire Safety in Highrise Buildings.

The three lines of defence are as follows:

1. Public education.
2. Code enforcement.
3. Fire suppression.

The three lines of defence model encourages fire departments to focus on fire prevention initiatives to reduce the need for fire suppression. Although fire suppression must remain a critical focus for fire departments, it is important for departments to take steps to reduce the need for this kind of response. Moreover, the FPPA requires every municipality to establish a fire prevention program in the community.

Fire prevention programs should focus on educating the community and bringing fire safety issues to the forefront, but the success of these programs relies on more than just an initial implementation. Effective programs require continued monitoring and revision to ensure they remain relevant to the community's current and anticipated needs.

Unfortunately, some municipalities do not provide enough resources for public education and code enforcement initiatives. Often, municipalities believe they cannot fund a comprehensive fire prevention model because they must reallocate available resources to offset the costs of fighting fires. The reality is that fire suppression has a more significant financial impact on a community than public education and code enforcement (the other two components of the three lines of defence model). Although municipalities shouldn't reduce their spending on fire suppression, they must find ways to ensure funding is available for effective fire prevention initiatives. By prioritizing public education and code enforcement, a municipality is more likely to protect lives and property, which will result in cost savings over the long term.

10.2 Public Education Initiatives

10.2.1 Public Education Messages

Context

Public education initiatives raise a community's awareness about the importance of fire safety. By developing and delivering proactive public education initiatives, fire departments can help people of all ages understand ways to stay safe. Public education may help community members understand codes and regulations or teach them how to install and maintain smoke alarms, carbon monoxide detectors, and other fire safety technology. As a result, public fire safety education may reduce the number of fires in a community.

Common ways of providing public education include conducting door-to-door campaigns, arranging public service announcements, and participating in community events.

Findings

The Department provides public education throughout Essex by attending events and facilitating programs for schools, daycares, seniors' residences, and other venues.

Some of the Department's most popular public education initiatives are summarized below.

Fire Prevention Week

Fire Prevention Week is a national program across Canada and throughout the United States. The event is an opportunity to promote and educate citizens about fire prevention. During Fire Prevention Week, the Department organizes a colouring contest for elementary school students (JK to Grade 4) and teaches them about fire escape plans, cooking safety, and how to stay safe in the event of a fire. At the end of the event, the Department awards prizes and displays the students' pictures at the fire stations.

After-the-Fire Program

The Department uses the After-the-Fire program to deliver applicable safety messages following a fire in the community. The audience for the safety messages includes the homeowners who experienced a fire. The Department also provides fire safety messages to local neighbourhood residents.

Emergency Preparedness Week

During Emergency Preparedness Week, the Department partners with members of the local media to raise awareness and educate the public about emergency planning.

Smoke/CO Alarm Programs

The Department runs various smoke/CO alarm programs to raise awareness about the dangers of not having working smoke/CO alarms in the home. During the programs, the Department provides information to the community about how to install residential smoke/CO alarms, as well as when/how to check the alarms for functionality.

10.3 Inspections and Compliance

For tracking purposes, fire departments organize their inspections into the following categories:

- complaint
- request and sale request
- vulnerable occupancies
- residential smoke and CO alarm
- other

Each category involves specific requirements that fire departments must meet for compliance purposes.

10.3.1 Complaint Inspections

Context

Fire departments conduct a complaint inspection when they receive a complaint regarding a possible fire code violation.

As per O. Reg. 365/13, fire departments must conduct complaint inspections. Fire departments must also complete follow-up actions for all complaint inspections. The most common follow-up actions are correspondence (in the form of a letter) and the addition of a note to the complaint's file.

Findings

As of this FMP, the Department is completing inspections upon complaint.

10.3.2 Request and Sale Request Inspections

Context

Fire departments conduct a request or sale request inspection when they receive a notification related to any of the following:

- new occupancies
- licensing
- property sales
- fire code compliance

As per O. Reg. 365/13, fire departments must complete request and sale request inspections.

Fire departments must also complete follow-up actions for all request and sale request inspections. The most common follow-up actions are correspondence (in the form of a letter) and the addition of a note to the complaint's file.

Findings

As of this FMP, the Department is completing inspections upon request.

10.3.3 Vulnerable Occupancy Inspections

Context

A vulnerable occupancy is a building or organization that functions as a retirement home, a care facility, or a care and treatment facility. As per O. Reg. 364/13, fire departments must complete vulnerable occupancy inspections and verify that all vulnerable occupancies in their community have conducted the required fire drills.

Findings

As of this FMP, the Department is completing the required vulnerable occupancy inspections.

10.3.4 Smoke/Carbon Monoxide Alarm Program

Context

The FPPA requires each municipality to establish a smoke/CO alarm program. In response to this requirement, most municipalities adopt an official smoke/CO alarm by-law.

All smoke/CO alarm programs should include the following components:

- Each time a fire department interacts with community residents (such as during emergency responses), its members should verify that the residents have working alarms.
- Fire departments should proactively check residential smoke/CO alarms.
- Fire departments should have a method for tracking and keeping statistics on the number of working and non-working smoke alarms in the community.

Fire departments can accomplish most requirements of a smoke/CO alarm program by conducting home inspections and home fire escape reviews for community residents, including those in seasonal dwellings and trailer parks.

Findings

The Department has implemented a residential smoke/CO alarm awareness program. The program has received support from the Rotary Club of Essex, which generously donated 120 battery-powered smoke/CO alarms for the Department to distribute to local senior citizens. Safe Community Project Zero (facilitated by Enbridge Gas) and the Rotary Club of Harrow have also donated battery-powered smoke/CO alarms for the residents of Essex. The Department's staff is available to help install alarms for any residents who cannot complete the installation independently.

10.3.5 Other Inspections

Context

Fire departments also conduct inspections when they receive a notification about fire safety concerns from a home inspection program, retrofit, general inquiry, or similar means. Fire departments may also conduct inspections when they need to examine specific occupancies or areas in the community.

Findings

The Department works with the Windsor Health Unit to conduct annual inspections of the temporary foreign working housing in Essex. During the inspections, the Department distributes fire safety handouts in various applicable languages.

10.4 Fire Prevention Statistics

Context

There are several reasons why fire departments must track their inspections:

- Tracking inspections is a requirement of the FPPA.

- A fire department can review its inspection statistics to identify operational needs (such as staffing) and create strategic plans to address those needs.
- A fire department can review its inspection statistics to identify occupancies that require more inspections.
- A fire department can create a fire prevention campaign targeted at residents in areas with more complaints and violations.
- Tracking inspections creates a paper trail, which can help protect building owners, municipalities, and fire departments, from potential liability issues.

Above all, tracking inspections can indicate ways to improve the safety of community residents, businesses, and visitors.

10.4.1 Inspections by Occupancy Type

Table 7 shows the number of inspections the Department conducted from 2018 to 2022.

Table 7. Inspections by occupancy type, 2018 to 2022.

Type of Occupancy Inspected	2018	2019	2020	2021	2022	Avg.
Group A: Assembly	89	96	86	54	68	78.6
Group B: Care, treatment, and detention	15	18	14	16	14	15.4
Group C: Residential	78	69	94	157	182	116
Group D/E: Mercantile/commercial	123	139	115	74	48	99.8
Group F: Industrial	6	9	18	12	7	10.4
Other inspections, smoke alarms, and safety concerns	4	5	1	7	4	4.2
Total Number of Responses	**315**	**336**	**328**	**320**	**323**	**323.4**

The data in the table indicates that the Department is increasing the number of residential occupancy inspections it conducts. The increase is attributable to the implementation of the Department's smoke/CO alarm program.

10.4.2 Inspection Reasons

Table 8 presents the number and types of inspections the Department conducted from 2018 to 2022.

Table 8. Inspection reasons, 2018 to 2022.

Type of Inspection	2018	2019	2020	2021	2022	Avg.
Complaint	8	4	23	22	12	13.8
Owner Request	36	37	38	79	67	51.4
Safety Concern/Smoke Alarm	102	125	107	99	76	101.8
Routine	166	170	160	120	110	145.2
Licensing	3	0	0	0	58	12.2
Total	**315**	**336**	**328**	**320**	**323**	**324.4**

The data in the table indicates that the Department's prevention division is conducting a consistent number of inspections. The consistency is attributable to the prevention division's adherence to the Department's smoke/CO alarm program.

10.4.3 Violations Noted by Inspections

There are several types of OFC violations that a fire department may identify when conducting an inspection. Depending on the nature of the violation, the on-site inspector may issue one of the following notices:

- Verbal: The inspector notes an issue verbally. The issue is corrected immediately, and the officer acknowledges the correction.
- Letter of compliance: The inspector notes violations in a formal letter to the building owner. The letter includes a timeframe in which to resolve the issue.
- Immediate threat to life: According to the FPPA, if a firefighter believes that there is an immediate risk of fire, they may enter a building without a warrant to remove or reduce the risk.
- Fire service inspection report: The inspector provides a report to the building owner that notes the time of inspection and outstanding issues.
- Order: According to section 5.21.(1) of the FPPA, an inspector "may order the owner or occupant of the land or premises to take any measure necessary to ensure fire safety on the land."
- Charges: If a building owner does not comply with an order, they may be charged under the FPPA.

Table 9 lists the number of violations that the Department noted—as well as the notices it issued—during the inspections it conducted from 2018 to 2022.

Table 9. Violations noted and notices issued, 2018 to 2022.

Type of Violations and Notices	2018	2019	2020	2021	2022
Verbal	102	124	104	92	59
Letter	0	0	0	0	0
Electrical Safety Authority	0	0	0	0	0
Intermediate Threat to Life	0	0	0	0	0
Fire Service Inspection Report	17	17	15	19	67
Order	0	0	0	0	0
Total	**123**	**142**	**119**	**111**	**126**
Resolved Violations and Notices	**100%**	**100%**	**100%**	**100%**	**100%**

The data in the table indicates that the Department issues appropriate follow-up orders for all noted violations.

The Department is also resolving applicable violations and notices and keeping up-to-date inspection records.

10.5 Fire Investigations

Context

Under the FPPA, fire departments must investigate all fires that occur within their jurisdiction. In order to gain the skills needed to conduct accurate investigations, firefighters should complete advanced training to the standards of NFPA 1033.

During a preliminary investigation, the local fire department is required to identify the cause, origin, and circumstances of the fire in question. Doing so is an essential component of fire protection. For example, if the cause of a fire is accidental, information from the inquiry reinforces the need to increase fire prevention and public education initiatives.

If the cause of the fire is suspicious, further investigations and actions are required. For example, arson is a criminal offence and is sometimes used to cover other illegal activities or defraud insurance companies. Due to the implications of incidents such as arson, fire departments must notify the OFM and the local police about all fires that appear suspicious.

The FPPA states that assistants to the Fire Marshal must notify the OFM of all incidents that meet—or that appear to meet—any of the following criteria:

- The investigating firefighters suspect the fire or explosion is incendiary (criminal). Incendiary fires include dumpster fires, car fires, and wildland fires. All incendiary fires and explosions must be reported to the applicable police authority.
- A fire or explosion results in either a fatality or serious injury that requires a person to be hospitalized as an in-patient. In such instances, the fire department must make every reasonable effort to confirm the status of injured persons transported to hospital before releasing the fire scene.
- A fire or explosion results in significant loss for the community.
- An explosion is the primary event.
- A fire results in an unusual spread of fire or smoke.
- A fire or explosion involves circumstances that may result in widespread public concern (such as an environmental hazard).
- A fire or explosion involves clandestine drug operations or marijuana growing operations.
- A fire or explosion occurs in a multi-unit residential occupancy and the fire spread or explosion impact extends beyond the unit of origin.
- A fire or explosion occurs in a multi-unit residential occupancy and the fire department suspects that OFC violations have impacted the event.

Under the FPPA, fire departments must follow all regulated steps when conducting a fire investigation. This obligation includes notifying and working with OFM investigators (when required).

Findings

As of this FMP, the Department's Fire Chief and Deputy Chief conduct basic fire investigations. Going forward, the Department should verify that its personnel all become certified to the NFPA 1033 standing before performing fire investigation duties.

10.6 Community Risk Assessment

Context

On July 1, 2019, the Province of Ontario passed O. Reg. 378/18 under the authority of the FPPA. O. Reg. 378/18 requires every municipality to complete a CRA by July 1, 2024. All municipalities must also complete a new CRA every five years. (As a best practice, every municipality should also review its CRA annually to ensure it remains current.)

Findings

Essex completed its mandatory CRA in conjunction with the writing of this FMP. This proactive approach ensures that Essex is compliant with applicable legislation. Completing the CRA and FMP in tandem also allowed the latter to incorporate information about the actual risks identified in the Essex community.

Figure 5 illustrates the public safety risks identified in Essex (from a fire services perspective.

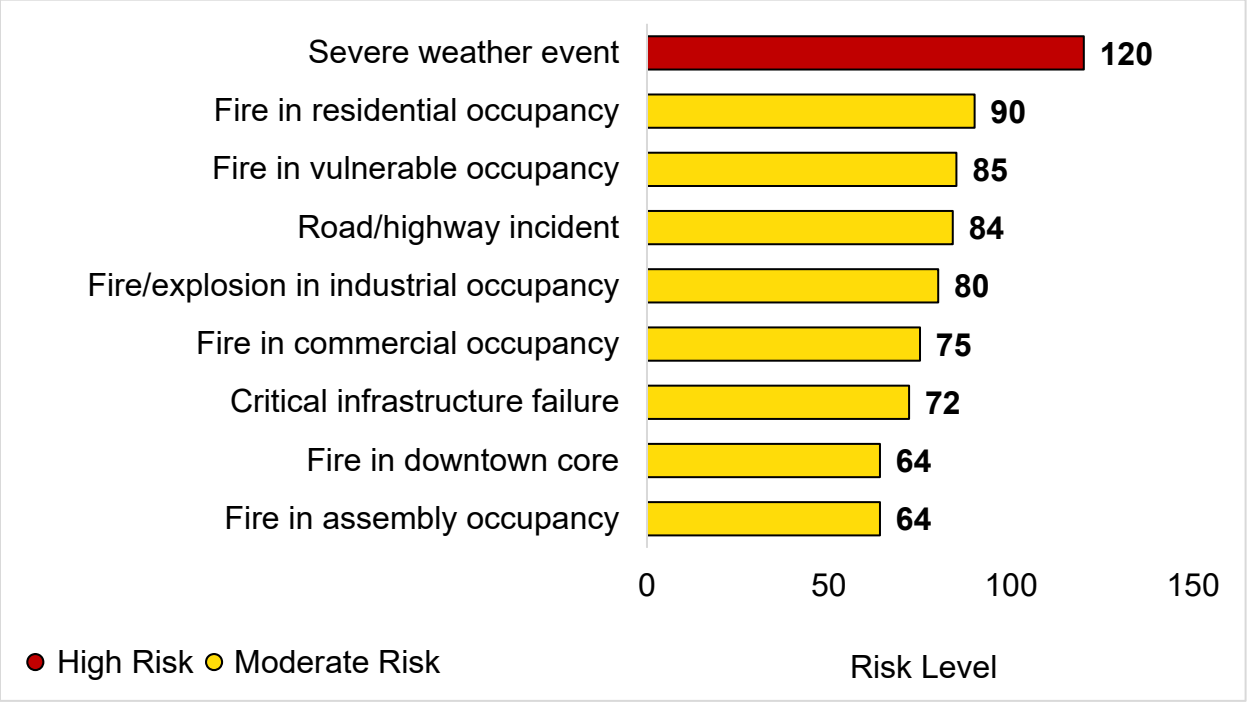

Figure 5. Public safety risks identified in Essex.

10.7 Pre-Incident Planning Process

Context

Completing the pre-incident planning process is a crucial step toward protecting firefighter safety.

When firefighters respond to an emergency in a building with an unfamiliar layout, the risk to their safety increases significantly. The risk increases even more in large commercial, industrial, or institutional buildings, or in buildings where visibility is limited. However, by completing the pre-incident planning process for different occupancies in the community, firefighters can familiarize themselves with site layouts and prepare themselves for the risks inherent to a building's construction, such as the likelihood of collapse.

Fire departments should prioritize the pre-incident planning process for all buildings that are at high risk, have vulnerable occupants, or have high value to the community. Fire departments should also plan to revisit those buildings on a regular basis to reassess the results of their previous pre-incident planning.

Employers also have responsibilities as part of the pre-incident planning process. Guidance Note 6-45 addresses pre-incident planning and identifies several actions employers should complete. According to Guidance Note 7-45, employers should take the following actions:

- Develop a pre-incident planning program that compiles building information.
- Keep building data updated with information gained during fire prevention activities or from other allied agencies.
- Provide known building information to responding firefighters, including building configurations and functions.
- Coordinate building tours for firefighters.
- Train firefighters how to conduct the pre-incident planning in their occupancy, as this will provide the firefighters with information that they can use to protect their health and safety.

By working together, a community's employers and fire department can take steps to help protect the safety of firefighters and building occupants during emergency responses.

Findings

The Department should assign one full-time firefighter to serve as a combination training officer/fire prevention officer. The firefighter should spend approximately 50 per cent of their time working in each division.

A combination training officer/fire prevention officer will help the Department meet applicable fire prevention, code enforcement, and fire suppression compliance requirements. The position will also allow the Department to enhance the services it provides to the community, as the Department will have another firefighter available to perform fire suppression duties (as required) during daytime hours.

For more information about assigning a combination training officer/fire prevention officer, refer to section 12 of this FMP.

10.8 Recommendations

After assessing fire prevention in Essex, The Loomex Group developed the following recommendations:

10-1. The Fire Chief should prepare a report for Council's consideration and approval that recommends appointing a full-time training/prevention officer who will dedicate half of their work hours to managing the Department's fire prevention division. The officer would also perform suppression duties during daytime hours (as needed).

11.0 Levels of Service

11.1 Core Services and Specialized Services

Every municipality has different risks, needs, and circumstances. Those variables should determine the types and levels of services a fire department provides to its community. Some services, such as auto extrication, are a common need in many municipalities. Other services, such as heavy urban rescue, are more specialized services that not every community will require.

Although infrequent, calls that involve specialized services often place firefighter safety at a significantly higher risk than calls requiring the provision of core services. Most specialized services are also costly to deliver, and many require firefighters to receive additional ongoing training and certifications.

For most specialized services, there are three levels of service that fire departments can provide: awareness, operations, and technician. A fire department can base the level of service it provides on the following considerations:

- How many calls does the fire department receive for a specific type of service?
- What risk does the threat pose to the community?
- Is it affordable to provide a specific service?
- Does the local municipal council need to approve the service before it is offered?

11.2 Determining Specialized Services for Essex Fire and Rescue

At a minimum, the Department should review the following topics to determine which specialized services it should deliver:

- firefighter safety
- the current condition of the equipment needed for specific services
- the level of initial training required
- the level of ongoing training required
- the current documentation that supports each specialized service
- the relevance of each specialized service to the community
- the frequency of past incidents requiring the specialized service

After completing the review, the Fire Chief should prepare a report for Council's consideration and approval that presents evidence supporting the need for the Department to continue receiving funding—or receive additional funding—to deliver specialized services safely and effectively.

Once the Department has a set list of specialized services, it must ensure that it has the capacity to deliver those services. The Department should also ensure that its firefighters receive training that meets or exceeds the relevant occupational health and safety laws and NFPA standards.

11.3 Levels of Services

Context

A fire department should become proficient at delivering its core services before it attempts to develop specialized services. In order to have an acceptable level of proficiency, a fire department should have appropriate documentation, training, and equipment in place across the organization. A fire department should only consider delivering specialized services after verifying that it has met these criteria.

It is unlikely that a fire department will provide advanced services effectively if it does not attain proficiency in its core services.

Findings

Going forward, leaders from Essex and the Department should consider using a tiered approach to structure the Department's service delivery (as shown in Figure 6). The figure illustrates that the Department must build a solid foundation based on proficiency in its core services before it looks to offer specialized services.

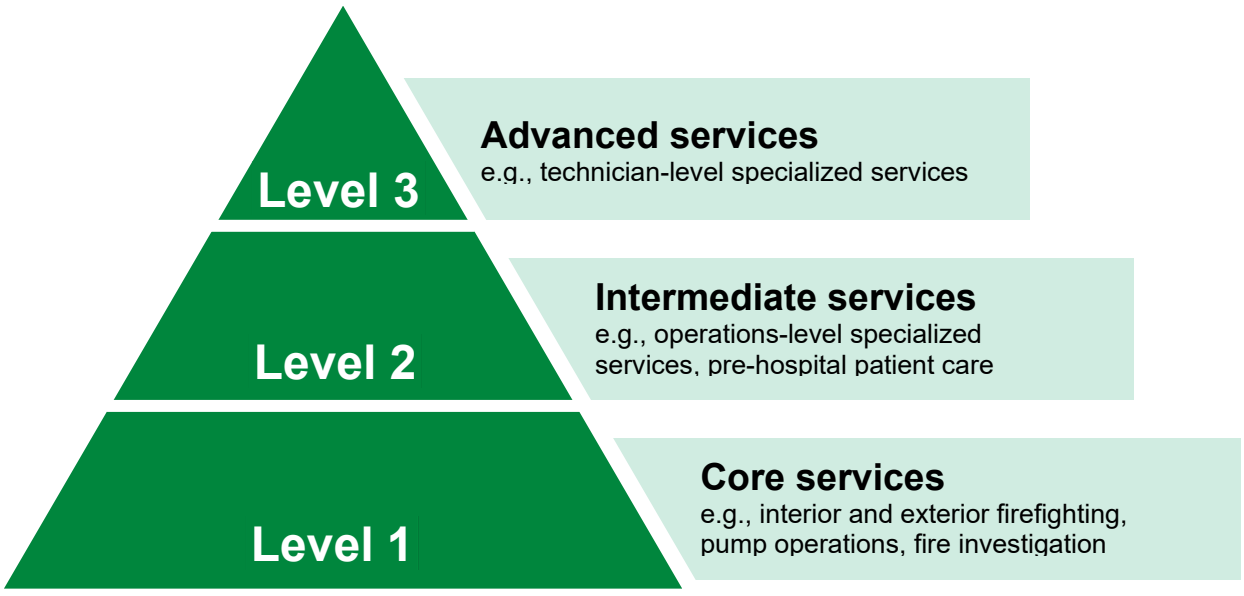

Figure 6. Tiered approach to levels of service.

11.3.1 Core Services

Context

Core-level services include the main services that most fire departments offer, such as interior and exterior firefighting. For example, firefighting almost always relies on the skills of a pump operator, which means an ability to perform pump operations represents an important core firefighter skill.

Findings

The Department provides the following core-level services:

- fire suppression services (offensive)
- fire suppression services (defensive)
- rescue operation services
- motor vehicle accident response services (including extrication and fire suppression)
- grass and brush firefighting services
- marine firefighting services (defensive only for small vessels)
- property conservation services (including salvage and overhaul)
- forcible entry and search services
- public assistance response services
- confined space rescue services (at the awareness level)

The Department's core services align with the Department's level of training, standard operating guidelines, and the number of personnel and equipment it can provide for an emergency response.

11.3.2 Intermediate Services

Context

Intermediate-level services include the specialized services most often provided by fire departments in Ontario.

Examples of intermediate services include common passenger vehicle rescue and emergency medical services, as well as other specialized services performed at the operations level.

Findings

As of this FMP, the Department provides the following intermediate-level services:

- standard first aid
- CPR and defibrillation
- rescue and vehicle operations

Some of the Department's intermediate-level services are delivered as part of a medical tiered response agreement with Essex-Windsor EMS.

11.3.3 Advanced Services

Context

Once a fire department has trained and equipped its firefighters to perform core and intermediate services proficiently and safely, its leadership personnel may consider introducing an advanced level of service. Advanced services include specialized services at the technician level. Such services require significant training, as they involve a much higher risk of injury or death than other services.

Findings

As of this FMP, the Department has several personnel with certification to the standards of NFPA 1006 and NFPA 1670. Those certifications allow applicable Department personnel to provide water and ice rescue services at an awareness level and technician level.

As per O. Reg. 343/22, firefighters performing water and ice rescue services will require certification to the standard of NFPA 1006 by 2028. It is expected that the Department's personnel will attain the relevant certification prior to this deadline. (For more on O. Reg. 343/22, see section 12.2 of this FMP.)

Overall, the Department is providing the correct type and level of advanced services for Essex's current needs. Going forward, the Fire Chief should continue monitoring the number of calls the Department receives for advanced services. If the Fire Chief notices a significant increase in the number of calls the Department receives, the Fire Chief should approach Council with recommendations about updating the Department's level of service accordingly.

11.4 Recommendations

After assessing the levels of service in Essex, The Loomex Group developed the following recommendations:

11-1. The Fire Chief should review the Department's medical tiered response agreement and update it accordingly. The Fire Chief should then submit the revised agreement to Council for consideration and approval.

11-2. The Fire Chief should keep track of all calls the Department receives for advanced services. If there is a significant number of calls for advanced services that the Department does not currently provide, the Fire Chief should prepare a report for Council's consideration and approval that recommends updating the Department's list of approved advanced services.

12.0 Training

12.1 Overview of Training

Due to the inherent occupational dangers of conducting emergency responses, firefighters must receive an appropriate level of training. Each fire department offers its personnel different training based on the type of services it provides and the specific needs of the community, the fire department, and its staff members. Training gives firefighters the aptitude to recognize the appropriate actions to take during an emergency response. A well-trained firefighter is a firefighter who is properly equipped to make decisions that will mitigate risks and save lives.

The Province of Ontario requires fire departments to provide their employees with training on the following topics:

- WHMIS
- Accessibility for Ontarians with Disabilities Act
- Incident Management System
- workplace harassment
- other training (as required)

Fire departments must also offer basic training to comply with legislation. According to the OHSA, all employers must “provide information, instruction and supervision to a worker to protect the health or safety of the worker.” As such, fire departments should complete ongoing training to ensure that their operations remain safe and effective. Firefighters should also complete ongoing training to maintain their skill levels.

As per O. Reg. 297/13, subsections 4 (1) and (2), employers must keep a record of the awareness training their employees and supervisors receive. This includes a record of any worker or supervisor who is exempt from the training.

Lastly, employers should protect the well-being of their employees by providing them with health and safety training. Once employees complete a training program, employers must maintain records of the completed training to verify that measures were taken to prevent hazards, accidents, discrimination, and harassment in the workplace.

12.2 NFPA Certification

Context

O. Reg. 343/22: Firefighter Certification came into effect on July 1, 2022. The regulation falls under the authority of the FPPA and establishes the mandatory minimum certification standards for specific fire protection services.

As per O. Reg. 343/22, fire departments and municipalities must meet the following requirements:

- All firefighters must receive the minimum level of certification for all services they perform. This stipulation is designed to ensure that all firefighters receive consistent, ongoing training that matches the level of service set by their municipal council. The stipulation is also in place to help protect firefighter safety.
- Municipal councils must set the types of service and the levels of service that their fire departments will provide. Once decided, the council must arrange for its fire department to receive the appropriate level of training (based on the applicable NFPA standards) for those services.
- Firefighters must meet the NFPA standards applicable to their roles. All firefighters must also have the ability to perform the services associated with their roles. For example, a fire prevention officer must have certification at the level of inspections they provide, and captains must have certification at the level of supervision they conduct.
- Fire departments must ensure all personnel meet the level of training required under O. Reg. 343/22 by the compliance deadline.
    - NFPA 1006 certifications have a compliance deadline of July 1, 2028.
    - All other certifications have a compliance deadline of July 1, 2026.

Findings

Like many fire departments, the Department's firefighters face potential challenges as they try to meet compliance with certification requirements before the legislated deadlines.

12.3 Recruitment Process and Training

Context

Many fire departments struggle to recruit a consistent number of volunteer firefighters. Although the factors affecting recruitment vary from region to region, there are some common themes that most fire departments face.

By taking the time to analyze the factors that affect its recruitment numbers, a fire department will gain information that it can use to develop a volunteer firefighter recruitment process that will have long-term success.

Findings

As of this FMP, the Department uses the following process to recruit volunteer firefighters:

1. A candidate submits an application to the Department. If the Department accepts the application, the candidate is enrolled in the Department's intake program.
2. The candidate completes a written aptitude test, undergoes a medical evaluation, completes an in-person interview, and undergoes a physical test at the Department's fire station.
3. If the candidate passes the tests and physical examinations, the Department arranges training for the candidate. The candidate must complete the training to become certified to the standards of NFPA 1001, level 1 and 2. The candidate must also complete training on hazardous materials responses at the awareness and operations levels.
4. After obtaining certification to the standards listed above, the candidate becomes a probationary firefighter with the Department for 12 months. During that time, the candidate must attain certification to all standards which are applicable to the Department's operations.

Completing the Department's recruitment program is a lengthy process for potential candidates. Moreover, the Department must assign several officers to manage the recruitment program from start to finish.

The time commitments needed for the recruitment program also compound another issue: The Department is currently forecasting a shortfall of volunteer firefighters in its organization. If the Department cannot address that issue, it will not have enough personnel to maintain its usual staffing levels.

The Department recognizes the demands its recruitment program places on the organization, as well as the constant drain of internal resources needed to maintain volunteer levels. In response to these issues, the Department has entered into an agreement with Southwest Fire Academy to help bolster its recruitment strategy. Ideally, the partnership will provide the Department with the time and resources it needs to recruit and train new firefighters. The agreement provides recruits with access to online and in-person training and testing, job performance reviews, and theory-based reviews and certifications. Recruits will also have the chance to attend "station duty nights," which will provide them with opportunities to familiarize themselves with the Department's fire stations and connect with current personnel.

Overall, the Department's third-party agreement with Southwest Fire Academy should assure consistency in the Department's training program. The agreement should also help alleviate time constraints on the Department's personnel, as they would otherwise have had to manage both the recruitment and in-service training programs.

12.4 Training Structure of Essex Fire and Rescue

Context

Firefighters must remain current with NFPA standards that are applicable to their roles and the services they provide. If a fire department is not required to provide a specific service (such as ice rescues), that department's firefighters do not need to complete ongoing training for that type of service.

In addition to completing ongoing training that covers NFPA standards, firefighters must complete training that addresses legislation and hazards that were not covered by previous training. For example, modern homes are constructed with different materials and in a different manner than older homes. As such, fires in modern homes have a much higher heat-release rate, and firefighters may face exposure to a higher level of risk than in years past. In response to developments like these, firefighting tactics and practices have evolved. Recent research into fire behaviour has led to new firefighting techniques aimed at improving the safety of firefighters and members of the public.

Maintaining up-to-date knowledge and skill levels is essential for delivering effective fire protection services. Therefore, fire departments should strive to provide their personnel with ongoing training that covers a variety of topics, such as:

- contemporary suppression and ventilation techniques
- building construction
- fire dynamics
- firefighter health and safety

Findings

Structure of Training Program

As of this FMP, the Department provides ongoing in-service training that covers the standardized, needs-based, and specialty services it is expected to deliver to Essex.

At a minimum, the Department's in-service training sessions take place on the first and third Wednesday of each month. There are also occasional weekend training sessions to cover special topics that require more time to complete than the regular training that takes place on weeknights.

Currently, the Deputy Chief organizes the Department's training. This duty involves the development of extensive training schedules that include a one-year roll-out plan for all training topics. The training schedule also includes a list of resources that firefighters should reference, such as *Essentials of Fire Fighting and Fire Department Operations*, International Fire Service Training Association, and OFM job performance reviews.

The Deputy Chief also provides a five-year training schedule, which helps the Department monitor its training delivery and verify that it is meeting the mandatory training requirements for its personnel.

Scope of Training Program

As of this FMP, the Department's current one-year training schedule covers the following topics:

- PPE
- extinguishers
- occupational health and safety
- communications and incident command
- building construction
- forcible entry
- fire dynamics
- structural search and rescue
- firefighter survival
- ground ladders
- aerial awareness
- mental health (including peer support, Road to Mental Readiness program, and applicable mental health certification requirements)
- hazmat product control and decontamination
- ventilation
- overhaul and scene preservation

The extensive scope of this training should allow the Department's firefighters to re-evaluate and maintain their knowledge and skill levels while also building on their existing abilities.

In addition to in-house training, the Department has also arranged for its officers and firefighters to receive external training from qualified third-party providers. Completing the third-party training has allowed Department personnel to become certified in the following NFPA standards:

- NFPA 1041: Fire Service Instructor
- NFPA 1561: Incident Management System and Command Safety Training
- NFPA 1021: Fire Officer I to IV

The Department's personnel have also received peer support training, as well as training on the R2MR program.

The external training opportunities allow the Department's officers and firefighters to gain valuable experience they wouldn't necessarily have access to in-house. These opportunities allow the Department access to qualified individuals who can fill current and future leadership positions. The Department's proactive approach to arranging external training is evidence of the organization's commitment to having a staff that can deliver high-quality services to the community. It is also worth recognizing the officers and firefighters for their dedication to completing additional training, as it requires them to take time away from their primary jobs and families in order to attend the training courses.

Overall, the partnership that exists between the Department's management team and its firefighters regarding training and certifications is commendable. The results of the partnership will help ensure the stability of the Department as it strives to provide a modern and effective fire service workforce.

12.4.1 Officer Development Program

Context

Many volunteer departments find it challenging to provide adequate training to prepare firefighters for greater responsibility, largely due to the time commitment required. However, fire departments must focus on developing the skills of members to ensure that potential candidates for leadership roles gain the skills needed to advance to a higher position.

A fire department should base a promotion to an officer role on the merit and qualifications of the member in question, including their track record of following departmental operating guidelines.

Findings

As of this FMP, the Department's promotional process is effective, as the Department ensures that officers meet the requirements of a competent supervisor.

The Department trains firefighters to NFPA standards, and the Department's officers have been certified to numerous standards. However, further training opportunities are limited. While the Department is successful at keeping officers engaged, it must offer higher levels of officer training to comply with NFPA standards.

12.5 Training Challenges

Context

Statistics show that there are some recurring challenges that the majority of fire departments face when it comes to delivering an effective training program. The most common issues are time constraints and lack of qualified trainers.

Industry best practices have shown that many fire departments address the issues affecting their training programs by implementing standard training protocols and establishing dedicated training teams or committees.

Findings

As of this FMP, the Deputy Chief develops the schedule for the Department's training program. Once the schedule is created, the Deputy Chief distributes it to the Department's district chiefs. The main issue with this arrangement is that the Deputy Chief is not always available to assist with the actual training delivery. When the Deputy Chief is unavailable, the district chiefs are responsible for assigning a captain or other qualified instructor to deliver the training. However, in some cases, a captain or training instructor is also unavailable, which hinders the Department's capacity to facilitate an effective training program at all.

In years past, the Department attempted to establish a committee to review its training program and other related topics. However, the committee did not have a formalized structure, nor did it hold regular meetings.

Going forward, the Department should consider appointing dedicated personnel to its training program. If the Department pursues this course of action, it has several options to consider. For example, many departments find it beneficial to establish a training committee that includes a full-time training officer. Doing so relieves leadership personnel of the time commitments needed to plan, develop, and deliver an effective ongoing training program. Other fire departments find using para-trainers is an efficient way of facilitating a training program.

Based on the Department's current structure and operations, establishing a training officer position is the most practical way of ensuring that the Department's firefighters receive the training they need. Additionally, having a training officer would provide the Department with someone to help manage the organization's NFPA certification, officer development, and firefighter retention needs. The training officer could find and promote additional training courses for officers and ensure that volunteer officers are available to attend next-level training.

A training officer could also outline and guide succession planning for the Department, ensuring that candidates are available when leadership roles become available. The Department has been successful at delivering officer development and succession

planning in the past, as noted by SWOT analysis participants. However, by hiring a dedicated training officer, the Department can ensure its officer development and succession planning programs are sustainable.

If the Department appoints a training officer, it should also consider having that officer serve as part of the fire prevention division. By allocating approximately 50 per cent of the training officer's schedule to each division, the Department would be more likely to meet the administrative, technical, and practical components of both divisions.

In order to provide even more support to its training program, the Department should consider establishing a training committee that has a formalized structure and meeting schedule. The committee would maintain and develop a strategic training program for officers and firefighters.

The evidence presented during the FMP development process also suggests that the Department would benefit from appointing para-trainers, as this would help ensure there are several qualified personnel to facilitate the required in-service training.

In summary, the Department administers an effective training program, but the training delivery is not always consistent. If the Department does not take steps to address the issues affecting the program, it is unclear whether the program will be able to accommodate the Department's future needs. Therefore, the Department should review the options for establishing a dedicated training officer role (as discussed above). Appointing such an officer will be crucial for the Department as it prepares its training program for long-term success.

12.6 Recommendations

After assessing training in Essex, The Loomex Group developed the following recommendations:

12-1. The Fire Chief should develop a process for having para-trainers assist with the Department's training program.

12-2. The Fire Chief should establish a training committee to help plan and implement the Department's training program.

12-3. The Fire Chief should explore opportunities that allow officers to complete training and obtain certifications beyond what the Department currently offers.

12-4. The Fire Chief should prepare a report that recommends appointing a full-time training/prevention officer who will dedicate half of their work hours to managing the Department's training and development program. The Fire Chief should then submit the report to Council for consideration and approval.

13.0 Performance Standards and Operational Models

13.1 Overview of Performance Standards

Every community expects its fire department to respond to emergencies when needed. In order to meet community expectations, a fire department must understand what level of service it is required to provide. Although each municipal council sets a different level of service for its fire department, all fire departments must respond promptly and with sufficient resources to provide fire protection and suppression services.

In many communities, the fire department and the municipality agree upon performance standards to ensure that residents receive the fire protection they expect. The performance standards establish how many firefighters must respond to emergencies and how long it should take for them to arrive at an incident site.

13.1.1 Importance of Response Times

The response time for all emergencies that involve structure fires is critical. A fire's growth is heat-generated and is dependent upon fuel and air supply. Once the temperature in a room ablaze reaches approximately 1,000 °F (590 °C), a flashover will occur in the entire room within six to ten minutes (or less). When a flashover occurs, it significantly increases the risk of fatalities and property damage. If firefighters can arrive at the scene of a fire quickly, they have a better chance of saving lives and limiting property damage.

It is also vital to have a quick response time when a medical emergency has occurred, as research has shown that response times and mortality are correlated.[3] For example, when a patient is experiencing a heart attack, their survivability decreases at a rate of 10 per cent/minute.[4] The outcomes of many other medical emergencies also depend on fast response times.[5]

Although not all fire departments respond to medical incidents, they should still understand response times for all services in order to determine which services to provide and which staffing levels to set.

[3] Pons et al., "Paramedic Response Time: Does It Affect Patient Survival?"

[4] Medical Advisory Secretariat, "Use of Automated External Defibrillators in Cardiac Arrest: An Evidence-Based Analysis."

[5] Blackwell and Kaufman, "Response Time Effectiveness: Comparison of Response Time and Survival in an Urban Emergency Medical Services System"; Wilde, "Do Emergency Medical System Response Times Matter for Health Outcomes?"

13.1.2 Importance of Leadership

A fire department's leadership team must have the capability to identify threats and make operational decisions at emergency scenes, ensuring that all decisions adhere to their department's established level of service.

It is also crucial for firefighters to receive proper supervision. Studies conducted by the National Institute for Occupational Safety and Health and the U.S. Fire Administration concluded that direct supervision improves firefighter safety. According to the U.S. Fire Administration's Firefighter Fatality Retrospective Study, many firefighter deaths occurred when firefighters became lost or disoriented and died before a fire officer or incident commander was aware that the firefighter in question required assistance. Because fire captains and other senior personnel usually have more experience and training than junior firefighters, they are better equipped to give direction during an emergency response.

13.1.3 Importance of Crew Size

The National Institute of Standards and Technology ("**NIST**") has conducted more than 60 controlled fire response experiments to determine the effect of fire crew size on a fire crew's ability to protect lives and property during responses to residential fires.

The NIST summarized the findings of its fire response experiments as follows:

> The study found that four-person firefighting crews were able to complete 22 essential firefighting and rescue tasks in a typical residential structure 30 percent faster than two-person crews and 25 percent faster than three-person crews.
>
> Researchers also performed simulations using NIST's Fire Dynamic Simulator to examine how the interior conditions change for trapped occupants and the firefighters if the fire develops more slowly or more rapidly than observed in the actual experiments. The fire modeling simulations demonstrated that two-person, late-arriving crews can face a fire that is twice the intensity of the fire faced by five-person, early arriving crews. Additionally, the modeling demonstrated that trapped occupants receive less exposure to toxic combustion products—such as carbon monoxide and carbon dioxide—if the firefighters arrive earlier and involve three or more persons per crew.[6]

Another NIST study evaluated the effectiveness of crew sizes during responses to high-rise fires. The NIST summarized that study's findings as follows:

> The NIST study, conducted with 13 Washington, D.C.-area fire departments, analyzed 14 "critical tasks"—those undertaken when potential risks to building

[6] National Institute of Standards and Technology, "Landmark Residential Fire Study Shows How Crew Sizes and Arrival Times Influence Saving Lives and Property."

> occupants and firefighters are greatest—[and] found that three-member crews took almost 12 minutes longer than crews of four, 21 minutes longer than crews of five, and 23 minutes longer than crews of six to complete all tasks. Four-person crews took nine minutes and 11 minutes longer than five- and six-member crews, respectively.[7]

In addition to improved performance, firefighters who train together under the supervision of a fire captain often work more cohesively than firefighters who don't.

13.2 Determining Effective Response Force

The term effective response force ("**ERF**") refers to the following:

- The number of firefighters needed to respond to an emergency safely and effectively.
- The resources needed to respond to an emergency safely and effectively.
- The time it takes for firefighters and resources to arrive at the scene of an emergency.

Fire departments can determine an ERF by completing a critical tasks analysis for each type of emergency. This approach allows fire departments to standardize their emergency responses and ensure they dispatch the appropriate number of personnel for each type of incident.

Conducting a critical tasks analysis involves the following steps:

1. Examine the type of risks that exist at an emergency scene.
2. Identify the tasks needed to mitigate and eliminate the risks that exist at an emergency scene.
3. Determine the number of personnel needed to carry out the tasks that will mitigate and eliminate the risks that exist at an emergency scene.

Fire departments can either assign critical tasks to multiple personnel or carry out the tasks sequentially. It is common to use an assignment chart (based on information received at the time of the emergency call) to assign critical tasks on the fireground at each emergency response.

Fire departments can use the results of studies conducted by leading fire service authorities to determine some general guidelines about resource deployment. Table 10 presents a critical tasks analysis for a fire in a single-family home (based on best practices and findings from the NIST, NFPA, and OFM).

[7] National Institute of Standards and Technology, "Landmark High-Rise Fire Study Evaluates Effectiveness of Crew Sizes, Elevator Use"

Table 10. Minimum firefighters required for critical tasks at single-family home fires.

Personnel	Critical Tasks	Firefighters Required
Crew #1	• Perform search and rescue duties. • Conduct fire control/extinguishment duties on the fire floor. • Serve as the pump operator.	4
Crew #2	• Provide backup support for crew #1. • Perform search and rescue duties. • Locate the fire extension beyond the immediate fire area.	4
Crew #3	• Assume the role/duties of a rapid intervention team. • Conduct firefighting operations after another crew has exited the structure and is ready to take over the rapid intervention team duties.	4
Chief Officer	• Serve as incident commander.	1
Accountability/Scribe	• Assist the incident commander with organizing the tasks needed on the fireground.	1
Total		**14**

Two additional considerations are as follows:

- If an incident safety officer is available, they can assess the overall safety of the incident and provide critical information to the incident commander.
- When a fire occurs in a non-hydrant area, it is critical for the responding fire department to have enough firefighters on the scene to ensure an adequate level of support and water supply.

13.3 Determining Response Benchmarks

Context

For many years, fire departments analyzed their performance by comparing their initial response times to a standard metric. Many agencies now agree that fire departments should set their own benchmarks to measure their performance.

After determining the ERF that it should provide, a fire department should examine the following factors:

- past performance
- fire station locations
- minimum dispatch time

By examining these factors, the fire department can identify its strengths and weaknesses and determine how often it has dispatched an ERF. The fire department can then establish response benchmarks that it can use to measure its performance. If a fire department can meet its benchmarks, it means that the department is operating at its self-determined optimal service delivery capacity during emergency responses. For example, a fire department may set its total response time at 12 minutes and aim to achieve that time during 90 per cent of its responses. In that example, that fire department assumes that 10 per cent of its responses will take longer than 12 minutes to arrive at an emergency.

When setting a level of service for a fire department, it is also important to ensure that the level of service meets all legislative requirements, such as those listed in the FPPA. In addition, fire departments should aim to create performance standards which adhere to the following legislation and guidelines:

- OHSA
- NFPA standards (as discussed further in section 13.3.1)
- OFM general guidance and the Public Fire Safety Guidelines

For example, under the OHSA, employers are responsible for protecting employees from workplace injuries or death. As such, employers must ensure they provide employee training and competent supervision. Fire departments and municipal councils must ensure that their firefighters receive adequate training and supervision for all services they provide.

The fire department can submit its response benchmarks to its municipal council for approval to ensure that the community understands the fire protection services it can expect to receive. It is up to leaders from each municipality and fire department to decide the level of service that is appropriate for their community. Each community has unique hazards, expectations, and needs, and reviewing the combination of factors will help shape the unique level of service for each community.

By analyzing responses that fall short of the benchmarks, a fire department can determine the issues that hinder its ability to meet its goals. This form of self-assessment can provide information that impacts decisions about station locations, staffing, apparatus deployment, and future standard development.

Findings

As of this FMP, the Department does not measure its performance against a response time benchmark.

The Department should take the following steps to determine a benchmark:

1. Analyze each component of the Department's past dollar-loss fire response data.
2. Compare the Department's services and statistics to similar municipalities.
3. Review relevant legislation, guidelines, and standards (including the NFPA standards listed in section 13.3.1).
4. Review the location of the Department's fire station and the location of stations in neighbouring municipalities (as discussed in section 13.3.2).
5. Determine a reasonable target time in which the Department's personnel should complete each step of an emergency response.
6. Determine the percentage of responses during which the Department's personnel should achieve its target emergency response benchmark.

After completing this process, the Department should use its benchmark to evaluate the results of its future responses.

The Department should analyze all responses that take longer than the targeted response time to identify issues that it can address to reduce future response times. The Department should then implement fire protection and prevention strategies accordingly.

13.3.1 NFPA Standards

Context

Fire departments should review the following NFPA standards when determining their emergency response benchmarks:

- NFPA 1225, *Standard for Emergency Services Communications*
- NFPA 1710, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*
- NFPA 1720, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments*

Note: Both NFPA 1710 and NFPA 1720 are scheduled to be consolidated into NFPA 1750 by 2025.

Table 11 shows the staffing and response time standards that NFPA 1720 provides for urban, suburban, rural, and remote areas. [8] The table defines each type of demand zone by its demographics and lists the minimum number of staff needed for responses in each area, as well as the expected response time. The table also includes a metric for measuring fire department effectiveness (which measures how often a minimum number of staff should respond within the expected time). For example, a fire department is considered effective if it can dispatch at least 15 staff to an incident in an urban area in nine minutes 90 per cent of the time.

Note: The text of Table 11 is taken directly from NFPA 1720. The NFPA uses the term Authority-Having Jurisdiction ("**AHJ**") to refer to the body with jurisdiction over an emergency scene.

Table 11. Staffing and response time standards as per NFPA 1720.

Demand Zone[9]	Demographics	Minimum Staff to Respond[10]	Response Time[11] (minutes)	Meets Objective (%)
Urban area	> 1000 people/mi^2 (2.6 km^2)	15	9	90
Suburban area	500-1000 people/mi^2 (2.6 km^2)	10	10	80
Rural area	< 500 people/mi^2 (2.6 km^2)	6	14	80
Remote area	Travel distance ≥ 8 mi (12.87 km)	4	Directly dependent on travel distance	90
Special risks	Determined by AHJ	Determined by AHJ based on risk	Determined by AHJ	90

[8] NFPA 1720 (2020), 11.
[9] A jurisdiction can have more than one demand zone.
[10] Minimum staffing includes members responding from the AHJ's department and automatic aid.
[11] Response time begins upon completion of the dispatch notification and ends at the time interval shown in the table.

Findings

As per the guidelines of NFPA 1720, Station 1 – Essex is in a suburban demand zone, while Station 2 – Gesto and Station 3 – Harrow are in rural demand zones.

The Department's policies outline apparatus response guidelines. The guidelines include a colour-coded response criteria, which categorizes incidents as follows:

- A "Priority 1" incident requires a response with emergency lights and sirens activated.
- A "Priority 2" incident requires a response without emergency lights and sirens.
- A "Priority 3" incident does not require an apparatus to respond.

According to the Department's response procedures, apparatus from two stations automatically respond to the following incidents:

- structure fires
- unknown fires
- alarm calls
- emergencies at vulnerable occupancies

By using this response criteria, the Department meets the staffing guidelines of NFPA 1720 and ensures sufficient resources are available at emergency scenes.

The Department follows this guideline unless following the guideline creates an unsafe situation. The incident commander or the officer in charge of the scene has the authority to deviate from the guideline.

13.4 Post-Incident Analysis and Review

Context

In addition to setting performance standards, a fire department can fine-tune the effectiveness of its operations by conducting a post-incident analysis and review ("**PIAR**") after an incident concludes.

During a PIAR, a fire department evaluates its performance and safety practices. This process allows fire departments to identify gaps in their practices and develop measures to improve their effectiveness and safety during future responses. It is important to note that fire departments do not conduct PIARs to uncover blame but to reinforce practices that encourage high performance and excellent community service. For instance, a fire department that prioritizes safety practices will develop an internal culture that values safety.

Members of a health and safety committee should participate in and review the results of all PIARs. The committee members can then help determine if there are any safety practices their department can adopt.

Findings

Going forward, the Department should consider conducting PIARs to improve future emergency responses. Members of the JHSC should participate in and review the results of all PIARs.

13.5 Response Statistics

Context

Fire departments should review their historical performance (especially the topics of distribution and concentration) to help identify their service delivery capabilities.

Fire departments should also use modelling and the results of statistical analyses to verify that they are using their resources efficiently and effectively.

Findings

The following tables list the Department's fire response statistics from 2018 to 2022:

- Table 12 lists the number of times per year the Department aided other agencies or responded to an emergency as per an automatic aid or mutual aid agreement.
- Table 13 lists the number and type of fire responses made by the Department per year.
- Table 14 lists the amount of dollar loss per occupancy group per year.
- Table 15 lists the amount of money saved per year.

Table 12. Automatic and mutual aid responses, 2018 to 2022.

Type of Aid	2018	2019	2020	2021	2022	Avg.
Assistance to other agencies	1	1	4	7	5	3.6
Assistance to police	0	1	2	1	0	0.8
Automatic aid	1	1	0	0	0	0.4
Mutual aid	5	1	3	3	0	2.4
Total	**7**	**4**	**9**	**11**	**5**	**7.2**

Table 13. Fire responses, 2018 to 2022.

Type of Response	2018	2019	2020	2021	2022	Avg.
Loss Fires: Structures	10	9	14	12	9	10.8
Loss Fires: Other	4	5	0	7	9	5.0
Loss Fires: Vehicles	1	0	0	0	9	2.0
No Loss Fires	1	0	0	0	0	0.2
Non-Fire Calls	306	259	275	286	310	287.2
Total	**322**	**273**	**289**	**305**	**337**	**305.2**

Table 14. Dollar loss by occupancy type, 2018 to 2022.

Occupancy	2018	2019	2020	2021	2022	Average
Group A	$0	$0	$0	$5,000	$0	$1,000
Group B	$0	$0	$0	$0	$0	$0
Group C	$557,000	$82,500	$577,850	$308,000	$1,040,500	$513,170
Groups D&E	$0	$21,000	$0	$0	$0	$4200
Group F	$0	$0	$0	$0	$1,400,000	$280,000
Other	$54,000	$22,000	$103,000	$120,000	$260,000	$111,800
Yearly Loss	**$611,000**	**$125,500**	**$680,850**	**$433,000**	**$2,700,500**	**$910,170**

Table 15: Dollar amount saved by station, 2018 to 2023.

Station	2018	2019	2020	2021	2022	Average
Station 1	$25,000	$180,000	$183,000	$400,000	$1,700,000	$497,600
Station 2	$365,000	$0	$210,000	$50,000	$300,000	$185,000
Station 3	$933,000	$700,000	$743,300	$871,000	$4,559,000	$1,561,260
Total	**$1,323,000**	**$880,000**	**$1,136,300**	**$1,321,000**	**$6,559,000**	**$2,243,860**

As shown in the above tables, the Department recorded an average yearly dollar loss of $910,170 from 2018 to 2023. However, the Department saved an average of $2,243,800 per year during the same period.

13.5.1 Response Time Statistics

Context

All fire departments must retain complete, consistent, and accurate records of their historical response times. Sound response data is essential for measuring performance, making strategic decisions, and determining service alternatives.

Every emergency response comprises the following four steps:

Step 1: Public Safety Answer Point (PSAP) Call Processing Time

- The PSAP call processing time begins when the PSAP or 911 call centre receives an emergency call and transfers the call to the Department.
- This step ends when the Department's dispatch centre answers the transferred call.

Step 2: Secondary Public Safety Answer Point (SPSAP) Alarm Processing Time

- The SPSAP alarm processing time begins when the Department's dispatch centre receives an alarm (incident beginning).
- This step ends when the communication technician/dispatcher activates the station's paging devices (dispatch time).

Step 3: Chute Time

- Chute time begins when the station activates its pagers, and the responding apparatus begins its response.
- This step ends when the apparatus's response is noted by or to dispatch via the Department's radio system (en route time).

Step 4: Travel Time (First Unit)

- Travel time begins when the responding apparatus initially acknowledges its response.
- This step ends when the responding apparatus confirms to dispatch via radio that it has arrived on-scene (on-scene time).

When they are timed and added together, the four steps listed above identify how long it takes for an emergency responder's first due unit to arrive at an emergency scene. However, in order for the resulting response data to be useful, the four steps used to calculate the response times must be measured consistently across all types of responses.

Findings

Table 16 summarizes each of the Department's fire stations' average chute times, travel times, and response times at dollar-loss fires from 2018 to 2022 (based on data provided by the Department). The table also lists the average number of personnel at each emergency scene. Note: As of this FMP, the Department does not have access to data on its dispatch processing times.

Table 16. Average response times, 2018 to 2022.

Station	Chute Time	Travel Time	Response Time	On-scene Personnel
Station 1	4m53s	1m48s	6m40s	13
Station 2	5m08s	3m54s	9m02s	13
Station 3	6m34s	4m34s	11m08s	12

13.6 Deployment Models

Context

Recently, the fire service reconsidered the way fire departments should deploy their assets. One best practice that is now widely accepted is basing deployment models on local needs and circumstances. This approach puts the risks specific to an individual community at the centre of a deployment model's considerations. Several industry-leading organizations, such as the OFM, the Metro Fire Chiefs Association, and the Commission on Fire Accreditation International, have endorsed this risk-based deployment model as the most effective way of protecting lives and property.

Findings

CRAs identify the risks that may affect residents or property within a specific community— the greater the risk, the greater the resources required. The Department should review Essex's CRA to determine what types and levels of fire protection services it needs to provide to the community. By understanding the risks in the community, the Department can equip itself with information that it can use to determine effective resource allocation and service provision.

The Department currently uses the apparatus response procedure listed in section 13.3.1. By following the procedure, the Department ensures it deploys the required resources when responding to emergencies. As of this FMP, the suppression division is deploying its resources adequately. Going forward, the Department should continue monitoring its ERF and using the information to determine adequate staffing levels. Specifically, the Department should monitor volunteer turnout during daytime hours to determine its staffing levels. The Department should then adjust its staffing levels accordingly. (For more on staffing levels, see section 13.7 below.)

It is imperative that the Department uses all available tools and information to measure its response data. This will help the Department ensure it meets its performance objectives and response criteria.

13.6.1 Incident Command Structure

Context

Many fire departments across North America have adopted the incident command structure ("**ICS**") to ensure they have a response structure that can accomplish all necessary operational tasks.

The ICS is a proven response model used by emergency management professionals. The ICS defines the roles needed during an emergency response and the organizational structure of all personnel involved with response efforts. (As of this FMP, the firefighter guidance notes cover five topics related to the ICS: incident command, crew integrity, radio communication, incident safety officer, and reporting exposures.)

Incident Commander

Under the ICS, the incident commander is in the individual who is charge of an emergency response. The incident commander is responsible for the safety of all responders. Typically, the on-site officer with the most seniority fills the role of incident commander.

In a crew-based response structure, a fire captain is usually the first officer to arrive at an emergency scene. The fire captain is often expected to take overall command of the scene and provide direct supervision of other fire crew members.

A senior officer should take over the role of incident commander upon arrival at an emergency scene, stationing themself inside a vehicle rather than inside the hazard zone. This arrangement allows the senior officer to monitor the safety and overall direction of the incident more effectively.

Section 2.1 of the firefighter guidance notes addresses topics related to the incident commander.

Accountability/Scribe

Under the ICS, an accountability/scribe role performs the following tasks to assist the incident commander:

- Document events occurring at the incident.
- Monitor communication devices.
- Track the location and actions of firefighters.

- The incident commander and responding units must know the location and status of firefighters during a mayday situation.

Section 5.1 of the firefighter guidance notes addresses topics related to firefighter accountability.

Incident Safety Officer

Under the ICS, the incident commander assigns an incident safety officer to perform the following tasks:

- Assess the hazards associated with the incident.
- Assess firefighter operations.
- Help the incident commander manage personnel and resources at the emergency scene.
- Improve the safety of the incident.

Section 2.4 of the firefighter guidance notes addresses topics related to the incident safety officer.

Findings

After determining the community's risks, needs, and circumstances, the Department should review the ICS deployment model and consider implementing it into its operations.

13.6.2 Effective Fireground Staffing Model

Context

The effective fireground staffing model ("**EFSM**") is a popular and accepted way of determining fire protection resources.

The OFM developed the EFSM in the 1990s as part of a comprehensive fire safety model that identified seven sub-models which impact fire protection. The EFSM comprises the following components:

- public attitude
- fire prevention effectiveness
- fire risk
- detection
- intervention time

- fireground effectiveness
- suppression capabilities

The EFSM is now widely used across Ontario and is a vital tool that helps fire departments determine the effectiveness of their responses.

Findings

After determining the community's risks, needs, and circumstances, the Department should review the EFSM and consider implementing it into its operations.

13.7 Staffing Models

13.7.1 Factors Affecting Fire Protection Staffing Models

The following factors influence how a municipality manages the fire protection staffing models and services in its community:

- population (including the number of year-round residents and the number of transient or migrant residents)
- land mass
- community risk
- community socioeconomics
- industrial tax base and operating budgets
- population growth
- fleet and equipment
- fire call volumes

13.7.2 Municipal Comparators

Table 17 shows municipal comparators for Essex and lists various statistics that influence their fire protection staffing models (based on data from the 2021 Statistics Canada census, as well as supplemental information provided by representatives of the municipalities used as comparators).

Table 17. Data from municipal comparators.

Staffing Consideration	Essex	Amherstburg	Kingsville	Lakeshore	LaSalle	Leamington	Tecumseh
Population	21,216	23,524	22,119	40,410	32,721	29,680	23,300
Area (km^2)	277.53	83.76	246.08	529.00	64.96	261.24	94.59
Population density	76.4	128.0	89.9	76.4	503.7	113.6	246.3
Stations	3	3	2	5	3	1	2
Fire chiefs	1	1	1	1	1	1	1
Deputy chiefs	1	2	1	1	1	1	2
Assistant deputy chiefs	1	0	2	2	0	1	0
Prevention/education staff	0	1	1	2	1	2	2
Training or EMS staff	0	1	0	0	1	0	1
Full-time firefighters	0	6	1	0	12	0	0
Total full-time staff	**3**	**11**	**6**	**6**	**16**	**6**	**6**
Volunteer firefighters	51	60	50	95	28	0	42
Part-time firefighters	0	0	0	0	0	28	0
Administrative assistants	0.5	1	1	1	1	1	1
Total fire department staff	**54.5**	**72**	**57**	**102**	**45**	**35**	**49**

The above table shows that the Department has an average number of volunteers, but the lowest full-time complement out of the seven fire departments compared. It should be noted that the Town of Amherstburg has a similar population to Essex, but its fire department has a full-time staff complement.

13.7.3 Daytime Staffing

All evidence presented during this FMP's development indicates that the Department has provided Essex with reliable, effective fire protection services. However, the Department is experiencing several challenges that are common to fire departments in Ontario. Those challenges include recruiting and retaining volunteer firefighters and meeting NFPA certification requirements.

The summary of municipal comparators shows there are several daytime staffing models Essex can consider for the Department (as needed). Some staffing models include using full-time response crews. Other staffing models involve assigning dedicated daytime personnel (such as a training officer) to respond to emergency calls and perform various other duties.

Going forward, the Fire Chief and Council must develop a strategy to deal with potential impacts on the type and level of service the Department provides, especially as the Essex community grows and develops. Adjustments to the Department's daytime staffing model will help the organization address some of the challenges it is currently facing.

Sections 10 and 12 of this FMP recommend adding a dedicated full-time staff member who can divide their time evenly between the training and fire prevention divisions. From a training perspective, a training officer would provide the managerial support the Department's training program needs to remain consistent and effective, which will help the Department's personnel learn the skills they need to achieve applicable NFPA certifications. From a fire prevention standpoint, a training officer would have time to assist with inspections and compliance requirements, which will allow the Department to meet its legislative obligations. The addition of a training/fire prevention officer is a good first step that will help the Department deliver required services and align its operations for long-term sustainability.

Council and the Fire Chief should review the information in this section of the FMP and discuss the factors that influence the fire protection services Essex receives. Based on the results of those reviews, Council and the Fire Chief should develop a strategy that will ensure the Department can address its current and potential staffing needs. Doing so will help the Department identify ways to adapt its operational structure (as needed) to meet the community's future risks, needs, and circumstances.

13.8 Recommendations

After assessing performance standards and response statistics in Essex, The Loomex Group developed the following recommendations:

13-1. The Fire Chief should continue monitoring the Department's effective response force to determine whether the Department needs to increase its staffing levels, specifically during the daytime.

14.0 Fire Stations

14.1 Overview of Fire Stations

Context

A fire station is a facility where a fire department houses its fire apparatus and other equipment. Depending on its age, size, and configuration, a fire station may also contain features such as an administrative area, a training room, or exercise equipment.

Over the years, the legislation governing fire stations has undergone several revisions, and fire stations must now meet specific requirements. For example, fire stations in Ontario must comply with the terms of the AODA.

As of this FMP, many fire stations in Ontario are several decades old. Due to the age of the facilities, fire departments must remain aware of the functionality and capabilities of their fire stations.

Findings

As of this FMP, the Department operates from the following three fire stations:

- Station 1 – Essex (located at 55 Alice Street North)
- Station 2 – Gesto (located at 3575 North Malden Road)
- Station 3 – Harrow (located at 25 Centre Street East)

The fire station locations were strategically chosen to provide the Department with timely access to various parts of the Essex community.

The Essex Parks and Facilities Division is responsible for the care and maintenance of the Department's fire stations. All facilities are well maintained, and the Department's firefighters have taken proactive steps to ensure each site can support their operations as best as possible. For example, the Department has ensured each fire station has a backup generator.

Details about the Department's fire stations are discussed in the subsections below.

14.2 Station 1 – Essex

Station 1 – Essex was constructed in 2013, at a site located near Essex's urban core. The station is attached to a self-contained, two-bay paramedic station (as shown in Figure 7).

Figure 7. Exterior of Station 1 – Essex.

As of this FMP, the following Department personnel operate from Station 1 – Essex:

- Fire Chief
- Deputy Chief
- Assistant Deputy Chief
- part-time administrative assistant
- part-time support firefighter

14.3 Station 2 – Gesto

Station 2 – Gesto (also referred to as Colchester North) is the newest of the Department's three fire stations. The station, which opened in 2022, is a state-of-the-art facility that the Department constructed to meet all current building and fire codes. The station is a fully accessible facility, and it meets the requirements of the AODA. Figure 8 shows the exterior of the station.

Figure 8. Exterior of Station 2 – Gesto.

Due to its location, Station 2 – Gesto allows the Department to provide service to a large rural/agricultural area.

Station 2 – Gesto also has space to house a training site (shown in Figure 9), which the Department uses to accommodate a variety of training sessions for firefighters of all skill levels.

Figure 9. Training site, Station 2 – Gesto.

St. Clair College also uses the training site (per an arrangement with the Department) to facilitate part of the school's pre-fire service program.

14.4 Station 3 – Harrow

Station 3 – Harrow (shown in Figure 10) was built in 1980, and it is the oldest of the Department's three fire stations. The Department primarily uses this station to provide services in the village of Harrow and the southern edge of the district.

Figure 10. Exterior of Station 3 – Harrow.

Although the Department's firefighters have maintained Station 3 – Harrow over the years, it is a cramped facility that does not have the functionality or features needed to support the Department's current operations. For instance, the current three-bay apparatus floor at Station 3 – Harrow is not big enough to house the Department's apparatus and equipment and offer the Department's firefighters the space they need to operate safely.

As shown in Figure 11, the Department's current fire apparatus are much larger than the apparatus which Station 3 – Harrow was built to accommodate. As a result, the Department's firefighters do not have adequate clearance to maneuver around vehicles parked in the bay.

Figure 11. Apparatus bay, Station 3 – Harrow.

The apparatus floor at Station 3 – Harrow also lacks space for the firefighters to put on their gear before leaving the station in response to an emergency call (as shown in Figure 12). Moreover, having the firefighters' gear stored so close to the fire apparatus creates health and safety concerns, as the gear may become contaminated by exhaust or other substances emitted by the fire apparatus.

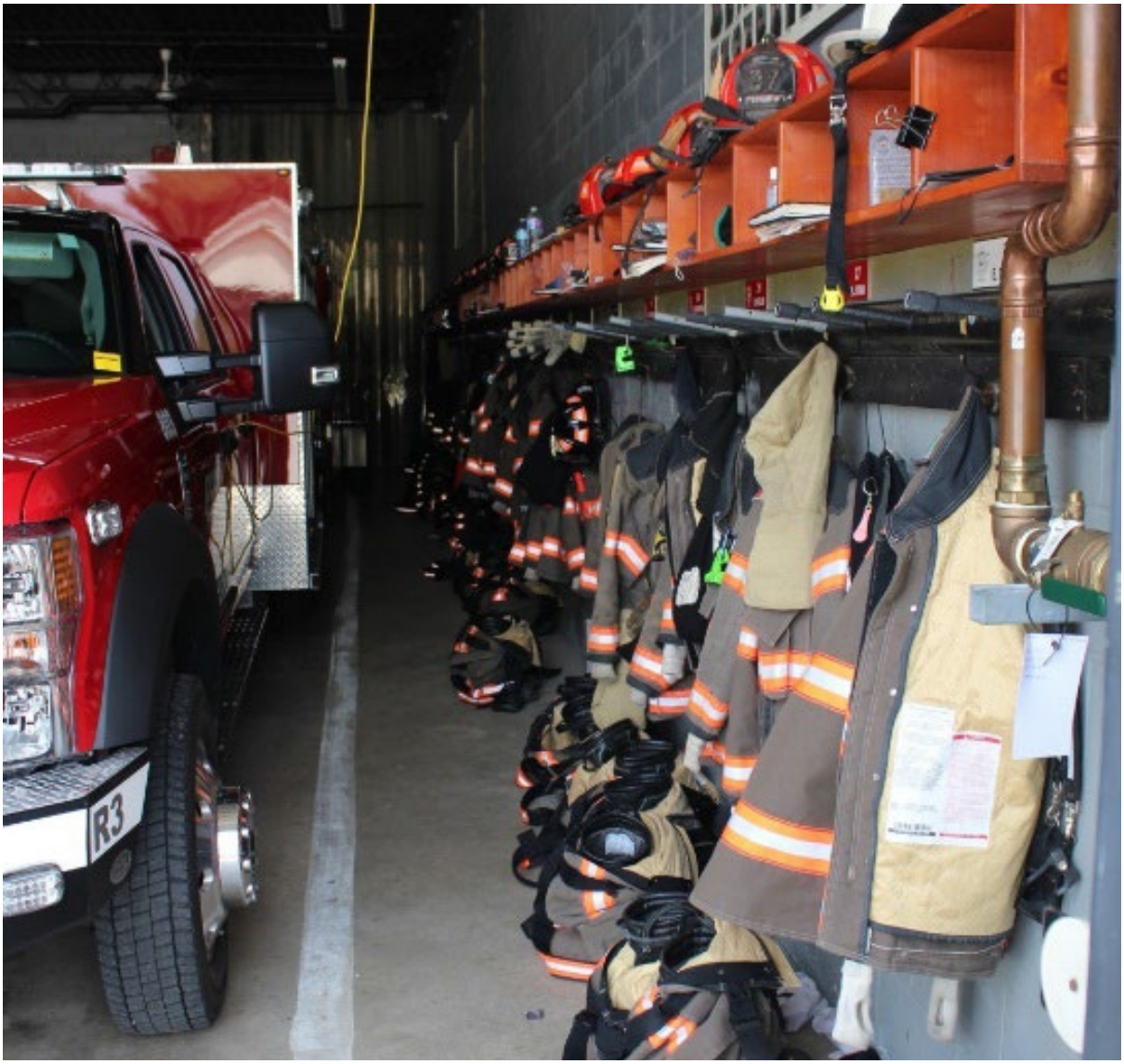

Figure 12. Bunker gear storage, Station 3 – Harrow.

There are also issues with the washroom facilities in Station 3 – Harrow. As shown in Figure 13, the station has outdated washroom facilities, and, aside from practicality concerns, the facilities do not meet current legislative requirements, such as accessibility requirements and gender-neutrality requirements (as outlined in the AODA).

Figure 13. Bathroom facilities, Station 3 – Harrow.

14.5 Summary of Fire Stations

As of this FMP, stations 1 and 2 have the functionality, capacity, and features needed to support the Department's current and anticipated needs.

Station 3 – Harrow does not meet the Department's current needs. Moreover, all evidence reviewed during the FMP development process indicates that the station will prove inadequate for the Department's anticipated future needs.

Council must now decide how it will address the issues presented by Station 3 – Harrow. Although Council must make a decision that is fiscally responsible, Council must also ensure that its decision will support the current (and future) needs of the Department, as well as the community. Due to the state of the station, which all evidence suggests is at the end of its life cycle, Council should not defer its decision about the facility. Any prolonged delays may require Essex to spend more money to complete upgrades or a station relocation in the future.

14.5.1 Recommended Plan Regarding Fire Stations

As noted above, Station 3 – Harrow presents several issues that Council and the Department must remediate as soon as possible.

A lack of space is one of the main issues with Station 3 – Harrow. For instance, the current facility does not have the space to accommodate an adequate number of training rooms. The station also lacks sufficient assembly space. There is also a lack of space in the apparatus bay, which limits the types of apparatus the Department can house at the station. Furthermore, the facility's limited space introduces various legislative concerns, such as a lack of compliant washroom facilities.

In 2018, Essex contracted Archon Architects Incorporated, Haddad Morgan and Associates Ltd., and EXP to conduct a building condition assessment for Station 3 – Harrow. The study assessed the feasibility of improving Station 3 – Harrow through renovations, additions, or the construction of a new building. The results of that study recommend replacing Station 3 – Harrow with a new facility.

In light of the issues with Station 3 – Harrow, The Loomex Group agrees with the 2018 building condition assessment. It is more practical for Council and the Department to build a new fire station at another location than it is to try updating the existing Station 3 – Harrow facility.

There are several advantages of replacing Station 3 – Harrow with a new fire station. The main benefit is that Essex can design a facility that will meet the Department's current and anticipated needs. Another benefit is that having a new facility in a different location is not likely to affect the Department's average response times, as volunteer firefighters respond from many different areas throughout Harrow. A new fire station can also incorporate a building layout that will satisfy applicable building codes and legislation, such as the AODA.

If Essex decides to build a new fire station to replace Station 3 – Harrow, the town should ensure its decision takes into account the following considerations:

- Will the proposed building design/location provide sufficient space for parking now and in the future?
- What is the future growth potential of the proposed site?
- What is the potential future training footprint?
- Will the proposed building design/location accommodate the Department's apparatus and vehicle deployment model?
- Will the proposed building design/location support a multi-use municipal facility?

Although finding a convenient location for a new fire station is important, it is more important for Essex to choose a site that is large enough to support the community's long-term needs.

14.5.2 Future Station Locations

Proposed Sites for a New Fire Station in Harrow

As of this FMP, Essex has identified four potential sites where it can locate a new fire station to replace Station 3 – Harrow:

1. Current site of the Essex Environmental Services Department (120 Sinasac Street West).
2. Current site of the Harrow Soccer Complex (2225 Roseborough Road).
3. Serviced lot across from the Harrow EMS station (intersection of 3rd Concession Road and County Road 22).
4. Lot to the south of Harrow Centre (intersection of Dunn Road and County Road 13).

Upon review of the potential sites, The Loomex Group does not recommend using locations 3 or 4, as Essex does not own the land at either site.

Figure 14 shows a map of Harrow Centre and indicates the location of the proposed replacement sites.

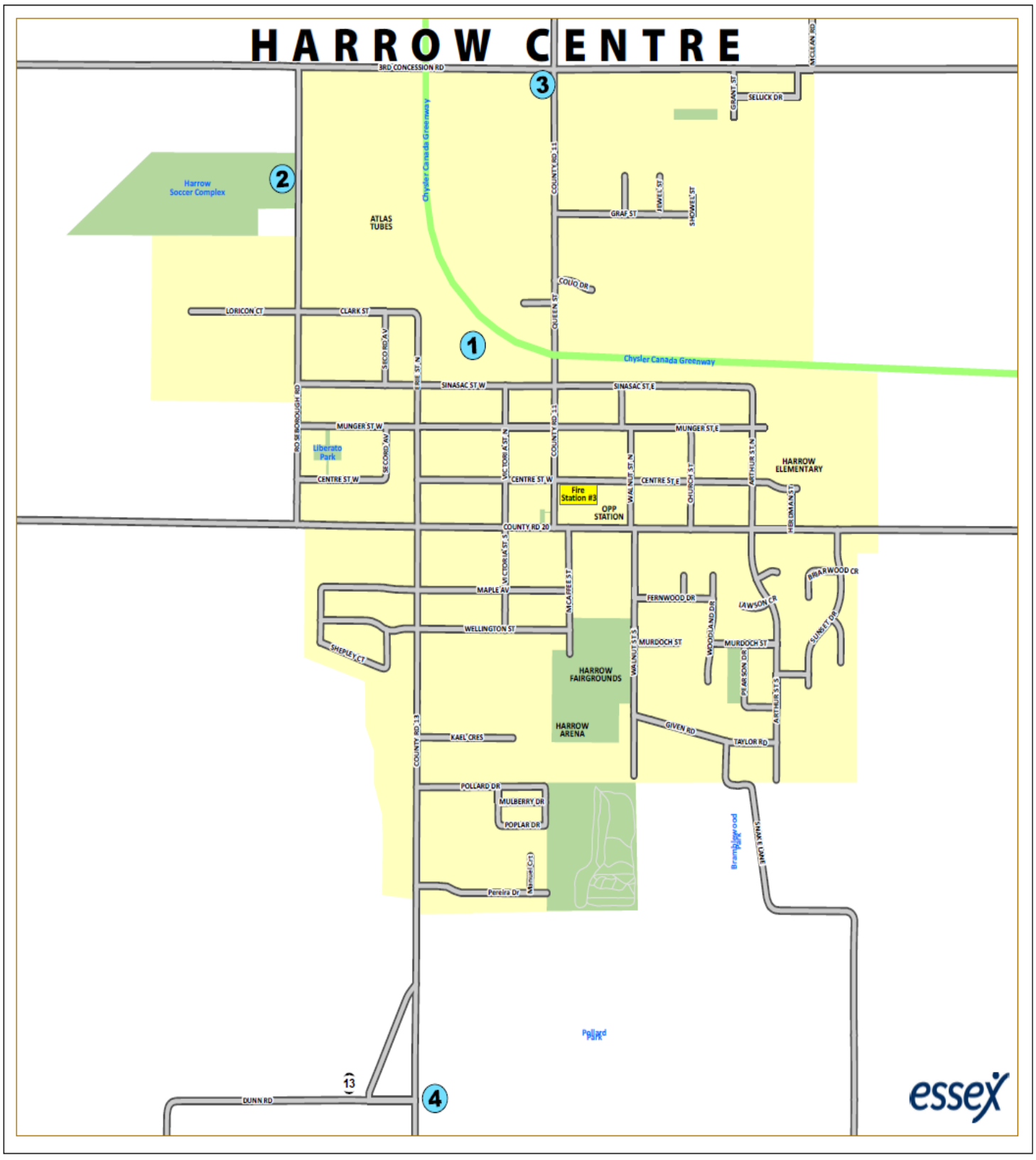

Figure 14. Potential locations for a new fire station in Harrow.

Location 1: Environmental Services Department Facility (120 Sinasac Street West)

The Department should note the following observations and considerations about location 1:

- The lot would provide limited access and egress for emergency routes and services.
- Due to the existing structures on the site, the lot may lack the necessary space to store the Department's current and future apparatus.
    - Essex could consider modifying or demolishing existing structures to mitigate this issue.
- Although the lot would provide sufficient parking space for the Department's firefighters, it may cause issues related to access and egress for responders.

Location 2: Harrow Soccer Complex (2225 Roseborough Road)

The Department should note the following observations and considerations about location 2:

- The lot has easy access to roads and routes for emergency responses.
- The lot is large enough to accommodate a fire station with a good-sized outdoor training space.
- The lot is large enough to meet the Department's current and future apparatus storage needs.
- The lot provides sufficient parking space for firefighters and visitors.
- The lot is large enough to accommodate a facility with ample meeting space, a training room, a PPE storage room, mechanical rooms, and cleaning facilities.
- The lot is compliant with current codes and AODA requirements.

Location 3: 3rd Concession Road and County Road 11

The Department should note the following observations and considerations about location 3:

- The lot would provide the Department with easy access to roads during emergency responses.
- Due to the size of the lot, the station could not have a large footprint.
- Due to the size of the lot, the station would have limited parking space.
- The lot may not have the space to meet the Department's current and future apparatus storage needs.

Recommended Site

The Loomex Group recommends that the Department build its new station at location 2 (2225 Roseborough Road). The lot is big enough to accommodate a fire station that is likely to meet the needs of the Department and the community for the foreseeable future.

14.6 Recommendations

After assessing the fire stations in Essex, The Loomex Group developed the following recommendations:

14-1. The Fire Chief should develop a report for Council that recommends replacing Station 3 – Harrow with a new fire station at 2225 Roseborough Road. The report should include a cost analysis and outline the benefits of building a new fire station at the proposed site.

15.0 Water Supply

15.1 Types of Water Supplies

In the context of fire suppression, a water supply is classified as one of the following:

1. Municipal water supply: A municipal water supply is water accessed in hydrant-protected areas.
2. Rural water supply: A rural water supply is water accessed in non-hydrant areas.

Fire departments must remain aware of which water supplies are available in their communities, as a reliable water supply is essential for delivering effective fire suppression services.

15.2 Municipal Water Supplies

Context

In hydrant-protected areas, municipal water and distribution systems provide the water supply that firefighters use for emergency responses. Municipalities are responsible for arranging hydrant testing, repairs, and replacements.

Municipalities must maintain their water systems to the following standards:

- The municipal water system must have the capacity to provide firefighters with a water supply that has a sufficient flow for firefighting operations.
- The municipal water system must support the local distribution system, including fire hydrants.

From an insurance standpoint, hydrant-protected properties usually pay lower insurance premiums than non-hydrant-protected properties.

Findings

As of this FMP, the Essex Environmental Services Department is responsible for monitoring, testing, and inspecting the town's municipal hydrant system. Under the direction of the Manager of Environmental Services, the municipal hydrants in Essex undergo annual flow testing and inspections.

15.3 Fire Hydrant Identification for Municipal Hydrants

Context

Table 18 shows the fire hydrant colour-coding scheme outlined in NFPA 291, *Recommended Practice for Water Flow Testing and Marking of Hydrants*.

Table 18. NFPA colour classifications and markings for municipal hydrants.

Class	Top and Nozzle Colour	Barrel Colour	Fire Flow	Pressure
AA	**Light Blue**	**Chrome Yellow**	1,500 gpm (5,680 L/min or greater)	20 psi (140 kPa)
A	**Green**	**Chrome Yellow**	1,000 to 1,499 gpm (3,785 to 5,675 L/min)	20 psi (140 kPa)
B	**Orange**	**Chrome Yellow**	500 to 999 gpm (1,900 to 3,780 L/min)	20 psi (140 kPa)
C	**Red**	**Chrome Yellow**	500 gpm (1,900 L/min or less)	20 psi (140 kPa)

The NFPA colour scheme helps fire crews identify the amount of fire flow they can expect from a given hydrant. This allows incident commanders, water sector officers, and pump operators to arrive at an incident site and quickly verify if there is enough water to complete the necessary response services. The colour-coding scheme also ensures that fire crews can make decisions about increasing the water supply by attaching it to another hydrant (if needed).

Findings

As of this FMP, Essex is following the NFPA colour scheme for municipal fire hydrants. The Manager of Environmental Services monitors hydrant markings to verify that they remain compliant with applicable NFPA guidelines. Figure 15 shows two examples of municipal fire hydrants in Essex.

Figure 15. Municipal fire hydrants in Essex.

Figure 16 illustrates an overview of the extensive water distribution system in Essex.

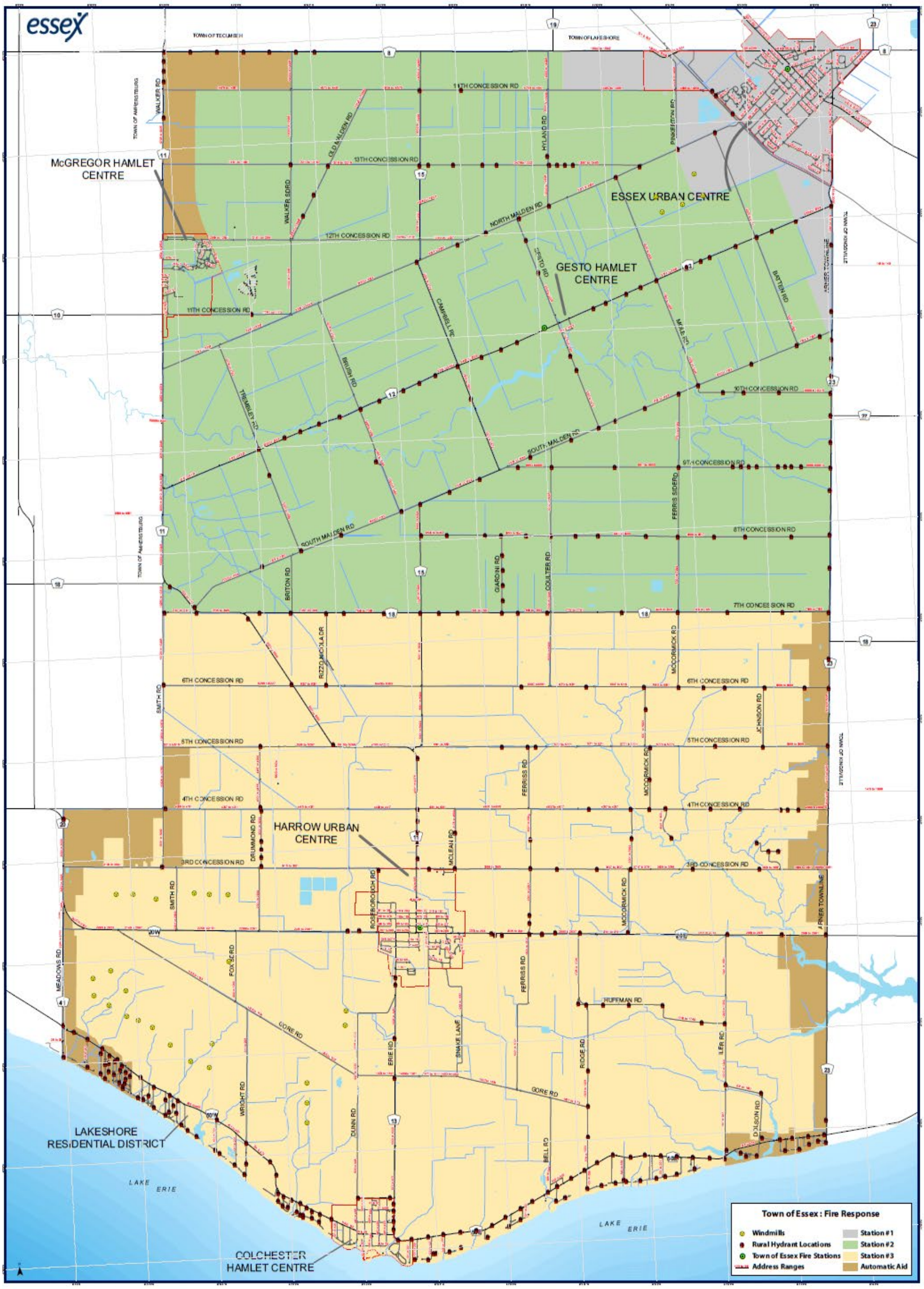

Figure 16. Water distribution system in Essex.

15.4 Private Hydrants

Context

When a property has a private hydrant, the property's owner or developer must provide hydrant installation and water flow certifications to the Chief Fire Official. The Chief Fire Official must then approve that certification before the owner or developer is allowed to occupy the property. After receiving approval to occupy their property, the developer or owner must ensure they test their on-site hydrants annually to verify they remain operational.

In contrast to the NFPA colour-coding scheme, private hydrants are usually painted in a colour that distinguishes them from municipal hydrants.

Findings

Essex contains a significant number of private hydrants, which are quickly identifiable by their silver colouring (as shown in Figure 17). As of this FMP, the county has over 70 private hydrants, and it has plans in place regarding the installation of additional hydrants.

Figure 17. Private fire hydrant in Essex.

The Department regularly works with private contractors and associations to ensure that the private hydrants in Essex undergo required inspections, testing, and maintenance. The partnership between the Department, the Essex Environmental Services Department, and private hydrant facilities is extremely effective, given the high number of private hydrants in the town.

15.5 Non-Hydrant-Protected Areas

Context

When fire departments respond to emergencies in areas without fire hydrants, they must use an alternate water source to provide fire suppression services. Dry hydrants and tankers are common alternative water sources.

Dry hydrants provide fire departments with a water supply culled from rivers, lakes, ponds, or storage tanks. Many fire departments that respond to calls in non-hydrant-protected areas rely on dry hydrants.

A tanker is a type of fire apparatus that can transport water to non-hydrant-protected areas. One benefit of a tanker service is that it may lead to reduced costs for a community's residents. Many insurance providers offer reduced fire insurance premiums in communities that have fire departments with Superior Tanker Shuttle Accreditation. The Superior Tanker Shuttle Accreditation program is available for fire departments that meet the following criteria:

- The fire department can maintain a minimum water supply of 200 gallons/minute for a two-hour duration for residential properties up to 8 km away from a fire station.
- The fire department can maintain a minimum water supply of 500 gallons/minute for a two-hour duration for commercial properties up to 5 km away from a fire station.

Although using dry hydrants and tankers can help fire departments access a water supply in areas that lack municipal fire hydrants, they often require firefighters to purchase specialized equipment or complete specific training.

Findings

As of this FMP, Essex contains a limited number of non-hydrant-protected areas, most of which are located near the village of Harrow. In order to ensure it has a reliable water supply in Essex's non-hydrant-protected areas, the Department has established a tanker shuttle service. The shuttle service operates from Station 3 – Harrow, which houses all applicable fire apparatus and vehicles.

Station 2 – Gesto can also support the Department's tanker shuttle service (if required). However, given the concentration of non-hydrant-protected areas in the Harrow community, the Department should continue keeping its tanker apparatus at Station 3 – Harrow. Doing so will keep the Department compliant with applicable tanker shuttle requirements, and it will ensure the Department can provide a reliable and uninterrupted shuttle service.

Going forward, the Department should attempt to maximize an available water supply in Essex's non-hydrant-protected areas by purchasing the necessary equipment (as needed) and having its personnel complete applicable training (as required).

15.6 Recommendations

After assessing the water supply in Essex, The Loomex Group developed the following recommendations:

15-1. The Fire Chief should ensure that the Department's tanker shuttle service meets all applicable fire service guidelines.

16.0 Asset Management

16.1 Fire Apparatus

16.1.1 Purchasing and Maintaining a Fire Apparatus

Firefighters respond to many kinds of emergencies, including fires, explosions, and motor vehicle collisions. In order to arrive at an emergency scene and deliver the required services safely and effectively, firefighters rely on a variety of fire apparatus. Common examples of fire apparatus include pumpers, tankers, rescue vehicles, and aerials.

Each fire apparatus is an expensive vehicle, and purchasing an apparatus is a significant investment for any municipality. As such, fire departments should only acquire the apparatus needed to address the risks in their communities. Each type of apparatus serves a different function, and not every fire department requires each type of apparatus.

Maintaining and replacing a fire apparatus is also costly. A fire apparatus is subject to intense conditions and use, which means most apparatus will require routine maintenance and upkeep. Therefore, municipalities must set aside funds to maintain and replace their fire apparatus as needed.

Despite the time and monetary commitments needed to purchase a fleet of fire apparatus and keep the vehicles in good working order, it is essential for fire departments to have properly equipped apparatus to control and mitigate emergencies.

16.1.2 Safety Standards

Fire apparatus have undergone considerable changes over the years. For example, many modern apparatus are much larger than older apparatus, and most newer vehicles are more technologically sophisticated than older vehicles. Moreover, many older fire apparatus lack features required by current legislation, such as anti-lock braking systems and roll stability control.

Due to changes in construction materials and features, fire apparatus must meet more rigorous safety standards than in years past, including the requirements of the OHSA, NFPA 1901: *Standard for Automotive Fire Apparatus,* and ULC S515-04: *Automotive Fire Fighting Apparatus*.

Municipalities and fire departments must take the time to review all applicable legislation and safety standards before purchasing a new fire apparatus, which makes appropriate planning and budgeting to replace older apparatus more important than ever.

16.1.3 Inspections, Testing, and Maintenance

A fire apparatus must undergo weekly and annual inspections, tests, and maintenance to ensure it can start and operate properly whenever an emergency occurs.

In addition to routine maintenance (such as checking and adjusting brakes and making lubrication and oil changes), a fire apparatus must undergo annual pump tests, non-destructive ladder tests, and Ministry of Transportation inspections. As a result of this routine upkeep, an apparatus will be out of service for several days each year for scheduled maintenance.

Fire departments must also recognize that maintaining a modern fire apparatus requires hiring mechanics with specialized training to inspect and repair the vehicle's safety systems, pollution control, and engine and driveline systems. In years past, a mechanically skilled firefighter could have performed those tasks, but the complex technology in modern fire apparatus has made it necessary to contract specialized assistance. Advanced maintenance work may also require a fire apparatus to be taken out of service for an extended period.

16.2 Fleet Renewal and Rationalization

Context

Assessing a fire fleet involves the following considerations:

- What apparatus comprise the fire department's current fire fleet?
- What types of responses does the fire department make?
- What are the fire department's available staffing levels for responses?

A fire department must keep these considerations in mind, as they will help identify which fire apparatus the department should purchase to suit its current and expected needs.

Once a fire department has identified which fire apparatus it is likely to need, it should work with its municipal council to develop a strategic plan that accounts for purchasing timelines and budgetary considerations.

Findings

Table 19 summarizes information about the apparatus that comprise the Department's fire fleet at the time of this FMP.

Table 19. Apparatus comprising the Essex Fire and Rescue fire fleet.

Unit #	Type	Station	Year	Number of Service Years	Projected Replacement Year	Estimated Cost of Replacement (2023 Prices)
Aerial Platform	Sutphen 70-ft platform	2	1998	25	2024	$2,000,000
Engine 3	American Liberty	3	2007	16	2026	$1,000,000
Engine 1A	E-One	1	2006	17	2027	$1,000,000
Chief 2	Ram RTR	1	2017	6	2027	$90,000
Tanker	GMC	3	2000	23	2028	$750,000
Chief 1	Ford	1	2021	2	2031	$75,000
Chief 3	Ford EPR	1	2022	1	2032	$75,000
Rescue 2	Ford DRW	2	2014	9	2034	$750,000
Squad 1	Ram 2500	1	2018	5	2038	$120,000
Engine 1	Spartan	1	2018	5	2038	$1,000,000
Rescue 3	Ford DRW	3	2021	3	2040	$750,000
Engine 2	Pierce	2	2021	2	2041	$1,000,000
Trailer	Haul HLA	3	2021	2	2041	$75,000
Support Unit 3	Ford 250 4x4	3	2023	1	2043	$120,000

A review of Department's fire fleet shows that the Department has purchased apparatus that suit its deployment model. The Department has maintained the consistency of its fire fleet by purchasing replacement vehicles prudently and responsibly.

The Department's fire fleet replacement schedule is also successful because the Department has collaborated with Council to arrange the support and resources needed to purchase apparatus.

Going forward, the Department should strive to maintain the tanker shuttle service apparatus at Station 3 – Harrow, which will help the Department provide a reliable water supply in Essex's non-hydrant-protected areas.

16.3 Fire Service Equipment

Context

In addition to fire apparatus, firefighters rely on a range of equipment to perform various tasks.

Examples of fire service equipment include:

- fire hoses and nozzles
- fittings
- ladders
- generators and lighting
- ventilation fans
- portable pumps
- saws
- gas detectors
- thermal imaging cameras
- various hand tools

All additional equipment is considered part of a fire department's assets. Municipalities should keep track of the equipment their fire departments use, as this will assist with budget planning for any necessary repairs or replacements.

Findings

As of this FMP, the Department has no formalized approach for maintaining and cleaning its equipment after emergency responses. Going forward, the Department should develop a formalized program (with documentation) to make sure its equipment is always clean and ready for service.

Although the Department does not have a formalized program for cleaning its equipment, the Department ensures that its hoses receive annual testing (which the Department's personnel complete in house). In addition, Essex retains third-party contractors to complete annual pump, ladder, and vehicle testing and maintenance. Essex also arranges third-party testing for the Department's SCBA gear. Overall, this testing schedule ensures the Department remains compliant with applicable equipment regulations.

To summarize, Council and the Department must properly budget for replacing the Department's equipment at the appropriate times. Since most of the equipment used by the fire service is expensive and has a life span, having a budget plan to replace the Department's equipment cost-effectively is crucial.

Over the years, the Department has taken steps to flag specific items for replacement including:

- PPE
- pagers
- thermal imaging cameras
- hoses

The Fire Chief has also provided Council with a detailed lifecycle replacement of equipment. Doing so ensures that Essex is aware of forecasted replacement costs, and it ensures that all applicable parties are aware of financial accountability concerns. Going forward, Council and the Fire Chief should maintain their partnership and continue working together to budget for necessary equipment replacements.

16.4 Radio Communications

Context

Radio communication systems play a crucial role during emergency responses. First responders use radio systems to communicate with dispatch services, response agencies, and other responders at emergency scenes. Without effective radio communications, it is difficult for first responders to coordinate safe, effective response efforts.

Findings

Communication Systems

The Department's communications system is integrated with the system used by Windsor Fire and Rescue Services. As part of this arrangement, the Windsor communication system provides dispatch services for the Department, and it also provides support for paging and airtime through a third-party supplier. A series of towers provide the required infrastructure to support the communication services.

Radio Systems

The Department's current radios are not considered fire-grade radios.

Although the current radio system has supported operations in Essex adequately, the town should consider upgrading the system. Ideally, the town should upgrade to a system that can support interoperability with neighbouring fire departments.

The Department understands the need to review and replace its radio and communication systems, and it has allocated funds in its lifecycle budget accordingly. Going forward, the Department should research other products to find a brand of fire-grade radios that can accommodate its needs.

16.5 Recommendations

After assessing the Department's fire apparatus and equipment, The Loomex Group developed the following recommendations:

16-1. The Fire Chief should prepare a report for Council's consideration and approval that recommends continued investment in the Department's radio communications equipment. The report should address the state of the current radio system and indicate whether the Department should upgrade to fire-quality radios.

16-2. The Fire Chief should attempt to form partnerships with external agencies to share the costs of radio purchases and increase interoperability.

Appendix A: Legislation and References

Applicable Legislation for the Ontario Fire Service

Coroners Act: This act outlines the regulations that govern the control of bodies. The act authorizes and regulates coroner inquests and coroner inquest recommendations.

Dangerous Goods Transportation Act: This act outlines the regulations that govern the transportation of dangerous goods.

Day Nurseries Act: This act defines the legislative requirements that day-care operators must meet (to the satisfaction of their local fire chief) before they can operate a day-care facility.

Development Charges Act: This act authorizes portions of development charges to be allocated to the fire service.

Emergency Management and Civil Protection Act: This act requires every municipality to have an emergency management plan and a trained community emergency management coordinator to conduct training exercises for the emergency control group.

Employment Standards Act: This act outlines regulations pertaining to human resources. (See also: Labour Relations Act.)

Environmental Protection Act: This act requires fire department personnel to report spills to the Ministry of the Environment, Conversation, and Parks, which was formerly referred to as the Ministry of the Environment.

Forest Fire Prevention Act: This act only applies to areas classified as “fire regions.” The act outlines regulations for controlling outdoor fires in restricted fire zones. The act requires municipalities to extinguish all grass, brush, and forest fires that occur within their geographic limits. The act authorizes the applicable minister to appoint wardens and officers.

Fire Protection and Prevention Act, 1997: This act outlines the regulations that govern both the OFM and municipalities. Part IX is generally the responsibility of the Ministry of Labour, except where terms and conditions in collective agreements may adversely affect the provision of fire protection.

Highway Traffic Act: This act outlines several governing regulations: how fire vehicles are to operate during emergency responses; firefighter responses on roads that have been closed by police; the use of flashing green lights on the firefighters’ personal vehicles; and controlling traffic at accident scenes.

Human Rights Code: This act defines how boards of inquiry, complaints, discrimination, and enforcement are handled.

Municipal Act, 2001: This act authorizes the passing of by-laws that are necessary for the provision of fire protection.

Municipal Freedom of Information and Protection of Privacy Act: This act defines how access to information held by institutions is granted and obtained. The intention of the act is to protect the privacy of individuals concerning personal information about themselves held by institutions.

Occupational Health and Safety Act: This act outlines regulations that govern various concerns related to occupational health and safety.

O. Reg. 332/12: Building Code: This regulation authorizes municipalities to appoint certain fire service personnel as building inspectors.

O. Reg. 213/07: Fire Code: This regulation outlines various requirements that fire departments must observe.

O. Reg. 207/96: Outdoor Fires: This regulation outlines governance for controlling outdoor fires that occur outside of restricted fire zones.

O. Reg. 211/01 and 440/08: Propane Storage and Handling: These regulations require propane operators to obtain approval from the presiding fire department for all risk and safety management plans. The fire department must approve the sections of the plans that deal with fire safety, fire protection, and emergency preparedness.

Pesticides Act: This act makes it mandatory to report wholesale and retail pesticide use to the fire department.

Provincial Offences Act: This act authorizes assistants to the Fire Marshal as provincial offences officers (regarding offences related to smoke alarms).

Workplace Safety and Insurance Act: This act requires employers to report on-the-job accidents. The act also requires employers to document employee training records and provide them upon request.

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Appendix B: Accessible Data from Figures

For accessibility purposes, Table 20 presents the data from Figure 5 as a table:

Table 20. Accessible data from Figure 5.

Risk Category	Risk Score	Risk Level
Severe weather event	120	**High**
Fire in residential occupancy	90	**Moderate**
Fire in vulnerable occupancy	85	**Moderate**
Road/highway incident	84	**Moderate**
Fire/explosion in industrial occupancy	80	**Moderate**
Fire in commercial occupancy	75	**Moderate**
Critical infrastructure failure	72	**Moderate**
Fire in assembly occupancy	64	**Moderate**
Fire in downtown core	64	**Moderate**