May 2021

Strathroy-Caradoc Fire Department

Master Fire Plan

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ACRONYMS ..... **I**

EXECUTIVE SUMMARY ..... **II**

OBJECTIVES II

RECOMMENDATIONS – QUICK REFERENCE CHART ..... **IV**

INTRODUCTION ..... **VI**

REVIEW PROCESS AND SCOPE VI
DELIVERABLES VI
PERFORMANCE MEASURES AND STANDARDS VI
PROJECT CONSULTANTS VIII

SECTION 1: COMMUNITY AND FIRE DEPARTMENT OVERVIEW **2**

1.1 COMMUNITY OVERVIEW 2
1.2 FIRE SERVICE COMPOSITION 4
1.3 GOVERNANCE AND ESTABLISHING & REGULATING BY-LAW 5
1.4 FIRE SERVICES BY-LAW, POLICIES, DIRECTIVES, AND STANDARD OPERATING PROCEDURES 7
1.5 FIRE STATION LOCATIONS 8
1.6 DISPATCHING SERVICES 11
1.7 FIRE SERVICE AGREEMENTS 12
1.7.1 Fire Service Costs *13*
RECOMMENDATION(S) 16

SECTION 2: PLANNING **18**

2.1 THREE LINES OF DEFENCE 18
2.2 INDUSTRY STANDARDS AND BEST PRACTICES 19
2.2.1 National Fire Protection Association 1201 ..... *19*
2.2.2 Commission of Fire Accreditation International *20*
2.3 STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS 21
2.3.1 Strengths *21*
2.3.2 Weaknesses *21*
2.3.3 Opportunities *21*
2.3.4 Threats/ Challenges *22*
2.4 STAKEHOLDER SURVEYS 22
2.4.1 Internal Staff Feedback *22*
2.4.3 Council Survey Responses *25*
RECOMMENDATION(S) 25

SECTION 3: DEPARTMENT STAFFING **27**

3.1 STAFFING CONSIDERATIONS 27
3.2 ADMINISTRATION DIVISION 28
3.3 FIRE PREVENTION & PUBLIC EDUCATION DIVISION 29
3.3.1 Determination of Current Staffing Requirements *30*
3.3.2 FUS Suggested Inspection Frequency Chart *32*
3.3.3 Targeted Residential Fire Risk Reduction *32*
3.3.4 Home Fire Sprinklers *33*
3.4 TRAINING & EDUCATION DIVISION 34
3.4.1 Commission on Fire Accreditation International *37*
3.4.2 Certification *37*
3.5 SUPPRESSION DIVISION 38
3.5.1 NFPA 1720 – Volunteer Fire Departments *39*

3.6 Health & Wellness 39
3.7 Comparisons with Other Similar Sized Communities 44
Recommendation(s) 50

SECTION 4: COMMUNITY RESPONSE AND COMPARABLES 52

4.1 Fire Suppression & Emergency Response 52
4.1.1 National Fire Protection Association 1720 52
4.2 Emergency Response Data 56
4.2.1 Calls for Service 2018-2020 56
4.2.2 Future Call Volume Expectations 62
4.2.3 Response Reliability 64
4.2.4 Travel Times 67
4.3 Technical Rescue 68
Recommendation(s) 71

SECTION 5: FACILITIES, VEHICLES, AND EQUIPMENT 73

5.1 Fire Station Review 73
5.1.1 Station #1 73
5.1.2 Station #2 79
5.1.3 Station #3 81
5.2 Apparatus and Equipment 85
5.3 Fire Apparatus – New and Replacement Schedule 86
5.3.1 FUS – Vehicle Replacement Recommendations 86
5.3.2 NFPA – Vehicle Replacement Recommendations 88
Recommendation(s) 90

SECTION 6: RISK ASSESSMENT & EMERGENCY MANAGEMENT 92

6.1 Municipal Responsibilities 92
6.2 Community Risk Assessment – Current & Future Needs 93
6.2.1 Current Condition 95
6.2.2 Future Needs 96
6.3 Integrated Risk Management Approach 96
6.3.1 Current Condition 97
6.4 Emergency Management Program 98
Recommendation(s) 100

SECTION 7: FINANCE, BUDGETING, AND CAPITAL INVESTMENT PLAN 102

7.1 Operating and Capital Budgets 102
7.1.1 Operating Budget 102
7.1.2 Capital Forecasts 103
7.2 Overview of Recommendations Costing 103

SECTION 8: SUMMARY 105

8.1 Conclusion 105
8.2 Recommendations & Estimated Costs 105

SECTION 9: APPENDICES 109

Appendix A – Definitions and References 109
Automatic Aid Agreements 109
Commission on Fire Accreditation International - Community Definitions 109
National Fire Protection Association Documents 109
Mutual Aid 110

APPENDIX B – FIVE-STEP STAFFING PROCESS 111
Step 1: Scope of Service, Duties, and Desired Outputs 111
Step 2: Time Demand 111
Step 3: Required Personnel Hours 111
Step 4: Personnel Availability and Adjustment Factor 112
Step 5: Calculate Total Personnel Required 112
APPENDIX C – FUS TECHNICAL DOCUMENT ON ELEVATED DEVICES 113
APPENDIX D - COMMUNITY OUTREACH 0
APPENDIX E – HISTORICAL RESPONSE DATA 0
2019 Response Data 0
2018 Response Data 0

FIGURE 1A: MIDDLESEX / STRATHROY-CARADOC MAP 3
FIGURE 1B: SCFD ORGANIZATIONAL CHART 5
FIGURE 1C: SCFD STATION LOCATIONS WITH 8-MINUTE TRAVEL TIMES 9
FIGURE 1D: 2020 TOTAL CALLS PER STATION 10
FIGURE 3A: PROPOSED STAFFING CHART 49
FIGURE 4A: FIRE RESPONSE/ PROPAGATION CURVE 55
FIGURE 4B: 2020 CALL TYPES 57
FIGURE 4C: 2020 CALL TYPES BY STATION 58
FIGURE 4D: SCFD CALLS BY LOCATION 61
FIGURE 4E: HOUSING FORECAST BY LOCAL MUNICIPALITY 63
FIGURE 4F: YEARLY CALL VOLUME PROJECTIONS 64
FIGURE 4G: 2020 TURNOUT TIMES 65
FIGURE 4H: 2020 80TH PERCENTILE TRAVEL TIMES 68

TABLE 1A: STRATHROY-CARADOC POPULATION 2001-2016 3
TABLE 1B: FIRE SERVICE COSTS PER CAPITA RE POPULATION 15,000 TO 29,999 15
TABLE 3A: FUS INSPECTION FREQUENCY CHART 32
TABLE 3B: COMPARABLE MUNICIPALITIES 46
TABLE 4A: NFPA 1720 TABLE 4.3.2 53
TABLE 4B: 80TH PERCENTILE RESPONSE TIMES FOR 2020 53
TABLE(S) 4C: CALL TYPE BREAKDOWN 59
TABLE 5A: SCFD APPARATUS FLEET 85
TABLE 5B: FUS VEHICLE REPLACEMENT RECOMMENDATIONS 87
TABLE 3A: FUS INSPECTION FREQUENCY CHART 97

Acronyms

AED	Automatic External Defibrillator
AHJ	Authority Having Jurisdiction
CAO	Chief Administrative Officer
CBRNE	Chemical, biological, radiological, nuclear, explosives
CEMC	Community Emergency Management Coordinator
CFAI	Commission on Fire Accreditation International
CO	Carbon Monoxide
CRA	Community Risk Assessment
CSA	Canadian Standards Association
EAP	Employee Assistance Program
EMCPA	Emergency Management & Civil Protection Act
EMS	Emergency Medical Services
EM&T	Emergency Management & Training Inc.
EOC	Emergency Operations Centre
FESO	Fire and Emergency Services Organization
FPO	Fire Prevention Officer
FPPA	Fire Protection and Prevention Act
FUS	Fire Underwriter's Survey
GFCI	Ground-fault circuit interrupter
GPS	Global positioning system
HFSC	Home Fire Sprinkler Coalition
HRFP	Health-Related Fitness Program
HUSAR	Heavy Urban Search and Rescue
HVAC	Heating, ventilation, and air conditioning
IRM	Integrated Risk Management
MFP	Master Fire Plan
NFPA	National Fire Protection Association
NIST	National Institute of Standards and Technology
OFMEM	Office of the Fire Marshal and Emergency Management
OHSA	Occupational Health and Safety Act
OSI	Occupational Stress Injuries
PPE	Personal Protective Equipment
PTSD	Post Traumatic Stress Disorder
SCBA	Self-Contained Breathing Apparatus
SCFD	Strathroy-Caradoc Fire Department
SCPS	Strathroy-Caradoc Police Service
SWOT	Strengths, Weaknesses, Opportunities, and Threats
WSIB	Workplace Safety & Insurance Board

Executive Summary

This Master Fire Plan (MFP) consists of a review of the community and its fire service that culminates into a 10-year plan for future opportunities for organizational improvements. The plan assesses present and future population statistics and anticipated growth. It evaluates past and present service levels provided by the Fire Department, coupled with its service goals and expectations.

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

While many of the recommendations in the MFP are operational, some of the recommendations are strategic and require the approval and support of Council to move forward (e.g., capital investment).

Other community decisions that may be seemingly unrelated, such as the type of development to occur in the Municipality, can also have an impact on the fire service, such as the type of firefighting apparatus required for multi-storey residential complexes.

Ultimately, all decisions on the services provided, the staffing, and equipping of the fire service are for Council. This document is to assist the Fire Chief and Council over the next 10 years in continuing to provide a high-quality fire service in an efficient, economical, and effective way.

Objectives

To ensure that they are meeting the needs of the community and their staff, the SCFD recognizes the importance of conducting this strategic review of the organization for the intention of providing high-quality fire services to the residents and businesses of the community along with its visitors. With the creation of a MFP, the Municipality of Strathroy-Caradoc is evaluating all aspects of its service including the operational costs and capital budgets required to maintain or enhance the service.

Any recommendations arising from the plan will be used to develop strategies for 2021 through to 2031. It must be kept in mind that the MFP is a living document, and the timing of recommendations and implementation strategies may vary by based on the timing of community development and growth.

Based on the information received during our meetings, a review of supplied documentation, and reference to industry standards and best practices, there is a total of 19 recommendations that are identified within each section.

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

Address Fire Suppression activities including aspects of current and future delivery with recommendations and approximate costing for the following:

- Current Facilities review for adequacies.
- Administration
- Fire Prevention
- Public Education
- Communications
- Statistical and trend analysis
- Staffing operations and service levels
- Station locations and facilities assessment and resource distributions taking into consideration geography and topography of the Municipality and current deployment sites.
- Emergency response and future growth
- Apparatus and fleet maintenance (including replacement cycles)
- Forecast Fire Service operational requirements including but not limited to, staffing deployment area locations, Fire Station locations that currently exist and future stations including apparatus requirements
- Matching resource to risk within the Municipality.

Note: A fire station location study is being completed by WSP and Emergency Management & Training Inc. under a separate cover.

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

Recommendations – Quick Reference Chart

Rec. #	Recommendation	Suggested Timeline
1	Review the E&R Bylaw annually by the Fire Chief to ensure currency and compliance.	Short-term (1-3 years)
2	Ensure all SOGs are reviewed at least once every three years.	Short-term (1-3 years)
3	SCFD work with SCPS to monitor adherence to NFPA 1221 Standard on Emergency Communications Services.	Short-term (1-3 years)
4	SCFD use a cellphone app to track the firefighter availability and response to calls.	Short-term (1-3 years)
5	Hire a full-time Fire Prevention Officer.	Short-term (1-3 years)
6	The Deputy Chief/Training Officer position should be moved to a full-time position with responsibility for training.	Short-term (1-3 years)
7	SCFD should enhance the training and certification of some of its volunteer firefighters in the areas of fire prevention and public education, trained and certified to at least NFPA 1031 – Fire Inspector I, and NFPA 1035 – Fire and Life Safety Educator I.	Short-term (1-3 years)
8	SCFD work with developers and the public to make the Home Sprinkler Systems initiative a part of its fire prevention and public education program.	Short-term (1-3 years)
9	SCFD review the physical expectations of a firefighter for use in training and recruiting. Review the 14 essential job tasks from NFPA 1582 as they pertain to their recruitment and testing process and seek options for offering personnel the ability to exercise and maintain fitness levels as explained in NFPA 1583.	Short-term (1-3 years)
10	SCFD develop a more wholesome approach to their PTSD Prevention Plan which may include peer support, intervention approach, professional services, clinical assistance and what a return-to-work plan may look like for a SCFD volunteer firefighter.	Short-term (1-3 years)
11	SCFD develop a more comprehensive cancer prevention program.	Short-term (1-3 years)

Rec. #	Recommendation	Suggested Timeline
12	Increase the volunteer firefighter complement at the Station #1 from 24 firefighters including captains, to 36 firefighters including captains. Firefighter reliability and turnout times to be monitored closely.	Short-term (1-3 years)
13	To mitigate risks, the municipality should consider a by-law requiring companies, including farms, that are working in hazardous areas to provide their own rescue standby team trained to the NFPA standards. To include High Angle and Confined Space environments.	Short-term (1-3 years)
14	Review the recommendations of the Station Location Study once it is available.	Short-term (1-3 years)
15	Initiate budgeting for the replacement of Station #1 pending the station location study.	Short-term (1-3 years)
16	Pending the outcome of the Station Location Study, build an addition on Station #2 to include: • proper unisex washrooms, showers, and locker rooms • bunker gear room with air exhaust/ filtration • office • locked storage	Mid-term (3-5 years)
17	Replace Rescue 16.	Short-term (1-3 years)
18	Replace Tanker 14.	Short-term (1-3 years)
19	The Fire Chief and Fire Prevention Officer to review Strathroy-Caradoc's inspection program to identify levels of desired frequency in relation to the inspections noted in the FUS Chart.	Short-term (1-3 years) and ongoing

Introduction

Review Process and Scope

Emergency Management & Training Inc. (EM&T) has based its review process on the Municipality's initial Request for Proposal and the response document submitted by EM&T. The specific scope of work identified in the Request for Proposal was reviewed. The MFP review was completed by utilizing best practices, current industry standards, and applicable legislation as the foundation for all work undertaken. EM&T also used both quantitative and qualitative research methodologies to develop a strong understanding of current and future needs and circumstances of the community.

Deliverables

Through a strategic planning process and by building upon the 2010 MFP, EM&T has developed a new plan for 2021 - 2031. As noted in the Executive Summary, the scope of work shall include, but not necessarily be limited to a review of the following:

- Current facilities review
- Department administration
- Fire prevention
- Communications
- Statistical and trend analysis
- Staffing operations and service levels
- Emergency response levels and future growth
- Apparatus and fleet maintenance
- Forecasted fire service operational requirements
- Matching resource to risk

Performance Measures and Standards

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

- Office of the Fire Marshal and Emergency Management's (OFMEM) Public Fire Safety Guidelines.
- *The Fire Prevention and Protection Act* and its subordinate regulations, including the Ontario Fire Code O. Reg. 213/07, Mandatory Assessment of Complaints and Requests for Approval O. Reg. 365/13, and Mandatory Inspection – Fire Drill in Vulnerable Occupancy O. Reg. 364/13. And O. Reg. 378/18 Community Risk Assessment.

- Office of the Fire Marshal and Emergency Management's (OFMEM) Integrated Risk Management program.
- The *Ontario Health and Safety Act*, with reference to the National Institute for Occupational Safety and Health (NIOSH).
- Ontario Fire Service – Section 21 Guidelines:
    - The Section 21 Committee is based on Section 21 of the *Ontario Occupational Health and Safety Act* (OHSA). This committee is charged with reviewing industry safety concerns and developing recommended guidelines to reduce injuries for the worker.
- The National Fire Protection Association (NFPA) standards:
    - NFPA 921 – Guide for Fire and Explosion Investigations
    - NFPA 1001 – Standard for Fire Fighter Professional Qualifications
    - NFPA 1002 – Standard for Fire Apparatus Driver/ Operator Professional Qualifications
    - NFPA 1021 – Standard for Fire Officer Professional Qualifications
    - NFPA 1031 – Standard for Professional Qualifications for Fire Inspector and Plan Examiner
    - NFPA 1033 – Standard for Professional Qualifications for Fire Investigator
    - NFPA 1035 – Standard on Fire and Life Safety Educator, Public Information Officer, Youth Fire Setter Intervention Specialist and Youth Fire Setter Program Manager Professional Qualifications
    - NFPA 1041 – Standard for Fire Service Instructor Professional Qualifications
    - NFPA 1061 – Professional Qualifications for Public Safety Telecommunications Personnel
    - NFPA 1072 – Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications
    - NFPA 1201 – Standard for Providing Fire and Emergency Services to the Public
    - NFPA 1221 – Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems
    - NFPA 1500 – Standard on Fire Department Occupational Safety, Health, and Wellness Program

  - NFPA 1521 – Standard for Fire Department Safety Officer Professional Qualifications
  - NFPA 1582 – Standard on Comprehensive Occupational Medical Program for Fire Departments
  - NFPA 1583 – Standard on Health-Related Fitness Programs for Fire Department Members
  - NFPA 1720 – Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Volunteer Fire Departments
  - NFPA 1730 – Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations
  - NFPA 1851 Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting
  - NFPA 1901 – Standard for Automotive Fire Apparatus
  - NFPA 1911 – Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Emergency Vehicles
- The Commission on Fire Accreditation International (CFAI), which is a program that promotes fire service excellence by evaluating a fire department based on related National Fire Protection Association standards, local legislation and industry best practices (the parent organization for Commission on Fire Accreditation International is the Centre for Public Safety Excellence).
  - This program has been adopted by many fire departments in Canada as a measure of best practices. Within Ontario, Guelph, Kitchener, Toronto, and Ottawa are just a few fire departments that have obtained accreditation from the Commission on Fire Accreditation International.
- Fire Underwriters Survey (FUS) technical documents

Project Consultants

Although several staff at EM&T were involved in the collaboration and completion of this Plan, the core review was conducted by:

- Darryl Culley, President, EM&T
- Rick Monkman, Fire Service Consultant

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

SECTION 1: COMMUNITY AND FIRE DEPARTMENT OVERVIEW

1.1 COMMUNITY OVERVIEW
1.2 FIRE SERVICE COMPOSITION
1.3 GOVERNANCE AND ESTABLISHING & REGULATING BY-LAW
1.4 FIRE SERVICES BY-LAW, POLICIES, DIRECTIVES, AND STANDARD OPERATING PROCEDURES
1.5 FIRE STATION LOCATIONS
1.6 DISPATCHING SERVICES
1.7 FIRE SERVICE AGREEMENTS

Section 1: Community and Fire Department Overview

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

1.1 Community Overview

The Municipality of Strathroy-Caradoc is one of eight lower tier municipalities of Middlesex County. The municipality is bordered by Middlesex Centre on the east, Adelaide Metcalfe on the north, Southwest Middlesex on the west, and three First Nations to the south; Chippewas of the Thames First Nation, Muncey Delaware First Nation, and Onyota'Aka First Nation.

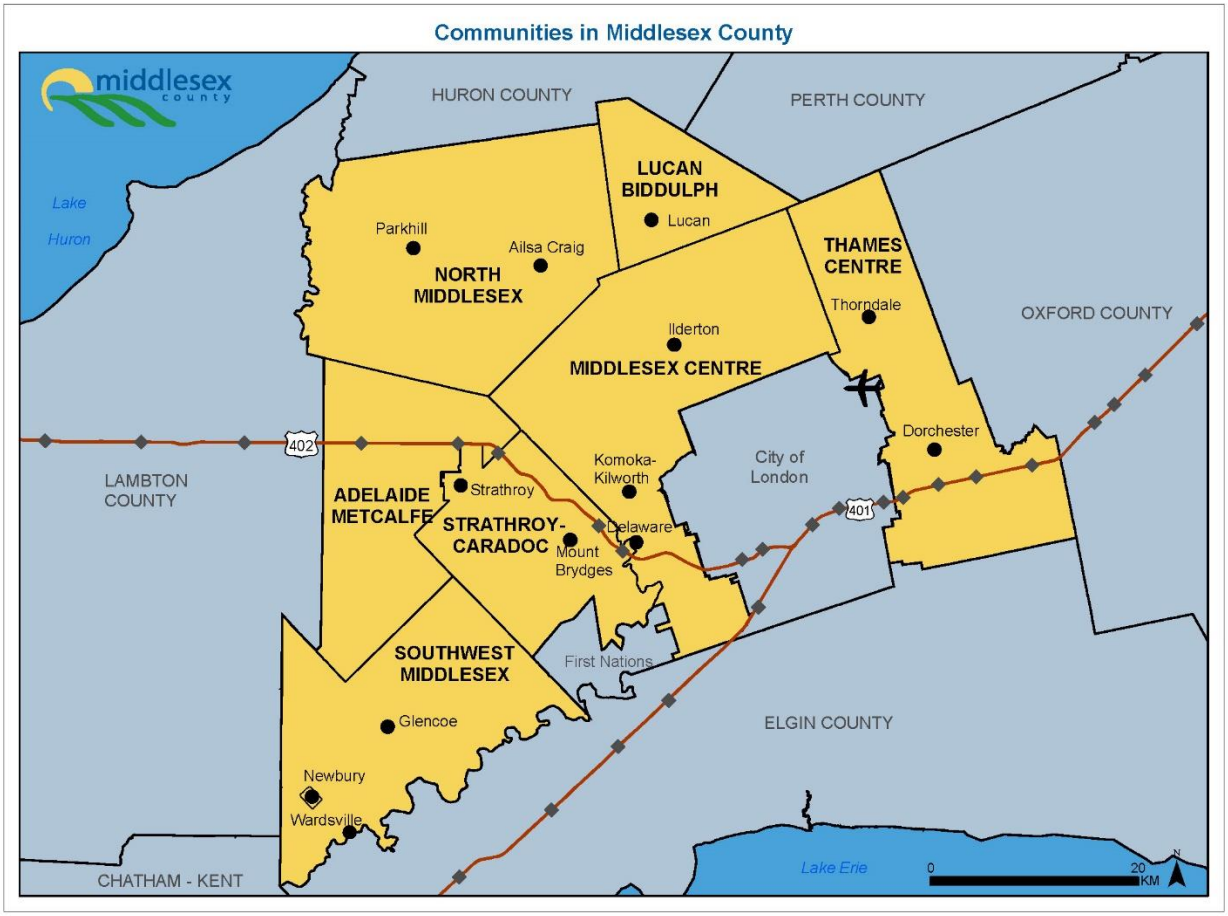
The municipality is also served by important thoroughfares in Highway 402 and County Road 81. Three rail lines transverse the municipality. While most of Strathroy-Caradoc is agricultural, the transportation links create opportunities for industrial development.

With its history dating back to 1832, the Town of Strathroy and Township of Caradoc were amalgamated as the Municipality of Strathroy-Caradoc in 2001. Strathroy is the largest community in the Municipality with a population of approximately 15,000[1] and serves and the administrative and business centre. Other settlements in the Municipality include Mount Brydges, Melbourne, Campbellvale, and Delaware West, all considerably smaller than Strathroy. These settlements are primarily bedroom communities, with Mount Brydges being the largest of these with approximately 2,200 residents. In addition to the settlement area, it includes limited commercial and industrial space. Just east of Mount Brydges there are three rural residential neighbourhoods. Melbourne has a population of approximately 300, of which roughly half live within the Strathroy-Caradoc boundary.

The Municipality has a large focus on agriculture including cash crops, tobacco, and livestock. Agriculture will continue to be a significant component of the Municipality's economic base and the predominant use of land in the rural area of the Municipality.

[1] Municipality of Strathroy-Caradoc Official Plan Consolidated Version, April 3, 2018

Figure 1a: Middlesex / Strathroy-Caradoc Map



With a population of 20,867 that has remained relatively steady over the years, Strathroy-Caradoc has shown limited growth in the census years of 2001 to 2016. Since 2001, the population has grown 9.1%, albeit with some rise and fall (see Table 1a). The 2016 Census data also shows that the median age is 43.7 years, with the provincial median age being 41.3 years.

Strathroy-Caradoc has 270.8 km^2 with a population density of 77.1 persons/ km^2.

Table 1a: Strathroy-Caradoc Population 2001-2016

2001	2006	2011	2016
19,114	19,977	20,978	20,867
-	+4.5%	+5.0%	-0.6%

1.2 Fire Service Composition

SCFD is comprised of 1 full-time Fire Chief, 1 full-time Administrative Assistant, 1 volunteer Deputy Chief, 2 volunteer District Chiefs, 9 volunteer Captains, and 60 volunteer firefighters.

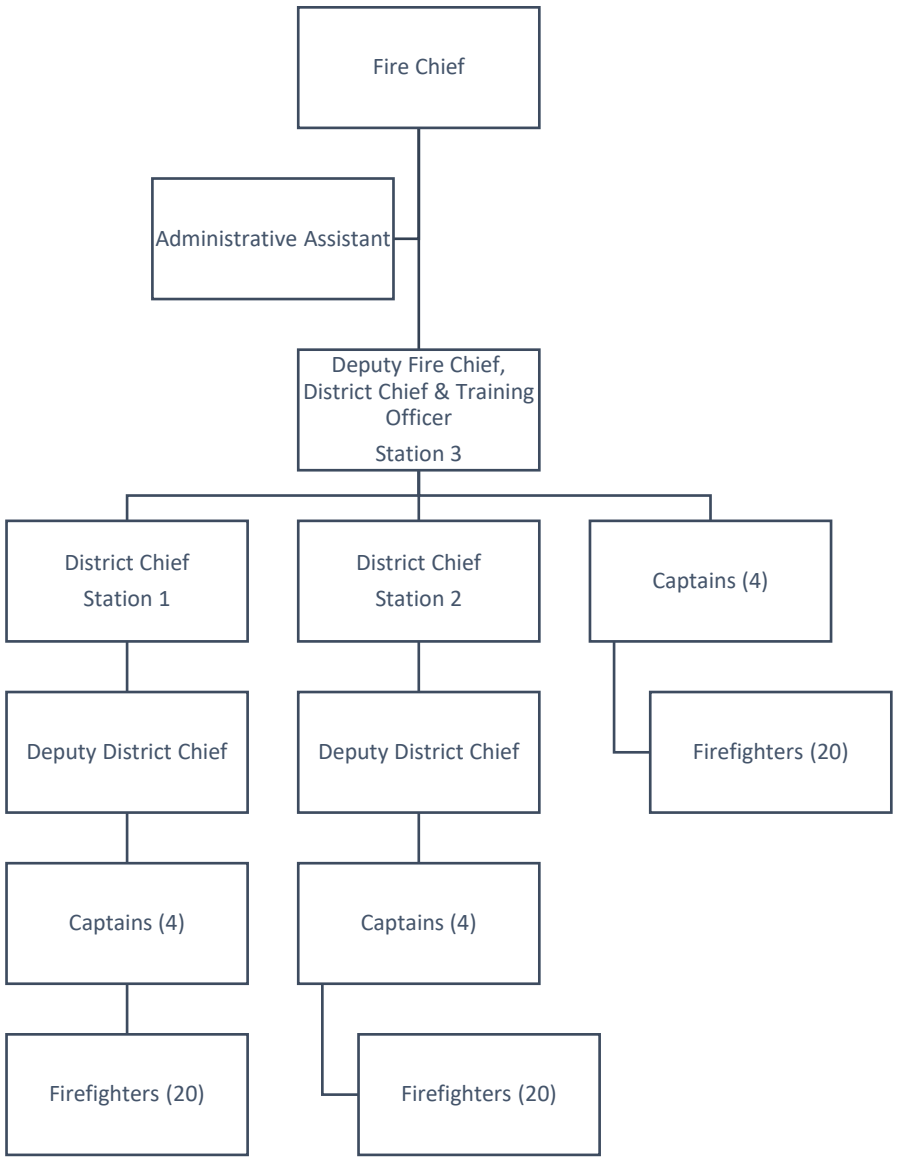
The fire department's operations are divided into four sections: Prevention and Public Education, Operations and Suppression, Training, and Administration. It should be noted that the Deputy Chief is also filling the District Chief role at Station 3.

Between 2018 and 2020, SCFD responded to an average of 314 incidents per year.

In addition, the fire department and the Fire Chief are the lead in emergency preparedness and management for the community. Each one of these sections will be detailed further in the report. The organizational chart in Figure 1b reflects the general reporting structure within SCFD.

Serving a rural area with a larger town, two central villages, the Township of Strathroy-Caradoc oversees the fire department through its municipal council. SCFD can provide a variety of emergency services from three stations including fire suppression, auto extrication, and emergency medical response. SCFD also delivers public fire safety education, fire prevention inspections, and code enforcement under the Ontario Fire Code, as well as overseeing the Municipal Emergency Management Program.

Figure 1b: SCFD Organizational Chart



1.3 Governance and Establishing & Regulating By-law

An Establishing & Regulating By-Law (E&R) is a municipal Council document/ policy for fire departments. It can be used to show how the municipality delivers fire protection services it has determined are necessary according to its needs and circumstances, as is required by the *Fire Protection and Prevention Act, 1997* (FPPA). An establishing &

regulating by-law can state the type and level of fire protection services provided and may include policy direction in the following areas:

- legislative/ regulatory requirements that may affect the delivery of fire protection services (e.g., FPPA*, Occupational Health and Safety Act*, and *Environmental Protection Act*)
- Fire Marshal directives
- best practices (e.g., Ontario Fire Service Section 21 Advisory Committee guidance notes, National Fire Protection Association standards)
- general functions and core services to be delivered
- goals and objectives of the fire department
- general responsibilities of fire department personnel
- organizational structure
- authority to proceed beyond established response areas
- authority to apply costs to property owners for fire investigations
- authority to effect necessary fire department operations, in consultation with the municipality's legal resources

When setting or amending the levels of service in the Establishing & Regulating By-law, municipal council, in consultation with the Fire Chief, should keep in mind the following considerations:

- the current needs and circumstances of the municipality
- requirements and expectations, such as the following:
    - training requirements based on current standards and practices
    - acquisition and maintenance of appropriate equipment
    - appropriate record keeping
- the extent of fire department funding necessary to achieve and maintain the stated levels of service

The fire chief has provided a draft for a updated Establishing & Regulating By-law (E&R). The document is well structured, is clear and concise in its intent, and provides current and necessary information in an appendix. The E&R by-law is explanatory and accurately reflects the Department's official name, organizational structure and division names, duties of members, rules and regulations, and services offered by SCFD.

It is recommended that the draft by-law should be vetted through the City Solicitor prior to going to Council.

Moving forward, it is recommended that annual reviews of the document be completed by the Fire Chief. This is a standard business practice to ensure that the fire department is operating within the Council approved parameters. This does not mean that an

updated by-law be presented to Council annually, but that the document is kept current and accurate. By doing this, the Fire Chief can ensure that the department is providing the services required by the community and identify when changes are necessary.

1.4 Fire Services By-law, Policies, Directives, and Standard Operating Procedures

Fire department policies and guidelines provide immense value to a department. In fact, they may be viewed as the key foundation to a department's success. The backbone of any fire service is its policies, operating procedures, and operating guidelines, which govern and provide direction on its operations.

- A *policy* is a high-level statement that expects consistent compliance. There is very little to no leeway permitted with a policy.
- A *guideline* is a standard with an acceptable level of quality or attainment on how to act in a given situation, with non-mandatory controls.
- A *procedure* is a standard with an acceptable level of quality or attainment in a series of detailed steps to accomplish an end. There are step-by-step instructions for implementation.

Most fire services operating guidelines are governed by Terms of Reference, the policy, and a procedure. Fire services first develop Terms of Reference for the committee to use as guidance for their purpose, then develop a policy, and then use that policy as a driver in developing the content to go into an operating guideline.

Well-written, up-to-date fire department policies and guidelines:

- Help all members operate consistently by laying out clear direction and guidelines.
- Keep members safe.
- Enhance operational excellence by incorporating best practices so that firefighters do not have to keep repeating the same mistakes or reinventing the wheel.
- Provide important defence for legal and personnel complaints, which can save money by shielding the municipality from lawsuits.

How can a fire department start to prioritize policies and guidelines so that department members see it for the value it really holds? The following are a few suggestions:

- Review policies and guidelines on a regular basis.
- Incorporate training based on policies and guidelines.

    - Over time, this will help everyone better understand and comply with department policy.

- Research department policies and guidelines.
    - Do you know where your department's policies come from? What parts are required by law, and what parts wound up there as a result of a particular individual? Doing some research on your policies (tracking down legal requirements, going back through older versions if you have them, comparing them to other departments' policies) can create an understanding of how and why the policy got to where it is today.

An up-to-date policy and guideline manual have great intrinsic value: the ability to protect, guide and encourage, thus, creating a better, safer, more consistent organization. All operating guidelines should be reviewed regularly and be updated as required. Many fire departments divide the operating guidelines into thirds and review one-third each year so that all are reviewed every three years (or more frequently for important updates).

There have not been regular reviews or updating of the SOGs due to the lack of staff time. Although the individual operating guidelines show the date of the last revision, there is not an indicator to show when they were last reviewed, as not all reviews require revision. A tracking sheet should be included in the operating guideline manual to show when each guideline had last been reviewed.

1.5 Fire Station Locations

Figure 1c identifies the locations of the three fire stations within the marked municipal borders. Station #1 is located at 23 Zimmerman Street North, in the Town of Strathroy. Station #2 is located at 688 Bowen Street in the Village of Mount Brydges. Station #3 is located at 21912 Melbourne Road in the Village of Melbourne.

Figure 1c: SCFD Station Locations with 8-minute Travel Times

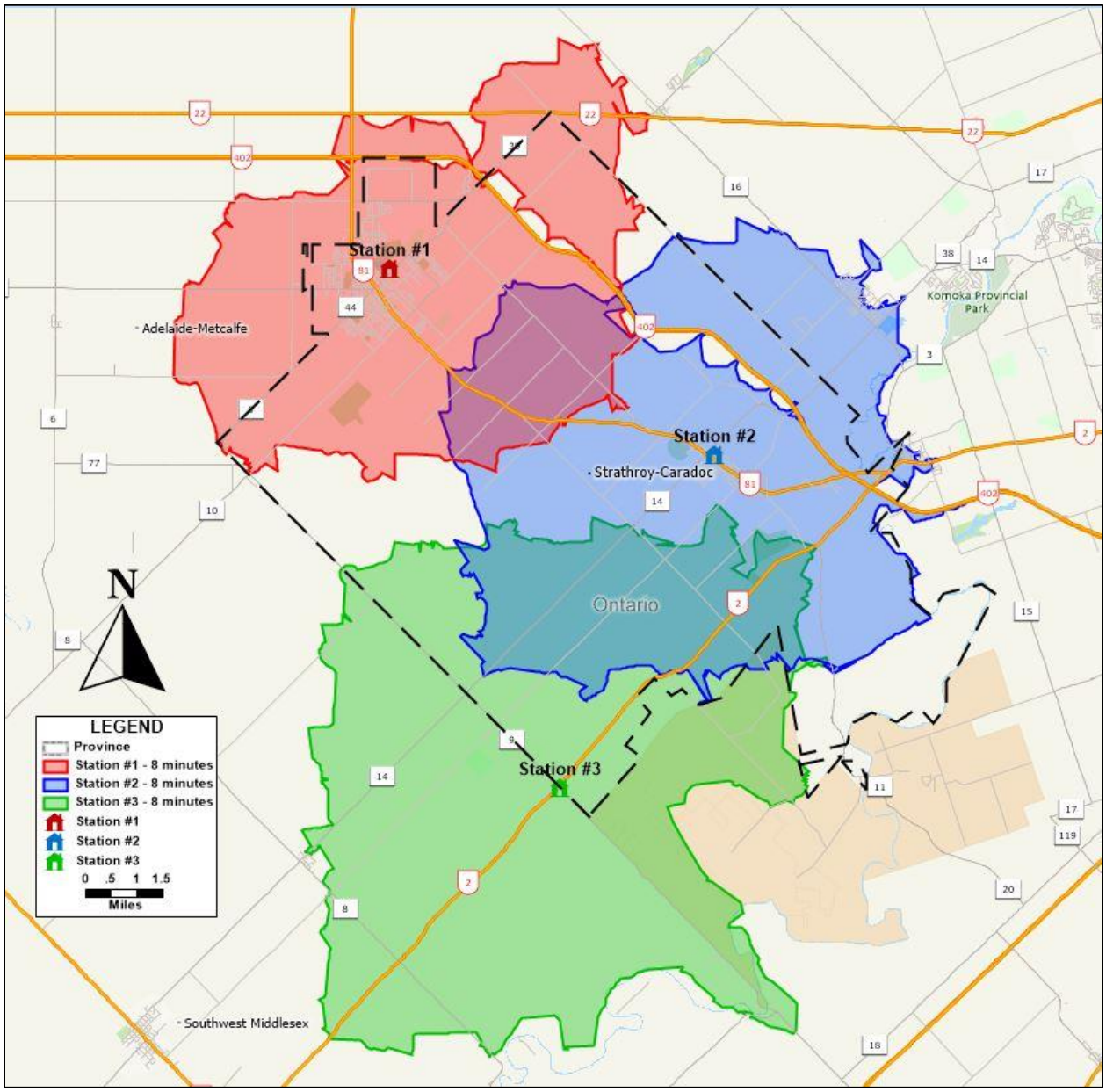


Figure 1c depicts the response coverage offered by the three fire stations in relation the National Fire Protection Association (NFPA) response recommendations of 14 minutes. The map's legend notes an 8-minute travel time. This is the drive time coverage by each station, considering that it takes approximately 6 minutes for the volunteer firefighters to respond to the fire station, get geared up, and depart from the station.

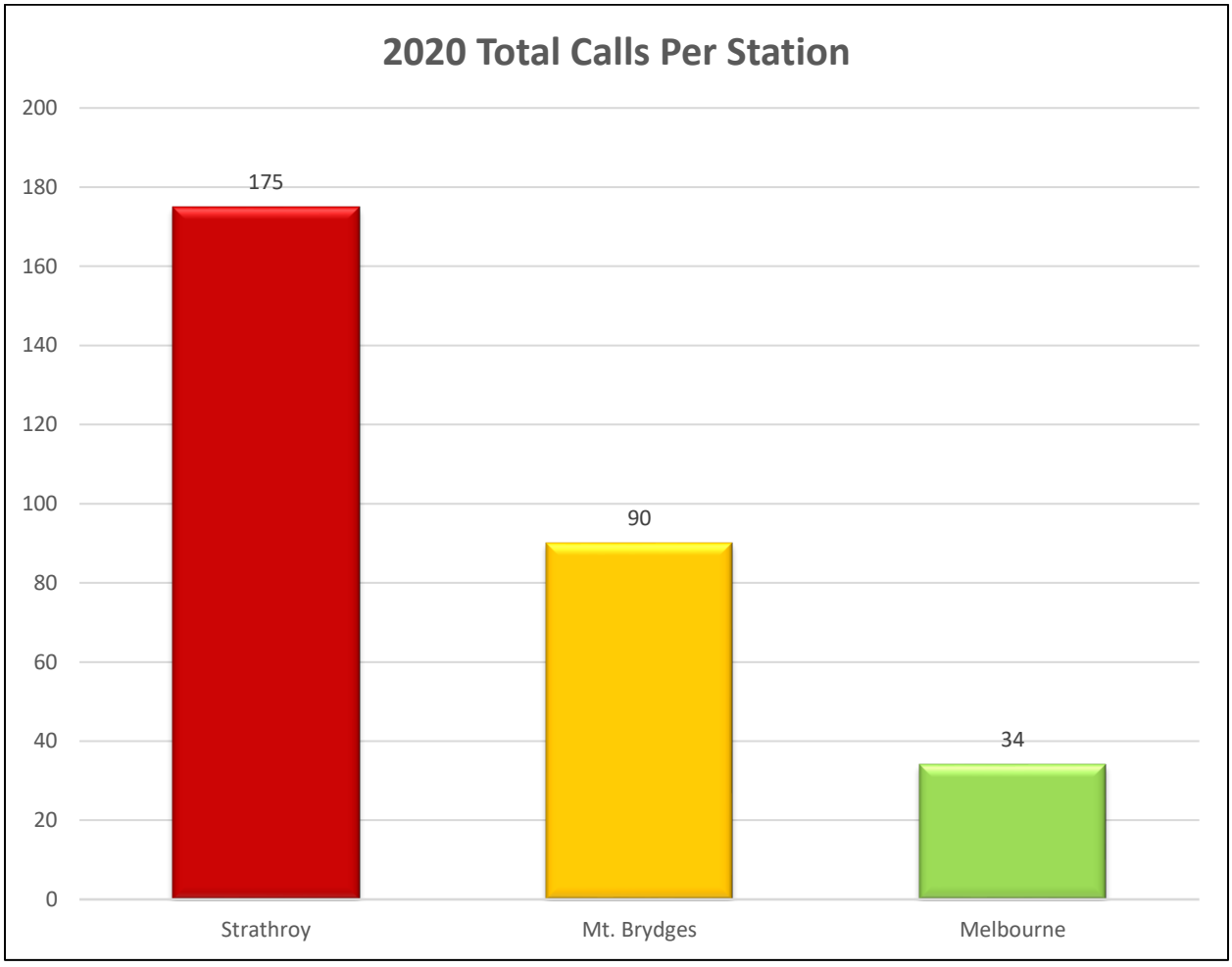
The recommended response time standard for suburban areas (Strathroy) under NFPA 1720 is 10 minutes while the recommended standard for rural areas is 14 minutes.

As illustrated above, the three fire stations offer a good level of coverage for the community.

Note: A fire station location study is being completed by WSP and EM&T under a separate cover.

The following chart identifies the number of calls per station. The number of calls per station is correlated with the population density, commercial/industrial properties, and highway traffic (e.g., Mount Brydges covers a large portion of Hwy 402), in each station area.

Figure 1d: 2020 Total Calls Per Station



Note: Data from 2019 and 2018 can be found in Section 9.

1.6 Dispatching Services

The SCFD receives its dispatching services from the Strathroy-Caradoc Police Service (SCPS). The Fire Chief reports receiving exceptional service from the SCPS, and recently the other county municipalities moved their fire dispatching from the City of London Fire Department to the SCPS.

EM&T is not recommending any changes to this agreement as it is based on shared costing and the working relationship between the two agencies is excellent. It is, however, recommended that SCFD work with SCPS to ensure that they are adhering to NFPA 1221 Standard on Emergency Communication Systems.

That standard, under NFPA 1221 section 7.4 Operating Procedures, sets out a benchmark listed below:

> **7.4.1*** Ninety-five percent of alarms received on emergency lines shall be answered within 15 seconds, and 99 percent of alarms shall be answered within 40 seconds. *(For documentation requirements, see 12.5.2.)*
> **7.4.1.1** Compliance with 7.4.1 shall be evaluated monthly using data from the previous month.

Ensuring that the NFPA benchmark is being met will allow SCFD to respond to emergency calls as quickly and efficiently as possible, ensuring life safety for all residents in the Municipality. It also allows both SCPS and SCFD to set goals that both can mutually agree upon.

In 2018, SCFD trialed the use of the app “Who’s Responding” for a few weeks. Who’s Responding is a cellular phone-based firefighter notification and tracking system. Firefighters can interact with this program, both receiving emergency notifications and reporting back if they are responding or not. This gives the station officers critical information on firefighter availability each day / time, along with the number of firefighters responding to specific calls. This information assists the officers in deciding when to request additional stations for assistance and make other tactical decisions. Other benefits of the apps include Global Positioning System (GPS) mapping of the call and directions, map markers (e.g., dry hydrants), tracking when firefighters are not available (e.g., vacation), internal messages, uploading site preplans, training/event schedules, resource lists, etc.

It is reported that the trial was dropped when several firefighters refused to use the app, did not have data plans, etc.

With the challenges of daytime response, this type of app is important to ensure the officers that they have adequate firefighters responding to a call. It is our

recommendation that the fire department re-institute this app (or a similar app), or alternatively invest in a two-way paging system (significantly more expensive) where the firefighter confirms they are responding to a call. Further, protocol should require the use of the app as part of the firefighter responsibilities and provide compensation for using a data plan.

1.7 Fire Service Agreements

Preparedness and response capability are a key component of a fire department's organizational planning, however, events often occur that exceed a department's resources (i.e., a disaster or large-scale fire). These events may be uncommon and unpredictable, therefore, assistance is sought and agreed to in advance in the form of ***Mutual Aid Agreements***. This type of agreement receives assistance from other neighbouring departments. Typically, the agreements are based on equal reciprocity. Such agreements are prepared and overseen by a County Fire Coordinator as established in Part II, Section 7 of the *Fire Protection and Prevention Act* (FPPA).

SCFD is part of the Middlesex County Mutual Aid Plan along with the municipalities of Adelaide Metcalfe, Lucan Biddulph, Middlesex Centre, Newbury, North Middlesex, Southwest Middlesex, Thames Centre, Oneida First Nation, the City of London, and the Greater London International Airport Authority.

The SCFD Fire Chief was recently added as an Alternate Coordinator to the County Plan.

Another form of agreement used in fire and emergency services is based on response times and nearest available fire service. As jurisdictional borders are defined, often a neighbouring fire department may better serve a section near outlying borders. These agreements are called ***Automatic Aid Agreements*** and may incur costs as they fall outside the scope of Mutual Aid calls for assistance. The *FPPA* defines Automatic Aid Agreements as:

> **Automatic aid agreements**
> (4) For the purposes of this Act, an automatic aid agreement means any agreement under which,
>
> (a) a municipality agrees to ensure the provision of an initial response to fires, rescues and emergencies that may occur in a part of another municipality where a fire department in the municipality is capable of responding more quickly than any fire department situated in the other municipality; or
>
> (b) a municipality agrees to ensure the provision of a supplemental response to fires, rescues and emergencies that may occur in a part of another municipality where a fire department situated in the municipality is capable of

providing the quickest supplemental response to fires, rescues and emergencies occurring in the part of the other municipality. 1997, c. 4, s. 1 (4).

SCFD has automatic aid agreements in place, with four neighbouring fire departments:

- Providing response to Adelaide Metcalfe
- Providing response to Middlesex Centre
- Providing response to Southwest Middlesex
- Receiving response from Middlesex Centre

Most of the agreements in place for SCFD were signed in 2001, the year that these municipalities were restructured. It is recommended that SCFD put in place a system to periodically review all automatic aid agreements to ensure that both parties are adhering to the agreed upon principles in the contract, and that all aspects of the agreement are still applicable.

The provision of response to Southwest Middlesex is based on the fact that the Melbourne station is situated on the east side of Melbourne Road, which is the border between the two municipalities. While the station is on the Strathroy-Caradoc side of the border, between 2010-2019 52% of the calls were to Southwest Middlesex. Therefore, an agreement with Southwest Middlesex has the municipality being responsible for 52% of the operating and capital costs for this station. This agreement is in place until December 31, 2023.

As the Melbourne Station is on the east side of Melbourne Street, it is on the border between Strathroy-Caradoc and Southwest Middlesex. The agreement between the municipalities to respond to both communities is based on a historical number of calls that the station responded to between 2010 and 2019. With 52% of the Station #3 calls occurring in Southwest Middlesex, the agreement is that this municipality will pay 52% of the operating and capital costs of this station.

1.7.1 Fire Service Costs

In a 2018 BMA Municipal Study on cost per capita, Strathroy-Caradoc placed at the low range of cost per capita of municipalities with a population range of 15,000 – 29,999 people. The top end is $294 per capita, whereas Strathroy-Caradoc is at $57 per capita costs. While, from a taxation perspective, this is a positive reflection on the fire department, the service is lagging in some areas such as Fire Prevention.

Each municipality's results are influenced to varying degrees by a number of factors including:

- The nature and extent of fire risks such as the type of building construction (i.e., apartment dwellings, single family residences, institutions such as hospitals).

- Geography such as the topography, urban/rural mix, road networks, fire station locations and travel distances from those stations.
- Fire prevention and public education efforts with includes the enforcement of the Fire Code and the presence of working smoke alarms.
- Staffing model (i.e., full-time, part-time fire, or composite)
- Collective agreements (if any) and the differences in what stage of multi-year agreements municipalities are at and differences in agreements about the number of firefighters assigned to each apparatus.

It should be noted that those departments with net costs per capita over $150 including amortization have some or all career firefighters.

Table 1b: Fire Service Costs per Capita re Population 15,000 to 29,999

Municipality	Net Cost per Capita Excl. Amort.	Net Cost per Capita Incl. Amort
Centre-Wellington	$45	$53
Strathroy-Caradoc	$47	$57
West Lincoln	$49	$59
Woolwich	$47	$61
Bracebridge	$50	$62
Huntsville	$50	$63
Tillsonburg	$64	$67
Wilmot	$61	$70
Springwater	$66	$75
Pelham	$59	$77
Grimsby	$69	$79
Middlesex Centre	$67	$81
Lincoln	$71	$89
Niagara-on-the-Lake	$87	$111
King	$89	$111
Prince Edward County	$92	$112
Port Colborne	$142	$157
East Gwillimbury	$140	$168
Kenora	$146	$168
Thorold	$181	$194
Collingwood	$186	$208
Owen Sound	$207	$214
Brockville	$286	$294
Average	**$100**	**$114**
Median	**$69**	**$81**

Recommendation(s)

Rec. #	Recommendation	Estimated Costs	Suggested Timeline
1	Review the E&R Bylaw annually by the Fire Chief to ensure currency and compliance.	Staff time	Short-term (1-3 years)
2	Ensure all SOGs are reviewed at least once every three years.	Staff time	Short-term (1-3 years)
3	SCFD work with SCPS to monitor adherence to NFPA 1221 Standard on Emergency Communications Services.	Staff time	Short-term (1-3 years)
4	SCFD use a cellphone app to track the firefighter availability and response to calls.	$15-20,000 inclusive of fees and reimbursement of data charges	Short-term (1-3 years)

SECTION 2: PLANNING

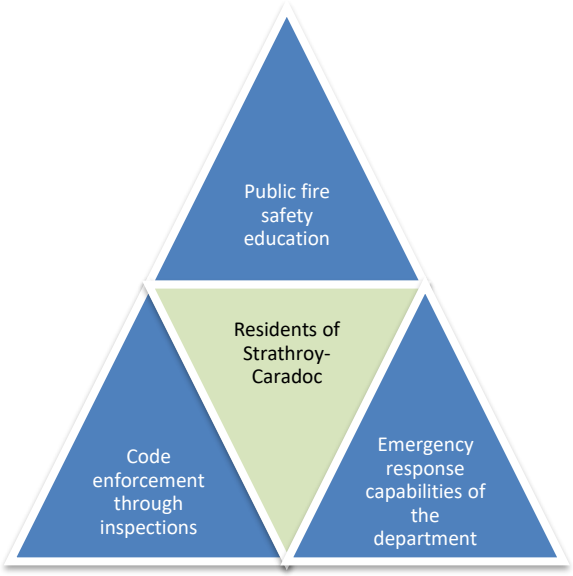
2.1 THREE LINES OF DEFENCE
2.2 INDUSTRY STANDARDS AND BEST PRACTICES
2.3 STRENGTHS, WEAKNESSES, OPPORTUNITIES, AND THREATS
2.4 INTERVIEW AND FOCUS GROUP FEEDBACK

Section 2: Planning

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

2.1 Three Lines of Defence

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



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

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

2.2 Industry Standards and Best Practices

2.2.1 National Fire Protection Association 1201

In 2014, the Province of Ontario adopted a move to the NFPA Standards for training and certification courses at the Ontario Fire College. To assist with EM&T's review, reference has been made to key NFPA Standards that identify services that should be offered and how they are to be delivered based on the composition of the fire department. One of the foundational NFPA Standards is Standard 1201 as it sets out criteria for providing fire and emergency service to the public.

NFPA 1201 – *Standard for Providing Fire and Emergency Services to the Public*

Section 4.3.5 notes:

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

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

To provide a fire department clearer focus on what the ultimate goals for emergency response criteria are, the NFPA suggests that response times should be used as a primary performance measure in fire departments. NFPA 1720 (refers to goals and expectations for Volunteer Fire Departments) has been incorporated into the evaluation

of the fire department's response and staffing needs. More discussion in relation to these two standards will be presented in sections 3 and 4.

2.2.2 Commission of Fire Accreditation International

"When a Fire Department applies a model of risk assessment to help determine their level of emergency services commitment, they have moved from being reactive to being proactive."[2]

In the fire service, the NFPA standards are considered by many as the benchmark to strive for. Many of these standards have, to a large degree, been adopted and supported by numerous fire departments. The CFAI is an organization that has incorporated all national and local standards into an accreditation process, effectively becoming the model for best practices and fire service excellence.

To accomplish this excellence model, the CFAI program revolves around 10 categories:

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

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

[2] Commission on Fire Accreditation International overview.

2.3 Strengths, Weaknesses, Opportunities, and Threats

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

2.3.1 Strengths

- The Fire Service and the Police Service have an excellent working relationship.
- The Department benefits from having a property with a house, garage and barn that the municipality owns and is being effectively used for training.

2.3.2 Weaknesses

- The paid staffing for the fire department is much lower than most municipalities of this size and place significant pressure on the leadership to achieve the ever-increasing demands and requirements.
- There is a need for a new station to replace Station #1 based on the age and condition of the current structure in Strathroy. A further review of Station #1 is provided in Section 5 of this report.
- There is a lack of adequate Fire Prevention staffing for a community of the size of Strathroy-Caradoc. This has resulted in the Fire Prevention program being reactive based on minimum legislative standards. A proactive fire prevention program is recommended to meet the needs of the community.
- One person is attempting to fill the positions of Deputy Chief, District Chief and Training Officer on a volunteer basis. This has resulted in these roles being completed as “well as can be with the limited time available”.

2.3.3 Opportunities

- With the need for a new station comes the opportunity to reassess the location of Station #1. It also offers the opportunity to share facility needs with other agencies such as the police service.
- Enhanced fire prevention programing including public education and fire/ building code enforcement can serve to reduce the number of fires and their impacts when they occur. This is particularly important in the rural areas where there may be extended response times and for vulnerable populations (e.g., persons with disabilities, young children, and seniors).

2.3.4 Threats/ Challenges

- Using paid on-call (volunteer) firefighters is a highly cost-effective method of providing fire response. However, due to other commitments, such as full-time jobs and family, there is no guarantee of the numbers of firefighters that will be available to respond as required with this method of operation. There are particular challenges in getting an adequate firefighter turnout in a timely manner during dayshifts Monday to Friday.
- With the growing expectation on all firefighters within Ontario, maintaining a healthy work/ life balance is important in the wellness of fire department staff. The time spent on mandatory training and skills maintenance requires careful planning and delivery.
- Recruiting and training firefighters is an increasing expense and therefore retention efforts are important to keep the investment and contain costs.
- Longer response times of fire apparatus to emergency calls in the rural portions of the Municipality is a challenge due to distance travelled. Increasing fire prevention activities in rural areas can help citizens reduce fire risks and take appropriate actions (e.g., evacuation) in the even of an emergency.

2.4 Stakeholder Surveys

2.4.1 Internal Staff Feedback

A survey was conducted to obtain feedback from SCFD staff. EM&T received a total of 51 completed surveys. Most firefighting staff were very proud of the service that they are providing and were interested in additional training opportunities.

The most stated challenges by staff were:

- Aging fire stations
- Lack of daytime firefighters
- Replacement of aging equipment and apparatus
- Lack of a comprehensive fire prevention program and inadequate staffing
- Lack of technical rescue capabilities including water rescue, ice rescue, confined space rescue, and trench rescue

Suggestions from the firefighters included:

- New or upgraded fire stations
- Increasing staffing (possibly full-time) for Strathroy Station
- Upgrading training equipment and props
- Having a fitness program
- Hiring staff for Fire Prevention

- Hiring a full-time Deputy Chief

A common theme was that the fire department has not kept up with the community growth or the current demands of fire services (fire prevention).

2.4.2 Public Survey Feedback

Ninety-one (91) responses were received from the public community survey. Most of the respondents were very pleased with the fire department and found them to be very professional.

The primary concerns identified in the community survey included:

- Long response times
- Increased traffic and railway traffic creating delays in response
- Ensuring the firefighters have the proper facilities, apparatus, and equipment to do their jobs

Suggestions from the community survey included:

- Annual public meetings / open house
- Increased fire prevention / public education programs
- Increasing staffing to keep up with the community growth

Community Priority List

	EXTREMELY IMPORTANT	VERY IMPORTANT	IMPORTANT	NOT VERY IMPORTANT	NOT IMPORTANT AT ALL	TOTAL
How quickly the Fire Service gets to me if I have an emergency	84.62% 77	9.89% 9	5.49% 5	0.00% 0	0.00% 0	91
Whether the Fire Service will visit my home to give me safety advice and/or smoke/CO alarm info	19.78% 18	24.18% 22	31.87% 29	16.48% 15	7.69% 7	91
How much the fire services costs me as a taxpayer	19.78% 18	15.38% 14	40.66% 37	19.78% 18	4.40% 4	91
How often the Fire Department provides community training opportunities (e.g., fire extinguisher training; school safety programs; older and wiser program; smoke alarms; fire escape planning)	25.27% 23	36.26% 33	26.37% 24	7.69% 7	4.40% 4	91
How visible the Fire Service is at local community events	25.27% 23	39.56% 36	18.68% 17	12.09% 11	4.40% 4	91
Timeliness to any request for services or assistance from the Fire Service	57.14% 52	27.47% 25	13.19% 12	2.20% 2	0.00% 0	91
Purchasing and maintaining new and applicable equipment	53.85% 49	27.47% 25	15.38% 14	2.20% 2	1.10% 1	91
Continued and relevant training for firefighters	81.32% 74	10.99% 10	5.49% 5	2.20% 2	0.00% 0	91

2.4.3 Council Survey Responses

The survey of the Council identified the primary concerns including:

- Aging and undersized fire stations
- The fire service meeting the growth of the community
- Long response times
- Lack of volunteers

Recommendation(s)

No recommendations in this section.

SECTION 3: DEPARTMENT STAFFING

3.1 STAFFING CONSIDERATIONS
3.2 ADMINISTRATION DIVISION
3.3 FIRE PREVENTION AND PUBLIC EDUCATION DIVISION
3.4 TRAINING AND EDUCATION DIVISION
3.5 SUPPRESSION DIVISION
3.6 HEALTH & WELLNESS

Section 3: Department Staffing

Within the scope of work noted in the original Request for Proposal document, staffing needs were identified as a priority in which EM&T was to review the capabilities of existing staffing and identify future needs for Administration, Suppression, Training, and Prevention.

3.1 Staffing Considerations

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

As a general guide, some communities refer to other similar sized municipalities in the determination of firefighter staffing numbers and types (i.e., full-time or volunteer). It must be kept in mind, however, that every community is unique in its geographical composition, population demographics, and size of residential, commercial, and industrial sectors. Therefore, community comparisons should be utilized with all the aforementioned information in mind. As an example, although SCFD and Strathroy-Caradoc Township are similar in size to the comparable communities utilized for this review, there is an expected upturn in growth which could move them from one comparable municipality to another. Until the growth is stabilized, actual numbers for comparison are only estimated.

EM&T has conducted its comparison and more information on this can be found later in the document in Section 3.7.

Having noted that there is no standard that recommends a firefighter per population quota, a department can refer to the NFPA 1720 standard on Volunteer Fire Departments. This standard identifies on scene staffing and response times for different “demand zones” (determined by population density). Overall, Strathroy-Caradoc is considered “rural” with less than 193 people per square kilometre (currently 77 people/ km^2). However, with an estimated 15,000 within the Strathroy settlement, consideration should be given to using the Suburban standard for the Strathroy boundaries.

Section 4 of this report will further detail the call data of SCFD, and how they relate to this standard.

The department is managed by one full-time position, the Fire Chief, who is assisted by a full-time Administrative Assistant. These positions are responsible for the day-to-day operations, including but not limited to department management, fire prevention functions, training development and oversight, and administrative functions.

When considering the overall staffing needs for the SCFD, some of the key questions that should be considered are:

- *Is there a proper level of senior staff to manage the Department and its divisions?*
- *Is there adequate administrative or management staff to effectively deal with such things as records management and addressing day-to-day operations of the Department?*
- *Is there a need for additional suppression staff to increase on-scene staffing?*

3.2 Administration Division

The Administration Office is located at Station #1 in Strathroy. The Fire Chief, along with the administrative support member, are located at this site.

Along with his regular duties, the Fire Chief serves as Fire Prevention Officer (FPO) and the municipal Community Emergency Management Coordinator (CEMC).

The CFAI accreditation program has a specific section that evaluates the administration component of a fire department. In this section, the following is noted:

> **Category 9C: Administrative Support and Office Systems:**
>
> Administrative support services and general office systems are in place with adequate staff to efficiently and effectively conduct and manage the agency's administrative functions, such as organizational planning and assessment, resource coordination, data analysis/ research, records keeping, reporting, business communications, public interaction, and purchasing.

The fire chief, who has an ever-increasing workload, is assisted by a volunteer Deputy Chief.

Currently the volunteer Deputy Fire Chief has responsibility of also being the District Chief of Station #3, overseeing suppression operations for three stations, 78 firefighters, and is also the Training Officer. The Deputy is fulfilling these duties on a casual basis around their regular employment, family responsibilities, and personal time. This is a significant responsibility and demand on a person's time for a part-time casual role. Although the time has never been formally tracked, the Deputy Chief estimates he spends approximately 20 hours a week in the roles of Deputy Chief, District Chief and the Training role, for a small stipend which would not equate to minimum wage. While the Deputy Chief should be applauded for the efforts to fulfill all three roles on a volunteer basis, the work demand clearly exceeds the time available.

In 1990, a review by the Office of the Fire Marshal recommended that the Fire Chief be supported by an additional position as well as a new station. Although the actual document was not available, a newspaper clip from December 5, 1990 covered the report.

To assist the Fire Chief with operational and on-call duties, and to also take over as Fire Chief during the Fire Chief's absences. The Municipality of Strathroy-Caradoc should hire a Deputy Fire Chief on a full-time basis. This full-time Deputy Chief would respond to emergencies after hours and renumeration for such shall be established by Council. Duties to be assigned to the Deputy Fire Chief would be identified under the Establishing and Regulating By-Law of the Strathroy-Caradoc Fire Department. The Deputy would be responsible Operations and Training and the District Fire Chiefs would report to the Deputy Fire Chief. A volunteer District Chief should be assigned to Station 3.

3.3 Fire Prevention & Public Education Division

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

The Fire Prevention Division consists of the Fire Chief filling the role of FPO assisted by a retired FPO from London and two volunteer firefighters who have just taken the FPO training. The part time FPO worked 384 hours in 2019 and 480 hours in 2020.

After reviewing data provided by SCFD, it was confirmed that the fire department is meeting the minimum legislated requirements, but not the level recommended standards. The Fire Chief monitors all facets of the program to ensure that the minimum provincial standards are met including inspections that are mandated such as vulnerable occupancies, complaint based, or by request. The Fire Chief does not have the time, due to multiple roles and responsibilities, to set out a proactive inspection program such as that identified by FUS (see section 3.3.3).

The Fire Chief, Deputy Chief, and Station #1 District Chief all advise that the Fire Prevention Program does not meet the level that they would like to see. This was also echoed by firefighters and the public during their surveys.

As noted in section 2, Public Education is the first line of defence in reducing fire related injuries and deaths. With a volunteer fire service where the response time is in excess of 13 minutes (80th percentile), it is the decisions and actions taken by the occupants of a building which make the difference in the outcome.

A fire prevention program should include the following components:

- Public education including targeting vulnerable groups (seniors, children, persons with disabilities
- Smoke detector program
- Building plan reviews
- Legislated Fire Inspections (complaint, request, and vulnerable occupancies)
- Proactive Fire Inspections
- Burn permits and complaints
- Fire cause determination
- Community Risk Assessment (update annually)
- Enforcement (laying charges and summonses)

Based on recommendations by the FUS group, the fire prevention officer per population ratio should be approximately one FPO per 15 to 20 thousand population minimum. With a population of 21,000 people, FUS standards suggest SCFD should have one full-time dedicated FPO. Fire prevention is seen as the first line of a defence; therefore, the more resources assigned to this endeavour, the more proactive a community and its fire department are regarding public safety.

3.3.1 Determination of Current Staffing Requirements

To assist fire departments in the determination of present and future staffing needs, NFPA 1730 *Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations* outlines a process within Annex "C" of the standard. Ultimately, Council determines the level of Fire Prevention based off the local needs and circumstances of the community.

Note: Annex C is not part of the requirements of this NFPA document but is included for informational purposes only.

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

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

By completing this process, it will assist the Department in further identifying what services it not only wants to offer, but what can actually be delivered based on present

staffing levels. More information on this staffing equation can be found in Appendix “B” of this document and within the NFPA 1730 Standard.

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

The Fire Chief is highly encouraged to review the number of inspections and associated orders/ fines issued on the concept of recidivism; that by which businesses are requiring more inspections, more follow-up and therefore more time of the FPO role, versus those which require minimal assistance or interaction of the FPO. A business or owner with tendencies to ignore the primary concepts of fire prevention may tend to preoccupy the FPO unnecessarily.

Further to what has already been noted by the NFPA and the FUS, the CFAI outlines the following regarding fire prevention and public education:

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

The utilization of existing resources is a cost-effective option for the promotion of fire prevention and public education programs. To accomplish this, some fire departments have trained suppression staff to conduct inspections or assist in public education. This not only brings more resources to the table but also enhances the level of fire safety awareness by those trained staff.

For the immediate future, SCFD should enhance the training and certification of some of its volunteer firefighters at each station in the areas of fire prevention and public education, so they are trained and certified to at least NFPA 1031 – Fire Inspector I and NFPA 1035 – Fire and Life Safety Educator I.

This can improve engagement at public events and the quality and quantity of public education efforts.

3.3.2 FUS Suggested Inspection Frequency Chart

Through the use of the FUS Inspect Frequency Chart (Table 3a), the FPO can measure requirements to meet inspection benchmarks, developing a plan with what can be accomplished with its present staffing complement, along with presenting options for increasing inspection frequencies. The use of this inspection chart can also prove beneficial in the Fire Chief's review for staffing needs.

Table 3a: FUS Inspection Frequency Chart

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

It is acknowledged that the FUS suggested frequency chart can be difficult to address even with full-time staffing, therefore, priority should be focused on the vulnerable occupancies (e.g., hospital, nursing homes, retirement homes, group homes, etc.), institutional buildings, assemblies, multi-residential, and industrial buildings.

3.3.3 Targeted Residential Fire Risk Reduction

In 2016, the "Targeted Residential Fire Risk Reduction"[3] report was released. This report was prepared by Len Garis, Sarah Hughan, and Amanda McCormick through the University of the Fraser Valley School of Criminology and Criminal Justice and the Centre for Social Research. The focus of the report was based on previous studies in England, Scotland, Sweden, and Norway. Those reports found that targeted home visits for public education efforts produced "promising results". By shifting public education efforts by way of door-to-door campaigns away from an entire community, not only are the campaigns more efficient but the effectiveness has measurable outcomes. The study team reviewed the Statistics Canada Census and National Household Survey and identified five areas for "at risk" criteria:

1. Age >65
2. Age <6
3. Lone Parent

[3]https://www.researchgate.net/publication/307599464_Targeted_Residential_Fire_Risk_Reduction_A_Summary_of_At_Risk_Areas_in_Canada

4. Unemployed
5. Mobility (movers)

The team evaluated and determined “the top 10th percentile of areas within municipalities that would be at most risk for fires to occur in their home”. From this they created dissemination areas (areas which represent populations of between 400-700 persons) and focused on single-family detached dwellings. The project did not focus on residents of condominiums, apartments, or townhouses. Surrey Fire Rescue Service used this data to create a “HomeSafe” program that focused on installing smoke alarms in these identified homes.

Appendix D contains a list of potential public education and partnership programs that the fire department could consider.

3.3.4 Home Fire Sprinklers

The NFPA, along with the Ontario Association of Fire Chiefs, are strong supporters of home sprinkler systems to reduce the risk to life and property from fire.

In a recent NFPA on-line article, it was noted that because fire sprinklers react so quickly, they can dramatically reduce the heat, flames, and smoke produced in a fire. Properly installed and maintained fire sprinklers help save lives, reduce damage, and make it safer for firefighters.

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

Facts about home fire sprinklers

Unfortunately, due to the lack of Canadian statistics, we must rely on American statistics. Since there are so many similarities in building construction, however, the statistics are an accurate reflection of the Canadian experience.

Automatic sprinklers are highly effective and reliable elements of total system designs for fire protection in buildings. According to an American Housing Survey, 4.6% of occupied homes (including multi-unit) had sprinklers in 2009, up from 3.9% in 2007, and 18.5% of occupied homes built in the previous four years had sprinklers.

Source: U.S. Experience with Sprinklers[4]

[4] https://www.nfpa.org/News-and-Research/Data-research-and-tools/Suppression/US-Experience-with-Sprinklers

- 85% of all U.S. fire deaths occur in the home.
- Home fire sprinklers can control and may even extinguish a fire in less time than it would take the fire department to arrive on the scene.
- Only the sprinkler closest to the fire will activate, spraying water directly on the fire. In 84% of home fires where the sprinklers operate, just one sprinkler operates.
- If you have a fire in your home, the risk of dying is cut by about one-third when smoke alarms are present (or about half if the smoke alarms are working), while automatic fire sprinkler systems cut the risk of dying by about 80%.
- In a home with sprinklers, the average property loss per fire is cut by about 70% (compared to fires where sprinklers are not present.)
- The cost of installing home fire sprinklers averages $1.35 per sprinklered square foot.

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

By working with the developers and the public in promoting the installation of home sprinkler systems, the SCFD would be demonstrating a pro-active approach to educating the public on another viable option for homeowners to help reduce the risk from fire. As such, it is recommended that SCFD investigate this safety initiative as part of their fire prevention and public education initiatives.

3.4 Training & Education Division

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

The Training Division consists of the volunteer Deputy Chief that is also tasked with overseeing Operations, being the District Chief for Station #3, and planning and coordinating delivery of high-quality learning to all 75 SCFD volunteer firefighters. The multi-hat role creates challenges in time management in the volunteer role as well as their other full-time job and family responsibilities.

The Training Officer coordinates training for new recruits with the basic skills necessary to extinguish fires, perform rescues, provide medical assistance, protect the environment, offer public education, and ensure public safety. This is done via the Malahide Township Fire Department. New recruits spend up to a year training and

certifying to NFPA 1001 Level I & II, provincial legislation training, and First Aid and CPR training before joining the suppression ranks in SCFD.

The Training Officer is also responsible for the weekly training session that all firefighters attend to meet ongoing competencies.

The commitment to quality training and certification to its members by SCFD is impressive.

The Training Officer is responsible for ensuring that all firefighters and officers meet the requirements for the appropriate NFPA Standards and other recognized industry standards such as Canadian Standards Association (CSA), *Occupational Health and Safety Act* (OHSA), Section 21, etc.

SCFD strives to deliver and maintain proper and adequate training to its members. In-house training (delivered by SCFD staff) consists of:

- Legislation, Policy, and Operating Guideline review
- Medical skills review
- Driver training
- FIT testing
- Suppression-based skills reviews
- Pumper Operator
- Tanker Shuttle training
- Rapid Intervention Team

During EM&T's review of the training and education programs, it was evident that the SCFD is endeavouring to ensure that all required training programs are being addressed to the best of the Department's ability.

The municipality owns a small farm property located at 8625 Falconbridge Drive which includes a house, garage, and pole barn. The fire department has utilized this property as a training site for numerous functions including pump operations, tanker operations, laddering, rapid intervention team, and automobile extrication. This is a very important facility as the current fire stations do not have adequate space for practical training.

NFPA 1201 – *Providing Fire and Emergency Services to the Public* notes, in relation to training and professional development, that:

- 4.11.1 *The Fire Department Organization shall have training and education programs and policies to ensure that personnel are trained, and that competency is maintained in order to effectively, efficiently, and safely execute all responsibilities.*

The Fire Chief and Deputy Chief/ District Chief/ Training Officer are aware of the needs of SCFD pertaining to training and certification. In reviewing documents provided, it is evident that there is a commitment to delivering necessary training and qualifications to staff. However, the Deputy Chief/ District Chief/ Training Officer struggles to find adequate time to dedicate to all three roles on a volunteer basis.

The Training Officer role includes:

- developing lesson plans,
- identifying competency in each lesson plan,
- skill maintenance priorities,
- determining how to evaluate each firefighter on the individual competencies,
- coordinating the Captains that are providing the training, and
- tracking each firefighter in maintaining those competencies.

Further, the Training Officer must devise a method of follow up for firefighters that have not met the individual competencies (e.g., missed a training session) to ensure that they meet the minimum standards. This may include providing or arranging additional training, coordinating training sessions/schedules with neighbouring fire services, etc.

Training Officers are often responsible for monitoring fire ground accidents, injuries, near misses, and safety issues to identify root causes and put training or procedures in place to minimize the risk in the future. Training Officers must monitor changing technology and firefighting environments and create new training to address those evolutions (e.g., electric vehicles, solar panels, home generators linked into the power grid, home-based hydroponics, etc.).

One of the areas that has been lacking is a formal officer training program to ensure Captains and District Chiefs have the appropriate training and competencies for their roles and responsibilities.

The fire department does not have any live fire training once the firefighters have completed their intake training.

Training sessions on a specific competency may only be offered once per year within the department due to the large number of topics that have to be covered. If that is a critical or mandatory topic and a firefighter is absent, there may be delays in obtaining training. Having a full-time Deputy Chief with the role of Training Officer, would provide additional time to offer selected training more than once and outside of normal training sessions (e.g., daytime or weekend training). Further, the Deputy Chief/ Training Officer could work with the neighbouring departments to collaborate on training schedules to provide greater flexibility for the firefighters.

3.4.1 Commission on Fire Accreditation International

The CFAI Accreditation Program has a specific section that evaluates the training component of a fire department. In this section, the following is noted:

Category VIII: Training and Competency

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

Through consultation meetings, it was concluded that the Training Division is meeting minimum goals with its program development and training objectives, however, the Deputy Chief/ District Chief/ Training Officer is challenged in dedicating adequate time to the roles.

As noted in section 3.3, the ability of a single person to fulfill all three roles as a volunteer has become a challenge.

Consideration should be given to increase the Deputy Chief/ District Chief/ Training Officer position from a volunteer status to a full-time position. By doing so, the Deputy Chief could invest dedicated time for the responsibilities of Training Officer as well as overseeing suppression operations, which would assist with maintaining training division goals and objectives.

3.4.2 Certification

Many of the firefighters noted that they wanted more professional training opportunities in the form of certification to the NFPA standards that are offered at some of the local Regional Training Centres.

EM&T is recommending that the Department continue the certification for staff for each position (that requires or recommends certification) and ensure that certifications are maintained. This includes the certification of firefighters, officers, training officers, and fire prevention.

3.5 Suppression Division

The Suppression Division is composed of 60 volunteer firefighters, 12 volunteer Captains, and 3 volunteer District Chiefs working out of three fire stations. The response area is divided into three districts. Each district has one District Chief, four Captains, and 20 firefighters. The District Chiefs report to the Deputy Fire Chief, who currently also functions as a District Chief (Station #3), and ultimately the Fire Chief.

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

- Does SCFD have adequate staffing to meet its own response criterion?
    - SCFD has Operating Guidelines that establish minimum staffing levels to execute fire suppression activities, but how do they compare to industry standards on response times?
- What change in population, demographics, and industry is occurring that may precipitate the need for a modification in stations and staffing?

There are four main standards and industry best practices that need to be considered:

- First, there are industry standards/ best practices in the form of the NFPA's 1720 and 1730 standards, which offer guidance regarding response times, staffing, fire prevention, and code enforcement.
- Second, the Department must consider the Public Safety Guidelines that are created and distributed by the OFMEM. These Guidelines advise fire services on aspects of delivering fire prevention, fire suppression, and fire station location programs. It must be noted that at the time of writing this report, the OFMEM still had the Guidelines "under review" but were made available for reference purposes.
- Third, the FUS, which is endorsed by the insurance industry as a tool for measuring the ability of a fire service in meeting the response time, staffing, and water supply needs of a community.
- Fourth, the CFAI, a program that has a fire service complete three key documents, including:
    1. A community risk assessment and standards of cover document.
    2. A self-assessment manual based on the 10 categories that make up the program review.
    3. A strategic plan for the service.
        - The MFP can be considered the strategic plan for the service.

3.5.1 NFPA 1720 – Volunteer Fire Departments

To accomplish the NFPA Standard, a fire department should endeavour to meet the stated minimum response standards based on responding to a 2,000-ft^2, two-storey, single-family dwelling. The dwelling (noted in the Standard) does not have a basement or other exposures (buildings close enough to each other to create a greater possibility for fire spread).

With the geographic dispersion of homes in Strathroy-Caradoc, there are both built-up areas in the villages and hamlets with a higher density of homes, and other rural areas with homes isolated from others. Most homes in Strathroy-Caradoc likely have basements and those in the built-up areas are often built close enough to each other to create that “exposure” for potential fire spread, which must be considered by the Fire Department in its response efforts.

Based on a review of the response data supplied, along with discussions with the Fire Chief, Strathroy-Caradoc is witnessing a varying level of success in meeting the NFPA response criteria. This can be seen in the charts found in Section 4: Community Response along with other more detailed information regarding department goals and expectations in meeting industry standards.

3.6 Health & Wellness

Health and wellness of staff is a key focus for all municipalities and Strathroy-Caradoc is no exception. Due to the nature of volunteer firefighters maintaining a separate primary vocation, a focus on fitness can be overlooked. The inherit nature of firefighting is both stressful and physically demanding. During the review by EM&T, it was noted that none of the stations have been equipped with workout facilities to ensure that staff can keep fit, which helps to reduce work related injuries.

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

NFPA 1582 Standard on Comprehensive Occupational Medical Program for Fire Departments identifies 14 essential job tasks that detail the physical and physiological strains placed on firefighters. The standard outlines the requirements for a department medical program including certain conditions that may pose a risk to firefighting, but everything is centred around the 14 essential job tasks. As the core determination for the physicality of firefighting, it is important for SCFD to understand the expectations

they are placing on their personnel. These job tasks are listed in the *NFPA 1582 Standard on Comprehensive Occupational Medical Program for Fire Departments* as:

NFPA 1582 5.1 Essential Job Tasks and Descriptions

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

1. While wearing personal protective ensembles and self-contained breathing apparatus (SCBA), performing firefighting tasks (e.g., hose line operations, extensive crawling, lifting and carrying heavy objects, ventilating roofs or walls using power or hand tools, forcible entry), rescue operations, and other emergency response actions under stressful conditions, including working in extremely hot or cold environments for prolonged time periods
2. Wearing an SCBA, which includes a demand valve-type positive-pressure facepiece or HEPA filter mask, which requires the ability to tolerate increased respiratory workloads
3. Exposure to toxic fumes, irritants, particulates, biological (infectious) and nonbiological hazards, and heated gases, despite the use of personal protective ensembles and SCBA
4. Depending on the local jurisdiction, climbing six or more flights of stairs while wearing a fire protective ensemble, including SCBA, weighing at least 50 lb (22.6 kg) or more carrying equipment/tools weighing an additional 20 to 40 lb (9 to 18 kg)
5. Wearing a fire protection ensemble, including SCBA, that is encapsulating and insulated, which will result in significant fluid loss that frequently progresses to clinical dehydration and can elevate core temperature to levels exceeding 102.2°F (39°C)
6. While wearing personal protective ensembles and SCBA, searching, finding, and rescue-dragging or carrying victims ranging from newborns to adults weighing over 200 lb (90 kg) to safety despite hazardous conditions and low visibility
7. While wearing personal protective ensembles and SCBA, advancing water-filled hose lines up to 2 ½ in. (65 mm) in diameter from fire apparatus to occupancy [approximately 150 ft (50 m)], which can involve negotiating multiple flights of stairs, ladders, and other obstacles

8. While wearing personal protective ensembles and SCBA, climbing ladders, operating from heights, walking, or crawling in the dark along narrow and uneven surfaces that might be wet or icy, and operating in proximity to electrical power lines or other hazards
9. Unpredictable emergency requirements for prolonged periods of extreme physical exertion without benefit of warm-up, scheduled rest periods, meals, access to medication(s), or hydration
10. Operating fire apparatus or other vehicles in an emergency mode with emergency lights and sirens
11. Critical, time-sensitive, complex problem solving during physical exertion in stressful, hazardous environments, including hot, dark, tightly enclosed spaces, that is further aggravated by fatigue, flashing lights, sirens, and other distractions
12. Ability to communicate (give and comprehend verbal orders) while wearing personal protective ensembles and SCBA under conditions of high background noise, poor visibility, and drenching from hose lines and/or fixed protection systems (sprinklers)
13. Functioning as an integral component of a team, where sudden incapacitation of a member can result in mission failure or in risk of injury or death to civilians or other team members
14. Working in shifts, including during nighttime, that can extend beyond 12 hours

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

NFPA 1582 4.1 Program Overview

4.1.1* The fire department shall establish and provide a health-related fitness program (HRFP) that enables members to develop and maintain a level of health and fitness to safely perform their assigned functions

A.4.1.1 The fire department needs to recognize that its members are its most valuable resource. The occupational safety and health program provided

direction on performing assigned functions in a safe manner. The health-related fitness program provides another proves, one that allows members to enhance and maintain their optimum level of health and fitness throughout their tenure with the fire department. Education, one provision of a health-related fitness program, allows a means for improving health and fitness throughout the organization. The organization needs to provide the recognition and support to ensure the promotion and success of this process. Health and fitness needs to become a value within the organization, just as safety is a value.

Data suggest a correlation between the following:

(1) A proactive approach to health and fitness and a decrease in debilitating occupational injuries

(2) A reduction in workers compensation claims and a decrease in acute and chronic health problems of fire fighters.

Combining the health-related fitness program with a proactive occupational safety and health program provides a fire department with the level of quality needed for its members.

Strathroy-Caradoc has included all its fire department staff in the Employee Assistance Program (EAP) offered through its municipal employee benefits. This is an important piece of employee wellness. SCFD should meet with administrative staff from the Municipality who oversee it to ensure that firefighting personnel are fully aware of what benefits the EAP offers, should they need it.

In 2017, emergency services organizations were required by the Ministry of Labour to submit a Post Traumatic Stress Disorder (PTSD) Prevention Plan. This was to coincide with PTSD and categorize Occupational Stress Injuries (OSI) as workplace injuries and allow compensation through the Workplace Safety & Insurance Board (WSIB). Although the program was delivered to the staff in 2017/2018, it has not been provided to new recruits.

Initial awareness training for existing staff and recruits is essential in establishing minimum levels of resiliency. Through their PTSD Prevention Plans, departments are expected to outline a full spectrum plan. They are encouraged to address four pillars of managing a PTSD/OSI event: prevention, peer support, treatment/recovery, and return to work programs.

In review of the SCFD PTSD Prevention Plan, there has been initial effort put forth to address some prevention and resiliency through awareness training. It is recommended that, as part of a larger commitment to firefighter health and wellness, SCFD develop a more wholesome approach to their PTSD Prevention Plan. This may include things like

peer support, intervention approach, professional services, clinical assistance and what a return-to-work plan may look like for a SCFD volunteer firefighter. Not all EAP services include accredited availability of trained mental health professionals (psychologists/ psychiatrists), and some only offer limited assistance through counselling and therapy.

In recent years there has been a more intensive review of cancer prevention related to firefighting. The focus has been on contamination control surrounding fire incidents. From pre-fire, incident duration, to cleaning and decontamination post-fire, all aspects of prevention are currently under review by all levels of fire service management. Departments are limiting opportunities for cross contamination and secondary exposure of carcinogens involved in fire scenes. It is recommended that, as part of a larger commitment to firefighter health and wellness, SCFD begin work on a cancer prevention program. This may include items such as, but not limited to:

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

A plan should be established to review PPE inventories and ensure forecasted replacements are identified so that budgetary submissions are effectively managed. This is important to note as NFPA 1851 Standard on *Selection, Care and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting* states in Chapter 10:

> **10.1.2** Structural fire fighting ensembles and ensemble elements shall be retired in accordance with 10.2.1 or 10.2.2, no more than 10 years from the date the ensembles or ensemble elements were manufactured.

The appendix to that section also references that "…it is imperative that the protective elements be routinely inspected to ensure that they are clean, well maintained, and still safe". SCFD has a program that PPE can be washed at the stations, and that there is a cache of used gear that can accommodate about 25% of the Department.

SCFD has an operating guideline on PPE/ Bunker Gear inspections and cleaning, however, it should be expanded to include the cleaning of bunker gear after every structure fire and hazmat exposure. Further, it is recommended that a PPE inspection plan be established, to allow for an annual inspection of all PPE, focusing on the structural firefighting ensemble. The benefits of a properly managed PPE maintenance and inspection program include improved firefighter safety, protection from exposures, and potentially manageable and predictable costs associated with PPE.

The expectations placed on a firefighter are clear; the risks placed on them are not always as clear. The recent attention given to unseen dangers that firefighters face has indicated more effort is necessary to protect the protectors. While some protections are becoming legislated, with more likely to follow, it is prudent that SCFD find ways to better care for their fire department staff. Consideration given to firefighter fitness can reduce the likelihood of cardiac emergencies and reduce work related injuries. Focus given to mental health and cancer prevention is both necessary and expected.

3.7 Comparisons with Other Similar Sized Communities

A review of the following municipalities and their fire service was conducted: King Township, Springwater, Middlesex Centre, Niagara-on-the-Lake, East Gwillimbury, Thorold, Collingwood, Tillsonburg, and Wilmot.

These communities were chosen based on several factors including similar populations and fire department sizes, community composition, and call volume.

The chart offers an at-a-glance view of the data received from each fire department regarding the following topics:

- Population served
- Geographical area
- Number of fire stations
- Number of volunteer firefighters
- Number of paid staff
- Call volume

To assist with the planning process, a fire service can look at other comparable fire services to help identify similarities and possible shortcomings in structure, staffing, and equipment. In completing this type of review, the Fire Chief and Council must be aware that no two communities are identical; each community has its own unique challenges due to demographics, topography, percentage of residential, commercial and industrial areas, along with transportation and road network challenges.

As illustrated in Table 3b, there is a range of population versus staffing ratios between the communities surveyed. No definitive conclusion or recommendation can be drawn from this comparison. This data does, however, offer a snapshot of information which can be used to determine whether Strathroy-Caradoc is in a similar situation relating to call volumes, population versus staffing, and composition of the service.

Based on the fire departments surveyed, the SCFD employs fewer full-time staff than all the other comparable municipalities (relative to population vs. staffing). The fire department also has fewer calls than most of the departments, which is due to the low

medical first response call volume. Six of the ten municipalities have four or more (up to 7) headquarters staff.

Every community in the survey, except for Strathroy-Caradoc and Tillsonburg, have at least 1 full-time FPO. At Tillsonburg, the Deputy Chief fills this role.

Of the 10 municipalities in the survey, 3 have moved to having career firefighters on duty.

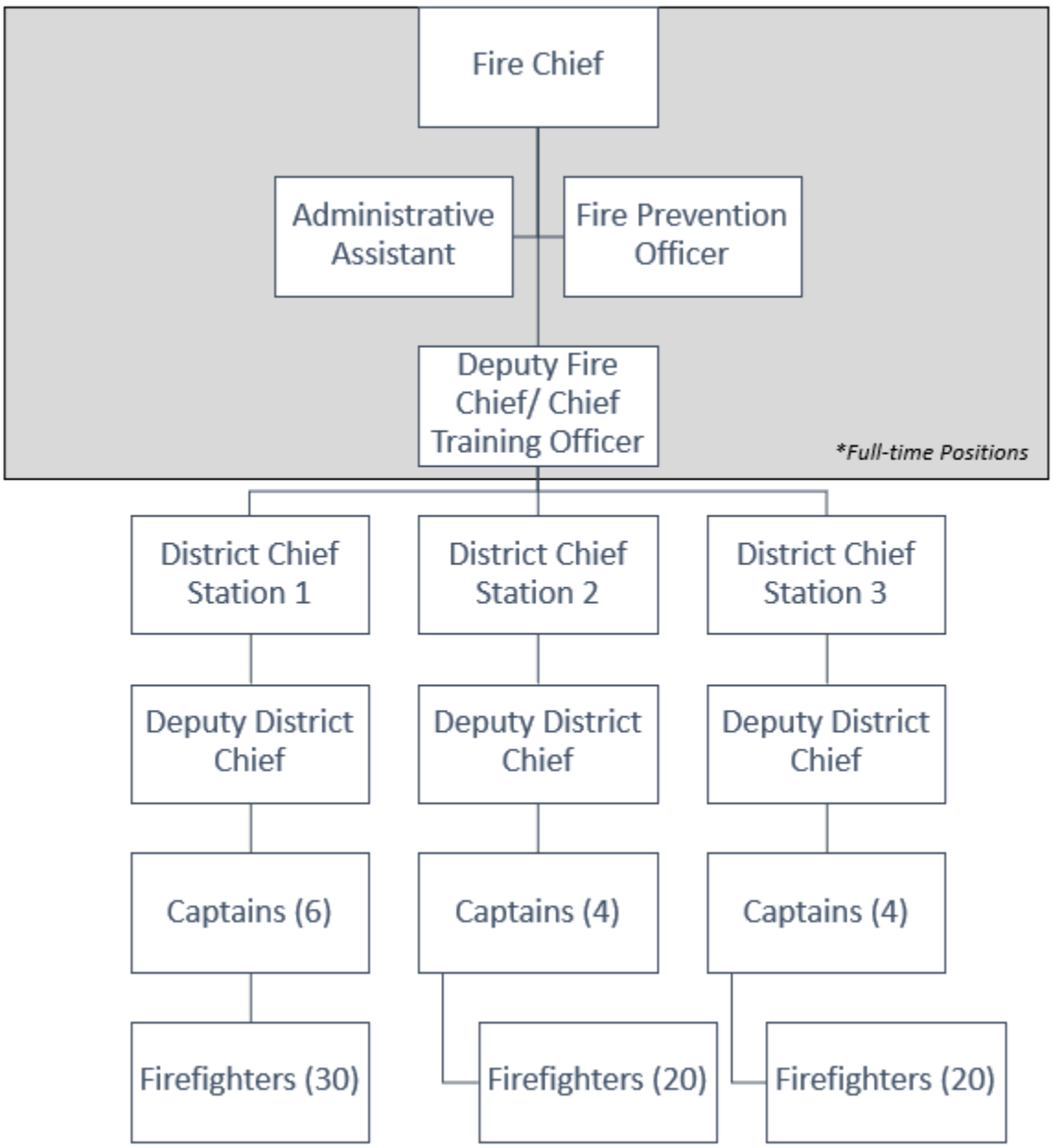
Table 3b: Comparable Municipalities

Municipality	Population Served (approx.)	Geographical Area	Number of Fire Stations	Firefighter Staffing	Fulltime Headquarters Staffing	Annual Incidents (including medical)
Strathroy-Caradoc	21,000	270.77 km^2 (104.54 sq mi)	3	78 volunteers	2 Fire Chief Admin Assistant	314
King	24,512	333.25 km^2	3	150 volunteers	6 Fire Chief Deputy Fire Chief Executive Assistant Admin Assistant Fire Prevention (2)	1,121
Springwater	19,059	536.28 km^2 (207.06 sq mi)	4	90 volunteers	5 Fire Chief Deputy Fire Chief Training Officer Fire Prevention Officer Administrative Assistant	600
Middlesex Centre	17,262	588.11 km^2 (1,089.19 sq mi)	5	113 volunteers	3 Fire Chief Fire Prevention Officer Fire Service Coordinator	338
Niagara-on-the-Lake	17,511	132.81 km^2 (51.28 sq mi)	5	110 volunteers	6 Fire Chief Deputy Fire Chief (2) Fire Prevention Officer	650

Municipality	Population Served (approx.)	Geographical Area	Number of Fire Stations	Firefighter Staffing	Fulltime Headquarters Staffing	Annual Incidents (including medical)
					Training Officer Admin Assistant	
East Gwillimbury	23,991	245.04 km^2 (94.61 sq mi)	3	60 volunteers 16 full-time	6 Fire Chief Deputy Fire Chief Fire Prevention (2) Training Officer Admin Assistant	927
Thorold	18,801	82.99 km^2 (32.04 sq mi)	4	79 volunteers 16 full-time	4 Fire Chief Captain: Fire Prevention Captain: Training Admin Assistant	714
Collingwood	21,793	33.78 km^2 (13.04 sq mi)	1	12 volunteers 24 full-time	4 Fire Chief Deputy Fire Chief Fire Prevention Admin Assistant	906
Tillsonburg	15,872	22.33 km^2 (8.62 sq mi)	1	30 volunteers	7 Fire Chief Deputy Chief Comm Dept (5)	350
Wilmot	20,545	263.72 km^2 (101.82 sq mi)	3	83 volunteers	3 full-time, 2 part-time Fire Chief Fire Prevention Officer Admin Assistant	738

Municipality	Population Served (approx.)	Geographical Area	Number of Fire Stations	Firefighter Staffing	Fulltime Headquarters Staffing	Annual Incidents (including medical)
					Training Officers (2 part-time)	

Figure 3a: Proposed Staffing Chart



The recommendations above move from two full-time employees, the Fire Chief and Administrative Assistant, to four full-time employees by adding a full-time Deputy Fire Chief and a Fire Prevention Officer. The number of firefighters is addressed in section 4.

Recommendation(s)

Rec. #	Recommendation	Estimated Costs	Suggested Timeline
5	Hire a full-time Fire Prevention Officer.	$70,000 plus benefits	Short-term (1-3 years)
6	The Deputy Chief/Training Officer position should be moved to a full-time position with responsibility for training.	$90,000 plus benefits and vehicle	Short-term (1-3 years)
7	SCFD should enhance the training and certification of some of its volunteer firefighters in the areas of fire prevention and public education, trained and certified to at least NFPA 1031 – Fire Inspector I, and NFPA 1035 – Fire and Life Safety Educator I.	Staff time	Short-term (1-3 years)
8	SCFD work with developers and the public to make the Home Sprinkler Systems initiative a part of its fire prevention and public education program.	Staff time	Short-term (1-3 years)
9	SCFD review the physical expectations of a firefighter for use in training and recruiting. Review the 14 essential job tasks from NFPA 1582 as they pertain to their recruitment and testing process and seek options for offering personnel the ability to exercise and maintain fitness levels as explained in NFPA 1583.	Staff time	Short-term (1-3 years)
10	SCFD develop a more wholesome approach to their PTSD Prevention Plan which may include peer support, intervention approach, professional services, clinical assistance and what a return-to-work plan may look like for a SCFD volunteer firefighter.	Staff time	Short-term (1-3 years)
11	SCFD develop a more comprehensive cancer prevention program.	Staff time	Short-term (1-3 years)

SECTION 4: COMMUNITY RESPONSE

4.1 FIRE SUPPRESSION & EMERGENCY RESPONSE

4.2 EMERGENCY RESPONSE DATA

4.3 RESPONSE RELIABILITY

4.4 TECHNICAL RESCUE

Section 4: Community Response and Comparables

4.1 Fire Suppression & Emergency Response

The Suppression Division is comprised of 78 volunteer firefighters working out of three fire stations. Each district has one District Chief, four Captains, and 20 firefighters. The District Chiefs report to the Deputy Fire Chief and ultimately the Fire Chief.

4.1.1 National Fire Protection Association 1720

To provide a fire department clearer focus on what the ultimate goals for emergency response criteria are, the NFPA suggests that response times should be used as a primary performance measure by fire departments. The NFPA's 1720 Standard for Volunteer Fire Departments list response times in Chapter 4, and according to the definition Strathroy-Caradoc, while the Municipality of Strathroy would be considered suburban. The standard established response times are as such:

3.3 Staffing and Deployment

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

3.3.2 Table 4.3.2 shall be used by the AHJ to determine staffing and response time objectives for structural firefighting, based on a low-hazard occupancy such as a 2,000 ft² (186 m²), two-storey, single-family home without basement and exposures and the percentage accomplishment of those objectives for reporting purposes as required in 4.4.2.

Strathroy-Caradoc is approximately 271 km^2 in size and has a population (based on 2016 Stats Canada census) of 20,867. The population density is approximately 77 persons per km^2.

This density is used in the NFPA 1720 standard to make recommendations on response times. As per Table 4a, this places the municipality in the rural standard. However, due to most of the population being located within the old town boundaries of Strathroy, we would recommend that the fire department use the suburban standard for measuring response within this area of the municipality.

The rural standard is to have 6 firefighters on scene within 14 minutes of the call 80% of the time. The suburban standard is to have 10 firefighters on scene within 10 minutes of the call 80% of the time.

Table 4a: NFPA 1720 Table 4.3.2

Demand Zone	Demographics	Minimum Staff to Respond*	Response Time (minutes)**	Meets Objective (%)
Urban area	>1000 people/mi² >384 people/km²	15	9	90
Suburban area	500-1000 people/mi² 192-384 people/km²	10	10	80
Rural Area	<500 people/mi² <192 people/km²	6	14	80
Remote area	Travel distance ≥8 mi. ≥12.9 km	4	Directly dependant based on travel distance	90
Special risks	Determined by AHJ	Determined by AHJ based on risk	Determined by AHJ	90

**minimum staffing includes members responding from the AHJ's department and automatic aid*
***response time begins upon completion of the dispatch notification and ends at the time interval shown in the table*

Based on the current population density for the municipality, NFPA 1720 has a response time standard of 6 firefighters on the scene within 14 minutes, 80% of the time. All three of the stations are meeting this standard for the first arriving apparatus (see Table 4b).

Table 4b: 80th Percentile Response Times for 2020

Response times -2020	80th Percentile
Strathroy	00:13:21
Mt. Brydges	00:13:26
Melbourne	00:13:31

As noted earlier, with the community of Strathroy having a population of more than 15,000 in a restricted area, the Suburban Standard of 10 firefighters on scene within a 10 minutes / 80th percentile should be the goal for this area.

When considering the response times and related needs for a community, the fire response curve (Figure 4a) presents the reader with a general understanding of how quickly a fire can grow within a furnished residential structure over a short period of time. Depending on many factors, the rate of growth can be affected in several ways, which can increase or suppress the burn rate through fire control measures within the structure.

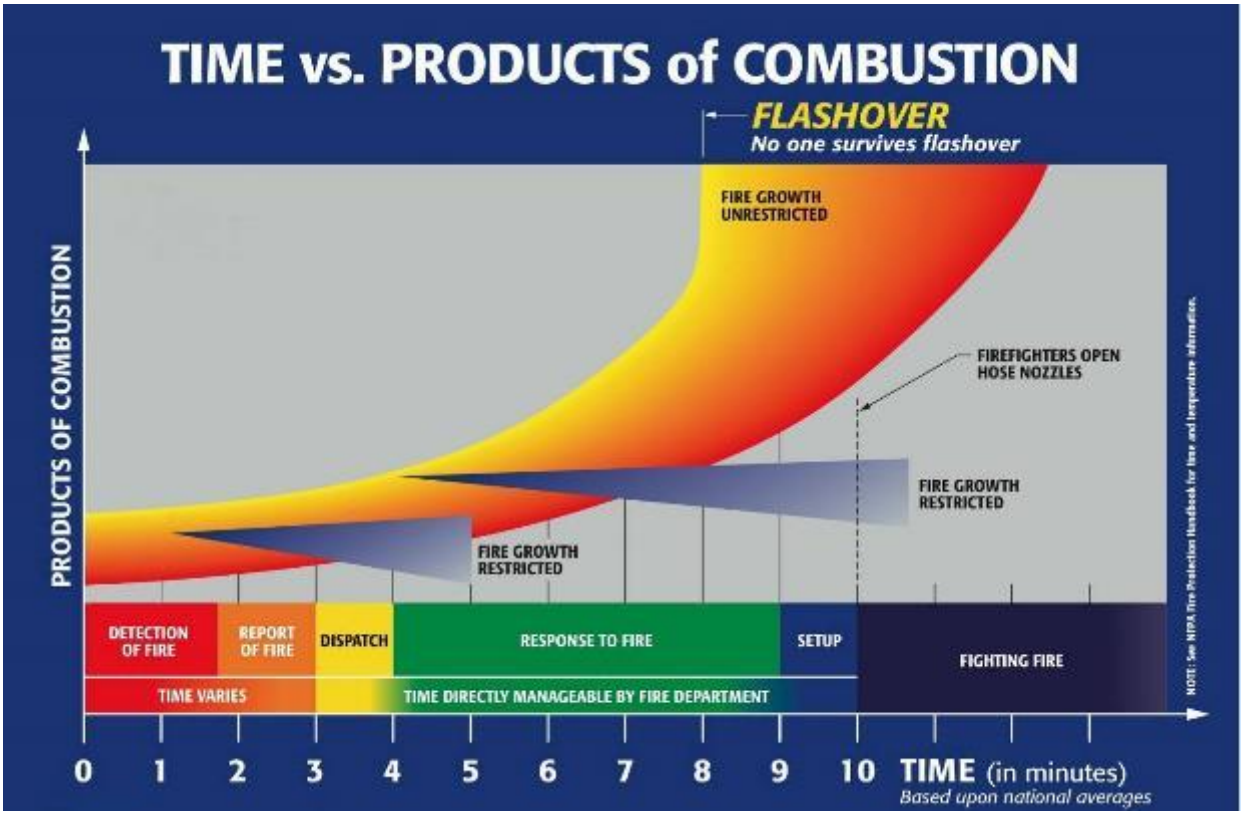
When we look at the response time of a fire department, it is a function of various factors including, but not limited to:

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

The criticalness of immediate initiation of fire suppression activities is illustrated in the following fire propagation diagram (Figure 4a). The curve within the chart notes the following time variables:

- **Detection of fire** – when the occupant discovers that there is a fire. The fire may be in a very early stage or could have been burning for quite some time before being detected.
- **Report of fire** – when someone has identified the fire and is calling 9-1-1 for help.
- **Dispatch** – the time it takes the dispatcher to receive the information and dispatch the appropriate resources.
- **Response to the fire** – from the initial dispatch to the fire department until the time they have the necessary resources on scene.
- **Setup time** – the time it takes for the fire crews to get ready to fight the fire.
- **Fighting the fire** – actual time on scene extinguishing the fire.

Figure 4a: Fire Response/ Propagation Curve



Based on fire growth, as illustrated in Figure 4a and the previously noted time variables, the overall goal of any fire department is to arrive at the scene of the fire and/ or incident as quickly and as effectively as possible. If a fire truck arrives on scene in eight minutes or less, with a recommended crew of four or more firefighters, there is increased opportunity to contain the fire by reducing further spread of the fire to the rest of the structure.

Alternatively, if the first fire attack team arrives with fewer than four firefighters on board, it is limited to what operations it can successfully attempt. Based on studies and evaluations conducted by the National Institute of Standards and Technology (NIST) and the NFPA, no interior attack is to be made in a *rural* area by the firefighters until sufficient personnel arrive on scene. The expectation is that a minimum of six personnel – four firefighters, one officer, and one pump operator – are to arrive on scene to make up the initial fire suppression team. This team of six can effectively do an assessment of the scene, secure a water source (fire hydrant or other source), ensure the fire truck is ready to receive the water and get the fire pump in gear, as well as unload and advance the fire hose in preparation for entry into the structure. Additional resources must be on the way to support the continuing fire suppression requirements of a structure fire.

Not having enough firefighters at an emergency scene can create an unsafe situation for the firefighters or, in a worst-case scenario, it can cause a delay in conducting fire suppression, lifesaving, and/or rescue operations. Therefore, all reported structure fires require a multi-station response in Strathroy-Caradoc.

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

The OFMEM Comprehensive Fire Safety Effectiveness Model Considerations, notes the following:

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

These considerations have been addressed and incorporated into the MFP document. As a regular practice, SCFD should review these questions annually to confirm if it has and continues to implement effective measures to meet the OFMEM Guideline considerations.

4.2 Emergency Response Data

4.2.1 Calls for Service 2018-2020

The SCFD responded to an average of 314 calls annually between 2018-2020. To comprehensively understand the scope by which a fire department operates, the types of calls and the means by which it responds must be reviewed.

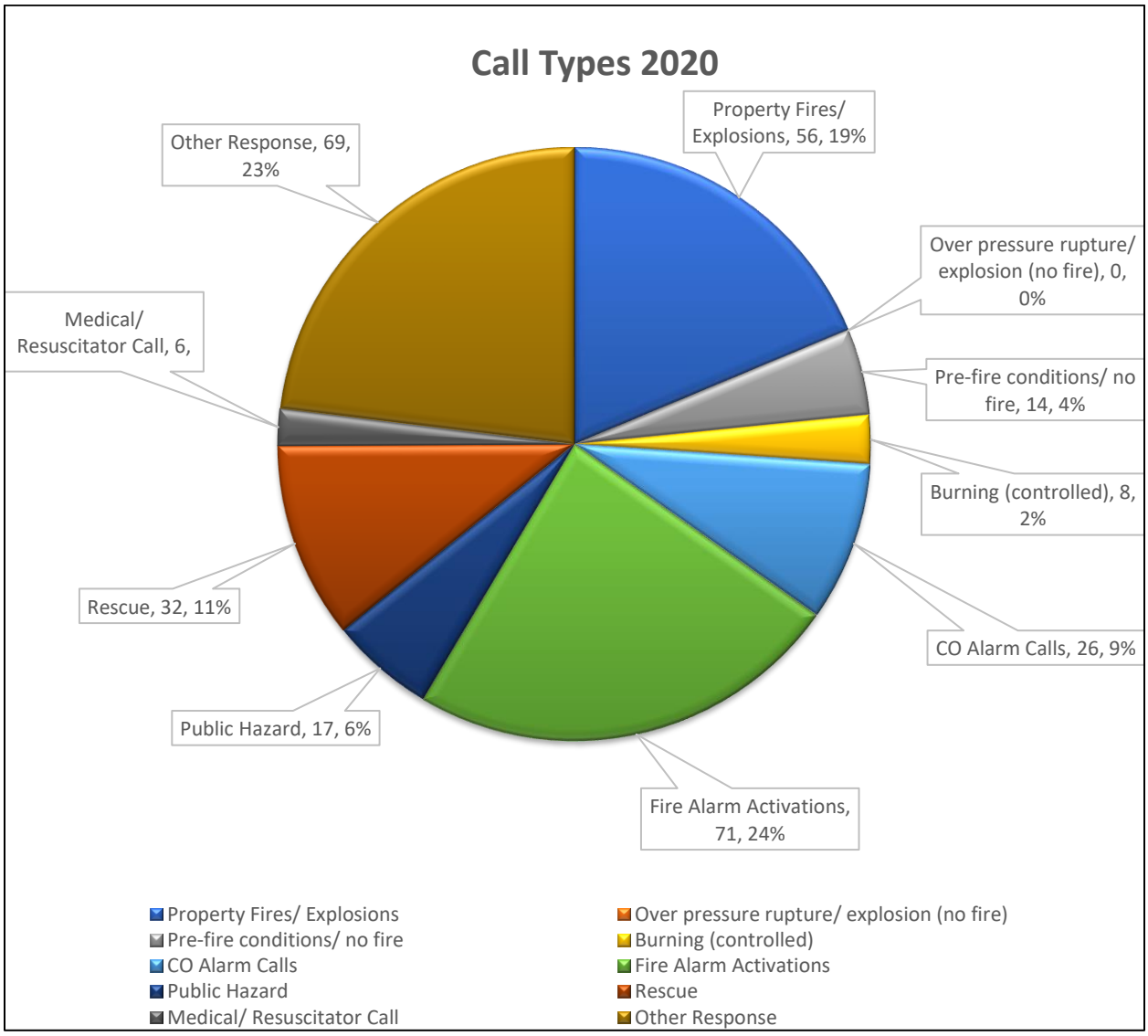
The types of calls that SCFD responded to in 2020 are detailed in Figure 4b.

The four most common types of calls are:

1. Fire Alarm Activations – 71 calls
2. Other responses – 69 calls
3. Property Fires / Explosions – 56 calls
4. Rescue – 32 calls

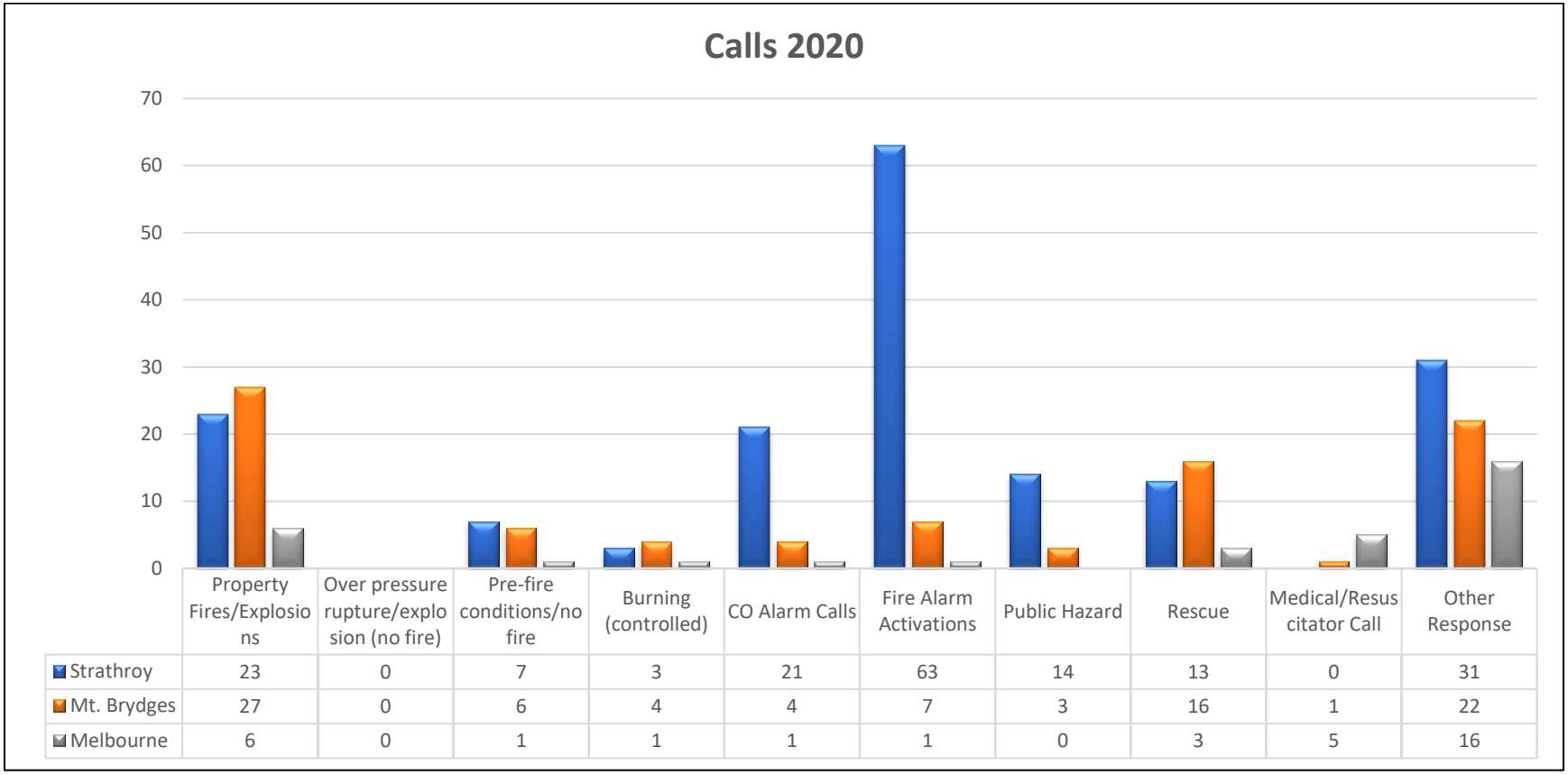
Other responses include mutual aid, automatic aid, and response to other jurisdictions. These calls made up 63 of the 69 “other” calls.

Figure 4b: 2020 Call Types



Note: Data from 2019 and 2018 can be found in Section 9

Figure 4c: 2020 Call Types by Station



	Property Fires/Explosions	Over pressure rupture/explosion (no fire)	Pre-fire conditions/no fire	Burning (controlled)	CO Alarm Calls	Fire Alarm Activations	Public Hazard	Rescue	Medical/Resuscitator Call	Other Response
Strathroy	23	0	7	3	21	63	14	13	0	31
Mt. Brydges	27	0	6	4	4	7	3	16	1	22
Melbourne	6	0	1	1	1	1	0	3	5	16

Note: Data from 2019 and 2018 can be found in Section 9.

Call type variance is also another important factor to review annually. By monitoring call types from year to year, fire department management can look for increases and decreases. Determining anomalies in these variances may predict a sustainable change in call numbers. Identifying these changes allows for better budgeting, staffing, and improved response criteria.

Table(s) 4c: Call Type Breakdown

	Strathroy	Mt. Brydges	Melbourne	2020
Property Fires/Explosions	23	27	6	56
Over pressure rupture/explosion (no fire)	0	0	0	0
Pre-fire conditions/no fire	7	6	1	14
Burning (controlled)	3	4	1	8
CO Alarm Calls	21	4	1	26
Fire Alarm Activations	63	7	1	71
Public Hazard	14	3	0	17
Rescue	13	16	3	32
Medical/Resuscitator Call	0	1	5	6
Other Response	31	22	16	69
Totals	175	90	34	299

	Strathroy	Mt. Brydges	Melbourne	2019
Property Fires/Explosions	15	16	12	43
Over pressure rupture/explosion (no fire)	0	0	0	0
Pre-fire conditions/no fire	36	6	1	43
Burning (controlled)	2	1	0	3
CO Alarm Calls	24	11	1	36
Fire Alarm Activations	58	11	2	71
Public Hazard	18	9	3	30
Rescue	19	13	11	43
Medical/Resuscitator Call	0	0	6	6
Other Response	18	36	8	62
Totals	190	103	44	337

	Strathroy	Mt. Brydges	Melbourne	2018
Property Fires/Explosions	17	15	13	45
Over pressure rupture/explosion (no fire)	0	0	0	0
Pre-fire conditions/no fire	17	4	2	23
Burning (controlled)	1	2	3	6
CO Alarm Calls	55	8	0	63
Fire Alarm Activations	49	9	2	60
Public Hazard	17	9	3	29
Rescue	24	13	9	46
Medical/Resuscitator Call	1	0	4	5
Other Response	12	12	6	30
Totals	193	72	42	307

While the number and types of calls vary from year to year, they are relatively consistent. Call volumes can change dramatically with weather, public events, etc. A winter or summer storm can result in fire alarm activations, hazardous road conditions, motor vehicle collisions, and increase the public's reliance on the fire service.

The number of calls per station is consistent with the population in the communities, with Mount Brydges being utilized as the 2-station support to calls in both Strathroy and Melbourne.

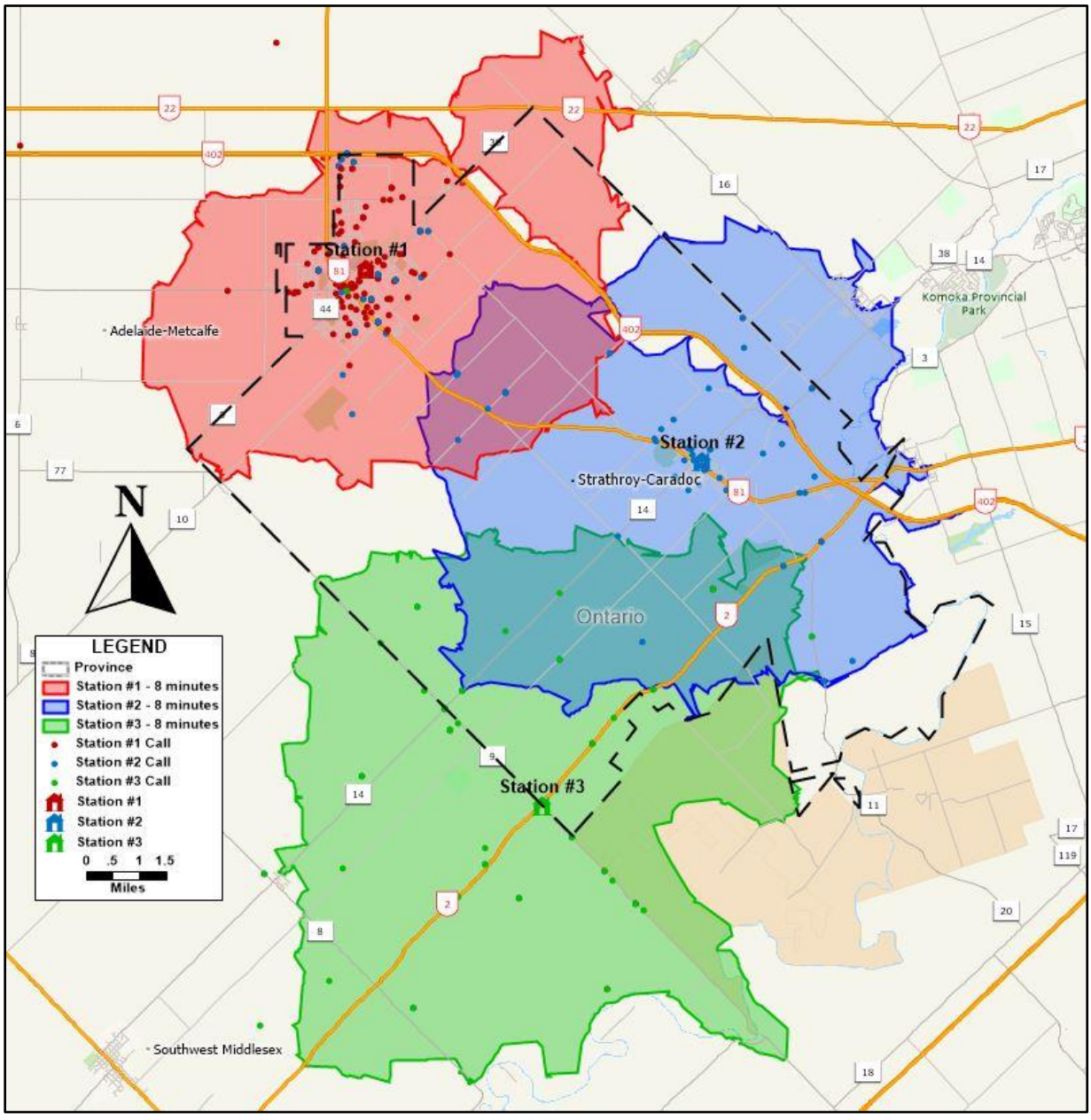
Combining the demands of responding to emergency calls at all hours of the day along with the on-going training requirements, the demand on the firefighters is increasing annually. As part-time on-call firefighters, these demands are in addition to their home and family responsibilities, full-time employment (often out of town), recreational activities, and other community/ social commitments. Therefore, unnecessary calls can become frustrating for the firefighters who drop everything they are doing to respond and find that the call is a preventable false alarm (about 30% of the calls). The constantly increasing demand may lead to higher staff turnover and/ or the requirement to staff a fire truck with career firefighters.

A SCFD FPO could be actively involved in following up with building owners where there are multiple false alarms and educating the public on CO detectors.

Another important consideration in reviewing call data is location. The distribution of calls is essential for SCFD to fully understand the scope of their response expectations. Identifying call clusters, whether by location or type, is a useful tool. Implementing the first two lines of defence (public education and code enforcement) can aid in reducing the amount and frequency of calls that occur in clusters. Call location is also useful in ensuring that station location is meeting the needs of Strathroy-Caradoc. If calls are consistently occurring beyond the range of efficient and reliable response times as

identified in NFPA 1720, corrections and improvements must be addressed. Figure 4d highlights the calls for service for SCFD in 2019. It also has colour shading to display the eight-minute travel time areas for each station.

Figure 4d: SCFD Calls by Location



As can be seen in the above map, the largest density of calls is within the Strathroy developed area (Station #1), with a small cluster in the Mount Brydges area (Station #2). Outside of those areas, the calls are relatively scattered throughout.

4.2.2 Future Call Volume Expectations

As previously mentioned, there are factors that can impact the call volume from year to year such as weather patterns, including severe storms, or major road construction projects that detour traffic. Longer-lasting changes, however, are directly related to three factors:

- Operating procedures
- Changes in technology
- Public education
- Community growth

Modifications to operating procedures can change call volume dramatically. For example, in those communities that participate in tiered medical response, calls will often increase the overall call volume of the department by 80-100% resulting in as many as half the fire department calls being medical related.

Changes in technology can add or reduce the number of calls that the fire department responds to. For example, the addition of CO alarms, while having the potential to save lives, adds to the number of fire department responses. In 2018, CO calls made up 20% of the department responses. As more homes tie their smoke detectors and fire alarms into monitoring stations, it is anticipated that the number of alarm calls will increase. Police services have seen a significant growth in alarm calls, with some communities getting so many that they no longer respond to alarm calls unless they have been confirmed by a secondary system or person on scene.

Public education can influence call volumes. For example, education programs, including the enforcement of penalties for multiple alarms, can reduce the number of false alarms the fire department responds to. Education and enforcement on public burning can reduce the number of grass fires and nuisance smoke complaints.

Community growth will also have an impact on calls; greater populations along with increases in commercial/ industrial properties and traffic will impact call volume growth.

On January 19, 2021, the Director of Planning for Middlesex County provided a report to the County Committee of the Whole forecasting the growth of housing and populations for the county and each municipality in the county.

In the report, a low growth scenario, reference scenario, and high growth scenario were provided for each municipality. The report predicts that the annual growth rate of Strathroy-Caradoc will range from 1.4% (low scenario) to 2.1% (high scenario). The reference scenario is 1.8%. Strathroy-Caradoc has adopted the 2.1% annual growth as their forecasted growth rate.

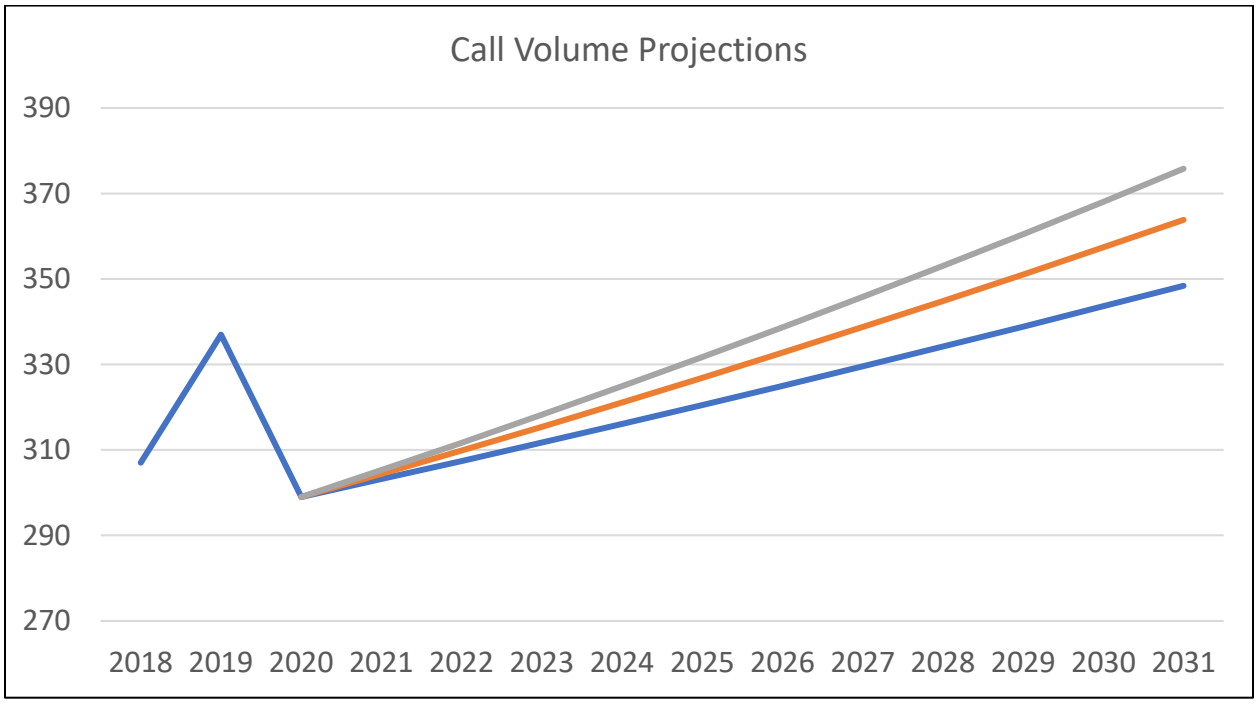
Figure 4e: Housing Forecast by Local Municipality

Middlesex County
Housing Forecast by Local Municipality – Low Scenario, 2016 to 2046

Year	Village of Newbury	Municipality of Southwest Middlesex	Municipality of Strathroy-Caradoc	Municipality of Thames Centre	Municipality of Middlesex Centre	Municipality of North Middlesex	Township of Adelaide-Metcalfe	Township of Lucan Biddulph	Middlesex County
2016	180	2,350	8,300	4,920	5,990	2,330	990	1,790	26,820
2021	180	2,390	9,050	5,240	6,550	2,370	1,020	1,970	28,770
2026	200	2,550	9,800	5,620	7,110	2,560	1,110	2,080	31,030
2031	210	2,620	10,530	5,910	7,690	2,630	1,150	2,210	32,950
2036	220	2,680	11,230	6,220	8,430	2,700	1,190	2,380	35,060
2041	240	2,740	11,980	6,550	9,310	2,770	1,230	2,560	37,380
2046	250	2,790	12,660	6,840	10,180	2,810	1,260	2,780	39,560
Share of 2016 County Housing	1%	9%	31%	18%	22%	9%	4%	7%	100%
Share of 2046 County Housing	1%	7%	32%	17%	26%	7%	3%	7%	100%
Housing Growth									
2016-2046	70	440	4,360	1,920	4,190	480	270	990	12,740
Annual Growth Rate, 2016-2046	1.1%	0.6%	1.4%	1.1%	1.8%	0.6%	0.8%	1.5%	1.3%
Share of County Housing Growth, 2016-2046	1%	3%	34%	15%	33%	4%	2%	8%	100%

This forecasted growth in households appears, over the long-term, to be steady, but not overwhelming. Using the report figures to project the call volume, we can project that the call volumes of the fire department will range from 350 (low scenario) to 375 calls (high scenario) per year.

Figure 4f: Yearly Call Volume Projections



SCFD is highly encouraged to continue to monitor call data including volumes, response types, and causes to assess fluctuations in calls (both short-term and long-term). This will assist the Fire Chief in ensuring that the department is prepared and responding appropriately to the increase in emergency calls.

The fire department does not do many EMS calls as there is an Emergency Medical Services (EMS) base located at 351 Frances Street in Strathroy, with additional response coming from 22494 Komoka Road in the community of Komoka, and 147 McKellar Street in the community of Glencoe, as required.

4.2.3 Response Reliability

Another factor in determining the ability of the fire department to respond to calls is the reliability of the volunteers to respond to each and every call. As with volunteer fire services, firefighters are doing their day-to-day tasks when a call comes in. They must respond to the station, put their gear on, and respond to the call. The time between when they are paged and when the first truck leaves the station is call the Turnout Time. The stations are having varying degrees of success in meeting turn out time standards.

Mount Brydges (Station #2) is doing well with an 80th percentile turnout time of 5:38 (min:sec). The Strathroy station (Station #1) with the highest call volume has an 80th percentile of 7:15. Melbourne, (Station #3) being the most rural station, has an 80th percentile of 9:50.

Figure 4g: 2020 Turnout Times

Note: Data from 2019 and 2018 can be found in Section 9.

If Strathroy is to target the Suburban response standard of 10 firefighters within 10 minutes 80th percentile, it will need to bring down the turnout times for calls.

There are four options to address the firefighter reliability and turnout time.

4.2.3.1 Hiring Full-time Firefighters

As noted in the community comparison (Section 3) three of the ten communities with populations in the 20,000 range have hired full-time firefighters. This ranges from

staffing 1 truck Monday to Friday 0700-1700 hrs (7:00 am to 5:00 pm) when volunteers are least available, to having full-time firefighters 24-hours a day.

To maintain the first apparatus was available with 4 firefighters Monday to Friday between 0700-1700 hrs it would require hiring 6 full-time firefighters. The approximate cost would be $800,000 to cover off these hours.

To staff the first truck 24 hours a day, 7 days a week would require 20 firefighters at a cost of approximately $2.5 million.

4.2.3.2 Utilize Headquarters Staffing

Some municipalities have hired into their headquarters staffing including Administrative, Fire Prevention and Training staff. These staff respond on the first truck Monday to Friday during office hours, when available. Examples of this include Niagara-on-the-Lake with a Fire Chief, two Deputy Chiefs, Fire Prevention Officer, Training Officer and Administrative Assistant who are all qualified firefighters. Similarly, Springwater also used their headquarters staff to respond to calls.

While the headquarters staff have other duties that may mean they are frequently unavailable, these departments can frequently have a first truck response and cancel the volunteers for non-fire calls.

Costs would be based on the position hired.

4.2.3.3 Increase Volunteer Complement

Other municipalities have increased their volunteer complement, specifically looking for persons who are able to respond Monday to Fridays. An example is King Township, which has 50 volunteer firefighters per station.

Additional costs are based on recruit training, ongoing training, and equipment for each firefighter. Each firefighter is equipped with approximately $3,000 in bunker gear, SCBA mask, radio, pager, etc. Recruit training costs about $5,000 in fees and salaries. Then ongoing costs would be dependant on the annual additional salaries for training and response.

4.2.3.4 On-Call Pay/ Stipend

Some municipalities provide a stipend or on-call pay for volunteers to be within 2 or 3 minutes of the station Monday to Friday day shifts. Firefighters sign up to an availability rotation making the commitment that they will be no more than 2-3 minutes from the station. Grimsby is an example of a community doing this. It is important to note that it

does require a depth of available firefighters to ensure that four volunteers are available every day.

Costs would be based on the level of the stipend paid. For example, a $50/day/firefighter ($200/day for four firefighters) for approximately 260 days a year is $52,000. Pay per call is additional.

Which Option?

With Strathroy being the busiest station, the priority should be given to reducing the turnout time and increasing the reliability at this station. While Melbourne has an extended turnout time, the station only responds to approximately 35 calls per year and has no room to accommodate additional firefighters or the required equipment.

In the short-term, it is recommended that SCFD create an additional 12 volunteer firefighter positions at Station #1. Consideration should also be given to increasing the number of firefighters at Stations 2 and 3 by up to 10 per station. Consideration will have to be given to the ability of the current stations to accommodate more firefighters.

The fire department should closely monitor the reliability and turnout times of the volunteers along with call volume and community growth to identify when it is appropriate to move to an alternative option to address the turnout times Monday to Friday during day shifts. Council should be prepared in the future for a recommendation from the Fire Chief to move to full-time staff.

4.2.4 Travel Times

The 80th percentile travel times reflect the geography and the density of the calls in the communities. Station #1, Strathroy has an 80th percentile travel time of 5:34 (mm:ss); Station #2, Mount Brydges of 8:46; and Station #3, Melbourne of 11:43. These times are in direct relation to the proximity of the calls to the stations.

Figure 4h: 2020 80th Percentile Travel Times

Note: Data from 2019 and 2018 can be found in Section 9.

4.3 Technical Rescue

One of the firefighter concerns was that there was not the capacity to undertake technical rescue such as confined space, high angle/rope rescue, ice/water rescue, trench rescue, and hazardous materials.

In each of these areas there are three levels of training: Awareness, Operations, and Technician.

The awareness level provides a high-level overview to the types of incidents allowing the firefighters to identify what types of incidents pose special risks and how to ensure general safety of the firefighters and public. This training can often be completed in a few hours and has little or no equipment requirements. At this level, once on scene, firefighters encourage the victim to self rescue or call for an agency that has the training and equipment to respond.

Operations level of training allows basic levels of rescue within defined perimeters and with the appropriate equipment/ PPE.

Technician levels of training allow for an enhanced level of rescue and task completion in the hazardous environment with the appropriate equipment/ PPE and back up support.

Each type of rescue has its own competencies, knowledge, and equipment requirements. There is a training, PPE, and equipment commitment with the associated financial commitment of the community that wishes to have a rescue team(s). Further, the rescue team must maintain their training/ competencies on a regular basis.

For these reasons, many fire departments create agreements through a county/ regional shared resource program or with a larger department that has the capabilities to provide these services.

In the last 3 years (2018-2020) there have not been any trench, confined space, high/low angle, ice or water rescue calls. The fire department responds to 4-8 calls that could potentially be considered hazardous materials, including fuel spills, etc. While there is always a low possibility of an incident occurring, it would be prudent to maintain the awareness level of training on each of the risks. As the firefighters already undergo significant training for SCBAs, increasing the training for operations level confined space would be reasonable to examine.

In some jurisdictions, fire departments will form an agreement with a fire department or private contractor that has the ability to respond to those very low frequency/ high risk events that require specialty training/ equipment. For example, in Simcoe County, the municipalities in the county have a response agreement with the City of Barrie to respond to HazMat calls, rope rescue, and trench rescue calls.

In a major scenario (e.g., train derailment or building collapse), the municipality can call upon the Provincial Emergency Operations Centre for assistance from a CBRNE (chemical, biological, radiological, nuclear, explosives) team or HUSAR (heavy urban search and rescue) team.

The Fire Chief, in association with the fire chiefs in the county, should review the technical rescue capabilities and assess various options to address the risks with shared resources or aid agreements.

To mitigate some of the risks, the municipality should consider a by-law requiring companies, including farms, that are working in hazardous areas to provide their own rescue standby team trained to the NFPA standards. For example, some municipalities require companies working at heights on a water tower to have a high-level rope rescue

standby team trained to the technician level onsite during the work. The same applies to industry or farms where workers may be required to enter a confined space.

Recommendation(s)

Rec. #	Recommendation	Estimated Costs	Suggested Timeline
12	Increase the volunteer firefighter complement at the Station #1 from 24 firefighters including captains, to 36 firefighters including captains. Firefighter reliability and turnout times to be monitored closely for all stations and increased accordingly.	Recruit training costs $40-60,000 Equipment costs $36,000 Additional salary costs based on call volume	Short-term (1-3 years)
13	To mitigate risks, the municipality should consider a by-law requiring companies, including farms, that are working in hazardous areas to provide their own rescue standby team trained to the NFPA standards. To include High Angle and Confined Space environments.	Staff time	Short-term (1-3 years)

SECTION 5: FACILITIES, VEHICLES, AND EQUIPMENT

5.1 FIRE STATION REVIEW
5.2 APPARATUS AND EQUIPMENT
5.3 FIRE APPARATUS – NEW AND REPLACEMENT SCHEDULES

Section 5: Facilities, Vehicles, and Equipment

5.1 Fire Station Review

The SCFD operates from 3 stations – Station #1 is located at 23 Zimmerman Street North, in the Town of Strathroy; Station #2 is located at 688 Bowen Street, in the Village of Mount Brydges; Station #3 is located at 21912 Melbourne Road in the Village of Melbourne.

Note: A fire station location study is being completed by WSP and EM&T under a separate cover.

5.1.1 Station #1

Station #1 is a 6-bay station with offices located on the first floor and an Association Room and storage on the second floor. The original date of construction is unknown, however, when the fire department moved in on November 27, 1975 it had been used as a manufacturing plant for truck bodies.

The station has undergone three expansions and renovations since that time. The station has served the community well but has many limitations for its ability to serve as a fire station in the future. A review by the Office of the Fire Marshal of the Fire Department in 1990 recommended that a new fire station replace the current building.

The station has three bay doors at the front, two of which are drive-through. There is an additional short bay on the side of the station.

This station houses an Engine, Tanker, Aerial Truck, Rescue Truck, and Rehab Trailer, as well as a Service Truck (used to transport equipment as well as for Fire Prevention).

The station serves as the headquarters with a reception area and offices for the Fire Chief, Deputy Chief/ District Chief (shared) and Fire Prevention. A training room was added to the back of the station on the main floor.

The station is served by an emergency generator, but it only provides power for a portion of the building; there are three separate electrical panels due to the renovations that occurred at different times.

The building lacks a proper heating, ventilation, and air conditioning (HVAC) system which becomes challenging in the offices in the winter and summer seasons.

Much of the station has cladding over frame which has the potential to conceal any structural issues.

The garage doors at the station lack safety devices to prevent them from closing on a person or vehicle.

The station had an oil separator built into the floor drains but there have been concerns that it may not be working properly.

Photo below: The fire department moved to this location as a temporary measure in 1975 as the town hall required the space that was previously allocated to the fire station.

The firefighters' bunker gear is stored on the apparatus floor, which exposes the gear to diesel exhaust and other contaminates, eventually degrading the efficiency of the equipment and reducing life span. The storage of the bunker gear in this manner also exposes the general area to contaminants obtained from fire responses and other types of calls. Even the bunker gear driers are located on the apparatus floor.

New station design incorporates a room that is properly ventilated whereby bunker gear can be laundered, dried and returned to service, as well as a separate room for the bunker gear racks, hanging of the gear for the firefighters' easy access for calls, and limiting the exposure of toxic fumes to the other areas of the fire station.

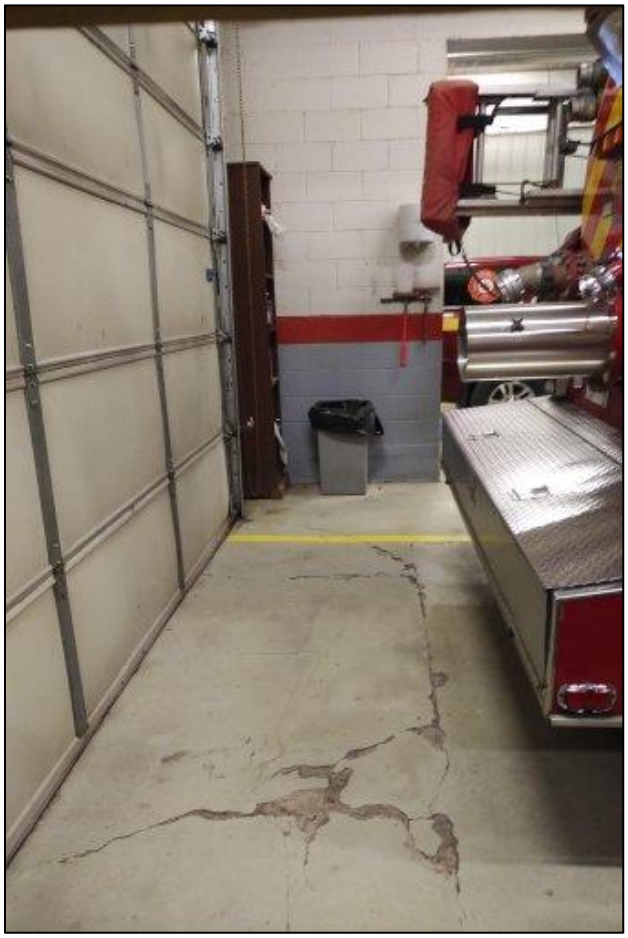
Further, the doors into the office area from the apparatus floor are not airtight, allowing for the potential of toxic fumes from the bunker gear, apparatus, and equipment to seep into the office area.

The administration area has one unisex washroom, that does not appear to meet the requirements for disability access. The apparatus floor has both a male and female washroom and a unisex shower but lacks locker/ change rooms, which are important so that firefighters do not wear contaminated clothing home.

The electrical outlets on the apparatus floor and an electrical panel need to be upgraded to be GFCI (ground-fault circuit interrupter) compliant and protected from the possible spray of water while the apparatus and equipment is being cleaned.

The flooring in the radio room and washrooms need structural review as they are not solid and have movement when walked on.

The garage doors do not fit tightly to the wall and are not insulated. This results in cold air and snow blowing in through the gaps.



While there is a small maintenance room with tools to repair equipment, the station lacks a proper area to clean and disinfect SCBA face masks, SCBAs, medical equipment, etc. This should be a sealed room from the apparatus floor with proper sinks to clean the equipment and area to air dry. Further, it is far too small for current needs.

There appears to be cracks in the block walls and the apparatus floor. It is therefore recommended that a structural engineering assessment of the building take place if the building is to be retained by the Municipality.

There is significant cracking and breaking up of the poured concrete floor in the apparatus bays that required professional examination and repairs. It was reported that this floor has been repaired at least three times previously.

Overall, the building is reaching an age where replacement should be considered.

It is recommended that the Municipality invest in a new fire station that is designed to meet the growing needs of the fire service for the next 50-70 years.

Considerations for a new station, which are not part of the current station, should include:

- Adequate space in the garage bays with drive-through access.
- Appropriately sized garage doors for larger vehicles.
- Electrical system designed to eliminate the use of extension cords for long-term use.
- Office space for the Fire Chief, Deputy Chief, District Chief, Fire Prevention, and Training Officer, and room for expansion.
- Training room that can accommodate all the firefighters in the station.
- Fitness room.
- Bunker gear stored in a self-contained room with appropriate ventilation.
- Proper unisex washrooms and locker rooms.
- Adequate number of unisex showers that allow multiple firefighters to decontaminate before going home.
- Storage rooms.
- Kitchen/ lunchroom.
- Emergency generator that can run all electrical needs within the station.

Further, any new station should be built to accommodate the potential of full-time firefighters at the station.

In constructing a new fire station, there are other opportunities to incorporate needed city facilities including a properly designed Emergency Operations Centre, a purpose designed larger dispatch centre for the SCPS (which also dispatches all the fire departments in the county), training and fitness facilities that could be shared with the police, and even secure a parking facility shared with the police.

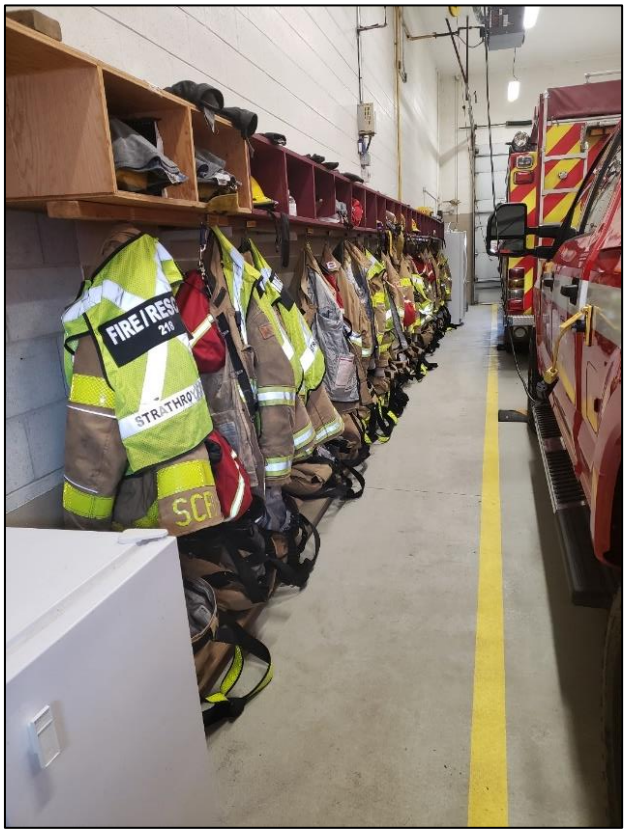
If the decision is made not to replace the station, it is critical to conduct an engineering review of the station including an in-depth structural assessment, electrical assessment, asbestos/ hazardous materials assessment, environmental assessment (floor drains), HVAC assessment, fire code assessment, roofing assessment, and plumbing assessment. EM&T's analysis was derived from a visual perspective only; no engineering review was performed on the buildings.

EM&T estimates the costs for the assessments to be up to $75,000. The value of the work required would be determined by the assessment.

5.1.2 Station #2

Station #2 is a two-bay, single length garage structure located in Mount Brydges, built in approximately 1994.

This station is home to an Engine, Tanker, and Service pick-up truck which is designed to carry crew and equipment. Although the length of the bays comfortably hold an apparatus and a pick-up truck, they would not be adequate to hold a third larger apparatus.



The station does not have shower facilities for the firefighters. Reducing the risk to firefighters and their families, proper showers are recommended for use following calls to decontaminate from pollutes such as blood, smoke, and chemicals.

The station has a training room but lacks a fitness room.

Firefighter bunker gear is stored on the apparatus floor exposing it to diesel fume contamination. It is recommended that bunker gear be stored in a separate ventilated room.

For the apparatus to enter the drive-through bays from the rear, they must travel over private property owned by the Royal Canadian Legion. The

Municipality should confirm a right of way is in place to guarantee fire department access.

It is recommended that an addition be added to the station to include a proper office, training room, and bunker gear storage.

5.1.3 Station #3

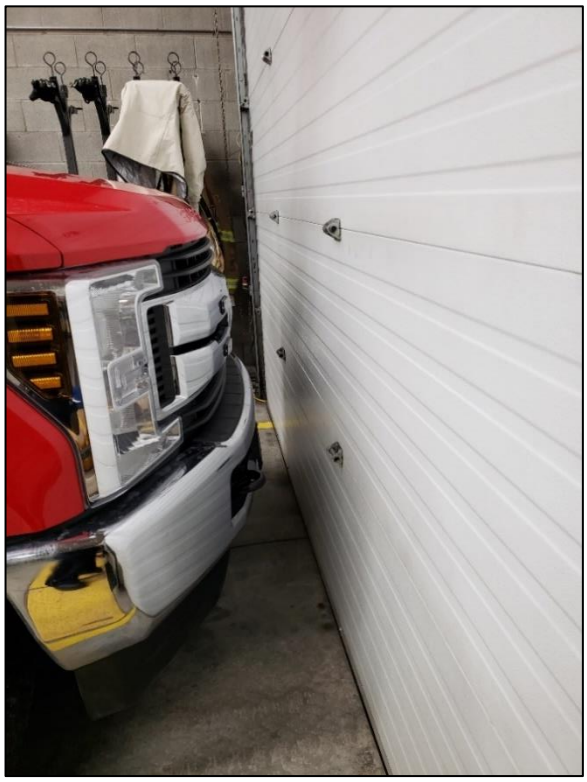
Station #3 is a block, non-combustible, steel clad, two-bay (1 ½ length) building constructed in 1997. One bay is a drive-through.

The station has a pumper, small tanker, and a service truck (pick-up) for transporting firefighters and equipment.

The building is on a very small lot close to the roadway with no parking for the firefighters responding to the station.

Due to the proximity to the road, the apparatus cannot sit on the apron for vehicle checks, washing, loading hose, etc. without blocking the sidewalk and encroaching on the roadway. Apparatus washing is done with the truck half in the station and half out.

The station has a training room and an office. There are both male and female washrooms, both equipped with showers.



Although the station has municipal water, there is no municipal sewer. A holding tank holds wastewater and must be pumped out monthly.

The lot is so small that a fuel tank for the station is located partially on the neighbouring lot.

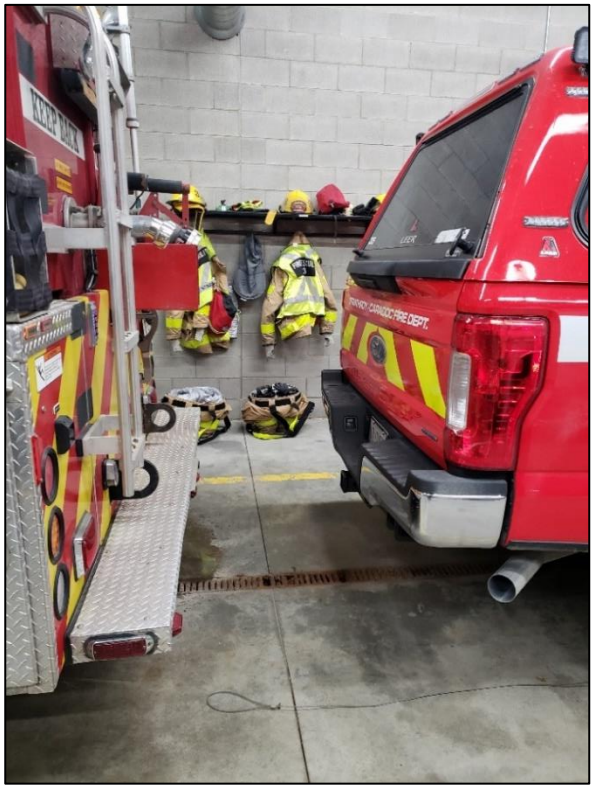
Having 1½ length bays creates a very tight situation in the bay where the pickup truck is kept, creating a potential crush point. Further, there is no room to do vehicle checks around the apparatus and the service truck unless the garage doors are open.

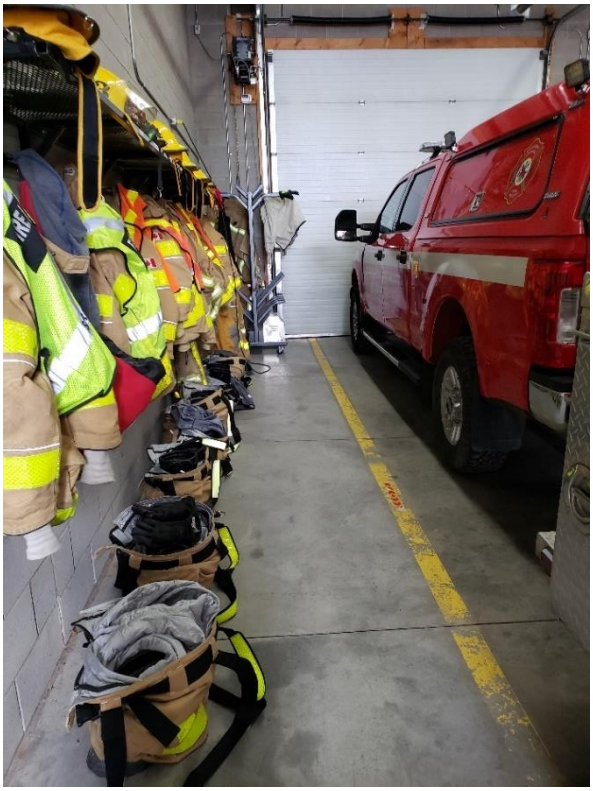
Should the department wish to move to a larger pumper/tanker as is commonly occurring to provide additional water and pumping capabilities at rural fires, there is not adequate space.

With such proximity between the garage doors at the front of each vehicle and the limited space between them, there is no opportunity for error and proper backup protocol with a guide is mandatory.

Further, the bunker gear is stored on the apparatus floor.

This station does not have an emergency generator. In the event of a power failure lasting more than a couple hours, many in the community may need to find a location of refuge and often first turn to the fire station. This includes people who have illnesses that may require electrical equipment such as IV pumps, oxygen concentrators, electric wheelchairs, and other medical equipment, as well as heat in the winter and air conditioning in the summer.





The floor grates are in poor condition and should be replaced.

While this station needs a renovation to provide added space, the lot is too small to do so.

For further discussion on all of the stations please refer to the Station Location Study that is being completed under a separate cover.

5.2 Apparatus and Equipment

The SCFD is equipped with engines, tankers, aerial truck, and support vehicles required for primary response to calls within the Municipality. As vehicles near replacement age, they are identified in the Department's capital replacement plan.

Based on the age and size of Station #1 in Strathroy, there is a challenge with acquiring replacements as standard new apparatus cannot fit in the station. Vehicles at Station #2 are newer and the floorspace is more accommodating to the size of newer units. Table 5a details the SCFD Apparatus Fleet.

Table 5a: SCFD Apparatus Fleet

Unit	Year	Make	Station
Engine 11	2013	Dependable	1
Tanker 14	2001	S&S	1
Truck 17 (aerial)	2015	Rosenbauer	1
Rescue 16	1992	E-One	1
Service 15	2010	Silverado	1
Car 1	2019	Tahoe	1
Engine 21	2020	Dependable	2
Tanker 24	2016	Rosenbauer	2
Service 25	2019	F250	2
Engine 31	2009	Rosenbauer	3
Tanker 34	2013	Dependable	3
Service 35	2019	F250	3

Note: *The vehicles shaded in ORANGE is past the recommended replacement cycle and should be a priority for replacement. The vehicle shaded in YELLOW should be in the planning stages for replacement.*

Based on the apparatus fleet and the recommendations as described next in both FUS and NFPA replacement recommendations, there needs to be consideration in the near future to replacing the aging unit Tanker 1.

Rescue 16 has reached a 29-year life span and should be in the planning forecast to be replaced in 2022.

Tanker 14 is a 20-year-old tanker that has reached its recommended maximum life span as a front run apparatus. It should be replaced in the short-term (1-3 years)

5.3 Fire Apparatus – New and Replacement Schedule

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

5.3.1 FUS – Vehicle Replacement Recommendations

When assessing a fire department's ability to respond and meet the needs of the community, the FUS considers the age of a fire truck as one of its guidelines. The FUS recommendations are discussed later in Section 7 regarding capital budgeting.

The Small Communities and Rural Centres section (outlined in blue) is the recommendation for vehicle replacement for a municipality the size of Strathroy-Caradoc. This allows for up to a 20-year replacement cycle, in which the fire vehicle can be utilized as First Line response status. It is, however, recommended that all First Line units be replaced by a new or younger unit when it reaches 20 years of age at which time it may serve as a *reserve* unit.

Table 5b: FUS Vehicle Replacement Recommendations

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

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

FUS definition of 1st line, 2nd line and Reserve is:

- ***1st line is the first fire truck utilized for response at the fire station***
- ***2nd line is the next truck to be used if the 1st line unit is tied up at a call, and***
- ***Reserve is the vehicle kept in the fleet to be put into service if a 1st line or 2nd line vehicle is out of service.***

The FUS rating is reviewed by insurance companies. Provided that the Fire Department adheres to the recommended replacement timelines through an approved capital replacement schedule, the Department will retain its fire rating for vehicle replacement. By working towards a standard replacement schedule for aging vehicles, Strathroy-Caradoc can demonstrate due diligence towards ensuring a dependable response fleet for the Fire Department and the community it serves.

FUS standards do not apply to trucks whose sole purpose is rescue. If the truck is a Pumper/Rescue used in suppression, then the FUS standards are applicable.

5.3.2 NFPA – Vehicle Replacement Recommendations

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

For fire departments that are considering refurbishing their vehicles to extend the in-service life, reference can be made to NFPA 1912, *Standard for Apparatus Refurbishing*.

It should be noted that although the FUS do take refurbishment of vehicles into consideration, no credit rating is assigned to vehicles over 30 years of age.

During the station and equipment review, it was noted that the vehicles and small engines (pumps, generators, etc.) are on a standard replacement cycle and that maintenance and repair work is addressed as quickly as possible by Strathroy-Caradoc or other recommended facilities.

NFPA and FUS both recommend replacement of front-run units after 20 years. This same vehicle can then be put into a secondary role. As such, all front-run units should be scheduled for replacement at the 20-year stage with the back-up/ secondary units being replaced at 25 years. Once a pumper truck has passed the 25-year stage, no credit is given by FUS.

Light duty vehicles (service trucks) are commonly replaced at 7-15 years depending on the use and maintenance costs.

It is recommended that the Fire Chief begin a planning process to replace the aging Rescue 16 and Tanker 14 as per the FUS and NFPA recommendations of a 20-year life span.

The following photos show the usefulness of the service trucks. In addition to having a crew cab being able to transport firefighters, they are well equipped to transport equipment and supplies to an emergency.

Recommendation(s)

Rec. #	Recommendation	Estimated Costs	Suggested Timeline
14	Review the recommendations of the Station Location Study once it is available.	Staff time	Short-term (1-3 years)
15	Initiate budgeting for the replacement of Station #1 pending the station location study.	$6,000,000 to $8,000,000	Short-term (1-3 years)
16	Pending the outcome of the Station Location Study, build an addition on Station #2 to include: • proper unisex washrooms, showers, and locker rooms • bunker gear room with air exhaust/ filtration • office • locked storage	$300,000 – $500,000	Mid-term (3-5 years)
17	Replace Rescue 16.	$350,000- $500,000	Short-term (1-3 years)
18	Replace Tanker 14.	$400,000- $600,000	Short-term (1-3 years)

SECTION 6: RISK ASSESSMENT & EMERGENCY MANAGEMENT

6.1 MUNICIPAL RESPONSIBILITIES
6.2 COMMUNITY RISK ASSESSMENT – CURRENT AND FUTURE NEEDS
6.3 INTEGRATED RISK MANAGEMENT APPROACH
6.4 EMERGENCY MANAGEMENT PROGRAM

Section 6: Risk Assessment & Emergency Management

The most effective ways to reduce injuries, death, and property damage due to fire are through public education, inspections, and enforcement. The Fire Prevention Program addresses these key components of fire safety which starts with conducting a Community Risk Assessment (CRA).

6.1 Municipal Responsibilities

It is Council that sets the level of service within the community. The *Fire Protection and Prevention Act*, 1997, S.O. 1997, c. 4, outlines the responsibilities of a municipality, providing a framework for protecting citizens from fire:

2. (1) *Every municipality shall,*

> *(a) Establish a program in the municipality which must include public education with respect to fire safety and certain components of fire prevention; and*
> *(b) Provide such other fire protection services as it determines may be necessary in accordance with its needs and circumstances.*[5]

Further, the *Act* provides a description for the methods of providing services.

Methods of Providing Services

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

(a) Appoint a community fire safety officer or a community fire safety team; or
(b) establish a Fire Department.

Strathroy-Caradoc has established a fire department as outlined in Section 2.2(b) of the *Fire Protection and Prevention Act*, 1997, S.O. 1997, c. 4. The level of service that must thereby be provided is further outlined in Section 2.1(b) of the *Act*. The level of service to be provided is determined by the needs and circumstances of the community and can be derived from conducting a MFP for Council. The ‘needs’ can be defined by the type of buildings, infrastructure, and demographics of the local area which in turn can be extrapolated into the types of services that would be offered and needed. The ‘circumstances’ are considered the ability to afford the level of service to be provided.

Together, the needs and circumstances assist in identifying a level of service for the community. This combination meets the expectations of the public for safety and the affordability of this level provided. Strathroy-Caradoc is forecast to experience growth,

[5] https://www.ontario.ca/laws/statute/97f04

which is leading to an infill within the communities. While most of this growth is residential in design, it may also bring commercial and industrial prospects. This increase impacts the service delivery of the Fire Department, increasing the need for service along with the population.

To date, SCFD has been able to effectively keep the up with the call volumes, however, there is concern that future challenges in meeting reasonable response times could occur as call volumes increase. This poses a possible risk to the community and, as such, the Fire Chief will need to monitor response times including how often a full response component was not amassed. This type of information can be utilized to identify any future needs and/ or considerations for the incorporation of a partial full-time response component.

6.2 Community Risk Assessment – Current & Future Needs

During this MFP review, a new Ontario Regulation through the *Fire Protection and Prevention Act* came into force requiring all communities to conduct a CRA every five years and update it annually.

Ontario Regulation 378/18 states the following requirement in relation to conducting a CRA:

*"**Mandatory use***

1. *Every municipality, and every fire department in a territory without municipal organization, must,*

(a) complete and review a community risk assessment as provided by this Regulation; and

(b) use its community risk assessment to inform decisions about the provision of fire protection services.

What it is

2. *(1) A community risk assessment is a process of identifying, analyzing, evaluating and prioritizing risks to public safety to inform decisions about the provision of fire protection services.*

(2) A community risk assessment must include consideration of the mandatory profiles listed in Schedule 1. (NOTE: see appendix "F" of this MFP for OFMEM related Guideline)

(3) A community risk assessment must be in the form, if any, that the Fire Marshal provides or approves. (NOTE: see appendix "F" of this MFP for OFMEM related Guideline)

When to complete (at least every five years)

***3.** (1) The municipality or fire department must complete a community risk assessment no later than five years after the day its previous community risk assessment was completed.*

(2) If a municipality, or a fire department in a territory without municipal organization, comes into existence, the municipality or fire department must complete a community risk assessment no later than two years after the day it comes into existence.

(3) A municipality that exists on July 1, 2019, or a fire department in a territory without municipal organization that exists on July 1, 2019, must complete a community risk assessment no later than July 1, 2024.

(4) Subsection (3) and this subsection are revoked on July 1, 2025.

When to review (at least every year)

***4.** (1) The municipality or fire department must complete a review of its community risk assessment no later than 12 months after,*

(a) the day its community risk assessment was completed; and

(b) the day its previous review was completed.

(2) The municipality or fire department must also review its community risk assessment whenever necessary.

(3) The municipality or fire department must revise its community risk assessment if it is necessary to reflect,

(a) any significant changes in the mandatory profiles;

(b) any other significant matters arising from the review.

(4) The municipality or fire department does not have to review its community risk assessment if it expects to complete a new community risk assessment on or before the day it would complete the review."

Along with the newly published CRA document, the NFPA 1730 Standard on *Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations*, also identifies that this type of review should be conducted at a minimum every five (5) years or after significant change. This standard also establishes a process to identify and analyze community fire risks.

There are seven (7) components of a CRA outlined in NFPA 1730. These components are:

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

The CRA is a very time intensive document, however, EM&T has completed the initial CRA for Strathroy-Caradoc. The CRA is presented in a separate stand-alone document and will need to be maintained annually.

6.2.1 Current Condition

The projected growth expected for the community will impact the demographic profile and, consequently, the needs and circumstances for the delivery of services by the Fire Department. All risks within the community need to be identified and evaluated by a team that is also tasked with the upkeep of the Municipality's Emergency Management Plan.

Vulnerable occupancies such as the elderly and people with physical and cognitive challenges need to be identified, along with railway crossings, major highways and industries that could create a hazardous environmental response.

At the moment there is not a dedicated FPO conducting all of the legislated requirements for a community the size of Strathroy-Caradoc. This has created a situation in which the FPO has had to focus on the minimum inspection requirement set out by the *Fire Protection and Prevention Act*, which are inspections on complaint and request, along with inspecting vulnerable occupancies. To increase and improve upon

[6] https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=1730

the number of inspections, utilizing trained firefighters would help to alleviate some of the pressure on the present FPO.

6.2.2 Future Needs

Understanding the community and its needs allows the Fire Chief and staff to be proactive with education and enforcement programs to the community. When fires occur within the community, the firefighters can be ready to battle the fires because they are trained, not only in the basics of firefighting, but in understanding any unique and/or special hazards that are found within the community. These hazards must be identified in a risk assessment so the Fire Chief can ensure preventative and mitigative programs are in place. As the community grows, the frequency of and the need for service will grow.

According to the new provincial legislation and continued growth within the Strathroy-Caradoc, there will be an ongoing need for additional staff time spent in fire prevention and public education activities. These activities are not just related to public education; there should also be emphasis placed on assessing building stock within the community to identify types and number of hazards that may exist and doing preplanning for emergencies that may occur.

6.3 Integrated Risk Management Approach

The Integrated Risk Management (IRM) approach, that was introduced by the OFMEM. It reviews all facets of the fire service that is meant to combine a review of building stock, fire safety and prevention issues to be addressed, ability to respond to emergencies effectively and efficiently, and how well equipped and trained the firefighters are to deal with emergencies within the community.

Conducting a review of every building (as recommended by the IRM) within the Municipality of Strathroy-Caradoc may not be practical at this time; however, utilizing NFPA 1730 and 1300 definitions of risk categories may help to guide the Fire Chief and Council in deciding the focus and service level within the community. Council should determine (with input from the Fire Chief) an acceptable level of risk to manage within the community based on its needs and balanced with the circumstances to deliver the services.

NFPA 1730 and 1300 defines the risks in three categories and provides examples for each. These risk categories are:

- High-Risk Occupancy – An occupancy that has a history of high frequency of fires, or high potential for loss of life or economic loss. Alternatively, an occupancy that has a low or moderate history of fire or loss of life, but the

occupants have an increased dependency in the built-in fire protection features or staff to assist in evacuation during a fire or other emergency.
    - Examples: apartment buildings, hotels, dormitories, lodging and rooming, assembly, childcare, detention, educational, and health care.

- Moderate-Risk Occupancy – An occupancy that has a history of moderate frequency of fires or a moderate potential for loss of life or economic loss.
    - Examples: ambulatory health care, and industrial.

- Low-Risk – An occupancy that has a history of low frequency of fires and minimal potential for loss of life or economic loss.
    - Examples: storage, mercantile, and business.

6.3.1 Current Condition

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

To help support this proactive initiative, SCFD should make note of and keep track of the following building stock within the Municipality to ensure that they are meeting the inspection recommendations outlined in the FUS chart below, or at the very least using these guidelines as a benchmark to aim for.

Table 3a: FUS Inspection Frequency Chart

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

The FUS Suggested Inspection Frequency Chart is highly aggressive and being able to provide inspection frequencies at the noted levels may be difficult to achieve. As a benchmark, however, the FUS chart provides an optimal set of goals for SCFD to strive

for. Priority should be given to Vulnerable Occupancies, institutional facilities, hotels/ motels, multi-family dwellings (including basement apartments), and assemblies.

Utilizing the IRM approach in conjunction with the guidance from NFPA 1730 and 1300 standards will provide an overall picture of the resources, time, and tools required to keep the fire risks in the community to a manageable level (as defined by Council). The NFPA 1730 Standard also outlines a process in Appendix C of the standard to assist council in setting the level of fire prevention service within the community based on the local needs and circumstances.

It is recommended that the Fire Chief review Strathroy-Caradoc's inspection program to identify levels of desired frequency in relation to the inspections noted in the FUS Chart (Table 3a). The FUS strongly recommends that a level of frequency be identified by the Fire Service in its quest towards ensuring a fire-safe community. The SCFD may not be able to meet the FUS recommendations, but a set of goals and expectations should be outlined to identify staffing hours required to achieve these goals and expectations.

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

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

6.4 Emergency Management Program

In this section, EM&T conducted a review of Strathroy-Caradoc's Emergency Management Program, including existing training for Strathroy-Caradoc employees and response planning. As mandated by the *Emergency Management and Civil Protection Act* (EMCPA), all municipalities in Ontario must have an emergency response plan and an emergency planning program. For every community in Ontario, there must also be an identified Community Emergency Management Coordinator (CEMC). Within Strathroy Caradoc, this role is fulfilled by the Fire Chief and the Alternate CEMC is the Police Chief.

Based on interviews with the Fire Chief, it would appear that the Municipality's Emergency Response Plan complies with all required legislation and that annual training exercises are conducted to ensure that the Emergency Plan is reviewed and practiced annually.

The primary Emergency Operations Centre (EOC) is located at the Strathroy-Caradoc Municipal Offices at 52 Frank Street, Strathroy in multi-purpose spaces that can be set up, as needed, by the EOC group.

Based on a review of the EOC facilities and the program in place, Municipality appears to be meeting the minimum requirements for an EOC location and the emergency management program.

If a new fire station is being constructed, it would be a good opportunity to include a purpose-built emergency operations centre that could have a secondary use as a training room.

Recommendation(s)

Rec. #	Recommendation	Estimated Costs	Suggested Timeline
19	The Fire Chief and Fire Prevention Officer to review Strathroy-Caradoc's inspection program to identify levels of desired frequency in relation to the inspections noted in the FUS Chart.	Staff time	Short-term (1-3 years) and ongoing

SECTION 7: FINANCE, BUDGETING, AND CAPITAL INVESTMENT PLAN

7.1 OPERATING & CAPITAL BUDGETS

7.2 OVERVIEW OF RECOMMENDATIONS COSTING

Section 7: Finance, Budgeting, and Capital Investment Plan

7.1 Operating and Capital Budgets

Through the review, EM&T concluded that the Fire Chief presents a very thorough annual budget report to Council for consideration and approval. The SCFD has an annual operating budget that appears to offer the Fire Chief the funds required to manage and support the Department's staff, facilities, and equipment in an effective manner.

SCFD's capital forecast fluctuates annually based on the equipment that has been identified for replacement each year.

During the review of the budget process, it was found that SCFD appears to be well set up in both the operating and capital budgets (to meet the general needs of the Department). This would also indicate an adequate level of support by Council and the Municipality's senior management team in relation to assisting the Fire Department in meeting its service goals.

When reviewing this section, one of the key areas that EM&T looks for is whether actual operating expenditures are identified and tracked by the Department. During the review of the operating budget, it was noted that all key accounts and operating sections are identified, such as:

Operating Budget Line Items:

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

Capital Budget Line Items:

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

7.1.1 Operating Budget

A review of the operating budget for SCFD shows that all general expenses and related revenues are accounted for.

7.1.2 Capital Forecasts

The fire department should endeavour to maintain a 20-year replacement cycle for apparatus. Many departments are now including, with the purchase of the apparatus, the key equipment on the truck. This helps keep the life cycle of the equipment, such as hose, extrication equipment, ladders, porta tanks, and small pumps in line with the trucks and simplifies purchasing when it is done as a package.

While the FUS/NFPA recommendations apply to firefighting vehicles (engines, aerials, tankers) they are commonly used for front line rescue trucks as well. The 29-year-old Rescue Truck would certainly be at the point of replacement.

For other support vehicles such as pick-up trucks or administration vehicles, there is no FUS or NFPA recommended standard for replacement schedules. Most communities include these support vehicle replacements on the same cycle as the municipality's other vehicles. Others will rotate light duty fire service vehicles to other municipal departments after 7 or 10 years where reliability is not as crucial.

Based on the review by EM&T, it would appear that the Fire Chief and his staff are working hard to ensure that equipment is being replaced and/or upgraded on a regular cycle and also on an as needed basis. The Fire Chief, Council and Municipal staff should be set aside capital funds to replace the Rescue Truck and Tanker in the short-term.

For building expenditures, Council should be setting aside capital funds to replace Station #1.

7.2 Overview of Recommendations Costing

Comments relating to staffing, fire stations, and new or updated equipment costs have been identified within each related section. High-level estimates are also noted with the recommendations in Section 8, Summary.

SECTION 8: SUMMARY

Section 8: Summary

8.1 Conclusion

During the review conducted by EM&T, it was demonstrated that the full-time staff and volunteer firefighters are truly dedicated to the community they serve. The Council, CAO, and Fire Chief are sincerely committed to ensuring the safety of the community and the firefighters. Based on the present staffing, equipment, and fire station locations, the Fire Department is endeavoring to offer the most efficient and effective service possible, however a lack of full-time staffing is hindering the fire service from being proactive. The highest priorities of this Master Fire Plan are the need to hire a full time Deputy Fire Chief and a full time Fire Prevention Officer.

All costs and associated timelines noted in this report are approximate estimates that can be implemented through prioritization between the Fire Chief, CAO, and Council.

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

8.2 Recommendations & Estimated Costs

The following chart provides a detailed overview of the recommendations found throughout this report along with any estimated costs and suggested timelines for implementation. This MFP document is a culmination of 19 recommendations.

Rec. #	Recommendation	Estimated Costs	Suggested Timeline
1	Review the E&R Bylaw annually by the Fire Chief to ensure currency and compliance.	Staff time	Short-term (1-3 years)
2	Ensure all SOGs are reviewed at least once every three years.	Staff time	Short-term (1-3 years)
3	SCFD work with SCPS to monitor adherence to NFPA 1221 Standard on Emergency Communications Services.	Staff time	Short-term (1-3 years)
4	SCFD use a cellphone app to track the firefighter availability and response to calls.	$15-20,000 inclusive of fees and reimbursement of data charges	Short-term (1-3 years)
5	Hire a full-time Fire Prevention Officer.	$70,000 plus benefits	Short-term (1-3 years)

Rec. #	Recommendation	Estimated Costs	Suggested Timeline
6	The Deputy Chief/Training Officer position should be moved to a full-time position with responsibility for training.	$90,000 plus benefits and vehicle	Short-term (1-3 years)
7	SCFD should enhance the training and certification of some of its volunteer firefighters in the areas of fire prevention and public education, trained and certified to at least NFPA 1031 – Fire Inspector I, and NFPA 1035 – Fire and Life Safety Educator I.	Staff time	Short-term (1-3 years)
8	SCFD work with developers and the public to make the Home Sprinkler Systems initiative a part of its fire prevention and public education program.	Staff time	Short-term (1-3 years)
9	SCFD review the physical expectations of a firefighter for use in training and recruiting. Review the 14 essential job tasks from NFPA 1582 as they pertain to their recruitment and testing process and seek options for offering personnel the ability to exercise and maintain fitness levels as explained in NFPA 1583.	Staff time	Short-term (1-3 years)
10	SCFD develop a more wholesome approach to their PTSD Prevention Plan which may include peer support, intervention approach, professional services, clinical assistance and what a return-to-work plan may look like for a SCFD volunteer firefighter.	Staff time	Short-term (1-3 years)
11	SCFD develop a more comprehensive cancer prevention program.	Staff time	Short-term (1-3 years)
12	Increase the volunteer firefighter complement at the Station #1 from 24 firefighters including captains, to 36 firefighters including captains.	Recruit training costs $60,000 Equipment costs $36,000	Short-term (1-3 years)

Rec. #	Recommendation	Estimated Costs	Suggested Timeline
	Firefighter reliability and turnout times to be monitored closely.	Additional salary costs based on call volume	
13	To mitigate risks, the municipality should consider a by-law requiring companies, including farms, that are working in hazardous areas to provide their own rescue standby team trained to the NFPA standards. To include High Angle and Confined Space environments.	Staff time	Short-term (1-3 years)
14	Review the recommendations of the Station Location Study once it is available.	Staff time	Short-term (1-3 years)
15	Initiate budgeting for the replacement of Station #1 pending the station location study.	$6,000,000 to $8,000,000	Short-term (1-3 years)
16	Pending the outcome of the Station Location Study, build an addition on Station #2 to include: • proper unisex washrooms, showers, and locker rooms • bunker gear room with air exhaust/ filtration • office • locked storage	$300,000 – $500,000	Mid-term (3-5 years)
17	Replace Rescue 16.	$350,000-$500,000	Short-term (1-3 years)
18	Replace Tanker 14.	$400,000-$600,000	Short-term (1-3 years)
19	The Fire Chief and Fire Prevention Officer to review Strathroy-Caradoc's inspection program to identify levels of desired frequency in relation to the inspections noted in the FUS Chart.	Staff time	Short-term (1-3 years) and ongoing

SECTION 9: APPENDICES

APPENDIX A – DEFINITIONS AND REFERENCES

APPENDIX B – FIVE-STEP STAFFING PROCESS

APPENDIX C – FUS TECHNICAL DOCUMENT ON ELEVATED DEVICES

APPENDIX D – COMMUNITY OUTREACH

APPENDIX E – HISTORICAL RESPONSE DATA

Section 9: Appendices

Appendix A – Definitions and References

Automatic Aid Agreements

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

a) a municipality agrees to ensure the provision of an initial response to fires, rescues and emergencies that may occur in a part of another municipality where a Fire Department in the municipality is capable of responding more quickly than any Fire Department situated in the other municipality; or

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

Commission on Fire Accreditation International - Community Definitions

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

National Fire Protection Association Documents

- National Fire Protection Association 1201 - Standard for Providing Fire and Emergency Services to the Public
- National Fire Protection Association 1500 – Standard on Fire Department Occupational Safety and Health Program, 2013 editions
- National Fire Protection Association 1710 – Standard for the Organization and Deployment of Fire Suppression Operations, Medical Operations, and Special Operations to the Public by Career Departments

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

Mutual Aid

a) Mutual aid plans allow a participating Fire Department to request assistance from a neighbouring Fire Department authorized to participate in a plan approved by the Fire Marshal.

b) Mutual aid is not immediately available for areas that receive fire protection under an agreement. The municipality purchasing fire protection is responsible for arranging an acceptable response for back-up fire protection services. In those cases where the emergency requirements exceed those available through the purchase agreement and the backup service provider, the mutual aid plan can be activated for the agreement area.

Appendix B – Five-Step Staffing Process

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

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

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

Step 2: Time Demand

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

- Local nuances
- Resources that affect personnel needs

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

Step 3: Required Personnel Hours

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

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

Step 4: Personnel Availability and Adjustment Factor

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

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

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

Step 5: Calculate Total Personnel Required

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

Correct calculations based on the following:

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

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

Appendix C – FUS Technical Document on Elevated Devices

Fire Underwriters Survey™

TECHNICAL BULLETIN

FIRE UNDERWRITERS SURVEY™

A Service to Insurers and Municipalities

LADDERS AND AERIALS: WHEN ARE THEY REQUIRED OR NEEDED?

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

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

Fire Underwriters Survey

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

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

Response areas with 5 buildings that are 3 stories or 10.7 metres (35 feet) or more in height, or districts that have a Basic Fire Flow greater than 15,000 LPM (3,300 IGPM), or any combination of these criteria, should have a ladder company. The height of all buildings in the community, including those protected by automatic sprinklers, is considered when determining the number of needed ladder companies.
When no individual response area/district alone needs a ladder company, at least one ladder company is needed if the sum of buildings in the fire protection area meets the above criteria."

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

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Eastern region 1-800-263-5361 optaintel.ca

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

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

NFPA

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

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

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

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

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

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

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

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

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

Excerpt: National Building Code 2012

A-3 Application of Part 3.

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

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

Firefighting Assumptions

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

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

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

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

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

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

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

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

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

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Appendix D - Community Outreach

During the many stakeholder meetings and the review of the many internal and external questionnaires, it was evident that more could be done to engage the community at large. The OFMEM is stressing the need for fire services to enhance their public education along with the number of fire inspections completed and the enforcement of violations.

It was also noted that SCFD has had many successes within its daily operations. It is these successes that should be celebrated in some form; for example, certificates, awards, recognition in front of Council or ensuring media are made aware of them so they may be shared with the citizens. These successes are not only with the Operations Division, but all Divisions, be it in the form of providing first aid instruction over the phone, use of an automated external defibrillator (AED) that saves a life, suggestions that saves expenses or the successful prosecution of significant fire safety violations.

The following are suggestions on engaging the community:

- Get business and/or community groups to sponsor fire safety coloring books for the children that highlight the growing ethnicities of the municipality. Engage art classes in the school system to design them.
- Establish an “Adopt a Fire Truck” program; a community group or business supports the department financially or services at no charge such as equipment for training in exchange for their business logo to be placed on the apparatus it adopted. This type of program would require limits to the number of sponsors per apparatus, parameters on the size of the logo, the minimum amount to be donated each year, etc.
- Attend community functions and celebrations. Permit a birthday party in the fire station for a fee which includes the cost of Department and cost of staff brought in to monitor the party if the station’s crew must leave for a call.
- During the summer attend a different park each week and invite the community to come out to meet the fire fighters. The community could tour the trucks, conduct games for children to win fire safety prizes, have face painting, etc. Many children would enjoy getting wet on a hot evening to cool off by way of a fire hose or water coming from an aerial.
- Work with the Water Department to establish an adopt a hydrant program which have been successful in many communities. Families would adopt the hydrant in front of their residence and their responsibility is to ensure it is clear of tall grass in the summer and snow in the winter. In return the family would receive a

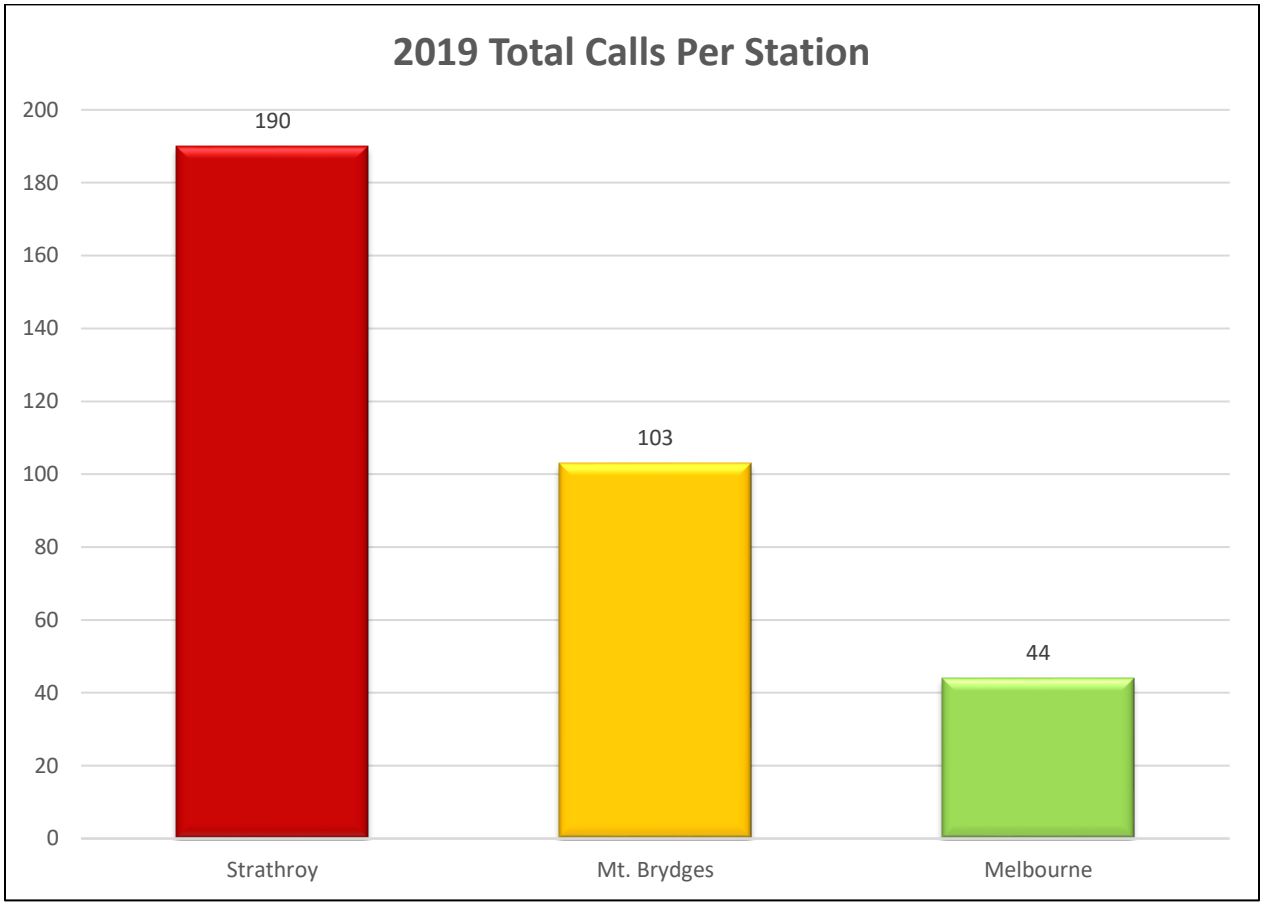
certificate and be permitted to paint the barrel of the hydrant in a manner that reflects a theme.

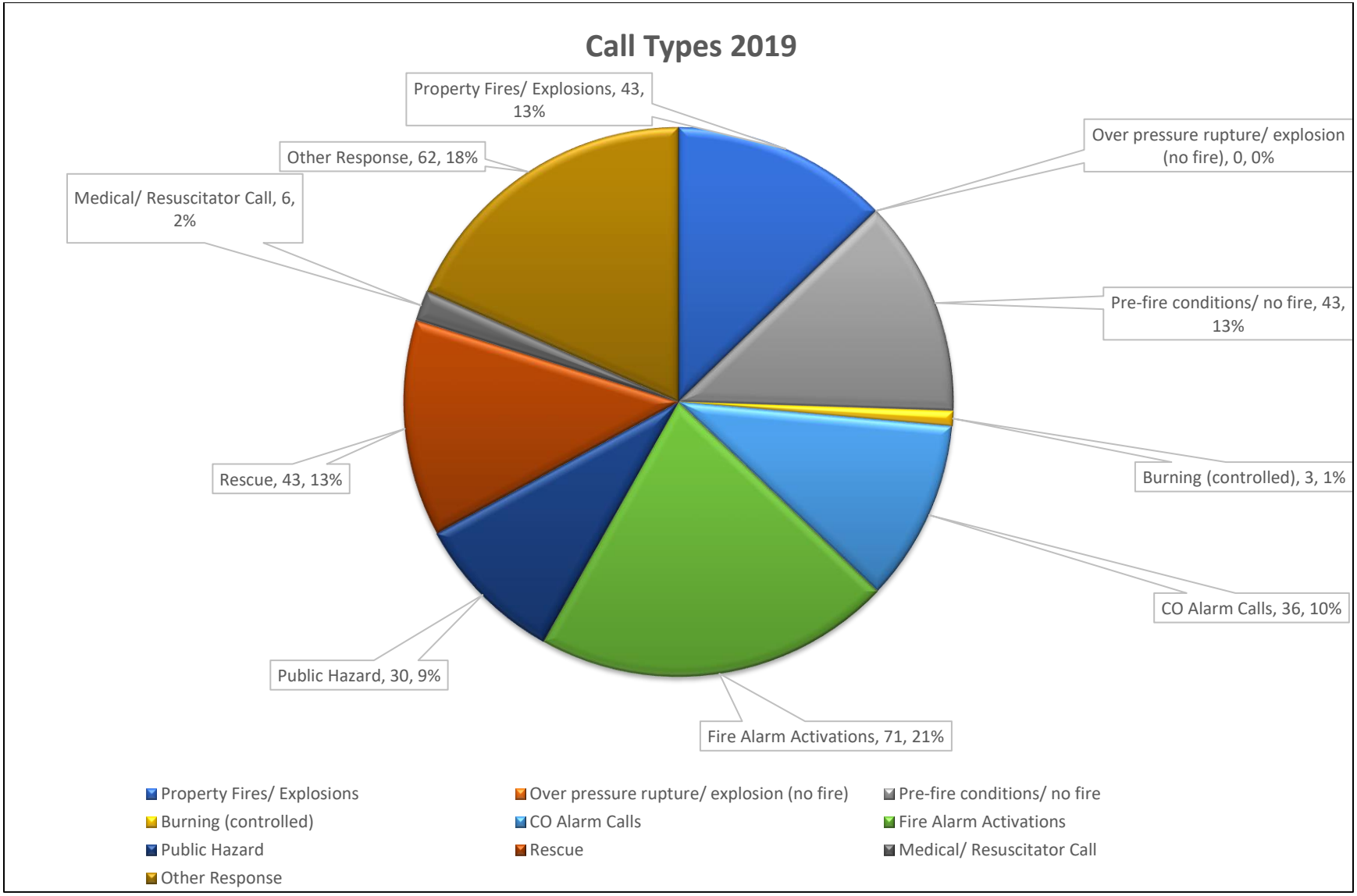
- The Department with support of community groups establish a junior fire fighter program.
- Invite high school students to complete community hours to assist the Fire Prevention Division at a public education function or community event.
- In conjunction with SCPS develop a "*Pull to the Right*" program to educate drivers on the need to pull to the right when they hear sirens. This could involve sponsorship from the local media.
- Send out questionnaires each month to a limited number of households that required the services of SCFD with questions regarding how their call was handled, having working smoke alarms, and their interactions with those that attended the call.
- SCFD develop an "*After the Fire*" booklet that would aid residents in understanding what the Department did to extinguish the fire such as breaching walls and ceilings, who they need to call such as insurance companies, and the process of establishing a claim, how to recover documents, etc. This too could be sponsored by local businesses and insurance companies.
- Everyone is familiar with Sparky the fire services mascot. What if SCFD had their own mascot to assist Sparky at community functions? Engage the schools to design one, have fashion design classes make its costume, have a community contest to name them and have businesses sponsor the new member to the Department.
- Contact some of the ethnic or neighbourhood organizations to participate in any festival/celebrations they may have. The Board of Trade may have a list of these or City Hall as some may require a permit.

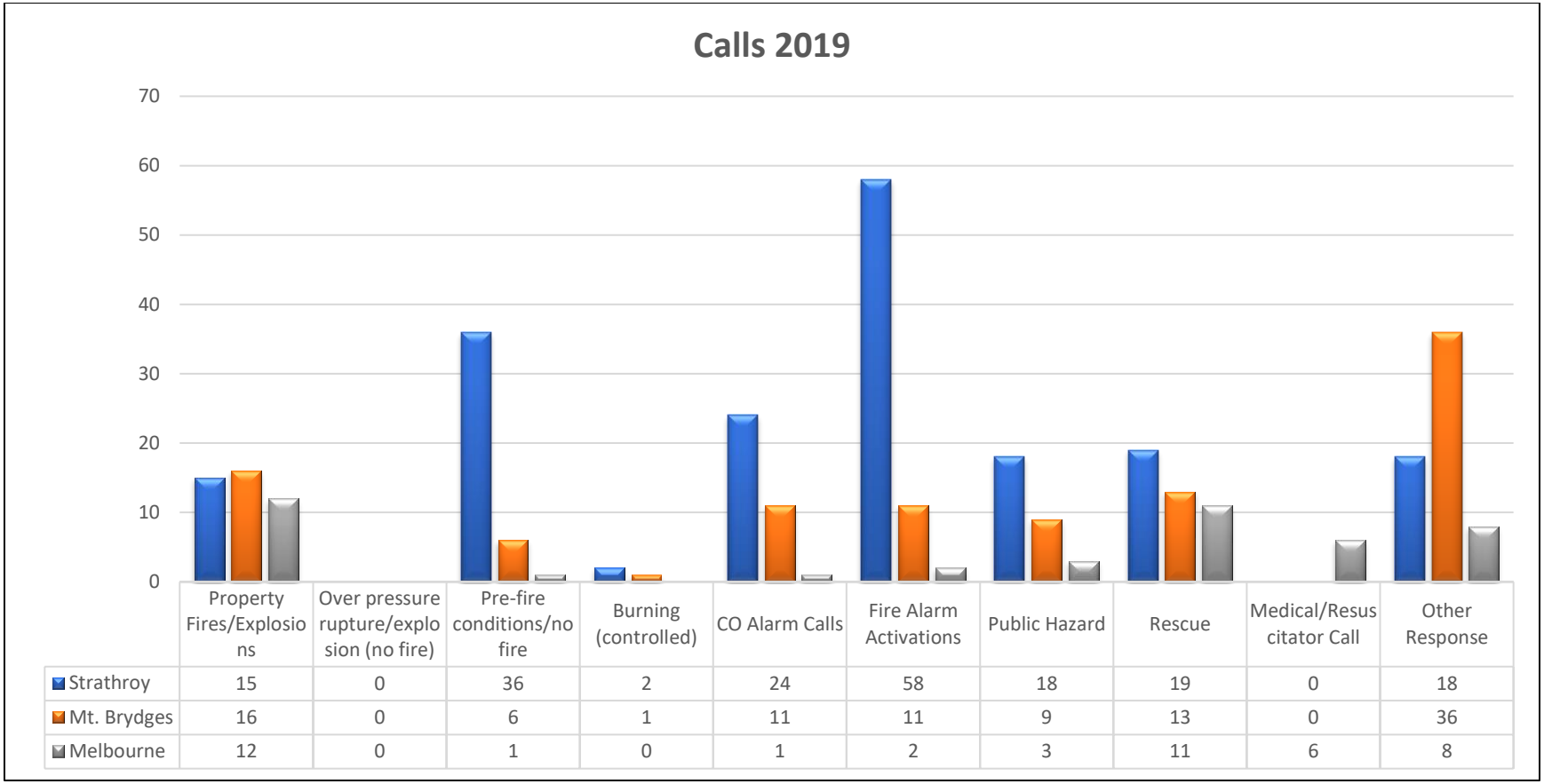
The list is endless and hopefully some of these ideas as well as others may come to fruition to aid in enhancing the SCFD community relations.

Appendix E – Historical Response Data

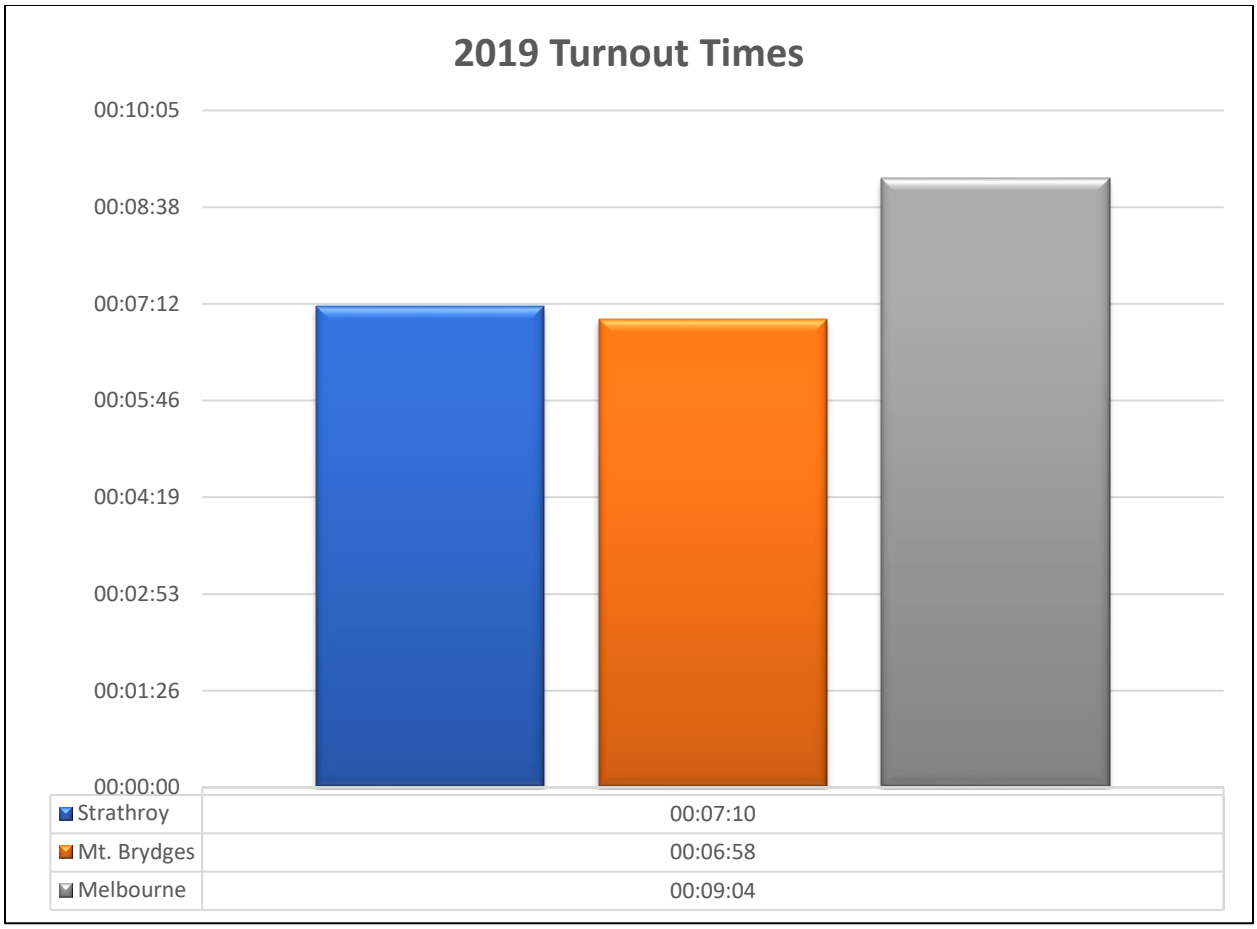
2019 Response Data




Call Types 2019
Property Fires/ Explosions, 43, 13%
Over pressure rupture/ explosion (no fire), 0, 0%
Other Response, 62, 18%
Medical/ Resuscitator Call, 6, 2%
Pre-fire conditions/ no fire, 43, 13%
Rescue, 43, 13%
Burning (controlled), 3, 1%
CO Alarm Calls, 36, 10%
Public Hazard, 30, 9%
Fire Alarm Activations, 71, 21%
Property Fires/ Explosions
Over pressure rupture/ explosion (no fire)
Pre-fire conditions/ no fire
Burning (controlled)
CO Alarm Calls
Fire Alarm Activations
Public Hazard
Rescue
Medical/ Resuscitator Call
Other Response



	Property Fires/Explosions	Over pressure rupture/explosion (no fire)	Pre-fire conditions/no fire	Burning (controlled)	CO Alarm Calls	Fire Alarm Activations	Public Hazard	Rescue	Medical/Resuscitator Call	Other Response
Strathroy	15	0	36	2	24	58	18	19	0	18
Mt. Brydges	16	0	6	1	11	11	9	13	0	36
Melbourne	12	0	1	0	1	2	3	11	6	8


2019 Turnout Times
00:10:05
00:08:38
00:07:12
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00:04:19
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00:00:00
Strathroy
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Mt. Brydges
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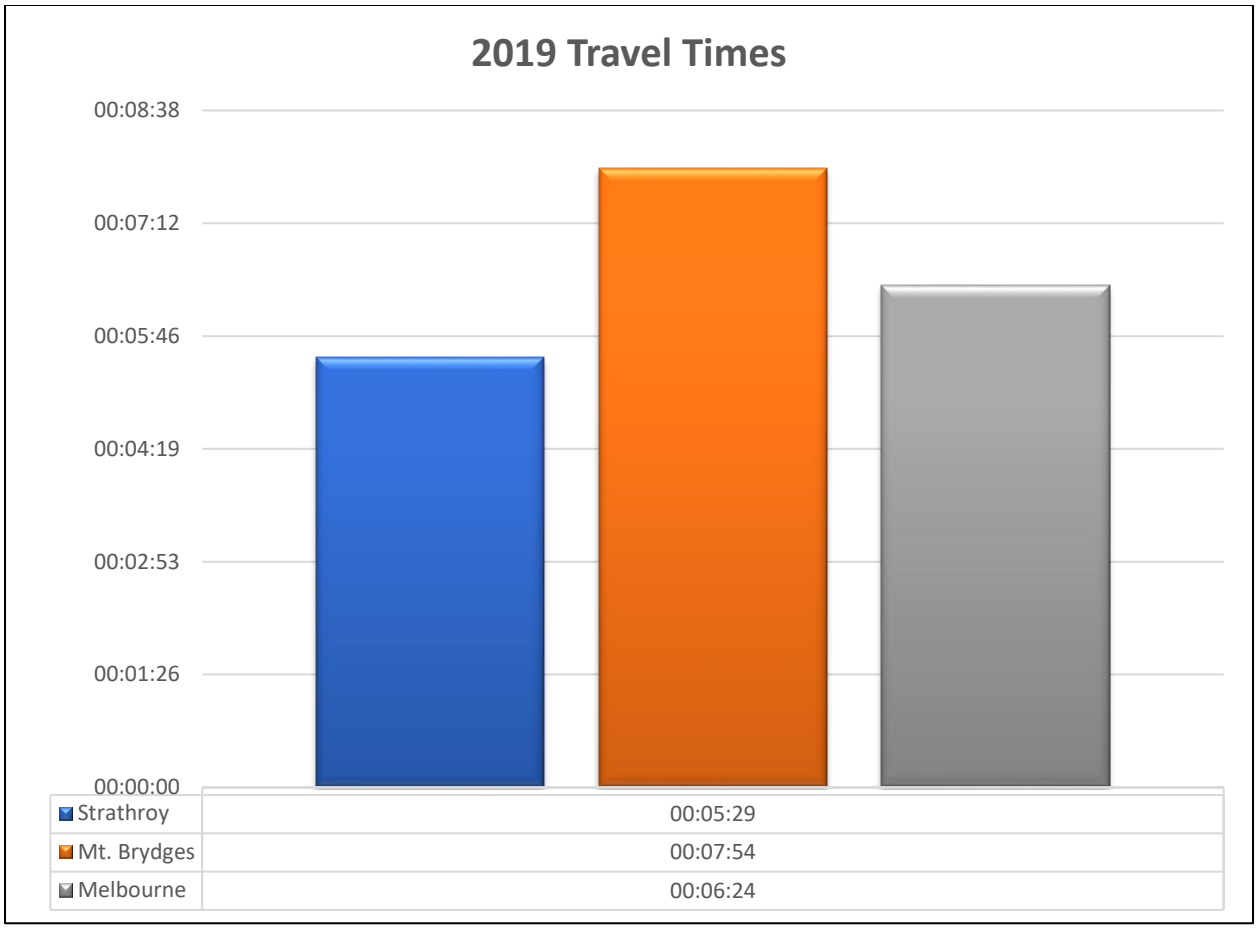
Melbourne
00:09:04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Mt. Brydges
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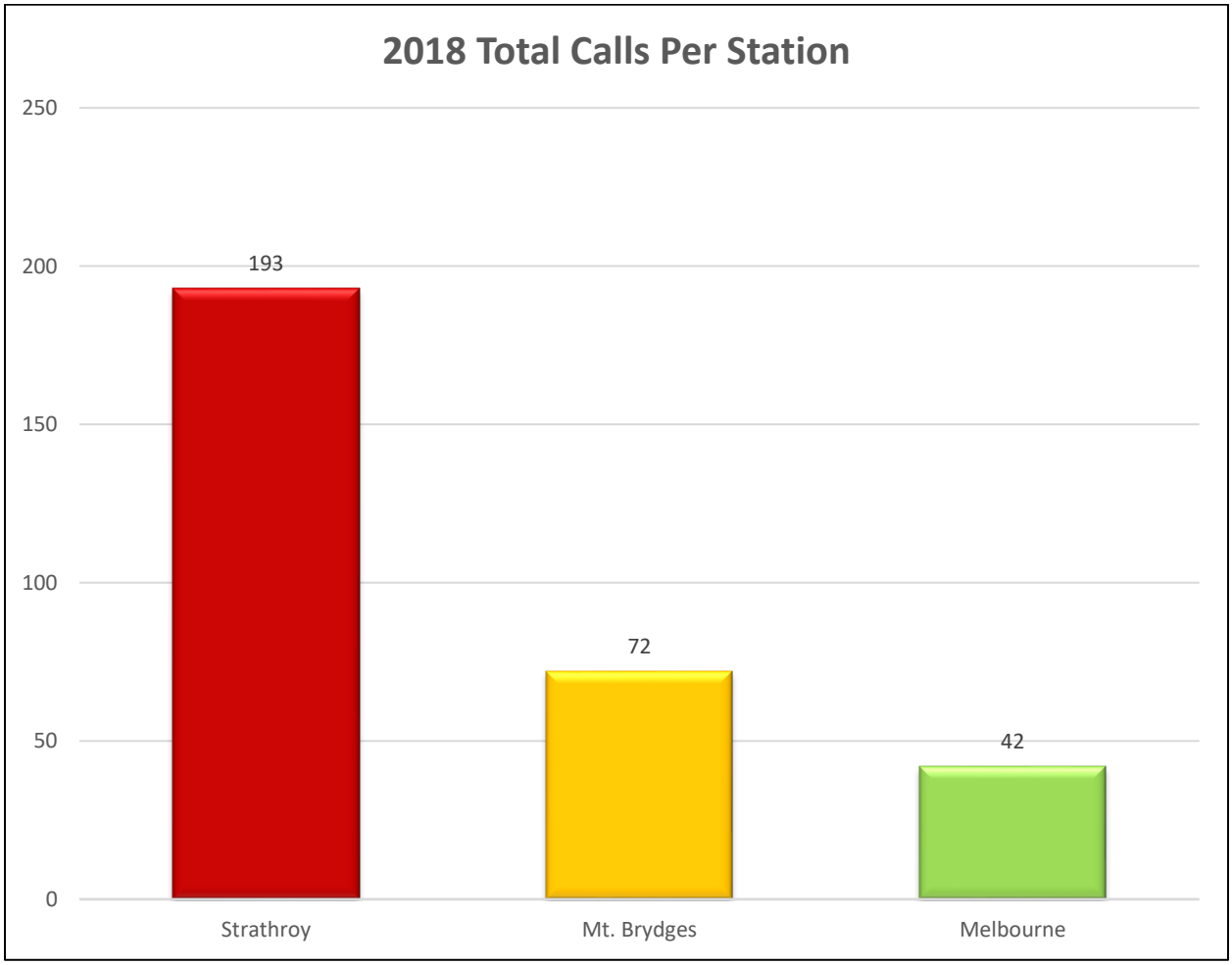
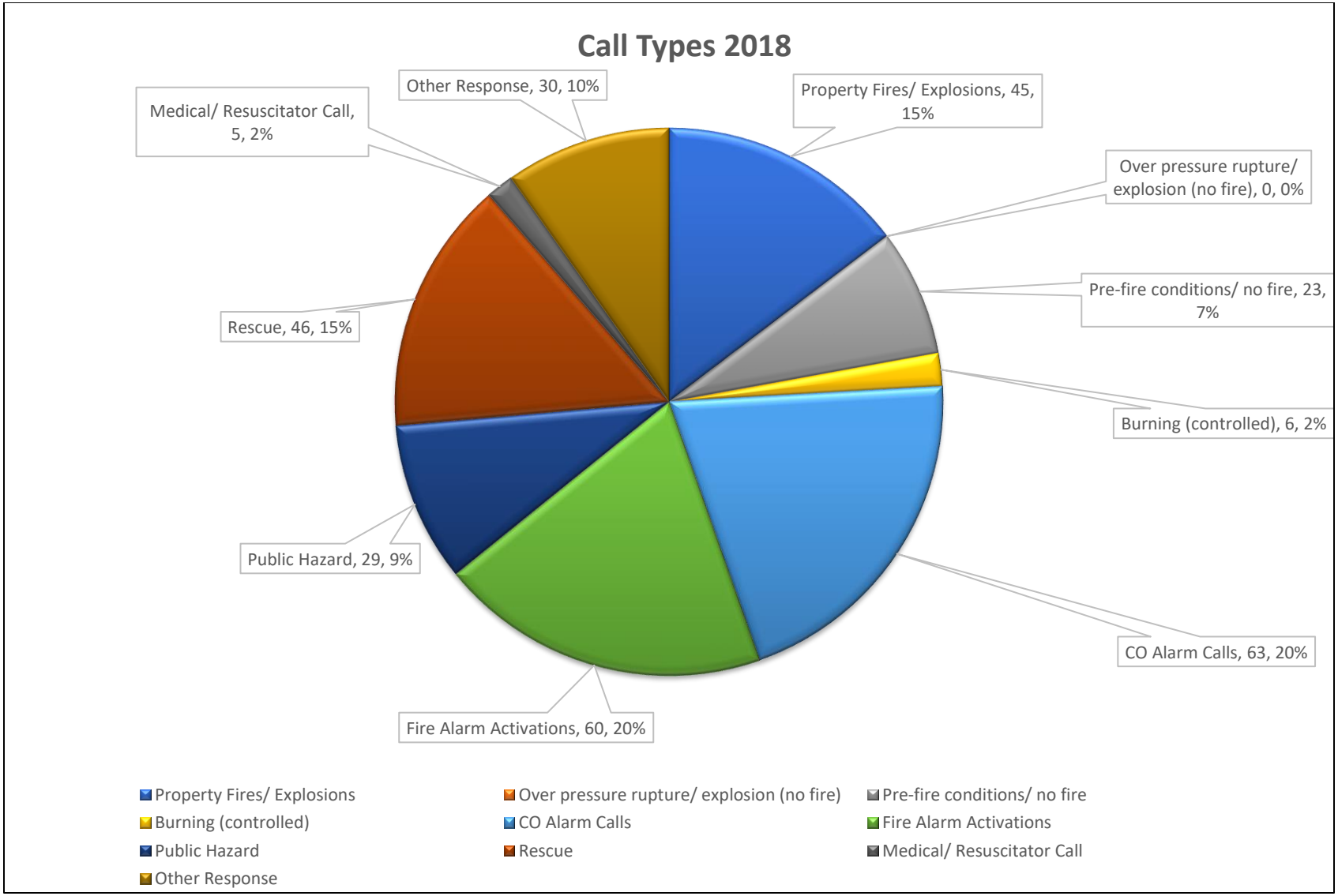
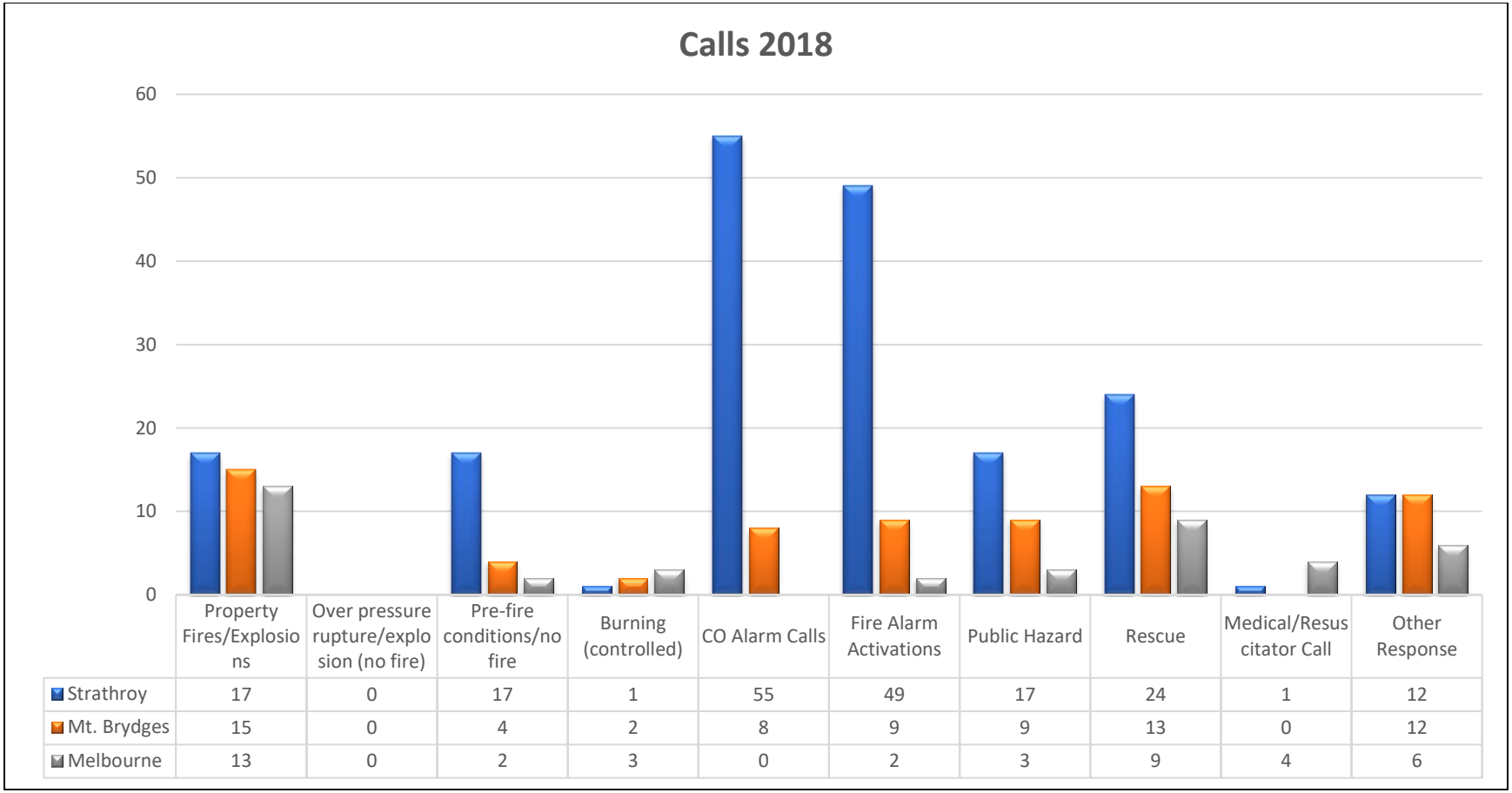
Melbourne
00:06:24

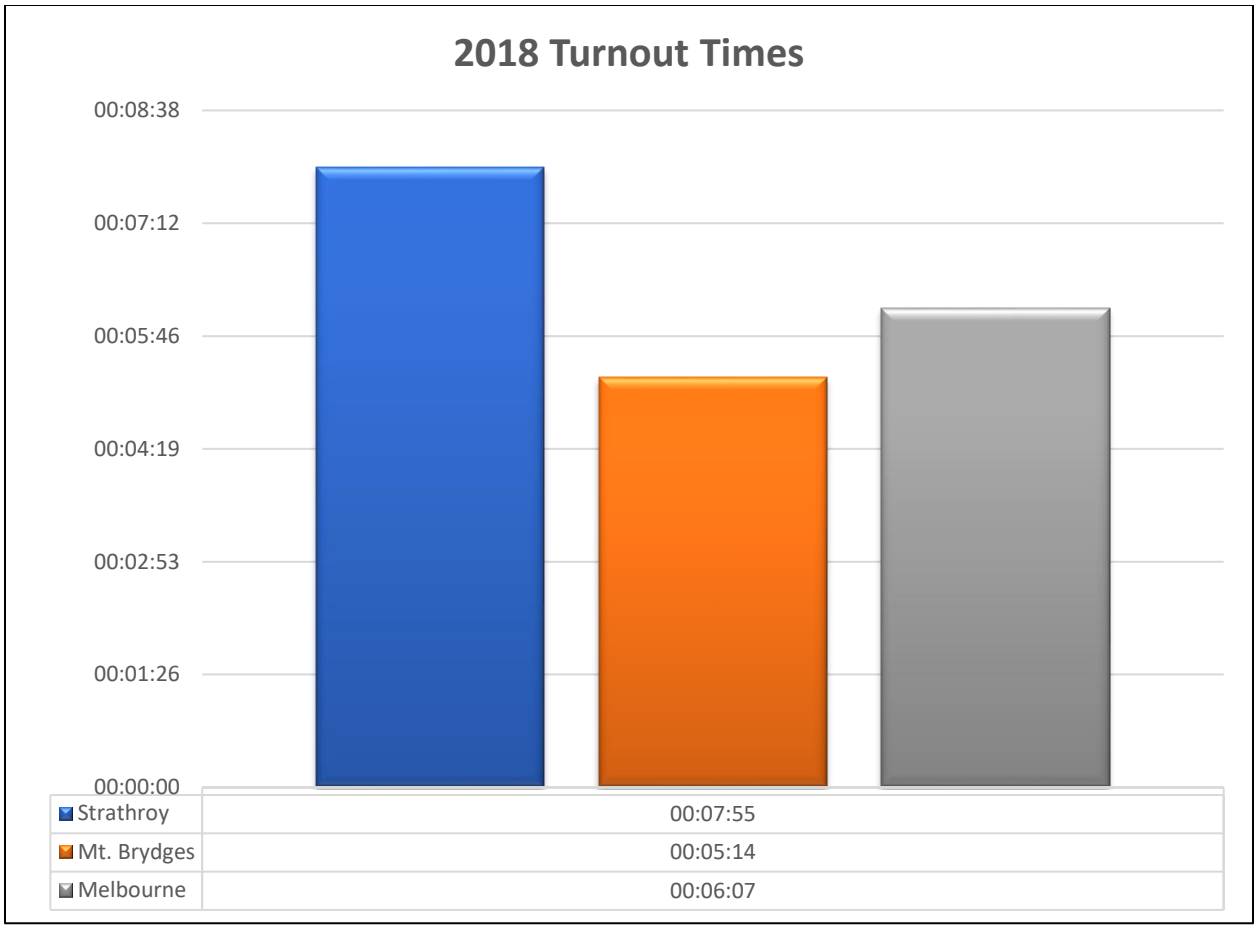
2018 Response Data

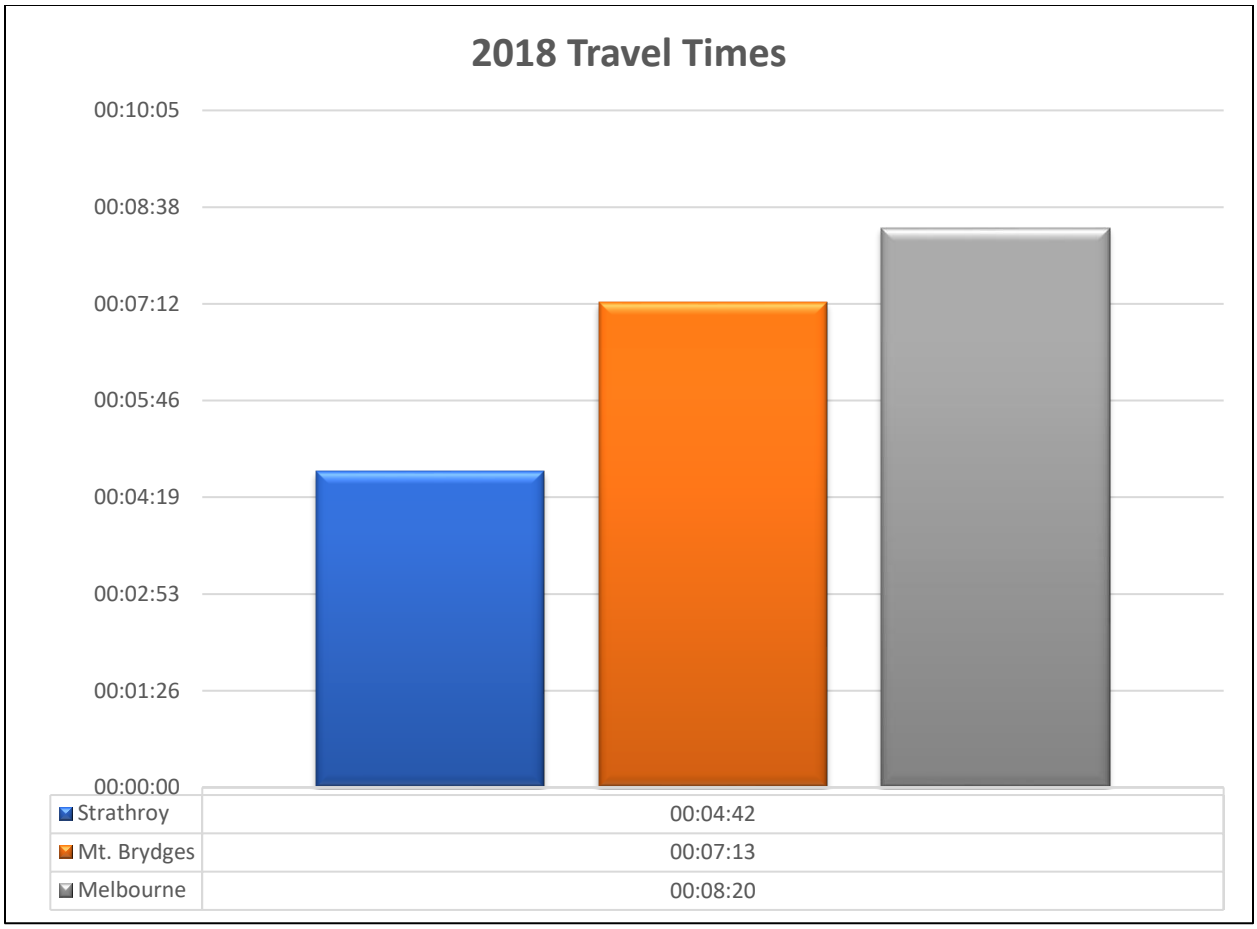



Call Types 2018
Other Response, 30, 10%
Property Fires/ Explosions, 45, 15%
Medical/ Resuscitator Call, 5, 2%
Over pressure rupture/ explosion (no fire), 0, 0%
Pre-fire conditions/ no fire, 23, 7%
Rescue, 46, 15%
Burning (controlled), 6, 2%
Public Hazard, 29, 9%
CO Alarm Calls, 63, 20%
Fire Alarm Activations, 60, 20%
Property Fires/ Explosions
Over pressure rupture/ explosion (no fire)
Pre-fire conditions/ no fire
Burning (controlled)
CO Alarm Calls
Fire Alarm Activations
Public Hazard
Rescue
Medical/ Resuscitator Call
Other Response



	Property Fires/Explosions	Over pressure rupture/explosion (no fire)	Pre-fire conditions/no fire	Burning (controlled)	CO Alarm Calls	Fire Alarm Activations	Public Hazard	Rescue	Medical/Resuscitator Call	Other Response
Strathroy	17	0	17	1	55	49	17	24	1	12
Mt. Brydges	15	0	4	2	8	9	9	13	0	12
Melbourne	13	0	2	3	0	2	3	9	4	6


2018 Turnout Times
00:08:38
00:07:12
00:05:46
00:04:19
00:02:53
00:01:26
00:00:00
Strathroy
00:07:55
Mt. Brydges
00:05:14
Melbourne
00:06:07


2018 Travel Times
00:10:05
00:08:38
00:07:12
00:05:46
00:04:19
00:02:53
00:01:26
00:00:00
Strathroy
00:04:42
Mt. Brydges
00:07:13
Melbourne
00:08:20