2019 Fire and Emergency Services Master Plan

Future Directions

MISSISSAUGA

2019 Fire and Emergency Services Master Plan
Prepared for the Community Services Department, City of Mississauga

FINAL REPORT
January 30, 2019

MISSISSAUGA

Prepared by:
City of Mississauga Fire & Emergency Services Staff

Acknowledgments

Mississauga City Council

Bonnie Crombie	Mayor	Ron Starr	Ward 6
Stephen Dasko	Ward 1	Dipika Damerla	Ward 7
Karen Ras	Ward 2	Matt Mahoney	Ward 8
Chris Fonseca	Ward 3	Pat Saito	Ward 9
John Kovac	Ward 4	Sue McFadden	Ward 10
Carolyn Parrish	Ward 5	George Carlson	Ward 11

Steering Committee

Paul Mitcham	Commissioner, Community Services	Jodi Robillos	Director, Parks & Forestry
Tim Beckett	Fire Chief, Fire and Emergency Services	Lori Kelly	Director, Library Services
Michael Cleland	Director, Environment	Jeff Jackson	Director, Finance and Treasurer
Paul Damaso	Director, Arts & Culture	Maurice Swaby	Manager, Business Planning
Shari Lichterman	Director, Recreation		

Project Core Team

Tracey Martino	Executive Officer, Fire and Emergency Services	Sue Coles	Manager, Library Facilities & Operations
Mary Bracken	Supervisor, Environment Initiatives, Environment	Mai Lu	Business Consultant, Library Services
Mojan Jianfar	Planner, Culture	Mike Menary	Manager, Library Planning & Analysis
Kelly Reichheld	Manager, Sport & Community Development	Debbie MacDonald	Business Advisor, Business Planning
Teresa Kerr	Planner, Parks & Forestry	Arlene D'Costa	Business Advisor, Business Planning

Acknowledgements (continued)

Project Resource Staff

Karen Flores	Supervisor, Communications	Katherine Lee	Statistician, Planning Strategies
Krista Franceschini	Manager, Business Operations	Tina Mackenzie	Manager, Creative Services
Irene Kiourdi	Buyer, Material Management	Josh Remazki	Graphic Designer, Creative Services
Kyle Rostad	Buyer, Material Management	Michael Tunney	Manager, Culture and Heritage Planning
Scott T Anderson	Supervisor, Geomatics	Stephen Torreno	Digital Coordinator, Marketing Solutions
Teresa Goncalves	GIS Specialist, Geomatics		

Staff no longer with the City of Mississauga

Rose Vespa	Director, Library Services	Roger da Cunha	Planner, Parks & Forestry
Laura Piette	Director, Parks & Forestry	Erin Hashani	Business Advisor, Business Planning
Eric Lucic	Manager, Parks & Forestry		

We would like to thank all the residents, stakeholders and organizations that participated by providing input through our surveys and various consultation events. We truly appreciate your time and input. We would also like to thank all City staff who contributed directly and indirectly to the completion of this Plan. This Plan would not have been possible without your assistance.

Table of Contents

List of Tables

List of Figures

2019 Fire and Emergency Services
Executive Summary

Executive Summary

This 2019 Future Directions Fire and Emergency Services guides the delivery of programs and services to the year 2028. Future Directions is a plan that provides a balanced approach between public safety and fiscal responsibility. It meets the needs and circumstances of the City of Mississauga by responding to changes in population, industry trends and current operating conditions.

The 2019 Future Directions Master plan recommendations are grouped into six (6) key strategic priorities which reinforce industry best practice and reflects information contained in the Fire and Emergency Services Comprehensive Risk Assessment. These priority areas are as follows:

1. Education
2. Enforcement
3. Engineering
4. Economic Incentives
5. Emergency Response
6. Continuous Improvement

Education

Public fire safety education is a critical component to fire prevention. Mississauga Fire and Emergency Services (MFES) is working towards prioritizing and implementing all public fire safety programming based on risk. Smoke alarm programs and compliance are a key component of public education. Teaching people to be the stewards of their own fire safety has proven to have a positive impact on the number and severity of fire-related injuries and deaths.

Key Observations:

- 46 per cent of fire calls do not have a working smoke alarm on the fire floor (based on data from the past five years).

- Residential (Group C) occupancies represent 95.8 per cent of the city's property stock and 65.9 per cent of the city's fire loss

- Residential (Group C) structure fires in the city represent 74.0 per cent of all fire calls (based on CRA data).

- 83.3 per cent of injuries and 100 per cent of fire fatalities occurred in residential occupancies.

Education Recommendations

1

Targeted Public Fire Safety Education
Establish a dedicated fire and life safety education section within Fire Prevention and Life Safety with a mandate to develop, implement and measure fire and life safety education programming based on identified key risks outlined in the Comprehensive Risk Assessment (CRA).

2

Expand Delivery of Public Fire Safety Education
Enhance the delivery of fire and life safety education by operational staff in the field.

3

Community Outreach
Develop and foster relationships with stakeholders of all key risk occupancy types as identified in the CRA to reinforce fire and life safety behaviours and code compliance.

6

Get the Message Out
Develop, implement and measure a communication strategy that uses various communication channels, including social media and councillor outreach, to relay key messages related to fire and life safety.

4

Trend Analysis
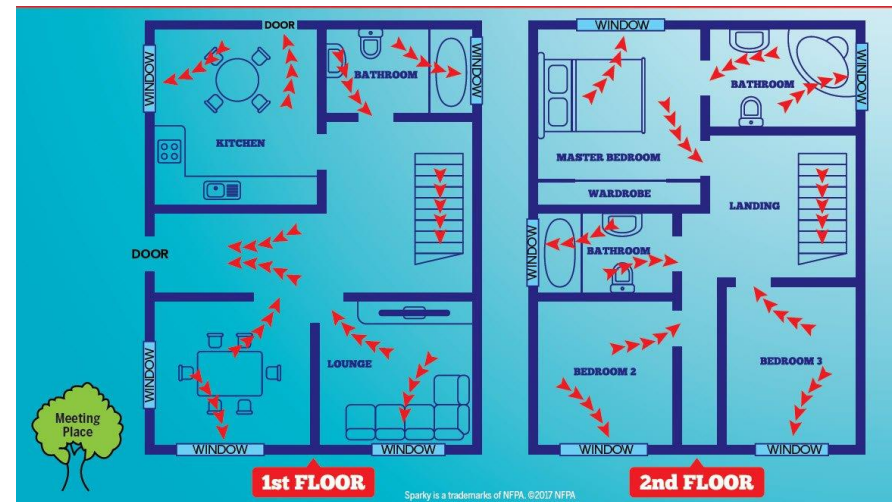Use fire cause determination to identify trends and to inform public education programming.

5

Residential Safety
Develop, implement and measure a proactive smoke alarm and home escape planning program.

Home Fire Escape Plan

Enforcement

It is the responsibility of a property owner to ensure they comply with all applicable regulations and statutes. Property owners who fail to ensure that their properties meet the minimum standards of fire and life safety will be charged under the *Provincial Offences Act*. They are also subject to penalties as outlined in the *Fire Protection and Prevention Act*, 1997. MFES has begun to work towards establishing a robust, proactive fire and life safety inspection program. This program will include an appropriate inspection cycle for all occupancy types depending on the risk level. A more aggressive application of penalties for non-compliance will also be a priority.

Key Observations:

- Every home in Ontario must have a working smoke alarm on every storey and outside all sleeping areas.

- MFES is legislatively responsible for conducting fire safety inspections to ensure public safety.

- The frequency of inspections directly impacts the level of fire safety and code compliance of properties.

- Of particular focus are vulnerable occupancies (retirement homes and care and treatment facilities).

- Failure to comply with the Fire Code could result in a ticket for $360 or a fine of up to $50,000 (depending on the severity) for individuals or $100,000 for corporations.

Enforcement Recommendations

7

Inspection Cycles
Develop, implement and measure a proactive fire and life safety inspection program that establishes appropriate inspection cycles for all occupancy types based on key risks identified in the CRA.

8

Develop Additional Inspection Opportunities
Enhance the delivery of proactive fire safety inspections and enforcement by fire operations staff in the field.

9

Policy Alignment
Conduct an annual review of existing fire related bylaws to ensure they align with current legislation and address the community needs and circumstances.

Engineering

Building permit applications must comply with the fire and life safety requirements in the Ontario Building Code and Ontario Fire Code. These requirements include: smoke and fire alarm systems, automatic fire sprinkler systems, emergency power systems, emergency lighting systems, hose and standpipe systems, hazardous processes/operations and protection, smoke control systems and high-rise safety measures. MFES plans examiners review each building permit application submitted to the City to ensure compliance.

Given the importance of safety and compliance with industry standards, MFES will develop a unit that will be primarily responsible for the testing and evaluation of all fire staff. The focus will be to conduct testing on a more frequent basis in order to maintain competencies and integrate new requirements.

A full lifecycle review of all major equipment will assist in the development of a more rigorous lifecycle replacement plan and improve equipment reliability.

The assessment and use of emerging technologies to reduce response time, ensure accuracy of data capture, and assist with environmental protection is an ongoing trend in the industry. When augmented by appropriate resourcing and good policy, technology can be extremely effective in improving service.

Key Observations

- Roughly 32 per cent of occupancies in the city were constructed when no provincial codes were in effect.

- Industrial (Group F) occupancies represent 1.9 per cent of the city's property stock and 11.6 per cent of the city's fire loss over the period 2003 to 2015.

- The city has 260 schools and 66 occupancies that house seniors/individuals who have a disability. These are considered to be vulnerable, high risk occupancies.

Engineering Recommendations

10 **Lifecycle Replacement**
Implement lifecycle replacement plans for fleet, equipment and facilities.

11 **Building Code Requirements**
Focus application of building code requirements during the plans examination process, based on key risks identified in the Comprehensive Risk Assessment (CRA).

12 **Testing and Evaluation**
Improve current program delivery and create an Academic Standards and Evaluation Unit within the Professional Development and Accreditation Section.

13 **Advocacy**
Advocate for enhancements to current legislations that promote an increased level of fire and life safety, including such things as smoke alarms and residential fire sprinkler systems.

14 **Technological Change**
Leverage new and innovative technologies that enhance the delivery of fire and life safety services.

Economic Incentives

Compliance rates increase when economic incentives and penalties are enforced. Fire departments can issue tickets under the *Provincial Offences Act* (POA) where property owners and landlords are found to be negligent in providing and maintaining smoke alarms. MFES currently charges a fee to property owners for false alarms as a result of a fire alarm mechanical failure, equipment malfunction, and improper installation of the system or failure to maintain the system as prescribed by the Fire Code.

Key Observations:

- Industrial (Group F) occupancies represent 11.6 per cent of the city's fire loss over the period 2003 to 2015.

- Of the fires occurring in Mississauga from 2003 to 2015, 14.4 per cent of fires were caused by mechanical/electrical failure.

- For the period 2003 to 2015, injuries within Assembly (Group A) occupancies (e.g., schools, churches, halls) accounted for 5.8 per cent of total fire injuries.

- Of the fires occurring in Mississauga from 2003 to 2015, 13.9 per cent of fires were determined to have been intentionally caused through an act of vandalism.

Economic Incentives Recommendations

15 **Encourage Compliance and Awareness**
Focused application of enforcement tools provided in various applicable legislation(s).
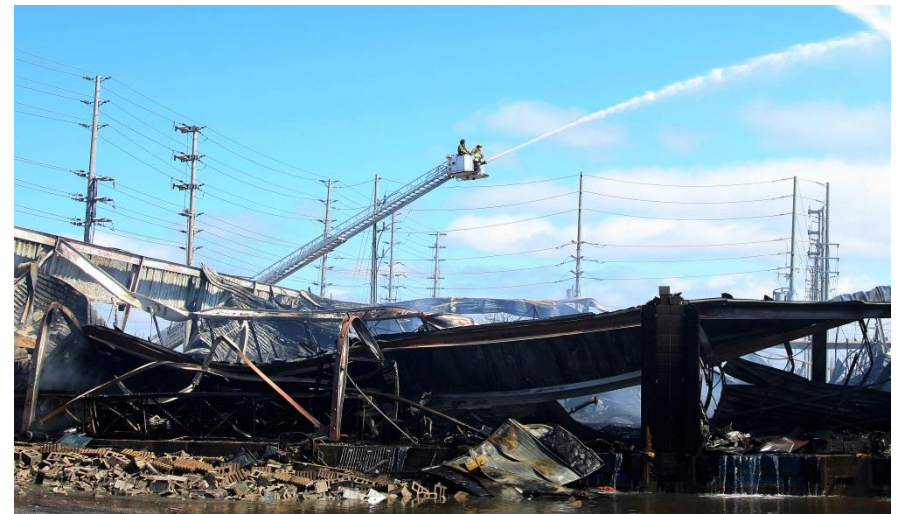
Results of an Industrial Fire

Emergency Response

MFES is an all hazards response fire department and responds to more than 30,000 incidents annually. These incidents include: fires, medical emergencies, hazardous materials, gas leaks, water, ice and high angle rescue, public assistance, carbon monoxide incidents and motor vehicle collisions. The existing Establishing and Regulating Bylaw establishes the standards to which MFES staff are trained to respond. The bylaw reflects industry professional standards.

Fire Ground Training at the Garry W. Morden Centre

The provision of emergency services relies heavily on the ability of front line operations staff to respond quickly. National Fire Protection Association (NFPA) 1710 is the standard for the organizing and deployment of fire suppression, emergency medical and special operations for career fire services. NFPA standard is as follows:

- Distribution (First Arriving vehicle): 240 seconds (four minutes) or less travel time for an initial arriving team of four firefighters 90 per cent of the time

- Concentration (Depth of Response): 480 seconds (eight minutes) or less travel time for the arrival of 26 or more

firefighters for high risk, 15 or more firefighters for moderate risk and four or more firefighters for low risk occupancies 90 per cent of the time

- Concentration (Depth of Response) for High Rise High Risk Occupancies: 610 seconds (10 minutes, 10 seconds) or less travel time for the arrival of 39 or more firefighters to a high-rise occupancy 90 per cent of the time (a new standard that has been included in the 2016 edition of NFPA)

Facility placement is a significant factor in the ability to meet the distribution target. The appropriate distribution of fire stations across the city is the only way to affect travel time.

Key Observations:

- MFES meets the NFPA 1710 travel time target 61 per cent of the time (as of Dec 2017).

- Response time across the city has increased by one per cent per year as a result of growth related variables such as density and traffic congestion.

- There are 326 identified vulnerable occupancies classified as **high risk.**

- There are 548 high hazard industrial properties classified as **high risk.**

- There are 347 buildings with a height in excess of 18 metres, which are defined as high-rise buildings and are classified as **high risk.**

- Future growth plans consider additional high-rise occupancies.

Emergency Response Recommendations

16

Infrastructure Renewal
Implement the recommendations of the Infrastructure Renewal Strategy including: contemplating fire station locations for both new and existing stations, optimizing deployment models to best mitigate potential risk, and apparatus type and quantity.

17

Response Standards
Apply the principles of NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments, 2016 edition.

18

Pre-Planning Standards
Develop, implement and measure a program based on NFPA 1620 Standard for Pre-incident Planning, 2015 edition, that provides access to occupancy data in the field.

19

Training and Development Standards
Develop, implement and measure a training program that aligns MFES with recognized industry professional standards based on the various disciplines approved in the current establishing and regulating bylaw.

Continuous Improvement

MFES faces challenges when it comes to balancing public safety with the demands of a growing community. The most effective way of addressing issues is to classify fire safety concerns into a risk model. MFES conducted a Comprehensive Risk Assessment (CRA) for the city of Mississauga that identified all of the risks as they pertain to Fire and Emergency Services. In addition to defining all risks present within the city, the CRA also outlined the relative magnitude of these risks. Quantification of risks existing within the city will assist MFES in integrating risk considerations with prevention, service planning, and management. MFES can use this data to build meaningful key performance indicators (KPIs) that will assist in measuring the actual performance of specific public education, inspection and community outreach programs. This will allow changes to existing programs and the development of new strategies aimed at reducing life safety risk in the community.

The corporate Lean program has had a significant impact on MFES performance and productivity. Staff have looked critically at the processes for fire plans examination, supplies inventory and front-line vehicle repairs. These three reviews resulted in significant savings and improvement opportunities. The goal is to continue to use the Lean principles to find efficiencies across the division.

Key Observations:

- The CRA identified 24 key risk areas across the city that should be addressed to ensure fire safety.

- All programming required to address key risk areas is not currently in place or fully developed.

- Key Performance Indicators that include data collected in the CRA have not yet been developed.

Continuous Improvement Response Recommendations

20

Review and Update of Strategic Initiatives
Conduct an annual review of the Comprehensive Risk Assessment risk reduction strategies and measure their effectiveness.

21

Cross Departmental Alignment
Identify and review current corporate internal processes that may impact occupancy fire and life safety. Liaise with key internal stakeholders to resolve any conflicts or enhance fire and life safety (i.e., Secondary dwelling units, affordable housing).

22

Data Collection
Develop and implement a quality assurance program to improve the accuracy of all data collected.

23

Continuous Improvement
Continue to improve processes through the application of the corporate Lean program.

24

Measuring Performance
Continue the maturation of MFES key performance indicators.

25

Employee Health and Safety
Develop, implement and measure a Total Wellness strategy that considers the physical and mental health of staff, and builds on the corporate Health and Safety Plan.

Lean Project Meeting

Funding the Master Plan

Not every action in the Master Plan requires funding – sometimes improvements can be accomplished through changes in approach or in policy. Most projects, however, require funding to proceed. Many projects are funded in the City's current Business Plan and Budget, with many still requiring funding sources to be identified. The City must balance service provision with affordability and will thoughtfully seek funding for projects as opportunities present themselves.

Capital initiatives are typically funded through a combination of sources. Existing and new sources are evaluated annually to determine the best approach for funding the City's projects. The following provides detail on currently available funding sources:

- Partnerships
- Federal and Provincial grants
- Development Charges
- Capital Reserves
- Debt financing

Partnerships
The City cannot fund all of its Master Plan projects alone. Partnerships with external agencies can provide welcome funding as well as other resources. The Region of Peel is a key partner in many initiatives. Other opportunities can be found in the sharing of resources, such as the co-location of different services in a single facility. This can help to reduce the costs of any one agency. Similarly, there may be partnership opportunities with Mississauga's community organizations and corporations that can benefit both parties.

Federal and Provincial Grants
The City receives funding from both Federal and Provincial levels of government. Much of this funding is targeted to specific programs by the granting authorities, and every effort is made to use these funds for our priority projects.

Development Charges
Funds collected under the *Development Charges (DC) Act* are collected and used for funding growth-related capital costs. DCs are structured so that "growth pays for growth" but revenues collected through DCs are insufficient to fully address all of the City's growth initiatives.

Capital Reserves
Reserves and Reserve Funds are created to assist with long-term financial stability and financial planning. The City has a long history of prudently managing its Reserves and Reserve Funds. One of the purposes for maintaining strong reserve funds is to make provisions for sustaining existing infrastructure and City building. The City has implemented a 2 per cent annual Capital Infrastructure and Debt Repayment levy (reflected on the tax bill since 2013).

Debt Financing
The issuance of debt is a critical component in financing future infrastructure for the City. There is nothing wrong with issuing debt as long as it is well managed. Debt does have an impact on the property tax; the larger the debt that a city holds, the larger the percentage of the property tax that must be allocated to service that debt. The City has a strong debt policy which defines stringent debt level limits to be adhered to.

With all of the City's competing priorities, choices must be made. The 2019-2022 Business Plan and Budget provides detail with respect to which Master Plan projects are currently proposed for funding. Projects identified in the Master Plan that do not have funding sources identified will be brought forward in future budget cycles for approval as viable funding sources become available. Each year, Council will direct which projects can be funded based on business cases and project plans through the annual Business Planning process.

Introduction

Introduction

Purpose of the Plan

The study is citywide in scope and includes an overview of Mississauga Fire and Emergency Services (MFES) facilities, programs and services. The MFES *Future Directions* Master Plan is being developed to guide the City of Mississauga in the delivery of fire and emergency services over a 10-year period (to the year 2028). In some cases, a longer-term outlook is considered to ensure that short-term actions support longer-term requirements.

The Fire Chief is responsible to Council under Part 2, Section 3 of the *Fire Protection and Prevention Act* (FPPA). "A fire chief is the person who is ultimately responsible to the council of a municipality that appointed him or her for the delivery of fire protection services." This means that it is the responsibility of the Fire Chief to inform Council of the needs and circumstances of the city as it pertains to the delivery of fire services. This Master Plan is intended to provide Council with information on the existing conditions, key areas of focus and recommendations for future service delivery so that they may set the level of service.

This Master Plan is informed by key background studies—most significantly the Comprehensive Risk Assessment (CRA) that identifies and assesses all of the existing risks within the community, as well as how they impact future emergency service delivery. The recommendations in this Master Plan reflect the risk reduction strategies outlined in the CRA.

Overview of Objectives/Methodology

The primary objective of this Plan is to provide MFES stakeholders with a document that contains achievable and measureable recommendations that will improve customer service and be the basis from which future policies and decisions will be made. The MFES Master Plan also considers policies and recommendations set out by

other municipal documents such as the City's Official Plan, other planning and community

growth strategies such as Inspiration Lakeview, Downtown 21, Port Credit and the Light Rail Transit (LRT) initiatives.

The key driver behind the recommendations in this document is the reduction of risk. The plan relies heavily on the information gathered and compiled in the Comprehensive Risk Assessment (CRA). The study considers demographics, geography of the city, types of occupancies, current and historic emergency data, and economic /financial impacts.

Figure 1: Project Methology Chart

Information Gathering/Consultation	Background Component Reports
Background Review	Comprehensive Risk Assessment
Staff Consultation	Infrastructure Renewal Strategy
Council Consultation	Socio Demographic Profile
September - December 2016	**January – November 2017**

Draft Master Plan	Final Master Plan
Preliminary Recommendations	Final Recommendations
Alignment of Specific Sub-Studies	Implementation Plan
Presentation to LT & GC	Presentation to GC
October 2017 – October 2018	**January 2019**

> **"A fire chief is the person who is ultimately responsible to the council of a municipality that appointed him or her for the delivery of fire protection services." (Part 2, FPPA)**

Achievements over the Past Five Years

Over the past five years, MFES has embarked upon a number of initiatives aimed at improving fire safety and customer service:

- Relocated two existing fire stations in partnership with the Peel Regional Paramedic Services

- Opened two LEED certified facilities (Garry W. Morden Centre – LEED Silver, Station 119 – LEED Gold)

- Introduced an EpiPen Program (all front-line vehicles carry EpiPens)

- Increased number of completed building permit applications by Fire Plans Examiners (23 per cent increase since 2014)

- Reduced the amount of time front-line apparatuses are out of service for repair (10 per cent reduction) through a Lean review

- Implemented a proactive fleet lifecycle and equipment maintenance program

- Initiated a 48-hour turnaround time to respond to fire safety complaints generated by the public and suppression crews

- Expanded community outreach through the development of Camp Ignite to introduce firefighting to teenage girls

> **Fire and Emergency Services Mission**
>
> To protect life, property and the environment in Mississauga from all perils guided by the three lines of defense: public education, prevention and emergency response.

Supporting the EpiPen Program

> **Fire and Emergency Services Vision**
>
> To be a Global Leader in Fire Service & Life Safety Excellence

Plan Foundation

Plan Foundation

Community Risk

The primary goal of this Master Plan is to provide MFES stakeholders with an understanding of the programming and resources required to reduce, mitigate or eliminate community risk as it relates to fire and emergency services.

The process of assessing community risk is receiving increased attention within the fire protection industry in North America. The risk assessment process has become fundamental to the planning and delivery of fire and emergency services that match the "needs and circumstances" of the community as defined by the *Fire Protection and Prevention Act*, 1997, (FPPA) and the Council approved Establishing and Regulating Bylaw. Quantification of risks within Mississauga will assist MFES in integrating risk considerations into the planning and delivery of fire protection services. This includes fire prevention, public education and emergency response services such as fire suppression (firefighting).

The most current document outlining the process of developing a risk assessment is the "National Fire Protection Association (NFPA) 1730 Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations (2016 Edition)." NFPA 1730 outlines seven profiles that should be used to understand risk within the community: demographics, geography, building stock, past fire loss, response, hazards and economics.

MFES has completed a Comprehensive Risk Assessment (CRA) following the guidelines provided by NFPA 1730, NFPA 1300 and Vision 20/20. The CRA informs this Master Plan and consequently the recommendations are reflective of the community risk reduction strategies identified in the assessment.

Linkages to City Strategic Direction

NFPA 1730 considers building density as a key factor for understanding potential fire risk. For the purposes of this Plan, building density is considered to include core areas (downtowns) and other areas that include exposure risk. Closely spaced buildings (typical of historic downtown core areas), newer infill construction, or highly urbanized communities like Mississauga have a higher risk of a fire spreading to an adjacent exposed building. A fire originating in one building could easily spread to neighbouring structures due to the close proximity. The close proximity of buildings can also impede firefighting operations due to the limited access for firefighters and equipment. Adoption of the Ontario Building Code (OBC) and the Ontario Fire Code (OFC) has required spatial separations, as well as the use of fire retardant materials and construction methods to reduce the fire risks. Older developments, as well as new infill, can have increased exposure risk due to density.

The Official Plan has identified a number of urban structure components including Downtown, Major Node, and Community Nodes. These areas in particular have different density targets for both jobs and population than the rest of the city. These areas are more likely to have a higher density of both buildings and people compared to the general neighbourhood structure; they are targets of intensification. Some areas, including the waterfront such as Port Credit, are in transition and growing. Corporate centres and employment areas reflect clusters of employment and industrial based buildings.

The planned urban structure of the city that is shown in Schedule 1b of the Official Plan (Figure 2) illustrates a number of core areas in the city. Mississauga is projected to experience population and employment growth, which will be targeted to these key areas and directed through a range of policy, studies and reports. This master plan considers the future risk related elements of these studies as it pertains to fire and emergency services.

Figure 2: City Planned Urban Structure
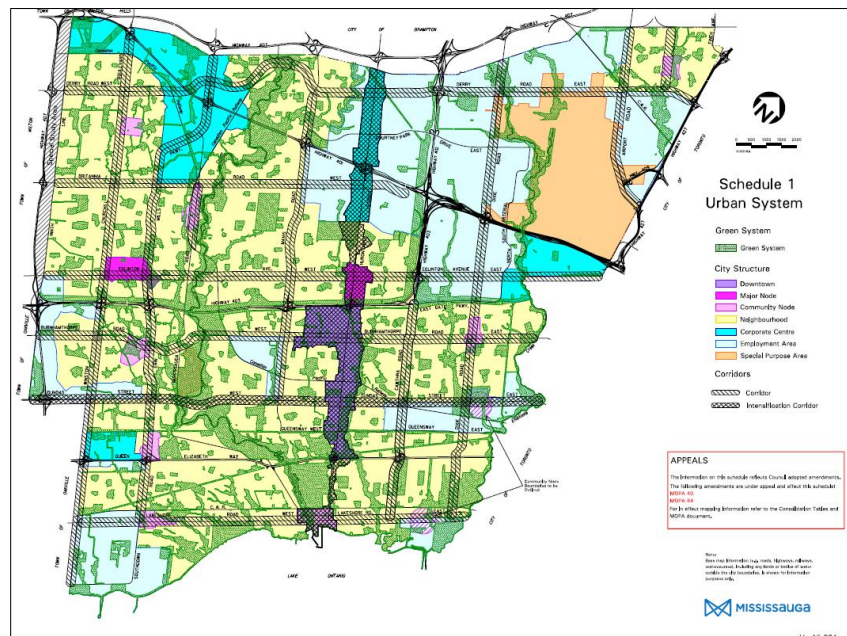
Some of the key areas slated for planned growth across the city and their risk related elements are summarized in **Table 1**.

Table 1: Planned Growth Areas

Study/Plan Name	Potential Planning Consideration for MFES
Vision Cooksville	• Downtown Cooksville will add 7,000 people in 2,700 new housing units, and 1,000 jobs over the next 20 years. • Housing opportunities and choices include a range of housing options such as new low-rise, midrise, high-rise residential and mixed-use buildings.
Inspiration Lakeview	• Forecasted to accommodate a range of 15,000 to 20,000 residents through 8,000 housing units and an additional 7,000 to 9,000 jobs. • Residential developments will include townhouses (up to four storeys) including traditional, stacked and back-to-back stacked; mid-rise (five to eight storeys); and taller building elements up to 15 storeys.
Port Credit West Village	• Estimated additional 2,500 housing units through a range of housing forms, including townhouses, condominiums.
Downtown 21 Master Plan	• Downtown Mississauga is a provincially identified Urban Growth Centre slated for high density population and employment. • Proposed land use includes residential with a range of options: townhouse and high- and low-rise development, employment, and mixed use.
Hurontario Main LRT Project	• Will bring rapid transit to the Hurontario corridor with 22 stops. • This project is currently in the planning and design phase.

Demographics

To complete the demographic analysis, information and analysis was completed by Environics Analytics (EA). The Environics DemoStats Report reflects 2016 data. These estimates are generated using econometric, demographic, and geographic models and informed by data sources such as the 2011 census, National Household Survey, current economic indicators, and immigration statistics. Where applicable, 2011 Statistics Canada data was used to supplement the DemoStats 2016 data.

Population and Age

Population and age are key risk factors. Specific age groups are at a higher risk from fire related incidents. (e.g., seniors and youth). Canada's aging population has been recognized as one of the most significant demographic trends in the nation. Based on preliminary post census estimates from Statistics Canada, on July 1, 2015, for the first time ever, there were more Canadians over the age of 65 (16.1 per cent of the population) than there were children aged 0 to 14 (16.0 per cent). Seniors (those 65 years and over) are considered to represent one of the highest fire risk groups across the province based on proportion of fire fatalities as shown in **Table 2**. Seniors account for a much higher percentage of fire fatalities than their proportion of the population.

13.6% of the population in Mississauga are aged 65 and over and are at an increased risk of experiencing a fatality in a residential fire.

21% of the population in Mississauga is aged 50 to 64, representing a future risk.

Table 2: Fire Fatalities by Age Group (Ontario)

Category	Age	% of Provincial Population	% of Fire Fatalities
Children/Youth	<=14	17%	7%
Adults	15–64	68%	60%
Seniors	>=65	15%	33%

Source: Office of the Fire Marshal and Emergency Management (OFMEM) Fire Statistics for 2004–2013 and 2011 census data.

Fire and Emergency Services must assess community fire risk in order to prioritize service delivery. One of the groups that are a high priority is vulnerable individuals. These people can have mobility limitations, cognitive limitations, or can be persons with developmental disabilities.

Vulnerable individuals and/or occupancies require particular focus from a fire and emergency service provider, as often these individuals are unable to assist themselves in the event of a fire. From an occupancy perspective, vulnerable occupancies fall into Care or Detention (Group B) occupancies. It is important to note that a vulnerable occupancy is always occupied by vulnerable individuals. However, *not all* vulnerable individuals reside in a vulnerable occupancy.

Within Peel Region the vast majority of seniors reside in a health care or related facility, which would be defined as Group B – Care or Detention occupancies, and 64.2 per cent of those people reside within Mississauga.

Community Public Fire Safety Education

Table 3: Top 10 Non-Official Languages Spoken at Home

Non Official Languages Spoken at Home in Mississauga	Total # of Households	% of Non-Official Languages Spoken at Home based on Total Household Population
Urdu	25,227	11.9
Punjabi	19,701	9.3
Polish	16,529	7.8
Arabic	14,950	7.1
Chinese n.o.s.	11,266	5.3
Mandarin	10,405	4.9
Spanish	10,382	4.9
Tagalog	10,156	4.8
Cantonese	8,883	4.2
Tamil	8,424	4.0
Total Household Population 211,195		

Source: Environics Demo Stats 2016

Ethnic and Cultural Considerations

English is the primary language spoken in 62.7 per cent of households in Mississauga. The city has a greater proportion of households that speak multiple languages at home (9.8 per cent) compared to the province as a whole (4.5 per cent). It is notable that in the city there are over 211,000 households (or 27 per cent) that speak a single language at home that is neither English nor French. Of those single, non-official languages spoken at home, the top ten languages used at home in Mississauga are shown in **Table 3**. The top three spoken languages are Urdu, Punjabi, and Polish.

MFES continuously looks for ways to get fire safety messages out to residents whose first language or language of choice is not english.

Population Shift

The population within a community can shift at various times during the day or week and throughout the year. Population shift can be a result of a number of factors, including employment, tourism and education. In some municipalities, residents regularly leave the community for employment. In other municipalities, non-residents may come into the community for employment. Other communities may be major tourist and vacation destinations, resulting in large population shifts related to seasonal availability of tourism activities. A tourism-based population shift can result in an increased risk due to overnight tourism accommodation (sleeping), which can impact the demand for fire protection services.

Another impact of population shift is an increase in traffic and the related risk of motor vehicle collisions. Common festivals or events in Mississauga that may provide a tourism draw include the Mississauga Waterfront Festival and Carassauga Festival (Festival of Cultures). Celebration Square downtown near Square One is a notable and unique venue for both festivals.

With Mississauga's unique position as Canada's sixth largest city and goods movement hub, it is reasonable to expect that the majority of the population shift in the city is due to employment.

One way to measure this population shift is based on traffic counts. Within the Greater Toronto and Hamilton Area, there is a transportation census conducted that provides insight into the travel habits of residents in the region called the Transportation Tomorrow Survey (TTS). The TTS reports on such topics as how many trips are made to a location. The most recent TTS reporting year (2011) indicates that, in a 24-hour period, 1,574,000 trips were made to Mississauga. Of those trips, 85 per cent were in a personal vehicle (as driver or passenger) and 27 per cent (roughly 425,000 trips) were for the purposes of going to work or school in Mississauga (from outside the city). Based on these metrics, it suggests that at a minimum 425,000 people are coming to Mississauga during a typical weekday. Similarly, in a twenty-four hour period, 1,612,338 trips were made from Mississauga. Of these, 85 per cent were in a personal vehicle (as the driver or passenger) and 26 per cent (roughly 427,000 trips) were for work or school purposes. This suggests that a minimum of 427,000 people leave Mississauga each weekday.

The analysis above indicates that the number of users on Mississauga's road network is greatly affected by these daily population shifts, and a higher risk may be present during peak commuting times.

This has a significant impact on the number and complexity of motor vehicle collisions on both city streets as well as highways. In 2016, MFES responded to almost 3,000 motor vehicle collisions.

Downtown Mississauga

Industry Trends: Achieving Community Safety Guided by the Three Lines of Defence

The fire and emergency service industry (driven by mandates from the OFMEM) has adopted a more proactive approach to fire safety by putting an emphasis on public fire safety education combined with the enforcement of fire safety standards and applicable codes. Where fire prevention measures cannot mitigate risk appropriately to meet the needs and circumstance of the community, emergency response is the failsafe.

Public Fire Safety Education

Proactive public fire safety education is critical to community safety. MFES delivers a variety of public education programs. These programs are delivered by both public education officers who specialize in developing and delivering fire safety programs, as well as fire suppression crews who interact with the community on a daily basis. Public education programs are designed for everyone, from young children to seniors. The overall objective of these programs is to educate the public on the dangers of fire, provide information to prevent fires and—in the unfortunate instance a fire does occur—provide the tools to ensure safe evacuation.

By law, smoke alarms are required on every storey of a dwelling in the province of Ontario. Smoke alarm programs are also one of the required services to be provided by a fire department as per the *Fire Protection and Prevention Act*, 1997. As a result, smoke alarm programs and compliance are a key component of public education and fire prevention activities provided by municipal fire departments across the province.

Data over the five years indicates that 46 per cent of fire calls in Mississauga do not have a working smoke alarm on the fire floor.

Fire Safety Standards and Enforcement

The enforcement of both the Ontario Fire Code and the Ontario Building Code is taken very seriously. It is the responsibility of a property owner to ensure they comply with appropriate regulations and statutes. Property owners who fail to ensure that their properties meet the minimum standards of fire and life safety will be charged under *the Provincial Offences Act* and are subject to penalties as outlined in the *Fire Protection and Prevention Act*, 1997. MFES has fire inspectors who conduct fire safety inspections to ensure buildings are safe and comply with the Ontario Fire Code. These inspections are currently completed on complaint or request. MFES is legislatively responsible for conducting fire safety inspections to ensure public safety. The frequency of inspections directly impacts the level of fire safety and code compliance of properties. Of particular concern are vulnerable occupancies (Group B - retirement homes and care and

treatment facilities). All vulnerable occupancies within Mississauga are fully inspected annually as per provincial legislation and in 2016 mock fire drills were conducted to ensure compliance.

Fire Inspectors are also responsible for post fire investigations. Investigations are conducted to determine the area of origin and cause. This information can be used in the prevention of similar incidents, as well as in developing fire safety education programming.

Fire Plans Examiners review all building permit applications to ensure that the fire and life safety requirements are in compliance with the Ontario Building Code and the Ontario Fire Code.

Emergency Response

Emergency operations personnel respond to emergency and non-emergency calls. These include fires, medical emergencies, motor vehicle accidents, public hazard situations, elevator rescues and water rescues.

Fire Incident

Risk Based Planning

The National Fire Protection Association (NFPA) 1730 Annex B provides a guide to the development of a Community Risk Assessment. The intention is establish risk profiles that will allow municipalities to assess risk based on community profiles. These include: demographics, geography, building stock, past fire loss, response, hazards and economics.

In 2015 the Office of the Fire Marshal and Emergency Management (OFMEM) conducted a comprehensive review of the City of Mississauga's fire prevention and public safety services. The review evaluated the City's compliance with the fire prevention legislative requirements as per the *Fire Prevention and Protection Act* (FPPA). One of the resulting recommendations from the OFMEM's review identified the need for a Comprehensive Risk Assessment (CRA) - "*The Municipal Council of the City of Mississauga shall ensure the completion and annual update of a comprehensive fire risk assessment.*"

The risk assessment process has become fundamental to the planning and delivery of fire and emergency services that match the "needs and circumstances" of the community as defined by the *Fire Protection and Prevention Act*, 1997 (FPPA).

Medical Response

Over the years, the fire service has become a valuable contributor to pre- hospital care. Response time is critical in most medical emergencies. In many cases firefighters are in the best position to respond quickly and provide critical care as fire stations are strategically placed throughout a community and can provide a faster initial response.

MFES is part of a tiered response agreement with the Peel Regional Paramedic Service (PRPS) that defines the types of medical emergencies that MFES will respond to in order to provide the best possible outcome for patients. This is an area of focus, as medical calls represent 46 per cent of the MFES total call volume (four per cent higher than the province of Ontario average).

Background Studies

A number of documents and provincial policies affect Mississauga's growth and must be taken into account during the preparation of this Master Plan. MFES has also proactively undertaken numerous studies and analyses to understand the needs of the community. The Master Plan will be used to guide planning and decision making. To be effective, this Plan must align with corporate objectives, as well as divisional specific plans. Pertinent provincial legislation has also been reviewed as part of the planning process.

Provincial Legislation

Ontario Planning Act
Ontario Building Code
Ontario Fire Code
Growth Plan for the Greater Golden Horseshoe

Strategic Policy Documents

City of Mississauga Strategic Plan
Peel Region Official Plan
Mississauga Official Plan
MFES Comprehensive Risk Assessment
MFES Infrastructure Renewal Strategy

Other Documents

Downtown 21 Master Plan
Vision Cooksville Plan
Inspiration Lakeview Plan
Port Credit West Village Plan
Hurontario Main LRT Project

Delivering the Service

Delivering the Service

Current Service Delivery

The annual call volume provides a high-level understanding of the probability of incidents occurring within Mississauga. A summary of the total number of calls within the city from January 2010 to December 2017 is shown in **Figure 3. Figure 4** illustrates the comparison between the numbers of emergency and non-emergency calls. There are three major factors that had a significant impact on the fluctuation of call volume.

- In 2009, Mississauga Fire and Emergency Service modified the tiered response agreement for medical calls with the Peel Regional Paramedic Service, which helped to reduce the overall call volume by over 1,000 calls. The tiered response agreement prescribes the types of emergency responses to which each agency must respond.

- In 2013 there were two major storms. A significant rain storm in July and a large ice storm in December. These two storms account for the majority of call volume increase occurring in 2013.

- A change to the EMS dispatch protocol called Emergency Medical Service Technology Interoperability Framework (EMSTIF) occurred in 2014, which accounts for the most dramatic increases in call volume from 2013 to 2014 (nine per cent), and from 2015 to 2016 (four per cent).

Overall, the number of calls responded to by MFES has increased by 12 per cent from 2009 to 2016, with the lowest number of calls received in 2010.

Figure 3: Call Volume by Year
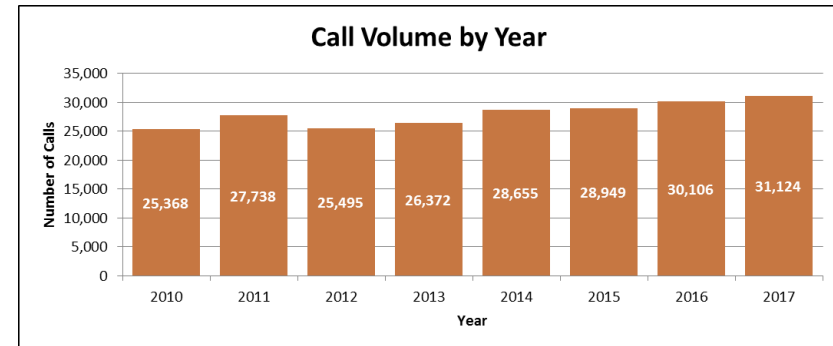
Over 90% of the calls received over the last five years are dispatched as emergency calls
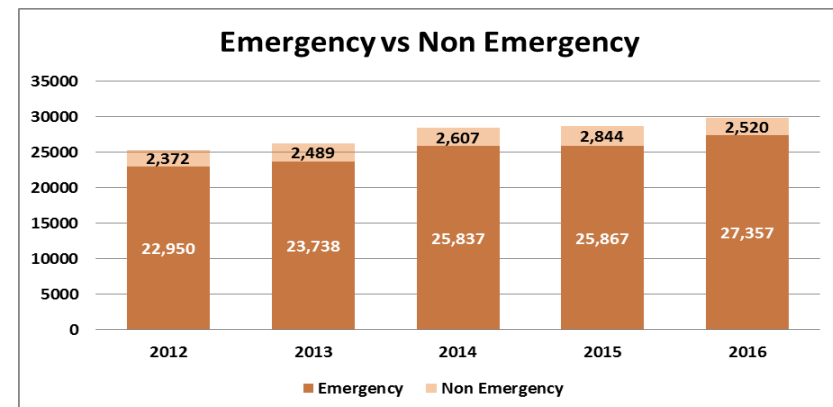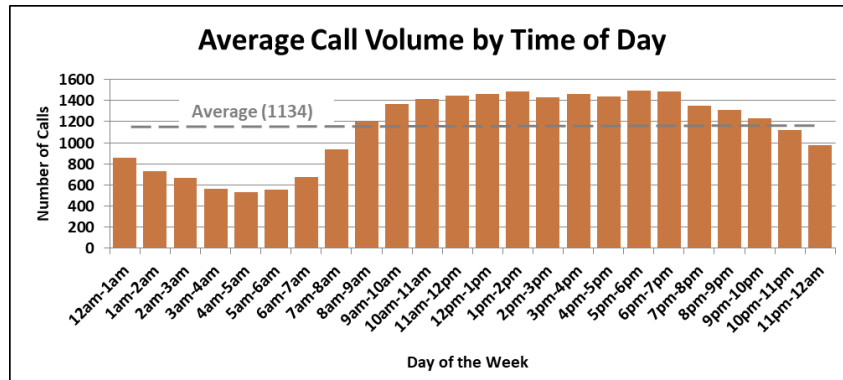
Figure 4: Emergency vs. Non-Emergency Calls

Figure 5: Average Call Volume by Time of Day

Figure 5: Average Call Volume by Time of Day

Figure 6: Travel Time Performance

Figure 6: Travel Time Performance

Travel Time Performance does not currently meet the travel time target established by NFPA 1710 (industry standard).
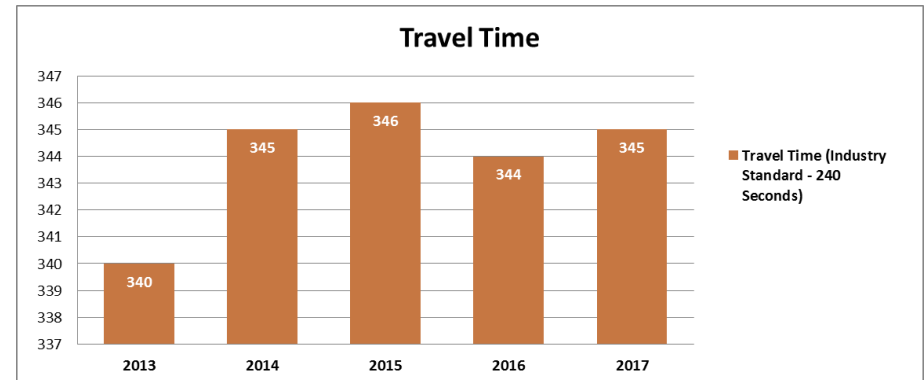
As shown in **Figure 5,** emergency call volume increases above the daily average between the hours of 8 a.m. and 10 p.m. The combination of higher than average call volume and peak traffic cycles has a negative impact on response time. Of greatest concern is the 5 p.m. to 7 p.m. window, as both call volume and traffic is at its highest levels during that time.

Response Time

Travel Time Performance captures how long it takes from the time the truck leaves the station until it arrives on scene. The National Fire Protection Association (NFPA) identifies a target of 240 seconds 90 per cent of the time. Travel time is the largest component of total response and is the most difficult to control in a growing municipality with significant urban intensification. An increase in travel time may have a negative impact on outcomes in an emergency situation such as medical, fire and rescue incidents. **Figure 6** illustrates MFES's actual city-wide travel time.

MFES has completed an infrastructure renewal strategy that considers deployment, resourcing and infrastructure options to best mitigate increasing travel times. Where significant changes in response and deployment are not warranted, additional mitigation factors such as public fire safety education and fire safety inspections will be considered.

Understanding the historic call volume and the risks associated with each call requires a more detailed analysis of call type. The average annual calls by response type is shown in **Figure 7.** This chart depicts an average based on an eight-year period (2009–2016).

Figure 7: Average Annual Call Volume by Response Type

Average Annual Call Volume by Response Type

Response Type	Number of Calls
Fires	1043
Pre Fire Conditions	583
False Fire Calls	4268
Medical Calls	12642
Rescues	3333
Public Hazard / Other	5338
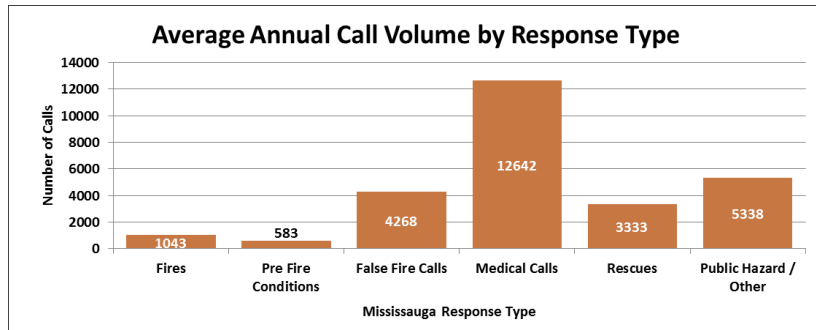
Firefighters on scene at motor vehicle collision

Based on data from the same eight years, medical calls are 46 per cent of MFES call volume (see **Figure 8**) and 81 per cent of those are

related to Asphyxia (or other respiratory condition) or chest pains/suspected heart attack.

Figure 8: Percentage of Calls by Call Type

Fires 4%
Pre Fire Conditions 2%
False Fire Calls 16%
Medical Calls 46%
Rescues 12%
Public Hazard / Other 20%
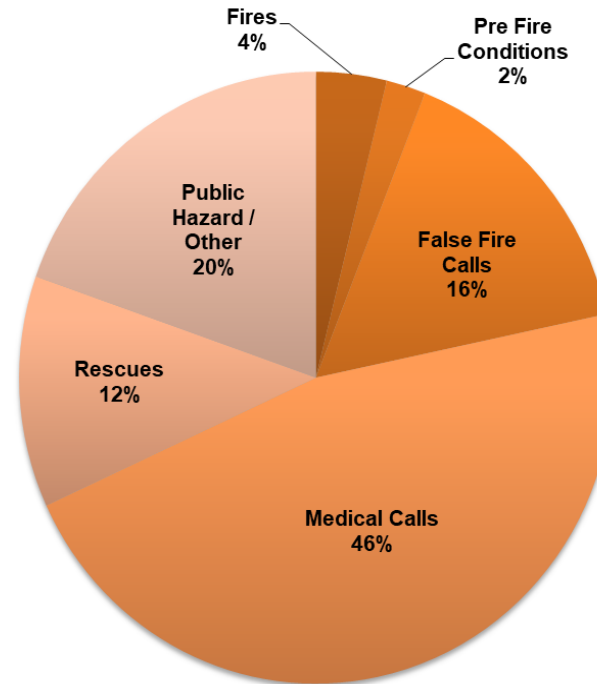
MFES medical response is provided by the closest available unit. Calls to 911 are evaluated by dispatchers and, if warranted (based on the tiered response agreement) MFES responds in support of Peel Regional Paramedic Service (PRPS). In a vast majority of situations, MFES can provide quicker initial contact with the patient as a result of the geographical disbursement of fire stations across the city. All MFES firefighters are trained to a minimum standard of Emergency Medical Responder. The training program is developed and administered in conjunction with a base doctor from Sunnybrook Centre for Prehospital Care.

In medical related emergencies, rapid, efficient and effective delivery of emergency medical response for life threatening 911 calls is a critical element in patient survivability. Patient outcomes are dependent on the speed with which trained personnel can arrive at the scene. In many cases, patients not only require immediate lifesaving treatment, but they may also require physical rescue, protection from the elements and scene safety. The fire service is structured to address all of the above simultaneously and is positioned to complement and enhance the EMS delivery system across Ontario, thus significantly improving patient outcomes.

Analysis of historical fire loss and fire call data provides valuable insight into understanding the specific trends within a community. Assessing the key factors of life safety risk and fire risk in relation to provincial statistics provides a foundation for evaluating where specific programs or services may be necessary.

Trends by Occupancy Classification

To assess the fire loss by occupancy classification, data accessed through the OFMEM's Standard Incident Reporting (SIR) was analyzed from 2003 to 2015. Based on this analysis, **Table 4** illustrates the proportion of total structure fires by property classification within Mississauga and Ontario from 2003 through 2015. During the 12-year period, the city and the province exhibit similar distributions of structure fires across the occupancy classifications. Approximately 66 per cent of the fire loss within Mississauga occurred within Residential (Group C) occupancies.

The largest discrepancy between the provincial and local distributions was within Industrial (Group F) occupancies. Industrial fires account for 11.6 per cent of fire loss in Mississauga, whereas the provincial average is 7.3 per cent.

One of the primary goals of MFES over the next five years is to develop and implement public education programming targeted to occupancies that have been identified as key risk areas.

Table 4: Proportion of Structure Fires by Major Occupancy Classification (2003–2015)

Occupancy Classification	# of Fires (Mississauga)	% of Structure Fires (Mississauga)	% of Structure Fires (Province of Ontario)
Group A - Assembly	214	5.1%	4.9%
Group B - Care of Detention	40	0.9%	1.3%
Group C - Residential	2781	65.9%	66.3%
Group D - Business/Personal	160	3.8%	2.4%
Group E - Mercantile	157	3.7%	3.4%
Group F - Industrial	488	11.6%	7.3%
Other (not classified or farm)	380	9.0%	14.5%
Total	**4220**		

Figure 9: Number of Structure Fires by Occupancy and Year
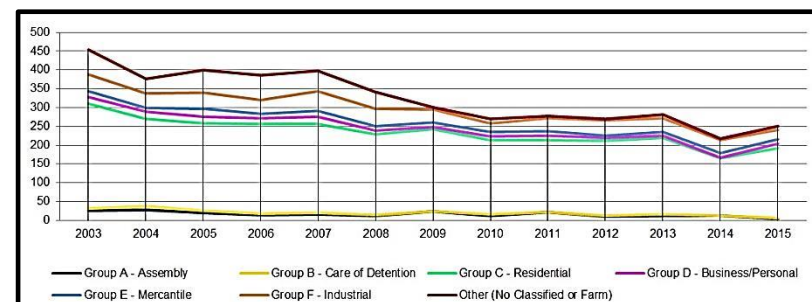
Mississauga – Occupancy Classification
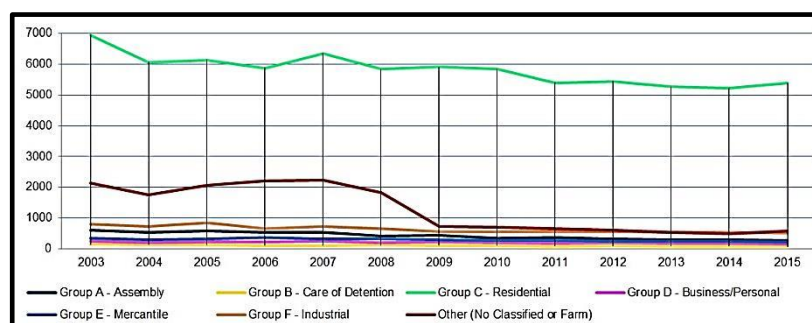
Province of Ontario – Occupancy Classification

Figure 9 illustrates the year to year changes in the number of structure fires by occupancy classifications. There are two key observations that can be made when looking at this information. First, the overall number of structure fires within both Mississauga and the province is declining even as the population continues to grow. Within the city, from 2003 to 2015 there was a 45 per cent decrease in the number of structure fires (454 to 250). The province has seen a similar trend with a decrease in structure fires by 36 per cent over the 12-year period. The decrease in the number of structure fires can be linked to greater optimization of the first two lines of defence (i.e., fire prevention and public education) and revised legislative standards.

The second key observation illustrated in **Figure 10** is the change in proportion of Residential (Group C) occupancies from 2003 to 2015. While the overall number of structure fires has decreased, the proportion of structure fires occurring in Residential (Group C) occupancies has increased both within the city and the province. The most recent reporting year (2015) saw the highest proportion of fires occurring in Residential (Group C) structure fires, in both the city and the province, at 74.0 per cent and 74.4 per cent respectively.

Figure 10: Proportion of Structure Fires in Residential Occupancies (Mississauga and Province)
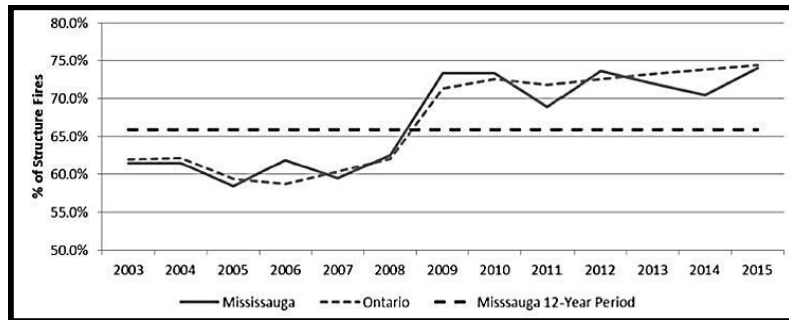
Civilian Fire Deaths and Injuries

Reviewing historic fire deaths or injuries by age and gender of victims can provide insight for the purposes of targeted community risk reduction programs. These trends can be used to inform programming. As explored in the demographic section above, seniors represent the highest proportion of fire fatalities in Ontario and males are more likely to be injured from a fire or lose their life in a fire.

Between 2003 and 2015 there have been 156 injuries and 21 fatalities in Mississauga. Within both the city and the province, the overwhelming majority of injuries and fatalities occurred in Residential (Group C) occupancies. In the city, 83.3 per cent or 130 injuries and 100 per cent or 21 fatalities occurred in Group C occupancies. In the province, 87.7 per cent or 6,057 injuries and 93.7 per cent or 989 fatalities occurred in Group C occupancies.

> While the overall number of structure fires has decreased, the proportion of structure fires occurring in Group C – Residential occupancies has increased both within the city and the province

Fire Cause

The NFPA defines fire cause as "the circumstances, conditions, or agencies that bring together a fuel, ignition source, and oxidizer (such as air or oxygen) resulting in a fire or a combustion explosion" (NFPA Glossary of Terms 2013). There are four categories of cause outlined within SIR data used to classify the cause of a fire. These include intentional, unintentional, other, and undetermined. The "intentional" category recognizes the cause of a fire to be started for a specific reason. These are typically classified as arson fires, and can be related to acts of vandalism, or to achieve personal gain through insurance. As indicated in **Table 5**, within the city, 18.4 per cent of the fires reported from 2003 to 2015 were intentional compared to 13.8 per cent in the province.

The "unintentional" category recognizes such things as playing with matches and equipment failures (see Table 5). In both the city and the province, unintentional causes account for the majority of all structure fires (60.6 per cent and 60.2 per cent respectively). This suggests a need for targeted education programs about fire causes and prevention.
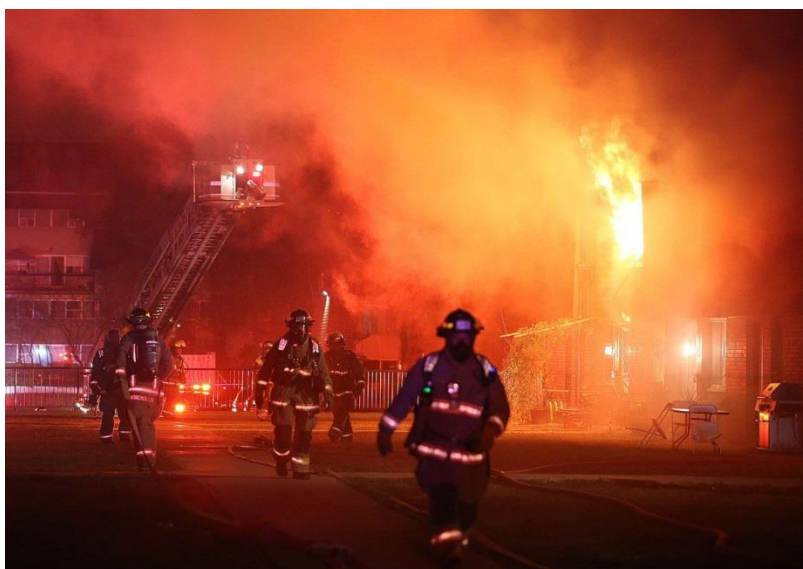
Fire Incident

Table 5: Fire Cause

Intentional		
	# of Fires	**% of Fires**
Vandalism	587	13.90%
Arson	191	4.50%
Intentional-Other	0	0.00%
Unintentional		
	# of Fires	**% of Fires**
Misuse of ignition source	1,390	32.90%
Mechanical/Electrical failure	608	14.40%
Design/Construction/Maintenance deficiency	221	5.20%
Undetermined	149	3.50%
Other undetermined	140	3.30%
Children playing	36	0.90%
Vehicle Collision	13	0.30%
Other - Undetermined		
	# of Fires	**% of Fires**
Other	326	7.70%
Undetermined	558	13.20%
Unknown, not reported	1	0.00%

Of the fires occurring within Mississauga from 2003 to 2015, the city has a higher proportion of fires overall that were caused intentionally compared to the province (18.4 per cent versus 12.8 per cent). Other key observations are:

- 14.4 per cent of fires were caused by mechanical/electrical failure (slightly higher than the province average at 13.8 per cent).

- 32.9 per cent of fires were caused by misuse of ignition source, (slightly higher than the province average at 29.9 per cent).

- 13.9 per cent of fires were determined to have been intentionally caused through an act of vandalism (significantly higher than the province average of just 6.0 per cent over the same period).

Ignition Source

Table 6 illustrates the fire loss by source of ignition based on an analysis of the data provided by the OFMEM for the city and the province. Of the fires occurring within Mississauga from 2003 to 2015, 27.8 per cent of fires occurred as a result of cooking equipment as the ignition source.

Table 6: Sources of Ignition (Mississauga/Province) (2003–2015)

Reported Ignition Source	City of Mississauga		Province of Ontario	
	# of Fires	% of Fires	# of Fires	% of Fires
Cooking Equipment	1,171	27.8%	18,463	16.2%
Undetermined	1,052	24.8%	29,363	25.7%
Open Flame/Tools/Smokers Articles	521	12.4%	17,158	15.0%
Miscellaneous	348	8.3%	11,925	10.5%
Electrical Distribution	292	6.9%	10,130	8.9%
Other Electrical/Mechanical	242	5.7%	4,138	3.6%
Heating Equipment, Chimney, etc.	185	4.4%	9,849	8.6%
Appliances	175	4.2%	4,799	4.2%
Lighting Equipment	163	3.9%	4,541	4.0%
Processing Equipment	56	1.3%	1,488	1.3%
Exposure	14	0.3%	1,886	1.7%
Not Reported	1	0.0%	340	0.3%
Total	4,220	100.0%	114,080	100%

In 27.8% of fires the ignition source was cooking equipment which is almost two times higher than the Provincial average.

Fire Safety

Smoke Alarms

Currently MFES provides some reporting on smoke alarm status and fire alarm system presence and activation with the fire call data. In regards to smoke alarms in a typical residential dwelling, **Table 7** shows the number of times a smoke alarm was present and operating on the floor or in the suite of fire origin over the past 5 years. In 2017, 46 per cent of the calls did not have a working smoke alarm on the fire floor. This means that in nearly half of the analyzed calls, there was not an operational smoke alarm present.

Table 7: Smoke Alarm on Floor or Suite of Fire Origin

Status	2013	2014	2015	2016	2017	TOTAL	%
No smoke alarm	96	89	99	96	88	468	32%
Smoke alarm present and operating	114	92	92	128	74	500	34%
Smoke alarm present, did not operate	43	46	40	31	35	195	13%
Smoke alarm present, operation undetermined	13	7	9	8	6	43	3%
Smoke alarm presence, undetermined	53	48	55	48	46	250	17%
Grand Total	**319**	**282**	**295**	**311**	**246**	**1456**	**100%**

Data over the past 5 years data indicates that in 46% of the instances, there was either no smoke alarm present, or it was not operational in the room where the fire started.
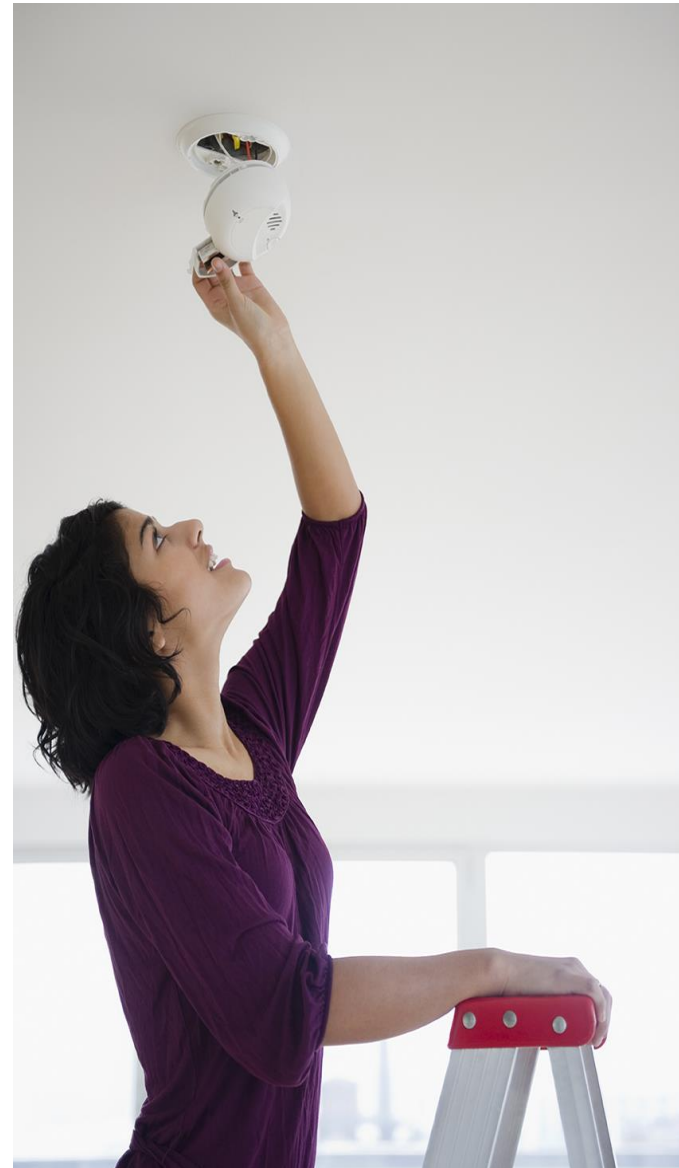
Check your smoke detector

Fire Suppression Systems

Fire suppression systems are essentially automatic systems that extinguish fires without human intervention, such as fire sprinklers. These systems can detect fires using a variety of methods including heat sensors, wiring, or manual detection. These systems are required in Group F – Industrial occupancies that may have a high fuel load, result in a large fire loss, or be home to hazardous materials.

In 2013, Ontario became the first province to require the phasing in of fire suppression systems in any and all long-term care facilities or other facilities that vulnerable occupants call home. Previously, fire suppression systems were only required in facilities built in Ontario after 1998. These are important systems that help prevent the loss of life and property as they act quickly to slow down fire progression and provide time for occupants with mobility or cognitive issues to evacuate.

Understanding the status of a fire suppression system in the case of a fire can be used as a check regarding prevention (e.g., inspection) activities. Although the data is not available as part of SIR at either a municipal or provincial level, the OFMEM requires fire departments to report on the presence of fire suppression system status in every structure fire they attend.

Table 8 illustrates the presence of a sprinkler system. It was reported that in the majority of instances (65 per cent), no sprinkler system was present. It should be noted, however, that it does not distinguish between whether a sprinkler system is mandatory in that occupancy or not.

Table 8: Presence of Sprinkler System (MFES call data 2013–2017)

Sprinkler System Present	2013	2014	2015	2016	2017	TOTAL	%
Full Sprinkler System Present	51	56	44	55	65	271	18%
Parital Sprinkler System Present	18	19	23	26	16	102	7%
No Sprinkler System Present	212	170	205	198	205	990	65%
Undetermined	37	37	23	32	35	164	11%
Grand Total	318	282	295	311	321	1527	100%

Sprinkler systems must be operational

Sprinkler systems are mandatory in F1 (high hazard) industrial occupancies.

Building Stock

The Ontario Building Code (OBC) categorizes buildings by their major occupancy classifications. Each classification has definitions that distinguish it from other occupancy classifications. The OBC major occupancy classifications are divided into six major building occupancy groupings. Within each group the occupancies are further defined by division. The OBC major classification groups and divisions are presented in **Table 9**.

Table 9: OBC Major Occupancy Classifications

Occupancy Classification	OBC Definition
Group A - Assembly	The occupancy or the use a building or part of a building by a gathering of persons for civic, political, travel, religious, social, educational, recreational or similar purposes or for the consumption of food or drink
Group B – Care of Detention	The occupancy or use of a building or part thereof by persons who are dependent on others to release security devices to permit exit; receive special care and treatment; or receive supervisory care.
Group C - Residential	An occupancy that is used by persons for whom sleeping accommodation is provided but who are not harboured or detained there to receive medical care or treatment or who are not involuntarily detained there.
Group D – Business/Personal	An occupancy that is used for the transaction of business or the provision of professional or personal services.
Group F - Mercantile	An occupancy that is used for the displaying or selling of retail goods, wares and merchandise.
Group F - Industrial	An occupancy that is used for the assembly, fabrication, manufacturing, processing, repairing or storing of goods and materials.

The analysis of property stock indicates that 95.8 per cent of the city's total building stock is Residential (Group C) occupancies. This includes single-family dwellings, multi-unit residential, and hotels/motels. Information provided by the OFMEM indicates that, for the period from 2003 to 2015, residential fires in the city accounted for 65.9 per cent of all fires, 83 per cent of fire injuries and 100 per cent of all fire fatalities. **Figure 11** depicts the distribution of property stock by major occupancy classification across the city.

Figure 11: Distribution of Property Stock by Major Occupancy Classification
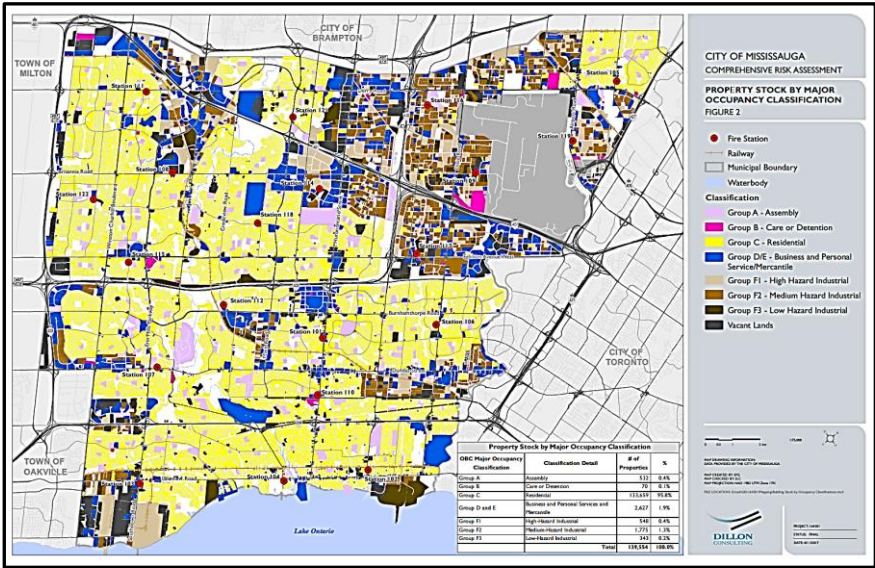
Over a 12 year period residential fires in Mississauga accounted for 65.9% of all fires, 83% of fire injuries and 100% of all fire fatalities.

Building Age and Construction

The National Building Code of Canada (NBCC) was developed in 1941 as a foundational model for jurisdictions across the country. Depending on the provincial jurisdiction, the National Building Code was either adopted outright and legislated, or alternatively used as the basis for developing provincial legislation.

In Ontario, the Ontario Building Code (OBC) was adopted in 1975, and the Ontario Fire Code (OFC) was adopted in 1981. Prior to the adoption of the OBC, municipalities had individually developed building codes. This resulted in inconsistent construction standards and regulatory environments across the province. In the city, approximately 32 per cent of the occupancies were constructed when there were no provincial codes in effect.

Together, the OBC and OFC have provided the foundation for eliminating many of the inconsistencies in building construction and maintenance that were present before their adoption.

In 1983, the OFC was further expanded to include retrofit requirements for many of the buildings constructed prior to adoption of the code. Retrofit requirements were established to ensure that a minimum acceptable level of life safety is present. A number of occupancy types are included within the retrofit requirements, including: assembly, boarding, lodging and rooming houses, health care facilities, multi-unit residential, two-unit residential, and hotels

More recent amendments to the OFC include Ontario Regulation 150/13 that came into effect January 1, 2014. This regulation is intended to enhance fire safety in Care or Detention (Group B) occupancies by including requirements for mandatory sprinklers, staff training and fire inspections. MFES has completed fire inspections on all Group B occupancies in Mississauga.

Table 10 illustrates the building age and existing building/fire code legislation that existed for that period.

Table 10: Building Age and Period of Construction Overview

Building Age (years)	Period of Construction	Comments
1 to 34	1982 - present	Both Fire Code and Building Code in effect.
35–41	1975–1981	Building Code in effect in Ontario.
42–74	1942–1974	National Building Code available for potential use by individual jurisdictions.
≥ 75	≤ 1941	No codes available or legislated guidelines in place.

Approximately 32% of occupancies in the city were constructed when no provincial codes were in effect.

Building Height and Area

The Ontario Building Code has regulations specific to high-rise buildings that consider the unique characteristics of the occupancy type.

Industry best practice and standards have also identified that fires in high-rise buildings can place significantly higher demands on fire suppression activities, which require more resources. This is commonly referred to as "vertical response." It is the initial deployment of firefighters and equipment to upper levels for suppression, medical or other incidents.

Building area can cause comparable challenges. Horizontal travel distances rather than vertical can mean extended response times by firefighters attempting rescue or fire suppression activities. Large buildings, such as industrial plants and warehouses, department stores, and big box stores, can contain large volumes of combustible materials.

In many of these occupancies the use of high rack storage is also present. Fires within this type of storage system can be difficult to access and cause additional risk to firefighter safety, due to collapse risks.

Building Contents

Building contents is typically referred to as "fuel load" and refers to the amount and nature of combustible content and materials within a building. This can include combustible contents, interior finishes as well as structural materials. Higher fuel loads result in increased risk of fire loss due to increased opportunity for ignition and increased fire severity.

As presented previously in this plan, age and construction of a building can also have an impact on fuel load. Older buildings typically have a larger volume of combustible construction such as wood framing rather than newer construction using concrete and steel products.

Consideration should be given to select industrial occupancies with potential fuel load concerns. There are a number of warehousing uses that exist within the city which are supported by the economic hub of the airport and the role of Peel Region as a whole in goods movement.

Other top common industries with potential fuel load concerns include heavy manufacturing (non-automotive), truck terminals, mini-warehousing, and food processing plants. There are also six identified major distribution centres, and two petro-chemical plants.

> **Longer response times can occur for emergency response to high-rise occupancies due to the "vertical response" factor.**

Historic or Culturally Important Buildings

In addition to the consideration of building age and construction, understanding the location of historic or culturally important buildings or facilities is important since such sites/buildings/landscapes can be key features to a community. They provide a sense of heritage, place, and pride and may act as tourism destinations. Historic areas can also present a high fire risk from the materials used to construct the buildings, the exposure to other buildings, and their importance to the community.

Regular fire prevention inspection cycles and strategies to enforce continued compliance with the Ontario Fire Code are considered as best practices to achieving the legislative responsibilities of the municipality and providing an effective fire protection program to address fuel load risks. Municipalities commonly have registered heritage sites/buildings and/or designated heritage conservation districts. According to the database provided by the City of Mississauga, the city has over 3,843 properties which are identified as heritage resources in the community.

Road Networks and Highways

Mississauga is 292 square kilometres, with a population density of approximately 2,440 persons per square kilometre. It is bordered to the west by the Town of Oakville, Town of Milton, and Town of Halton Hills, to the north by the City of Brampton, to the east by the City of Toronto, and to the south by Lake Ontario.

Mississauga is served by a network of highways/freeways, arterial roads, collector roads, and local roads. Highway 401, Highway 403, and the Queen Elizabeth Way (QEW) run through the city. Highway 407 and 427 are not within Mississauga, but are situated immediately outside the city borders—Highway 407 just north of the Mississauga-Brampton border and Highway 427 along the border with the City of Toronto.

The primary road network is a grid of arterial roads. There are over 769 signalized intersections within the city, most of which are connected to the central computerized traffic control system. These signals operate with "semi-actuated control," and have pre-determined timing plans to reduce overall system delay.

Most major intersections have traffic signal pre-emption for fire vehicles (pre-emption is provided in the direction of major traffic flow or in both directions if there is significant traffic in both directions). Traffic signal pre-emption is an intelligent transportation system used to manipulate traffic signals to give emergency vehicles priority when travelling through signalized intersections. They are commonly based on line-of-sight technologies whereby an emitter within a vehicle sends a signal to a receiver mounted at a traffic light. In the context of fire service, these systems provide travel time and public safety advantages. Traffic signal pre-emption systems can assist in clearing intersections and/or controlling surrounding traffic signals that are equipped with the technology. Such systems can allow emergency vehicles to pass through intersections more efficiently and safely, reducing emergency response times.

It is common within a municipality for road networks to be a contributor to emergency call volume due to motor vehicle collisions. The road network also impacts emergency response times. For example, increased traffic congestion will increase emergency response travel times. Congestion has been and continues to be a significant issue within the city. It is anticipated to increase as development intensification continues. **Table 11** presents an analysis of the number of emergency calls based on highways, arterial roads, and local roads within the city.

Table 11: Emergency Calls per Road Type

Road Type	# of Emergency Calls	
	2013	2016
Highway	655	553
Arterial	1703	1811
Local	508	632

(Note: The above analysis considers only 2013 and 2016 road networks, based on available data).

Traffic Congestion

Toronto Pearson International Airport

Toronto Pearson International Airport is located in the northeast corner of Mississauga. Fire and Emergency Services for the Airport are provided jointly by the Greater Toronto Airport Authority Fire and

Emergency Services (GTAAFES) and Mississauga Fire and Emergency Services (MFES) based on a Fire Protection Agreement.

Though the airport has dedicated emergency response services, Mississauga Fire and Emergency Services responds to certain airport emergency calls, as well as to emergencies extending beyond the airport boundary. MFES averages approximately 215 airport related calls annually.

Hazard Identification

Under the *Emergency Management and Civil Protection Act* (EMCPA), municipalities are required to complete a Hazard Identification and Risk Assessment (HIRA) to outline all hazards and risks present in the municipality. This assists municipalities in preparing for, responding to, and recovering from emergencies. It is important to note that municipally-prepared HIRAs inform community emergency preparedness through the development of emergency management programs. This Plan considers and incorporates risks arising from hazards only from a fire and emergency services perspective, so as to inform fire and emergency service planning, prevention and management.

Hazards are important to consider from a fire risk, emergency response and overall public safety perspective. As part of legislated municipal emergency planning, municipalities including the City of Mississauga have completed a HIRA.

The City of Mississauga HIRA considers three types of hazards:

1. **Natural hazards** are those which are caused by forces of nature (sometimes referred to as "Acts of God"). Human activity may trigger or worsen the hazard (e.g., deforestation may increase the risk of a landslide), but the hazard ultimately is viewed as a force of nature.
2. **Technological hazards** are hazards which arise "from the manufacture, transportation, and use of such substances as radioactive materials, chemicals, explosives, flammables, modern technology and critical infrastructure."
3. **Human-caused hazards** are hazards that result from direct human action or inaction, either intentional or unintentional.

This includes hazards that arise from problems within organizational structure of a company, government, and so on.

The key hazard related risks for the city are: flood, freezing rain/ice storm, transportation emergency (air, rail, and road), human health emergency, hazardous materials incident, windstorm, extreme temperature, cyber-attack, tornado, energy supply emergency, and snowstorm/blizzard. Some of these hazards can occur as major or minor events.

In July 2013, the city was hit by heavy rainfall that caused significant flooding and damage to many homes. In December of 2013, the city was subjected to an ice storm which caused significant damage to infrastructure and the environment. In each of these events, critical and essential services were impacted. The city faces the increasing likelihood of similar emergencies related to extreme weather occurring in the future. Preparation to address and recover from extreme temperatures, precipitation, flooding and other localized climate related disasters is a priority.

Business continuity is a municipality's capability to continue delivering services at acceptable levels following a major incident where services may have been disrupted. The Office of Emergency Management (OEM) is developing a process whereby all critical City services will be identified and business continuity plans will be developed for each service city wide.

Purely from a Fire and Emergency Services perspective, MFES is an all hazards service and is prepared to respond to all types of emergencies. There is collaboration between the OEM and other City staff. One of the many responsibilities of the OEM is to train staff in various levels of incident management in order to ensure all divisions within the City are prepared to respond to the needs of the community in any disaster situation.

Economic Impact

The economic profile of a community considers particular facilities, employers, or events in a community that may contribute to its

financial vitality and sustenance (NFPA 1730). If these facilities, employers, or events are impacted through a fire or emergency event, it could have a profoundly negative impact on the overall well-being of the city.

To assess the economic risk, potential financial loss was estimated using a predictive model. The model was deployed for each non-residential dissemination area within Mississauga, and assesses the likelihood of calls occurring in business environments and their severity.

> **Fire incidents can cause physical damage on goods and facilities, can risk the health/life safety of employees and loss of income/revenue as facilities are in recovery.**

Figure 12 illustrates the geographic distribution of revenue throughout the city by dissemination area. The northeast quadrant of the city is observed to have the highest revenue per dissemination area. This area is dominated by industrial land uses, as well as Pearson International Airport.

Other smaller, high-employee dissemination areas are scattered throughout the city:

- Area surrounding Highway 401 in the northwest of the city, with prevailing industrial and office land uses

- Area surrounding Highway 403 on the western city border, with primarily industrial land use

- Area south of Burnhamthorpe Road West and west of Mavis Road, with a mix of industrial, utility/public work, and office land uses

- Area along Highway 403, near to Hurontario Street interchange, with primarily retail land use

- Area bordered by Dundas Street East, the Queensway East, Cawthra Road, and the eastern city border, with primarily industrial and retail land uses

- Area just north of the Queen Elizabeth Way, along the western city border, with a mix of office, industrial, and public work/utility land uses

- Area south of Royal Windsor Drive on the southwest city border, with mostly industrial and vacant land

- Area south of Royal Windsor Drive on the southeast city border, with a mix of public work/utility, public or municipal parking, open space/greenfield, and some industrial land

Figure 12: Estimated Revenue by Dissemination Area
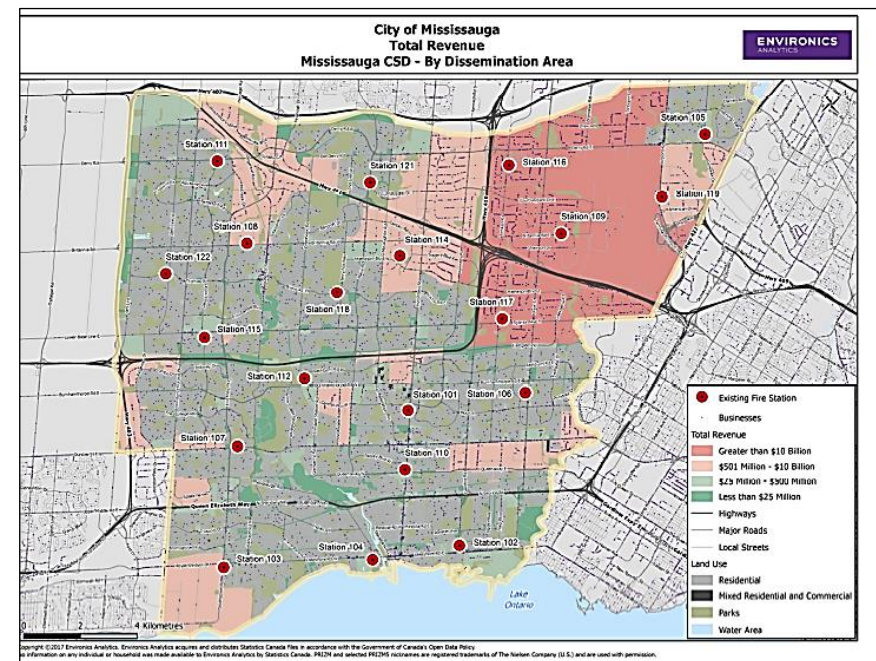
Key Areas of Focus

To ensure community safety through risk reduction, MFES has developed a community risk reduction strategy that considers the risk level of each identified risk, as well as our ability to mitigate, prevent, accept or transfer each risk. As mentioned earlier, MFES has assessed the city from the perspective of seven profiles including: demographics, geography, building stock, past fire loss, response, hazards and economics. Through the analysis presented in each of the seven profiles, key risks were identified. For each of these key risks, a risk has been assigned based on probability and consequence. To assist in developing goals and objectives to address these risks, specific consideration has been given to five key areas: education, enforcement, engineering, economic incentives and emergency response (the 5 E's of risk assessment).

Education

Public fire safety education is a critical component to fire prevention. MFES is working towards implementing and prioritizing all public fire safety programming based on risk. The risks identified in the CRA document will be used to inform existing and new public education initiatives. This will include a proactive smoke alarm and home escape planning program.

Enforcement

Fire safety inspections and code compliance are an essential component of community safety. A priority for MFES is to establish a robust, proactive fire and life safety inspection program. This program will include an appropriate inspection cycle for all occupancy types depending on the risk level. A more aggressive application of penalties for non-compliance will also be a priority.

Failure to comply could result in a ticket for $360 or a fine of up to $50,000 for individuals or $100,000 for corporations.

Making a Home Escape Plan

Engineering/Technology

Building permit applications must comply with the fire and life safety requirements in the Ontario Building Code and the Ontario Fire Code. These requirements include smoke and fire alarm systems, automatic fire sprinkler systems, emergency power systems, emergency lighting systems, hose and standpipe systems, hazardous processes/operations and protection, smoke control systems and high-rise safety measures. MFES plans examiners review each building permit application submitted to the City to ensure compliance. This program will continue to be a priority.

Technology is a tool that can be leveraged to enhance existing program capabilities as well as introduce new ways to capture and use data to reduce risk. Improvements will be made to the Computer Aided Dispatch (CAD). CAD is an incident management software system that includes call handling and dispatching, intelligent mapping, field communications, data reporting and analysis and application integration. The current system is dated and an upgrade of the system will be completed to ensure continued reliability of routing, dispatching and data information capture.

MISSISSAUGA

Economic Incentives

Economic incentives are intended to improve and encourage fire safety compliance and/or raise public awareness. These include such things as charging fees and/or penalties for lack of compliance, as well as providing opportunities or reduced fees for individuals who make the necessary changes in order to comply. MFES currently charges a fee to the property owner for false alarms as a result fire alarm mechanical failure, equipment malfunction, improper installation of the system or failure to maintain the system as prescribed by the Fire Code.

Emergency Response

Risk prevention and mitigation are the goal of four of the five E's above, however, consideration must also be given to the fifth E: emergency response. This is critical in the event that the prevention and mitigation steps are not enough.

Each municipality has its own unique set of needs and circumstances that are reflected in the fire protection services and programs delivered. MFES is an all hazards response fire department and responds to more than 30,000 incidents annually. These incidents include: fires, medical emergencies, hazardous materials, gas leaks, water, ice and high angle rescue, public assistance, carbon monoxide incidents and motor vehicle collisions.

MFES has completed an infrastructure renewal strategy that informed this Master Plan and will be used to determine deployment, resourcing and infrastructure options to optimize front line service delivery. This will consider fire station locations for both new and existing stations, type of apparatus and staffing to best mitigate community risk. This has informed many of the recommendations in this document.

Fire Trucks at Fire Station 106

House Fire

MISSISSAUGA

Capital Infrastructure Requirements

Capital Infrastructure Requirements

There are currently 20 fire stations in Mississauga, with #21 currently in the planning stages. These stations deliver emergency services city wide. Specialized crews in select stations across the city provide technical rescue and hazardous materials response. These stations are located strategically across the city.

This section contains an assessment of Mississauga's Fire and Emergency Service capital infrastructure consisting of facilities, equipment and vehicles.

Fire Station 116

Facilities

Fire stations are in operation 24 hours per day, 365 days per year. For this reason they are subject to wear and tear issues more frequently than facilities that operate on more traditional working hours. The maintenance of fire station infrastructure is essential to ensure that staff can operate effectively to meet health and safety and accessibility standards.

MFES has not built a new fire station since 2002. Based on response time data, MFES has identified priority areas where new infrastructure is required to augment service delivery. It is also imperative to maintain the infrastructure of existing fire stations in order to provide

the required services, to meet health and safety obligations, and be self-sufficient in the event of large scale emergencies. There are seven fire stations that were built prior to 1980. Of these seven fire stations, only station 105 in Malton has had a significant renovation to maintain its life cycle.

Table 12 illustrates existing stations, locations and construction years.

Table 12: Existing Fire Station Infrastructure

Station #	Station Area	Year Built	Last Year Renovated	Age
101	Cooksville	1974	1987	43
102	Lakeview	1979	None	38
103	Clarkson	1985	2001	32
104	Port Credit	1950	None*	67
105	Malton	1980	2011	37
106	Dixie	2012	None	5
107	Erindale	1970	1979	47
108	Streetsville	1980	None	37
109	Britannia W	1976	1988	41
110	Queensway	1982	2006	35
111	Meadowvale	1983	2004	34
112	Creditview	1984	2017	33
114	Heartland	1989	None	28
115	Erin Mills	1990	None	27
116	West Malton	2011	None	6
117	North Dixie	1999	None	18
118	East Credit	1996	None	21
119	Airport	2016	None	1
121	Meadowvale Village	2002	None	15
122	Churchill Meadows	2003	None	14

*Minor maintenance only

The provision of emergency services relies heavily on the ability of front-line operations staff to respond quickly. NFPA 1710 is the standard for the organizing and deployment of fire suppression, emergency medical and special operations for career fire services, like Mississauga Fire and Emergency Services. It is an internationally

recognized standard and is used by most fire services as a service delivery benchmark.

NFPA 1710 (2016 edition) sets the following targets for response time:

- **Distribution (First Arriving vehicle):** 240 seconds (four minutes) or less travel time for an initial arriving team of four firefighters 90 per cent of the time. MFES meets that target 61 per cent of the time.(as of December 2017)

- **Concentration (Depth of Response):** 480 seconds (eight minutes) or less travel time for the arrival of 26 or more firefighters for high risk, 15 or more firefighters for moderate risk, and four or more firefighters for low risk occupancies 90 per cent of the time. **Table 13** illustrates MFES actual ability under current conditions to meet this standard.

- **Concentration (Depth of Response) for High Risk Occupancies:** 610 seconds (10 minutes, 10 seconds) or less travel time for the arrival of 39 or more firefighters to a high-rise occupancy 90 per cent of the time. This is a new standard that has been included in the 2016 edition of NFPA.

Table 13: Concentration Actuals (Current Conditions)

# of FF on Scene with 8 Minutes Travel Time	% Calls Covered
>=4	99%
>=15	57%
>=26	14%
>=39	24%

Emergency Medical Response: 240 seconds (four minutes) travel time or less for the arrival of a unit with first responders with automatic external defibrillator (AED) or higher-level capability at an emergency medical incident.

Pink Truck Tour outside of City Hall

Facility placement is a significant factor in the ability to meet the distribution target. The appropriate distribution of fire stations across the city is the only way to affect travel time.

Figure 13 and **14** below illustrate the response ability in 2014 and 2017 respectively under the existing 20 station model.

Response time across the city has increased by one per cent per year as a result of growth related variables, such as density and traffic congestion.
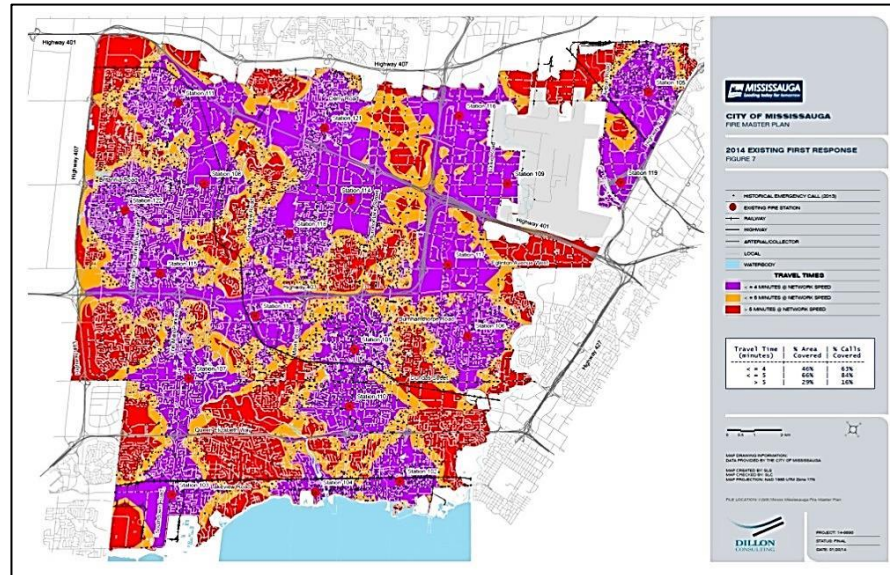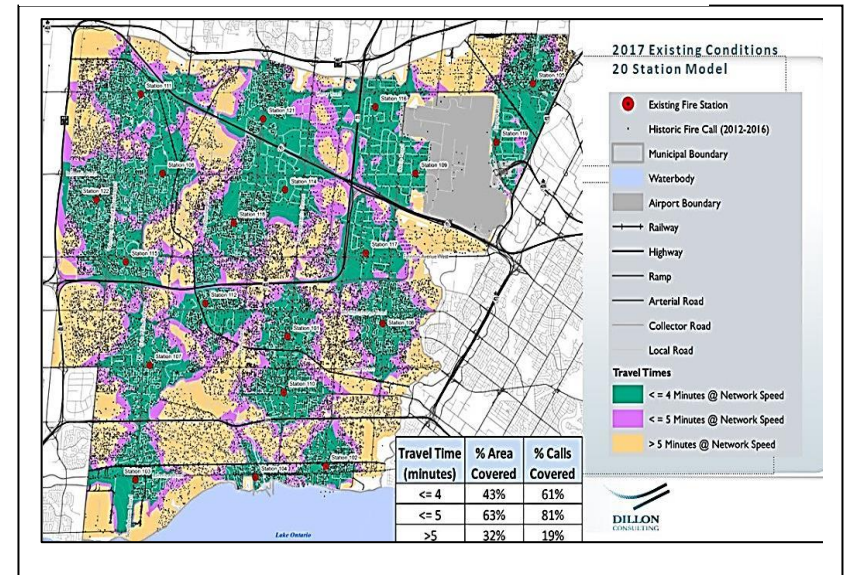
Figure 13: 2014 Existing First Response

Figure 14: 2017 Existing First Response

The number of vehicles, the type of vehicle and the number of firefighters are all factors contributing to the probability of a positive outcome. As illustrated in **Table 14,** in current conditions and existing infrastructure MFES falls considerably short of the NFPA 1710 target for moderate, high and high-rise occupancies.

Table 14: Concentration Targets by Risk Type

Risk	# of FF Required in 8 Minutes	% of time target achieved
Moderate	>=15	57%
High	>=26	14%
High Rise (High)	>=39	24%

Factors to consider:

- 95.8 per cent of the city's total building stock is Residential (Group C) occupancies, which are classified as **moderate risk.**

- There are 326 identified vulnerable occupancies classified as **high risk.**

- There are 548 high hazard industrial properties classified as **high risk.**

- There are 347 buildings with a height in excess of 18 metres, which are defined as high-rise buildings and are classified as **high risk.**

- The City and provincial planning policies have identified intensification as a primary objective of community growth that will include a significant component of additional high-rise buildings in the future.

Figure 15: Existing Concentration High-Rise (Depth of Response)
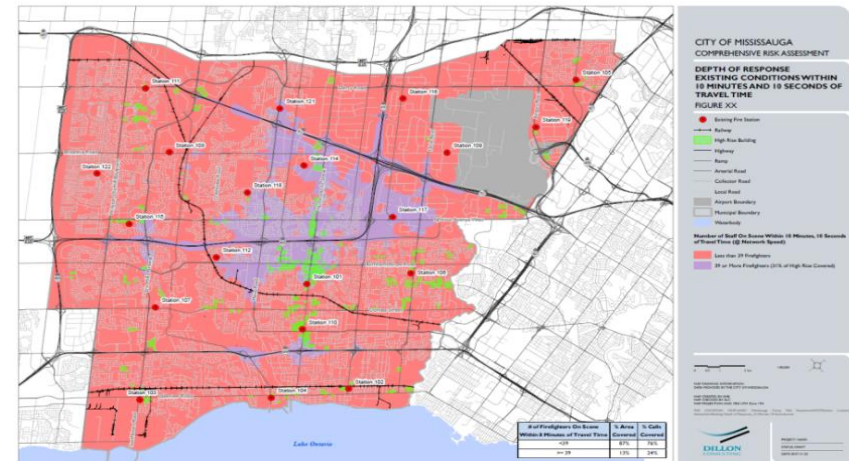
Absolute Towers

Facility Requirements

The approach that is being taken by MFES with regards to resource deployment is based on the principles of NFPA 1710, 2016. The goal is to have stations located so that the response time for the first arriving vehicle from a station to the location of an incident can occur in four minutes or less, 75 per cent of the time over the next 12 years. Other considerations in an effective deployment model are:

1. Intensification/Growth: The city is also undergoing rapid intensification and future growth predictions indicate that there are areas, including the City Centre which will see significant vertical growth.

2. Risk: Community risk factors such as high risk occupancies, high risk behaviour and a combination of the two are factors in station location and deployment.

3. Geography: Rivers, bridges, arterial roadways and rail lines are natural barriers that can impede travel time.

4. Traffic congestion: Historically, response time has increased by one per cent per year as a result of increased traffic congestion.

The Station Location Study that was completed in 2014 identified areas within the city where MFES was experiencing response time challenges. Priority areas were identified based on the number of higher risk occupancies and the rate of deficient calls compared to the city-wide service levels. To address the deficiency in these priority areas, the 2014 *Future Directions* Fire and Emergency Services Master Plan recommended seven new stations over the long term.

In 2017/2018, MFES conducted both a Comprehensive Risk Assessment and associated Infrastructure Renewal Strategy. These studies were completed in order to inform decisions regarding the optimal location of fire stations across the city to best support a more risk-based deployment model.

Based on the results of these studies, the 2019 *Future Directions* Master Plan recommends five new fire stations over a 10 year planning cycle. This does not include fire station 120 at Hurontario and Fairwind Drive which is currently funded and in the design phase.

Priority areas across the city were identified where some or all of the following conditions existed:

- High volume of calls

- Historically deficient response times

- Future growth implications

- Higher risk occupancies/population

The following geographic areas have been identified as a priority and where new fire stations are recommended (listed in priority sequence).

1. **Dundas and Cawthra**: This area has been identified as a priority because it has high call volumes, a significant number of high and moderate risk occupancies and historically has a high number of calls that do not meet the travel time standards.

2. **Collegeway and Winston Churchill**: This area is identified as a priority based on existing deficiencies, current population and community risk. This is an area where the community risk is higher, as a large portion of the occupancies are residential and consist of a mix of single family dwellings and low-to-medium rise multi-unit buildings.

3. **Tenth Line and Aquitaine**: This area has been identified as a priority area based on existing response deficiencies and future growth opportunities. It has a number of high and moderate risk occupancies.

4. **Southdown and Truscott (Lorne Park):** This area is identified as a priority based largely on existing response deficiencies. This is a large geographic area and access can often be challenging for emergency response vehicles.

5. **Mavis and Dundas**: This area has been identified as a priority as there are a significant number of calls that do not meet the travel time standards. There are also a substantial number of high-rise/high risk occupancies that are either directly in this response area or would be serviced by this station in an adjacent response area.

Future Considerations:

Other areas across the city that will be considered as part of future planning are (see **Figure 14** for map of locations) (not in priority sequence):

6. QEW and the Toronto border

7. Residential/Employment to QEW West of Winston Churchill Employment, North of QEW West of Winston Churchill (investigate the feasibility of entering into automatic aid agreement with Oakville)

8. Credit River near Britannia

9. West Malton North of the GTAA (investigate the feasibility of entering into automatic aid agreement with Brampton)

10. Credit River near Eglinton

11. North Lakeview

12. East Dixie

13. North East Malton

14. East Rathwood (investigate the feasibility of entering into automatic aid agreement with Toronto)

15. Ninth Line and Eglinton Avenue

16. Sheridan North of the QEW

17. Hurontario South of the QEW – Mineola

18. East of Erin Mills and South of the 403

19. Creditview Road North of Derry (investigate the feasibility of entering into automatic aid agreement with Brampton)

20. Gateway

21. Airport Corporate Rathwood (investigate the feasibility of entering into automatic aid agreement with Toronto)

22. Winston Churchill and Lake Ontario (investigate the feasibility of entering into automatic aid agreement with Oakville)

The Fire Master Plan recommends options to expand and improve public education programs, as well as review alternatives to current inspection cycles.

Figure 16: Future Planning Areas

2019 FIRE AND EMERGENCY SERVICES MASTER PLAN

MISSISSauGa
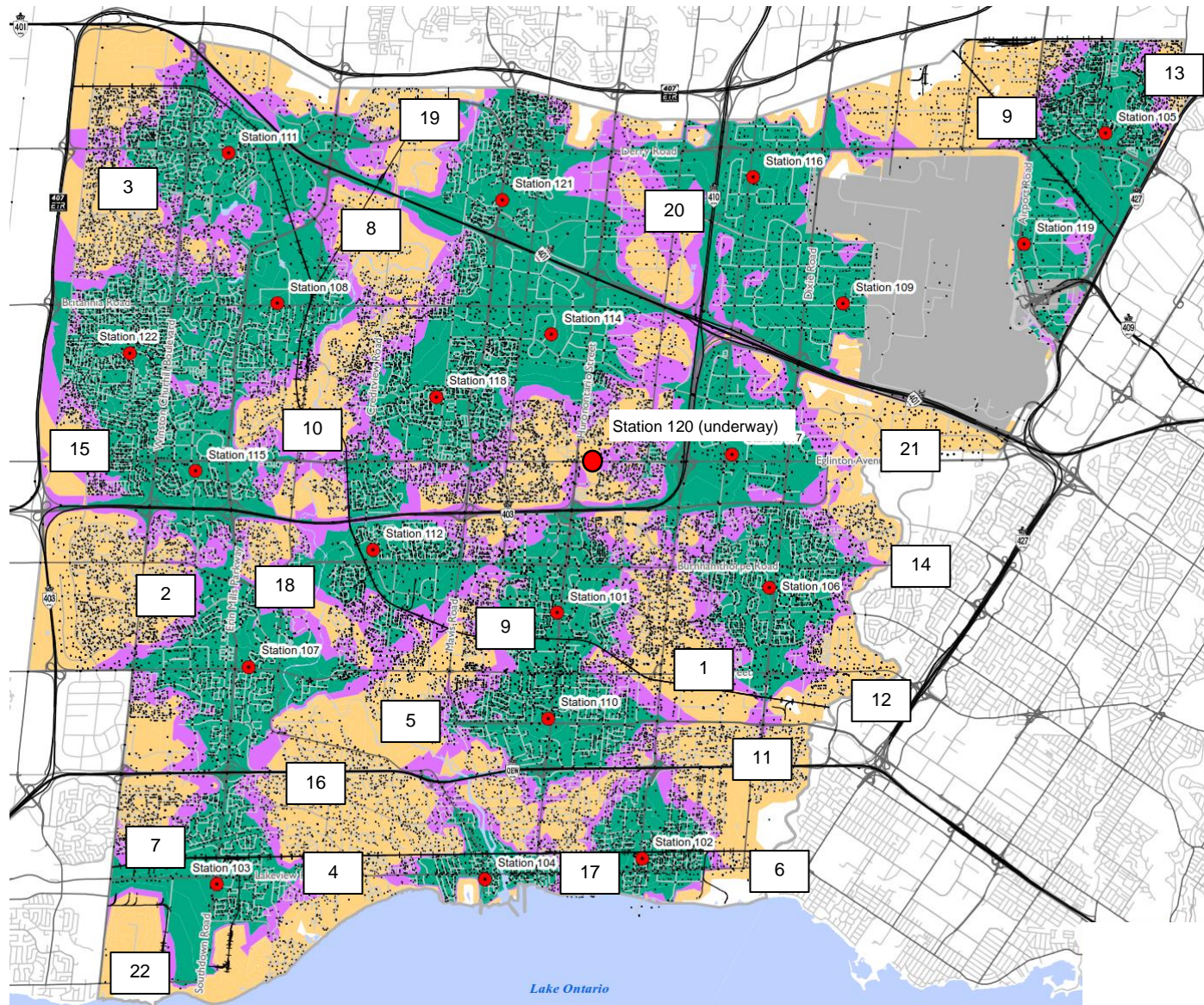
Equipment

MFES has an inventory of equipment valued at more than $10 million dollars. This equipment includes:

1. Personal protective equipment (bunker gear, Self-Contained Breathing Apparatus (SCBA), helmets, gloves and all gear required for front-line operations)

2. Technical rescue equipment (auto extrication, high angle, ice and water, trench and confined space rescue)

3. Other front-line equipment (such as hoses, nozzles, and so on)

Currently MFES maintains a capital budget that allows for the purchase of new equipment and the replacement and refurbishment of existing equipment. MFES will be completing a formal equipment lifecycle program that will inform the business planning and budget process.

The Infrastructure Renewal Strategy also addresses the equipment required to effectively implement the deployment model. Each fire station and truck must be appropriately equipped to meet the needs of the communities they serve. MFES operations section responds to various types of emergencies that include: fires, medical emergencies, motor vehicle accidents, public hazard situations, hazardous material (hazmat), and technical rescues. All of these disciplines use specialized equipment and require highly trained staff to respond to various emergencies. This equipment must be tested and evaluated regularly to ensure reliability, and confirm that legislative requirements and manufacturer recommendations are met. This includes the testing of ground and aerial ladders, pumps, generators, hose and other equipment used for auto extrication and other rescues. A consistent and ongoing investment is critical to maintain equipment within its recommended lifecycle. Forecasted development and growth will add to the total inventory pressures. A formal lifecycle replacement model will provide a predictable and reliable funding model and subsequently effective service delivery.

SCBA Training

Vehicles

Until 2017, MFES had a heavy fleet replacement schedule in place that reflected a lifecycle of 15 years as a front-line apparatus and five years in reserve. During the first half of 2016, an extensive review of the replacement schedule was conducted. As a result of the review it was recommended that the new replacement schedule reflect twelve years front- line and three years reserve. This schedule ensures that vehicles remain in good operating condition, are safe and reliable to perform for fire fighters responding to the scene of an emergency and pass the Ministry of Transportation of Ontario (MTO) annual certification inspection.

In addition to this, a Lean Project was completed in 2017 that improved the MTO certification process by decreasing the turnaround time for legislated MTO repairs. The outcome was a turnaround time reduction of up to 80 per cent for Pumper and Squad vehicles and 90 per cent for Aerial apparatus.

Recommendations

Recommendations

The following recommendations are intended to define requirements to prevent or mitigate community risk. They also reflect programming and infrastructure requirements to meet the needs and circumstances of the community. There are 25 recommendations in total which are grouped into six areas of focus: Education, Enforcement, Engineering, Economic Initiatives, Emergency Response and Continuous Improvement. They are not prioritized. They reflect industry trends, community risks and infrastructure requirements. Recommendations from the 2014 *Future Directions* Fire and Emergency Services Master Plan document were also considered.

Education

Targeted Public Fire Safety Education

1   Establish a dedicated fire and life safety education section within Fire Prevention and Life Safety with a mandate to develop, implement and measure fire and life safety education programming based on identified key risks outlined in the Comprehensive Risk Assessment (CRA).

Discussion

Public Fire Safety education is a critical component of the fire prevention strategy. MFES currently delivers some public education programming such as: evacuation drills, fire extinguisher training, firefighter in the community, general fire safety, high rise safety and the Arson Protection Program for Children (TAPP-C).

As mentioned above, a significant component of the CRA was the community risk identification phase which looked at historical data and other relevant information to assess areas of risk. This assessment will be used to drive targeted public education programs prioritized by risk.

Implications

- Teaching people to be the stewards of their own fire safety has proven to have a positive impact on the number and severity of fire related injuries and deaths.

Public Education Event

Expand Delivery of Public Fire Safety Education

2   Enhance the delivery of fire and life safety education by operational staff in the field.

Discussion

Fire operations staff (fire fighters) are already active in the delivery of public education in the community. These programs come in different forms and include such things as Home Safe Home, Station Visits and Vehicle Visits. Organizations can book both station and truck visits. Schools often take advantage of this education opportunity.

Implications

- Operations staff comprise the largest number of front-line personnel. Therefore on duty staff can reach a large number of residents more effectively than relying solely on public education staff.

Community Outreach

| 3 | Develop and foster relationships with stakeholders of all key risk occupancy types as identified in the Comprehensive Risk Assessment to reinforce fire and life safety behaviours and code compliance. |

Community Outreach

Discussion

Each type of occupancy has inherent risks associated with it. Property owners should recognize these risks and operate in a way that ensures safety for themselves, their property and the community. MFES will work closely with all stakeholders to ensure a good understanding of both legislative responsibilities and good fire safety practices.

Implications

- Knowledge is power. Property owners, managers and other stakeholders can have a positive impact on fire safety by understanding their responsibilities and knowing what to do in the event of an emergency.

Trend Analysis

| 4 | Use fire cause determination to identify trends and to inform public education programming. |

Discussion

Under clause 9.2(a) of the *Fire Protection and Prevention Act,* it is a duty of the Ontario Fire Marshal and Emergency Management (OFMEM) to investigate the cause, origin and circumstances of any fire. MFES has 30 fire safety inspectors who are designated by the Fire Marshal as Assistants to the Fire Marshal and have fire reporting duties such as cause determination in situations where the OFMEM does not attend. That information is submitted to the OFMEM and is tracked provincially. This information can be valuable to track fire cause and tailor education programs accordingly.

Implications

- The ability to develop meaningful public education programs is an important step in reducing risk.

- Using available data to determine the best and most effective prevention methods can save lives.

Remember to Replace Batteries in Smoke Alarms

Residential Safety

5 Develop, implement and measure a proactive smoke alarm and home escape planning program.

Discussion

Residential occupancies account for approximately 74 per cent of all fires in Mississauga. Within Mississauga, 83.3 per cent of injuries and 100 per cent of fatalities occurred in residential occupancies. As discussed above, data over the past eight years indicates that 46 per cent of fire calls do not have a working smoke alarm on the fire floor. It is critical that homeowners understand that the law requires that all residential occupancies must have a working smoke alarm on every floor and that there are consequences for non-compliance.

Implications

- A comprehensive, smoke alarm program will reach a substantial number of residents and result in a higher rate of voluntary compliance and subsequently, improved fire safety.

- Reduce the fire risk in residential occupancies.

Get the Message Out

6 Develop, implement and measure a communications strategy that uses various communication channels, including social media and councillor outreach, to relay key messages related to fire and life safety.

Discussion

MFES currently uses various social media avenues to reach residents with fire safety messages, such as Twitter and the City of Mississauga website, to get fire safety messages and information to the residents. In the future, the goal is to implement a more comprehensive communications framework that considers other options to reach as many people as possible.

Implications
The distribution of fire safety and important fire service messaging provides reminders and potentially life-saving information to many people at one time

Enforcement

Inspection Cycles	
7	Develop, implement and measure a proactive fire and life safety inspection program that establishes an appropriate inspection cycle for all occupancy types based on key risks identified in the Comprehensive Risk Assessment.

Discussion

The frequency of inspections is an important issue and will impact the ongoing level of fire safety and code compliance of properties. Routine inspections should be conducted at a frequency that conveys and reinforces to property owners the importance of their properties being maintained in a code compliant condition.

The inspection frequency will be based on the risk identified in the CRA and the application of NFPA 1730 which defines minimum inspection frequency for fire safety inspections based on occupancy risk. The table below identifies the proposed frequency of inspections by occupancy type for the City of Mississauga.

Occupancy Type	Inspection Frequency
Assembly occupancy	Biennial
Institutional occupancy. (Currently legislated to conduct proactive inspections annually)	Annual
Residential occupancy. Midrise is 6-12 storeys	Annual
Residential building over 12 storeys	Annual
Business and personal services occupancy	Biennial
Industrial occupancy - High hazard	Annual
Factory industrial uses- Moderate hazard	Biennial
Warehousing and storage facilities- Moderate to Low hazard	Biennial

Implications

- Properties consistently maintained according to the requirements within the Ontario Fire Code thereby providing safe environments for people living, residing or working on the property

- Reduced risk inherent in various occupancy types by ensuring compliance with the Ontario Fire Code

Develop Additional Inspection Opportunities	
8	Enhance the delivery of proactive fire safety inspections and enforcement by fire operations staff in the field.

Discussion

In order to ensure inspection cycles commensurate with the level of risk, expanding the fire safety inspection program to include on duty fire operations staff will greatly increase the number of inspections that can be completed.

Implications

- A greater number of properties can be inspected on a regular basis and subsequently a higher number of properties will be in compliance with the Ontario Fire Code.

Policy Alignment	
9	Conduct an annual review of existing fire related bylaws to ensure they align with current legislation and address the community needs and circumstances.

Discussion

The fire industry must comply with various pieces of legislation such as the Ontario Fire Code, and the *Fire Protection and Prevention Act*. City bylaws such as the Establishing and Regulating Bylaw and other regulating bylaws reflect the needs and circumstances of Mississauga. Regular reviews and updates are necessary to ensure compliance and efficient service.

Implications

- Monitoring industry best practice and associated legislation allows MFES to be proactive and adapt quickly to the changing needs and circumstances.

Engineering

Lifecycle Replacement

10   Implement lifecycle replacement plans for fleet, equipment and facilities.

Discussion

After a thorough review of appropriate lifecycle replacement models for front-line fire apparatus, MFES has implemented a new lifecycle model that is 12 years front line and three years in reserve for a total lifecycle replacement of 15 years. The stage of this process is ongoing with the purchase of a number of new front-line vehicles to replace those which are beyond their reasonable lifecycle. A fleet preventative maintenance program has been executed, which is expected to reduce the time a vehicle is out of service for demand maintenance.

As part of an overall review of the Capital Assets Section, MFES will undertake a full lifecycle review of all major equipment. This will assist in the development of a more rigorous lifecycle replacement plan that will inform the 10-year capital budget process.

MFES has eight fire stations that require rehabilitation. This project will be dependent on the completion of the Infrastructure Renewal Strategy and Fire Station Facility Audit. These two projects will provide direction as to the scope of the renovations required.

Implications

- Improved reliability for front-line vehicles and equipment resulting in improved customer service and risk reduction

- Reduced risk to staff responding to all types of emergencies

Building Code Requirements

11   Focus application of building code requirements during the plans examination process based on key risks identified in the Comprehensive Risk Assessment.

Discussion

Fire plans examination is one of the components of the overall building permit application process and its performance directly impacts the legislated service standards. The Fire Plans Examination Unit ensures that all assigned fire and life safety requirements of the Ontario Building Code, and the Ontario Fire Code are addressed prior to the issuance of a building permit. Items under MFES jurisdiction in the plans review process include (but are not limited to): fire alarm systems, automatic fire sprinkler systems, emergency power systems, emergency lighting systems, hose and standpipe systems, hazardous processes/operations and protection, smoke control systems and high-rise fire safety measures.

MFES intends to continue the plans examination process with a focus on risks that have been identified in the Comprehensive Risk Assessment.

Implications

- New buildings are compliant with the Ontario Building Code prior to occupancy.

- Reduced risk with a focus on areas that have been identified in the Comprehensive Risk Assessment.

Testing and Evaluation

12 Improve current program delivery and create an Academic Standards and Evaluation Unit within the Professional Development and Accreditation Section.

Discussion

Continuing to develop quality officer training programs and identify new opportunities for officer development is critical to the future success of MFES. The review, testing and evaluation of staff is critical to meet the requirements of the Council approved Establishing and Regulating By-law as well as provide the service expected by residents. It is also important to maintain existing competencies and integrate new requirements.

Implications

- Health and safety for all staff in front line operations

- Enhanced tracking and consistency of training

Crew Training

Advocacy

13 Advocate for enhancements to current legislations that promote an increased level of fire and life safety including such things as smoke alarms, residential fire sprinkler systems.

Discussion

It is incumbent on the fire service to advocate for legislative changes that promote and enhance fire safety in their communities. MFES staff update, assess and modify internal procedures and operating guidelines with the objective to promote fire safety in Mississauga. MFES will attempt to find ways to advocate at the provincial and federal levels to do the same. Lobbying has gone a long way to convince government representatives of the importance of residential sprinklers and smoke alarms.

Implications

- Reduced risk of fire injuries, deaths and property loss

Technological Change

14 Leverage new and innovative technologies that enhance the delivery of fire and life safety services.
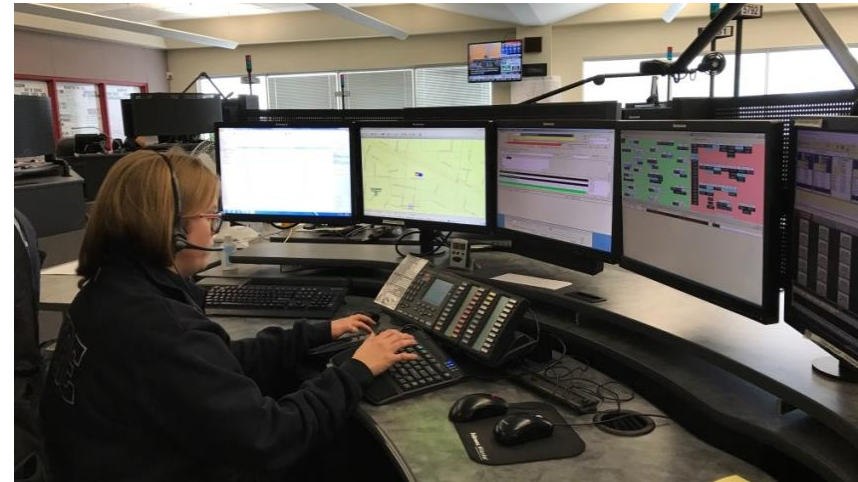
Discussion

The use and assessment of new and emerging technologies to reduce response time, ensure accuracy of data capture and assist with environmental protection is an ongoing trend in the industry. When supported by appropriate resourcing and good policy, technology can be extremely effective in improving service.

MFES has already begun to implement new technology to enhance service. For example, MFES will be introducing mobile field technology for fire inspection staff to improve the delivery of inspection and enforcement services. Inspection staff will be provided with mobile technology that will allow them to access and update files, maps and building data remotely. An upgrade to the existing Computer Aided Dispatch (CAD) system will enhance the call handling and dispatching, intelligent mapping, field communications and data reporting and analysis.

Implications

- Improved customer service

- Increased capacity for existing staff to allow for additional programming

- Better analytical capabilities as a result of improved data capture and reporting

Communications (Dispatch)

Economic Incentives

Encourage Compliance and Awareness

15 Achieve focused application of enforcement tools provided in various applicable legislation(s).

Discussion

Fire departments can issue tickets under the *Provincial Offences Act* (POA) where property owners and landlords are found to be negligent in providing and maintaining smoke alarms. Every home in Ontario must have a working smoke alarm on every storey and outside all sleeping areas. Landlords are required to ensure their rental properties comply with the law and tenants should immediately contact their landlord if they do not have the required number of smoke alarms. It is against the law for tenants to remove the batteries or tamper with the alarm.

MFES intends to put a priority on fire safety compliance.

Implications

- Homeowners and tenants are safe in their own homes

- Convey the seriousness of non-compliance.

Emergency Response

Infrastructure Renewal

16 Implement the recommendations of the Infrastructure Renewal Strategy including:

- Contemplate fire station locations for both new and existing stations.

- Optimize deployment models to best mitigate potential risk.

Discussion

The 2017 Infrastructure Renewal Strategy will be the framework for infrastructure planning for MFES over the next 30 years. The strategy considers both the results of the Comprehensive Risk Assessment and existing facility condition reporting to determine a long-term infrastructure plan. Fire station locations for both new and existing stations, as well as optimizing deployment models to best mitigate potential risk have been explored. This plan will inform the 10-year capital budget process.

Implications

- Improve response time.

- Reduce risk city wide.

- Provide a financially responsible and operationally effective plan that will inform the business plan process.

Smoke Alarm

Response Standards		**Pre-Planning Standards**	
17	Apply the principles of NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments, 2016 edition.	**18**	Develop, implement and measure a program based on NFPA 1620 Standard for Pre-incident Planning (2015 edition) that provides access to occupancy data in the field.

Discussion

NFPA 1710 relates to staffing of firefighting forces at a fire scene and is recognized internationally as an industry standard. NFPA 1710 applies to career fire services, like MFES.

MFES currently measures operational objectives against NFPA 1710 (2010), as recommended in the 2014 *Future Directions* Fire Master Plan.

NFPA 1710 was updated in 2016 and one of the more significant changes was to give greater consideration to the risk inherent in higher risk occupancies.

In conjunction with the Comprehensive Risk Assessment, MFES will use NFPA1710 (2016 edition) to measure all operational objectives.

Implications

- An improved deployment model that will more effectively match response with risk.

Discussion

NFPA 1620 (Standard for Pre-Incident Planning) is used by the fire service to develop pre-incident plans to assist in managing and responding to emergencies. A detailed and effective preplan assists Incident Commanders in developing the right strategies and it can help front-line staff make decisions during a fire or other emergency.

MFES intends to combine the application of NFPA 1620 standards with the introduction of mobile technology to assist command officers with pre-planning for all emergency events.

Implications

- Improved access to information prior to the arrival on scene

- Better decision making

- Improved customer service

Training and Development Standards

19 Develop, implement and measure a training program that aligns MFES with recognized industry professional standards that are based on the various disciplines approved in the current establishing and regulating bylaw.

Discussion

The Establishing and Regulating Bylaw (E&R Bylaw) is an expression of Council's direction regarding the provision of fire protection services in the municipality. The *Fire Protection and Prevention Act* (FPPA) provides the legal authority and responsibility for establishing fire departments and sets out municipal responsibilities. The E&R Bylaw defines the type and level of fire protection service to be provided.

MFES has a Council-approved E&R bylaw (0269–2016), which clearly establishes the services provided to the city of Mississauga by MFES. MFES will continue to provide training to staff that ensures the level of service that has been approved by Council can be delivered to the community.

Implications

- Level of service meets or exceeds recommended service standards

- Council has approved the level of service provided

- Staff able to provide excellent customer service for all hazards described in the bylaw

Rope Training

Continuous Improvement

Review and Update of Strategic Initiatives

20 Conduct an annual review of the Comprehensive Risk Assessment risk reduction strategies and measure their effectiveness.

Discussion

MFES completed a risk assessment designed to gather and assess data relevant to the delivery of fire and emergency services within the community. It was used to inform this document and will be used to determine current and potential future risk and associated mitigation strategies.

The data collected to inform this assessment will be updated annually to reflect new data and the changing needs and circumstances of the community. The effectiveness of the mitigation strategies outlined in these documents will be measured and adjusted where required.

Implications

- Updated information will always be available and accessible for decision making.

- Changes to program delivery will be proactive and better reflect varying community needs.

Cross Departmental Alignment

21 Identify and review current corporate internal processes that may impact occupancy fire and life safety. Liaise with key internal stakeholders to resolve any conflicts or enhance fire and life safety. (i.e., Secondary dwelling units, affordable housing).

Discussion

MFES is a key stakeholder and plays an important role in the development of other department projects, processes and policies. The goal is to ensure fire and life safety requirements are considered.

Implications

- Improved fire safety for Mississauga residents, businesses and visitors

Data Collection

22 Develop and implement a quality assurance program to improve the accuracy of all data collected.

Discussion

MFES collects data from emergency incidents, fire safety inspections, and fire cause inspections. The goal is to ensure the data is entered correctly into the appropriate databases and that the quality of that data is reviewed on a regular basis.

Implications

- Data more accurately reflects community trends and issues

- Improved community programming and response deployment based on historical data

Continuous Improvement

23 Continuous improvement of processes through the application of the corporate Lean program.

Discussion

MFES has completed three major Lean process reviews. The reviews looked critically at the processes for fire plans examination, supplies inventory and front-line vehicle repairs. These three reviews resulted in significant savings and improvement opportunities.

Implications

- The fire plans examination review has increased the number of complete submissions meeting legislated deadlines by 23 per cent since 2014.

- The station supplies inventory review reduced delivery time by 50 per cent and reduced processing of supply orders by 40 per cent.

- Mandatory front-line vehicle repair turnaround time was reduced by up to 80 per cent for pumpers/squads and 90 per cent for aerial apparatus.

- Capacity for existing staff to undertake other duties is built.

Lean Event

Measuring Performance

24 Continue the maturation of MFES key performance indicators.

Discussion

For many years MFES has reported on a number of financial and response related performance indicators. The development of additional key performance indicators (KPI's) that measure other areas of the business have begun. The goal is to build a group of meaningful KPI's that will assist in measuring the actual performance of specific public education, inspection and community outreach programs.

Implications

- They will help to gauge the effectiveness of programs and mitigation strategies.

- They will allow MFES management the ability to proactively modify existing programs and develop new strategies to reduce risk in the community.

Employee Health and Safety

25 Develop, implement and measure a Total Wellness strategy that considers the physical and mental health of staff, as well as builds on the corporate Health and Safety Plan.

Discussion

The Ministry of Labour mandated that a Post-Traumatic Stress Disorder (PTSD) program must be provided by all first responder agencies. The intention is to provide increased awareness around the impacts of emergency response on occupational stress injuries (OSI) and PTSD.

According to studies and experts in the field, a total wellness approach should include physical, medical and behavioural components because they have the most impact on decreasing the occupational stress injuries.

Implications

- Reduces the number of occupational stress injuries related to PTSD and proactively prevent injuries

Funding the Master Plan

Funding the Master Plan

Not every action in the Master Plan requires funding – sometimes improvements can be accomplished through changes in approach or in policy. Most projects, however, require funding to proceed. Many projects are funded in The City of Mississauga's (the City) current Business Plan and Budget, with many still requiring funding sources to be identified. The City must balance service provision with affordability and will thoughtfully seek funding for projects as opportunities present themselves.

Capital initiatives are typically funded through a combination of sources. Existing and new sources are evaluated annually to determine the best approach for funding the City's projects. The following provides detail on currently available funding sources:

- Partnerships
- Federal and Provincial grants
- Development Charges
- Capital Reserves
- Debt financing

Partnerships
The City cannot fund all of its Master Plan projects alone. Partnerships with external agencies can provide welcome funding as well as other resources. The Region of Peel is a key partner in many initiatives. Other opportunities can be found in the sharing of resources, such as the co-location of different services in a single facility. This can help to reduce the costs of any one agency. Similarly, there may be partnership opportunities with Mississauga's community organizations and corporations that can benefit both parties.

Federal and Provincial Grants
The City receives funding from both Federal and Provincial levels of government. Much of this funding is targeted to specific programs by the granting authorities, and every effort is made to use these funds

for our priority projects.

Development Charges
Funds collected under the *Development Charges (DC) Act* are collected and used for funding growth-related capital costs. DCs are structured so that "growth pays for growth" but revenues collected through DCs are insufficient to fully address all of the City's growth initiatives.

Capital Reserves
Reserves and Reserve Funds are created to assist with long-term financial stability and financial planning. The City has a long history of prudently managing its Reserves and Reserve Funds. One of the purposes for maintaining strong reserve funds is to make provisions for sustaining existing infrastructure and City building. The City has implemented a 2% annual Capital Infrastructure and Debt Repayment levy (reflected on the tax bill since 2013).

Debt Financing
The issuance of debt is a critical component in financing future infrastructure for the City. There is nothing wrong with issuing debt as long as it is well managed. Debt does have an impact on the property tax; the larger the debt that a city holds, the larger the percentage of the property tax that must be allocated to service that debt. The City has a strong debt policy which defines stringent debt level limits to be adhered to.

With all of the City's competing priorities, choices must be made. The 2019-2022 Business Plan and Budget provides detail with respect to which Master Plan projects are currently proposed for funding. Projects identified in the Master Plan that do not have funding sources identified will be brought forward in future budget cycles for approval as viable funding sources become available. Each year, Council will direct which projects can be funded based on business cases and project plans through the annual Business Planning process

Appendices

# Appendix 1: Fire & Emergency Services Public Feedback Report

In December 2018, the City undertook a series of consultations with the community to test the Draft Future Directions prior to its finalization. The City hosted virtual and physical public information centres that presented key themes from each Future Directions Master Plan, as well as promoted a community survey. The themes from consultations conducted during the Draft Master Plan stage are presented in this Appendix.

Fire and Emergency Services Master Plan Draft Phase Consultation Themes

Priority on Public Fire Safety Education

Through the consultations, participating residents support the City's current and future efforts to put a priority on Public Fire Safety Education. This is intended to educate the public on fire hazards, deliver fire safety information to prevent fires and provide tools to ensure safe evacuation when a fire occurs. Among survey respondents, 55 per cent rated Public Fire Safety education as a high priority compared to 10 per cent that rated it as a low priority.

Figure 17: Survey Responses on the Priority of Public Fire Safety Education
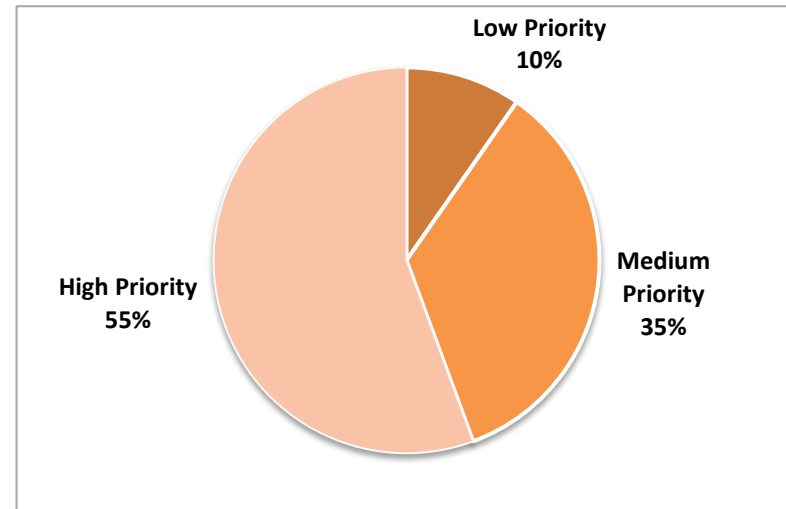
Expand Fire Safety Inspection Program

Survey respondents also felt strongly that Fire Safety Inspections were of a high priority. This would help to ensure that all buildings city wide are built and maintained to meet fire and life safety standards. 96 percent of survey responses rated the expansion of the inspection program as a high or medium priority, only four per cent rated it as a low priority.

Figure 18: Survey Responses on the Expansion of Fire Safety Inspection Programing
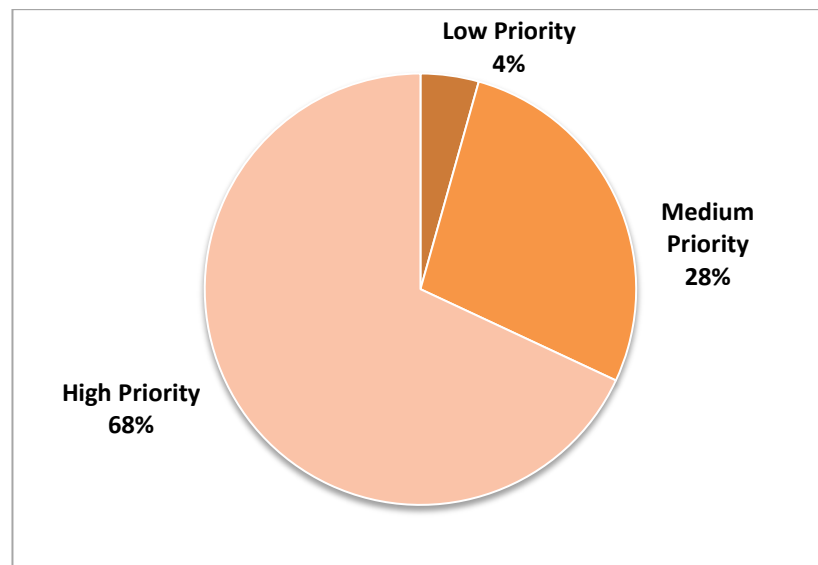
Reduce Response Time

Survey respondents also highly prioritized the addition of new fire station infrastructure to support a reduction in response time, mitigate community risk. The time it takes for emergency services staff to reach the emergency scene is considered a priority to survey respondents. 91 percent of responses considered this initiative to be either a high or medium priority.

Figure 19: Survey Responses on the Addition of Infrastructure to help Reduce Emergency Response Time
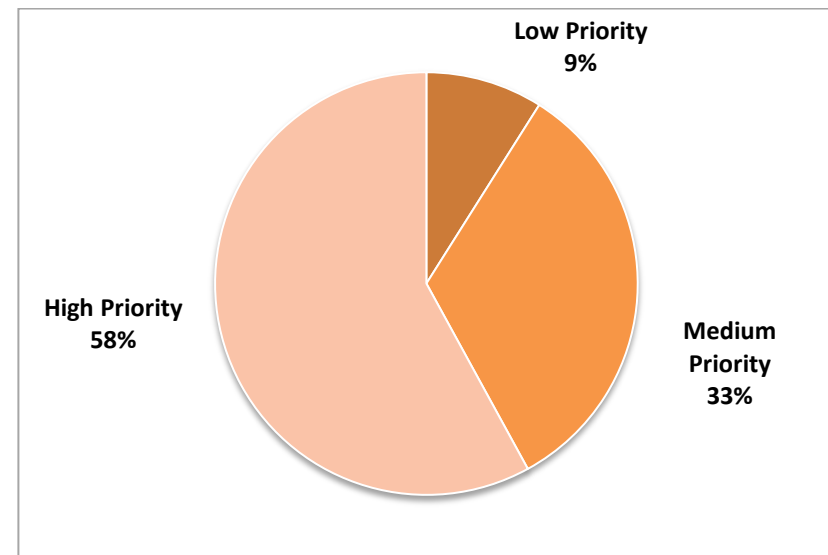
Emergency Services Vehicle and Equipment Maintenance

Maintaining the front line vehicles and equipment critical to emergency service response was important to survey participants. Nearly all of the respondents (96 percent) indicated that this initiative was either a high or medium priority whereas only four per cent of responses rated this as a low priority initiative.

Figure 20: Survey Responses on the Maintenance of Emergency Vehicles and Equipment
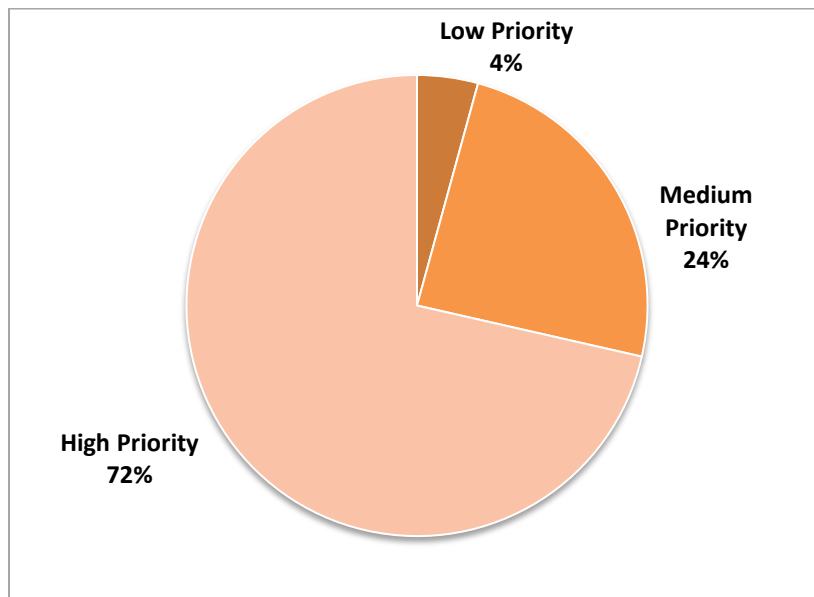
Provision of All Hazards Response

Survey respondents felt strongly that the City should continue to provide an all hazards emergency response capability. A priority should be on ensuring trained personnel are available to respond to medical, specialty rescue, motor vehicle accidents and all fire related incidents. 71 percent of responses considered this initiative to be a high priority whereas only five percent indicated this was a low priority.

Figure 21: Survey Responses on the Provision of an All Hazards Emergency Service
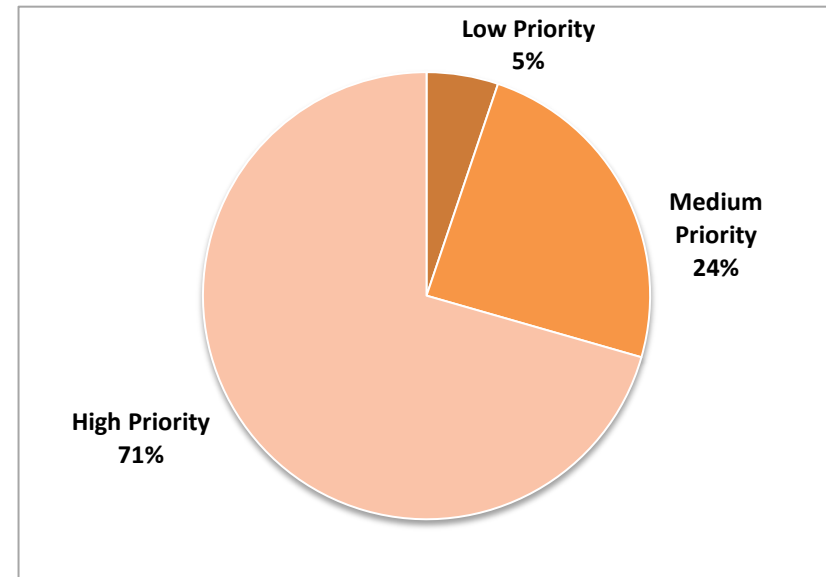
Appendix 2: Fire & Emergency Services Implementation Guide

This Implementation Guide is a planning tool to be used in conjunction with the capital recommendations contained within the 2019 Fire & Emergency Services Master Plan. City Staff will review this Implementation Guide annually to monitor progress on each item and ensure that the recommendations are being incorporated into workplans.

Key elements of the Implementation Guide include:

Implementation Trigger(s)

Refers to the factors that should be considered prior to initiating the recommendation.

Timeframe

Refers to the timing for implementation of a recommendation. For the purpose of this guide, four time frames are used: short term (1-4 years); medium term (5-9 years); long term (10+ years); and ongoing. Timing is often synonymous with priority. Recommendations are listed under each area of focus in order of suggested start.

Section(s) Most Responsible
Identifies those business unit(s) within the Community Services Department that have a major role in implementing each recommendation. The lead business unit is identified in bold.

Capital Costs and Additional Operating Costs

Recommendations with capital costs will be subjected to the annual corporate business planning and budget processes. Some of these recommendations are already in the 2019-2028 ten year capital budget and forecast. Recommendations that are anticipated to have an operating impact will also be reviewed through the annual corporate business planning and budget process.

Rec.#	Recommendation	Implementation Trigger(s)	Timeframe	Section(s) Most Responsible	Estimated Capital Costs	Additional Operating Costs
Education						
1	Establish a dedicated fire and life safety education section within Fire Prevention and Life Safety with a mandate to develop, implement and measure fire and life safety education programming based on identified key risks outlined in the Comprehensive Risk Assessment (CRA).	• Hire 8 Public Education Officers over 3 years (2019-2021) • Develop Targeted Public Education Programs based on risk as defined in the Comprehensive Risk Assessment • Deliver Targeted Public Education Programs prioritized by risk category as defined in the Comprehensive Risk Assessment	Short Term	Fire Prevention & Life Safety	N/A	Yes
2	Enhance the delivery of fire and life safety education by operational staff in the field.	• Deliver NFPA 1035 (Standard on Fire and Life Safety Educator) to all new hires and current and future Company Officers • Develop training delivery modules to be used by operational staff to delivery public education to the community	Short Term	Operations	N/A	Yes

Rec.#	Recommendation	Implementation Trigger(s)	Timeframe	Section(s) Most Responsible	Estimated Capital Costs	Additional Operating Costs
3	Develop and foster relationships with stakeholders of all key risk occupancy types as identified in the CRA to reinforce fire and life safety behaviours and code compliance.	• Develop fire safety training available to high rise building owners and superintendents • Work with Health and Safety groups within industrial occupancies	Short term	Fire Prevention & Life Safety Operations	N/A	Yes
4	Use fire cause determination to identify trends and to inform public education programming.	• Develop a tracking process using internal data collection to identify trends and develop programming to mitigate fire loss	Short term	Fire Prevention & Life Safety	N/A	No
5	Develop, implement and measure a proactive smoke alarm and home escape planning program.	• Develop a proactive smoke alarm program that considers current demographics • Deliver program based on risk as identified in the Comprehensive Risk Assessment • Measure the impact that the program has on fire loss injuries and fatalities by developing KPI's and reporting on an annual basis	Short term	Fire Prevention & Life Safety	N/A	Yes

MISSISSauga

Rec.#	Recommendation	Implementation Trigger(s)	Timeframe	Section(s) Most Responsible	Estimated Capital Costs	Additional Operating Costs
6	Develop, implement and measure a communication strategy that uses various communication channels, including social media and councillor outreach, to relay key messages related to fire and life safety	• Develop key public fire safety messages based on identified risks and current trends • Work with corporate communications, to develop a fire safety communication strategy that includes the Mayor and Councillors to help get the message out	Short term	Administration	N/A	No

Rec.#	Recommendation	Implementation Trigger(s)	Timeframe	Section(s) Most Responsible	Estimated Capital Costs	Additional Operating Costs
Enforcement						
7	Develop, implement and measure a proactive fire and life safety inspection program that establishes appropriate inspection cycles for all occupancy types based on key risks identified in the CRA	• Hire 34 Fire Safety Inspectors over 5 years to support a proactive fire safety inspection program • 5 in 2019 to address high-rise and begin to address midrise occupancies • 10 in 2020 to complete midrise occupancies and continue annual inspections • 7 in 2021 to address high hazard industrial occupancies • 6 in 2022 to complete medium hazard factory industrial, assembly and business occupancies • 6 in 2023 to complete the factory industrial occupancies	Short Term Medium Term	Fire Prevention & Life Safety	N/A	Yes

2019 FIRE AND EMERGENCY SERVICES MASTER PLAN

Rec.#	Recommendation	Implementation Trigger(s)	Timeframe	Section(s) Most Responsible	Estimated Capital Costs	Additional Operating Costs
8	Enhance the delivery of proactive fire safety inspections and enforcement by fire operations staff in the field.	• Deliver NFPA 1031 (Standard for Professional Qualifications for Fire Inspector and Plan Examiner) to all new recruits and current and future Company Officers • Develop training delivery modules to be used by operational staff to conduct fire safety code inspections in the community	Short Term Long Term	Operations	N/A	Yes
9	Conduct annual review of existing fire related bylaws to ensure they align with current legislation and address the community needs and circumstances.	• Complete an annual review of fire By-laws with consideration being given to changing legislation and other existing City By-laws • Modify, add or remove any by-laws to meet current industry standards and community needs	Short Term	Administration	N/A	No

Rec.#	Recommendation	Implementation Trigger(s)	Timeframe	Section(s) Most Responsible	Estimated Capital Costs	Additional Operating Costs
Engineering						
10	Implement lifecycle replacement plans for fleet, equipment and facilities.	• Continue to implement the lifecycle replacement plan for all service delivery vehicles • Develop and implement a lifecycle replacement plan for all service delivery equipment • Complete fire station audit and use results to inform the lifecycle rehabilitation and replacement of all fire stations	Short Term Medium Term Ongoing	Capital Assets	N/A	No
11	Focus application of building code requirements during the plans examination process, based on key risks identified in the Comprehensive Risk Assessment (CRA).	• Review key risks as defined in the CRA with Plans Examination Staff • Continue to apply building code requirements to the plans examination process with an emphasis on key risks identified in the CRA • Hire 1 Fire Safety Engineer to augment the existing plans examination unit and assist with alternative compliance submissions	Short Term	Fire Prevention & Life Safety	N/A	Yes

MISSISSAUGA

Rec.#	Recommendation	Implementation Trigger(s)	Timeframe	Section(s) Most Responsible	Estimated Capital Costs	Additional Operating Costs
12	Improve current program delivery and create an Academic Standards and Evaluation Unit within the Professional Development and Accreditation Section.	• Hire 6 staff over 3 years • 2 section supervisors (one for delivery and one for evaluation) and 4 additional training officers for the development and delivery of staff training requirements • Train staff to certifications in all disciplines at levels as identified in the Establishing and Regulating By-law • Develop a centre of excellence for fire training with MFES being an identified designated certification authority through the Ontario Fire Marshal's Office	Short Term	Professional Development & Accreditation	N/A	Yes
13	Advocate for enhancements to current legislations that promote an increased level of fire and life safety, including such things as smoke alarms and residential fire sprinkler systems.	• Participate with allied organizations for the promotion of increased fire and life safety legislation and regulations • Develop key strategies to help promote the need for change and to increase fire and life safety protection goals	Short Term	Administration	N/A	

Rec.#	Recommendation	Implementation Trigger(s)	Timeframe	Section(s) Most Responsible	Estimated Capital Costs	Additional Operating Costs
14	Leverage new and innovative technologies that enhance the delivery of fire and life safety services.	• Introduce mobile field technology for use by fire safety inspection staff in the field • Utilization of GIS and analytic software to analyze and address changing industry requirements and the development of KPI's • Ensure compatibility of all new software applications	Short Term Medium Term	Administration	N/A	No

MISSISSAUGA

Rec.#	Recommendation	Implementation Trigger(s)	Timeframe	Section(s) Most Responsible	Estimated Capital Costs	Additional Operating Costs
Economic Incentives						
15	Focused application of enforcement tools provided in various applicable legislation(s).	• Establish a cross departmental working group to review options	Short Term	Fire Prevention & Life Safety	N/A	No
16	Implement the recommendations of the Infrastructure Renewal Strategy including: contemplating fire station locations for both new and existing stations, optimizing deployment models to best mitigate potential risk, and apparatus type and quantity.	• Build 7 fire stations over 12 years (one station every 2 years) to meet identified travel time target of 4 minutes 75% of the time • Add additional trucks in identified fire station locations as per the infrastructure renewal plan • Adjust deployment model to meet identified risk in the CRA including truck numbers and mix • Use the results of the fire station facility audit in conjunction with the IRS to determine station locations and renovations	Short- Long Term	Capital Assets	Funded as per 2019-2028 Capital Plan	Yes

Rec.#	Recommendation	Implementation Trigger(s)	Timeframe	Section(s) Most Responsible	Estimated Capital Costs	Additional Operating Costs
17	Apply NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments, 2016 edition.	• Apply the principles of NFPA 1710 as it relates to response time for all first arriving units and balance of first alarm assignment based on the associated risk • Utilize all three lines of defence to mitigate identified risks and ensure a balanced response model	Short Term	Operations	N/A	Yes
18	Develop, implement and measure a program based on NFPA 1620 Standard for Pre-incident Planning, 2015 edition, that provides access to occupancy data in the field	• Develop a standardized format for pre incident planning to be utilized by suppression crews • Prioritize buildings in the City by fire risk to be utilized in the pre planning process • All fire suppression crews to conduct pre-planning	Short Term	Operations	N/A	No

Rec.#	Recommendation	Implementation Trigger(s)	Timeframe	Section(s) Most Responsible	Estimated Capital Costs	Additional Operating Costs
19	Develop, implement and measure a training program that aligns MFES with recognized industry professional standards based on the various disciplines approved in the current establishing and regulating bylaw.	• Train staff to certifications in all disciplines at levels as identified in the Establishing and Regulating By-law • Develop a centre of excellence for fire training with MFES being an identified designated certification authority through the Ontario Fire Marshal's Office • Continue to develop both a program development and delivery and evaluation section within PD&A	Ongoing	Professional Development & Accreditation	N/A	Yes
Continuous Improvement						
20	Conduct an annual review of the Comprehensive Risk Assessment risk reduction strategies and measure their effectiveness.	• Gather updated data in identified areas and compare with existing to address changes • Ensure identified risks are still relevant in current conditions	Short Term	Administration	N/A	Yes

Rec.#	Recommendation	Implementation Trigger(s)	Timeframe	Section(s) Most Responsible	Estimated Capital Costs	Additional Operating Costs
21	Identify and review current corporate internal processes that may impact occupancy fire and life safety. Liaise with key internal stakeholders to resolve any conflicts or enhance fire and life safety (i.e., Secondary dwelling units, affordable housing).	• Meet on a regular basis with significant stakeholders including Planning and Building, Legal, Licensing and By-law and others as required • Ensure all corporate process align and make necessary adjustments as required	Short Term	Fire Prevention & Life Safety	N/A	No
22	Develop and implement a quality assurance program to improve the accuracy of all data collected.	• Develop and training and information package to be delivered to all staff responsible for data and information input • Conduct a random sampling of data collection on an annual basis to determine any inconsistencies in data to ensure accuracy of data	Short Term	Administration	N/A	No
23	Continue to improve processes through the application of the corporate Lean program.	• Continue to conduct lean improvements throughout the division and report out efficiencies	Short Term Medium Term	Administration	N/A	Yes

Rec.#	Recommendation	Implementation Trigger(s)	Timeframe	Section(s) Most Responsible	Estimated Capital Costs	Additional Operating Costs
24	Continue the maturation of MFES key performance indicators.	• Work with Community Services Business Planning to further develop KPI's and determine reporting schedule • Use KPI's to inform business decisions	Short Term Medium Term	Administration	N/A	No
25	Develop, implement and measure a Total Wellness strategy that considers the physical and mental health of staff, and builds on the corporate Health and Safety Plan.	• Acquire appropriate equipment to encourage staff physical fitness • Develop appropriate education and resiliency tools that encourage mental health including the acquisition of a therapy dog • Continue to work with EHS to ensure employee medical requirements are addressed • Work with the Future Corporation Plan working group to identify solutions for MFES staff related to facility planning and work life balance	Ongoing	Professional Development & Accreditation	N/A	No

MISSISSAUGA