

STRONG for YOU



2019-2028 Hamilton Fire Department
10 year SERVICE DELIVERY PLAN



Hamilton

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This Service Delivery Plan reflects evidence-based decisions aimed at improving service delivery and mitigating community risks.



MESSAGE FROM THE CHIEF

It is my pleasure to present the Hamilton Fire Department's ten-year Service Delivery Plan for the years 2019 – 2028.



When we set out to develop this Plan we began with a specific focus in mind. We wanted the Plan to focus on “optimization”. We wanted to know, What do we do? How well do we do it? Who is better off? and most importantly, Is there a better way to do it?

To answer these questions, we have gathered data, updated and expanded our Community Risk Assessment, developed a predictive analytics model, reviewed internal operations, participated in an Audit Services led enterprise risk management audit and engaged our Councillors, municipal leaders, Hamilton Fire Department (HFD) staff and leadership team, key community partners and residents.

Through the comprehensive analysis of current and historical data we have identified the fire protection needs of neighbourhoods across our city, determined the level of risk in the city's various occupancies, identified opportunities to build and enhance community partnerships and established ways to optimize our existing resources to best serve the people who live, work and play in Hamilton.

This Plan reflects evidence-based decision making. As a result, the objectives presented are based on data and are aimed at improving our ability to deliver services and enhance our ability to measure services in order to ensure that community risks are adequately addressed.

This Plan is the result of the efforts and dedication of a project team comprised of HFD leadership and extended leadership team members who engaged HFD personnel, staff from other City Departments, elected officials, key community partners and members of the community. The contribution of all of these people was critical to the success of this Plan and I am grateful to each of them.

Residents, visitors and those who come to Hamilton to work rely on the Hamilton Fire Department. We are the people's fire department. We are trusted to help prevent emergencies and are depended upon to protect people and their property when emergencies occur. We are committed to serving this great community to make it a Healthy and Safe Community and we are dedicated to help ensure that Hamilton is the best place to raise a child and age successfully.

A handwritten signature in black ink, appearing to read "David Cunliffe". The signature is stylized and cursive.

Fire Chief David Cunliffe

EXECUTIVE SUMMARY

This Service Delivery Plan provides direction for the Hamilton Fire Department (HFD) for the next ten years. It outlines the critical initiatives and actions that the HFD will implement in the coming years in order to achieve its objectives. The Plan is meant to offer a road map as a means for the HFD to navigate through ongoing challenges and capitalize on opportunities. It is a living document that will be continuously evolving and improved as new information is gathered and analyzed beyond the ten-year period identified.

The HFD is an all-hazards operation that serves a city of over half a million people through three levels of service: Career emergency response services in urban areas, volunteer emergency response services in rural areas and a composite emergency response service with a mix of career and volunteer for suburban areas of the city. Hamilton is a city with a complex risk profile based on its diverse geography, growth and development, industrial sector, transportation network, demographics and climate among other factors.

This Plan is the result of a detailed comprehensive analysis comprised of an updated Community Risk Assessment, predictive analytics, a review of internal operations, an Audit Services led enterprise risk management audit and the engagement of City Councillors, City leaders, HFD staff and leadership team, community partners and residents.

Four principles have guided the development of the Plan:

OPTIMIZED SERVICE DELIVERY	EXCEPTIONAL PEOPLE AND PERFORMANCE	ROBUST COLLABORATION AND INTEGRATION	REDUCED RISK FOR A HEALTHIER AND SAFER COMMUNITY
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These principles provide the framework for twelve objectives and associated initiatives.

Through the Community Risk Assessment, the Plan supports the three lines of defence:

Line 1: PUBLIC FIRE SAFETY EDUCATION	Line 2: FIRE SAFETY STANDARDS AND ENFORCEMENT	Line 3: EMERGENCY RESPONSE
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Through defining the current level of service delivery and identifying gaps in services and resources the Plan explores opportunities for optimizing existing resources to mitigate risks in the community. For example, the Plan will seek to maximize the use of apparatus, ensure the optimal use of facilities and conduct a strategic review of some Divisions. The Plan also identifies opportunities to create a multi-functional workforce through cross-training of personnel. The Plan will help to maximize the potential of personnel by supporting their professional development and promoting a healthy, inclusive and engaged workforce. Furthermore, the Plan presents strategies for effective use of technology as well as opportunities to generate revenue.

In areas where the increasing risk profile due to growth exhausts current resources, even after optimization, the HFD is looking to progressively manage growth. This will be achieved by addressing the highest risks first and strategically transitioning in enhancements or additional resources. For example, the Plan proposes to increase the level of composite operations in parts of the city to maintain service delivery. In addition, the Plan identifies how the HFD will maintain a viable and sustainable Volunteer Division.

This Plan identifies operational challenges that in some areas of service delivery need to be addressed immediately. In other areas, service delivery will be monitored to determine if there are any resource gaps that need to be addressed to mitigate risk. In some cases, a longer term solution to address risk is provided in the Plan but they may not be required if initial efforts at mitigating risk are successful.

The Plan identifies the importance of building and cultivating meaningful partnerships within the City and outside of the organization. As such the Plan outlines initiatives to be undertaken to coordinate with City Departments and Divisions and expand external partnerships with educational institutions, community agencies, cultural organizations, businesses and industries to develop and disseminate public safety information. One such initiative outlined in the Plan is to explore opportunities for involvement and collaboration with key civic stakeholders to address the results of the Hamilton Spectator's Code Red series. The HFD will utilize resources or programs to contribute to a positive change in the health and well-being of Hamiltonians.

Finally, the Plan outlines the need to enhance performance metrics for each Division in the HFD and communicate these both internally and externally. This will enable the HFD to monitor, evaluate and improve performance, utilizing a results-based accountability approach. Demonstrating the level of service delivery through performance metrics will enhance the value for money proposition of the services being delivered to the citizens of Hamilton.

The Hamilton Fire Department is dedicated to preserving life, property and the environment in Hamilton through an integrated program of fire protection and rescue services and emergency management.



1.0 INTRODUCTION

The Hamilton Fire Department (HFD) was established with the construction of its first fire station in 1832 in which citizen volunteers fought fires for a town of approximately 1,200 people. One hundred and eighty-seven years later, the HFD has grown to include 26 stations and over 850 personnel (including fulltime and volunteer firefighters), who serve almost 537,000 citizens.¹

Today's HFD is an all-hazards operation delivering a wide range of services to those who live, work and play in Hamilton including, but not limited to, emergency response for fires, medical calls, motor vehicle collisions, alarm conditions, gas leaks, and carbon monoxide alarm calls. The HFD also provides specialized rescue services such as rope rescues, confined space rescue, ice rescue, and hazardous materials operations. The HFD undertakes inspections to enforce the Fire Code, educates the public about fire prevention and offers a variety of fire safety programs. In addition, the HFD oversees the management of Hamilton's Emergency Operations Centre. The HFD also operates an Emergency Services Fleet Services Centre, a Fire Prevention business centre, a Stores/Logistics Centre and the Multi-Agency Training Academy.

The purpose of the Hamilton Fire Department is as follows:

The HFD is dedicated to preserving life, property and the environment in Hamilton through an integrated program of fire protection and rescue services and emergency management. Other services provided by the HFD to support a Healthy and Safe Community include:

- Co-ordination of the City's Emergency Management Program, including emergency plan development, training, exercises, and public safety education in order to enhance the City's disaster resiliency.
- Oversight of the corporate radio system, including mission critical voice and data communications for the Hamilton Fire Department, Hamilton Police Service, City of Hamilton Public Works and the Airport Operations Group.

The services provided by the HFD are guided by three lines of defence set out in the Public Fire Safety Guidelines established by the Office of the Fire Marshal and Emergency Management (OFMEM):

Line 1: PUBLIC FIRE SAFETY EDUCATION	Line 2: FIRE SAFETY STANDARDS AND ENFORCEMENT	Line 3: EMERGENCY RESPONSE
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¹ *Statistic Canada, Census 2016*

The first line of defence relates to fire prevention and emergency preparedness through public education, while the second line of defence ensures Fire Code compliance through inspections. Failing the first two lines of defence, response or suppression is the last line of defence against emergencies. However, the goal of any fire department is to reduce the need for emergency response by focusing activities on public fire safety education and fire safety standards and enforcement.

The following table organizes the all-hazard services provided by the HFD by each line of defence and lists the customers who use these services.

LINE OF DEFENCE	SERVICE	CUSTOMER
Line 1: PUBLIC FIRE SAFETY EDUCATION	<ul style="list-style-type: none"> • Hamilton Arson Prevention Program for Children • School Education Program • Senior’s Fire Safety Education Program • Training and education sessions • Home Fire Safety Education Program • Alarmed and Ready Program • Fire safety education materials and handouts • Volunteer Inspection Program for Homeowners • Public events <i>(open house, fundraisers, community fairs, etc.)</i> • Emergency Plan • Business continuity planning 	<ul style="list-style-type: none"> • Property owners • General public • Students • Seniors • Cultural organizations • Municipal Departments and organizations • Event attendees • Building occupants • Business owners • Institutions
Line 2: FIRE SAFETY STANDARDS & ENFORCEMENT	<ul style="list-style-type: none"> • Inspections: Vulnerable occupancies, complaints, private home daycare, municipal licenses, licencing for Provincial agencies, building clearances, commercial property inspections • Fire drills • Vacant Building Monitoring Program • Non-compliance notification follow up <i>(smoke alarm (SANN) and carbon monoxide (CONN))</i> • Fire safety plan approval • Fire Permits <i>(open air burning, family fireworks sales)</i> • Public requests <i>(for information, incident reports, outstanding work orders, special occasion permit review, freedom of information, establishment of a fire route)</i> 	<ul style="list-style-type: none"> • Property owners • Businesses and business owners • Building occupants • General public • Institutions <i>(hospitals, schools, vulnerable occupancies)</i> • Insurance companies • Law firms • Real estate companies
Line 3: EMERGENCY RESPONSE	<ul style="list-style-type: none"> • Fire suppression • Alarm conditions • Rescue operations <i>(rope rescue, confined space, vehicle extrication, shore based water rescue, ice water rescue)</i> • Hazardous materials operations • Gas leaks <i>(natural gas, propane, carbon monoxide)</i> • Medical services • Disaster response and emergency preparedness/planning • Training and exercises 	<ul style="list-style-type: none"> • Property owners • Businesses • Occupants • General public • Institutions • Incident victims • Event attendees • City Departments

The HFD is driven by the City of Hamilton's Strategic Plan (2016-2025) aimed at achieving the City's Vision "to be the best place to raise a child and age successfully." Specifically the HFD supports the following two priorities within the Strategic Plan:

Priority 1: Healthy & Safe Communities

The HFD contributes to the achievement of a healthy and safe community through its commitment to respond to and effectively handle each call for assistance and deal with all citizens in a caring, compassionate manner.

Priority 2: Community Engagement & Participation

The HFD supports community engagement and participation through its dedication to be a fire department of the people. The HFD aims to strengthen its role as a pillar of the Hamilton community through expanding and enhancing partnerships, educating Hamilton's communities on the services it provides and fire safety measures and participating in community events. The HFD values the input of the citizens and seeks feedback through service satisfaction surveys.

In the fall of 2016, Hamilton's City Council authorized the Chief of the HFD to develop a ten-year plan for the delivery of fire services in the City of Hamilton. The development of this Plan was guided by the two priorities of the City's Strategic Plan described above as well as the Corporate Cultural Values:



The Corporate Cultural Values are reflected in the four guiding principles that have been identified in the planning process to guide the development of this Plan's objectives. Those four guiding principles are:



These principles are described more fully in Section 3.5.

Service Delivery Plan Overview

This Plan is the compilation of research, discussions, consultations and analyses of a wide range of data to develop an approach to delivering services for the next decade. The Plan outlines the actions to be undertaken by the HFD to ensure that the delivery of its services is optimal. This Plan has taken into account the significant growth areas in Hamilton and the demographic changes that have occurred, are currently occurring and are anticipated over the next ten years

Section 2.0 of this document provides a description of the City of Hamilton including its physical attributes, demographics, educational institutions, economy, growth and development and climate.

Section 3.0 presents a summary of the process that was undertaken to develop this Plan and the elements of the process that have informed the Plan. This section includes the results of surveys and consultations conducted with stakeholders, HFD leaders and the public. These consultations led to the formation of four Guiding Principles which framed the Plan's objectives. Section 3.0 also outlines the HFD's legislative responsibility and the City's strategic plans that were reviewed for this Plan. A summary of the HFD Community Risk Assessment is provided here as well as the results of the City's Audit Services' Enterprise Risk Assessment. Finally, this section describes the predictive analysis tool that was developed for the HFD to assist in decision-making related to placement of resources.

Section 4.0 describes the structure of the HFD and its operating costs. This section also details each of the divisions that comprise the Department, their key functions, resources (human and equipment), challenges faced and performance data where available. Based on a review of data, input from staff, partners and HFD administration, objectives to optimize services in each area are provided and are highlighted in the boxes. The objectives are presented with a number that references that objective and its corresponding initiatives in the Action Plan which is presented in Section 5.0.

Section 5.0 is the Action Plan for the ten-year Service Delivery Plan. It lays out the objectives along with the initiatives and actions that will be undertaken to achieve each objective. The objectives in the Action Plan are numbered to correspond with the objectives found throughout this Service Delivery Plan in order to provide a quick reference for each. The Action Plan is organized into the four Guiding Principles discussed in Section 3.0 and includes the timeframe for each initiative.

Section 6.0 presents the Financial Forecast to carry out the Action Plan. The Financial Forecast shows preliminary costs that have been estimated based on identified actions with known or anticipated financial impacts.

Section 7.0 contains the appendices: The Establishing and Regulating By-law, the Citizen Survey and HFD Partner Survey results, and the Community Risk Assessment.



Hamilton is a city with a complex risk profile based on its diverse geography, growth and development, industrial sector, transportation network, demographics and climate among other factors.



2.0 PROFILE OF HAMILTON

2.1 Topography

The Hamilton Fire Department provides service to a city with a land area of 1,117 square kilometres² with a diverse topography. Hamilton is a port city that wraps around the westernmost part of Lake Ontario. The city's northern limit is marked by the Hamilton Harbour. The Niagara Escarpment runs through the middle of the entire city dividing the cityscape into lower and upper portions. The Escarpment in Hamilton is characterized by its hiking and biking trails such as the Bruce Trail, forests, cliffs and a variety of ecosystems. It offers visitors natural treasures to explore and great views of the city.

It is because of the Escarpment, or 'the Mountain' as it is commonly referred to, that Hamilton has one of the highest numbers of waterfalls of any urban area of its size. With over 150 waterfalls³, Hamilton has recently been deemed the Waterfall Capital of the World. This distinction has led to an increase in visitors to the area which poses both benefits and challenges for the city. The HFD has been required to perform rope rescue operations in recent years as visitors attempt to get close to the falls.

The City of Hamilton has a unique combination of bodies of water within and close to its borders that are used for commercial, recreational, agricultural and environmental protection purposes. These bodies of water include but are not limited to Lake Ontario, Hamilton Harbour, Cootes Paradise, Conservation Areas in Stoney Creek (Fifty Point Conservation Area), Glanbrook (Binbrook Conservation Area), Dundas (Christie Conservation Area) and Flamborough (Valens Conservation Area) and small lakes, ponds, creeks and various water retention ponds across the city.

With an increasing popularity of outdoor winter activities and with the development of Hamilton's West Harbour, areas around bodies of water are being used more increasingly during the cold weather. As such, the HFD is in the process of establishing a joint tri-service ice rescue response with Hamilton Police Service and Hamilton Beach Rescue Unit. This has required additional training and equipment for personnel from five fire stations (two career stations and three volunteer stations).

² Sources: Statistics Canada, Census 2001, Census 2006, Census 2011 and Census 2016

³ Smithsonian.com Just 50 Miles From Niagara Falls Lies the True Waterfall Capital of the World by Jennifer Nalewicki (July 24, 2017) <https://www.thespec.com/news-story/5837620-what-should-be-in-or-out-of-greenbelt-city-asks/>



Source: Tourism Hamilton

Hamilton is located in the centre of the Golden Horseshoe which is surrounded by the Greenbelt, permanently protected agricultural and natural areas. In Hamilton, the Greenbelt which includes the Niagara Escarpment covers a large portion of the city's total land mass.⁴ Approximately 78 per cent of the city is protected by Greenbelt lands⁵, which includes approximately 480,000 acres of the Niagara Escarpment.⁶

The many and varied features that make up Hamilton's topography including the Escarpment, Lake Ontario, and the Greenbelt bring unique considerations from a fire protection and rescue perspective.

4 *TheSpec.com What should be in or out of Greenbelt, city asks by Teviah Moro (Sept. 11, 2015) <https://www.thespec.com/news-story/5837620-what-should-be-in-or-out-of-greenbelt-city-asks/>*

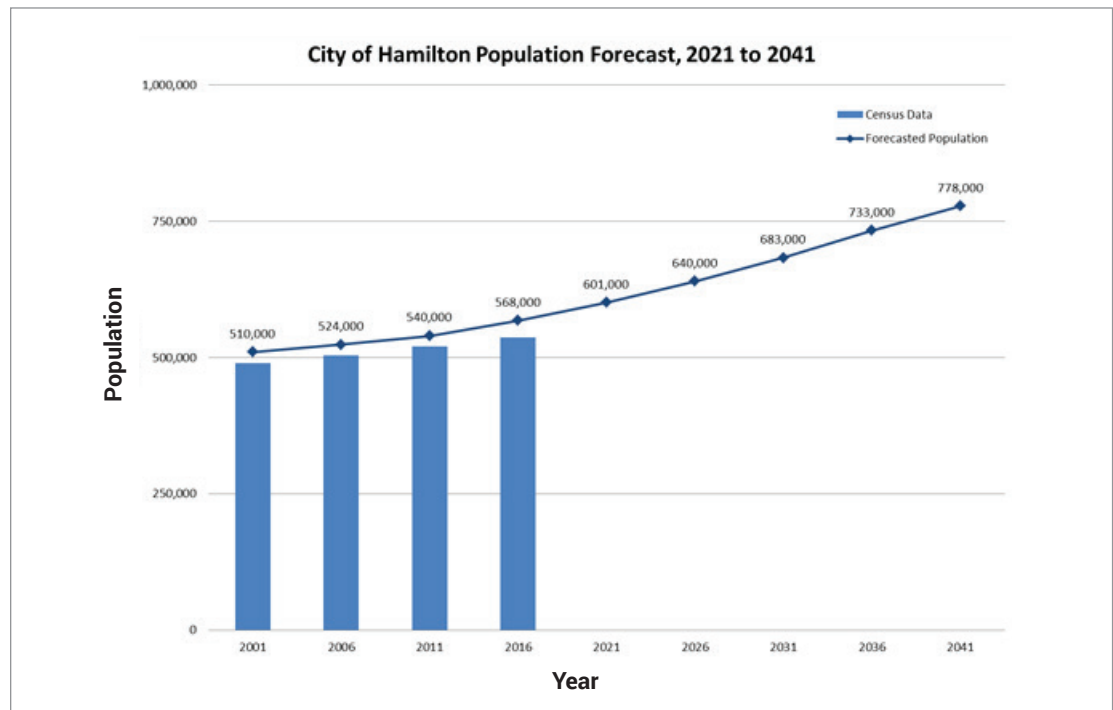
5 *City of Hamilton, Greenbelt Boundary Review Public Consultation Presentation 2015 <https://d3fpllf1m7btt3.cloudfront.net/sites/default/files/media/browser/2015-09-10%2008%3A56/greenbelt-boundary-pic-panels.pdf>*

6 *see endnote 4*

2.2 Population and Demographics

Over half a million people reside in Hamilton of which almost 25% are newcomers and just over 18% identify as visible minorities.⁷ Hamilton is home to more than 80 ethnic groups who speak more than 90 languages. In 2016, 12% of households spoke one of over 100 languages other than English at home.⁸

In 2016, the median age of the population was 41.5 years. Hamilton's population is an aging one with about 17% of its residents or 93,000 people aged 65 years or older. Children aged 14 years and under accounted for approximately 16% of the city's population. For the first time in Hamilton, seniors outnumber children.⁹



Sources: Statistics Canada, Census 2001, Census 2006, Census 2011 and Census 2016
Hemson Consulting Ltd (2012). Greater Golden Horseshow Growth Forecasts to 2041, Technical Report

Over the course of this ten-year plan, Hamilton's population is projected to increase to approximately 680,000 by 2031¹⁰ with seniors being the fastest growing segment of the population.¹¹ By 2031, almost 22% of Hamilton's population will be 65 years old or older¹². Hamilton's population is forecasted to grow to approximately 780,000 by 2041¹³.

⁷ <http://www.cbc.ca/news/canada/hamilton/hamilton-2016-census-visible-minorities-doubled-1.4383573>

⁸ https://infogram.com/copy_2016_home_languages_in_hamilton?utm_source=SPRC+Newsletter&utm_

⁹ Statistics Canada, Census 2016

¹⁰ GRIDS2: Growth Summary 2006-2016

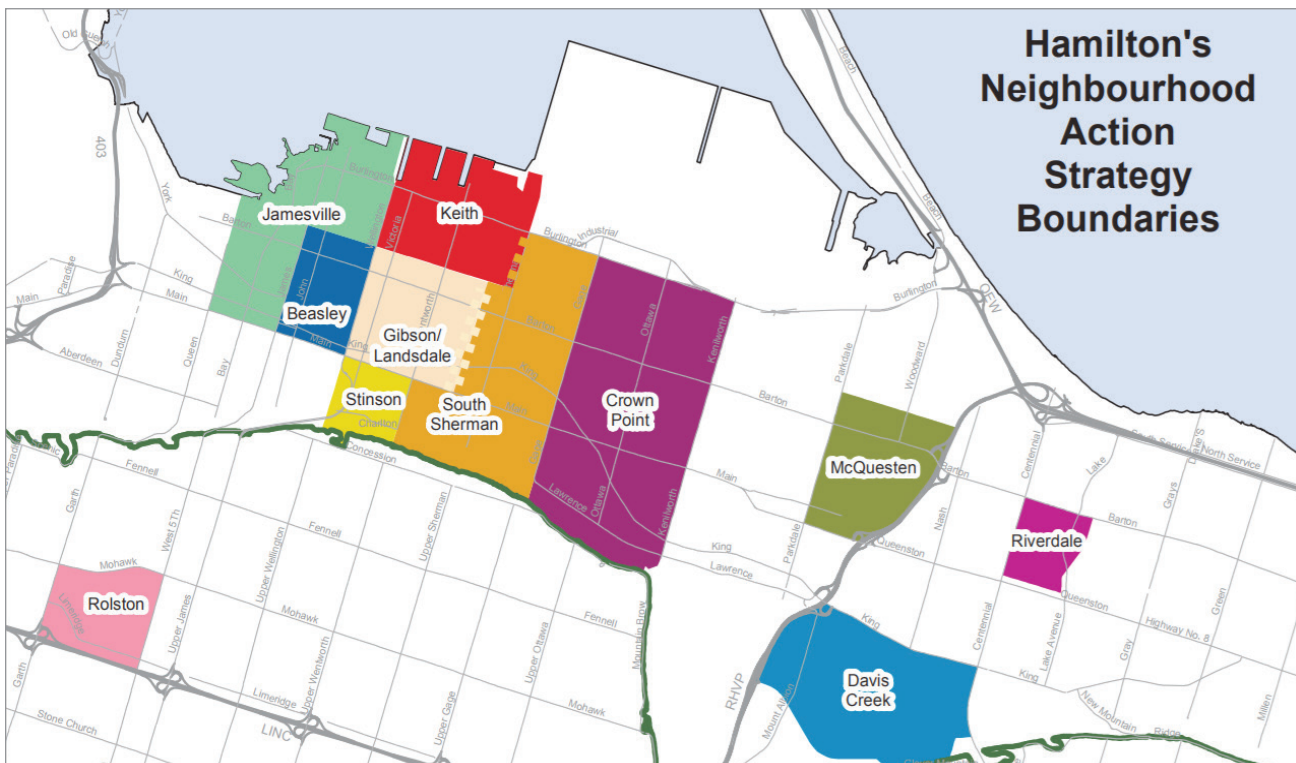
¹¹ GRIDS May 2006

¹² Hemson Consulting Ltd (2012). Greater Golden Horseshoe Growth Forecasts to 2041, Technical Report

¹³ GRIDS2: Growth Summary 2006-2016

It is important for the HFD to consider the changing and diverse population with the associated vulnerabilities and unique risks as it prepares to meet the growing demands on service in the coming decade.

Overall in Hamilton, a little more than 15% of the population are low income.¹⁴ However, the poverty rates vary greatly across areas of the city. In 2010, the Hamilton Spectator explored the powerful impacts that poverty has on health in a series entitled Code Red. In response, the City of Hamilton identified eleven neighbourhoods, mostly in the lower inner city, as priority neighbourhoods (see map below). The health and wealth disparities in these areas prompted the City to create a new Division dedicated to working with neighbourhood residents to address the inequities. Almost ten years later, the Spectator revisited the Code Red project only to find that health outcomes in these neighbourhoods have declined.¹⁵ The HFD has reported that the highest occurrence of residential structure fires has occurred in some of these neighbourhoods.¹⁶ In May 2017, the HFD initiated the Home Fire Safety Education Program in which firefighters visit the homes located around their stations to talk about fire safety and check smoke alarms. The firefighters install smoke alarms or batteries if needed at no cost to the resident. By the end of 2018, over 20,000 homes were visited across the city and almost 2,500 smoke alarms were installed or made operational.



Source: Social Planning & Research Council of Hamilton (SPRC) 2013

¹⁴ Statistics Canada, 2016 Census

¹⁵ <https://www.thespec.com/news-story/9187352-code-red-10-years-later/>

¹⁶ Hamilton Fire Department Annual Report 2017

2.3 Education

Hamilton is home to a number of post-secondary institutions including McMaster University, Mohawk College, Redeemer University College, Brock University satellite campus and Collège Boréal, the only French-language college in Southwestern Ontario.

In addition, Hamilton is home to Columbia International College a university preparatory school and the country's largest boarding school with 1800 students from over 70 countries.¹⁷

Not only do these institutions provide the local area with a well-educated workforce and job opportunities (McMaster alone employs 7,500 faculty and staff) it also results in an influx of students during the school term. For example, McMaster University has around 30,000¹⁸ students, of which almost two-thirds come from outside the immediate Hamilton region¹⁹.

Areas of the city with a high density of student housing pose unique fire safety risks. Student housing contains a high occupancy load, the potential for increased fire-risk behaviour and occupants who may not be familiar with the building and evacuation procedures.

The existence of various educational institutions in the city presents an opportunity for the HFD to tap into their resources for the purposes of conducting local research (e.g., City-Lab) and utilizing student skills as interns, co-op and summer students. In addition, the HFD can collaborate with these institutions to deliver fire safety education to students living in student housing who may be vulnerable to fire risks.

2.4 Economy

In recent decades Hamilton's economy has become significantly diversified. Moving away from being seen as the steel-producing city, Hamilton is now recognized for its life sciences research, health care, education and service sectors in addition to advanced manufacturing.²⁰

Hamilton also has a thriving arts and culture scene that is helping to drive the economy. The city has a range of entertainment venues including a 17,500-seat enclosed arena that is home to an OHL hockey club (Hamilton Bulldogs) and national basketball team (Hamilton Honey Badgers) and hosts concerts year round; a state-of-the-art concert hall with a capacity for over 2,100 people; a 750-seat professional theatre as well as many small community theatres; an outdoor stadium that holds

17 <https://www.cic-totalcare.com/discover-columbia/>

18 *City of Hamilton, Invest in Hamilton* <http://www.investinhamilton.ca/why-hamilton/universities-colleges/>

19 https://en.wikipedia.org/wiki/Hamilton,_Ontario

20 *City of Hamilton Trust and Confidence Report* <https://www.hamilton.ca/government-information/trust-and-confidence-report/our-economy>

up to 24,000 persons which is home to Hamilton's national sports teams (Hamilton Tiger Cats, Forge FC), and also utilized for concerts and films; and there are numerous smaller venues and clubs that feature live shows.

In addition to the Art Gallery of Hamilton, Hamilton boasts smaller galleries and studios displaying local and international art. Many of these are located in the downtown core along James Street North and are showcased during "Art Crawl." Once a month the galleries, studios, boutiques, stores and restaurants stay open late for hundreds of visitors. In addition, "Supercrawl" is the annual festival for which the street is closed to vehicle traffic so hundreds of thousands of people can enjoy the shops and studios in addition to street performers and artisans who also set up on the street. Supercrawl takes place over a long weekend and includes a variety of musical acts that perform from six stages across multiple streets stemming from James Street North.²¹

Hamilton has received media attention for its cultural revival and as such has attracted thousands of visitors to the city and these venues, both indoor and outdoor. While this is a boost to the city's economy it poses a challenge for the HFD should there ever be an incident that would require emergency management and the accessibility of fire department vehicles into these densely crowded areas.

Increasingly, Hamilton's film industry has also been contributing to the local economy. In 2018, 135 productions were filmed in Hamilton with a self-reported direct spend of \$59.8 million into the city's economy.²² The HFD not only has to be aware of road closures during production but is also required to approve the use of pyrotechnics when filming and may be required for emergency stand-by.

As Hamilton is situated roughly midway between Toronto and Niagara Falls it has a strategic position within Ontario's transportation network. Hamilton has two major provincial freeways (Highway 403, Queen Elizabeth Way (QEW) and two municipal expressways (the Lincoln Alexander Parkway and the Red Hill Valley Parkway).

The movement of goods is paramount to the local economy. The location of the city enables easy access through a network of highways, international trucking and rail lines, the John C. Munroe International Airport and the Port of Hamilton, the busiest of all Canadian Great Lakes ports.²³

Because of an increasing integration of the economy and transportation system between the Greater Toronto Area (GTA) and the City of Hamilton, Hamilton is now considered part of larger GTA region called the GTHA (Greater Toronto and Hamilton Area).

²¹ <http://supercrawl.ca/news/84-volunteer-for-supercrawl-2018>

²² Email correspondence, Film Operations Specialist, City of Hamilton, January 14, 2019

²³ <https://www.hamiltonport.ca/port-facts/history/>

With a growing population, increasing density and road closures due to construction, the city has experienced heightened traffic volume and congestion. This can impede the travel time for the HFD in responding to emergencies. Increased traffic also increases the occurrence of transportation-related incidents on the city streets, highways, bridges, water or on the rail lines involving transport trucks, public buses, automobiles, or cargo ships and trains.

Hamilton's International Airport has seen significant growth in passenger traffic which increased in 2018 by 21% from 2017 and 118% from 2016²⁴. In 2018, the airport served over 725,000 passengers. Growth in passenger traffic is expected to continue into 2019 and beyond. The airport also remains Canada's largest overnight express cargo airport with a 5% increase in air cargo distribution as compared to 2017 and 20% increase over 2016.²⁵ The airport has recently been recognized as North America's fastest growing airport. The airport is a strong economic driver for the city with over 3,400 people employed either directly or indirectly with the airport and \$1.2 billion of industry activity.²⁶ While the airport maintains a full aircraft emergency fire service, the HFD provides a support role in terms of first aid and water supply for airside crash emergencies and is responsible for other incidents at the airport such as alarm conditions, structural fires and hazardous material responses. The HFD is responsible for any aircraft incidents that happen off airport property and within the city limits.

The Port of Hamilton is home to 130 companies that store, process and export diversified cargo such as steel, agricultural and liquids and is one of the city's largest employers and taxpayers. The HFD must be aware of the hazardous materials that pose risk both at the sites and during transportation on land and water²⁷. The HFD has the duty to respond to any incidents requiring fire protection and rescue services that occur on ships that are docked in the Port. Ships that are in Hamilton Harbour are currently the responsibility of the Hamilton Police Service's marine unit whose duty it is to patrol the water for impaired safety violations and perform water rescue. As noted above there is an opportunity for the HFD to partner with Hamilton Police Service to create a joint unit that covers water rescues year round.

In March 2019, Hamilton had a record unemployment rate of 3.5%²⁸, lower than both the provincial (5.9%) and national (5.8 %) rate.²⁹

24 <https://www.thespec.com/news-story/9139299--unprecedented-passenger-growth-at-hamilton-international-airport/>

25 <http://flyhamilton.ca/hamilton-international-more-than-doubles-passenger-traffic-in-just-two-years/>

26 <http://flyhamilton.ca/news/north-americas-fastest-growing-airport-provides-significant-economic-value-to-hamilton/>

27 <https://economy.hamiltonport.ca>

28 <https://www.thespec.com/news-story/9270393-hamilton-area-had-record-3-5-per-cent-unemployment-rate-in-march/>

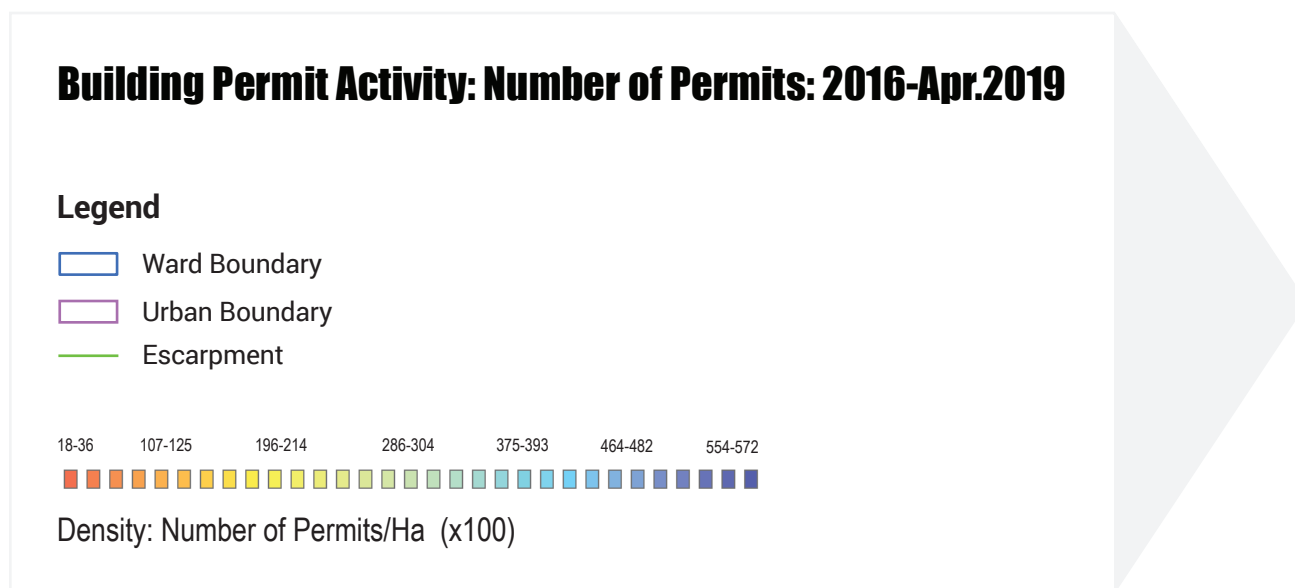
29 <https://www150.statcan.gc.ca/n1/daily-quotidien/190405/dq190405a-eng.htm>

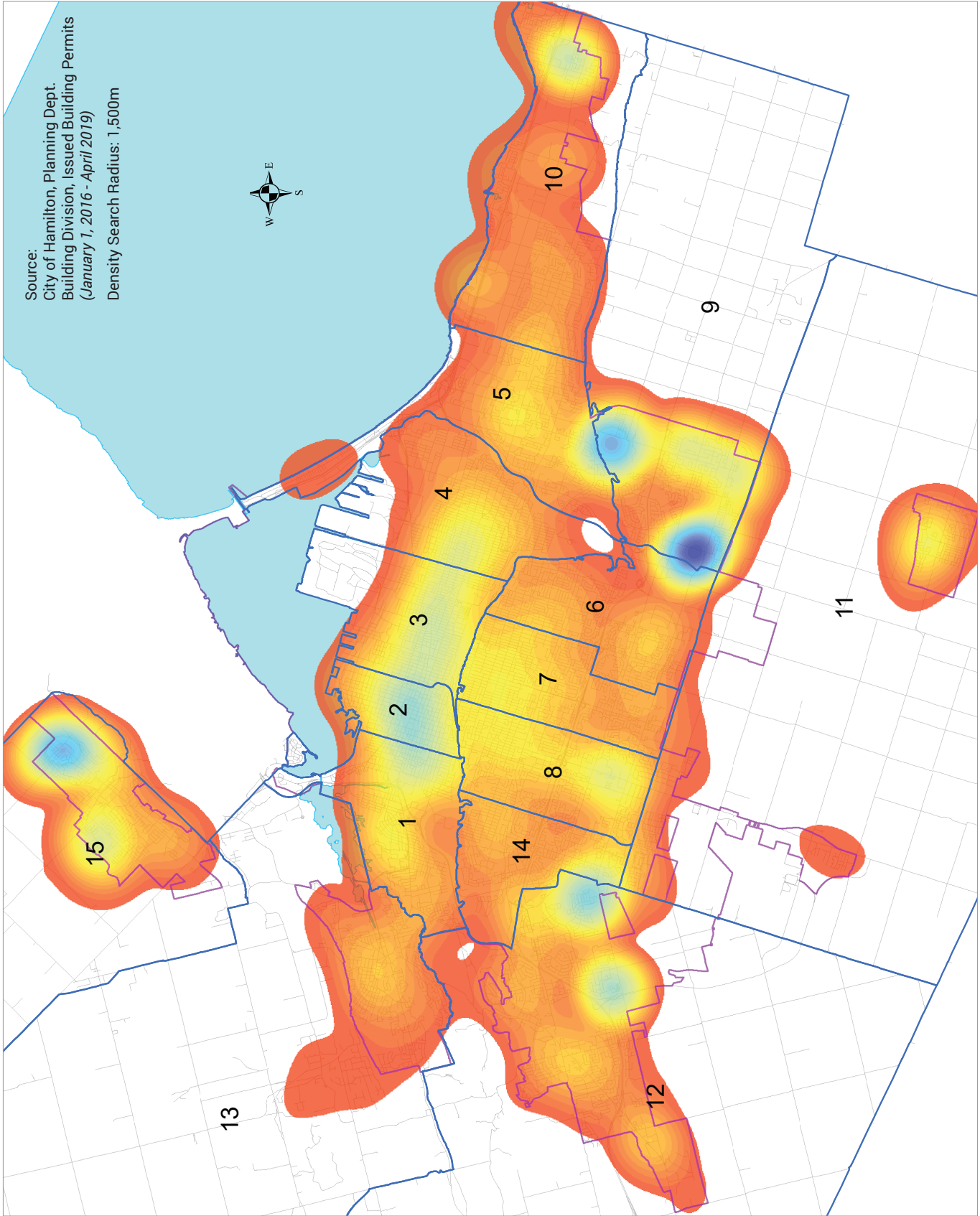
2.5 Growth and Development

In 2001, the 'old' City of Hamilton amalgamated with its five neighbouring municipalities, Ancaster, Dundas, Flamborough, Glanbrook, and Stoney Creek to form the 'new' City of Hamilton. As a result, the fire departments in each of these municipalities merged to become one large Department.

Today, major growth and development in Hamilton is occurring in these former neighbouring municipalities. Binbrook, Upper Stoney Creek, Waterdown and Winona are all in the suburban/rural areas of Hamilton which are undergoing development or plans for development to accommodate the increasing population.

The following map shows growth by building permit activity from 2016 to present. The map shows a high density of building permits issued in Waterdown, Upper and Lower Stoney Creek and Binbrook. Ancaster and the downtown core also show a higher number of building permits issued in this time period.





Hamilton’s downtown core is undergoing a revitalization leading to growth in high rise developments and a project to develop Hamilton’s west harbour is on the horizon. The expected population forecast for these growth areas are as follows:

GROWTH AREA	2031 POPULATION FORECAST	INCREASE FROM 2016	GROWTH %
Binbrook	16,011	5,985	60%
Waterdown	32,067	11,804	58%
Upper Stoney Creek	20,427	15,442	310%
Winona	13,297	9,671	267%
Downtown Hamilton	25,206	12,480	98%
West Harbour	8,419	2,791	50%
Ancaster	26,327	7,305	38%
TOTAL	141,754	65,478	

Source: City of Hamilton, Planning & Economic Development Community Planning-GIS Section, January 7, 2019

By 2031, the City of Hamilton’s population is expected to grow to 680,000, or by almost 20%.³⁰

Not only will the demand for service increase as the population increases, new developments consisting of multi-unit buildings, high rise structures, narrow streets and bike lanes all pose challenges for effective fire fighting and rescue response for the HFD.

Hamilton will also see development in the Airport Business Park. The Airport Employment Growth District is an area designated for employment lands which will help meet the City’s needs identified in its growth strategy (GRIDS) to the year 2031.³¹ Hamilton’s employment is expected to grow from 252,000 jobs in 2016 to 350,000 in 2031.³²

Currently, the Hamilton Street Railway (HSR) provides bus service within the city while GO Transit provides inter-regional bus and rail services. However, there are plans in place to build a Light Rail Transit system in Hamilton to carry passengers from the west to the east end of the city. Construction is set to start in 2020 with service commencing in 2025. This project will have an impact on response times since the LRT will run along a main corridor across the city which is used by many of the HFD stations. The HFD has been involved in the planning phases of the project to ensure the planning committee is aware of fire risks and response challenges.

As one of Ontario’s fastest growing metropolitan areas, Hamilton is the ninth largest metropolitan area in Canada and the third largest in Ontario.³³ The HFD must be able to accommodate the growing demands on service while meeting the unique needs of the city’s various communities.

³⁰ GRIDS2 Growth Summary 2006-2016

³¹ <http://www.investinhamilton.ca/locate-expand/business-parks/>

³² GRIDS2 Growth Summary 2006-2016

³³ City of Hamilton, Planning & Economic Development Dept. Elfrida Growth Area Study Existing Conditions Report

2.6 Climate

Hamilton enjoys four full seasons with warm, humid summers averaging a high of 27°C and cold winters, with averages as low as -9°C. Hamilton can also reach temperatures into the 30s degrees Celsius and drop into the -20s degrees Celsius.³⁴ On average, Hamilton experiences an annual rainfall of 765.8 mm and snowfall of 161.8 cm.³⁵

Recent extreme weather events in Hamilton such as flooding and ice storms present an increasing need for the HFD to continue to be proactive in terms of emergency planning and response. The HFD's Emergency Management Program Annual Review (2018) identified the city's hazards and risks which were unchanged from the 2016 Hazard Identification and Risk Assessment. Flooding was identified as one of the city's highest risks, second only to hazardous material spills. Extreme ice storms also remained on the list of the top ten risks for the City of Hamilton. Enhancing partnerships within the organization and with external agencies will assist the HFD in the improving preparedness and business continuity.

During the winter months, snow banks create more narrow streets impeding emergency response and travel times. This challenge is intensified in streets that are already narrow as seen in new developments, or through the addition of bike lanes and traffic calming measures throughout the city.

Hamilton is comprised of varied natural landscapes as it is situated along Lake Ontario and divided by the Escarpment. It features an industrial heritage and has thriving arts, education, and health care sectors which are driving current growth. It is a city that is diverse in terms of communities, ethnicities and socio economic status. It boasts one of the busiest Ports and fastest growing airports in North America. All of the elements that make Hamilton unique must be taken into consideration as the HFD sets out plans for the delivery of fire protection and rescue services over the next decade.

³⁴ <https://www.currentresults.com/Weather/Canada/Ontario/Places/hamilton-temperatures-by-month-average.php>

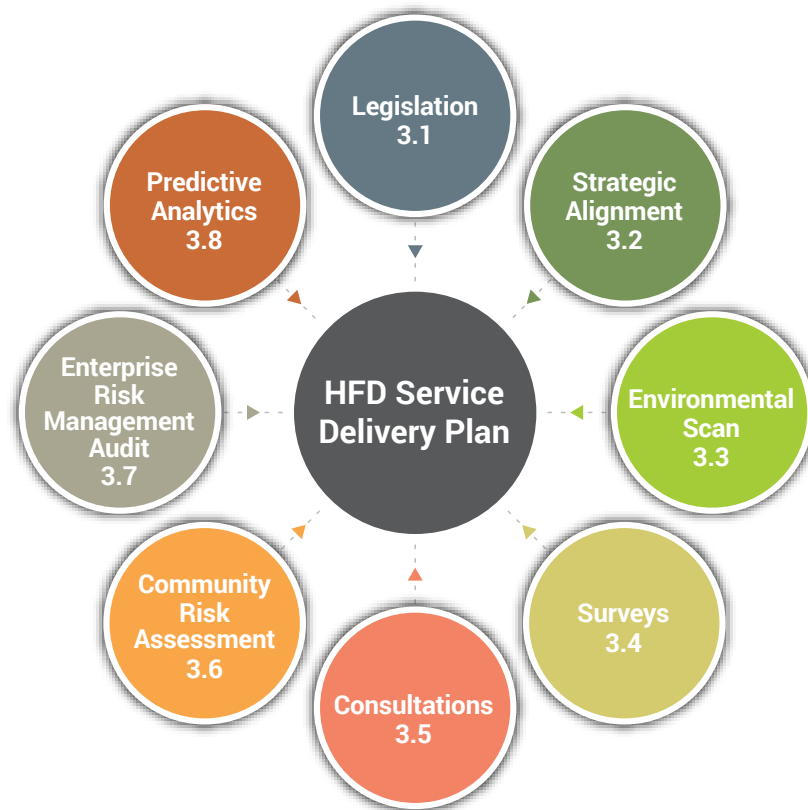
³⁵ <http://www.investinhamilton.ca/why-hamilton/quick-facts/>

The Plan was informed by the comprehensive analyses of a number of critical elements including an updated and expanded Community Risk Assessment



3.0 THE PLANNING PROCESS

The Hamilton Fire Department's Service Delivery Plan (2019 - 2028) has drawn on a number of critical elements to inform its development:



3.1 Legislation

The HFD, along with all municipalities in Ontario, is legislated by the Province's *Fire Protection and Prevention Act (FPPA)*, 1997 which states in Part II that:

2. (1) Every municipality shall,
 - (a) establish a program in the municipality which must include public education with respect to fire safety and certain components of fire prevention; and
 - (b) provide such other fire protection services as it determines may be necessary in accordance with its needs and circumstances

Hamilton's City Council is obligated by the *FPPA* to establish levels of services that meet the needs of the community and provide funding for staffing, apparatus and equipment to deliver those services.

The City of Hamilton's Establishing and Regulating By-Law 19-034 (attached as Appendix A) governs the establishment and operation of the HFD as per the *FPPA*. It outlines the structure of the Department and establishes the responsibilities of the Fire Chief who has the authorization to make general orders, policies, procedures, rules and regulations to ensure the proper administration and efficient operations of the HFD which includes exercising control over the HFD budget approved by Council. The By-law also defines fire protection services provided by the HFD which includes fire suppression, fire prevention, fire safety education, rescue, hazardous materials response, emergency first response services, mitigation and risk prevention for unsafe levels of carbon monoxide and the training for the provision of, and delivery of those services. Finally, the By-law establishes when the HFD will respond to calls outside of the city which includes adhering to the Ontario Mutual Aid Plan in accordance with the *FPPA*.

The Office of the Fire Marshal (OFM) is responsible to administer the *FPPA* and to monitor, review and advise municipalities with respect to the provision of fire protection services. Public Fire Safety Guidelines are issued by the Fire Marshal under the authority of the *FPPA* to assist municipalities in fulfilling their responsibilities as set out in the *FPPA*.

The OFM outlines a minimum requirement of fire protection services for municipalities to deliver.

As a minimum acceptable model, municipalities should provide the following services:

1. Smoke alarm program
2. Fire safety education material distributed to residents/occupants
3. Inspections upon complaint or when requested to assist with code compliance (including any necessary code enforcement)
4. Simplified risk assessment

The *FPPA* Part II also directs municipalities to appoint a fire chief who is responsible to City Council:

6. (1) If a fire department is established for the whole or a part of a municipality or for more than one municipality, the council of the municipality or the councils of the municipalities, as the case may be, shall appoint a fire chief for the fire department.
- (3) A fire chief is the person who is ultimately responsible to the council of a municipality that appointed him or her for the delivery of fire protection services.

Other legislation that affects the delivery of fire protection services must also be considered:

- *Criminal Code*, R.S.C., 1985, c. C-46
- *Emergency Management and Civil Protection Act*, R.S.O. 1990
- *Environmental Protection Act*, R.S.O., 1990
- *Highway Traffic Act*, 2001
- *Municipal Freedom of Information and Protection of Privacy Act*, R.S.O. 1990
- *Occupational Health and Safety Act*, R.S.O. 1990

In addition, the National Fire Protection Association (NFPA) is an international not-for-profit organization that provides codes, information and training to help departments minimize the risk and effects of fire. Most National Fire Protection Standards are considered best practice or guidelines unless specifically referenced in other legislation, in which the contents of the NFPA standards can be enforced.

3.2 Strategic Alignment

As noted previously, the HFD and its work are guided by the City of Hamilton's Strategic Plan (2016-2025). Most particularly the HFD supports the Strategic Priority of Healthy & Safe Communities through the objectives defined in this Service Delivery Plan. This Plan's Guiding Principles also reflected the City's Corporate Cultural Values which aim to have a collaborative workforce trusted by citizens to deliver quality service.

In addition, several other City plans and strategies have influenced the development of the Service Delivery Plan:

- Transportation Master Plan
- Growth Related Integrated Development Strategy (GRIDS)
- Growth plans (*Harbour West, Airport Land, Waterdown, Winona, Upper Stoney Creek*)
- People and Performance Plan
- Neighbourhood Action Strategy
- Equity, Diversity & Inclusion Framework (draft)
- HFD Community Risk Assessment

Finally, the Collective Agreements of the two associations for firefighters and one association for some support staff were considered throughout the development of this Plan.

3.3 Environmental Scan

As well as looking at internal plans and strategies, plans from fire departments of various municipalities were also reviewed for insights, best practices and comparisons in developing the HFD Service Delivery Plan:

- Burlington, Community Risk Assessment-Standards of Cover 2016
- Barrie, Fire Master Plan Update, 2016-2025
- Cambridge, Master Fire Plan & Emergency Services Plan, 2013
- Edmonton, Fire Rescue Master Plan, 2012
- Edmonton, Business Plan, 2016-2018
- Kelowna, Fire Department Strategic Plan, 2016-2030
- Kitchener, Fire Department Master Plan, 2017-2022
- Mississauga, Master Plan – Executive Summary, 2014
- Oakville, Fire Master Plan – Executive Summary, 2016
- Seattle, Strategic Plan, 2012-2017
- St. Catharines, Master Fire Plan, 2017
- Toronto, Master Fire Plan, 2015-2019

Many commonalities are found throughout these plans not only in terms of challenges these fire departments face but also how they propose to address the challenges. Some common challenges are as follows:

- Changes in building stock
- Increased traffic volumes/congestion
- Aging, more diverse and growing population
- Aging workforce
- Provincial legislation demands on the department (e.g., vulnerable occupancies, PTSD, carbon monoxide alarms)
- Increasing call volume
- Increasing costs
- Insufficient technology
- Training gaps

Common recommendations found throughout these plans include:

- Strengthen partnerships
- Add stations
- Enhance training
- Increase inspections

- Expand public education efforts
- Improve pre-planning
- Modernize technology
- Develop succession plans
- Enhance/develop employee Health & Wellness Program

The HFD faces similar challenges as described by other fire departments and as such has developed initiatives to overcome these challenges that are in line with best practices.

3.4 Surveys

Understanding the needs and expectations of citizens and community partners is paramount to determining whether the services delivered by the HFD are consistent with those needs and expectations.

To that end, the HFD conducted two surveys:

- 1) A survey that obtained feedback from citizens on what HFD services are important to them and their level of satisfaction with HFD services (attached as Appendix B)
- 2) A survey that invited key community partners to provide input into the HFD ten-year service delivery plan by identifying fire risks, priorities for the next ten years and ways to work together to meet the needs of the community (attached as Appendix C)

In addition, the City Manager's Office of the City of Hamilton conducted a survey to obtain citizens' feedback on all city services. The results offer some insights into citizen's level of satisfaction with the services provided by the HFD.

Finally, the City of Hamilton administered a survey to employees across the organization to gauge their level of engagement. The results of the survey for HFD employees were considered in developing the ten-year Service Delivery Plan.

1) HFD Citizen Survey

In February 2018, a total of 843 residents of Hamilton completed a survey about the services delivered by the HFD. Randomized telephone surveys, representative of Hamilton's population, collected 550 responses. To supplement the telephone data, an online version of the survey posted on the City of Hamilton website garnered 293 responses.

Overall, residents were highly satisfied with the services provided by the HFD. Of a list of ten services provided, the ones with the highest satisfaction include:

1. Response to life threatening medical calls (91%)
2. Fighting fires (89%)
3. Rescue operations (89%)

The services with the least amount of satisfaction include:

1. Code enforcement (2.7%)
2. Fire permits (1.9%)
3. Fee based services (1.8%)

The services of most importance to residents include:

1. Perform rescue operations (91%)
2. Respond to gas leaks (89%)
3. Hazardous materials operations (85%)

The services residents indicated were not at all important include:

1. Provide smoke alarm installation (8%)
2. Provide door to door fire safety education (5%)
3. Provide fire permits (5%)

In terms of firefighter performance, residents noted that arriving on scene in a timely manner and treating people with care was more important than following up with people after a fire or keeping people informed on the scene of an emergency.

The majority (84%) of respondents indicated they would prefer to maintain current taxes and current service levels for fire protection services. Those who thought taxes should increase to improve or add fire protection services identified the need for more or improved fire safety education and awareness programs, inspections and home visits, firefighters and equipment. Respondents who indicated taxes should be decreased along with a reduction in fire protection services most commonly identified response to medical calls as the service that should be eliminated.

The vast majority of respondents agreed that the HFD does its best to: protect human life and property, keep the community healthy and safe, act in the best interest of residents, help residents when they have an emergency and arrive in a timely manner.

Respondents also were asked to describe what the HFD can do to contribute to a 'healthy and safe community' which is one of the City's Strategic Priorities. The most common responses are as follows:

1. Increase fire safety awareness / Provide more education in schools, homes and to the community
2. Increase visibility and involvement in the community by attending local events or hosting open houses, workshops, etc.
3. Conduct inspections in homes, schools, rental units, public facilities, etc. to ensure fire safety codes are adhered to and smoke/carbon monoxide detectors are installed and functioning

2) HFD Partner Survey

Also in February 2018, twenty-nine key community partners responded to an invitation from the Fire Chief to provide input into the planning of the HFD's ten-year Service Delivery Plan. The survey was completed by leaders in the emergency services sector, industry and institutions (school boards and hospitals) as well as elected officials and the City's senior leaders.

For the most part, the partners indicated that the services of the HFD meets their needs, although it was noted that further training with partners is required to better understand fighting fires in the industrial sector.

Partners identified what they believed to be the biggest fire risks in the community:

- Lack/ineffectiveness of education
- Industry
- Traffic
- Human Behaviour

They noted the ways in which the HFD can reduce these risks:

- Educate and Promote Fire Safety
- Train and Support Partners
- Create and Enhance Partnerships
- Generate and Share Information

Partners then identified ways they could help to reduce the fire risks:

- Educate staff
- Train staff, through exercises, drills, safety plans
- Communicate with HFD/Provide HFD with organization's information

The key community partners were also asked to rank, in order of importance, the ways in which the HFD should continue to contribute to a healthy and safe community over the next ten years. They identified the following priorities:

OVERALL RANKED	PRIORITY
1	Building Partnerships with community organizations, institutions, industries, businesses, etc. to mitigate fire and safety risks
2	Public Education regarding emergency preparedness and community fire safety
3	City-Wide Emergency Planning for emergencies such as flooding, power outages, ice storms, etc.
4	Training for specialty operations such as rope rescue, hazardous materials, confined space rescue, medical calls, gas leaks
5	Inspections for fire code compliance

Partners were also asked to identify ways to collaborate with the HFD to build a healthy and safe community. Responses included collaborating on training, education and promotion of fire safety and sharing information about needs, risks and mitigation strategies.

When asked how the HFD can deal with the changing demands of a growing community, partners pointed to a need for more resources, the need to review and optimize existing resources, educating the public on fire safety and the need for the HFD to understand what a changing community will require.

3) City of Hamilton’s Our Citizen Survey

The City Manager’s Office conducted a survey between January and February 2018 called the “Our Citizen Survey”³⁶ to gauge residents’ level of satisfaction with city services. A representative sample of 550 respondents was contacted via telephone with an additional 1,307 people completing the survey on the City’s website.

Results showed that the large majority of citizens are satisfied with the current level of service provided by the HFD. In fact, results from the telephone survey showed the HFD received a higher satisfaction rating than any other city service with 97% of respondents indicating that the service is good, very good or excellent. The online results, although not statistically representative, showed that 85% of respondents felt that the HFD services were good or better. This was the second highest rated service next to ‘Libraries and Bookmobiles’ and tied with ‘Drinking Water.’

³⁶ <https://www.hamilton.ca/government-information/news-centre/news-releases/city-hamiltons-first-citizen-survey-results>

4) The City of Hamilton's Our People Survey

In the fall of 2017, Metrics@Works was procured to conduct a survey of employee engagement for employees across all City of Hamilton Departments.³⁷ Employees' level of engagement affects organizational and work outcomes such as job performance and employee health. The survey asked employees to rate their level of satisfaction with 48 factors (or 'drivers') of engagement related to the organization as a whole, the job and the work environment.

Results for the HFD were based on the responses of 180 HFD employees. Findings showed an overall engagement score of 68%. The scores for five key focus areas of the survey were as follows:

- City of Hamilton Values (65.4%)
- Support for Diversity (76.5%)
- Health & Safety (74.2%)
- Psychological Wellness (72.5%)
- Ethics & Integrity (68.0%)

The top five factors of highest satisfaction identified by HFD respondents are:

- Job Clarity (88%)
- Pride in Team/Division/Department (87.7%)
- Customer/Client/Citizen Service Important (87.1%)
- Sense of Accomplishment (83.6%)
- Respectful Work Environment (79.1%)

The five lowest rated factors still received a rating of over 50% but are areas in which there is opportunity for improvement:

- Department Leadership Approachability (53.4%)
- Managing Poor Work Performance (53.2%)
- Support for Training Opportunities (52.5%)
- Able to be Innovative in my Work Area (52.4%)
- Two-way Communication (52.0%)

Given that each of the four surveys described above was the first of their kind for the City of Hamilton and the HFD, more insights will be gleaned as they are repeated in future years and change over time is measured.

³⁷ <https://www.hamilton.ca/government-information/trust-and-confidence-report/our-people-survey>

These survey findings have informed a number of Initiatives to be undertaken over the course of this Plan:

- Continue to measure citizen satisfaction of the services being provided by the Fire Department (Initiative 4.1)
- Continue to update and enhance the Health & Wellness Program based on staff needs (Initiative 6.1)
- Identify opportunities to create a more inclusive workplace culture (Initiative 6.2)
- Leverage Our People Survey results to enhance employee engagement (Initiative 6.3)
- Implement strategies to ensure the continuity of core City services during emergencies (Initiative 8.2)
- Increase the level of involvement with City Departments to ensure the collaborative planning for growth in the City (Initiative 8.3)
- Identify strategies to promote emergency preparedness with community partners (Initiative 9.1)
- Develop and implement a collaborative, strategic and targeted approach to public safety education that addresses community risk (First Line of Defence) (Initiative 10.1)
- Identify safety standards and code enforcement strategies to address risks (Second Line of Defence) (Initiative 10.2)
- Identify opportunities to lessen the impact of risks through effective emergency response (Third Line of Defence) (Initiative 10.3)

These initiatives will help to achieve the following Plan objectives:

OBJECTIVES	
Enhanced customer value proposition	4
Healthy, inclusive and engaged workplace culture	6
Coordination with City Departments/Divisions/HFD	8
Collaboration with external partners	9
Community Risk Assessment response	10

3.5 Consultations

Various groups within the City of Hamilton Departments were consulted during the planning process either through meetings, membership on committees, or via email. Some of these Departmental groups include:

- Corporate Services Information Technology staff
- Hamilton Paramedic Service senior leaders
- Light Rail Transit Planning Committee
- Planning & Economic Development Elfrida Growth Area team
- Planning & Economic Development GIS team
- Planning & Economic Development Information Systems Planner
- Planning & Economic Development Business Development Consultant
- Planning & Economic Development Special Projects Manager re: Staging of Development Report
- Planning & Economic Development Building Engineering and Zoning
- Public Works Facilities Assessment
- Healthy and Safe Communities Our People Survey Committee
- Technical Advisory Committee

Collaborating with these groups and other internal partners is important for sharing of ideas, resources and to ensure alignment across Departments. As this ten-year Service Delivery Plan will be updated annually it is important to continue to consult with internal partners. For example, the HFD's Community Risk Assessment, described in the next section, points to a need to be able to respond to a changing streetscape with more narrow roads, pedestrian friendly neighbourhoods, bicycle lanes and the Light Rail Transit system. Thus, the HFD will have to continue to assess and determine appropriate changes to service delivery that aligns with the City's new Transportation Master Plan. This would help to lessen the impact of risks through effective emergency response (Initiative 10.3). It is important that the HFD continues to collaborate with City Departments to plan for growth in the city over the next ten years and beyond (Initiative 8.3).

Furthermore, as noted in Section 2.2, the Hamilton Spectator's investigative series, Code Red, shows that ten years later the community is still struggling to close the gap on health disparities between the priority neighbourhoods and more affluent areas of Hamilton. The Spectator highlighted the link between poor health and poverty, illustrated by shorter-life expectancy in low socioeconomic neighbourhoods, among other health issues. The HFD is dedicated to collaborating with internal partners as well as key civic stakeholders to explore opportunities to address Code Red and affect positive change in the health and well-being of Hamiltonians. The HFD will look for opportunities to assist the community through the use of HFD resources and programs that would help contribute to making a difference for those who are disadvantaged (Initiative 12.1).

The initiatives described above will help to achieve the following objectives of the Action Plan (Section 5.0):

OBJECTIVES	
Coordination with City Departments/Divisions/HFD	8
Community Risk Assessment response	10
Code Red response	12

In addition to consulting other City Departments, internal consultations occurred in a variety of methods with a number of HFD personnel. Frontline staff and the Associations were invited by the Fire Chief through an all-personnel memo to provide their input via email either directly to the Chief or to an email address that was created specifically for staff input. Some feedback has been submitted through this email address which has been considered as part of the planning process.

In addition, the Chiefs of each Division in the HFD and Platoon Chiefs were engaged, first through a survey in which they described their Division’s strengths, weaknesses, opportunities and threats. Each Division Chief/Platoon Chief then participated in a series of meetings to identify and analyze their Division’s data, needs and opportunities for optimization. The details from these consultations help to form the description of each Division’s section below.

Finally, HFD senior leaders were heavily engaged in the process to plan for the delivery of services over next ten years. The extended leadership team met approximately every two weeks over the course of a year. The team reviewed and discussed the data for the Plan as it was made available and worked with the predictive analysis tools. The leadership team was responsible for making final decisions on every aspect of the Plan most especially the objectives presented within it. The extended leadership team consisted of:

- Fire Chief
- Deputy Chief Fire Operations
- Deputy Chief Operational Support and Community Safety
- Assistant Deputy Professional Standards, Training & Communications (Fire Dispatch)
- Assistant Deputy Operations, Career and Volunteer
- Assistant Deputy Corporate Radio, Facilities & Procurement, Mechanical Division
- Assistant Deputy Fire Prevention, Community Safety, Planning
- Area Commander Volunteer Division
- Divisional Chief of Administration

- Senior Emergency Management Coordinator
- Emergency Management Coordinator
- Radio Frequency Systems Specialist Corporate Radio, Technology & Mechanical
- Senior Project Manager Continuous Improvement & Performance Measures

Guiding Principles

It became apparent early in the planning process, largely through consultations with Division Chiefs and the extended leadership team, that planning for optimal service delivery over the next ten years should focus on four main areas: service delivery, the people who deliver the services, collaborating and integrating to improve service delivery and reducing risk to make the community healthier and safer.

The goal to optimize performance in these four areas became the Plan's Guiding Principles. These Principles will strategically direct the initiatives undertaken to implement this Plan. The objectives and corresponding initiatives and actions that are presented in the Action Plan at the end of this document are aligned with these Guiding Principles:

1. Optimized Service Delivery: The HFD is committed to delivering emergency preparedness, fire protection and rescue services in the most efficient, effective and cost conscious way possible. The focus is to provide optimal service through maximizing existing resources, improving technology and ensuring resources are available to meet the needs of the community.

2. Exceptional People & Performance: The HFD knows that engaged, motivated employees who have the tools to do their jobs will perform to the best of their ability to deliver optimal services to citizens. The HFD is committed to providing a positive workplace culture that supports employees in reaching and increasing their potential.

3. Robust Collaboration & Integration: The HFD will strive to enhance the collaboration among the Divisions within the Department to increase collective ownership of service delivery. The HFD also recognizes the importance of building and cultivating meaningful partnerships within and outside of the organization. Such strategic collaborations will help the HFD to increase its capacity in meeting the needs of the community.

4. Reduced Risk for a Healthier and Safer Community: The HFD will enhance a focus on proactive measures to effectively mitigate risks to residents. Through a comprehensive public education program, increasing inspections and assessments and ensuring resources align with the needs of the community, risks can be reduced and avoided.

3.6 Community Risk Assessment

As noted earlier, the *Fire Protection and Prevention Act (FPPA)* obligates municipalities to establish levels of services that meet the needs of the community. In order to determine the needs of the community the *FPPA* requires every municipality to:

- (a) complete and review a community risk assessment as provided by this Regulation; and,
- (b) use its community risk assessment to inform decisions about the provision of fire protection service

A community risk assessment identifies, analyzes, evaluates and prioritizes risks in a community that pose a threat to public safety. The provision of fire protection and rescue services is based on the risks identified in the community risk assessment. The *FPPA* requires an annual review of the community risk assessment and reassessment every five years.

A community risk assessment must consider a community's geographic attributes, demographic profile, building stock, economy, services, hazards and critical infrastructure. In addition, the fire department's response history including number and types of emergency responses and loss statistics must be reviewed.

The HFD conducted a Community Risk Assessment (attached as Appendix D) for 2018; the results of which form the basis for many of the objectives in this Service Delivery Plan.

To summarize, the HFD 2018 Community Risk Assessment identified the following areas as potential risks to public safety:

1) Residential Occupancies

- **Residential development growth which includes high-rises and multi-unit dwellings**
Increased density and intensification in residential areas, vertical response challenge and the spread of fire through multi-units pose notable threats to public safety.
- **Materials used in the construction of both new and old residential structures**
Older buildings with balloon framing have wall cavities that extend from the foundation to the roof structure which can be an open path for fire to spread quickly. In new builds, the open concept can allow for the spread of fire while solar panels on roofs can impede firefighters' ability to ventilate. In addition, the use of lightweight building materials creates a hazard due to quicker fire spread and potential collapse of a structure.
- **Community housing residences**
The past loss and event history profile of community housing or social housing buildings has indicated a high occurrence of incidents including fatalities.

2) Assembly Occupancies

- **Schools and restaurants with a capacity of more than thirty**

The HFD's past loss and history profile shows a risk of fires in schools due mostly to vandalism and in restaurants for thirty or more people due mostly to cooking equipment and failure to maintain exhaust hoods.

3) Institutional Occupancies

- **Vulnerable occupancies and institutions**

Vulnerable occupancies such as Long Term Care facilities, Retirement Homes and Group Homes pose a risk due to behaviours such as careless smoking while hospitals and detention centres' risk is largely due to vandalism and arson. Further challenges in these facilities relate to evacuating a large amount of people, many with limited or restricted mobility.

4) Industrial Occupancies

- **Hazardous materials**

Hamilton's industrial sector is thriving and while industrial buildings must comply to safety regulations those that may be non-compliant or house highly hazardous materials may pose a risk to public safety.

5) Growth

- **Development in rural areas and the Port of Hamilton**

Rural areas of the city are currently served by volunteer or composite stations which may experience a challenge in meeting demands as the population and building stock increase. As the Port continues to grow so too does the handling of various types of hazardous goods.

- **Increased traffic on roads and at the Hamilton International Airport**

A growing population results in increased traffic and congestion impacting response travel times. The LRT, narrow streets, bike lanes and traffic calming measures also affects response times. The airport is also growing in terms of its cargo and passenger traffic. The lands around the airport are also slated for the development of a business park.

6) Demographics

- **Diversity**

Diversity in the City of Hamilton poses a challenge for the HFD in ensuring fire prevention and public education efforts are effective for reaching non-English speaking residents.

- **Income Level**

Some households are unable to afford proper repairs, utilities and fire safety products which can lead to an increase in risk.

- **Careless Behaviour**

The HFD 2018 Community Risk Assessment noted human behaviour as the top causes of residential fires, that being unattended cooking and careless smoking

7) Geography

- **Escarpment and waterways**

Hamilton’s unique natural landscape presents risks associated with the escarpment that has led an increase in rope rescues over the recent years in heavily wooded areas that are difficult to access. Situated on Lake Ontario and with many inland bodies of waters poses risks in terms of water and ice water rescue.

8) External

- **Criminal attacks**

The city hosts numerous festivals attended by large numbers of people. Recent criminal attacks on outdoor crowds across the world highlights the importance of being prepared for such a possibility in Hamilton.

- **Climate**

An increase in storms such as ice storms and rain causing flooding has an impact on the city’s critical infrastructure requiring emergency response.

In order to mitigate the risks identified in the 2018 Community Risk Assessment a number of recommendations are made. These recommendations address the three lines of defence that were outlined in the Introduction section.

Response to the Community Risk Assessment is a stand alone objective in the Action Plan (Section 5.0). It consists of three initiatives representing each line of defence:

Line 1: PUBLIC FIRE SAFETY EDUCATION	Line 2: FIRE SAFETY STANDARDS & ENFORCEMENT	Line 3: EMERGENCY RESPONSE
Develop and implement a collaborative, strategic and targeted approach to public safety education that addresses community risk (Initiative 10.1)	Identify safety standards and code enforcement strategies to address risks (Initiative 10.2)	Identify opportunities to lessen the impact of risks through effective emergency response (Initiative 10.3)

The recommendations made in the Community Risk Assessment become the actions in the Action Plan (Section 5.0).

OBJECTIVE	
Community Risk Assessment response	10

3.7 Enterprise Risk Management Audit

To help inform the development of the ten-year Plan, in 2018 the City's Corporate Audit Services Division conducted an internal risk assessment of the HFD (see City of Hamilton Committee Report AUD19008). For this purpose, risk is defined as the chance of something happening that may have an impact on or prevent the HFD from achieving safe, timely and quality service delivery. The impact can be either negative or positive, although the positive impacts are considered opportunities as opposed to risks.

Audit Services utilized the Enterprise Risk Management (ERM) framework to carry out the assessment which included:

- Identifying risks and opportunities related to HFD's objectives
- Assessing the risks in terms of likelihood and magnitude of impact
- Determining response strategies

Audit Services assessed the HFD's risk management process through the following methods:

1. Interviewing key personnel to compile a comprehensive list of risks that might have an impact on the achievement of HFD objectives; and,
2. Conducting a workshop for the group to assess the likelihood and impact of identified risks and identify those events that require a response.

Twenty-six people participated in the audit including HFD senior leaders, the Associations' executives, Division Chiefs, Platoon Chiefs, and support staff (i.e., Human Resources, Labour Relations, Communications).

The results of the assessment were reviewed with members of the HFD leadership team including the Chief and Deputy Chief and actions to mitigate each risk were documented.

Twenty-two risks were assessed for level of criticality and of those risks seven were identified as the most critical risks facing the HFD today. Five of these risks require further management and are addressed through this Service Delivery Plan. Two risks are identified as accepted risks since controls are currently in place to adequately manage these.

Managed Risks

1. Staffing – The HFD staffing levels (non-union management and unionized front line staff) may be too lean.
2. Skills – The HFD employees may lack the skills or experience to be successful in their roles.
3. Technology – The HFD may be unable to utilize technology to make processes more efficient or effective.
4. Costs – The HFD may face budgetary pressures to be able to fund unexpected or rising financial obligations and maintain current service levels.
5. Recruitment – The HFD may face challenges in their ability to fill positions in a timely manner.

Accepted Risks

1. Disruption – The HFD may experience loss of functionality of critical systems.
2. Legislation – The HFD may not have the capacity to react to regulatory changes made by third parties with jurisdiction over the Fire Department.

Initiatives and actions designed for managing these risks are listed in the Action Plan (Section 5.0) under the following objectives:

OBJECTIVES	
Innovative and effective use of technology	1
Revenue generation opportunities	2
Existing resources efficiently utilized to maximum potential	3
Skilled and diverse workforce	5
Professional development opportunities	7
Coordination with City Departments/Divisions/HFD	8
Collaboration with external partners	9

3.8 Predictive Analytics

Along with the Hamilton Paramedic Service, the HFD has been working with Darkhorse Analytics to develop a suite of software tools to conduct diagnostic and predictive analysis of response performance. With the use of the HFD’s response data, population forecasts and road networks among other data sets, Darkhorse Analytics created customized platforms that allow for the response data to be viewed spatially on a map of Hamilton.

Through the diagnostic reporting tool, the HFD is able to visualize past and current call demand and response performance. It provides a picture of where and when stations are performing well and shows the areas for improvement. It also identifies the root cause of areas that show underperformance such as distance to incident, drive time, turnout time, unit occupied or nearest unit not assigned. Underperformance or “overgoals” is defined by Darkhorse as calls that exceed the set target time.

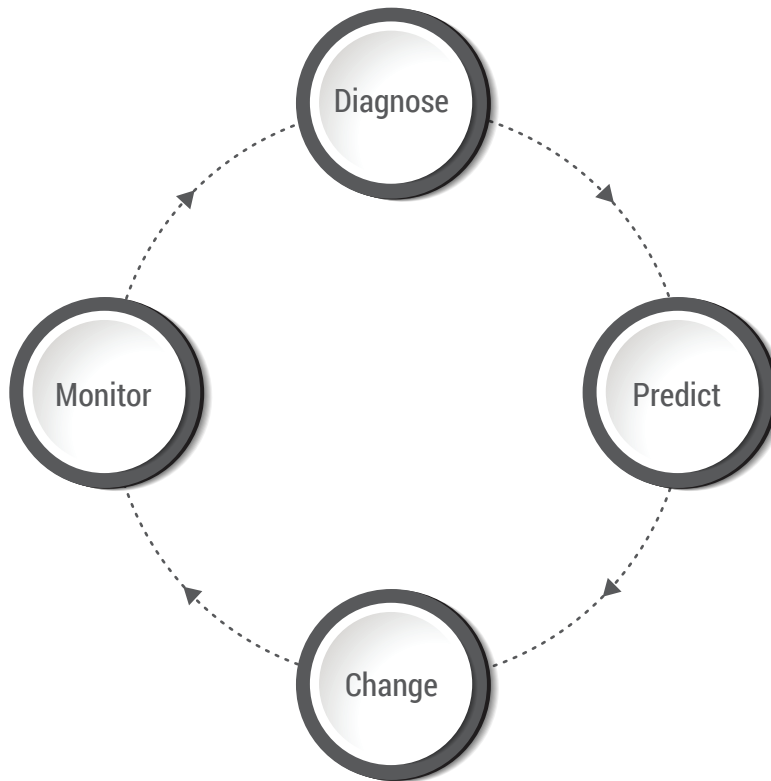
Hamilton Fire Department Diagnostic Analysis 2018	
Call Volume	32,509
Annual Increase (average from 2014)	4.5%
Trend	While call volume increases each year, the percentage increase has been declining year over year since 2014
Call Demand Locations	Concentrated in Downtown Hamilton (with pockets in Waterdown and Dundas) Call volume is increasing more quickly in the urban areas
Call Demand Times	Most calls occur during weekdays
Call Type	66% are life threatening medical calls 1% structure fires
Areas of Overgoals	Winona, Binbrook, Upper Stoney Creek, Waterdown, Southwest mountain (Garth and Rymal area)
Reason for Overgoals	Distance – is the biggest cause of overgoal calls, i.e., incidents are far enough away from the station that an average response could not arrive within the target time *first on scene

The diagnostic tool shows that despite the growth in calls over the last five years, performance has remained stable.

The predictive modelling tool enables the HFD to test a variety of scenarios of station locations, station configurations and resource placement. It incorporates a spatial forecast of call volumes and a prediction of response times in tune to the practices of the HFD. Testing potential scenarios using the tool enables the HFD to identify the best placement of resources for optimal performance over the next ten years.

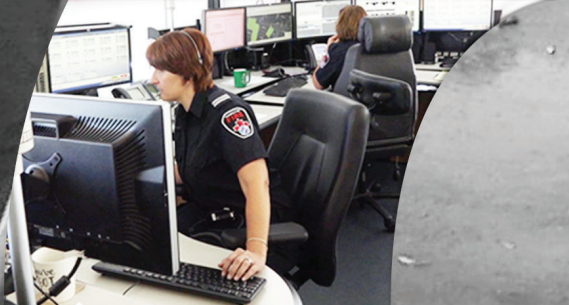
A more thorough depiction of the current state of service delivery will be presented in the Operations Division Section (4.2). The future state will also be described in the same Section and solutions for current and predicted challenges as supported by the predictive analysis tool will be provided.

These tools help the HFD identify any performance issues and their root causes so that action can be taken to mitigate the issue. This reflects a loop of continuous improvement:





Eight Divisions of the Hamilton Fire Department deliver services to the community related to public safety education, code enforcement and all-hazard emergency response.



4.0 HFD DIVISIONS

The Hamilton Fire Department serves a growing and changing community with a variety of needs that require a range of services. The goal of this Plan is to set a course that helps the HFD prepare for the short and long term needs of the community while ensuring quality services for reasonable taxation levels. This will require the HFD's Divisions to operate in more fluid and cost effective manner that maximizes existing resources and at the same time enhances customer experience.

What follows is a detailed description of each Division, its key functions, organizational structure and resources (staff and equipment), programs and services. Any major challenges that the HFD may face in the short, medium or long term will be identified and objectives to address them are provided.

Objectives provided in the boxes throughout these sections will advance the HFD toward an approach of increased capacity through collaboration and integration, optimizing existing resources, developing staff capabilities and reducing risks to the community with an emphasis on the first two lines of defence (education and prevention).

Department Key Functions

The HFD is an all hazard operation that performs the following functions:

- Fire suppression
- Rescue operations (rope rescue, confined space rescue, ice rescue, vehicle extrication)
- Hazardous materials operations
- Response to gas leaks (natural gas, carbon monoxide)
- Response to alarm conditions
- Emergency Medical Services for life-threatening medical calls
- Fire Communications/Dispatch
- Code Enforcement (residential and commercial inspections, enforcement of the Ontario Fire Code and City by-laws)
- Fire Prevention Programs (Home Fire Safety Education Program, Volunteer Inspection Program for Homeowners, Alarmed and Ready Smoke Alarm Program, Hamilton Arson Prevention Program for Children)
- Fire Safety and Emergency Preparedness Public Education
- Fire Permits (Open Air Burning, Family Fireworks Sales)
- Fee-based services (Fire Response Report, outstanding Work Order search, private home daycare inspection, establishment of fire route)

- Mechanical services for both HFD and Hamilton Paramedic Service
- City of Hamilton Emergency Plan
- Emergency training and exercises
- Activation of the Emergency Operations Centre
- Emergency response to city-wide emergencies
- Business Continuity
- Risk Analyses (Hazard Identification, Critical Infrastructure Identification, Community Risk Assessment)
- Corporate Radio System oversight (including mission critical voice and data communications for the Hamilton Fire Department, Hamilton Police Service, City of Hamilton Public Works and the Airport Operations Group)
- Training personnel in all aspects of services provided by the HFD

In addition to 26 emergency response stations, the HFD also operates an Emergency Services Fleet Services Centre, a Fire Prevention business centre, a Stores/Logistics Centre and the Multi-Agency Training Academy.

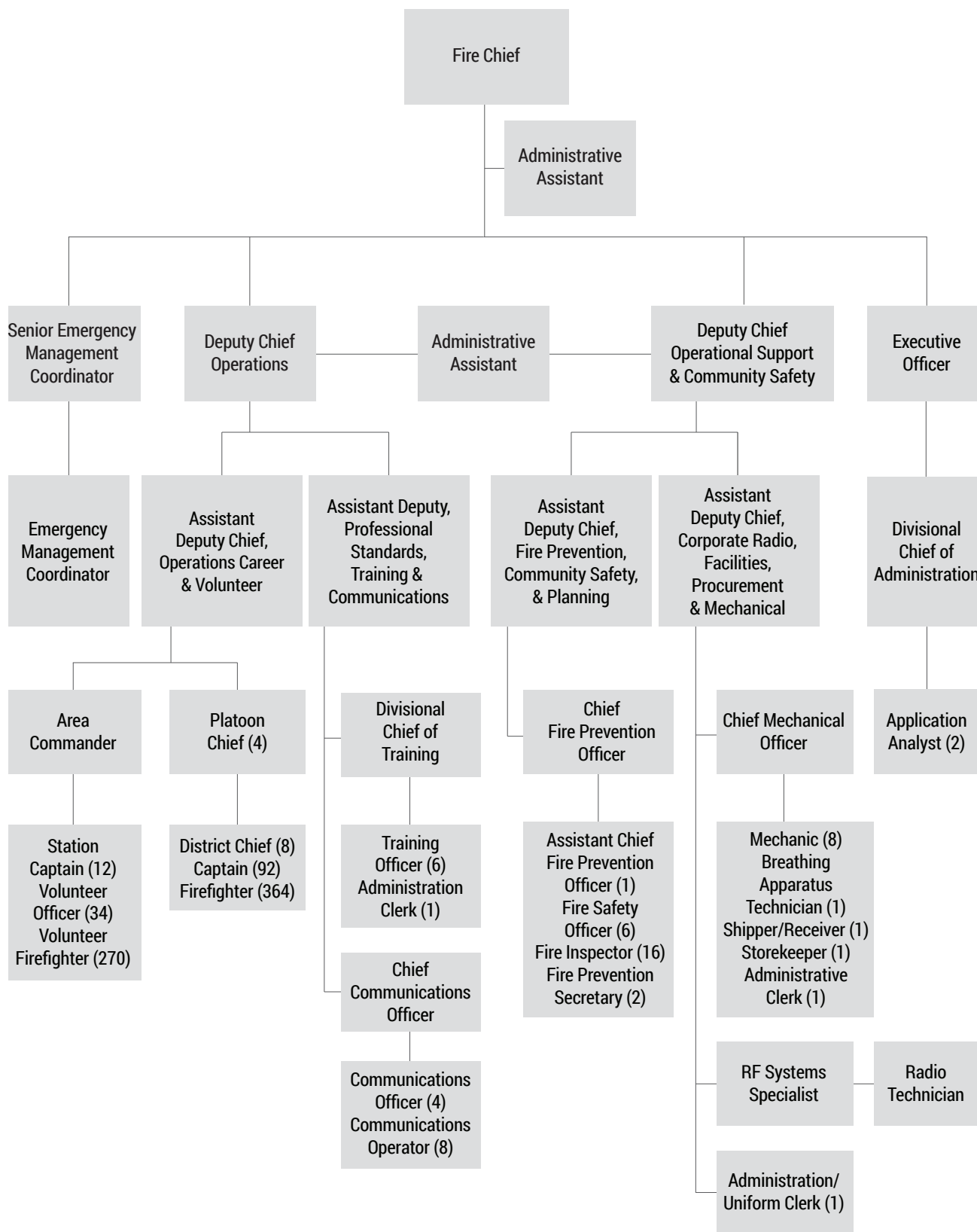
Department Structure and Staff Resources

Situated within the Healthy and Safe Communities Department of the City of Hamilton, the HFD is organized into eight Divisions:

- Administration/Leadership
- Operations - Career and Volunteer
- Fire Prevention
- Training
- Mechanical
- Communications (Dispatch)
- Corporate Radio
- Emergency Management

The Fire Chief reports to the General Manager of the Healthy and Safe Communities Department of the City of Hamilton. The Chief is responsible to lead the HFD which is structured in the following way:

Hamilton Fire Department



The HFD is a composite fire service made up of 468 career (fulltime) firefighters and 270 volunteer (paid on-call) firefighters. In total, the HFD employs 856 people who hold a variety of positions within the eight Divisions including data analysts, administration assistants, technicians and clerks.

The HFD workforce is represented by three unions: The Hamilton Professional Firefighters Association (Local 288) represents career firefighters, the Greater Hamilton Volunteer Firefighters Association (CLAC Local 911) represents volunteer firefighters and the Canadian Union of Public Employees (CUPE Local 5167) represents some of the HFD's support staff.

Currently, the HFD employs 71 women in total. Nine of these women occupy management and Officer rank positions (Captains, Divisional/Assistant Deputy Chiefs, Executive Officer, Emergency Management Coordinators). An opportunity exists for HFD to build a diverse workforce that is reflective of the community it serves (Initiative 5.1). For example, the HFD will look to expand the Camp FFIT (Female Firefighters in Training) concept to broader community groups. This will provide a diverse group of people with the opportunity to experience first-hand the duties of a firefighter and promote firefighting as a career.

As the workforce becomes more diverse there is a growing need to create a more inclusive workplace culture (Initiative 6.2). Through the use of the City of Hamilton's newly developed Equity, Diversity and Inclusion (EDI) Plan, the HFD will apply an EDI lens in identifying strategies to increase diversity and inclusivity within the Department.

The HFD has an aging workforce with 132 career firefighters set to retire within the next ten years. This represents over 4,000 years of experience at time of retirement. It includes a significant portion of the Department's current Officer ranks. The result is a loss of key experiences and skills of veteran employees. Planning for the departure of experienced employees by supporting and promoting the growth and development of existing employees is crucial for the long-term success of the HFD (Initiative 7.1). Opportunities for development such as creating a Department-wide mentoring program to expose staff to all facets of the fire service and enhance skill development and implementing a Department-wide foundational core competency training program will contribute to the development of skills and expertise of personnel and help address the loss of experienced personnel through retirement.

The HFD will also investigate opportunities to maximize use of current resources in all Divisions (Initiative 3.1). Keeping staff healthy and engaged will contribute to their ability to reach their maximum potential. As such, the HFD will continue to update and enhance the Health & Wellness Program based on staff needs (Initiative 6.1) for example all personnel will be provided 'Road to Mental Readiness' training. Results of the Our People Survey will also be leveraged to enhance employee engagement (Initiative 6.3) by further developing and enhancing a formal recognition program for staff, for example.

The HFD will also commit to investigating additional resource gaps in all Divisions including the leadership team due to the increased workload and growth (Initiative 11.4). Finally, the HFD will explore strategies to enhance the hiring process to better meet the needs of the Department and community (Initiative 5.2).

Preparing for the departure of Departments' senior leaders is of particular importance to ensure organizational stability and continuity. As such, the HFD will also develop a succession plan for the Leadership Team (Initiative 5.3).

These initiatives are categorized under the following objectives of the Action Plan (Section 5.0):

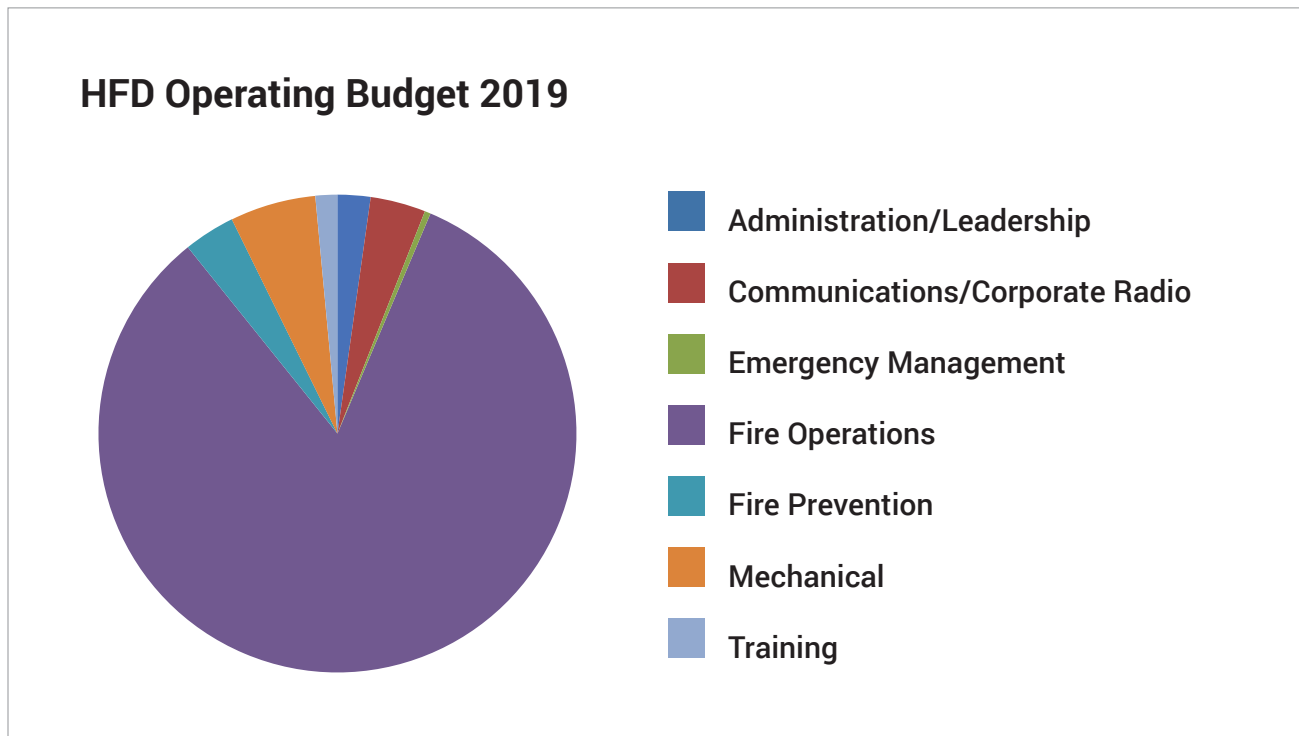
OBJECTIVES	
Existing resources efficiently utilized to maximum potential	3
Skilled and diverse workforce	5
Healthy, inclusive and engaged workplace culture	6
Professional development opportunities	7
Resourcing community growth demands	11

HFD Department Budget

For 2019, the HFD has an overall operating budget of \$93,149,430. The allocation of funds per each Division and percentage of overall budget is as follows:

OPERATING BUDGET 2019		
Division	\$	%
Administration/Leadership	\$2,074,200	2.2%
Communications/City Wide Trunked Radio	\$3,483,220	3.7%
Emergency Management	\$372,580	0.4%
Operations	\$77,189,620	82.9%
Fire Prevention	\$3,241,410	3.5%
Mechanical	\$5,407,070	5.8%
Training	\$1,381,330	1.5%
Total	\$93,149,430	100%

The HFD 2019 operating budget breakdown can be illustrated with the following pie chart:



The HFD is committed to optimizing available financial resources to maintain the current level of service delivery. However, the HFD faces ongoing challenges to allocate financial resources effectively to ensure each Division is able to deliver the services and programs that meet the growing and diversifying needs of the community. The Operations Division represented the largest proportion of overall spending by service with over 82% of the total expenditures.

Limited capital funding poses a challenge for the HFD as aged facilities require maintenance or replacement. As time passes and the building stock ages, the facilities that currently require repairs can become further deteriorated, past the point of repair.

The HFD is committed to exploring options for revenue generation and cost saving strategies with City partners and external partners. For example, the HFD boasts a one-of-a-kind Multi-Agency Training Academy utilized by the Hamilton Paramedic Service and the Hamilton Police Service. The Academy consists of an indoor training facility, an outdoor training tower, an outdoor car fire simulator, classrooms and a working fire station on the premises. While HFD firefighters train regularly at this facility, there are times when it is not in use and could be rented out to other fire and emergency services for training purposes (Initiative 2.1).

There is also the possibility for other ways to generate revenue such as through the

delivery of dispatch services, emergency management services and fire protection and rescue services. The HFD will explore the possible funding strategies and the level of interest from other fire services (Initiative 2.3). The HFD Administration/Leadership will work to establish appropriate user fees for these revenue generation initiatives within the City of Hamilton's User Fee By-Law during budget process.

Furthermore, opportunities to access new funding streams such as grants will be investigated by Administration/Leadership (Initiative 2.2). These initiatives and corresponding actions help to achieve the following objective of the Action Plan (Section 5.0):

OBJECTIVE

Revenue generation opportunities

2

4.1 Administration/Leadership Division

Key Functions

The Administration/Leadership Division of the HFD consists of the leadership team who oversees and monitors the resources and operations for all of the divisions in the department under the direction of the Fire Chief. The key functions of the leadership team include:

- Managing the HFD's operating and capital budgets
- Ensuring compliance with policies and procedures (from federal, provincial and municipal levels)
- Developing HFD policies and procedures
- Providing strategic direction and vision that aligns with the City's 2016-2025 Strategic Plan
- Developing and implementing business plans
- Handling human resource issues
- Managing labour relations
- Developing and implementing HFD Communications Plan
- Ensuring proper records management (in FDM)
- Ensuring proper functioning of information technology systems such as Computer Aided Dispatch System (CAD), Paging System and the Department's intranet
- Reporting to General Manager of Healthy and Safe Communities, City Manager and City Council
- Coordinating the City's Emergency Management Program

- Ensuring adequate resources (facilities, apparatus, equipment and staffing)
- Leading and supporting continuous improvement initiatives throughout the HFD
- Promoting a positive culture of collaboration, engagement, empowerment and integrity to ensure the delivery of sensational service
- Overseeing the corporate radio system

The Administration/Leadership Division is also responsible to demonstrate that the HFD is performing effectively and ensure the community’s expectations are met with respect to the level of service provided by the HFD. As such, over the short term of this ten-year Plan, the Administration/Leadership Division will establish forward facing and internal tools to communicate performance results (Initiative 4.2). This will include developing a performance dashboard to be utilized for evidence-based decision making and enhance performance metrics for each Division to monitor, evaluate and improve performance using a result-based accountability approach.

Furthermore, the Administration/Leadership Division will continue to measure citizen satisfaction of HFD services by repeating the HFD Citizen Survey on a continuing three-year cycle from the 2018 initial baseline.

To assure Hamiltonians that the HFD delivers valuable services, the HFD Administration/Leadership will define the value for money proposition of the services being provided to citizens (Initiative 4.3). Achieving cost effective, quality services that are valued by citizens will be achieved, in part, through supporting and participating in the City’s and the Healthy and Safe Communities Department’s integration and continuous improvement initiatives (Initiative 8.4).

These initiatives and actions are reflected under the following objectives in the Action Plan (Section 5.0):

OBJECTIVES	
Enhanced customer value proposition	4
Coordination with City Departments/Divisions/HFD	8

Division Structure and Resources

The Administration/Leadership Division consists of the leadership team and support staff. The core leadership team consists of the Fire Chief, two Deputy Chiefs, one Executive Officer, four Assistant Deputy Chiefs, the Divisional Chief of Administration, a Senior Emergency Management Coordinator and an Emergency Management Coordinator. The addition of the Area Commander, Radio Frequency Systems Specialist, Human Resource Recruiter, Labour Relations Officer and a part-time Senior Project Manager forms the extended leadership team.

Data and Analytics

Within the Administration Division, the Divisional Chief of Administration reports to the Executive Officer. The Divisional Chief oversees two Application Analysts which will be transferred to Corporation Information Technology (IT) as part of the IT centralization project.

This unit is responsible for data collection and analysis, records management and technology which includes:

SYSTEM	RESPONSIBILITY
Computer Aided Dispatch (CAD)	<ul style="list-style-type: none"> • Maintain and update CAD mapping quarterly • Update CAD programming for dispatch • Maintain system accounts
Mobile Data Terminals (MDT)	<ul style="list-style-type: none"> • Maintain MDT software • Maintain MDT files and connectivity
FDM Records Management System	<ul style="list-style-type: none"> • Maintain system accounts and security • FDM product module customization • Develop HFD specific modules and work flows • Develop and maintain customized reports • Develop training materials
Paging System	<ul style="list-style-type: none"> • Manage of capcodes and terminal IDs • Program and deploy pagers • Program Zetron 2100 terminal • Program Page Gate backup paging application • Maintain Log page and Web gate
HFDNet	<ul style="list-style-type: none"> • Maintain and update content • Design graphics and layouts • Develop customized applications to display information stored in databases
Corporate Servers	<ul style="list-style-type: none"> • Manage applications and databases on 12 corporate servers
Reporting	<ul style="list-style-type: none"> • Develop all reports and queries • Provide updated statistics and performance measures
Predictive Analytics	<ul style="list-style-type: none"> • Update data for analytic tools • Support leadership team with tool as power user • Run queries and generate data charts to assist with decision-making regarding resource placement
Miscellaneous Systems	<ul style="list-style-type: none"> • Maintain and update Fire Keyscan system • Maintain Command Sim applications • Maintain security camera system • Create and deploy automated Twitter application
Request for Services	<ul style="list-style-type: none"> • IT services as requested from within the Department and throughout the Corporation

The HFD's successes over the next decade will be enhanced by its ability to engage and incorporate technology solutions across all of its operations. This will involve the strategic implementation of technology to improve the efficiency and effectiveness of operations and enhance the customer experience.

For example, mobile technology can be utilized by Fire Inspectors who would use tablets linked to the FDM system onsite to input information as they are recording it rather than having to complete a written form that must be input into the system once they return to the office (Initiative 1.2).

The customer experience can be enhanced through technology that allows them to access services, submit requests, complete applications and send payment for the HFD services online. For example, residents could apply for a burn permit online, make the payment online and receive the permit electronically. Residents could also schedule inspections or book a fire truck for an event online, and so on. The HFD will develop the capability for residents to access services online including a payment portal (Initiative 1.6).

Leveraging integration with Corporate database applications would benefit both employees and customers (Initiative 1.1). Currently, City Departments store their data in their own separate database systems. Integrating the HFD information with other corporate databases would enable information to be accessed by all Departments. Therefore, residents requiring information on properties and permits would be able to access this information from a single source. For example, the department issuing building permits would have information about burn permits and number of fires at a given property in the last five years. The customer experience is enhanced by reducing the number of City staff with whom they must interact to fulfil their request.

Internally, it is critical that the HFD follows audit principles by consolidating asset management and gaining greater control over inventory. The HFD will need to expand the utilization of the asset management platform of the FDM system (Initiative 1.4). This will help to better track assets throughout the HFD including the equipment used in training, the products stock and equipment required by the Mechanical Division, equipment housed in Stations and on apparatus as well as technological equipment such as radios, tablets, computers and cellular phones used by staff.

In the short term there are a number of technology updates that are required for the HFD to ensure the current level of service delivery is maintained and continuously improved:

- Update Computer Aided Dispatch System to Version 9.4
- Upgrade Mobile Data Terminal Hardware to ruggedized tablet
- Upgrade Personnel Alerting System
- Implement Secondary Volunteer Incident Notification using an application that is compatible with cellular phones

As technology quickly and constantly evolves it will be important for the HFD to keep up with and utilize technological advancements over the coming decade. This will require working with external partners as well as internal partners and including Corporate Services Information Technology (IT). Initiatives reflecting the improvements outlined here are all reflected under this objective of the Action Plan (Section 5.0):

OBJECTIVE	
Innovative and effective use of technology	1

4.2 Operations Division

Key Functions

The Operations Division of the Hamilton Fire Department is the City of Hamilton's only all-hazards emergency response organization protecting against loss of life and property due to fire, accidents, illness and other hazards. The Operations Division is responsible for the third line of defence, emergency response. The key functions of the Operations Division are:

- Fire suppression
- Rescues
- Hazardous materials response
- Disaster response
- Medical first response services in accordance with the tiered-response agreement with the Hamilton Paramedic Service
- Mitigation and prevention of the risk created by the presence of unsafe levels of carbon monoxide

Specialized rescue capabilities of the Operations Division include:

- Vehicle extrication
- Confined space rescue
- High angle rope rescue
- Shore-based water rescue
- Ice rescue

Division Structure and Resources

The Operations Division is overseen by the Deputy Chief of Operations who reports to the Fire Chief. The Assistant Deputy Chief of Operations, Career and Volunteer and the Assistant Deputy Chief of Professional Standards, Training and Communications (Dispatch) report to the Deputy Chief of Operations.

The Operations Division utilizes three models of response across the urban, suburban, and rural areas of the City. In the urban areas, full-time career firefighters respond to events and in the rural areas volunteer firefighters are employed to respond. Three suburban areas of the City utilize a composite response model whereby both career and volunteer firefighters respond together.

The HFD currently has 364 career firefighters who operate on a four-platoon, 24-hour shift structure and report to 92 Captains. Captains report to one of two District Chiefs on their platoon (eight District Chiefs in total) who are responsible for all stations within their geographic area. Each of the four platoons is managed by a Platoon Chief who reports to the Assistant Deputy Chief of Operations.

The 270 volunteer firefighters of the HFD respond on an as-needed basis to incidents within their assigned station's response area. Each volunteer Station has an overall Station Captain and Training Officer, and additional Captains relative to the number of apparatus assigned to the Station. All of the Officers of the volunteer operation report to the Area Commander who in turn reports to the Assistant Deputy Chief of Operations.

While the Operations Division's focus is on emergency response, there is an opportunity to maximize the use of current resources (Initiative 3.1) and utilize Operations personnel to help support the first two lines of defence. As part of the ten-year Plan, the HFD will identify opportunities to create a multi-functional resilient workforce within the existing organization (Initiative 3.3). As such, Operations Division staff will take on an expanded public safety education role to address community risk (Initiative 10.1) in support of the first line of defence.

For example, Operations personnel will help to develop and disseminate public safety information such as delivering information to residents in a neighborhood recently affected by fire.

In support of the second line of defence, the HFD will identify safety standards and code enforcement strategies to address risk (Initiative 10.2). For example, Operations personnel will be trained to conduct fire safety inspections. Furthermore, opportunity exists to provide cross training and expand the role of Safety Officers to include Shift Training Officers. Therefore, when not on the scene of a fire, these Officers would be trained to manage and deliver training modules to personnel on their shift.

At present, during an incident, scene safety and accountability are both the responsibility of the Safety Officer. To mitigate the increased risk profile across the City (Initiative 11.3) and to enhance the safety of personnel on scene, the HFD will create a new role of Firefighter Safety/Accountability Officer. This position will be responsible to ensure personnel are accounted for on a scene which will enable the Safety Officer to focus on the safety of personnel. To continue to build the multi-

functionality of the workforce, this new Accountability position will also include working with the Safety/Shift Training Officer during their shift to jointly manage and deliver training.

The initiatives described above will help to achieve the following objectives of the Action Plan (Section 5.0):

OBJECTIVES	
Existing resources efficiently utilized to maximum potential	3
Community Risk Assessment response	10
Resourcing community growth demands	11

Apparatus

The HFD operates out of 30 locations across the city with 26 emergency response stations. The total number of front-line apparatus used by Operations is 77. This includes all station apparatus listed in the chart below and spare vehicles:

STATION NUMBER AND ADDRESS	SERVICE LEVEL	APPARATUS
STATION 1 35-43 John St North, Hamilton	Career	Platoon 1 Engine 1 Ladder 1 Rescue 1 Supply 1
STATION 2 1400 Upper Wellington St, Hamilton	Career	District 3 Engine 2 Car 73
STATION 3 965 Garth St, Hamilton	Career	Engine 3
STATION 4 729 Upper Sherman Ave, Hamilton	Career	Rescue 4 Ladder 4 Support 4 Hazmat 2
STATION 5 1227 Stone Church Rd East, Hamilton	Career	Engine 5 Command Unit

STATION NUMBER AND ADDRESS	SERVICE LEVEL	APPARATUS
STATION 6 246 Wentworth St North, Hamilton	Career	Pump 6
STATION 7 225 Quigley Rd, Hamilton	Career	Engine 7
STATION 8 400 Melvin Ave, Hamilton	Career	District 2 Engine 8
STATION 9 125 Kenilworth Ave North, Hamilton	Career	Engine 9 Ladder 9
STATION 10 1455 Main St West, Hamilton	Career	Ladder 10
STATION 11 24 Ray St South, Hamilton	Career	Engine 11
STATION 12 199 Hwy #8, Stoney Creek	Career	Pump 12 Rescue 12
STATION 14 595 Chapel Hill Rd, Elfrida	Volunteer	Tanker 14
STATION 15 415 Arvin Ave, Stoney Creek	Volunteer	Ladder 15
STATION 16 939 Barton St East, Stoney Creek	Volunteer	Pump 16 Squad 16 Tanker 16
STATION 17 363 Issac Brock Dr, Stoney Creek	Composite	Engine 17 Tanker 17

STATION NUMBER AND ADDRESS	SERVICE LEVEL	APPARATUS
STATION 18 2636 Hwy #56, Binbrook	Volunteer	Pump 18 Ladder 18 Support 18 Tanker 18
STATION 19 3303 Homestead Dr, Mount Hope	Volunteer	Pump 19 Tower 19 Tanker 19
STATION 20 661 Garner Rd, Ancaster	Career	Ladder 20
STATION 21 365 Wilson St, Ancaster	Composite	Engine 21 Pump 21 Rescue 21 Tanker 21
STATION 23 19 Memorial Square, Dundas	Career	Pump 23 Support 23
STATION 24 256 Parkside Dr, Waterdown	Composite	Engine 24 Ladder 24 Support 24 Tanker 24
STATION 25 361 Old Brock Rd, Greensville	Volunteer	Pump 25 Rescue 25 Tanker 25 Brush 25
STATION 26 119 Lynden Rd, Lynden	Volunteer	Pump 26 Squad 26 Tanker 26
STATION 27 795 Old Hwy #8, Rockton	Volunteer	Pump 27 Squad 27 Tanker 27
STATION 28 1801 Brock Rd, Freelton	Volunteer	Pump 28 Squad 28 Tanker 28

Defining Levels of Service

As part of the development of this Service Delivery Plan, the HFD undertook an analysis of response levels across the City. It is evident through this analysis that the pre-amalgamated communities were each effective at structuring and resourcing their fire services to meet the needs of their communities. The amalgamation of the fire services under the new City of Hamilton have collectively been able to sustain effective levels of response despite the growth that has occurred throughout the city. However, as this section will outline, the HFD currently faces some challenges in the areas of highest growth in the city.

According to the results of the HFD's Citizen Survey and the City of Hamilton's Our Citizen Survey discussed in Section 3.4, residents of Hamilton are very satisfied with the services currently provided by the HFD. This section will quantify the current level of service delivery through response data. Defining the HFD's performance through metrics will enable the HFD to monitor, evaluate, maintain and, where possible, improve performance.

The HFD will establish forward facing and internal tools to communicate performance results (Initiative 4.2) such as a performance dashboard. Such a tool will also help to illustrate the value for money proposition HFD services provide to citizens (Initiative 4.3). Defining and communicating the HFD's performance will not only help citizens see the value in the services they receive but it also ensures decision making is evidence-based resulting in more effective and efficient service delivery.

1) Overall Response Times

Response time refers to the total time it takes to receive a call, dispatch apparatus (call handling), notify the station, apparatus leaving the station (turnout time), and travel time for the apparatus to arrive on scene. Response times from 2014 to 2018 establish the 90th percentile and average times for the HFD overall, career and volunteer responses for both non-medical and medical calls.

First On-Scene Response Time for Non-Medical Calls:

RESPONSE TYPE	90 TH PERCENTILE TIME (mins)	AVERAGE TIME (mins)
Overall HFD	09:34	06:01
Career	07: 57	05:46
Volunteer	16: 25	11:23

First On-Scene Response Time Breakdown for Non-Medical Calls:

RESPONSE TYPE		CALL HANDLING (mins)	TURNOUT (mins)	TRAVEL (mins)
Overall HFD	90 th percentile	00:40	03:22	05:50
	Average	00:19	02:27	03:15
Career	90 th percentile	00:45	02:48	05:43
	Average	00:27	02:01	03:12
Volunteer	90 th percentile	00:51	10:19	07:47
	Average	00:24	07:00	04:15

First On-Scene Response Time for Medical Calls:

RESPONSE TYPE	90 TH PERCENTILE TIME (mins)	AVERAGE TIME (mins)
Overall HFD	07:37	05:08
Career	06:52	05:05
Volunteer	14:56	10:17

First On-Scene Response Time Breakdown for Medical Calls:

RESPONSE TYPE		CALL HANDLING (mins)	TURNOUT (mins)	TRAVEL (mins)
Overall HFD	90 th percentile	00:23	02:45	04:55
	Average	00:12	02:00	02:57
Career	90 th percentile	00:27	02:30	04:52
	Average	00:14	01:42	02:59
Volunteer	90 th percentile	00:29	09:27	07:02
	Average	00:15	06:18	03:50

These response times demonstrate that the HFD arrives promptly on the scene of any emergency (medical or non-medical) with an overall response time of less than ten minutes. However, in comparison to NFPA 1710 which includes a standard for career response times, the HFD just falls short of meeting the 6 minute 24 second NFPA Standard for first on scene (non-medical) total response time. The HFD is committed to work to continually improve in this area. As noted above, a dashboard to communicate performance can help inform decision-making and demonstrate value for money but it can also empower personnel to take ownership of their performance and motivate them to improve performance.

The HFD has a tiered response agreement with the Hamilton Paramedic Service that establishes protocols for the HFD to respond to life-threatening (Code 4) medical calls. The prompt response to medical calls, in under ten minutes for the HFD overall, means that the HFD is often the first on scene of a life-threatening medical calls. Given that in 2018, 66% of the HFD calls were for life-threatening medical emergencies, the HFD has the ability to assist with providing for a positive outcome for people in medical distress. The HFD is committed to an efficient response to medical calls by investigating a simultaneous dispatch protocol with the Hamilton Paramedic Service (Initiative 4.4). The sooner the HFD dispatch is notified of a medical call the more quickly the HFD can respond. The HFD will also review the medical tiered response agreement with the Hamilton Paramedic Service to ensure the appropriate resources are dispatched relative to patient needs (Initiative 3.5).

Furthermore, the HFD has an opportunity to lessen the impact of risks and increase effective response (Initiative 10.3) by moving to a closest unit dispatch protocol. Currently, apparatus are dispatched from a station to an incident that occurs within the station's primary response area first before another station is paged. There are times, however, when an incident occurs within a station's response area but is actually closer to a neighbouring station. Closest unit dispatch means that the apparatus of the station closest to the incident would be called first, thereby reducing the time it takes to arrive at the incident. In addition, as discussed later in this Section, dispatch protocols would ensure that the type of incident determines the appropriate apparatus to be dispatched. As part of this Service Delivery Plan the HFD will update dispatch protocols to ensure deployment of resources is based on risk and closest unit.

2) Effective Firefighting and Rescue Force (EFRF)

Effective firefighting and rescue force (EFRF) refers to the convergence of resources required to efficiently and safely conduct initial fire suppression and/or rescue operations at a scene. It consists of a minimum four four-person apparatus arriving at a scene. The EFRF times include call handling, turnout, and travel times. The following chart outlines the 90th percentile and average EFRF response times for career, composite, and volunteer responses based on 2014-2018 data for all incidents (including medical and non-medical calls):

EFRF Response Times:

RESPONSE TYPE	90TH PERCENTILE TIME (mins)	AVERAGE TIME (mins)
Career	10:54	7:39
Composite	18:51	14:33
Volunteer	20:45	16:08

According to the response data in urban areas, the career operations can converge four four-person apparatus on the scene in just under 11 minutes in urban areas, just over the NFPA 1710 standard of 8 minutes. The volunteer response in rural areas is expected to be longer as there is time required for the firefighter to travel to the station once the page is received and usually a longer distance to travel to the incident from the station.

The initiatives described above will help to achieve the following objectives of the Action Plan (Section 5.0):

OBJECTIVES	
Existing resources efficiently utilized to maximum potential	3
Enhanced customer value proposition	4

Gap Analysis and Recommended Actions

To mitigate any identified gaps in services or resources, the HFD will first assess existing resources and explore all opportunities to optimize and utilize those resources to maximum potential. In cases where the increasing risk profile due to growth exhausts current resources, even after optimization, the HFD is looking to progressively manage growth. This will be achieved by addressing the highest risks first and strategically transitioning in the enhancement or addition of resources. This will allow HFD the ability to assess the impacts of those added resources before moving forward in implementing any further actions. In some cases, the full breadth of what may be needed long term to address risk is presented within this report but may not be required if first efforts at mitigating risk are successful.

1) Apparatus Optimization

Through an investigation of current apparatus utilized by the HFD opportunities are identified to maximize the use of current resources (Initiative 3.1). HFD will convert single function apparatus to multifunctional apparatus to provide greater efficiency and flexibility in service delivery. The conversion of Rescue 1 to an Urban Pumper, Rescue 4 to an Engine, and Rescue 12 to a Ladder (former Ladder 15) using existing staff complement and apparatus would increase the ability to achieve EFRF. It would also assist in redeploying apparatus around the city to respond to events and maintain coverage. These Rescue Units will then be redeployed to the volunteer response area to maximize effectiveness and standardize apparatus at each volunteer station to include a rescue-type vehicle, pumper and rural tanker.

Converting Engine 5 at Stone Church and Nebo Roads to a Ladder utilizing existing apparatus within the fleet would increase operational effectiveness to address the growth and increased risk profile on the easterly end of the Mountain and Upper Stoney Creek. In Lower Stoney Creek, Volunteer Station 15 will be provided with a multipurpose pumper using existing resources to replace the ladder that was relocated to Station 12.

The following objective will be supported through these actions:

OBJECTIVE	
Existing resources efficiently utilized to maximum potential	3

2) Existing Station 14 (Chapel Hill Rd)

An analysis of current stations was undertaken to identify enhancements that may be required to mitigate risk (Initiative 11.1). During this process, Station 14 located on Chapel Hill Road south of Highway #20 was identified as an area of concern. To ensure the HFD maintains current service delivery and the Tanker Shuttle Service Accreditation, Station 14 must remain operational. At present Station 14 is in a building owned by the Province of Ontario and leased to the City of Hamilton under an agreement in effect until September 2021. This lease agreement may be terminated by any party with six months written notice exposing the HFD to risk of having to move the Station in short notice. Given the critical nature of this Station, the HFD will secure a long-term lease or purchase property for existing Station 14. This will help to achieve the following objective:

OBJECTIVE	
Resourcing community growth demands	11

3) Composite Growth Areas (Waterdown, Upper and Lower Stoney Creek)

The growth areas of Waterdown and Upper and Lower Stoney Creek, once rural areas, became suburban upon amalgamation of the City in 2000. As rural areas, these Stations were well-resourced to serve the rural communities surrounding them. However, over the years these areas have transitioned into predominately urban areas. The increased risk profile generated by the growth that has already occurred in these areas has not been addressed through an increase in resources. Fortunately, the composite service delivery model provides both operational and financial flexibility. There is an opportunity to utilize this model to transition the delivery of service to address the growth that has occurred, is occurring and will continue to occur in these areas. Waterdown, Upper and Lower Stoney Creek will begin this transition by increasing the level of composite coverage, and as such there will be an increased career presence, while maintaining a volunteer response.

Waterdown

The Waterdown Station (Station 24) has on average 1.96 calls per day. This represents a 5.2% annual increase over the last five years or 22% increase in 2018 when compared to 2014. Analysis of data for EFRF calls reveals an average of 8.6 EFRF calls per year which has doubled in the last two years.

Currently a composite response area, Waterdown has challenges converging an EFRF response. This is due to the location/geography, volunteer staffing response levels, and out-of-area support to volunteer responses.

Given the transition to an urban area and the increased risk profile there is a need to improve the EFRF response time in Waterdown towards the career EFRF response time (90th percentile) of 10 minutes and 54 seconds. This would help to maintain the level of service required in an urban area. At present, the EFRF response time in Waterdown of 18 minutes and 46 seconds is 7 minutes and 52 seconds longer than the career 90th percentile time.

Waterdown is bordered by the escarpment and a network of busy highways. As a result, there is a delay in achieving the convergence of resources which come from downtown Hamilton. This is significant as career Engine 24 is out of their response area over 14% of the time supporting on average 94 responses per year in the volunteer areas extending to the Cambridge and Puslinch borders. As such, response times for the Waterdown station are extended further during these times.

The personnel and apparatus available to respond affect the ability to converge an effective EFRF response. Within the composite service there is a difference in the turnout and drive times of career and volunteer response. If both are dispatched at the same time, in Waterdown the career response is 8 minutes and 37 seconds faster at the 90th percentile and 3 minutes 18 seconds faster on average when compared to the volunteer response.

Furthermore, the challenge in obtaining sufficient numbers of volunteer staff can impede the achievement of EFRF. The HFD averages one volunteer firefighter responding for every four personnel on the station roster. Waterdown has a better average with 6.66 staff responding per page but this only equates to 1.5 apparatus (based on four firefighters per apparatus) being able to be deployed to an incident. Therefore, the remaining two apparatus required for EFRF must come from downtown Hamilton.

The most difficult time to obtain sufficient numbers of volunteer personnel is during the weekdays. There are times when volunteers are paged with no response. Of these zero turnouts 84% occur between Monday and Friday and 64% from 8:00 a.m. and 4:00 p.m. For Waterdown, the average volunteer staff turnout is 5.99 during this time-period equating to 1.5 apparatus being able to respond. Again, this would require response for the remaining two apparatus for EFRF to come from downtown Hamilton.

To mitigate these challenges, the HFD will continue to leverage the composite service delivery model in Waterdown but increase the number of full time firefighting staff. The implementation of a five-person Monday to Friday day crew from 8:00 a.m. to 4:00 p.m. will increase the ability to achieve EFRF, mitigate risk, and achieve operational effectiveness. HFD will also increase the volunteer staff from 25 to 40 in Waterdown.

In addition, the HFD will begin the process of constructing a new station in Waterdown with the vision of relocating all full time HFD resources from the existing Parkside location completing the transition of the day crew to a second full time crew operating 24 hours a day, seven days a week.

These actions will help to address the HFD's Initiative (11.3) to identify resources gaps needed to mitigate increased risk which will be integrated into the City's operating and capital budget process.

Upper Stoney Creek

Upper Stoney Creek (Station 17) has on average 2.46 calls per day. This represents an 8.8% annual increase over the last five years or 38% increase in 2018 when compared to 2014. Analysis of data for EFRF calls reveals an average of 10.4 EFRF calls per year.

As a composite response area, Upper Stoney Creek, like Waterdown, has challenges converging an EFRF response as a result of location/geography, volunteer staffing response levels, and out-of-area support to volunteer responses. Due to growth this area is transitioning to an urban area and therefore has an increased risk profile. At present, the EFRF response time (90th percentile) in Upper Stoney Creek is 17 minutes and 15 seconds which is 6 minutes and 21 seconds longer than the career response time. As such, there is a need to shift the EFRF response time in Upper Stoney Creek closer to the 90th percentile for the career EFRF response which is 10 minutes and 54 seconds to meet the service demands in an urban area.

Achieving an EFRF response is impacted by the ability to have the convergence of staff and apparatus to a scene. In Upper Stoney Creek when dispatched to a call, the career response is 6 minutes and 20 seconds faster at the 90th percentile and 2 minutes 52 seconds faster on average responding when compared to the volunteer response.

Obtaining sufficient numbers of volunteer staff is critical to the achievement of EFRF in Upper Stoney Creek. Staffing the second piece of apparatus from the volunteer division is a challenge in Station 17. Station 17 averages 3.2 staff responding per page which is not enough to operate a four-person apparatus and is a significant barrier to meeting an EFRF. During the time period of Monday to Friday 8:00 a.m. to 4:00 p.m., the average volunteer staff turnout is 2.56 personnel which again is insufficient and impedes the ability for an EFRF response. This is significant as career Engine 17 is out of their response area over 15% of the time supporting on average 130 responses per year in the volunteer areas extending to the Grimsby/West Lincoln border. Without enough volunteer staffing to operate one truck, this means that 15.3% of the time Upper Stoney Creek is relying on resources from Binbrook (volunteer station) and Hamilton Mountain (career station) for an incident.

To increase the ability to achieve EFRF thereby enhancing operational effectiveness and mitigating risk, the HFD will implement a five-person day crew from 8:00 a.m. to 4:00 p.m. during the week, Monday to Friday at Station 17 and the addition of 25 volunteer firefighters. This is a transitional step to implementing a full time 24 hour a day, 7 day a week crew at a new composite Upper Stoney Creek station in the future. As part of this transition, Engine 5 will be converted to a Ladder to support response on the East Mountain and Upper Stoney Creek will utilize existing apparatus. These actions support the initiatives to investigate opportunities to maximize use of current resources (3.1) and to identify resource gaps needed to mitigate increased risk (11.3)

In addition, the composite service delivery model will be leveraged in the areas that support and surround Station 17 which also have an increased risk profile due to growth. The level of response in the following volunteer response area will be changed to a composite response and the impact to area rating will be assessed (Initiative 11.2):

- Response area from Rymal Road East and south to Golf Club Road between Trinity Church Road to Regional Road 56

Lower Stoney Creek

Lower Stoney Creek is currently serviced as a volunteer response area however, given response protocols that are in place from the former City of Stoney Creek, it acts as a composite response area with at least one of two fulltime lower Stoney Creek apparatus responding into the area to support volunteer resources. As such, for the purposes of analysis it will be considered a composite area.

Response in Lower Stoney Creek may involve Station 12 (career), Station 16 (volunteer), and/or Station 15 (volunteer). If both are dispatched at the same time the Station 12 career response is 4 minutes and 56 seconds faster at the 90th percentile and 3 minutes 38 seconds faster on average compared to the volunteer response from Station 16. This is significant given that Station 12 is out of district supporting volunteer responses (mainly in Winona) over 22% of the time accounting for 212 responses per year.

Lower Stoney Creek Station 16 has on average 1.16 calls per day. This represents an annual increase of 3.1% over the last five years or 12% increase in 2018 compared to 2014. Analysis of data for EFRF calls in Lower Stoney Creek reveals an average of 6.6 EFRF calls per year which has increased over the past two years.

Station 16 has an EFRF response time of 13 minutes and 36 seconds, 2 minutes and 42 seconds above the career 90th percentile time. To adequately service the urban growth in Lower Stoney Creek there is a need to reduce the EFRF response time for Station 16 to be closer to career EFRF response of 10 minutes and 54 seconds (at the 90th percentile).

Station 16 averages one four-person apparatus or 5.46 volunteer staff responding to support an EFRF event. One apparatus is also achieved during the Monday to Friday 8:00 a.m. to 4:00 p.m. timeframe with an average of 4.36 volunteer staff turnout.

Efforts to mitigate risk in Lower Stoney Creek will begin with optimizing current resources in the area (Initiative 3.1). This will be achieved by creating multifunctional apparatus at Stations 12 and 15 with Rescue 12 being changed to a Ladder, and Ladder 15 being changed to a Pumper. The level of response in Lower Stoney Creek will transition from volunteer to composite and the impact to area rating will be assessed (Initiative 11.2):

- Greens Road (lower Stoney Creek) easterly to Fruitland Road, from the escarpment to the lake will be maintained as a composite response area. Fruitland Road easterly to the Grimsby border from the lake to the escarpment will be changed from a volunteer response area to a composite response area.

This will allow for fulltime career presence in the area. Combining the response areas of Station 16 and Station 15 will allow the HFD to gain efficiency by being able to use both volunteer stations for incidents to meet the required staffing levels. This will support the career response and provide a better opportunity to achieve an EFRF.

To increase the ability to achieve EFRF thereby enhancing operational effectiveness and mitigating risk, the HFD will implement a five-person day crew from 8:00 a.m. to 4:00 p.m. during the week, Monday to Friday at Station 16. These changes will be monitored to assess their effectiveness and to identify any resources gaps needed to mitigate increased risk (Initiative 11.3). It is projected that there will be a future need to renovate Station 16 to a composite station to accommodate the addition of a full time crew, 24 hours per day and 7 days a week.

The initiatives and actions described in these composite growth areas will support the following objectives presented in the Action Plan (Section 5.0):

OBJECTIVES	
Existing resources efficiently utilized to maximum potential	3
Resourcing community growth demands	11

4) Volunteer Growth Area (Binbrook)

Binbrook is the largest growth area with volunteer response. Station 18 in Binbrook has on average 0.96 calls per day. This represents a 6.5% annual increase over the last five years or 29% increase in 2018 compared to 2014. Analysis of data for EFRF calls reveals an average of 4.6 EFRF calls per year which has increased in the past two years.

The 90th percentile response time for EFRF in Binbrook is 23 minutes and 59 seconds which exceeds the 90th percentile time volunteer by 3 minutes and 14 seconds. Given the growth and risk profile of the community it might be more accurate to compare to the composite 90th percentile EFRF response time rather than to volunteer times. Binbrook’s EFRF response time exceeds that of the composite response by 5 minutes and 8 seconds at the 90th percentile. Given that Binbrook is on the outskirts of the City and is surrounded by other volunteer response it is not surprising that there is a delay in achieving the convergence of resources. An EFRF response to this area is supported by resources from Mount Hope, Upper Stoney Creek, and the Hamilton Mountain.

Although Binbrook is a volunteer station, it achieves high staff turnout for calls with an average of 7.73 staff for EFRF incidents and an average of 7.48 for all incidents during Monday to Friday 8:00 a.m. to 4:00 p.m. This equates to almost two four-person apparatus being deployed.

To reduce increasing pressures due to call volume and continued growth, the HFD will maintain a viable and sustainable volunteer division, by increasing the number of volunteer firefighters at Station 18 from 25 to 40. Additionally, to increase the ability to achieve EFRF thereby enhancing operational effectiveness and mitigating risk, the HFD will implement a five-person day crew from 8:00 a.m. to 4:00 p.m. during the week, Monday to Friday at Station 18. These changes will be monitored to assess their effectiveness and to identify any resources gaps needed to mitigate increased risk (Initiative 11.3). It is projected that there will be a future need to renovate Station 18 to a composite station to accommodate the addition of a fulltime crew, 24 hours per day and 7 days a week.

This initiative and actions support the following objective: (See Action Plan 5.0)

OBJECTIVE	
Resourcing community growth demands	11

5) Volunteer Operations

The ability to maintain a sustainable volunteer operation is not only critical for the delivery of both composite and volunteer service levels but also for the efficient functioning of the HFD overall. Volunteer operations enable the appropriate servicing of rural areas as their risk profiles increase and prevent or delay the need for career response.

A key factor for success of the volunteer operation is the ability to have sufficient numbers of staff responding to an incident. Sufficient staff response affects the response times for both first apparatus on scene and EFRF. Analysis of five years of data shows the HFD averages one volunteer firefighter responds for every four personnel on the station roster.

As a component of identifying resource gaps needed to mitigate increased risk (Initiative 11.3), the HFD will maintain a viable and sustainable volunteer division by increasing the number of volunteer firefighters from 25 to 40 at the following stations:

- Station 18 – Binbrook
- Station 19 – Mount Hope
- Station 21 – Ancaster
- Station 24 – Waterdown
- Station 25 – Greensville
- Station 26 – Lynden
- Station 27 – Rockton
- Station 28 – Freelon

As described in the Action Plan (Section 5.0), the initiative above will achieve the following objective:

OBJECTIVE	
Resourcing community growth demands	11

6) South Hamilton Mountain and the Airport

The south Hamilton Mountain extending from Upper Stoney Creek to the Ancaster border is currently serviced as a volunteer response area. However, this area has transitioned to a more urban environment with the construction of residential, commercial, and industrial occupancies. Included in this growth are the Red Hill North and South Business Parks as well as the Airport Business Park. As previously described in Section 2.4, the Hamilton International Airport is one of Canada's busiest overnight express cargo airports and has seen significant growth in passenger traffic since 2016.

The HFD has identified an opportunity to leverage the composite service delivery model to maintain service in this area where the risk profile has increased due to growth (Initiative 11.2). The level of response will change from volunteer to composite within the following boundaries on the south Hamilton Mountain:

- Twenty Road southward to Dickenson Road between Glover Road and Glanaster Road.
- Airport Industrial Park and the Hamilton International Airport property

The HFD will assess the impact to area rating by changing these areas to composite responses.

The objective addressed by this initiative is as follows:

OBJECTIVE	
Resourcing community growth demands	11

7) West Hamilton and Dundas

Geographically, there are challenges in achieving an EFRF response in both West Hamilton and Dundas with career support provided mainly from the downtown core. At present, Station 10 in West Hamilton and Station 23 in Dundas are able to achieve EFRF response times of 12 minutes and 13 seconds, and 13 minutes and 24 seconds respectively at the 90th percentile. On average EFRF response time for Station 10 is 8 minutes and 58 seconds, while Station 23 has an average response time of 11 minutes and 45 seconds.

Future growth and potential challenges with congestion due to the introduction of Light Rail Transit and other changes set out in the City of Hamilton’s Transportation Master Plan may impact the ability for resources to converge from downtown to these areas for an EFRF response. As a result, the HFD will continue to assess and determine appropriate changes to service delivery that aligns with the City’s new Transportation Master Plan when identifying opportunities to lessen the impact risk through effective emergency response (Initiative 10.3).

In addition, the HFD will continue to monitor impacts to response times and identify any resources gaps required to mitigate increased risk (Initiative 11.3). This may result in the need for an additional fulltime multipurpose apparatus (Urban Pumper) in either West Hamilton or Dundas in the future. The HFD will also give consideration relative to the location of existing and future resources in this area in order to maximize efficiencies and operational effectiveness.

These initiatives would support the following objectives:

OBJECTIVES	
Community Risk Assessment response	10
Resourcing community growth demands	11

Community Risk Assessment

1) First Line of Defence

There is opportunity to expand roles within the career operations to create a multi-functional and resilient workforce within the existing organization (Initiative 3.3). This will include increasing the role of the Operations Division in supporting Fire Prevention in the first line of defence as they develop and implement a collaborative, strategic, and targeted approach to public safety education that addresses community risk (Initiative 10.1). Operations personnel will take on an expanded role in delivering public safety education. This will include delivering information to residents in a neighbourhood affected by fire as HFD formalizes an 'After the Fire' educational program. These initiatives help to fulfill the following objectives of the Action Plan (Section 5.0):

OBJECTIVES	
Existing resources efficiently utilized to maximum potential	3
Community Risk Assessment response	10

2) Second Line of Defence

The Operations Division can also assist in identifying safety standards and code enforcement strategies that address risks identified in the Community Risk Assessment (Initiative 10.2). One strategy is for Operations Division staff to support the Fire Prevention Division in the development and delivery of an objective inspection program as outlined in Section 4.3. Operations personnel could also conduct pre-fire tactical surveys of all risk occupancies and log information to a common database within FDM that is accessible to all Divisions. As mentioned in Section 4.0, the HFD will investigate updated mobile information system for HFD vehicles (Initiative 1.2) which will give Operations personnel effective tools to perform this expanded role.

Residential Sprinklers

There is also an opportunity for the Operations Division to assist in supporting the second line of defence by providing information and education about residential sprinkler systems. Residential sprinkler systems can save lives, significantly reduce property loss, reduce the environmental impacts of fires, and reduce insurance costs.

Hamilton is experiencing significant growth in rural areas of the city that are currently served by volunteer and composite stations. As described above, the rural areas have longer response times when compared to the urban areas of the city. As such, any mitigation measures that can reduce the spread of fire prior to the arrival of the HFD personnel reduce the need to initiate the third line of defence, emergency response for fire suppression.

In addition to longer response time, these growth areas contain modern buildings that are often constructed with lightweight construction materials, have an open concept and are close in proximity to each other. Home contents also tend to be more flammable today. The result is that fires today burn hotter, faster, and are more toxic than ever before. According to the Ontario Association of Fire Chiefs (O AFC), fire growth doubles every minute, so in 2 minutes the fire grows 4 times, and 5 minutes equals 25 times the fire growth. Flashovers, which are the simultaneous ignition of combustible materials in an enclosed area, lead to injuries and deaths in residential fires. Combustible furnishing in homes have reduced the time between the start of a fire and when flashover occurs to 2-4 minutes.

Home fire sprinklers can contain and, in some cases, may even extinguish a fire in less time than it would take firefighters to arrive on the scene. According to the Canadian Automatic Sprinkler Association, installing both smoke alarms and a fire sprinkler system reduces the risk of death in a home fire by 82%, relative to having neither and reduce property damage due to fire by 71%. The national average cost of a home fire sprinkler system is 1% to 1.5% of the total building cost in new construction, a cost that is minimal compared to the cost of property damage and loss caused by fires.

Therefore, an action to support the second line of defence will be for the HFD to work with the Planning and Economic Development Department to educate homebuilders (and homeowners) on the benefits of sprinkler systems and encourage builders to offer sprinkler systems as an option for new home construction.

These initiatives to support the second line of defence help to achieve the following objectives described in the Action Plan (Section 5.0):

OBJECTIVES	
Innovative and effective use of technology	1
Community Risk Assessment response	10

3) Third Line of Defence

In response to the risks outlined in the 2018 Community Risk Assessment, the HFD has identified several opportunities to lessen the impact of risks through effective emergency response (Initiative 10.3). Some of the actions the HFD will take over the next ten years to lessen the impact of risks are described below.

As the city continues to grow there is a focus on balancing all modes of transportation, reducing dependence on single occupancy vehicles, and promote accessibility. More pedestrian friendly neighbourhoods, the combination of smaller turning radii, narrower streets, on street parking, bicycle lanes and the development of the Light Rail Transit system will impact emergency response times. The HFD must adapt to the changing transportation landscape to sustain current level of service delivery. As

such, the HFD will assess the impacts and determine appropriate changes to service delivery that align with the City's new Transportation Master Plan (Initiative 10.3).

The City's Hazard Identification Risk Assessment (HIRA) and the 2018 Community Risk Assessment noted several occupancies in the city considered to be of higher risk. Working in collaboration with property owners, the HFD will update the emergency response procedures for the higher risk occupancies to lessen the impact of risk by being able to provide an effective emergency response.

Additionally, these HIRA and Community Risk Assessments identify that hazardous materials incidents, whether at a fixed site or in transportation, pose a risk to public safety. Response to this type of incident includes the use of large quantities of foam a resource the HFD currently does not possess. To lessen the impact of risks through effective emergency response, the HFD will acquire response apparatus to transport and supply firefighting foam to respond to hazardous materials incidents (Initiative 10.3).

Lessening the impact of risks can also be achieved through dispatch protocols. Dispatch protocols outline the number and types of apparatus to be deployed for a specific response. The HFD currently has 56 dispatch protocols. Some protocols are based on the type of call and do not consider the level of risk or occupancy type. For example, the standard response to a structure fire is the same whether the building is a single residential home, a 15-story high-rise, or a hospital. As a result, the HFD will update the current dispatch protocols to reflect not only the type of call, but the level of risk of the call to ensure deployment of resources is based on risk (Initiative 10.3).

Reducing risks through effective emergency response will also be achieved through a Tri-Service Water Rescue Unit. In 2018, City Council endorsed a similar program for ice water rescue. This program is a joint collaborative in which the HFD, the Hamilton Police Service Marine Unit and the Hamilton Beach Rescue provide ice water rescue to the bodies of water in Hamilton including Lake Ontario, Hamilton Harbour, Cootes Paradise and the Conservation Areas. The potential for water rescue is equal, if not greater than, that of ice water. As such, the HFD will develop a Tri-Service Water Rescue Unit in collaboration with the Hamilton Police Service and Hamilton Beach Rescue Unit to service inland waters as an extension of the ice rescue unit (Initiative 10.3).

Effective emergency response in Hamilton's diverse geography will also include the HFD acquiring a nature trail response vehicle and a vehicle to transport it. This would assist in the ability to more effectively and efficiently respond to incidents on the city's extensive trail system. Located across the city, the trail system poses challenges for HFD apparatus which due to their size and weight cannot access or navigate the trails to respond to an incident. An off-road vehicle equipped with a pump and capable of carrying a stretchered patient off a trail would assist firefighters in extinguishing small fires on the trail system and performing a rescue in a timely manner (Initiative 10.3).

In addition to a trail vehicle, drone technology would assist firefighters in locating people who have become lost or injured while on the trails, as many trails are along the escarpment. This reduces the amount of time firefighters spend trying to locate people in the heavily wooded trail system. People who require rescuing may be able to use their cell phones to call for help, however, they often cannot relay to dispatch exactly where they are located. Utilizing drone technology would accurately pinpoint

the location of the person requiring rescuing in either the daytime or at night. Therefore, as part of the Service Delivery Plan, the HFD will explore the use of drone technology (Initiative 1.3).

Technology can also be utilized to support effective emergency response through the use of updated mobile information systems in fire department vehicles (Initiative 1.2). This technology will enable firefighting personnel to capture and retrieve critical information on the scene enhancing the safety of the firefighters and increasing efficiency of operations. For example, on the scene of an emergency the Incident Commander can retrieve records of a building including floor plans or history of incidents at the same building or code infractions, etc. This type of technology would be especially useful during large events in which communication is crucial. The HFD will explore the use of such technologies to support information sharing for large scale emergency response (Initiative 1.5)

Finally, the HFD will lessen the impact of risk through effective emergency response to support the third line of defence by enhancing partnerships between HFD Divisions and external partners such as hospitals, industries and learning institutions regarding sharing information, training and exercise programs. According to the updated HIRA report (2017) and the HFD 2018 Community Risk Assessment, Hamilton has a complex risk profile and is most vulnerable to low probability events with high impact such as hazardous materials incidents, flooding, extreme ice storms, and active shooter/violent situations. These risks, although rare, often require a multi-agency response. For such incidents it is critical to collaborate and plan proactively.

The initiatives and actions described here will help to achieve the following objectives of the Action Plan (Section 5.0):

OBJECTIVES	
Innovative and effective use of technology	1
Community Risk Assessment response	10

4.3 Fire Prevention Division

Key Functions

The Fire Prevention Division plays a key role in the implementation of the first two lines of defence for fire protection services:

Line 1: PUBLIC FIRE SAFETY EDUCATION	Line 2: FIRE SAFETY STANDARDS AND ENFORCEMENT
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To address the first line of defence the Fire Prevention Division provides education and awareness programs that are conducted year-round. These include:

- Hamilton Arson Prevention Program for Children
- School Education Program
- Seniors' Fire Safety Education Program
- Public Education sessions
- Volunteer Inspection Program for Homeowners
- Media campaign for Fire Prevention Week
- HFD open house

Also upon request, the Fire Prevention Division conducts training and education sessions for building owners and the general public across the city.

Furthermore, the Division tracks and monitors the following programs delivered by the Operations Division:

- Home Fire Safety Education Program
- In-service Commercial Inspection Program
- Alarmed and Ready Program

The Fire Prevention Division also develops all fire safety education materials and handouts.

Services provided by this Division related to the second line of defence to ensure and enforce fire safety standards include:

- Vacant Building Monitoring Program
- Vulnerable occupancy inspections
- Objective based inspections
- Fire drills
- Paid inspections
- License inspections (municipal and Alcohol Gaming Commission of Ontario)
- Smoke alarm non-compliance notification (SANN) follow-ups
- Carbon monoxide non-compliance notification (CONN) follow-ups
- Building clearance inspections
- Home Daycare inspections
- Complaint inspections

In addition to supporting the first two lines of defence, the Fire Prevention Division is also responsible for the following key functions to help promote and enforce fire safety:

- Approving fire safety plans
- Issuing Fire Permits (for open air burning, family fireworks sales)
- False alarm tracking and enforcement
- Reviewing propane submissions
- Processing freedom of information requests
- Processing third party requests for information
- Filing status request letters
- Managing fire incident report requests
- Reviewing special occasion permits for business/private events
- Reviewing and approving controlled burns
- Issuing contravention letters
- Preparing and submitting response billings
- Handling enquires from business owners and the general public
- Approval of pyrotechnic permits for shows and film shoots

Division Structure and Resources

The Fire Prevention Division consists of a Chief Fire Prevention Officer who reports to the Assistant Deputy Chief of Fire Prevention, Community Safety & Planning, an Assistant Chief Fire Prevention Officer, six Fire Safety Officers, sixteen Fire Inspectors, and two Fire Prevention Secretaries.

The Chief Fire Prevention Officer is responsible for the overall management of the Division and is supported by the Assistant Chief Fire Prevention Officer who has oversight of the six Fire Safety Officers. At present, three Officers have specialty portfolios: Community Engagement, Special Projects and Training, and Schools. The remaining three Officers are responsible for managing a district and supervising from three to eight Fire Inspectors each.

At present, the Fire Prevention Division operates on a two-platoon system out of three locations which align with the district structure: East (Stoney Creek), Mountain (Ancaster), and West (Hamilton). The current three-district structure was implemented during the 2001 amalgamation of the City and was based solely on available work space at fire stations rather than based on the services the Division needed to provide and from what locations.

An assessment of work load based on call volume per district over a five year period indicates the highest number of calls in the West District (1279), which averaged 450 more calls than the Mountain District and 732 more calls than the East District. Given that the districts have different staffing levels, further analysis established the average call volume per staff member in each district over this timeframe. The Mountain District has a higher average call volume per staff when compared to the West and East Districts.

Additionally, the supervisory workloads within the West District are higher than in the other districts. The Fire Safety Officer in the West District supervises double the number of staff when compared to the other two districts, and eight times the number of staff when compared to the specialty portfolios of Community Engagement, Special Projects and Training, and Schools.

Based on these data and interviews with the Division Chiefs it is clear the current structure and operations of the Fire Prevention Division is not optimal. The HFD will investigate opportunities to maximize the use of current resources in all Divisions (Initiative 3.1), including Fire Prevention, and review its capacity to meet demands by investigating additional resource gaps due to increased workload and growth (Initiative 11.4). In addition to these measures, the HFD will conduct an accommodations/facilities review to increase efficiencies and promote community focused and collaborative work environments (Initiative 3.2) for the Fire Prevention Division.

Retirements have presented a challenge for the Fire Prevention Division as in other Divisions across the HFD. In the last five years (2014 to 2018), 9 retirements accounting for 37.5% of positions in this Division have occurred. As a result, 50% of Fire Safety Officers and 44% of Inspectors have been in their roles for just three years or less. At the Inspector level, 69% have less than five years of experience in their role. Within the next two years more retirements are expected, some at the senior levels after which staffing is expected to stabilize for the next eight to ten years before there are more personnel eligible for retirement. Supporting and promoting the growth and development of existing employees is crucial for the success of the Fire Prevention Division (Initiative 7.1). Creating opportunities for development such as a Department-wide mentoring program to expose staff to all facets of the fire service and enhance skill development and implementing a Department-wide foundational core competency training program will contribute to the development of skills and expertise of personnel and help address the loss of experienced personnel through retirement.

The Fire Prevention Division staff also face challenges in balancing administrative work in the office with being out in the community conducting inspections. The time it takes to travel back and forth from the office is unproductive. The use of digital technology to enable staff to perform key duties outside of the office would enhance the effectiveness and efficiency of service delivery. Such mobile technology would allow staff to schedule appointments while in the field, take pictures during inspections, receive and respond to emails in a timely manner, and track and record inspections electronically. Furthermore, the implementation of mobile technology would decrease the amount of time it takes to produce inspection orders freeing up time to conduct more thorough investigations of properties. As such, the HFD will investigate updated mobile information systems for fire department vehicles (Initiative 1.2).

The initiatives outlined here will contribute to achieving the following objectives of the Action Plan (Section 5.0):

OBJECTIVES	
Innovative and effective use of technology	1
Existing resources efficiently used to maximum potential	3
Professional development opportunities	7
Resourcing community growth demands	11

Service Delivery

High quality service delivery to the community is a priority for the Fire Prevention Division. Results from the HFD Citizen Survey 2018 outlined earlier in Section 3.4 revealed that citizens were unaware of how to contact the HFD and there was little awareness of the services offered by the Fire Prevention Division, such as permits and fee-based services. In addition, in the past five years, 69% of HFD responses to open air burning complaints occurred in areas of the city where open air burning is not permitted. These data indicate that there is a need to raise awareness of services and by-laws that are in place to ensure the public's safety. This action would support the development and implementation of a collaborative, strategic and target approach to public safety education that addresses community risk (Initiative 10.1).

Some services provided by the Fire Prevention Division require citizens to visit a Fire Prevention Office location or make contact by telephone such as purchasing permits or requesting incidents reports. However, as indicated by the HFD Citizen Survey results, citizens are unsure of how to contact the HFD. The Survey also found that when applying for permits or requesting reports citizens would prefer to conduct these transactions online. At this time there are no services being offered online by the Fire Prevention Division. The Service Delivery Plan will consider providing the following services online as well:

- Requesting fire safety inspection for property
- Requesting the establishment of fire routes
- Requesting the installation of a smoke alarm
- Booking a fire station tour
- Booking a fire truck for an event

As part of the Service Delivery Plan, the HFD will develop the capability for residents to access HFD services online including a payment portal (Initiative 1.6).

These initiatives will support the following objectives as described in the Action Plan (Section 5.0):

OBJECTIVES	
Innovative and effective use of technology	1
Community Risk Assessment response	10

Public Fire Safety Education

Over the last five years staff from the Fire Prevention Division and the Operations Division (including both career and volunteer personnel) participated in 3,028 public education events to deliver fire safety education to citizens. Public education events include community events such as fairs, celebrations, etc.; fire safety presentations for community groups; arson education; school events; and fire station tours. Of these events, 1,025 were attended by Fire Prevention staff and focused on fire safety presentations within the community and the delivery of the School Education Program. Almost two-thirds of all events in which Fire Prevention staff provide education are within schools. For the Operations staff, the 1,975 events in which they participated focused on providing station tours and attending community events.

Public fire safety education is one of the three lines of defence that is crucial in helping to prevent fires from occurring and promote safety in the case of a fire. As such, the HFD ten-year Service Delivery Plan contains a series of actions described below to develop and implement a collaborative, strategic and targeted approach to public education that addresses community risk (Initiative 10.1).

The risks in Hamilton have been recently assessed as described earlier (Section 3.6). The 2018 Community Risk Assessment identifies occupancies within the city which pose the greatest risk. This indicates areas for which the Fire Prevention Division can develop focused risk-specific fire safety messaging. For example, within the institutional occupancy category of the Community Risk Assessment, group homes and retirement facilities account for 60.8% of all fires. The leading causes of these fires are arson/vandalism and smoking. The Fire Prevention Division will expand the public safety program in collaboration with agencies to address the needs of the vulnerable residents in order to mitigate these behavior-based risks.

While the Community Risk Assessment classifies residential occupancies as a moderate risk, there are 161,267 in the city accounting for 75.4% of fire losses and 94.2% of fatalities. As such, they must be a priority for targeted public education and awareness.



Within the residential occupancy category, social housing units are considered high risk. Targeting these residences will require collaborating with the housing providers and other community agencies. In addition, the 13,000 residents of CityHousing Hamilton units alone represent 30 different languages. As such, HFD will expand public safety information produced in multiple languages reflective of the community.

Two programs currently delivered by HFD firefighters are aimed at educating homeowners. The Alarmed and Ready program provides the installation or battery replacement for smoke and carbon monoxide alarms to homeowners who are seniors, have a physical disability or are low income. Over the past five years there have been 1,079 smoke alarms and 127 carbon monoxide alarms installed and 950 batteries replaced for qualifying homeowners. There has been a 206% increase in the number of smoke alarms installed through this program in the last two years.

The Home Fire Safety Education Program is a proactive program in that firefighters are out in neighbourhoods making door-to-door visits to educate homeowners on potential hazards, fire safety measures, and test and install smoke alarms. Since the launch of this program in May 2017, firefighters have visited a total of 20,107 homes, spoken to 14,231 citizens, and installed 2,069 smoke alarms and 427 batteries.

The sheer volume of institutional and residential occupancies in Hamilton and the increasing demand on the home visit programs make it difficult to rely solely on Fire Prevention staff to deliver education and awareness programming. The success of the Home Fire Safety Education program in reaching such high numbers of citizens in a short time period reinforces that the HFD will expand/increase opportunities to utilize front line Fire Operations personnel in the delivery of public education initiatives.

The Fire Prevention Division also offers the Hamilton Arson Prevention Program for Children (HAPP-C). This program connects families with HFD personnel and other resources in the community to support families of children who set fires or are prone to playing with matches or lighters. Over the past five years that has been an average of 17 HAPP-C families per year, however, the trend shows that number has been declining since 2014. Given that the HFD 2018 Community Risk Assessment categorizes schools as a moderate risk and fires within schools are caused by arson and vandalism 73% of the time, the Fire Prevention Division will continue to partner with local school boards to expand public safety curriculum, including the arson education program.

A targeted approach to public education would include not just to whom the education is targeted and with which community partners but also the timing of the education. The period of time immediately following a fire provides a unique opportunity to educate the public on how to avoid a similar incident. Recent informal outreach and education initiatives by the HFD in buildings and neighbourhoods affected by a fire have been well-received. It is the intention through the Service Delivery Plan to formalize these activities into an 'After the Fire Program' that will utilize resources from both the Fire Prevention and Operations Divisions to deliver information to residents in a neighbourhood recently affected by fire.

In order to meet the outreach needs of the community, the HFD will investigate opportunities for Operations Division staff to become more involved in the delivery of programming. Furthermore, there is a need for HFD to build on partnerships with organizations and institutions that already have established relationships with various populations within the community. The HFD will expand partnerships with City Departments, educational institutions, community agencies, cultural organizations, businesses and industries to develop and disseminate public safety information. These partner organizations can assist in developing and disseminating risk-specific information to their members, constituents, residents and clients.

The HFD utilizes Twitter to enhance communication with both citizens and the media. Social media provides a valuable means of connecting with citizens to deliver public safety messaging, updates on fire incident responses, and to showcase HFD and community events. Established in 2015, the HFD Twitter account has over 10,000 followers and continues to grow. As social media gains in popularity as the primary source for many citizens to obtain up-to-date information, the Fire Prevention Division will increase the HFD presence on Twitter and consider expanding to other social media platforms to deliver public safety messaging.

As noted earlier, in sections 2.2 and 3.5, the HFD is dedicated to collaborating with internal partners as well as key civic stakeholders to explore opportunities to address Code Red and affect positive change in the health and well-being of Hamiltonians. The HFD will look for opportunities to assist the community through the use of HFD resources and programs that would help contribute to making a difference for those who are disadvantaged (Initiative 12.1).

The value of any public education program is knowing that it has affected change in the community, through increased education and/or changed behaviour. The HFD

will undertake an analysis of public education efforts to evaluate effectiveness in improving outcomes in community public safety. Part of this analysis will include exploring opportunities for involvement and collaboration with key civic stakeholders to address Code Red to affect positive change in the health and well-being of the citizens of Hamilton through use of Fire Department resources and programs (Initiative 12.1) including public safety education.

These initiatives will support the following objectives as described in the Action Plan (Section 5.0):

OBJECTIVES	
Community Risk Assessment response	10
Code Red response	12

Inspections

In accordance with fire safety standards, the Fire Prevention Division conducts enforcement activities to ensure buildings are compliant with the Ontario Fire Code and have the required fire protection and detection systems in place. As the second line of defence, code enforcement assists in reducing damage and casualties should a fire occur.

Re-inspections remain the highest call type, averaging 35.7% of all calls per year from 2014 to 2018. In 2018 there were 1,666 re-inspection calls which accounts for a 10% increase over the five-year average number of re-inspection calls. Re-inspections calls tend to be more complex resulting in a longer time a file remains open.

Some inspections conducted by the HFD are provincially mandated which include responding to complaints or Action Requests, annual inspections and fire drills at all vulnerable occupancies, and license inspections for the Alcohol and Gaming Commission (AGCO). Action Requests account for an average of 26.2% of all calls for the Fire Prevention Division which increased by 5% in 2018 when compared to the average over that last five years. As mandated, the Fire Prevention Division inspects and witnesses fire drills at all 119 vulnerable inspection occupancies throughout the city. Although accounting for only 2% of call volumes, AGCO inspections also increased in 2018 by 64% when compared to the five-year average. This trend for AGCO inspections is expected to continue with the continued growth in the arts and entertainment industry in the city.

In addition to an increase in mandated inspections, the Fire Prevention Division has experienced higher call volumes for the following four call types in 2018 when compared to the average of the last five years. These calls types account for an average of 50% of all calls over the last five years:

CALL TYPE	% OF TOTAL CALL VOLUME	2018 INCREASE OVER 5 YEAR AVERAGE CALL VOLUME
Smoke Alarm Non-Compliance Notification (SANN)	35.7%	7%
Municipal Licencing	7.6 %	13%
Carbon Monoxide Non-Compliance Notification (CONN)	4 %	37%
Fire Safety Plan Review	2.6%	14%

The HFD 2018 Community Risk Assessment identified high and moderate risk occupancies that would require inspecting. These include:

- Institutional occupancies with a focus on the jail and psychiatric facilities
- Residential occupancies with a focus on social housing
- Schools
- Industrial occupancies

As part of the ten-year Plan, the HFD will identify safety standards and code enforcement strategies to address risks related to the second line of defence (Initiative 10.2). One action to address this Initiative is to conduct pre-fire surveys of all risk occupancies and log information to a common database within FDM accessible to all divisions.

Given the number of units in these types of occupancies there are not enough resources to inspect higher risk occupancies as identified by the Community Risk Assessment, even when combining the resources of the Fire Prevention and Operations Division. In order to prioritize inspections and optimize resources, a modelling tool that accurately predicts where fires are likely to occur would be beneficial. One such tool has been recently developed by the Fire Underwriters Survey, in partnership with Opta Information Intelligence, the City of Vancouver, and the City of New Westminster. This tool has been successful in utilizing data to accurately predict where fires will occur which has allowed fire departments to plan targeted inspections. The HFD will investigate this and similar tools to develop an objective inspection program that includes a self-assessment component utilizing resources from both Operations and Fire Prevention Divisions. The action supports the initiative to identify safety standards and code enforcement strategies to address risks (Initiative 10.2). Furthermore, cross training and utilizing front line Fire Operations staff in an expanded Fire Prevention and public safety education role supports the identification of opportunities to create a multifunctional resilient workforce within the existing organizational structure (Initiative 3.3).

These initiatives and corresponding actions will help to achieve the following objectives (Section 5.0):

OBJECTIVES	
Existing resources efficiently utilized to maximum potential	3
Community Risk Assessment response	10

Records Management

As noted in the Administration/Leadership Division Section (4.1), the FDM records management system is also utilized by the Fire Prevention Division. Custom modules have been created for all call intake, assignments, and tracking, management of files, and daily work reports. There is an opportunity to expand the use of FDM for the purposes of Fire Prevention activities to enhance service delivery. For example, FDM modules can be developed for tracking Fire Safety Plans, inspection orders, and prosecutions, writing Inspector file notes, improving file management, and attendance management.

As discussed in Section 4.1, the HFD will establish forward facing and internal tools to communicate performance results (Initiative 4.2). This will include a dashboard that the Fire Prevention Division can utilize to monitor caseload, completion of files, public education activities and inspections. The dashboard will also help to monitor the Division's performance metrics so that they can be evaluated and improved using a results-based accountability approach.

This initiative supports the objective listed below and as identified in the Action Plan (Section 5.0)

OBJECTIVE	
Enhanced customer value proposition	4

4.4 Training Division

Key Functions

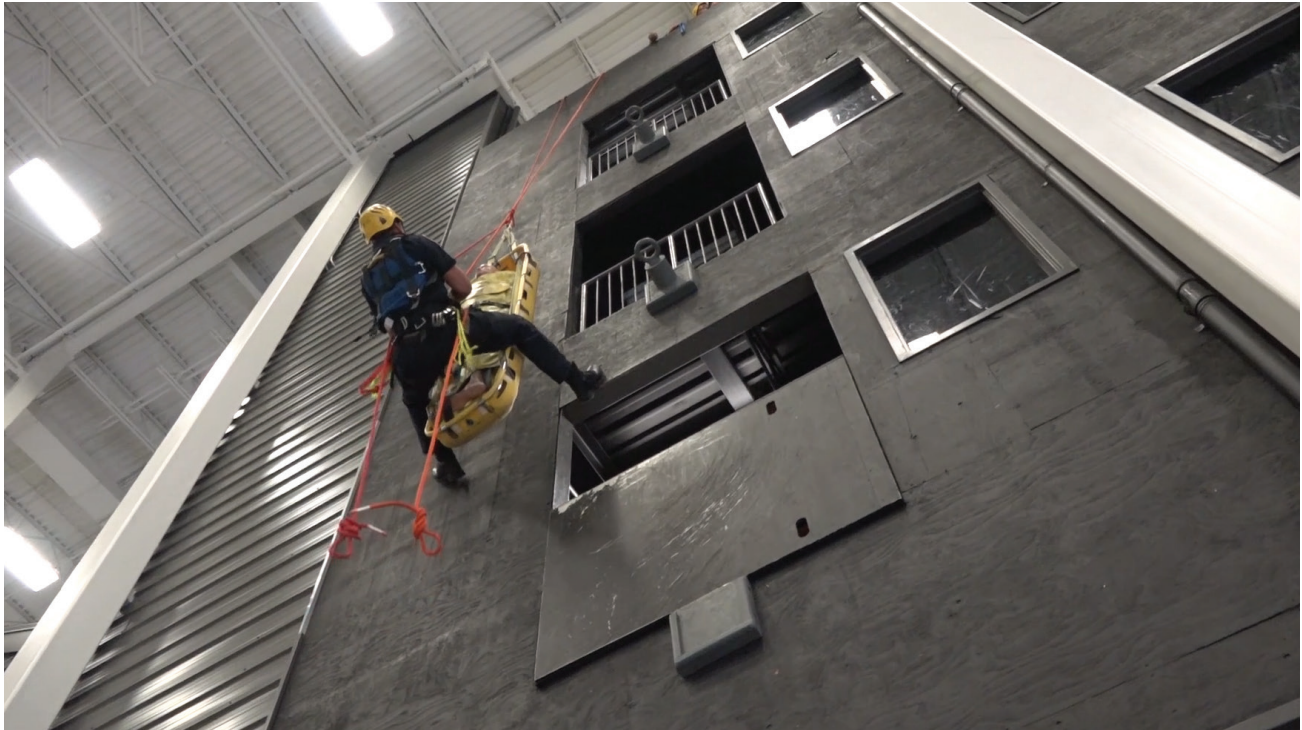
The Training Division resides at the Multi-Agency Training Academy and is responsible for developing, delivering and evaluating training in compliance with legislated standards. This Division conducts training activities for all suppression personnel to ensure they are qualified and prepared to perform their duties effectively and safely. The Training Division is also responsible for specialty training, medical training as well as examinations related to promotions and reclassification. This Division is responsible for:

- **Career Recruit Training** An 18-week training program for career firefighter recruits. At present, two recruit classes are being held on an annual basis. The Training Division provides both oversight of the program as well as training on specific topics.
- **Volunteer Recruit Training** An 18 to 22-week program for volunteer firefighter recruits. At present, two recruit classes are being held on an annual basis. The Training Division provides both oversight of the program as well as training on specific topics.
- **Specialty Training** The Training Division provides oversight and assists with the ongoing training for in-service fire crews in the following disciplines:
 - Hazardous Materials for 16 crews in three stations
 - Confined Space for 20 crews in four stations
 - High Angle for 20 crews in four stations
 - Shore-Based Water Rescue for all suppression personnel
 - Ice Rescue is a new discipline being introduced in 2020 as per Council direction (Report CES18010) ³⁸
- **Medical Training** Administration of CPR and First Aid training for all firefighters which consists of 14 hours annually per person for CPR and 24-32 hours every three years for First Aid. The medical portfolio also includes the administration of training on basic life-saving skills such as Epipen, blood pressure, and Narcan to all suppression personnel, and fit testing for N95 and Self-Contained Breathing Apparatus (SCBA) for all firefighters.
- **Driver Training** The HFD has Department signing authority for the Ministry of Transportation Ontario (MTO). Training Officers provide administration of testing, certification and testing for ongoing maintenance of DZ license certifications. In addition, the Chief of the Training Division has registered authority to conduct driver abstract searches.
- **Promotional and Class Examinations** The Training Division administers the promotional and class examination processes for career and volunteer firefighters which includes a review and update of study package material, exam proctoring, and marking for practical and theoretical components.

³⁸ <https://pub-hamilton.escribemeetings.com/filestream.ashx?DocumentId=142106>

- **Ongoing Theoretical and Practical Training** Each firefighter participates in a minimum of 180 hours annually of on-going theoretical and practical training each year. The Training Division is responsible for developing and administering a comprehensive training syllabus from over 100 distinct subjects and over 1,100 lessons.

The Training Division also serves as research and development for fire suppression technology matters, the dissemination of new information in the field, and the updating of all manuals.



In 2018, the Training Division was responsible for the delivery of the equivalent of 156,290 hours of training covering 1,229 topics for both career and volunteer personnel. This is an increase in training hours from 2016 by 40.7%.

These numbers will increase as the HFD implements a Department-wide foundational core competency training program for all personnel in all Divisions. This is one strategy to encourage, support and promote ongoing growth and development of all personnel (Initiative 7.1). The HFD will move toward achieving selected Standards for training set out by the National Fire Protection Association (NFPA). This will require training of all personnel employed by the Department. This includes personnel in the following positions:

- Firefighters
- Pump Operators

- Technical Rescuers
- Educators
- Officers
- Inspectors
- Dispatchers
- Hazardous materials personnel
- Mechanics
- Storekeepers
- Breathing Apparatus Technician

While not mandated, the foundational core competency training program will provide the option for personnel to receive certification in selected NFPA Standards through the support of the HFD.

The HFD is committed to ensuring the safety of personnel through competency training throughout their careers with the Department. Additionally, teaching skills and enhancing professional competencies on an ongoing basis not only assists personnel in their current roles but also prepares them for future roles, including those in leadership, as their careers progresses.

OBJECTIVE

Professional development opportunities

7

Division Structure and Resources

The Training Division presently consists of the Divisional Chief of Training, six Training Officers, and one Administrative Clerk with oversight provided by the Assistant Deputy Chief of Professional Standards and Training, Fire Dispatch.

Similar to other Divisions, the HFD has been challenged with a significant number of retirements in the Training Division over past several years, a trend that will continue for the foreseeable future. In order to maintain staffing levels, two career recruit classes, each 18 weeks in length, are being conducted on an annual basis. This increased demand is compounded with the Department moving to core competency training for all personnel.

To assist in delivering training, the current practice is for recruit classes to utilize Operations staff in order to maintain the industry best practice standards for student to Instructor ratios. The challenge with this practice is that there are times when Operations staff do not express an interest in taking on the role of Instructors.

In addition, having different Instructors for each class makes it difficult to maintain consistency in how lessons are delivered.

To help alleviate the increased demand for training, the HFD will explore strategies to enhance the hiring process to better meet the needs of the Department (and community) (Initiative 5.2). This will include implementing a pre-hire component of recruit training programs as a condition of employment. For example, the completion of the theoretical component of recruit training would be a condition of employment. Recruits would complete the theoretical component of their training online, thereby reducing the amount of time and resources required for classroom instruction.

Furthermore, the HFD will identify opportunities to create a multi-functional resilient workforce within the existing organization (Initiative 3.3). This will include cross-training and expanding the role of Safety Officers to include Training Officers. Therefore, when not at a scene of a fire, these Officers would be trained to deliver instruction to personnel at the stations during their shifts.

As noted earlier in the Operations Division Section (4.2) and Fire Prevention Division Section (4.3) and based on the Community Risk Assessment, multi-functional capability would also apply to Firefighting and Rescue Operations, Fire Prevention and Emergency Management staff. For example, Operations staff would be trained to conduct inspections. Operations and Fire Prevention staff would be trained to conduct pre-fire surveys. Operations, Fire Prevention and Emergency Management staff would work together to deliver a targeted public education campaign.

Creating a multi-functional resilient workforce will require the Training Division to provide content and help train personnel as they expand their skill sets. Multi-functionality means the skill set of staff is expanded and the workforce is more flexible. It also enables different perspectives to be brought to different job functions. For personnel, multi-functionality enhances their growth and development and helps to keep them engaged.

Finally, the HFD will also investigate opportunities to maximize the use of current resources in all Divisions (Initiative 3.1) including the Training Division and review its capacity to meet demands by investigating additional resource gaps due to increased workload and growth (Initiative 11.4).

The following objectives will be achieved through the initiatives and actions described above:

OBJECTIVES	
Existing resources efficiently utilized to maximum potential	3
Skilled and diverse workforce	5
Resourcing community growth demands	11

Currently, the recruit training for volunteer firefighters is coordinated and delivered by Training Officers from the Volunteer Division. Integrating the delivery of training and consolidating the oversight of training would help to improve the consistency and quality of the recruit training for all new personnel.

In order to coordinate and integrate training across the entire Department, the HFD will conduct a feasibility study for a centralized model in training for all Divisions to ensure consistency and continually improve competencies (Initiative 8.1). In addition to training all recruits, delivering ongoing training for all suppression personnel, Officer development and training on all new apparatus and equipment, the HFD will explore if this model would also be effective for fire prevention training, communications training, and employee development opportunities.

OBJECTIVE

Coordination with City Departments/Divisions/HFD

8

Equipment

Located at the Multi-Agency Training Academy (MATA) the Training Division is able to utilize an array of resources for training, particularly practical training:

- Indoor training facility with a simulated house, simulated high rise, High Angle Rope Rescue (HARR) rappel wall, Search & Rescue/SCBA confidence maze
- Quantitative/Qualitative FIT test room
- Self-Contained Breathing Apparatus cascade/fill station
- HAZMAT, HARR and Confined Space Training props
- Auto-Extrication pit
- Outdoor simulated live fire burn building (house and high rise),
- Propane operated vehicle fire prop
- Spare training apparatus – one Rescue Unit, two Pumpers, a Ladder and a driver training vehicle

In addition, the MATA includes an indoor lecture facility with four classrooms, some equipped with overhead projectors with a direct link to the HFD Intranet training site. Medical training takes place in two of the classrooms three days a week from Tuesday to Thursday for almost 50 weeks of the year. Recruit training takes place in the other two classrooms Monday to Friday for 36 weeks of the year. As a result, the classrooms are regularly booked leaving little time and space for any additional training that is required. The Service Delivery Plan includes an action to explore the possibility of expanding the training facility to accommodate additional classroom space and outdoor training.



This action supports the initiative of identifying enhancements to current resources required to mitigate risks to be integrated into the City's capital budget process (Initiative 11.1) to achieve the following objective:

OBJECTIVE

Resourcing community growth demands

11

4.5 Mechanical Division

Key Functions

Effective delivery of emergency responses depends on well-functioning fire apparatus and equipment.

The Mechanical Division operations take place at Station 13 and provide the following services:

- Maintain and repair all fire apparatus and equipment
- Maintain and repair all Hamilton Paramedic Service apparatus and equipment
- Maintain, update and write the technical specifications for fire apparatus purchases

- Maintain self-contained breathing apparatus (SCBA) and associated equipment
- Mandatory safety inspections compliant with MTO and other applicable regulatory bodies



The Mechanical Division includes a Stores/Logistics Centre, located at Station 30. The responsibility of Stores includes:

- Order, stock and delivery of all medical, operating, office, and station supplies for the HFD and Hamilton Paramedic Service
- Order and distribute all safety equipment, personal protective equipment, clothing and uniforms for HFD and Hamilton Paramedic Service (including management)
- Contribute to a tendering process for stock items in Stores
- Maintain and set inventory control and provide feedback for Management consideration for both HFD and Hamilton Paramedic Service
- Weekly ordering schedule and delivery of stock orders for HFD and Hamilton Paramedic Service
- Preparation of uniforms for new recruit classes for HFD and Hamilton Paramedic Service
- Delivery / pick-up of vehicles and parts

As described in the Operations Section, the HFD currently has a fleet of over 100 apparatus and associated equipment. The Hamilton Paramedic Service presently has a fleet of 66 vehicles that includes 41 ambulances, 17 Paramedic Response Units, six logistics/support vehicles and two Emergency Support Units. It is the responsibility

of the the Mechanical Division to ensure a high level of operational functionality for all of these vehicles and equipment. Furthermore, the Stores/Logistics Centre of the Mechanical Division orders safety equipment, bunker gear, clothing and uniforms for approximately 1,000 employees of the HFD and Hamilton Paramedic Service combined and delivers these to 30 locations across the city.

Division Structure and Resources

The Mechanical Division is staffed by a Chief Mechanical Officer who reports to the Assistant Deputy Chief of Corporate Radio, Facilities, Procurement and Mechanical and includes a Breathing Apparatus Technician, one Shipper/Receiver, one Storekeeper, eight Mechanics, one Mechanical Clerk and one Mechanical Administrative Clerk.

Maintaining a fleet of apparatus and associated equipment for the HFD and the Hamilton Paramedic Service to ensure they meet the respective regulatory requirements is complex and highly technical. The Mechanical Division carries out regular comprehensive programs of maintenance, inspections, diagnostics, testing and repairs. Emergency repairs are done at all hours of the day and night and Mechanical Division staff attend multiple alarm emergencies when dispatched. Routine maintenance is performed on apparatus on three-month, six-month, and annual cycles. The work of the Division is wide ranging and it has the capability to complete major vehicle repairs.

In 2018, Mechanical staff completed 1,301 work orders and logged a total of 9,749 labour hours for both the HFD and Hamilton Paramedic Service vehicles and equipment repairs. This represents an upward trend in labour hours of 4% on average per year since 2015.

In addition to hours spent on HFD and Hamilton Paramedic Service apparatus and equipment, Mechanical staff are responsible for general shop cleaning and maintenance, administrative work, training and vehicle design and specifications.

As the community continues to grow and demand on emergency services increases there will be a corresponding increase in demand on the Mechanical Division. As noted in the Operations Section (4.2) the HFD is planning to acquire new vehicles over the course of this ten-year Plan. An increase in the fleet will lead to an increase in inspections, maintenance and repairs for vehicles and associated equipment.

With new apparatus comes new technology. Today's fire trucks are becoming more intelligent due largely to the electronic technology that is being built into the trucks. Touch screens, electric valves, self-monitored chassis, multiplexing and water flow systems as well as remote diagnostic capabilities are just some of the features available in the new trucks. Such advances in technology will need to be considered when acquiring new apparatus along with the impact

To ensure the Mechanical Division continues to meet service demands, it will be included when the HFD investigates additional resource gaps in all Divisions due to the increased workload and growth (Initiative 11.4). In the meantime, the HFD will investigate any opportunities to maximize use of current resources in the Mechanical Division, and all Divisions as part of the ten-year Plan (Initiative 3.1). This will help to achieve the following objectives:

OBJECTIVES	
Existing resources efficiently utilized to maximum potential	3
Resourcing community growth demands	11

Equipment

The Mechanical Division uses a wide range of technical equipment, tools and technology to carry out its functions:

- Hoists for medium size to large commercial trucks
- Equipment such as welders, torches, air conditioning machines, brake lathe, fork lift, overhead crane, and hand/air (pneumatic) tools
- Computers, laptops, scan tools, and numerous software programs to read on board diagnostics for newer apparatus
- Fully stocked maintenance trucks, Stores delivery truck, and Pump Test trailer
- Parts room with a range of parts inventory

The Mechanical Division faces a number of challenges that will intensify as demand increases over the next several years. At present, Mechanical Operations and Stores are located in separate facilities and the Mechanics are responsible to research and order the parts they require. Taking on this work reduces the amount of time Mechanics spend on mechanical work. Given that there is not a dedicated person to manage the parts inventory at Station 13 where mechanical operations take place there is little control over stock in the shop and records are unreliable.

The HFD intends to rectify this issue by conducting a facilities review to increase efficiencies and promote collaborative work environments (Initiative 3.2). The goal is to relocate Mechanical Operations including reconciling Stores and Parts services to the lands adjacent to the Multi-Agency Training Academy.

The relocation and merging of Mechanical Operations and Stores would shift the responsibility of managing the parts inventory from the Mechanic to the Storekeepers. Moreover, expanding the utilization of the asset management platform of the FDM software would help to ensure more accurate tracking of inventory (Initiative 1.4)

A consolidated Mechanical Division in a new location would also address the issue of space limitations at Station 13. The Station has four bays that can accommodate large apparatus (i.e., Pumpers, Tankers, Engines, or Ladders) however, when these are occupied by vehicles that require major work that can take days or longer, Mechanics are forced to work outside on apparatus that will not fit into the smaller three bays. This becomes even more of a challenge in the winter months as vehicles cannot be left outside in the cold for prolonged periods. The water contained within fire apparatus can freeze and freezing can cause some medications that are stored in ambulances to be ineffective.

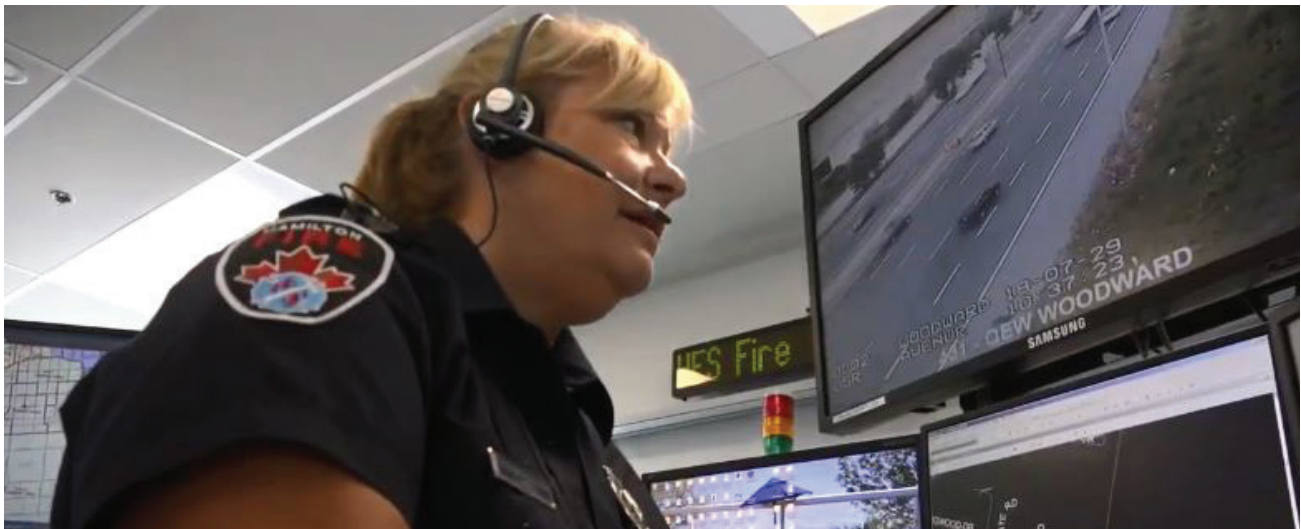
The initiatives described here support the following objectives of the Action Plan (Section 5.0):

OBJECTIVES	
Innovative and effective use of technology	1
Existing resources efficiently utilized to maximum potential	3

4.6 Communications Division

Key Functions

The components essential for a successful dispatch process are reliable radio communications infrastructure, well-trained Communications staff and a strongly supported CAD system. These components are critical for the delivery of effective, efficient fire service to residents and in providing support for frontline firefighters at an incident.



Located on the premises of the Multi-Agency Training Academy, the Communications Divisions is responsible for answering emergency calls and dispatching HFD fire apparatus in response. The functions performed by this Division include:

- Intake of emergency calls
- Dispatch apparatus
- Relocation of apparatus
- Monitoring of all radio transmissions

- Handling non-emergency calls
- Fulfil station mapping requirements
- Monitor hydrant status
- Monitor road closures
- Document alarm system testing
- Maintain information within the Computer Aided Dispatch system (CAD)
- Receive and process non-emergency requests for service from the public, emergency agencies and other public safety services

The Communications Division is a co-user of the Hamilton Corporate Trunked Radio System that enhances coordinated delivery of public safety emergency services in the city. Other users of the trunked radio system include the Hamilton Police Service, City of Hamilton Public Works Department and the Hamilton International Airport.

Division Structure and Resources

The Communications Division consists of a Chief Communications Officer, four Communications Officers (one per Platoon) and eight Communications Operators (two per Platoon). The Assistant Deputy Chief of Professional Standards, Fire Dispatch and Training provides oversight for this Division.

The Communications Division has experienced an increase in call volume by an average of approximately 4.5% per year since 2015. In 2018, Communications personnel dispatched over 32,500 calls for assistance. In addition, there were numerous calls for assistance in neighbouring municipalities in which HFD dispatchers fielded calls and dispatched resources. Presently, two operators and one Officer are on duty at a time to handle call intake and dispatch. The increase in service demand is a common concern throughout the Department. As such, the HFD is committed to investigating opportunities to maximize the use of current resources (Initiative 3.1) and investigating resource gaps due to the increased workload and growth (Initiative 11.4) in the Communications Division along with the other Divisions in the Department.

In addition to experiencing an increase in call volume the Communications Division will face a significant turnover of staff. Five personnel in the Division are expected to retire within the next five years. Preparing for these changes is crucial to ensure a smooth transition. As noted earlier, the HFD will investigate strategies to encourage, support and promote ongoing growth and development of all personnel and will create a Department-wide mentoring program and foundational core competency training program (Initiative 7.1). These programs will help provide personnel with skills and knowledge they will need prior to taking the position, thereby facilitating a seamless changeover.

The majority of the call volume handled by the Communications Division involves life threatening medical intervention. As noted in the Operations Division Section 4.2, the HFD was dispatched to 21,304 medical calls in 2018, which is 66% of all calls. The tiered response agreement between the HFD and the Hamilton Paramedic Service is activated for responses to life threatening or critical, time-sensitive incidents. By

working together, the services are better equipped to meet the emergency needs of the community. The HFD will review the medical tiered response agreement with the Hamilton Paramedic Service to ensure the appropriate resources are dispatched relative to patient need (Initiative 3.5).

Moving to simultaneous dispatch with the Hamilton Paramedic Service may help to alleviate some of the call demand for the HFD Communications Division. A simultaneous dispatch protocol also presents an opportunity to reduce the number of life threatening medicals calls in which the HFD is dispatched, as per the Tiered Response Agreement, that were subsequently cancelled when it was determined firefighters were not required. The HFD would be alerted immediately as per an updated Tiered Response Agreement, then the HFD dispatch can monitor responses and if firefighters are not needed, for example when an ambulance arrives on scene first, then fire resources would not need to be deployed. Not only would this help to reduce the call volume, it would also free HFD resources to be able to address the first two lines of defence and conduct public education initiatives, inspections and tactical surveys. As part of the ten-year Plan, the HFD will investigate a simultaneous dispatch protocol with the Hamilton Paramedic Service (Initiative 4.4). These initiatives will support the following objectives as described in the Action Plan (Section 5.0):

OBJECTIVES	
Existing resources efficiently utilized to maximum potential	3
Enhanced customer value proposition	4
Professional development opportunities	7
Resourcing community growth demands	11

The Communications Division uses a wide range of technical equipment and technology to carry out its functions:

Equipment

- Personal Computers
- CAD Computers and Software
- Motorola MCC7500 ELITE DISPATCH Computers and Software
- Motorola FSA 4000 – Fire Station Alerting
- Control Point Radios
- Mobile radios and batteries
- Telephones
- Headsets
- Bell services/phone lines
- NICE Inform (recording software)

Currently, the Communications Division uses a CAD program (Version 9.2) which was last upgraded in 2015. The base of this system stems from the original version initiated in 2000. Changes and updates that have been made to the system have been layered onto the original version. This has resulted in a system that is insufficient at times. For example, operators have to manually select units for large events to dispatch because they are not programmed into CAD.

As discussed in the Administration/Leadership Division Section (4.1), the HFD will work to improve the use of technology utilized by the Communications Division. This will include updating the CAD System to Version 9.4 and implementing new technologies such as the Next Generation 9-1-1 (NG9-1-1) voice and text messaging services. In addition, developing a dashboard to communicate performance results will support dispatchers in monitoring real-time performance (Initiative 4.2). With the most current technology, the increasing and changing demands of the Communications Division will be managed more efficiently and effectively to better serve the community.

As noted in Section 4.0, there may be opportunities for the HFD to provide dispatch services to surrounding municipalities to generate revenue. This would require a larger dispatch centre as the current space for Communications staff at the MATA is limited. An initiative of this Plan is to investigate the merits of co-locating a dispatch centre with the Hamilton Paramedic Service and potentially the Hamilton Police Service (Initiative 9.2).

This has the potential to improve inter-agency coordination of deployment and field operations. In addition, there is the potential for cost savings as a result of sharing expenses related to technology, facility, and infrastructure, to name a few. Moving the HFD dispatch to a shared location with the Hamilton Paramedic Service would also help to alleviate the space limitations in the Administration area of the MATA building.

The actions and initiatives undertaken in the Communications Division will advance the following objectives as identified in the Action Plan (Section 5.0):

OBJECTIVES	
Innovative and effective use of technology	1
Enhanced customer value proposition	4
Collaboration with external partners	9

4.7 Corporate Radio Division

Key Functions

The Corporate Radio Division is responsible for the oversight of development and implementation, ongoing troubleshooting and maintenance of the following communication systems:

- Twelve-channel radio system for various user groups
- Alphanumeric paging system infrastructure used to page out volunteer firefighters to emergency calls
- Fire station alerting system that alerts on-duty career firefighters of an emergency call
- Mobile computing hardware in fire apparatus

The Corporate Radio Division is responsible for the Corporate Trunked Radio System which provides mission critical voice and data communications for the HFD, Hamilton Police Services, the City of Hamilton's Public Works Department, the City's Municipal Law Enforcement Division and the Hamilton International Airport.

The Corporate Radio Division maintains a twelve-channel radio system that operates through ten tower sites across the city. This radio system provides service to approximately 3,300 radio units (both mobile and portable).

Radio channels are logically divided into over 150 talk groups for use by public safety and Public Works personnel. Communications personnel have the ability to patch radio channels with neighbouring Fire Services such as Burlington, Grimsby and Puslinch for interoperability when working at emergency scenes. As well the HFD shares a common radio channel with external agencies, such as Hamilton International Airport, Hamilton Police Service and Hamilton Beach Rescue.

Division Structure and Resources

The Corporate Radio Division is staffed by a Radio Frequency (RF) Systems Specialist and a Radio Technician who report to the Assistant Deputy Chief of Corporate Radio, Facilities, Procurement and Mechanical.

Equipment

The Corporate Radio Division maintains 1,650 devices for Hamilton Police Services, 900 devices for Public Works Department, 80 devices for Municipal Law Enforcement and 50 devices for the Hamilton International Airport. The devices maintained for the HFD such as those utilized by the Emergency Operations Centres include the following:

- 112 mobile two-way radios
- 497 portable two-way radios

- 80 mobile computers
- Seven radio dispatch consoles at Fire Communications Centres
- Fire Station Alerting System
- Nine site Alphanumeric paging system

The two-way radios are a critical lifeline for frontline responders who must be able to transmit and receive integrated information while on the scene of an incident. Every HFD firefighter on duty must have a two-way radio to assist in effective firefighting and for their own safety through communication with the Incident Commander. Public Works and Municipal Law Enforcement users of two-way radios are moving toward a competing technology such as Smartphones which have the capacity to stay connected to the office as well as print tickets, take pictures, map locations, and access documents. However, the two-way radio technology is a reliable and seamless source of communication that is durable and easy to use and it will continue to be fundamental to the operations of fire services. Two-way radios are also utilized by Fire Inspectors in the case they may need to connect with communications/dispatch directly for immediate assistance.

As a part of the CAD upgrade, the HFD will review the Fire Station Alerting system. This system is an automated system integrated with CAD to alert fire personnel in the fire station that there is an incident. Firefighters are notified through the system with alarm tones and the audio of dispatch. A printer in the station is linked to CAD and prints off the details of the call. The Alerting System is essential to ensure that dispatch processing times are optimum. While the current system is effective, there are functionalities available such as alerting specific areas of the station, soft-start alerting, automatic bay door opening, automatic stove shut off and customizable lighting and sounds specific to the type of incident that could be explored to determine their potential usefulness for the HFD.



The Corporate Radio Division faces challenges with some of the current technology. Pagers used to alert volunteer personnel of an incident have a limited range. In many cases the HFD volunteer firefighters have fulltime jobs that are outside of the rural area in which they live and often it is a distance too far for the pager to transmit. Furthermore, the paging technology does not allow for the availability of personnel to be tracked nor how many personnel may be answering the call to respond to an alarm. As noted earlier, the HFD will be upgrading the Personnel Alerting System and will explore cellular technology for alerting volunteers and tracking their response.

The HFD will also investigate updating mobile information system for fire department vehicles (Initiative 1.2). The mobile computing technology that is currently in the fire trucks was installed in 2010 with the intent to disseminate information to expedite response to incidents. The computers house information about response protocol particularly for hazardous incidents, incident details from CAD and include vehicle routing capabilities among other functionalities. However, audits conducted by the Corporate Radio Division show firefighters will often refer to hard copies of protocols, maps and CAD printouts or use their own phones for GPS and rely on two-way radio transmission for incident information. Given the age and the under-utilization of these mobile computers by personnel there is an opportunity to update technology that is better suited for personnel and would increase the usefulness and utilization of the computers.

Inspection of the ten communications towers can also prove to be a challenge. Currently, the HFD must rely on a third party when inspection of tower antennas and associated equipment is required. This incurs a cost for the HFD and can be time consuming. Drone technology is relatively low cost, effective and inspections can be performed immediately, avoiding waiting for a third party. In exploring the use of drone technology for suppression activities, as outlined in the Operations Division Section 4.2, the HFD will also consider the use of a drone for tower inspections (Initiative 1.3).

The review and updating of technology to support the Corporate Radio Division will help to achieve the following objective of the Action Plan (Section 5.0):

OBJECTIVE	
Innovative and effective use of technology	1

4.8 Emergency Management Division

Key Functions

The Emergency Management Division of the HFD is responsible for the City of Hamilton's Emergency Management Program that consists of developing and implementing mitigation, preparedness, response, and recovery initiatives to strengthen the city's disaster resiliency. This is accomplished through the following key functions:

- Complete annual Hazard Identification and Risk Analysis (HIRA)
- Maintain a list of critical infrastructure
- Develop, maintain and update corporate emergency plans and procedures
- Develop a business continuity program for essential city services
- Develop and implement annual emergency management training for City of Hamilton staff, partner agencies, and external organizations
- Conduct annual emergency exercises to test emergency plans and procedures
- Activation of the Emergency Operations Centre to coordinate emergency response efforts
- Maintenance of two Emergency Operation Centre locations
- Develop and implement of public education and awareness activities
- Organize and facilitate the Emergency Management Program Committee meetings

The Emergency Management Division's responsibilities contribute to the three lines of defence that guide the services provided by the HFD:

LINE OF DEFENCE	RESPONSIBILITY
Line 1: PUBLIC FIRE SAFETY EDUCATION	<ul style="list-style-type: none"> • Promote emergency preparedness • Disseminate public safety information with other HFD Divisions and community partners to address community risk • Organize public safety education events • Maintain an updated Emergency Plan • Deliver a Business Continuity Program
Line 2: FIRE SAFETY STANDARDS & ENFORCEMENT	<ul style="list-style-type: none"> • Meet requirements of the Emergency Management and Civil Protection Act • Report to the City's Emergency Management Program Committee • Deliver Incident Management System training to internal and external partners
Line 3: EMERGENCY RESPONSE	<ul style="list-style-type: none"> • Conduct training and exercises • Activate Emergency Operations Centre • Manage crises and determine resources required to control incidents • Disaster preparedness and response • Complete annual HIRA • Maintain list of critical infrastructure

The Emergency Management Division is required by *Ontario's Emergency Management and Civil Protection Act* to develop and implement an emergency management program that is based on the HIRA and critical infrastructure list. Emergency Management staff must identify and assess the various hazards and risks to public safety in Hamilton that could result in an emergency. They must also identify the city's facilities and other elements of the city's infrastructure that are at risk of being affected by an emergency. Identifying hazards most likely to result in an emergency enables the Emergency Management Program to be proactive and focus on prevention, preparedness and mitigation activities in addition to the reactive activities of responding to and recovering from emergencies.

According to the updated HIRA report (2017), Hamilton is most vulnerable to low probability events with high impact such as hazardous materials incidents, flooding and extreme ice storms. Indeed, in April of 2018, Hamilton experienced an ice storm and subsequent flooding which caused power outages, road closures, suspended bus service and high volumes of water that exceeded capacity at the wastewater treatment. For such incidents, a continuity plan is critical to ensure that critical and essential business functions can continue with minimum disruption during an emergency.



Source: The Hamilton Spectator

In 2017, the Emergency Management Division staff developed a Corporate Business Continuity Program in coordination with the City's senior leadership. While the City has adopted the program into a corporate policy, the program now needs to be tested. Staff will implement strategies to ensure the continuity of core City services during emergencies (Initiative 8.2). Emergency Management staff will collaborate with all City Departments to implement, test, maintain and expand the Corporate Business Continuity Program. Expanding the program will not only be within the corporation but also to key businesses in the community. The Emergency Management Coordinators will identify strategies to promote emergency preparedness with community partners (Initiative 9.1). This will include working with targeted local businesses to develop individualized Business Continuity Plans to help their operations minimize downtime in the case of an emergency.

These initiatives will support the following objectives as described in the Action Plan (Section 5.0):

OBJECTIVES	
Coordination with City Departments/Divisions/HFD	8
Collaboration with external partners	9

Division Structure and Resources

The Emergency Management Division consists of a Senior Emergency Management Coordinator who reports directly to the Fire Chief and who works with an Emergency Management Coordinator.

Ontario Regulation 380/04 supports the Emergency Management and Civil Protection Act and requires municipalities to designate an Emergency Management Program Coordinator. As is best practice for a city of Hamilton’s size, the HFD has also designated an alternate coordinator. The Regulation requires Emergency Management Coordinators to coordinate the development and implementation of the City’s emergency management program, and also coordinate with other municipalities’ emergency management programs. The Coordinators must ensure the most recent version of the City’s emergency plan is in the possession of the Chief of Emergency Management Ontario (EMO). EMO monitors compliance and supports municipalities in maintaining the required program.

Emergency Management Coordinators must also report on their efforts to the City’s Emergency Management Program Committee which consists of City employees responsible for emergency management functions, senior municipal officials appointed by Council and a City Council member. The Coordinators report to the Committee twice a year.

While the Emergency Management Division has been able to meet the standards set out in the Act and Regulation, there are challenges that prevent staff from exceeding the standards to reach more people. As the number of partnerships grow training continues to be a challenge. The Emergency Management Coordinators have recently investigated the possibility of online training to reach more people with fewer resources. Awareness of disastrous events globally is increasingly making public education more important in helping people better understand, mitigate and prepare for such events. Educating the public is critical in shifting the focus from reaction to prevention. This requires outreach to a wide range of groups and using a variety of methods and in multiple languages. Implementing and expanding the Business Continuity Plan to beyond the corporation will also increase the workload of this Division.

To address the increasing workload, the Emergency Management Division will enhance partnerships with community partners such as hospitals, industries and

learning institutions to identify opportunities to lessen the impact of risks through effective emergency response (Initiative 10.3). Emergency Management Coordinators will also identify strategies to promote emergency preparedness with community partners (Initiative 9.1) and work with them and other City Departments to develop and implement a strategic and targeted approach to public safety education that addresses the community risk (Initiative 10.1). The Emergency Management Division will also collaborate with the Fire Prevention and Operations Divisions to develop and disseminate public safety information in multiple languages.

To ensure Hamilton has a strong emergency management program it will need to continuously improve in keeping with international standards and recommended practices. To ensure the effectiveness of this Division, the HFD will complete strategic review of the Emergency Management Program based on HIRA and *Emergency Management and Civil Protection Act* requirements (Initiative 3.4). Furthermore, along with the other Divisions, the HFD will investigate opportunities to maximize use of current resources (Initiative 3.1) and investigate additional resource gaps in the Emergency Management Division due to the increased workload and growth (Initiative 11.4).

OBJECTIVES	
Existing resources efficiently utilized to maximum potential	3
Collaboration with external partners	9
Community Risk Assessment response	10
Resourcing community growth demands	11

Equipment

The Regulation requires every municipality to establish an emergency operations centre equipped with appropriate technological and telecommunications systems to ensure effective communication in an emergency.

The City of Hamilton has two Emergency Operations Centres (EOC). The primary EOC is a twenty-four hour a day, seven day a week facility that is one of only a few stand-alone facilities in Ontario. In the event that this primary location is inoperative or inaccessible during an emergency, the City has an alternate EOC. The EOC is where senior municipal staff convenes to manage an emergency on a strategic level. The EOC supports the needs of tactical responders, manages the impact on the community and ensures that the delivery of municipal services continues.

The Emergency Management Coordinators are responsible for maintaining both EOCs which contain a variety of communications systems including:

- Computers, Internet and networks
- Network and landline telephones for each agency
- Fax line and machine
- Two-way radios to communicate with emergency responders and field personnel
- Large screen televisions for monitoring weather and news
- A boardroom adjacent to the Operations Room for management team briefings during an event
- Video conferencing
- Video projectors to display action plans and maps
- Microphone system to ensure communication within the EOC during an event

Hamilton's EOC is well-equipped with technology and equipment that effectively fulfill the purpose of communicating information necessary to manage an emergency. However, information is currently tracked using programs such as Excel, Word and in some cases FDM (e.g., for public education events). Since reporting to the Ministry is a requirement of the Emergency Management Program, it would be worth exploring EOC-specific software to streamline the reporting process and enable accurate integrated tracking.

As noted in both sections of Operations (4.2) and Corporate Radio Divisions (4.7) the HFD will explore the use of drone technology (Initiative 1.3). A drone would also benefit the Emergency Management Division by providing assessments of large scale emergency scenes. The drone can relay aerial footage of an incident to provide a very different perspective. This would be combined with information from personnel at the incident to help Emergency Management Coordinators determine how to manage the crisis and what kind of resources are needed to get the incident under control.

In addition the HFD will explore using technology to support information sharing for large scale emergency response (Initiative 1.5), as described in the Operations Division Section. Such technology would enhance inter-organizational communication and data sharing and help coordinate agencies and individuals during a major event.

OBJECTIVE

Innovative and effective use of technology

1



The Action Plan is designed to progressively manage current and predicted growth and risk throughout the city.



5.0 ACTION PLAN 2019-2028

5.1 Summary of Objectives

As noted previously (see Section 3.5), the Hamilton Fire Department’s Service Delivery Plan is guided by four principles. The objectives to be achieved in each of the Guiding Principles are summarized below:

OPTIMIZED SERVICE DELIVERY	EXCEPTIONAL PEOPLE AND PERFORMANCE	ROBUST COLLABORATION AND INTEGRATION	REDUCED RISK FOR A HEALTHIER AND SAFER COMMUNITY
Innovative and effective use of technology (1)	Skilled and diverse workforce (5)	Coordination with City Departments/ Divisions /HFD (8)	Community Risk Assessment response (10)
Revenue generation opportunities (2)	Healthy, inclusive and engaged workplace culture (6)	Collaboration with external partners (9)	Resourcing community growth demands (11)
Existing resources efficiently utilized to maximum potential (3)	Professional development opportunities (7)		Code Red response (12)
Enhanced customer value proposition (4)			

Fire Service Delivery Action Plan 2019-2028

This section outlines the initiatives and corresponding actions required to achieve the objectives highlighted throughout Section 4.0. These are organized by the four Guiding Principles. The Action Plan includes anticipated timeframes associated with actions. The resources required to achieve each these initiatives and actions are outlined in the Financial Forecast in the following section (6.0).

The ten-year Service Delivery Plan is a living document. It will be reviewed and updated annually. As each year is complete and the Plan is reviewed and revised, an additional year of objectives and initiatives will be included. Therefore, the Plan will remain a perpetual ten year plan.

Hamilton Fire Department Service Delivery Plan 2019 – 2028

Action Plan

<p>OPTIMIZED SERVICE DELIVERY</p> <p>The HFD is committed to delivering emergency preparedness, fire protection and rescue services in the most efficient, effective and cost-conscious way possible.</p>	<p>EXCEPTIONAL PEOPLE & PERFORMANCE</p> <p>The HFD knows that engaged, motivated employees who have the tools to do their jobs will perform to the best of their ability to deliver optimal services to citizens.</p>	<p>ROBUST COLLABORATION & INTEGRATION</p> <p>The HFD recognizes the importance of building and cultivating meaningful partnerships within City departments/divisions and outside of the organization.</p>	<p>REDUCED RISK FOR A HEALTHIER AND SAFER COMMUNITY</p> <p>The HFD will enhance a focus on proactive measures to effectively mitigate risks to residents.</p>
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OBJECTIVES			
<p>Innovative and effective use of technology</p> <p>1</p>	<p>Skilled and diverse workforce</p> <p>5</p>	<p>Coordination with City Departments/ Divisions/HFD</p> <p>8</p>	<p>Community Risk Assessment response</p> <p>10</p>
<p>Revenue generation opportunities</p> <p>2</p>	<p>Healthy, inclusive and engaged workplace culture</p> <p>6</p>	<p>Collaboration with external partners</p> <p>9</p>	<p>Resourcing community growth demands</p> <p>11</p>
<p>Existing resources efficiently utilized to maximum potential</p> <p>3</p>	<p>Professional development opportunities</p> <p>7</p>		<p>Code Red Response</p> <p>12</p>
<p>Enhanced customer value proposition</p> <p>4</p>			

OPTIMIZED SERVICE DELIVERY			
OBJECTIVE	INITIATIVES	ACTIONS	TIMEFRAME
Innovative and effective use of technology <div style="border: 1px solid white; padding: 5px; width: 30px; margin: 10px auto; text-align: center;">1</div>	Leverage integration with Corporate database applications (1.1)		2019-2021
	Investigate updated mobile information system for Fire Department vehicles (1.2)		2019-2021
	Explore the use of drone technology (1.3)		2019-2020
	Expand the utilization of the asset management platform within FDM (1.4)		2019-2021
	Explore use of technology to support information sharing for large scale emergency response (1.5)		2022-2023
	Develop the capability for residents to access HFD services online including payment portal (1.6)		2019-2023
Revenue generation opportunities <div style="border: 1px solid white; padding: 5px; width: 30px; margin: 10px auto; text-align: center;">2</div>	Explore the use of Multi Agency Training Academy by external parties (2.1)	Establish appropriate user fee within User Fee By-Law during budget process	2020
	Investigate and access new funding streams such as grants (2.2)		2020
	Explore funding strategies through provision of additional Fire Department services (2.3)	Establish appropriate user fee within User Fee By-Law during budget process	2020

OPTIMIZED SERVICE DELIVERY			
OBJECTIVE	INITIATIVES	ACTIONS	TIMEFRAME
<p>Existing resources efficiently utilized to maximum potential</p> <p>3</p>	<p>Investigate opportunities to maximize use of current resources in all Divisions (3.1)</p>	<p>Convert/change Engine 5 to a Ladder in the East Mountain and Upper Stoney Creek using existing apparatus</p>	2019
		<p>Convert existing Rescue 1 (Hamilton downtown) to a multipurpose apparatus (Urban Pumper) using existing complement and apparatus</p>	2019
		<p>Convert existing Rescue 12 (Stoney Creek) to a multipurpose apparatus (Ladder) using existing complement and apparatus</p>	2019
		<p>Convert existing Rescue 4 (Hamilton Mountain) to a multipurpose apparatus (Engine) using existing complement and apparatus</p>	2019
		<p>Convert existing Volunteer Ladder 15 (Lower Stoney Creek) to a multipurpose apparatus (Pumper) using existing apparatus</p>	2019
		<p>Redeploy the three Rescue Units to Volunteer Response Areas</p>	2019

OPTIMIZED SERVICE DELIVERY			
OBJECTIVE	INITIATIVES	ACTIONS	TIMEFRAME
Existing resources efficiently utilized to maximum potential <div style="border: 1px solid black; padding: 5px; display: inline-block; margin-top: 10px;">3</div>	Conduct accommodations/facilities review to increase efficiencies and promote community focused and collaborative work environments (Mechanical Division, Fire Prevention, Training Division) (3.2)	Relocate Mechanical Operations including reconciling Stores and Parts services to the lands adjacent to the Multi Agency Training Academy	2021-2025
	Identify opportunities to create a multifunctional resilient workforce within existing organizational structure (3.3)	Cross train and expand the role of four existing Safety Officers to include Shift Training Instructor	2019-2020
		Cross train and utilize front line Fire Operations staff in an expanded Fire Prevention and public safety education role	2019-2022
	Complete strategic review of the Emergency Management Program based on HIRA and <i>Emergency Management and Civil Protection Act</i> requirements (3.4)		2020
	Review the medical tiered response agreement with the Hamilton Paramedic Service to ensure the appropriate resources are dispatched relative to patient need (3.5)		2020

OPTIMIZED SERVICE DELIVERY			
OBJECTIVE	INITIATIVES	ACTIONS	TIMEFRAME
Enhanced customer value proposition <div style="border: 1px solid white; padding: 5px; display: inline-block; margin: 10px 0;">4</div>	Continue to measure citizen satisfaction of the services being provided by the HFD (4.1)	Conduct citizen survey on a continuing three-year cycle from initial 2018 baseline	2021
	Establish forward facing and internal tools to communicate performance results (4.2)	Develop performance dashboards to be utilized for evidence-based decision making	2019-2020
		Enhance performance metrics for each Division to monitor, evaluate and improve performance using a results-based accountability approach	2019-2020
	Define the value for money proposition of the services being provided to citizens (4.3)		2020-2021
	Investigate a simultaneous dispatch protocol with the Hamilton Paramedic Service (4.4)		2020-2022

EXCEPTIONAL PEOPLE AND PERFORMANCE			
OBJECTIVE	INITIATIVES	ACTIONS	TIMEFRAME
Skilled and diverse workforce <div style="border: 1px solid black; padding: 5px; width: 40px; margin: 0 auto;">5</div>	Identify strategies using an equity, diversity, and inclusion (EDI) lens to build a diverse workforce that reflects the community (5.1)	Expand the Camp FFIT (Female Firefighters in Training) concept to broader community groups	2019-2022
	Explore strategies to enhance the hiring process to better meet the needs of the HFD and the community (5.2)	Implement pre-hire component of recruit training program as a condition of employment	2019-2021
	Develop a plan for Leadership Team succession planning (5.3)		2019-2021
Healthy, inclusive and engaged workplace culture <div style="border: 1px solid black; padding: 5px; width: 40px; margin: 0 auto;">6</div>	Continue to update and enhance the Health & Wellness Program based on staff needs (6.1)	Complete Road To Mental Readiness training	2019-2020
	Identify opportunities to create a more inclusive workplace culture (6.2)		2019-2023
	Leverage Our People Survey results to enhance employee engagement (6.3)	Further develop and enhance formal recognition program	2019-2020
Professional development opportunities <div style="border: 1px solid black; padding: 5px; width: 40px; margin: 0 auto;">7</div>	Investigate strategies to encourage, support and promote ongoing growth and development of all personnel (7.1)	Create Department-wide mentoring programs to expose staff to all facets of the fire service and enhance skill development	2019-2023
		Implement a Department-wide foundational core competency training program for all personnel in all divisions	2019-2020

ROBUST COLLABORATION AND INTEGRATION			
OBJECTIVE	INITIATIVES	ACTIONS	TIME-FRAME
Coordination with City Departments/ Divisions/HFD 8	Conduct a feasibility study for a centralized model in training for all divisions to ensure consistency and continually improve competencies (8.1)		2021-2022
	Implement strategies to ensure the continuity of core City services during emergencies (8.2)	Collaborate with all City Departments to implement, test, maintain and expand the Corporate Business Continuity Program	2019-2023
	Increase the level of involvement with City Departments to ensure the collaborative planning for growth in the City (8.3)		2019-2024
	Support and participate in Healthy and Safe Communities Department integration and departmental/ corporate continuous improvement initiatives (8.4)		2019-2024
Collaboration with external partners 9	Identify strategies to promote emergency preparedness with community partners (9.1)	Work with targeted local businesses to develop individualized Business Continuity Plans	2019-2023
	Investigate the merits of a co-locating dispatch centre with the Hamilton Paramedic Service and the Hamilton Police Service (9.2)		2019-2023

REDUCED RISK FOR A HEALTHIER AND SAFER COMMUNITY			
OBJECTIVE	INITIATIVES	ACTIONS	TIMEFRAME
Community Risk Assessment response <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 5px 0;">10</div>	Develop and implement a collaborative, strategic and targeted approach to public safety education that addresses community risk (First Line of Defence) (10.1)	Expand partnerships with City Departments, educational institutions, community agencies, cultural organizations, businesses and industries to develop and disseminate public safety information	2019 - ongoing
		Continue to partner with local school boards to expand public safety curriculum, including the arson education program	2020 - ongoing
		Expand public safety information produced in multiple languages reflective of the community	2020-2021
		Expand the public safety program in collaboration with agencies to address the needs of the vulnerable residents	2020 - ongoing
		Increase presence on Twitter and consider expanding to other social media platforms to deliver public safety messaging	2019 - ongoing
		Analyze public education efforts to evaluate effectiveness in improving outcomes in community public safety	2019-2025
		Expand/Increase opportunities to utilize front line Fire Operations personnel in the delivery of public education initiatives	2019-2023
		Formalize an 'After the Fire' educational program that utilizes Fire Prevention and Fire Operations personnel to deliver information to residents in a neighbourhood recently affected by fire	2019-2020
		Increase public awareness of services offered by the Fire Prevention Division	2019-2020

REDUCED RISK FOR A HEALTHIER AND SAFER COMMUNITY			
OBJECTIVE	INITIATIVES	ACTIONS	TIMEFRAME
Community Risk Assessment response <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 5px 0;">10</div>	Identify safety standards and code enforcement strategies to address risks (Second Line of Defence) (10.2)	Work with the Planning and Economic Development Department to educate homebuilders (and homeowners) on the benefits of sprinkler systems and encourage builders to offer sprinkler systems as an option for new home construction	2020 - ongoing
		Develop an objective inspection program that includes a self-assessment component utilizing resources from both Operations and Fire Prevention Divisions	2021
		Conduct pre-fire tactical surveys of all risk occupancies and log information to a common database within FDM accessible to all Divisions	2019 - ongoing
	Identify opportunities to lessen the impact of risks through effective emergency response (Third Line of Defence) (10.3)	Continue to assess and determine appropriate changes to service delivery that aligns with the City's new Transportation Master Plan	2019 - ongoing
		Update emergency response procedures for the higher risk occupancies based on the HIRA and the Community Risk Assessment	2019-2025
		Update dispatch protocol to ensure deployment of resources is based on risk and closest unit	2019-2021
		Develop a Tri-Service Water Rescue Unit in collaboration with the Hamilton Police Service and Hamilton Beach Rescue Unit to service inland waters as extension of the ice rescue unit	2020-2021
		Acquire response apparatus to transport and supply firefighting foam to respond to hazardous materials incidents	2020-2021
		Acquire nature trail response vehicle and a vehicle to transport it to be able to more effectively and efficiently responds to incidents	2020
		Enhance partnerships between HFD divisions and external partners (such as hospitals, industries, and learning institutions) regarding sharing information, training and exercise programs	2019-2025

REDUCED RISK FOR A HEALTHIER AND SAFER COMMUNITY			
OBJECTIVE	INITIATIVES	ACTIONS	TIMEFRAME
Resourcing community growth demands <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 10px 0;">11</div>	Identify enhancements to current resources required to mitigate risks to be integrated into the City's capital budget process (11.1)	Secure a long-term lease or purchase the land and property for existing Station 14 (Chapel Hill and Hwy. 20)	2021
		Explore an expansion of the training facility to accommodate additional classroom space and outdoor training	2020-2022
	Identify opportunities to leverage and implement composite service delivery model to maintain service levels in areas with increased risk profile (11.2)	Change the level of response from Volunteer to Composite within the following boundaries and assess the impact to area rating: <ul style="list-style-type: none"> • Greens Road (lower Stoney Creek) easterly to Fruitland Road, from the escarpment to the lake will be maintained as a composite response area. Fruitland Road easterly to the Grimsby border from the lake to the escarpment will be changed from a volunteer response area to a composite response area • Rymal Road East to Golf Club Road between Regional Rd 56 and Trinity Church Road • Twenty Road southward to Dickenson Road between Glover Road and Glanaster Road • Airport Industrial Park and the Hamilton International Airport property 	2020

REDUCED RISK FOR A HEALTHIER AND SAFER COMMUNITY			
OBJECTIVE	INITIATIVES	ACTIONS	TIMEFRAME
Resourcing community growth demands <div style="border: 1px solid black; padding: 5px; width: 40px; margin: 0 auto;">11</div>	Identify resource gaps needed to mitigate increased risk to be integrated into the City's operating and capital budget process (11.3)	Create a multi-functional Firefighter Safety/Accountability Officer position, one per platoon, to ensure on-scene safety of Operations staff and provide shift training	2020 – 4 FTE (Career)
		Continue transition of composite delivery model by increasing full time firefighting staff at Station 17 (Upper Stoney Creek) to support EFRF through implementation of 5-person Monday to Friday day crew (8:00 am – 4:00 pm)	2020 – 5 FTE (Career)
		Continue transition of composite delivery model by increasing full time firefighting staff at Station 24 (Waterdown) to support EFRF through implementation of 5-person Monday to Friday day crew (8:00 am – 4:00 pm)	2020 – 5 FTE (Career)
		Construct a new station in Waterdown and relocate fulltime HFD resources from existing Parkside location	2019 – land purchase 2020 – 2022 design/build station 2021 – 2022 purchase & build trucks (2) 2022 – 15 FTE (Career)
		Maintain a viable and sustainable Volunteer Division by increasing the number of volunteer firefighters at the following stations from 25 to 40: <ul style="list-style-type: none"> • Station 18 – Binbrook • Station 19 – Mount Hope • Station 21 – Ancaster • Station 24 – Waterdown • Station 25 – Greensville • Station 26 – Lynden • Station 27 – Rockton • Station 28 – Freulton 	2021-2027

REDUCED RISK FOR A HEALTHIER AND SAFER COMMUNITY			
OBJECTIVE	INITIATIVES	ACTIONS	TIMEFRAME
Resourcing community growth demands <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 5px 0;">11</div>	Identify resource gaps needed to mitigate increased risk to be integrated into the City's operating and capital budget process (11.3)	Begin the transition to a composite delivery model by introducing full time staff at Station 16 (Winona) to support EFRF through implementation of 5-person Monday to Friday day crew (8:00 am – 4:00 pm)	2021 – 5 FTE (Career)
		Begin the transition to a composite delivery model by introducing full time staff at Station 18 (Binbrook) to support EFRF through implementation of 5-person Monday to Friday day crew (8:00 am – 4:00 pm)	2021 – 5 FTE (Career)
		Construct a new composite station in Upper Stoney Creek	2023 – 2025 design/build station 2024 – 2025 purchase and build trucks (2) 2025 – 15 FTE (Career) & 25 Volunteer (paid on-call)
		Renovate Station 16 (Winona) to a composite station to accommodate the addition of a full time 24/7 crew	2023 – 2024 design/renovate station 2024 – 15 FTE (Career)
		Renovate Station 18 (Binbrook) to a composite station to accommodate the addition of a full time 24/7 crew	2025 – 2026 design/renovate station 2026 – 15 FTE (Career)
		Add an additional fulltime multi- purpose firefighting apparatus (Urban Pumper) in west Hamilton/Dundas into an existing station	2026/2027 – purchase and build truck (1) 2027 – 20 FTE (Career)

REDUCED RISK FOR A HEALTHIER AND SAFER COMMUNITY			
OBJECTIVE	INITIATIVES	ACTIONS	TIMEFRAME
Resourcing community growth demands <div style="border: 1px solid white; padding: 2px; width: fit-content; margin: 5px auto;">11</div>	Investigate additional resource gaps in all Divisions including Leadership Team due to the increased workload and growth. To be integrated into the City's operating budget process (11.4)		2020 - ongoing
Code Red Response <div style="border: 1px solid white; padding: 2px; width: fit-content; margin: 5px auto;">12</div>	Explore opportunities for involvement and collaboration with key civic stakeholders to address Code Red to affect positive change in the health and well-being of the citizens of Hamilton through use of Fire Department resources and programs (12.1)		2020 - ongoing



The Hamilton Fire Department is committed to optimizing existing resources and resourcing current gaps in a cost conscious way.



6.0 FINANCIAL FORECAST

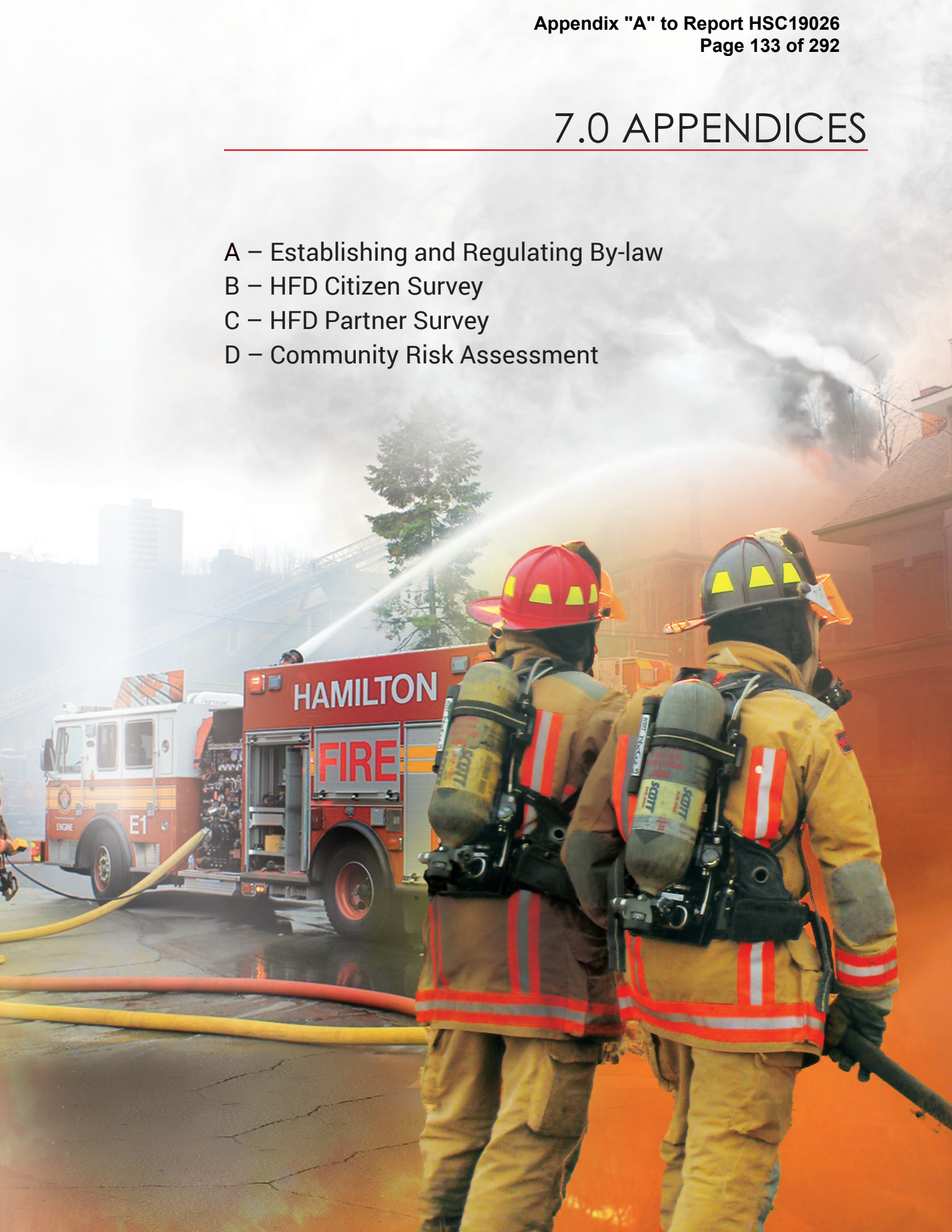
Financial Forecast (\$000's)									
Capital Budget Impacts		2020	2021	2022	2023	2024	2025	2026	2027
New Station Construction / Apparatus	Waterdown	\$4,200	\$3,724						
	Upper Stoney Creek				\$8,432	\$1,944			
Station Renovation/Relocation	Mechanical / Stores		\$1,500	\$4,257	\$4,257	\$2,128			
	Winona				\$1,757	\$1,668			
	Binbrook						\$1,118	\$1,029	
Additional Apparatus	Foam / Nature / West Ham/Dundas	\$700							\$954
Gross Capital Costs		\$4,900	\$5,224	\$4,257	\$14,446	\$5,740	\$1,118	\$1,029	\$954
Less: Development Charges Funding		(\$4,200)	(\$3,724)		(\$1,776)				
Less: Capital Block Funding		(\$700)	TBD	TBD	TBD	TBD	TBD	TBD	TBD
Net Capital Costs/Year		\$0	\$1,500	\$4,257	\$12,670	\$5,740	\$1,118	\$1,029	\$954

Financial Forecast (\$000's)									
Operating Impacts from Capital (OIC)		2020	2021	2022	2023	2024	2025	2026	2027
		FTE		15		15	15	15	20
		Volunteer Headcount						25	
New Station Staffing / Equipment	Waterdown/ Upper SC			\$1,556			\$2,120		
Station Renovation / Staffing	Winona/ Binbrook					\$1,545		\$1,602	
Additional Apparatus Staffing / Equipment	West Hamilton/ Dundas								\$2,182
Gross Operating Impacts from Capital				\$1,556		\$1,545	\$2,120	\$1,602	\$2,182
Less: Equipment Reserve Funding				(\$100)		(\$107)	(\$343)	(\$109)	(\$148)
Net Operating Impacts from Capital /Year				\$1,455		\$1,438	\$1,777	\$1,493	\$2,034

Financial Forecast (\$000's)								
Operating Budget Impacts	2020	2021	2022	2023	2024	2025	2026	2027
<i>FTE</i>	14	10						
<i>Volunteer Headcount</i>		15	15	30	15	15	15	15
Firefighter Safety / Accountability Officer	\$331	\$172						
Day Crews - Staffing & Equipment	\$631	\$976	\$335					
Volunteer - Staffing & Equipment		\$261	\$266	\$543	\$277	\$282	\$288	\$294
Gross Operating Costs	\$962	\$1,409	\$602	\$543	\$277	\$282	\$288	\$294
Less: Equipment Reserve Funding	(\$60)	(\$212)	(\$161)	(\$272)	(\$139)	(\$142)	(\$144)	(\$147)
Net Operating Costs / Year	\$902	\$1,197	\$441	\$271	\$138	\$141	\$144	\$147
Net Operating Costs and OIC / Year	\$902	\$1,197	\$1,896	\$271	\$1,576	\$1,918	\$1,637	\$2,181
% Annual Increase on HFD Budget	0.9%	1.2%	1.9%	0.3%	1.5%	1.8%	1.5%	2.0%
% Annual Increase on COH Budget	0.1%	0.1%	0.2%	0.0%	0.2%	0.2%	0.2%	0.2%

7.0 APPENDICES

- A – Establishing and Regulating By-law
- B – HFD Citizen Survey
- C – HFD Partner Survey
- D – Community Risk Assessment



Appendix A



Authority: Item 1, Emergency & Community
Services Committee
Report 19-001 (HSC19005)
CM: February 27, 2019
Ward: City Wide

Bill No. 034

CITY OF HAMILTON

BY-LAW NO. 19-034

**To Establish, Maintain and Operate Hamilton Fire Department
and to Repeal:**

**By-law No. 68-34, as amended, of The Corporation of the City of Hamilton;
By-law No. 1915-85 of The Corporation of the City of Stoney Creek;
By-law No. 2023, as amended, of The Corporation of the Town of Ancaster;
By-law No. 4341-97 of The Corporation of the Town of Dundas;
By-law No. 77-89-F of The Township of Flamborough; and
By-law No. 341-87, as amended, of The Township of Glanbrook**

WHEREAS pursuant to section 5 of the Fire Protection and Prevention Act, 1997, the City of Hamilton may establish, maintain and operate a fire department.

NOW THEREFORE the Council of the City of Hamilton enacts as follows:

Definitions

1. In this By-law:

“Act” means the Fire Protection and Prevention Act, 1997 as may be amended from time to time, and includes any successor legislation and any regulations made thereunder including the Ontario Fire Code;

“City” means the municipal corporation of the City of Hamilton or the geographic area of the City of Hamilton as the context requires;

“City Manager” means the City Manager of the City of Hamilton;

“Council” means the council of the City of Hamilton;

“Deputy Fire Chief” means the person or persons appointed as a Deputy Fire Chief by Council and who may act on behalf of the Fire Chief in the case of an absence or vacancy in the office of Fire Chief;

“Division” means a division of Hamilton Fire Department as provided for in this By-law;

“Fire Chief” means the person appointed by Council as Fire Chief for the City under the Act;

“Fire Department” means the City of Hamilton Fire Department;

To Establish, Maintain and Operate Hamilton Fire Department and to Repeal:
By-law No. 68-34, as amended, of The Corporation of the City of Hamilton;
By-law No. 1915-85 of The Corporation of the City of Stoney Creek;
By-law No. 2023, as amended, of The Corporation of the Town of Ancaster;
By-law No. 4341-97 of The Corporation of the Town of Dundas;
By-law No. 77-89-F of The Township of Flamborough; and
By-law No. 341-87, as amended, of The Township of Glanbrook

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"fire protection services" includes:

- (a) fire suppression, fire prevention, fire safety education;
- (b) rescue and hazardous materials response;
- (c) emergency first response services in accordance with the tiered-response agreement with Hamilton Paramedic Services.
- (d) mitigation and prevention of the risk created by the presence of unsafe levels of carbon monoxide and safety education related to the presence of those levels;
- (e) communication in respect of any matter described in (a)-(d);
- (f) training of persons involved in the provision of any services described in (a)-(e) in accordance with National Fire Protection Association (NFPA) standards; and
- (g) delivery of all of those services described in (a)-(f) above.

"member" means a person employed in or appointed to the Fire Department and assigned to undertake fire protection services and includes full-time and volunteer firefighters;

"officer" means the Fire Chief, Deputy Fire Chief(s), Assistant Deputy Chief(s), Platoon Chief(s), and Divisional Chief(s);

"volunteer firefighter" means a member who provides fire protection services and who are paid on an on-call basis.

Establishment

2. The Fire Department is established under the direction of the Fire Chief to provide fire protection services.

Composition

3. The Fire Department shall consist of the Fire Chief and such officers, members and administrative support staff as considered necessary by Council to perform fire protection services.

Organization

4. Hamilton Fire Department shall be organized into the following Divisions:
 - (a) Administration;
 - (b) Communications;
 - (c) Fire Operations – Full Time and Volunteer;
 - (d) Fire Prevention;
 - (e) Training;
 - (f) Mechanical; and,

To Establish, Maintain and Operate Hamilton Fire Department and to Repeal:
By-law No. 68-34, as amended, of The Corporation of the City of Hamilton;
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By-law No. 341-87, as amended, of The Township of Glanbrook

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- (g) Emergency Management.
5. The Fire Chief, with the prior written approval of the City Manager, may reorganize or eliminate Divisions or establish other Divisions or may do any or all of these matters or any combination thereof as may be required to ensure the proper administration and operation of Hamilton Fire Department.
 6.
 - (a) Each Division of the Fire Department is the responsibility of the Fire Chief and is under the direction of the Fire Chief or an officer designated by the Fire Chief.
 - (b) Officers shall report to the Fire Chief on activities within the Division under their supervision and shall carry out all orders of the Fire Chief.
 7. Where the Fire Chief designates a member to act in place of an officer in the Fire Department, such member, when so acting, shall have all of the powers and shall perform all duties of the officer replaced.

Responsibilities of the Fire Chief

8. The Fire Chief shall have all the rights, powers and duties assigned to a Fire Chief under the Act and shall ensure compliance with the Act.
9. The Fire Chief is responsible for the proper administration and operation of the Fire Department.
10. The Fire Chief shall be authorized to make such general orders, policies, procedures, rules and regulations and to take such other measures as the Fire Chief may consider necessary for the proper administration and efficient operation of the Fire Department and the effective management of fire protection services for the City and for the prevention, control and extinguishment of fires, the protection of life and property and the management of emergencies and without restricting the generality of the foregoing;
 - (a) For the care and protection of all property belonging to the City that are utilized by the Fire Department;
 - (b) For arranging for the provision and allotment of strategic staffing and facilities, apparatus, equipment, materials, services and supplies for the Fire Department;
 - (c) For the development and implementation of automatic aid, mutual aid and other fire protection and emergency service agreements within the City's borders and/or within the municipal borders of adjoining municipalities upon the approval of Council;

To Establish, Maintain and Operate Hamilton Fire Department and to Repeal:
By-law No. 68-34, as amended, of The Corporation of the City of Hamilton;
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By-law No. 4341-97 of The Corporation of the Town of Dundas;
By-law No. 77-89-F of The Township of Flamborough; and
By-law No. 341-87, as amended, of The Township of Glanbrook

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- (d) For determining and establishing the qualifications and criteria for employment or appointment, and the duties of, all members of the Fire Department;
 - (e) For the conduct and the discipline of members of the Fire Department;
 - (f) For preparing, and upon approval by Council, implementing and maintaining a departmental fire service plan and program for the Corporation;
 - (g) For keeping an accurate record of all fires, rescues and emergencies responded to by the Fire Department and reporting of same to the Office of the Fire Marshal and the public as required by the Act;
 - (h) For keeping such other records as may be required by Council, the City, and the Act;
 - (i) For preparing and presenting an annual report of the Fire Department to Council;
 - (j) For preparing and submitting to Council the annual budget estimates for the Fire Department for its approval; and
 - (k) For exercising control over the budget approved by Council for the Fire Department.
11. The Fire Chief shall regularly review and update the standard operating procedures and guidelines, general orders and rules referred to in section 10 as required.

Authority to Leave City Limits

12. The Fire Department shall not respond to calls with respect to a fire or emergency outside of the limits of the City except with respect to a fire or emergency:
- (a) that in the opinion of the Fire Chief or designate threatens property situated outside the City that is owned or occupied by the City;
 - (b) in a municipality with which an approval agreement has been entered into to provide fire protection services which include automatic aid;
 - (c) on property where an approved agreement has been entered into with any person or corporation to provide fire protection services;
 - (d) in a municipality authorized to participate in the Province of Ontario Mutual Aid Plan and mutual aid program or any other similar reciprocal plan or program; or
 - (e) in the opinion of the Fire Chief or designate requires immediate action to preserve and protect life or property and the appropriate fire department is notified to respond and assume command or to establish alternative measures acceptable to the Fire Chief or designate.

Short Title

To Establish, Maintain and Operate Hamilton Fire Department and to Repeal:
By-law No. 68-34, as amended, of The Corporation of the City of Hamilton;
By-law No. 1915-85 of The Corporation of the City of Stoney Creek;
By-law No. 2023, as amended, of The Corporation of the Town of Ancaster;
By-law No. 4341-97 of The Corporation of the Town of Dundas;
By-law No. 77-89-F of The Township of Flamborough; and
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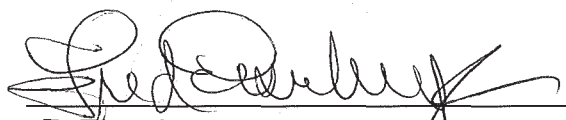
Page 5 of 5

13. This By-law may be referred to as the "Hamilton Fire Department Establishing and Regulating By-law".


Repeal and Enactment

14. By-law No. 68-34, as amended, of The Corporation of the City of Hamilton, By-law No. 1915-85 of The Corporation of the City of Stoney Creek, By-law No. 2023, as amended, of The Corporation of the Town of Ancaster, By-law No. 4341-97 of The Corporation of the Town of Dundas, By-law No. 77-89-F of The Township of Flamborough and By-law No. 341-87, as amended, of The Township of Glanbrook are repealed.
15. This By-law comes into force on the date of its passing.

PASSED this 27th day of February, 2019.



F. Eisenberger
Mayor



J. Pilon
Acting City Clerk



Appendix B

City of Hamilton

The Hamilton Fire Department

Citizen Survey 2018

Results Summary



Hamilton Fire Department Citizen Survey 2018

- Results Summary

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Hamilton Fire Department Citizen Survey 2018

- Results Summary

Background

The Hamilton Fire Department Citizen Survey 2018 is the Hamilton Fire Department's first citizen survey.

The main objective of the survey is to gain a better understanding of residents' needs, expectations and satisfaction levels regarding the services provided by the Hamilton Fire Department.

In addition, the survey gives residents an opportunity to provide feedback about:

- the importance of services provided by the Hamilton Fire Department
- value for tax dollar
- communicating and interacting with the Hamilton Fire Department

The collected information will help identify areas in which the Hamilton Fire Department is doing well and areas for improvement.

The findings from the Hamilton Fire Department Survey 2018 will help to inform the Hamilton Fire Department's 10 Year Service Delivery Plan.



Hamilton Fire Department Citizen Survey 2018

- Results Summary

Survey Methods and Administration

The survey tool and questions were developed by a project team comprised of members of the Hamilton Fire Department leadership team and City staff based on the identified objectives of the survey. The survey tool can be found in Appendix A.

A third party vendor, Metroline Research Group Inc. was contracted to conduct the survey through Computer Assisted Telephone Interviews (CATI). Hamilton based residential and cellular phone lines were randomly called and residents were invited to participate in the survey. To qualify for participation in the survey, the respondent had to be an adult age 18 years or over residing in Hamilton. For residential lines, the adult in the household with the most recent birthday was interviewed. For cellular lines, the person answering the call would be interviewed provided they met the age and residency requirements. The telephone surveys were conducted between February 6th, 2018 and February 27th, 2018.

To supplement the telephone interviews and allow more residents to participate in the survey, an online version of the survey tool was made available on the City of Hamilton website. A banner advertising the survey with the survey link was placed on the most frequently visited pages on www.hamilton.ca. A list of the web pages where the banner was placed can be found in Appendix B. The online survey was active between February 5th and February 25th, 2018.

Both the telephone and online version of the survey was available in English and French.



Hamilton Fire Department Citizen Survey 2018

- Results Summary

Survey Response and Report Notes

Metroline who conducted the telephone survey called approximately 21,961 randomly selected Hamilton based phone numbers and collected 550 completed responses.

The results of the telephone survey are accurate to +/-4.2%, 19 out of 20 times (95% confidence interval) for the City of Hamilton residents. Data for subgroups of the total respondent universe would have a larger margin of error.

The online survey collected 293 surveys where a response was provided for at least one (1) survey question.

The findings presented in this report will primarily focus on the data collected through the phone survey which is a statistically representative sample of the City of Hamilton population. The results of the online survey are also provided as a supplementary source of information. It should be noted that the results from the two data sources should not be compared due to differences in survey methodologies. While the online survey greatly expanded the opportunity for residents to participate in the survey, this survey methodology may be subject to self-selection bias and the collected surveys cannot be determined to be a statistically representative sample of the population.

For both the phone and online survey, respondents did not always provide a response to every question or may have responded "don't know". For some analyses these missing or "don't know" records have been removed. Hence, the universe of respondents (n) will vary for each question. The universe of respondents (n) is provided for all reported data and a full breakdown of responses including the missing and "don't know" response counts is provided in Appendix C.



Hamilton Fire Department Citizen Survey 2018

- Results Summary

Data shown may not add up to 100% due to rounding. For some questions, respondents were allowed to select multiple responses in which case the totals would exceed 100%.

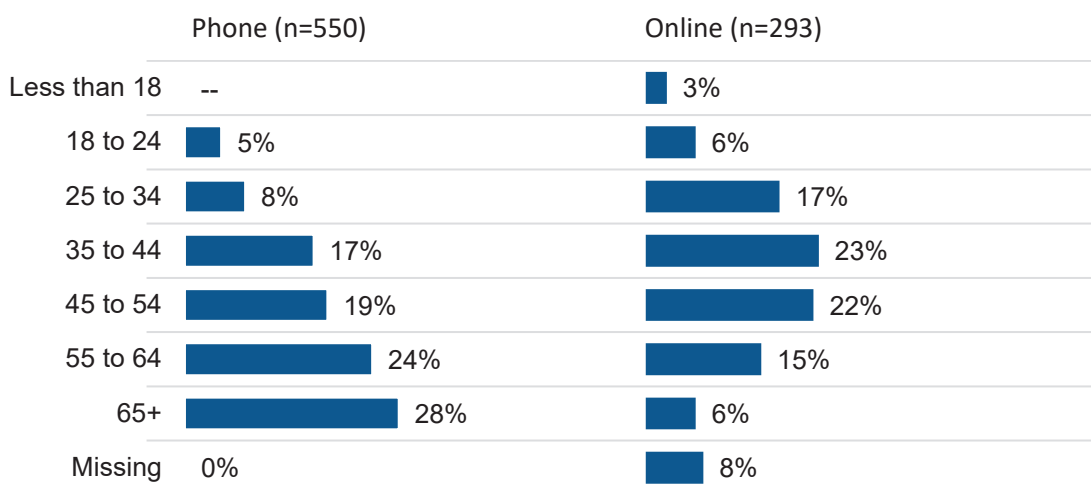
Key Findings

The Respondents

The following section provides some descriptors of the survey sample population such as age, gender and household income. These respondent characteristics provide some context of collected responses and may be helpful to keep in mind when reviewing survey results.

The following is the age, gender composition and household income for respondents from both the phone and online survey.

Age

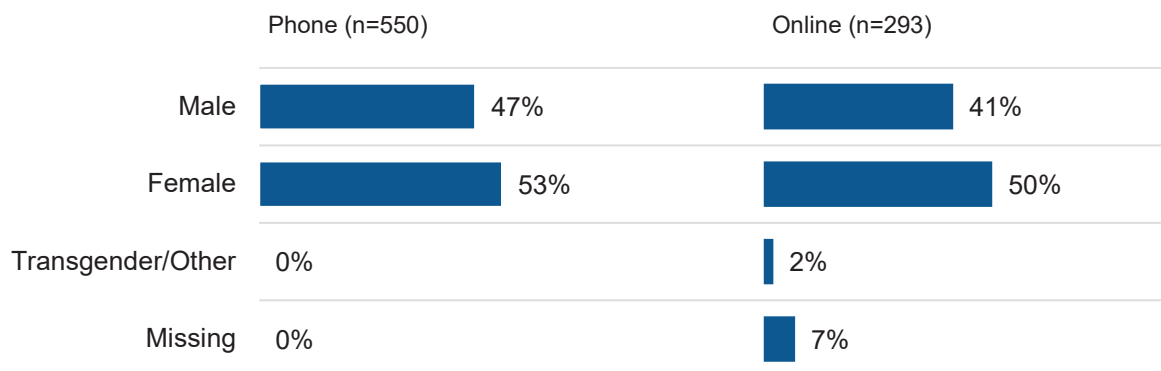




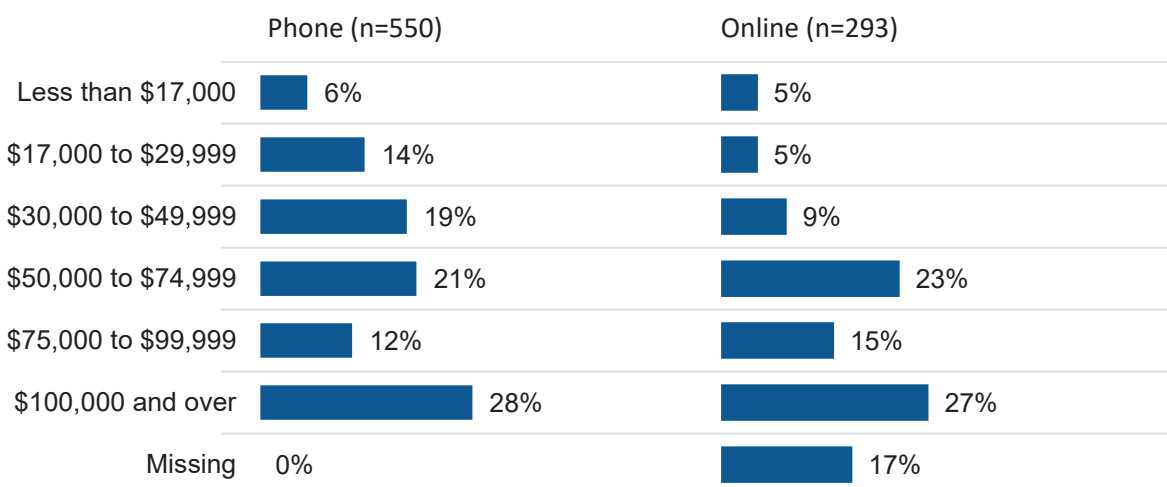
Hamilton Fire Department Citizen Survey 2018

- Results Summary

Gender



Household Income





Hamilton Fire Department Citizen Survey 2018

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What “Hamilton Fire Department” means to residents

As a lead in to the survey and to gain an understanding of respondents’ impressions about the Hamilton Fire Department, the survey began with asking respondents what they thought about when they hear “Hamilton Fire Department”.

The following are the most common words or ideas respondents from both the phone and online survey associate with “Hamilton Fire Department” listed in order by precedence.

1. Fire
2. Safety
3. Fire truck
4. Emergency or an emergency situation
5. Firefighters
6. Rescue or saving
7. Assistance or help
8. Fire Suppression
9. Excellent/Great Service
10. First Responders



Hamilton Fire Department Citizen Survey 2018

- Results Summary

Satisfaction with Services

Overall, residents were highly satisfied with services provided by the Hamilton Fire Department. Survey respondents from both the phone and the online most often indicated being satisfied or very satisfied with each of the 10 services provided by the Hamilton Fire Department. Respondents very rarely indicated being dissatisfied or very dissatisfied with services.

The Hamilton Fire Department services that respondents of the phone survey were most often satisfied or very satisfied with include:

1. Response to life threatening medical calls (91%)
2. Fighting fires (89%)
3. Rescue operations (89%)

The Hamilton Fire Department services that phone survey respondents were most dissatisfied or very dissatisfied with include:

1. Code enforcement (2.7%)
2. Fire permits (1.9%)
3. Fee based services (1.8%)

It should be noted that while these were the services with the highest level of dissatisfaction, the proportion of residents dissatisfied with these services was less than 3%.

The Hamilton Fire Department services that phone survey respondents more commonly were unaware of include:

1. Fee based services (19%)
2. Fire permits (15%)
3. Code enforcement (11%)

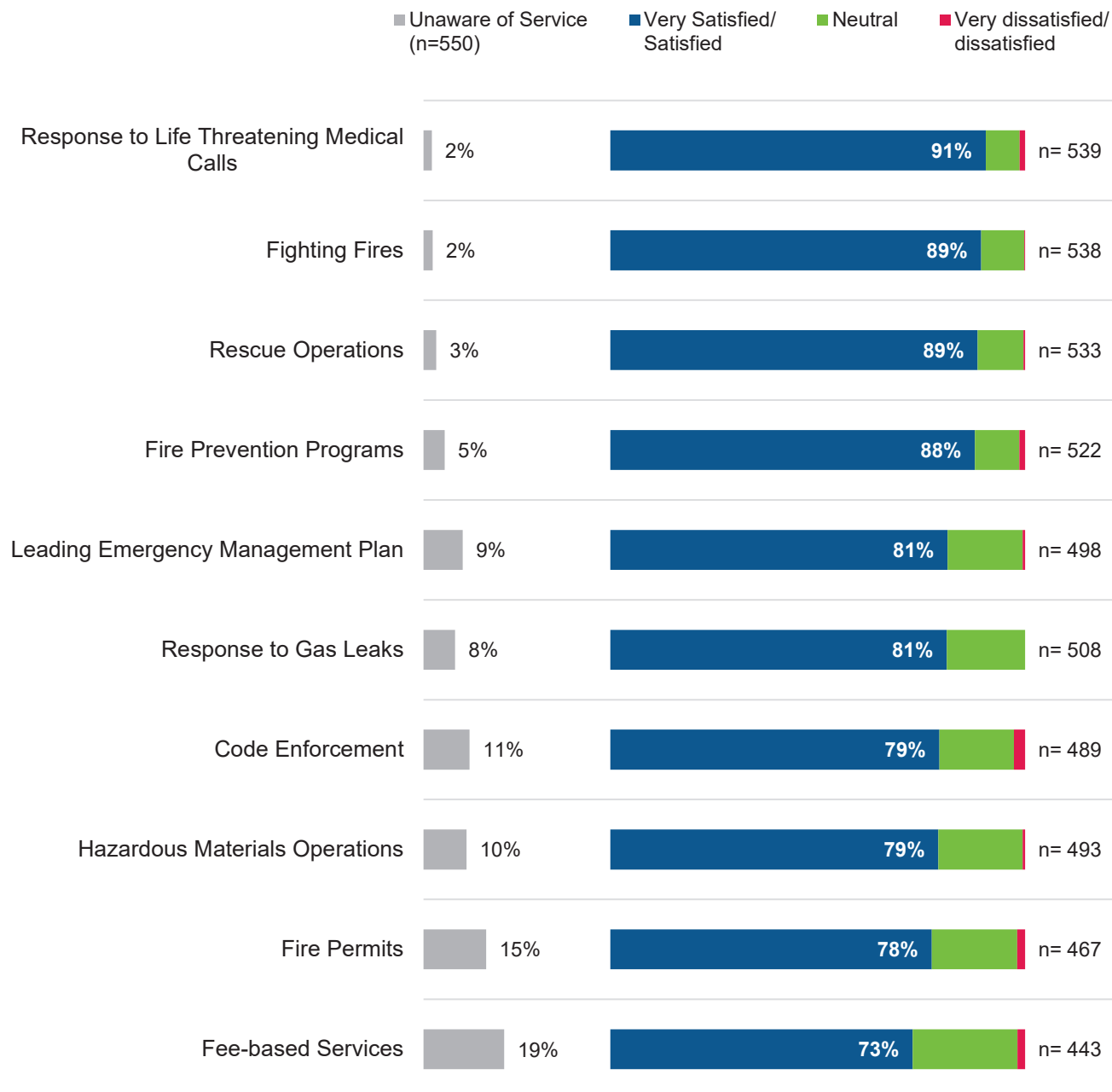


Hamilton Fire Department Citizen Survey 2018

- Results Summary

Based on your experience or knowledge of services provided by the Hamilton Fire Department, how satisfied are you with the following fire protection services provided by the Hamilton Fire Department?

Phone





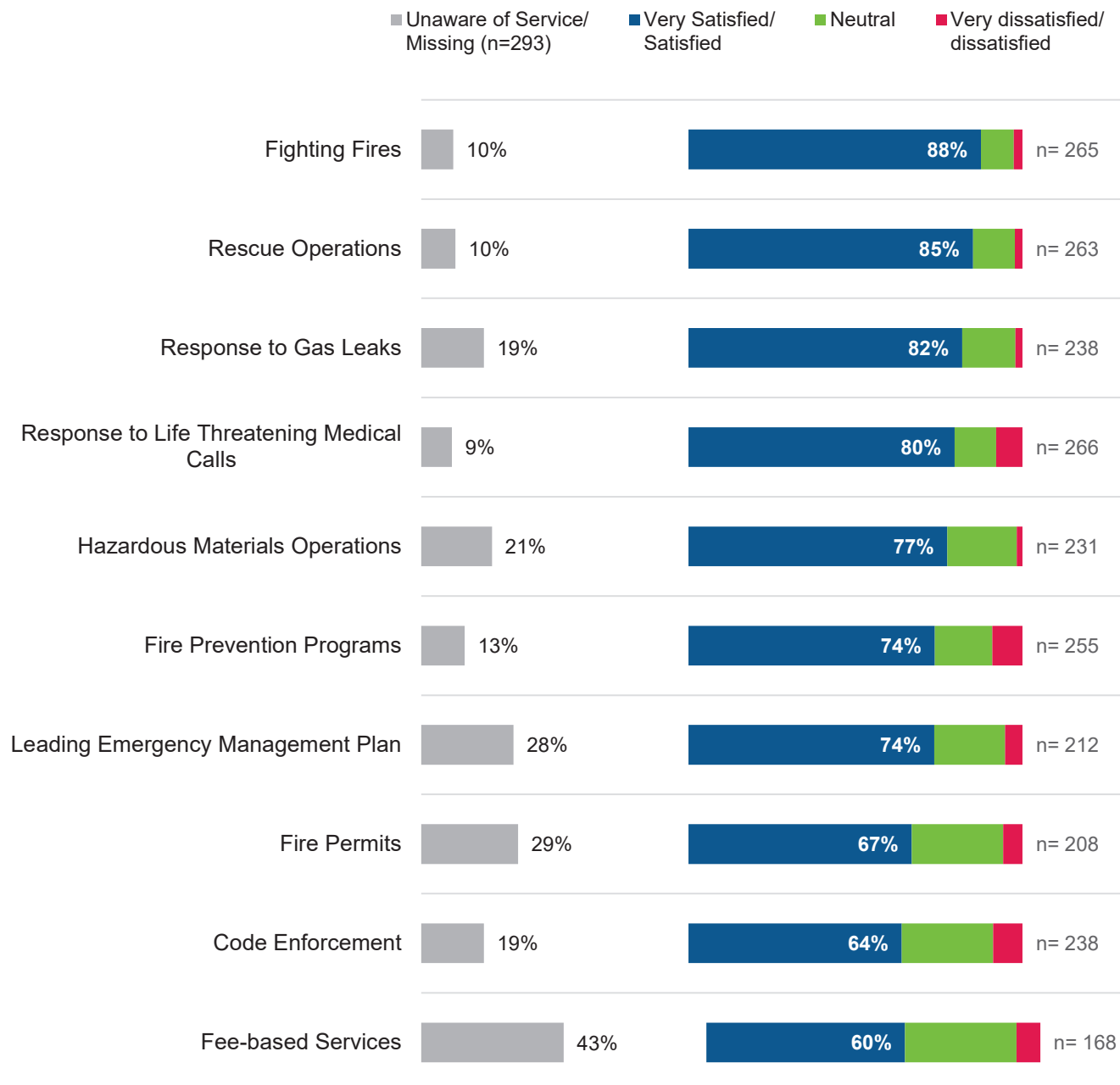
Hamilton

Hamilton Fire Department Citizen Survey 2018

- Results Summary

Based on your experience or knowledge of services provided by the Hamilton Fire Department, how satisfied are you with the following fire protection services provided by the Hamilton Fire Department?

Online





Hamilton Fire Department Citizen Survey 2018

- Results Summary

Importance of Services

Respondents were asked about the importance of the various services provided by the Hamilton Fire Department.

The services most often indicated by phone survey respondents to be “very important” include:

1. Perform rescue operations (91%)
2. Respond to gas leaks (89%)
3. Hazardous materials operations (85%)

The services that phone survey respondents most often indicated as being “not at all important” include:

1. Provide smoke alarm installation (8%)
2. Provide door to door fire safety education (5%)
3. Provide fire permits (5%)

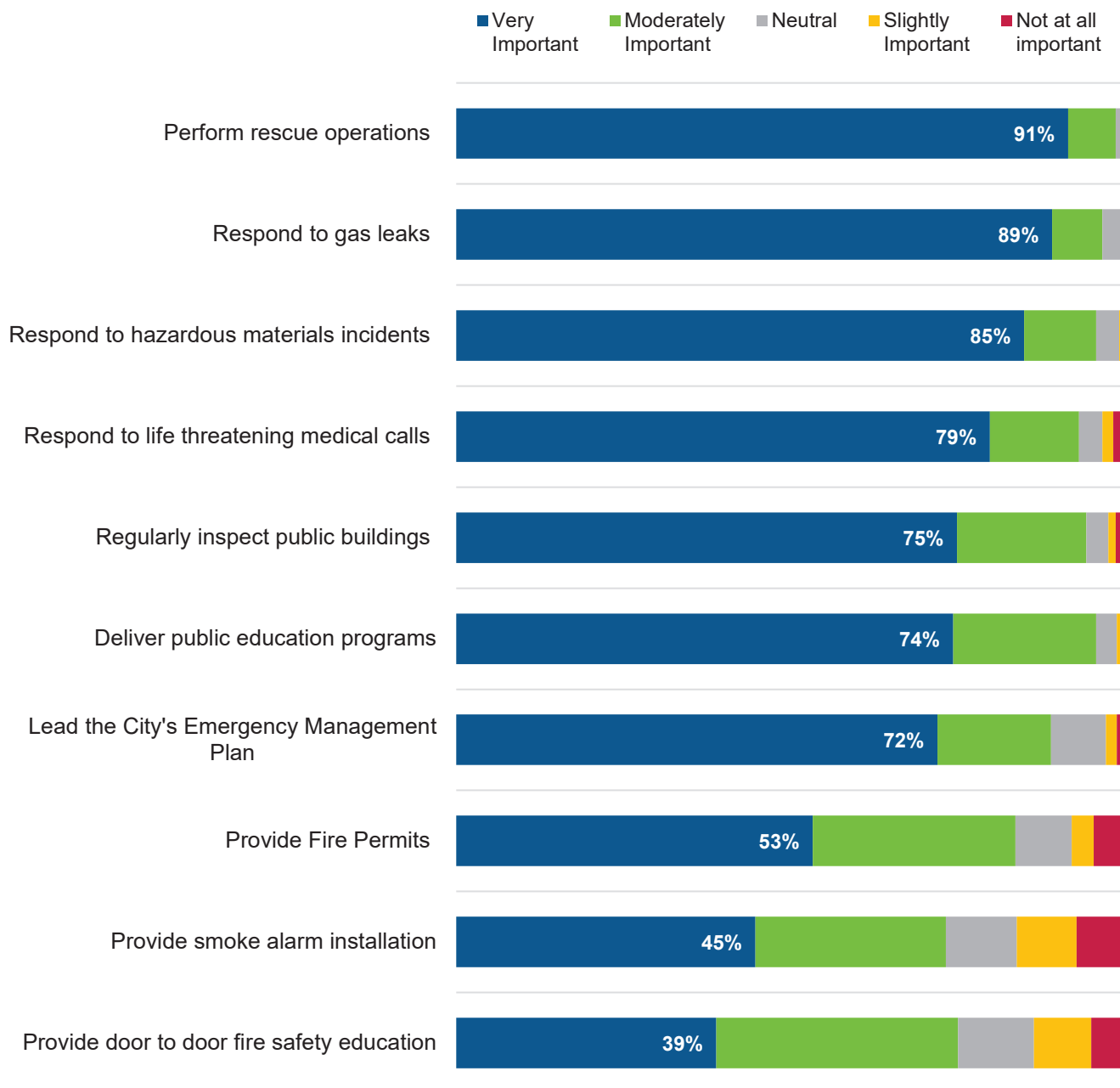


Hamilton Fire Department Citizen Survey 2018

- Results Summary

How important is it for the Hamilton Fire Department and firefighters to

Phone (n=550)



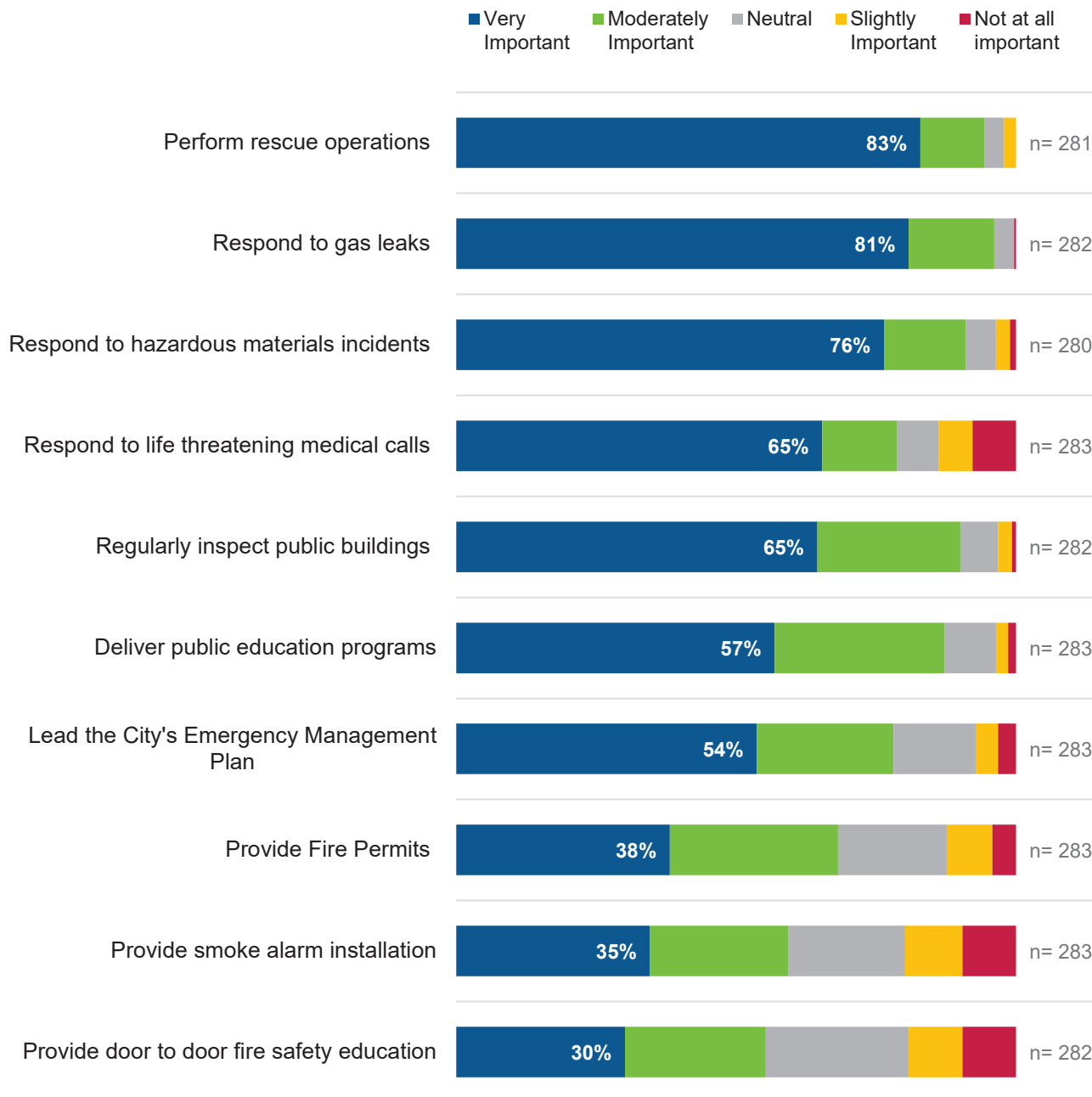


Hamilton Fire Department Citizen Survey 2018

- Results Summary

How important is it for the Hamilton Fire Department and firefighters to

Online





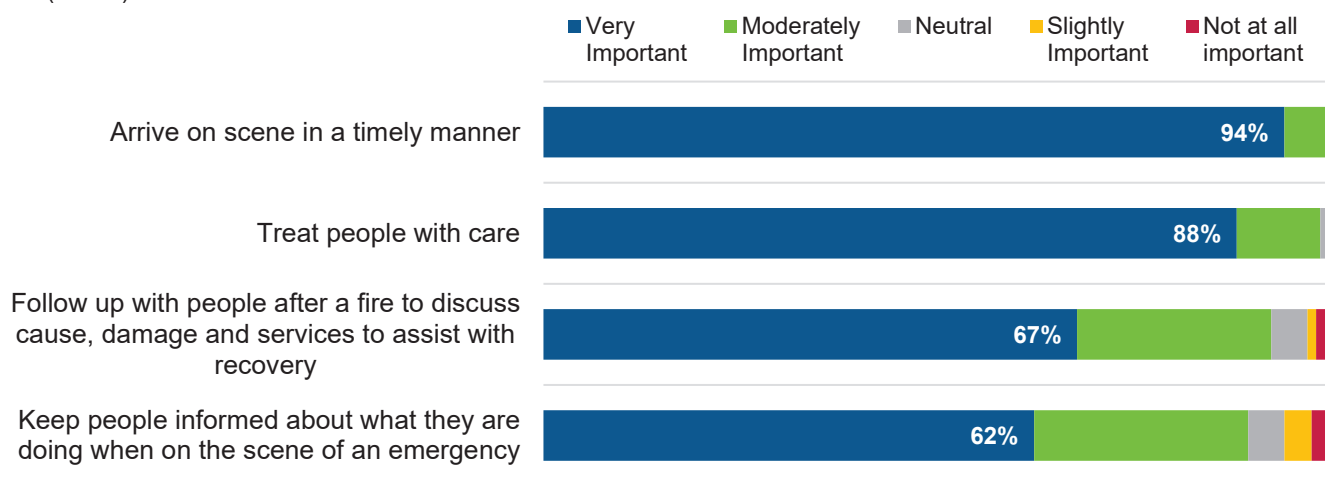
Hamilton Fire Department Citizen Survey 2018

- Results Summary

When asked about the importance of various aspects of service delivery, the proportion of phone survey respondents indicating that arriving on scene in a timely manner and treating people with care as being very important was significantly higher than the proportion indicating that it is very important to follow up with people after a fire or to keep people informed of what they are doing while on the scene of an emergency.

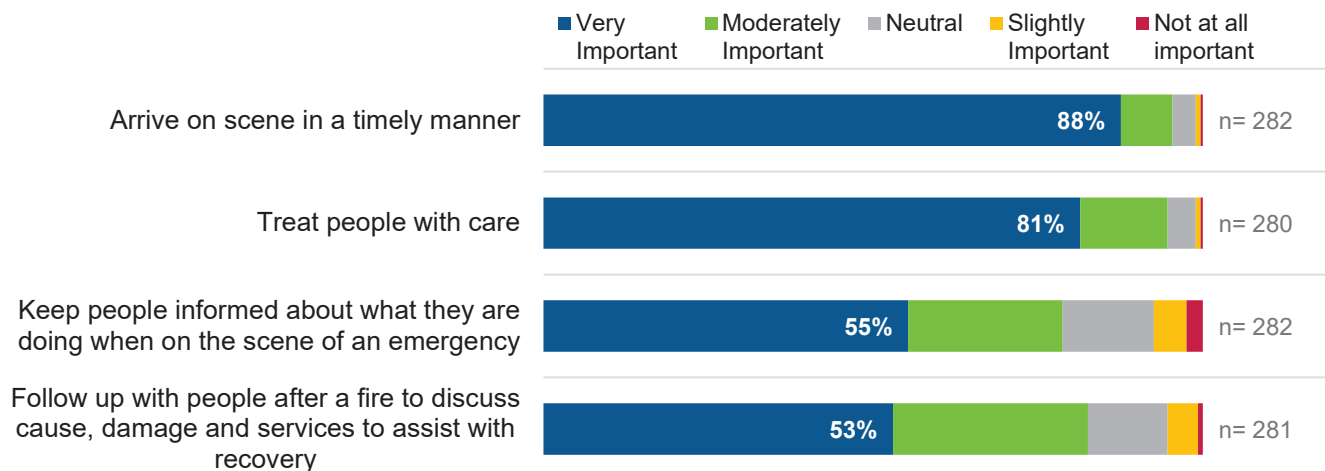
How important is it for the Hamilton Fire Department and firefighters to

Phone (n=550)



How important is it for the Hamilton Fire Department and firefighters to

Online



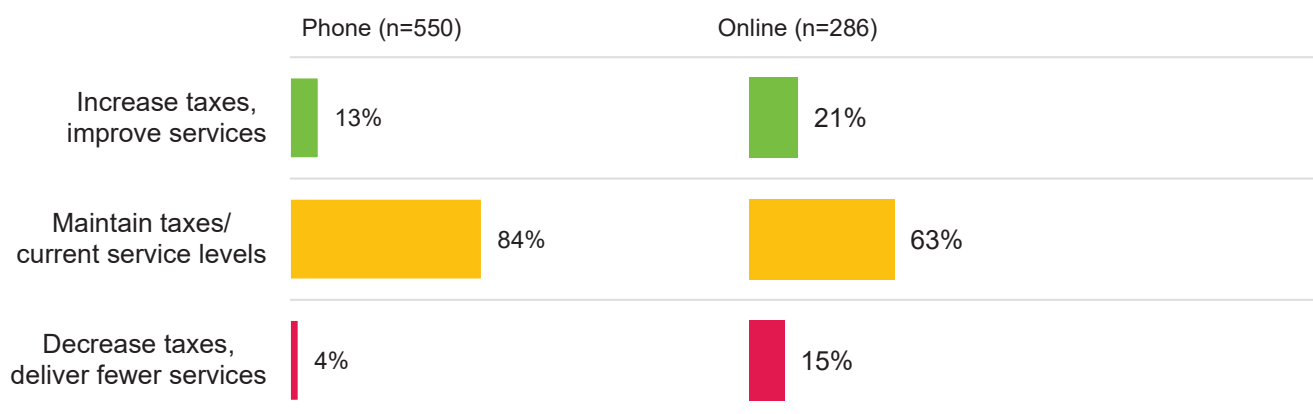


Hamilton Fire Department Citizen Survey 2018

- Results Summary

The majority (84%) of respondents from the phone survey indicated they would prefer to maintain current taxes and current service levels for fire protection services.

In delivering fire protection services to you and the community, the City typically pays for them through taxes or user fees. Based on this, do you think the City should:



Respondents who thought the City should increase taxes and improve fire protection services were asked what services need to be added or improved. Fire protection services phone survey respondents most commonly identified as needing to be improved or added include: fire safety education and awareness, inspections and home visits, firefighters, equipment and general improvements to services etc.

Respondents that indicated they feel that taxes should be decreased and fire protection services should be reduced were asked what services they feel should be eliminated. Response to medical calls was the service respondents most commonly thought should be eliminated.



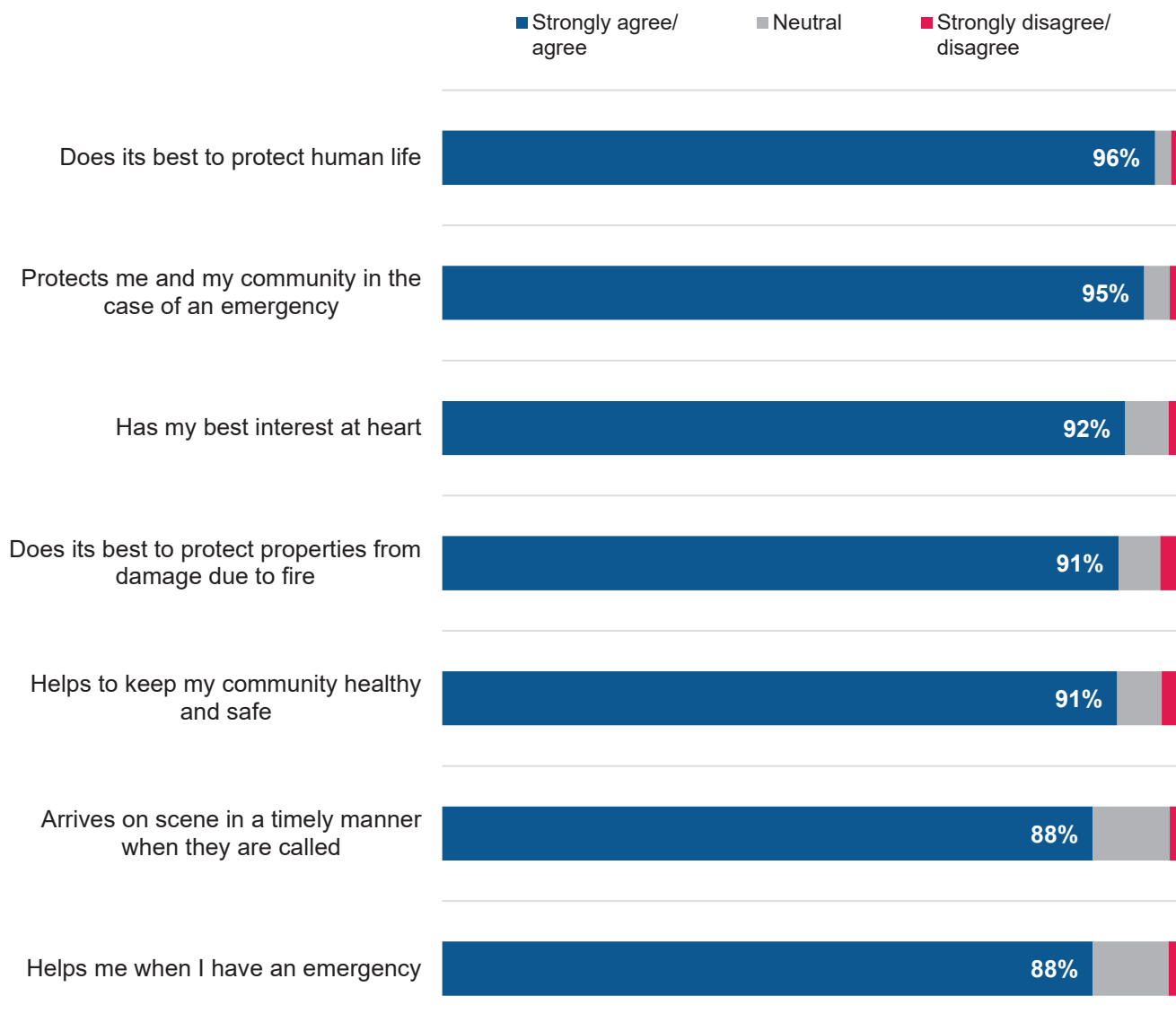
Hamilton Fire Department Citizen Survey 2018

- Results Summary

The vast majority of respondents from the phone survey strongly agree or agree with statements that describe the Hamilton Fire Department as doing its best to protect humans, properties and the community as well as other qualities listed in the charts to follow.

The Hamilton Fire Department ...

Phone (n=550)



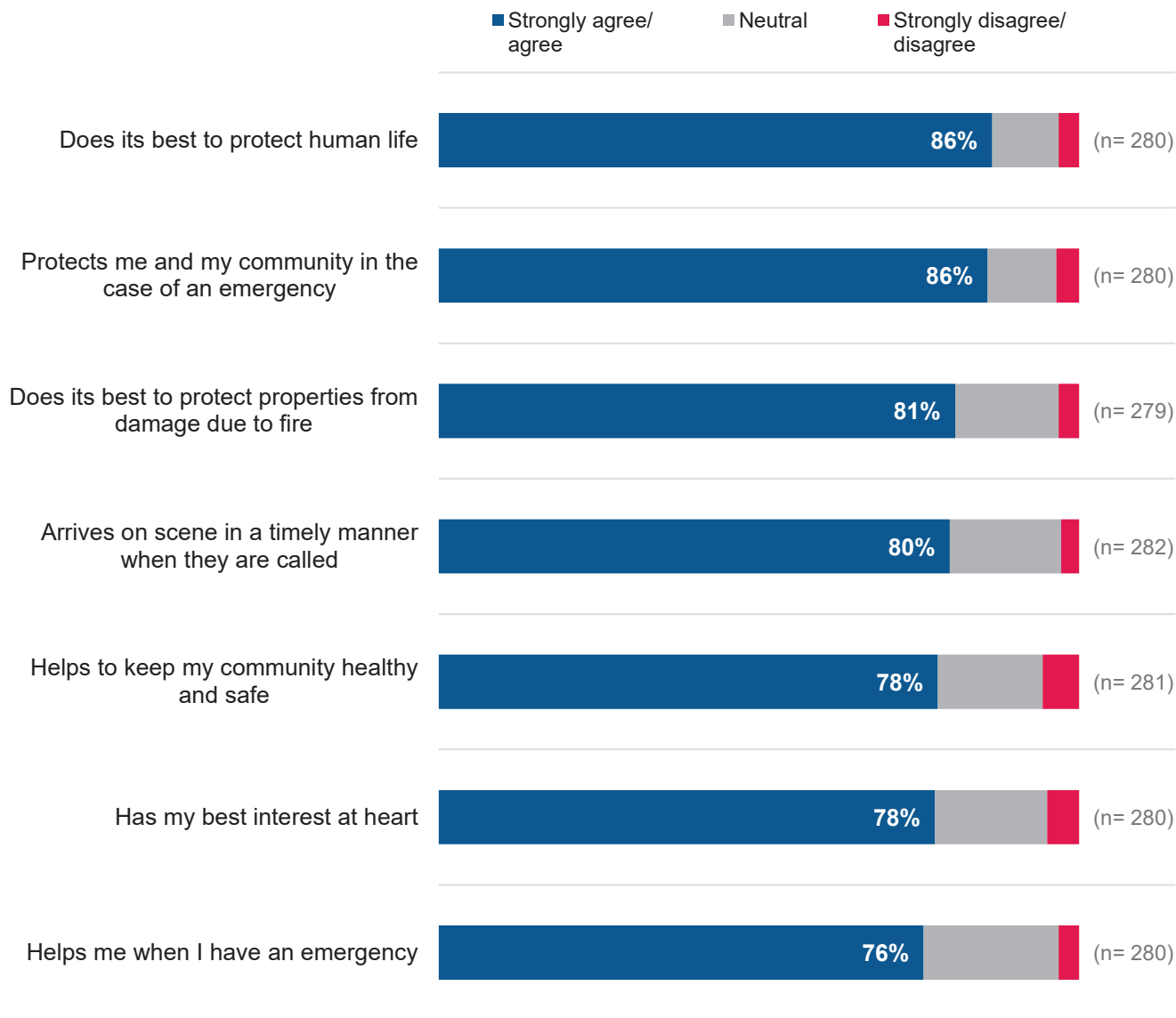


Hamilton Fire Department Citizen Survey 2018

- Results Summary

The Hamilton Fire Department ...

Online





Hamilton Fire Department Citizen Survey 2018

- Results Summary

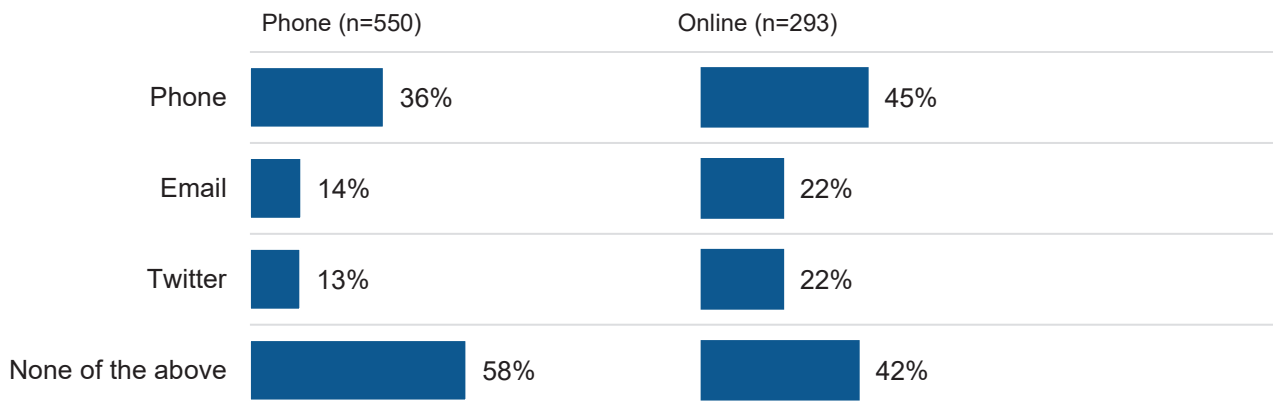
Contacting the Hamilton Fire Department

When applying for permits or requesting reports from the Hamilton Fire Department, phone survey respondents indicate preferring to conduct these transactions online. Phone survey respondents indicate preferring to use the phone for interactions with the Hamilton Fire Department such as:

- requesting fire safety inspections for properties
- requesting the establishment of fire routes
- requesting the installation of a smoke alarm
- booking a fire station tour
- booking a fire truck for an event

Approximately 12% of phone survey respondents indicated having used 911 to contact the Hamilton Fire Department in the past two (2) years. The majority (58%) of phone survey respondents did not know any of the methods of contacting the Hamilton Fire Department for non-emergency issues which include a dedicated phone number, an email address and a twitter account.

Which of the following methods of contacting the Hamilton Fire Department for non-emergency issues (such as inquiries about permits, public education programs, home inspections, replacing smoke alarms) have you heard about?





Hamilton Fire Department Citizen Survey 2018

- Results Summary

Only about 7% of the phone survey respondents indicated having used the dedicated phone number and less than 3% have used either email or twitter in the last two years to contact the Hamilton Fire Department for a non-emergency issue. The majority (over 91%) of the phone survey respondents who have contacted the Hamilton Fire Department for an non-emergency issue using the phone line, the email address or the twitter account were very satisfied or satisfied with their experience

Preferred Ways for Communication

The phone survey found that residents mostly prefer to get information about fire safety and fire related information from:

1. local television stations (69%)
2. local newspapers (63%)
3. local radio stations (60%)
4. social media (Twitter, Facebook) (56%)
5. mail (55%)



Hamilton Fire Department Citizen Survey 2018

- Results Summary

Summary of Comments

The survey had an open ended question asking “What is one thing you think the Hamilton Fire Department can do to contribute to a healthy and safe community?” for which there were over 490 responses collected from the phone survey and over 190 from the online survey

Phone survey and online respondents most commonly commented that to contribute to a healthy and safe community, the Hamilton Fire Department should:

1. increase fire safety awareness and provide more education in schools, in homes and to the community
2. continue with the good work which respondents are already satisfied with
3. increase visibility, presence and involvement in the community by attending local events or hosting open houses, workshops, etc.
4. conduct inspections in homes, schools, rental units, public facilities, etc. to ensure fire safety codes are being adhered to and smoke/carbon monoxide detectors are installed and functioning
5. communicate more with the community and keep the public informed and updated

Other comments from respondents about how the Hamilton Fire Department can contribute to a healthy and safe community include:

- being responsive and available for emergencies/fires etc.
- promoting the services offered by the Hamilton Fire Department so more people know what the department does
- increasing firefighters, training, fire stations, equipment
- reducing the use of the siren
- fining people for rescue operations that result from disregard of “rules”, false alarms etc.
- collaborating and working more closely with other City departments, police, paramedics etc.



Hamilton Fire Department Citizen Survey 2018

- Results Summary

Appendix A: Survey Tool



Hamilton Fire Department Citizen Survey 2018

- Results Summary



Hamilton

Hamilton Fire Department Survey

English ▼

You have been invited to take part in the Hamilton Fire Department's survey.

The Hamilton Fire Department is developing a 10 Year Service Delivery Plan and would like to know how residents feel about the services we are providing.

Your responses will help identify what is important to you, where we are performing well and areas where we can improve.

The survey is entirely voluntary and will take approximately 10 minutes to complete. Your responses will be kept strictly confidential and results will only be reported in aggregate form that does not identify individuals.

The City of Hamilton collects information under authority of section 227 of the Municipal Act, 2001. Any personal information collected for the Hamilton Fire Department Survey will be used for improvement of municipal service delivery.

Questions about the collection of this personal information can be directed to:


John Verbeek
Acting Deputy Chief
john.verbeek@hamilton.ca
905-546-2424 ext. 7120

[Start Survey / Commencer](#)



Hamilton Fire Department Citizen Survey 2018

- Results Summary



Hamilton Fire Department Survey

English ▾

When you hear the words "Hamilton Fire Department", what is the first thing that comes to mind?

Have you used 911 to contact the Hamilton Fire Department in the **past two (2) years**?

Yes

No

<< >>



Hamilton Fire Department Citizen Survey 2018

- Results Summary

Hamilton Fire Department Survey

English ▾

Based on your experience or knowledge of services provided by the Hamilton Fire Department, how satisfied are you with the following fire protection services provided by the Hamilton Fire Department?

	Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied	Unaware of service
Fighting Fires	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Rescue Operations (rope rescue, car accidents, confined space rescue)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Hazardous materials operations (investigate, contain, neutralize hazardous materials)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Response to gas leaks (carbon monoxide, natural gas)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Leading the City's emergency management plan during city-wide emergencies (flooding, power outages, ice storms etc.)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied	Unaware of service
Response to life threatening medical calls (vital signs absent, cardiac arrest, chest pains, burns, shortness of breath, uncontrolled bleeding)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fire Permits (Open Air Burning Permit, Family Fireworks Sales Permit)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Code Enforcement (residential and commercial inspections, enforcement of Ontario Fire Code and city by-laws)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fire Prevention Programs (Home Fire Safety Education Program, Volunteer Inspection Program for Homeowners, Alarmed and Ready Smoke Alarm Program, Hamilton Arson Prevention Program for Children)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Fee-based Services (Fire response report, file search for outstanding work orders, private home daycare inspection, establishment of a fire route)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Hamilton Fire Department Citizen Survey 2018

- Results Summary

Hamilton Fire Department Survey

English ▼

How important is it for the Hamilton Fire Department and firefighters to


	Not at all important	Slightly important	Neutral	Moderately Important	Very important
Respond to life threatening medical calls <small>(vital signs absent, cardiac arrest, chest pains, burns, shortness of breath, uncontrolled bleeding)</small>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Respond to gas leaks <small>(carbon monoxide, natural gas)</small>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Perform rescue operations <small>(rope rescue, car accidents, confined space rescue)</small>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Respond to hazardous materials incidents <small>(investigate, contain, neutralize hazardous materials)</small>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Deliver public education programs about fire safety and preventing fires	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not at all important	Slightly important	Neutral	Moderately Important	Very important
Regularly inspect public buildings such as long term care facilities, schools, churches, malls, concert halls etc.	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide door to door fire safety education	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide smoke alarm installation	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Provide Fire Permits <small>(Open Air Burning Permit, Family Fireworks Sales Permit)</small>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Lead the City's emergency management plan during city-wide emergencies <small>(flooding, power outages, ice storms etc.)</small>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
	Not at all important	Slightly important	Neutral	Moderately Important	Very important
Arrive on scene in a timely manner	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Keep people informed about what they are doing when on the scene of an emergency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Treat people with care	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Follow up with people after a fire to discuss cause, damage and services to assist with recovery	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Hamilton Fire Department Citizen Survey 2018

- Results Summary



Hamilton Fire Department Survey

English ▾

In delivering fire protection services to you and the community, the City typically pays for them through taxes or user fees. Based on this, do you think the City should:


- decrease taxes and deliver fewer fire protection services
- maintain taxes and current fire protection service levels
- increase taxes to improve or deliver more fire protection services

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Hamilton Fire Department Citizen Survey 2018

- Results Summary



Hamilton Fire Department Survey

English ▾

Please indicate your level of agreement with the following statements.

The Hamilton Fire Department ...


	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Arrives on scene in a timely manner when they are called	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Helps me when I have an emergency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Has my best interest at heart	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does its best to protect human life	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Does its best to protect properties from damage due to fire	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Protects me and my community in the case of an emergency	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Helps to keep my community healthy and safe	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Hamilton Fire Department Citizen Survey 2018

- Results Summary



Hamilton Fire Department Survey

English ▾

What is best way to communicate with you about fire safety and other fire-related information?

Select all that apply.

- City of Hamilton website (www.hamilton.ca)
- Local Television Station
(e.g. CHCH, Cable 14)
- Local Radio Station
(e.g. FM 102.9 KLite, FM CHML 900, 95.3 Fresh Radio)
- Social Media (Twitter, Facebook)
- Local Newspaper
(e.g. The Hamilton Spectator, Dundas Star News, Flamborough Review, Hamilton Mountain News, Stoney Creek News, The Sachem & Glanbrook Gazette, Bay Observer)
- Magazine
(e.g. Hamilton Magazine, View, Snapd Hamilton, Best Start, Hamilton Recreation Guide)
- Mail
- E-mail
- Internet search engine
- In person
- Other - please specify

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Hamilton Fire Department Citizen Survey 2018

- Results Summary



Hamilton Fire Department Survey

English ▾

Which of the following methods of contacting the Hamilton Fire Department for non-emergency issues (such as inquiries about permits, public education programs, home inspections, replacing smoke alarms) have you heard about?

- Phone: 905-546-3333
- Email: fire_department@hamilton.ca
- Twitter: @HamiltonFireDep
- None of the above

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Hamilton Fire Department Citizen Survey 2018

- Results Summary



Hamilton Fire Department Survey

English ▾

Which of the following methods of contacting the Hamilton Fire Department for non-emergency issues (such as inquiries about permits, public education programs, home inspections, replacing smoke alarms) have you used in **the past two (2) years?**

- Phone: 905-546-3333
- Email: fire_department@hamilton.ca
- Twitter: @HamiltonFireDep

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Hamilton Fire Department Citizen Survey 2018

- Results Summary



Hamilton Fire Department Survey

English ▾

Overall, how satisfied were you with your experience contacting the Hamilton Fire Department by ...

	Very dissatisfied	Dissatisfied	Neutral	Satisfied	Very satisfied
Phone: 905-546-3333	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Email: fire_department@hamilton.ca	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Twitter: @HamiltonFireDep	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Hamilton Fire Department Citizen Survey 2018

- Results Summary

Hamilton Fire Department Survey

English ▾

What is your preferred way of conducting each of the following types of interactions with the Hamilton Fire Department?


	Online	In person	Phone	Email
Apply for Fire Permits (Open Air Burning Permit, Family Fireworks Sales Permit)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Request reports (fire response reports, file search for outstanding work orders, inspection reports)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Request fire safety inspections for properties	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Request the establishment of a fire route	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Request installation of a smoke alarm	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Book a Fire Station tour	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Book a fire truck for an event	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

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Hamilton Fire Department Citizen Survey 2018

- Results Summary



Hamilton Fire Department Survey

English ▾


What is one thing you think the Hamilton Fire Department can do to contribute to a healthy and safe community?

<< >>



Hamilton Fire Department Citizen Survey 2018

- Results Summary



Hamilton Fire Department Survey

English ▾

If you're comfortable, please tell us a little about you and your household.

What is your postal code?

<< >>



Hamilton

Hamilton Fire Department Citizen Survey 2018

- Results Summary



Hamilton

Hamilton Fire Department Survey

English ▾

How would you describe yourself?

- Male
- Female
- Transgender
- Other

What is your age?

- Under 18
- 18 to 24
- 25 to 34
- 35 to 44
- 45 to 54
- 55 to 64
- 65 years and older

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Hamilton

Hamilton Fire Department Citizen Survey 2018

- Results Summary



Hamilton

Hamilton Fire Department Survey

English ▾

What is your highest level of education?

- Less than high school
- High school diploma
- College diploma/trades certificate
- University Undergraduate Degree
- University Graduate Degree

What is your household's total income before taxes?

- Less than \$17,000
- \$17,000 to \$29,999
- \$30,000 to \$49,999
- \$50,000 to \$74,999
- \$75,000 to \$99,999
- \$100,000 and over



Appendix C



City of Hamilton

The Hamilton Fire Department Partner Survey 2018

Results Summary

The Hamilton Fire Department Partner Survey 2018

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Findings	3
Appendix A: Partner List.....	13
Appendix B: Survey Tool	15

The Hamilton Fire Department Partner Survey 2018

Introduction

The Hamilton Fire Department's Partner Survey was developed to collect input from key community partners to inform the Department's 10 Year Fire Service Delivery Plan. The Plan will ensure that the Department continues to deliver quality services in an effective and efficient manner today and into the future.

The main objective of the survey is to obtain partners' opinions about fire service delivery and how the Department can work with community partners to meet the changing needs of the community.

The survey results identify what the Department is doing well and areas for improvement that may be included in the 10 Year Plan.

Methodology

The survey was administered through an email from the Chief of the Hamilton Fire Department to key community partners from emergency services, industry and institutions (school boards and hospitals). The survey was also sent to elected officials and the City's senior leaders who were asked to cascade the survey to their Department Leadership Teams (DLT), although no DLT members completed this survey (see Appendix A for list of partners).

Emails with the survey link were sent to 57 email addresses including:

- Chief of Hamilton Paramedic Service
- Chief of Hamilton Police Service
- 33 external partners
- 16 elected officials
- 6 Senior Leaders

In total, 29 partners completed (or partially completed) the survey.

The survey was active between February 9, 2018 and February 23, 2018.

The survey had both close-ended and open-ended questions (see Appendix B for the survey tool). The results of the close-ended questions are shown in charts. The results of the open-ended questions are shown by themes presented in order of the top three most common themes. In some cases where themes were equally common, four themes are presented.

The Hamilton Fire Department Partner Survey 2018

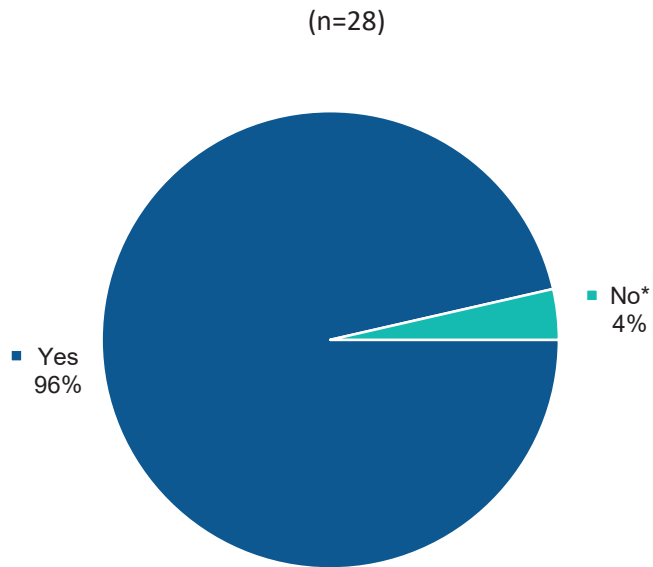
Findings

What do you believe is the biggest contribution of the HFD to the community/ward?

THEME	DETAILS
1. Fire Prevention	<ul style="list-style-type: none"> to protect people and property to keep public safe to help to create and ensure there are risk mitigation plans prevention education to reduce incidents in home, business, industry
2. Education	<ul style="list-style-type: none"> to help understand risks on prevention targeted to industry to promote/raise awareness about fire safety Fire safety education in schools (for students and staff)
Emergency Response	<ul style="list-style-type: none"> Fire response Response for all types of emergencies (medical, fire, auto, industrial) Ensure plans are in place to respond to fire and safety situations All hazard response
3. Partnerships	<ul style="list-style-type: none"> Support (prevention and education) to industry partners Assistance with fire code compliance/ application (in schools and industry) Inspections to keep facility safe Community partnerships

The Hamilton Fire Department Partner Survey 2018

Is the Hamilton Fire Department currently meeting your (and/or your ward's) fire protection needs?



*n = 1

What services do you feel are missing?

'local training to understand the actions required in an industrial fire'

The Hamilton Fire Department Partner Survey 2018

What do you believe are the biggest fire risks to the community?

Examples: Type of building stock, lack of education about fire prevention, congestion and traffic, changing weather patterns, etc.

THEME	DETAILS
<p>1. Education</p> <hr/> <p>Industry</p>	<p>Lack of education about fire prevention</p> <p>Does education make a difference (re: risky behaviour)?</p> <hr/> <p>Amount and types of industry/industrial lands (active and inactive)</p> <p>Hazardous materials – disposal, storage, transporting, large quantity</p> <p>Lack of training, education, awareness, protective & firefighting equipment</p> <p>Lack of knowledge about type and ways to store materials and how to dispose of them</p> <p>Lack of information about industries' operations and materials being used and stored</p>
<p>2. Traffic</p>	<p>Traffic and congestion</p> <p>Congestion due to parking on streets</p> <p>Increased traffic accidents</p> <p>Increasing train traffic</p> <p>Complex transportation networks</p>
<p>3. Human Behaviour</p>	<p>Careless smoking, cooking, improper storage of flammable items</p> <p>Non-compliance re fire safety protocols</p>

The Hamilton Fire Department Partner Survey 2018

How can the Hamilton Fire Department help reduce these risks?

THEME	DETAILS
<p>1. Educate / Promote Fire Safety</p>	<p>The recent increase in educational ads and media releases has been helpful</p> <p>Increase/continue public education on fire prevention – campaigns, flyers, programs and outreach to residents and businesses (e.g., Home Fire Safety Education Program)</p> <p>Look for new and innovative ways to reach people in their homes</p> <p>Education and review, support visits, spot checks and enforcement</p> <p>Targeted Fire safety programs</p> <p>Media engagement, speaking engagements and community events</p> <p>Educate firefighters on fighting fires of specific products</p> <p>Partnerships to promote fire safety (with landlords, condo boards, partner agencies, other City departments/divisions) e.g., Work with Police to promote traffic and fire safety</p>
<p>2. Train / support</p>	<p>Continue to provide guidance, coaching and direction on risk controls</p> <p>Local training (at plants)</p> <p>Coordinated training with stakeholders</p> <p>Train re: risks of rail traffic</p>
<p>Create / Enhance Partnerships</p>	<p>Work collaboratively with the community</p> <p>Regular interface with stakeholders</p> <p>Partner on key messages, emergency plans, training, fire and traffic safety</p>
<p>3. Information</p>	<p>Require/create lists of industry products being stored, and hazardous waste</p> <p>Inform businesses about what information to provide to HFD (e.g., use templates)</p> <p>Share information with industries (plans, site tours, contact info)</p> <p>Ensure site plans are created and up to date</p>

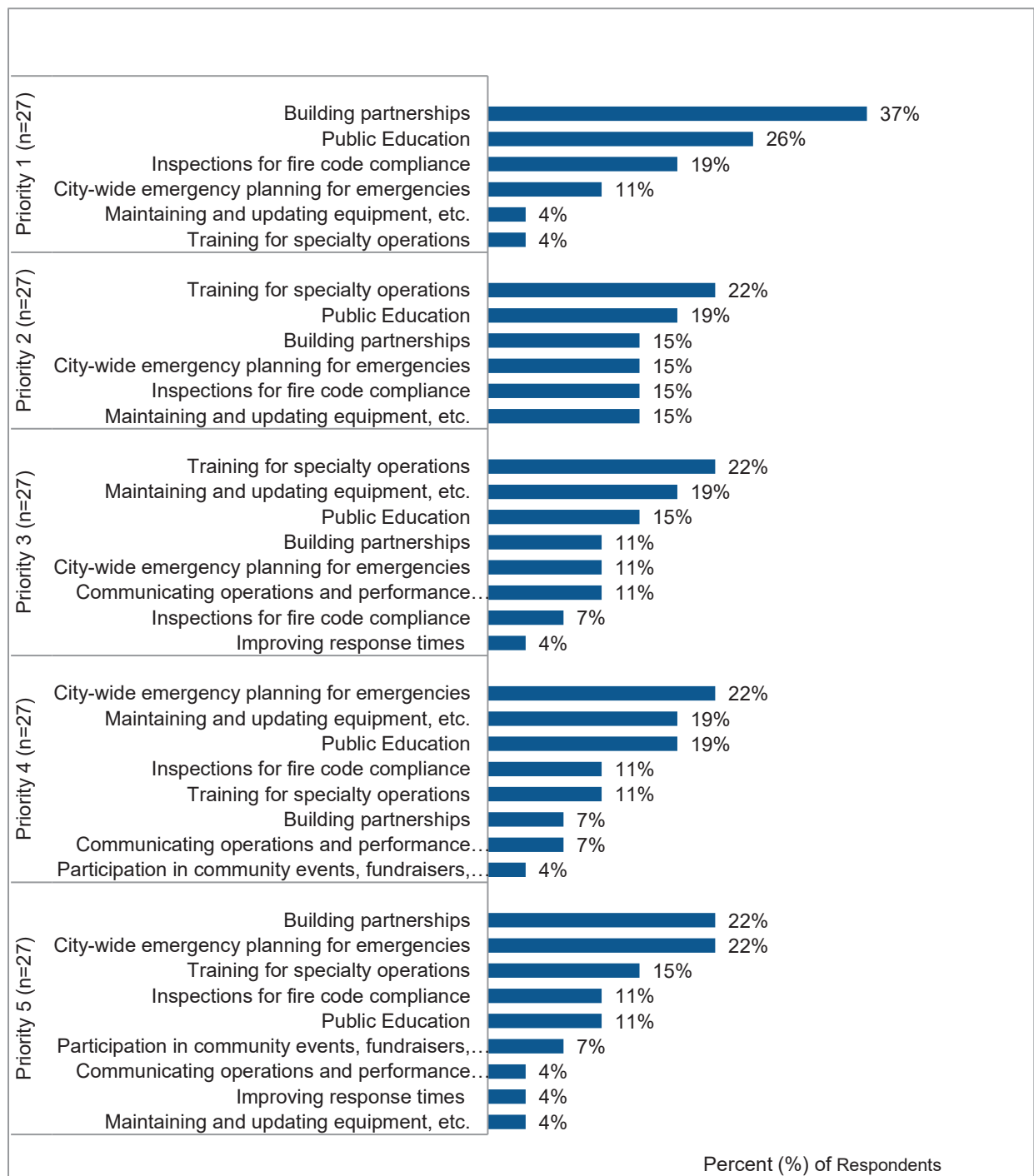
The Hamilton Fire Department Partner Survey 2018

How can you help to reduce these risks?

THEME	DETAILS
1. Education	Educate community/champion fire safety Increase awareness with public and employees Educate staff re: risks in buildings, fire drills Conduct in-house inspections
2. Training	Develop and improve training for staff Improve site safety measures and emergency preparedness plans Hold regular training and drills for staff Provide EOC level training/Attend industry training
3. Communication / Information	Provide information and tools to HFD Call HFD for information on fire safety Develop risk maps / Accurate inventory of stored materials Build and improve communication channels

The Hamilton Fire Department Partner Survey 2018

Priorities for the Next 10 Years:



The Hamilton Fire Department Partner Survey 2018

In order to derive the top 5 priorities each response was assigned a ranking score:

ITEM RANKED AS PRIORITY	SCORE ASSIGNED
1	5
2	4
3	3
4	2
5	1
Not ranked	0

As a result of totalling the scores for each item the top 5 priorities are:

OVERALL RANKED	PRIORITY	TOTAL SCORE
1	Building partnerships with community organizations, institutions, industries, businesses, etc. to mitigate fire and safety risks	85
2	Public education regarding emergency preparedness and community fire safety	80
3	City-wide emergency planning for emergencies such as flooding, power outages, ice storms, etc.	58
4	Training for specialty operations such as rope rescue, hazardous materials, confined space rescue, medical calls, gas leaks	57
5	Inspections for fire code compliance	56

The Hamilton Fire Department Partner Survey 2018

In what ways can you work together with the Hamilton Fire Department to help build a Healthy and Safe Community?

THEME	DETAILS
<p>1. Partnerships</p>	<p>Will consider needs of HFD in decision making (<i>Cllr</i>)</p> <p>Support/ participate / cooperate with HFD</p> <p>More interactive with HFD / regular meetings / HFD as active member of CAER</p> <p>Continue collaboration / build on partnership / improve integration with HFD</p> <p>Joint training / public education / response plans with HFD</p> <p>Align policies with HFD</p> <p>Work with HFD to ensure facility meets fire code / depend on HFD to support safety requirements</p> <p>Advocate for resources for HFD</p>
<p>2. Educate / Promote fire safety</p>	<p>Help to promote fire safety / distribute information to residents and students / raise awareness of employees</p> <p>Presentations to HFD on the Port (include drawings of the area)</p> <p>Provide a College fire safety course</p>
<p>3. Communication / Information sharing</p>	<p>Ongoing meetings with HFD – identify and discuss issues and needs of both parties and strategies for mitigation</p> <p>Provide information to HFD (e.g., drawings of areas; about facility through tours, ER drills and joint training)</p> <p>Continue open communication with HFD</p> <p>Communicate with employees</p>

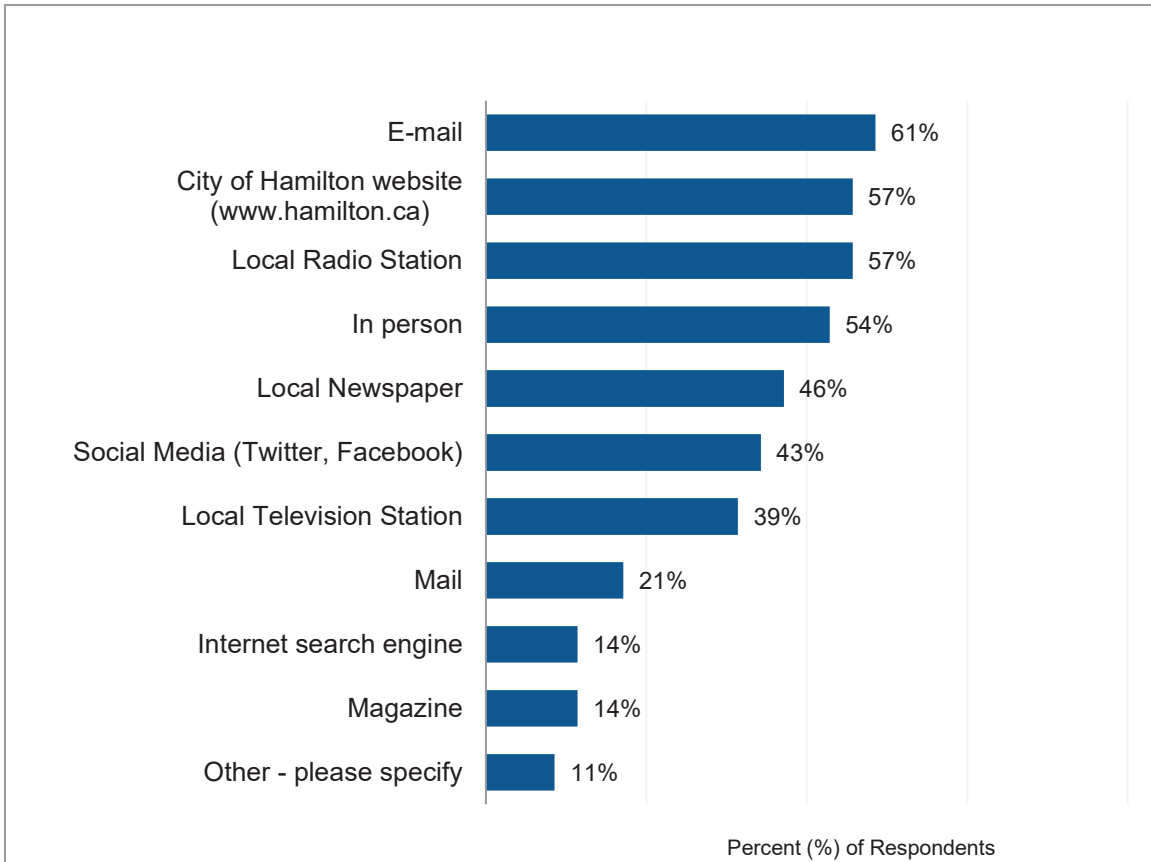
The Hamilton Fire Department Partner Survey 2018

Hamilton's population is increasing and many new subdivisions are being developed to meet this growth. What does the Hamilton Fire Department need to do to meet the changing demands of the growing community?

THEME	DETAILS
<p>1. More resources / Grow with community</p>	<p>Additional facilities and resources to maintain response time</p> <p>More staff and funding to reflect growth in population</p> <p>Increase operational capabilities to stay ahead of growing demands</p> <p>Review resource allocation and expand if necessary</p>
<p>2. Review / Better use of existing resources</p>	<p>Review current assets compared to future needs</p> <p>Conduct needs assessment, focus resources on high priorities / clearly define needs</p> <p>Gather data to support increasing resources</p> <p>Use data to ensure resources are located in high call areas</p> <p>Do not need more stations – distribute existing personnel</p> <p>Remain affordable / Find efficiencies</p> <p>Evaluate and adapt to change</p>
<p>3. Education</p>	<p>Education for new homeowners on regulations and fire safety</p> <p>Fire access routes around schools</p> <p>Educate general population on fire safety</p> <p>Fire Dept become educated on the changing area</p>

The Hamilton Fire Department Partner Survey 2018

What is best way to communicate with you about fire safety and other fire-related information?



Other:

- Through City staff (Cllr)
- At schools
- Via the Hamilton CAER Group

The Hamilton Fire Department Partner Survey 2018

Appendix A: Partner List

Sector	Partner
City of Hamilton	Hamilton Paramedic Service Chief
	City of Hamilton Senior Leadership Team
	Hamilton Fire Department, Emergency Management
	Hamilton Paramedic Service Chief
	City of Hamilton Mayor
	City of Hamilton Ward Councillors
Airport	Hamilton International Airport
Port	Hamilton Port Authority
Hospitals	Hamilton Health Sciences
	St Joseph's Hospital
School Board / Educational Institutions	Hamilton Wentworth District School Board
	Hamilton Wentworth Catholic District School Board
	McMaster University
	Mohawk College
	Redeemer University College
Industry	Canada Bread
	Edpro Energy Group Inc.
	Hotz Environmental Services Inc.


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Sector	Partner
CAER Group	Air Liquide
	ArcelorMittal Dofasco
	ArcelorMittal Long Products
	Biedermann Packaging Inc.
	Bunge Canada
	Canadian Asphalt Industries Inc.
	Columbian Chemicals Canada Ltd.
	Contanda Canada Inc.
	McAsphalt Industries Limited
	Ruetgers Canada Inc.
	Shell Canada
	Stelco
	Vopak
Yellowline Asphalt Products Ltd.	

The Hamilton Fire Department Partner Survey 2018

Appendix B: Survey Tool

The Hamilton Fire Department Partner Survey 2018



Hamilton

Hamilton Fire Department Partner Survey

The Hamilton Fire Department is developing a 10-Year Service Delivery Plan and would like input from our partners.

Your responses will help to identify the Hamilton Fire Department's priorities over the next 10 years.

The survey is voluntary and will take approximately 10 minutes to complete.


The City of Hamilton collects information under authority of section 227 of the Municipal Act, 2001. Any personal information collected for the Hamilton Fire Department Partner Survey will be used for improvement of municipal service delivery.

Questions about the collection of this information can be directed to:

John Verbeek
Acting Deputy Chief
Email: john.verbeek@hamilton.ca
Telephone: 905-546-2424 ext. 7120

[Start Survey](#)

The Hamilton Fire Department Partner Survey 2018



Hamilton


Hamilton Fire Department Partner Survey

Please tell us if you are representing ...

- the City of Hamilton
(City Manager's Office, City Department)
- Elected Official
(Mayor and Ward Councillors)
- Other
(Hospital, School Board, Educational Institution or other organizations)

<< >>

The Hamilton Fire Department Partner Survey 2018




Hamilton Fire Department Partner Survey

What do you believe is the biggest contribution of the Hamilton Fire Department to the community?

<< >>

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Hamilton

Hamilton Fire Department Partner Survey


Is the Hamilton Fire Department currently meeting your fire protection needs?

Yes

No

<< >>

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Hamilton

Hamilton Fire Department Partner Survey

What do you believe are the biggest fire risks to the community?


Examples: Type of building stock, lack of education about fire prevention, congestion and traffic, changing weather patterns, etc

How can the Hamilton Fire Department help reduce these risks?

How can you help reduce these risks?

<< >>

The Hamilton Fire Department Partner Survey 2018



Hamilton Fire Department Partner Survey

The following is a list of ways the Hamilton Fire Department helps to support the City's strategic priority of a Healthy and Safe Community.


Which of these items should the Hamilton Fire Department make a priority over the next 10 years?

Please select and drag one (1) action item into each priority box.

Items	Priority 1
Inspections for fire code compliance	
City-wide emergency planning for emergencies such as flooding, power outages, ice storms, etc.	
Improving response times	
Training for specialty operations such as rope rescue, hazardous materials, confined space rescue, medical calls, gas leaks	
Public education regarding emergency preparedness and community fire safety	
Building partnerships with community organizations, institutions, industries, businesses, etc. to mitigate fire and safety risks	
Maintaining and updating equipment, apparatus and stations/facilities	
Communicating operations and performance metrics of the HFD	
Participation in community events, fundraisers, committees etc.	
Other <input type="text"/>	

<< >>

The Hamilton Fire Department Partner Survey 2018




Hamilton Fire Department Partner Survey

In what ways can your organization work together with the Hamilton Fire Department to help build a Healthy and Safe Community?

<< >>

The Hamilton Fire Department Partner Survey 2018




Hamilton

Hamilton Fire Department Partner Survey

Hamilton's population is increasing and many new subdivisions are being developed to meet this growth. What does the Hamilton Fire Department need to do to meet the changing demands of the growing community?

<< >>

The Hamilton Fire Department Partner Survey 2018



Hamilton Fire Department Partner Survey

What is best way to communicate with you about fire safety and other fire-related information?

Select all that apply.

- City of Hamilton website (www.hamilton.ca)
- Local Television Station
(e.g. CHCH, Cable 14)
- Local Radio Station
(e.g. FM 102.9 KLite, FM CHML 900, 95.3 Fresh Radio)
- Social Media (Twitter, Facebook)
- Local Newspaper
(e.g. The Hamilton Spectator, Dundas Star News, Flamborough Review, Hamilton Mountain News, Stoney Creek News, The Sachem & Glanbrook Gazette, Bay Observer)
- Magazine
(e.g. Hamilton Magazine, View, Snapd Hamilton, Best Start, Hamilton Recreation Guide)
- Mail
- E-mail
- Internet search engine
- In person
- Other - please specify

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Appendix D





Hamilton



HAMILTON FIRE DEPARTMENT

2018 Community Risk Assessment



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Introduction

In Ontario, the fire service is regulated through Provincial legislation that includes the *Fire Protection and Prevention Act (FPPA)*, 1997, S.O. 1997. Part II of the *FPPA* states that:

2. (1) every municipality shall,
 - a) Establish a program in the municipality which must include public education with respect to fire safety and certain components of fire prevention; and
 - b) Provide such other fire protection services as it determines may be necessary in accordance with its needs and circumstances.

The *FPPA* authorizes the Council of a Municipality to establish, maintain and operate a fire department for all or any part of the municipality and to pass by-laws regarding fire prevention.

Municipal Council, obligated by the *FPPA* to provide fire protection services, must:

- Establish levels of service commensurate with needs and circumstances; and
- Provide fiscal resources for staffing, apparatus and equipment to support the level of service

Through our various Divisions, the Hamilton Fire Department provides to the citizens of Hamilton:

- Fire Prevention/Public Education and administration of the Ontario Fire Code and the *Fire Protection and Prevention Act (FPPA)*
- Fire Communications/Dispatch
- Firefighting Rescue Operations
- Tiered medical response with the Hamilton Paramedic Service
- City- wide Trunked Radio Services
- Emergency Planning/Preparedness
- Mutual/Automatic Aid with neighbouring municipalities
- Mechanical and Fleet services for both Fire and Hamilton Paramedic Service
- Training of personnel in all aspects of services provided

Prior to amalgamation the Hamilton region was served by six (6) fire departments offering different levels of service based on the needs of their respective communities. When the new City of Hamilton was formed in 2000; these six departments were amalgamated into one composite service (career and volunteer fire protection).

Citizens in the City of Hamilton are served by career firefighters in the urban areas of the City and volunteer firefighters in the predominately rural areas of the City. Three fire stations (Station 17 Stoney Creek, Station 21 Ancaster and Station 24 Waterdown) are composite stations with both career and volunteer firefighters operating out of the stations.



The Hamilton Fire Department is primarily funded through local municipal government. The Department does generate some revenue through the User Fee By-law which includes but is not limited to revenue from inspections, permits, false alarm responses, open air burning responses and reimbursements from the Ontario Ministry of Transportation (MTO) for responses to provincial highways. Any money collected becomes part of the general revenue stream for the City and is reflected in the Fire budget on an annualized basis.

Fire Protection and Prevention Act – Community Risk Assessment

Recent amendments to the *Fire Protection and Prevention Act* require municipalities to complete a community risk assessment every five years. In addition, the community risk assessment must be reviewed annually. Mandatory profiles within the community risk assessment include:

- Geographic profile: The physical features of the community, including the nature and placement of features such as highways, waterways, railways, canyons, bridges, landforms and urban-rural interfaces.
- Building stock profile: The types of buildings in the community, the uses of the buildings in the community, the number of buildings of each type, the number of buildings of each use and any building-related risks known to the fire department.
- Critical infrastructure profile: The capabilities and limitations of critical infrastructure, including electricity distribution, water distribution, telecommunications, hospitals and airports.
- Demographic profile: The composition of the community's population, respecting matters relevant to the community, such as population size, cultural background and population shifts.
- Hazard profile: The hazards in the community, including natural hazards, hazards caused by humans, and technological hazards.
- Public safety response profile: The types of incidents responded to by other entities in the community, and those entities' response capabilities.
- Community services profile: The types of services provided by other entities in the community, and those entities' service capabilities.
- Economic profile: The economic sectors affecting the community that are critical to its financial sustainability.
- Past loss and event history profile: The community's past emergency response experience, including the following analysis:
 - The number and types of emergency responses, injuries, deaths and dollar losses.
 - Comparison of the community's fire loss statistics with provincial fire loss statistics.

Fire Risk in the City of Hamilton



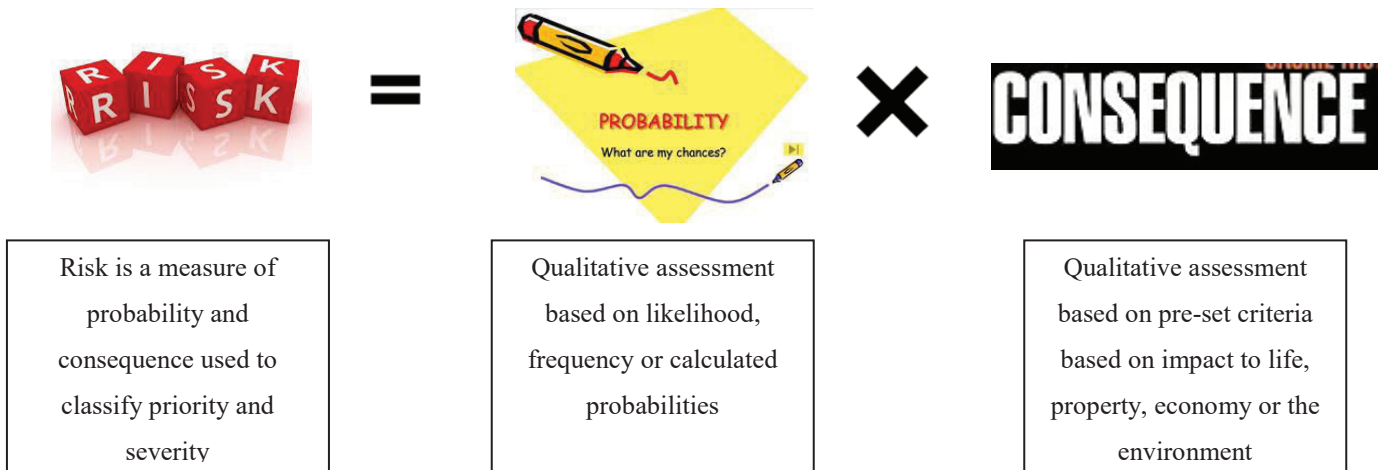
Hamilton, with a population of over 537,000 is the 9th largest City by population in Canada and is one of Ontario's most economically diverse. The City is divided into fifteen Wards, both urban and rural.

Assessing the fire risk within a community is the process of examining and analyzing the relevant factors that characterize the community and applying this information to identify potential fire risk scenarios that may be encountered. The assessment includes an analysis of the probability of these scenarios occurring and their subsequent consequences. In essence, fire risk assessment attempts to answer the following questions.

1. What could happen?
2. When could this happen?
3. Where could this happen?
4. Who could this happen to?
5. Why could this happen?
6. How likely is it to happen?
7. How bad would it be if it did happen?

This information serves as the basis for formulating and prioritizing fire risk management decisions to reduce the likelihood of these events from occurring and to mitigate the impact of these events when they occur.

The Ontario Fire Marshal and Emergency Management (OFMEM) Fire Risk Sub-Model defines risk "as a measure of the probability and consequence levels to potential adverse events or scenarios due to fire and combining the two to arrive at an overall risk level". The OFMEM Fire Risk Sub-Model provides a matrix as one option in arriving at the level of risk for a range of scenarios.



For analytical purposes, the methodology within this report uses the OFMEM Fire Risk Sub-model major occupancy classifications as the basis for segmenting the community by primary building use. Each major occupancy classification is assigned a probability level based on the OFMEM Fire Risk Sub-model definitions. A consequence level also using the OFMEM Fire Risk Sub-model definition is then assigned for each major occupancy classification.

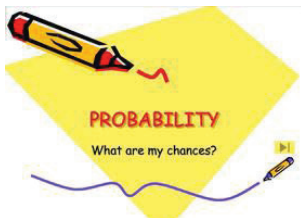
The level of risk (Priority Level) for each major occupancy classification is determined by multiplying “**probability x consequence = risk level (priority).**” This provides the ability to determine an overall risk level for each major occupancy classification within the community.

The methodology within this report includes a further process of assigning ‘weighting factor’ to each of the eight risk factor categories identified by the OFMEM Fire Risk Sub-model. Utilizing a range from 1 (lowest) to 3 (highest) each of the factors is assigned a weight factor, to calculate a weighted average. The weight factor assigns priority to each of the given factors. This process results in the most relevant categories having more impact on the risk priority level calculated.

This methodology then coordinates the assigned risk level for each major occupancy classification with the Council approved zoning by-law information and mapping. This process provides the opportunity to create a visual model (map) of the Community Risk Profile. This map can be found on page 77 at the end of this report.

Completing the Community Risk Profile Model allows for the evaluation of the current level of fire protection services provided. The model can further identify where risk levels may increase, or change based on growth and long-term planning of the community.

Probability Levels



The probability or likelihood of a fire within a community is often estimated based on the frequency of previous incidents. A review of past events may involve extracting relevant historical fire loss data and the experience of members of the Department with knowledge of responses.

Professional judgment based on experience and in combination with historical information is used to estimate probability levels. An evaluation of the probability of an event can be categorized into five levels of likelihood:

Table 1: Probability Levels

Description	Level	Specifics
Rare	1	- May occur in exceptional circumstances -No incidents in the past 15 years
Unlikely	2	-Could occur at some time, especially if circumstances change -5 to 15 years since last incident
Possible	3	-Might occur under current circumstances -1 incident in the past 5 years
Likely	4	-Will probably occur at some time under current circumstances -Multiple or recurring incidents in the past 5 years
Almost Certain	5	-Expected to occur in most circumstances unless circumstances change -Multiple or recurring incidents in the past year

Consequence Levels



The consequences as a result of fire are the potential losses or negative outcomes associated with the event. The application of professional judgment and reviews of past occurrences are important methods used for quantifying consequence levels. Estimating the consequence level due to fire involves an evaluation of four components:

a. Life Safety

Injuries or loss of life due to occupant and firefighter exposure to life threatening fire or other situations.

b. Property Loss

Monetary losses relating to private and public buildings, property content, irreplaceable assets, significant historic/symbolic landmarks and critical infrastructure due to fire.

c. Economic Impact

Monetary losses associated with property income, business closures, downturn in tourism, tax assessment value, employment layoffs due to fire.

d. Environmental Impact

Harm to humans and non-human (i.e. wildlife, fish and vegetation) species and general decline in quality of life within the community due to air/water/soil contamination as a result of fire and fire suppression activities.

An evaluation of the consequence due to fire can be categorized into five levels based on severity:

Table 2: Consequence Levels

Description	Level	Specifics
Incidental	1	-No life safety issue -Limited valued or no property loss -No impact to local economy and/or -No effect on general living conditions.
Minor	2	-Potential risk to life safety of occupants -Minor property loss -Minimal disruption to business activity and/or -Minimal impact on general living conditions.
Moderate	3	-Threat to life safety of occupants -Moderate property loss -Poses threat to small local businesses and/or -Could pose threat to quality of the environment.
Major	4	-Potential for a large loss of life -Would result in significant property damage -Significant threat to large businesses, local economy and tourism and/or -Impact to the environment would result in a short term, partial evacuation of local residents and businesses.
Catastrophic	5	-Significant loss of life -Multiple property damage to significant portion of the municipality -Long term disruption of businesses, local employment, and tourism and/or -Environmental damage that would result in long-term evacuation of local residents and businesses.

Overall Level of Risk and Priority

The overall risk assessment is completed by assigning probability and consequence levels to occupancies due to fire and combining the two to arrive at an overall risk level. The Risk Analysis Matrix is an analytical tool that can be used for this purpose. The highest overall risk levels are in the bottom right corner (red) of the matrix and the lowest levels are at the top left corner (white). This tool also allows the analyst to rank and classify the scenarios for the purpose of prioritizing risk reduction measures.

Table 3: Risk Analysis Matrix

RISK ANALYSIS MATRIX-Level of Risk (Priority Level)					
Probability	Consequence				
	1 (Insignificant)	2 (Minor)	3 (Moderate)	4 (Major)	5 (Catastrophic)
1 (Rare)	L (L1)	L (L1)	M (L2)	H (L3)	H (L3)
2 (Unlikely)	L (L1)	L (L1)	M (L2)	H (L3)	E (L4)
3 (Moderate)	L (L1)	M (L2)	H (L3)	E (L4)	E (L4)
4 (Likely)	M (L2)	H (L3)	H (L3)	E (L4)	E (L4)
5 (Almost Certain)	H (L3)	H (L3)	E (L4)	E (L4)	E (L4)

The risk and priority levels are defined as follows:

- L = Low Risk

Priority Level 1 (L1)-manage by routine programs and procedures, maintain risk monitoring

- M = Moderate Risk

Priority Level 2 (L2)-requires specific allocation of management responsibility including monitoring and response procedures

- H = High Risk

Priority Level 3 (L3)-community threat, senior management attention needed

- E = Extreme Risk

Priority Level 4 (L4)-serious threat, detailed research and management planning required at senior levels

Community Risk Factors

The types of fire risks that a community may be expected to encounter are influenced by its defining characteristics. For example, a “bedroom community” presents a different set of circumstances over one that is characterized as an “industrial town”. Communities that are distinguished by older buildings will pose a different set of concerns over those that are comprised of newer buildings constructed to modern building codes.

Assessing fire risk should begin with a review of all available and relevant information that defines and characterizes the community. A number of key factors have been identified that contribute to the community’s inherent characteristics and circumstances. These factors influence events that shape potential fire scenarios along with the severity of their outcomes:

1. Building Stock Profile
2. Building Height and Area
3. Building Age and Construction
4. Building Exposures
5. Demographic Profile
6. Geography/Topography/Road Infrastructure
7. Response Data for all fire calls to identify current capabilities
8. Fuel Load

A review must consider the factors independently as well as in combination with each other to identify potential fire related concerns within the community. This report will examine fire risk across the City as a whole and then identify recommendations and solutions to mitigate the risks.

Based on the above information and in conjunction with data analysis for the years 2013-2018, the following charts will establish the risk assessment scores for each building occupancy class.

1. Building Stock

It is important to develop a community building stock profile to establish a detailed inventory of potential property related risks. This involves determining building stock totals based on occupancy classification as well as other non-building properties that could pose a risk in the community. The Ontario Building Code (OBC) categorizes buildings under the following major occupancy classifications, each of which has inherent hazards that distinguish it from the others. Those major occupancy classifications are as follows:

- Group A - Assembly Occupancies
- Group B - Institutional - Care or Detention Occupancies
- Group C - Residential Occupancies
- Group D - Business and Personal Services Occupancies
- Group E - Mercantile Occupancies
- Group F - Industrial Occupancies (High/Medium/Low Hazard)

Other Properties

In addition to gathering information on the above noted building related risks, attention is also given to other property types, particularly farm properties that contain large quantities of combustible materials.

Definitions, Risk and Proactive Measures for Risk Reduction

Group A – Assembly

Definition as per the Ontario Building Code (OBC)	The occupancy or the use of 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
Occupancy Risks	<ul style="list-style-type: none"> • Overcrowding by patrons • Lack of patron familiarity with emergency exit locations and procedures • Staff training in emergency procedures • Large quantities of combustible furnishings and decorations
Proactive Measures	<ul style="list-style-type: none"> • Regular fire prevention inspection cycles • Automatic fire detection, sprinklers and monitoring systems • Approved Fire Safety Plan and staff training • Pre-planning by fire suppression staff

Group B – Institutional (Care and Detention)

Definition (As per OBC)	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.
Occupancy Risks	<ul style="list-style-type: none"> • Inability to evacuate or relocate patients • Presence of flammable/combustible gases • Vulnerable occupants using overnight accommodations (sleeping) • Combustible furnishings
Proactive Measures	<ul style="list-style-type: none"> • Regular fire prevention inspection cycles • Automatic fire detection, sprinklers and monitoring systems • Approved Fire Safety Plan and staff training • Pre-planning by fire suppression staff

Group C – Residential

Definition (As per OBC)	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.
Occupancy Risks	<ul style="list-style-type: none"> • Overnight accommodation (sleeping) • Combustible furnishings • Secondary units (basement apartments) • High population density • Human behaviour (cooking, careless smoking, etc.)
Proactive Measures	<ul style="list-style-type: none"> • Home smoke alarm programs • Public education programming including home escape planning • Retro-fit and compliance inspection cycles for Ontario Fire Code compliance • Pre-planning by fire suppression staff

Group D – Business and Personal Service

Definition (As per OBC)	An occupancy that is used for the transaction of business or the provision of professional or personal services.
Occupancy Risks	<ul style="list-style-type: none"> • High volume of occupants • High combustible loading • Specialized equipment utilizing high risk substances such as radiation • Consumers unfamiliar with emergency exits and procedures
Proactive Measures	<ul style="list-style-type: none"> • Regular fire prevention inspection cycles to maintain OFC compliance • Targeted fire prevention inspections for OFC retro-fit compliance • Staff training in fire prevention and evacuation procedures • Public education programs • Pre-planning by fire suppression staff

Group E – Mercantile

Definition (As per OBC)	An occupancy that is used for the displaying or selling of retail goods, wares, and merchandise.
Occupancy Risks	<ul style="list-style-type: none"> • High volume of occupants/staff • High volume of combustible loading/high rack storage • Lack of occupant familiarity with emergency exit locations and procedures • Size of building
Proactive Measures	<ul style="list-style-type: none"> • Regular fire prevention inspection cycles • Automatic fire detection, sprinklers and monitoring systems • Approved Fire Safety Plan and staff training • Pre-planning by fire suppression staff

Group F – Industrial

Definition (As per OBC)	An occupancy that is used for the assembly, fabrication, manufacturing, processing, repairing or storing of goods and materials
Occupancy Risks	<ul style="list-style-type: none"> • Large dollar loss as a result of a major fire • Economic loss in the event of plant shut downs and job loss • Environmental impacts • Presence of ignition sources related to processing activities
Proactive Measures	<ul style="list-style-type: none"> • Regular fire prevention inspection cycles • Staff training in fire prevention and evacuation • Public education • Pre-planning by fire suppression staff • Installation of early detection systems (smoke alarms, heat detectors) • Installation of automatic sprinkler systems

The following chart provides an overview of the building stock in the City of Hamilton.

Occupancy Type	Number of Occupancies	Percentage of Occupancies
Assembly	1,046	0.6%
Institutional	186	0.1%
Residential	161,267	94.7%
Business and Personal Service	756	0.4%
Mercantile	1,441	0.8%
Industrial	2,620	1.5%
Barns (Farm Properties)	2,963	1.7%
Total	170,279	

The vast majority of building stock in the City of Hamilton is 'Group C - Residential' (94.7%). The second largest percentage of building stock (1.7%) consists of farm properties. These agricultural areas surround the suburbs of the City.

This analysis suggests that Hamilton is primarily a residential community, likely as a result of affordable land and housing prices. Residential occupancies include commercial/residential mixed-use buildings, detached family dwellings, low and mid-rise apartment buildings, and newly developed high-rise residential complexes.

2. Building Height and Area

Buildings that are in excess of six stories in building height or that contain a large amount of square footage can have a greater fire loss risk and life safety concern. There has been a significant increase in the construction and planned construction of high-rise developments across the City including downtown Hamilton and Winona (lower Stoney Creek).

One of the unique characteristics and risks of tall/multi-storey buildings is known as the "stack effect". This is characterized as vertical air movement occurring throughout the building, caused by air flowing into and out of the building typically through open doors and windows. The resulting buoyancy caused by the differences between the indoor/outdoor temperature and elevation differences causes smoke and heat to rise within the building. This can have a dramatic effect on smoke permeation throughout the common areas and individual units within the building and have a direct correlation to the high percentage of deaths that occur in high-rise buildings as a result of smoke inhalation.

High-Rise buildings will have higher occupant loads and higher fuel loads due to the quantity of furnishings and building materials. Efficient evacuation can also be a challenging process due to a lack of direction, signage and knowledge of the exits and in some cases familiarity of the occupants in the building itself (such as in hotels) which may result in overcrowding of stairways and exit routes.

Ensuring all required life safety systems are in place and functioning is a priority for these occupancies. Taller buildings can mean extended rescue/suppression response times for firefighters to ascend to the upper levels. Options such as "shelter-in-place" whereby occupants are directed by the Fire Department to stay within their units can be an effective strategy. However, ensuring internal building communications systems are in place and functioning is critical to the success of this strategy.

Total building area can cause comparable challenges as those present in taller buildings. 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 the new "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 large buildings can be difficult to access and cause additional risk to firefighter safety.

3. Building Age and Construction

The City of Hamilton has a mix of older and newer buildings. Although there are some newer single-detached dwellings and infill developments, areas of Waterdown, Ancaster, Stoney Creek, Dundas and downtown Hamilton all have many buildings that were constructed in the early 1900s, prior to building code standards being in place. Older buildings can present specific hazards such as in balloon construction which allows for the rapid spread of fire through open walls and through the use of asbestos in flooring, plaster and piping which presents significant health hazards and requires specific decontamination procedures by firefighters.

Much of the current infill development in the downtown is the reclamation of "brownstone" buildings; older buildings are being renovated into multi-storey residential, commercial, and institutional occupancies. In addition, there is going to be significant residential/commercial development in the West Harbour area and with high-rises in the downtown core.

New construction can present hazards such as open spaces which allows for the rapid spread of fire or the use of lightweight construction components which under fire conditions can lead to a collapse of structural components much faster than in older construction. Green roofs and photo-voltaic systems present unique

challenges during firefighting activities as they present obstacles to typical roof ventilation procedures.

4. Building Exposures

Closely spaced buildings, typical of historic downtown core areas, and newer infill construction, have a higher risk of a fire propagating (fire spreading to an adjacent exposed building). A fire originating in one building could easily be transferred 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 and the Ontario Fire Code has required spatial separations and the use of fire retardant materials and constructions methods to reduce the fire risks. In addition to the construction and planning requirements within the respective codes, basic firefighting practices consider the protection of exposures as a primary function and consideration in the event of a response by the fire department.

As a large percentage of the building stock in different areas of Hamilton such as Waterdown, Ancaster, Stoney Creek, Dundas and downtown Hamilton were constructed prior to the current Ontario Building Code, the probability of a fire spreading to involve other exposures is of concern due to the close proximity and combustible construction of many of these buildings. Exposure risks are also found due to past planning which resulted in many industrial type properties being intermixed with residential neighbourhoods in some of the older established areas of the City such as in the north end of Hamilton and areas of Stoney Creek and Dundas.

Across the City, there have been a significant number of townhouse developments and, condominium developments which include attached dwellings. These developments of high density housing include housing units constructed side by side and back to back. Many of these types of occupancies share spaces such as attics which may allow for fire to spread from unit to another.

5. Demographic Profile

With regard to developing a community risk profile, it is important to understand a number of key factors related to residents of the community. Assessing these factors in relation to provincial statistics is an effective tool in understanding where there may be vulnerable groups in terms of fire or life risk, or barriers such as language that could affect communication of public education programs. The key factors within the demographic profile include:

- Population Distribution by Age Group and Gender

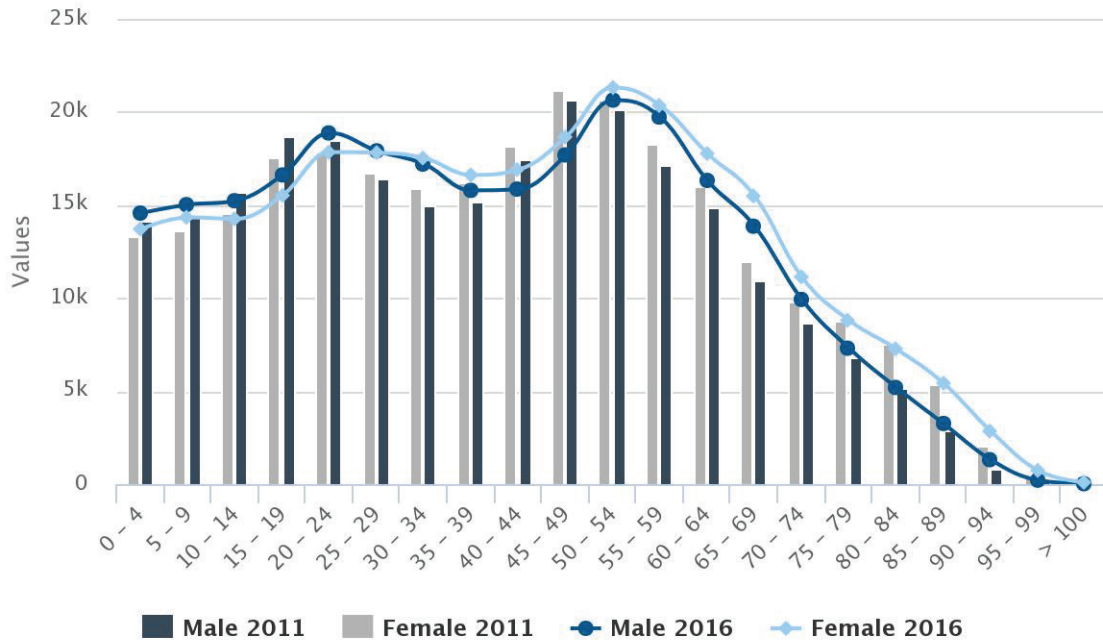
- Population Forecast
- Population Shifts
- Vulnerable Individuals or Occupancies
- Language
- Socio-Economic Profile

It is recognized that one of the most significant demographic trends is our aging population. Based on current data it is predicted that by the year 2026, one in every five Canadians will have reached the age 65. Seniors, those 65 and above, represent one of the highest fire risk target groups in Ontario.

Population Distribution by Age Group and Gender

In 2016, there were 536,917 people living in Hamilton. This represents an increase of 16,970 (3.3%) people since 2011. The majority (66.8%) of the overall population increase since 2011 can be attributed to the change in the population age 65 years and older which increased by 11,335. Of the total 2016 population, 16.2% were youths under the age of 15, 66.5% were age 15 to 64 and 17.3% were age 65 years and older. In 2016, the median age of the population was 41.5 years. This is an increase of 0.6 years since 2011. In 2016, there were slightly more females than males living in Hamilton, 51.1% and 48.9% respectively. This is a trend that has remained unchanged from 2006. An increasingly greater difference between the proportion of females and males is notable amongst older age groups. For residents age 75 and over, 59.3% were females and 40.7% were males. The difference becomes greater for those ages 85 and over where 65.4% were females; and for residents age 100 and over there were 80.0% females and only 20.0% males.

Population Comparison 2011 & 2016

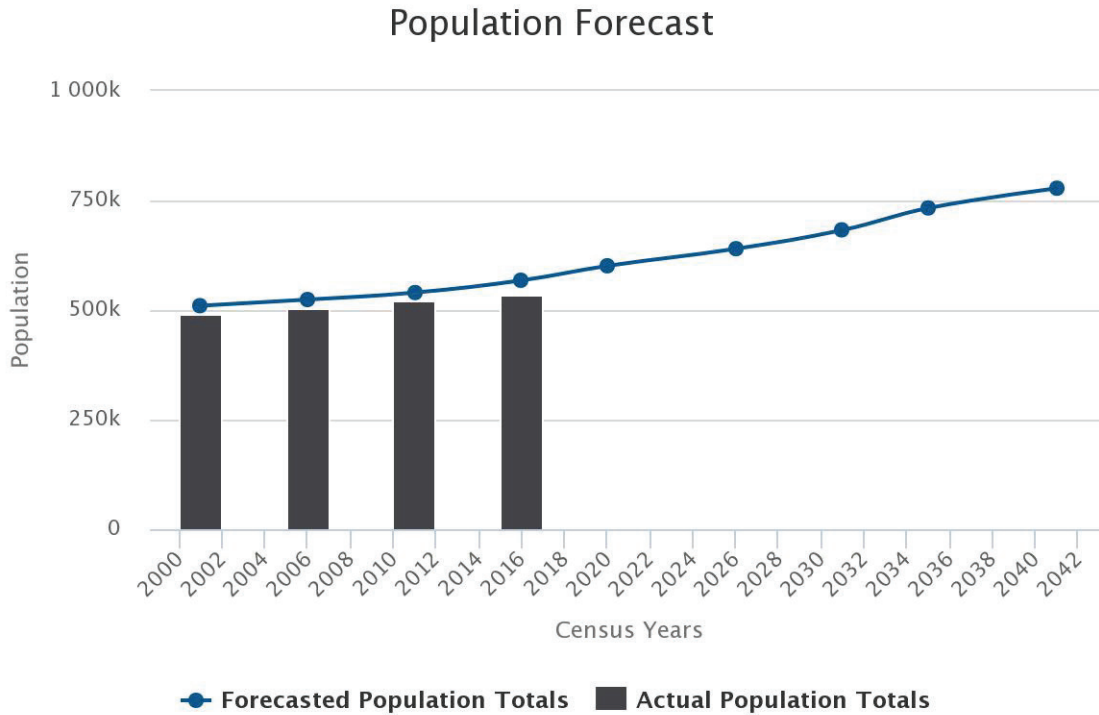


Population Forecast

The City of Hamilton population is forecasted to increase by approximately 37% over the next 25 years. This long-term population forecast is based on assumptions that include and are not limited to: a long-term economic outlook that remains positive; an economy that remains focused on goods production and related industrial activities; and demographic changes primarily driven by rising life expectancy and continued growth from immigration.

Population growth can impact risk in a few ways. Population growth driven by immigrants and cultural differences can impact how public education is delivered. Population growth by age, specifically seniors can impact responses such as in medical related calls.

Both existing and future population growth in the City of Hamilton is occurring primarily in areas that are served by volunteer or composite fire stations. Service delivery in growth areas must be evaluated based not only on population changes, construction starts and other associated risks, but on the ability to effectively respond to all types of events including fires and rescues. In areas served by composite or volunteer stations, evaluation of effective response must include availability and response data of firefighters at all times of the day and different response models such as day-time crews should be considered.



Population Shifts

The population within a community can shift at various times during the day or week and throughout the year. Daily shifts can be attributed to employment locations outside of the community. Larger shifts can include tourist and vacation destinations within a community. For example, large population shifts can occur during summer months as a direct result of the seasonal availability of these activities or tourism draws within a community.

Areas of the City that are home to educational institutions such as colleges and universities often have a population shift during the fall and winter months when students attend school and living in both on campus and off campus housing. In both instances the increased risk due to overnight accommodation can be a significant factor impacting the demand for fire protection services.

Educational institutions are also having an impact on the City’s downtown population. The location of satellite campuses of several institutions (McMaster University, Mohawk College, Columbia College) in Hamilton has increased the student population in the downtown core. In addition, additional multi level/high density student residences have been constructed and occupied in various areas of the City including the west mountain and the downtown area.

Vulnerable Individuals

Identifying the location and number of vulnerable individuals, and occupancies that house vulnerable occupants within the community will provide insight into the magnitude of this particular demographic within a community. This demographic is typically defined as requiring some type of assistance due to physical/cognitive limitations, disabilities, drug or alcohol use and others that may require assistance to evacuate in the event of a fire.

Across all areas of the City, occupancies that should be considered when assessing this demographic include hospitals, seniors' apartments, social assisted housing, group homes, rooming houses, residential care facilities, daycare centres, nursing homes and long-term care facilities. The Province of Ontario also identifies specific vulnerable occupancies which require annual inspections and witnessed fire drills. Inspection information with respect to these occupancies must be reported to the Ontario Fire Marshal's Office.

Languages

Cultural diversity and ethnic backgrounds are factors that the Hamilton Fire Department must consider in developing and delivering programs related to fire prevention and public education. Communication barriers in terms of language and the ability to read written material can have an impact on the success of these programs.

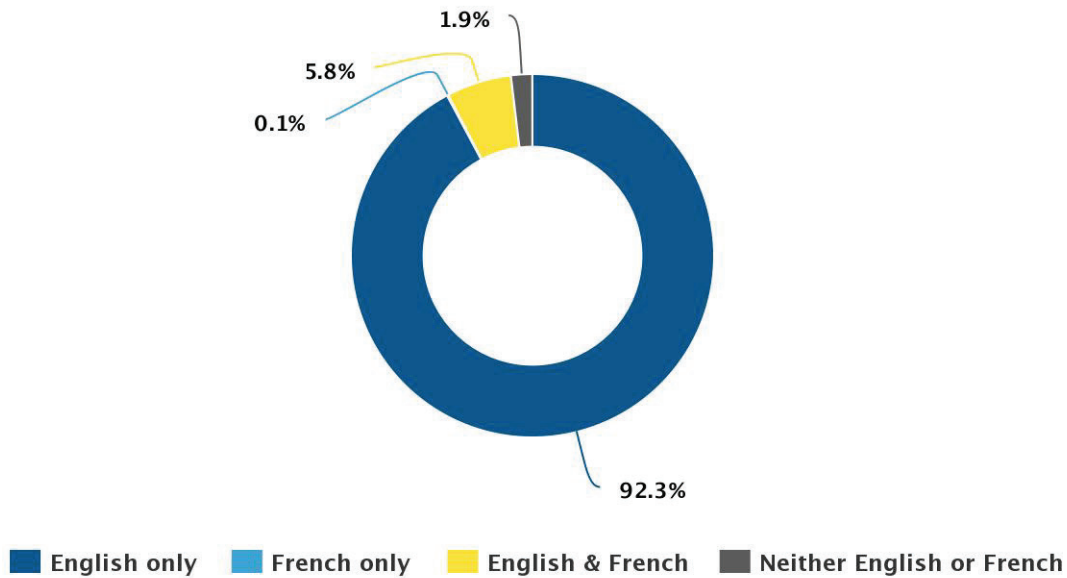
In Hamilton, the most common non-official languages spoken most often at home are: Arabic, Italian, Spanish, Mandarin, Portuguese, Punjabi (Panjabi), Polish, Serbian, Urdu and Vietnamese.

- Approximately 1.9% of residents in Hamilton have no knowledge of English or French.
- At least 23.1% of Hamilton residents have a non-official language as their mother tongue.
- Approximately 15.7% either speak a non-official language most often at home or a combination of a non-official language with an official language most often at home.

As ethnic backgrounds, culture and language can all be a barrier to public education in the community; public education initiatives must be specialized or targeted to specific populations or cultural groups.

Knowledge of Official Languages

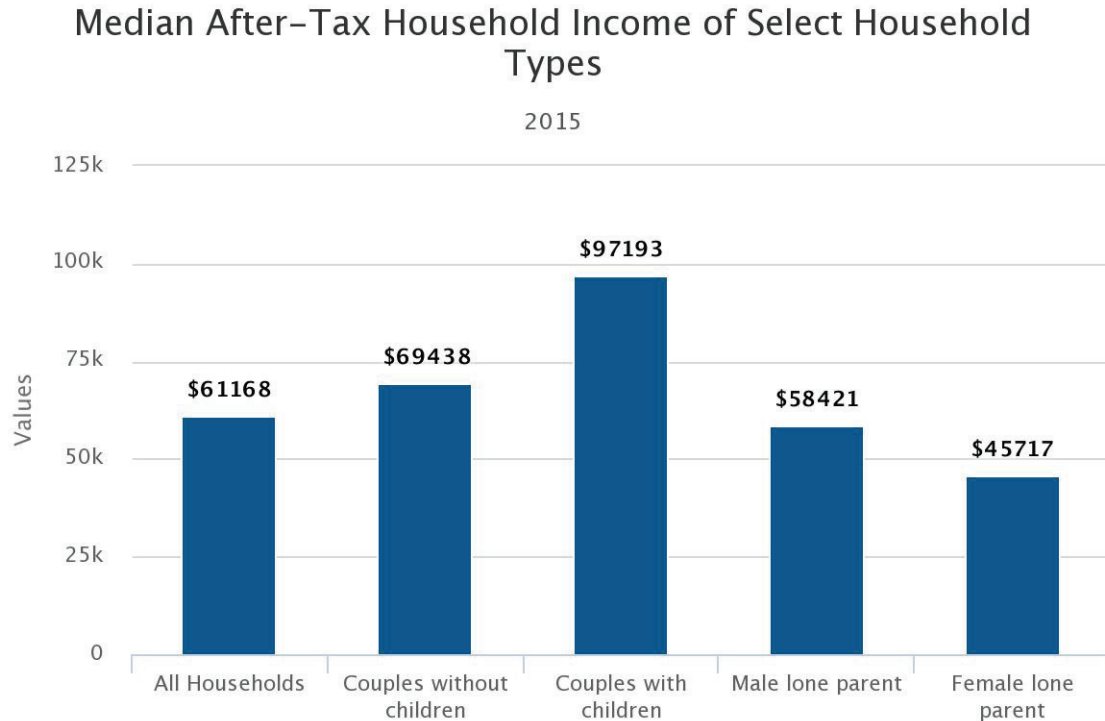
2016



Socio-Economic Profile

In 2015, the median total income of Hamilton residents age 15 and over was \$32,917. The median total income for Hamilton males was \$39,174 which was 33.1% higher than the median total income for Hamilton females which was \$28,056. The median total income for Hamilton households was \$69,024.

To better understand the economic well-being of individuals and households, it is useful to look at median after-tax income. After-tax income accounts for government transfers and income taxes and provides a reflection of the dispensable income people have for purchase of necessities. In 2015, the median after-tax income was \$30,175 for residents age 15 and over and was \$61,168 for Hamilton households. The median after tax income for male lone parent families was \$58,421 which was 24.4% higher than the median after tax income for female lone parent families which was \$45,717.



Additional insight into the economic well-being of residents in Hamilton can be provided by looking at income in relation to the Low Income Measure after tax (LIM-AT). A person or household with income below the Low Income Measure would be considerably worse off financially than average.

The LIM-AT represents 50% of the median adjusted household income after tax, where adjusted means that considerations were made for household size and needs. Based on the LIM-AT, in 2015 a one-person household would be considered low income if their after-tax income was below \$22,133. The threshold for a two-person household was \$31,301 and for a four-person household the threshold was \$44,266.

In 2015, there were 80,915 Hamilton residents living in low income using the LIM-AT. This is equivalent to 15.3% of the total population in Hamilton. Overall, there were more females in low income than males (53.6% vs. 46.4%). The difference was much more notable for residents age 65 years and over in low income with 64.8% females compared to 35.2% males.

Income levels can have an impact on fire risk as building owners may be less likely to make repairs due to affordability which can lead to increased risk due to lack of maintenance. In addition, households with lower income are less likely to purchase fire safety products (i.e. smoke alarms, carbon monoxide alarms) due to affordability or in other cases renters may experience difficulties in having a landlord supply these detection devices. Residents who are unable to make utility

payments in order to make rent payments, may resort to using space heaters for heat which can lead to fires if placed too close to combustibles or because of the use of extension cords.

The top three causes of residential fires in the City of Hamilton are careless smoking, unattended cooking and electrical malfunctions. Careless smoking and unattended cooking are behavioural based and clearly preventable. The Federal Emergency Management Agency (FEMA) has previously reported that low income households are at greater risk from fire due to smoking. An Ontario Fire Marshal study conducted in 2005/2006 on stove-top fires, found that the rate of stovetop cooking fires was three times higher in subsidized residential dwellings than in non-subsidized dwellings.

6. Geography/Topography/Transportation Infrastructure

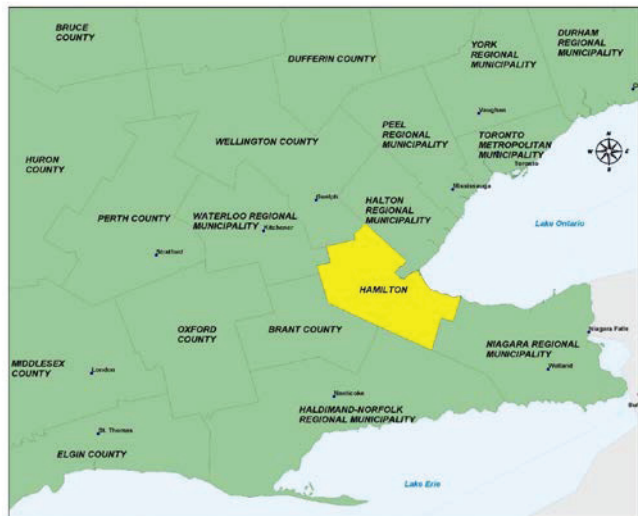
The City of Hamilton spans an area that covers 1,171sq km and is located within the Golden Horseshoe area in Southern Ontario, at the southwest corner of Lake Ontario.

Hamilton is a City of many communities. Physically defined by unique geographical features like the Niagara Escarpment and Hamilton Harbour, the City has a broad mix of urban centres and sprawling farmland.

Hamilton is located in the centre of the most densely populated corridor of economic activity in all of Canada. Hamilton's location provides businesses with easy access to a network of highways, international rail lines, local air connections, the Port of Hamilton and is within half a day's drive of key major urban markets in the United States. The Queen Elizabeth Way provides ready access to both the Greater Toronto Area and Highway 401.

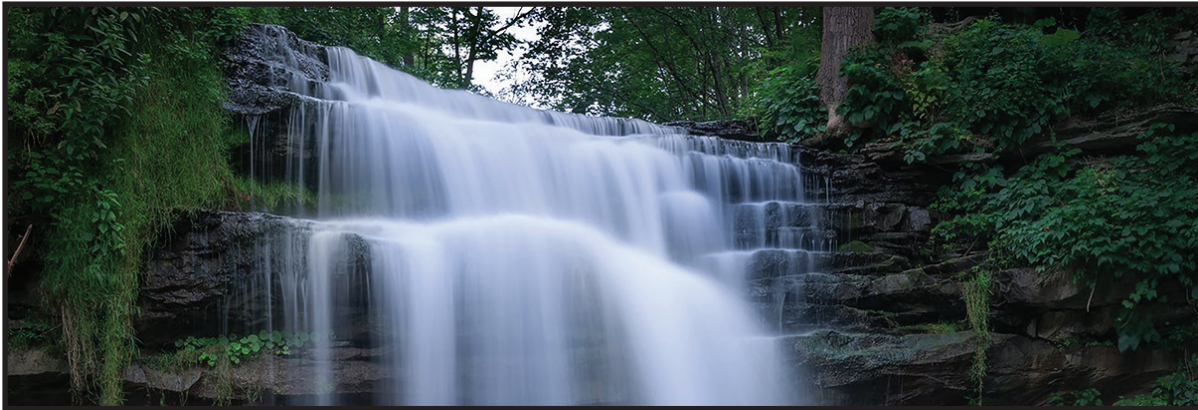
The Queen Elizabeth Way and Highway 401 are the Canadian link connecting Ontario with the I-75 serving Michigan, Ohio, Kentucky, Tennessee, Georgia and Florida and the I-90 connections to the eastern seaboard. With the United States border only an hour's drive away, Hamilton has site selections and industrial real estate locations that are within half a day's drive of key major urban markets in the United States.

Hamilton is home to more than 100 waterfalls, and with one of the highest number of waterfalls of any urban area of its size, has been called the Waterfall Capital of the



World. Many of the waterfalls are found along the Niagara Escarpment and Bruce Trail, and can be easily accessed from groomed trails and viewing areas.

Most waterfalls are situated beside steep drops and the ground around the waterfalls can become unstable. This can lead to accidents which require technical rescue services from the Hamilton Fire Department. This combination does result in many rope rescue calls off the escarpment. In the past five years, the Hamilton Fire Department has responded to 111 rope rescue calls. Complicating some of these rescue calls is the unfamiliarity of the locations with visitors to the trails and waterfalls.



Persons calling 911 for help often utilize visual landmarks or sounds to help guide rescuers to their locations. The use of drone technology with thermal imaging capabilities would assist rescuers in locating victims in a timely manner.

When effecting a rescue within the City's trail system, Fire Department apparatus cannot access the trails due to their size and weight. The Hamilton Fire Department dispatches a Senior Officer's vehicle (District Chief or Platoon Chief) to the scene to transport firefighters to a victim and to assist in removal of a victim. There are limitations to areas these vehicles can access as well. An off-road vehicle such as an all terrain vehicle equipped with a pump to extinguish small fires on the trail system and capable of carrying a stretchered patient off a trail would assist firefighters in affecting a rescue in a timely manner.

Being situated on Lake Ontario, along with the harbor and many inland waterways, water rescue and ice rescue are risks within the City. In water rescue on Lake Ontario and the harbour is currently provided by the Hamilton Police Service and the Hamilton Beach Rescue Unit which is a volunteer Coast Guard Auxiliary Unit. The Hamilton Fire Department provides shore-based water rescue services and have recently been approved by City Council to provide shore-based ice water rescue services along with the Hamilton Police Service and the Hamilton Beach Rescue Unit.

Recent changes being made to the road network within the City can have an impact

on emergency response. More pedestrian friendly neighbourhoods, the combination of smaller turning radii, narrower streets, on street parking, bicycle lanes and the development of the Light Rail Transit system will impact emergency response times. The Hamilton Fire Department must be in a position to respond to these changes effectively.

Physical Geography

The City of Hamilton is defined by its physical geography and is distinguished for its uniqueness of its urban and rural areas. Hamilton maintains 5,523 acres of parkland, municipal properties and open spaces with one of the most prominent features being the Niagara Escarpment which is defined by its distinctive trails (Bruce Trail), waterfalls, vistas, forests, cliffs, mineral resources and wildlife habitats.

The City's Conservation Authority owns and manages 10,872 acres of environmentally significant protected land, representing 9.4% of the City's watershed land mass.

Climate

The City of Hamilton's climate is categorized as moderate humid continental. The region has warm, humid summers, reaching average highs of 26.3°C and cold winters, experiencing seasonal averages as low as -9.7°C. The average annual rainfall is 765.8 mm and average annual snowfall is 161.8 cm. As identified in the 2016 Hazard Identification Risk Assessment (HIRA) report, flooding and extreme ice storms are considered as two the top 10 risks in the City.

Within the HIRA report, a flood is defined as "an overflow or inundation of water from a river or other body of water which causes or threatens loss of life and property and environmental damage". Floods are the most costly natural disasters in Canada in terms of property damage. They can occur in any region, at virtually any time of the year and have affected hundreds of thousands of Canadians. In Canada, flooding can be caused by any one or combination of the following factors:

- Extreme precipitation – sudden, high volume input of water
- Snow melt – sudden, high volume input of water, during warmer temperatures
- Ice break-up – can release a significant amount of water and ice
- High winds – can result in a storm surge
- Soil moisture conditions – saturated soil leads to a greater percentage of precipitation and will be available as runoff
- Ice jams – can act as a natural dam, allow large volumes of water and ice to build up until the jam breaks
- Wind chill – produces frazil ice

One of the most common causes of flooding is the accumulation of precipitation (heavy storm rainfall). Snow, sleet or hail sits frozen for several months, only to run off during the few short weeks of spring thaw. During this period, heavy rain, ice jams on rivers, or a heavy snow cover and rapid melt, can cause flooding. Heavy rains caused by thunderstorms, or warm, moist air rising rapidly, can produce flash floods. Historically, documented flooding incidents have typically been associated with the remnants of hurricanes (Hazel, 1954 & Connie, 1955) or tropical storms (Isobel, 2003). More recently, flooding within Hamilton has been because of severe weather incidents. This includes incidents where large amounts of rain fell in short periods of time, as well as insufficient infrastructure to handle the rainfall.

Transportation System

The City of Hamilton has an extensive and diverse transportation system. This transportation system includes two major provincial freeways (Highway 403, Queen Elizabeth Way (QEW)), the Lincoln Alexander Parkway and the Red Hill Valley Parkway. Hamilton also has an extensive network of arterial and collector roads, an international airport, several rail facilities, and the Port of Hamilton.

GO Transit provides inter-regional bus and rail services, which are presently focused on the Downtown GO Transit Terminal, the West Harbour and McMaster University GO Stations. Various other companies, such as Greyhound Canada and Coach Canada, offer service to other nearby cities.

Hamilton is a major centre for goods movement in Ontario. It is a main port, serves as an air cargo hub for express packages (i.e. courier companies), and is strategically located for road and rail routes that serve both domestic and trans-border trade. Canada's two national railways, Canadian Pacific (CP) and Canadian National (CN), provide rail freight services across North America for Hamilton's industries. There are also short line railways that run through Hamilton, including Southern Ontario Railway.

The 2016 Hazard Identification Risk Assessment (HIRA) for the City of Hamilton identified hazardous material spills on the transportation network as a risk. A Hazardous Materials Incident is defined as the unintentional release of a material that is considered to be hazardous to humans, animals, plants or the environment due to its explosive, flammable, combustible, corrosive, oxidizing, toxic, infectious or radioactive properties (EMO, 2005). The HIRA report identifies this type of incident as an extreme hazard for the City of Hamilton. A Transportation Incident is one in which the release occurs during the transport (by means of road, rail, air or marine) of a hazardous material (Emergency Management Ontario, 2005).

Specific concern within the City of Hamilton would industrial zones within the City, all gas lines, railways, the Hamilton Port and the road transportation system. Large scale hazardous material releases in Hamilton, with impacts to the community, tend

to be mainly at fixed sites. The Transportation of Dangerous Goods Act requires companies to provide information to Transport Canada on the kinds and quantities of dangerous goods that are being transported through communities. Communities can request this information so local emergency responders can be trained and prepared for incidents involving these hazardous materials.

A rail transportation emergency is defined as a crash, collision or incident, of large scale, involving any rail mode of transportation that encompasses the transport of general goods or passengers and excludes hazardous materials incidents (Emergency Management Ontario, 2005).

In the past fifteen years, there have been a variety of minor train derailments in the City of Hamilton. Two have involved flammable materials but they occurred on side tracks or rail yards and there was no significant impact. There has only been one main-track derailment in Hamilton which happened in June 2013. Main-track derailments are considered more serious because they run through more densely populated areas. There were no injuries or dangerous goods being transported when that train derailed. The majority of recent derailments in Hamilton are happening in yards at low speeds. In 2000, there was a train derailment behind the Fortinos at Dundurn and King St which included a number of cars.

According to Transport Canada, since 2007, train accidents in Canada have decreased by 23 per cent and train derailments are down 26 per cent. Despite this fact, there have been some significant rail transportation examples in recent history. The Lac-Mégantic derailment illustrates the potential impact of a transportation emergency within a community. This incident occurred in Quebec and parts of the small town were completely destroyed on July 6, 2013 when a train carrying 72 cars of crude oil derailed and exploded in the centre of town, killing 47 people (Carter, 2013).

Historically there have been no large scale incidents involving VIA rail trains in Hamilton. In February 2012, there was a VIA train incident in Burlington when passenger train number 92 was proceeding eastbound to Toronto. The locomotive and all five coaches derailed. The locomotive rolled onto its side and struck the foundation of a building adjacent to the track. The three operating crew were fatally injured, and 45 passengers were injured.

Transportation related incidents, whether it involves vehicles such as transport trucks or tanker trucks and rail vehicles may require a specific response including in some cases firefighting capabilities involving the use of larger quantities of foam. Fire Department apparatus carry a limited supply of foam which in larger scale incidents may be insufficient.

The Hamilton Fire Department previously maintained a Foam Truck at Station 1 which was unmanned. In the event of a larger scale incident, this truck would be

manned by a firefighter from one of the apparatus in the station and respond to the incident. The purchase and commissioning of a foam truck would address this transportation risk as identified in the HIRA report.

When responding to emergency incidents, the Hamilton Fire Department contends with increasing levels of traffic congestion as a result of planned construction projects, unplanned delays due to emergency road repairs and a number of other localized special events. Increased congestion not only impacts travel times, it also increases the risk of incidents and demand for emergency response.

Recently, the City of Hamilton advanced a number of strategies related to creating a safer environment for users of our streets. This includes various traffic calming initiatives; a reduction in the number of travel lanes, reducing the widths of roadways and the creation of dedicated bicycle lanes.

It is important that City Divisions work together to ensure that potential impacts on emergency response routes and times are considered on a project-by-project and/or location-by-location basis. Looking ahead, population growth and the associated congestion will be the primary impact on the roads. This is an impediment to service provision and a primary consideration as the Hamilton Fire Department plans for future service delivery.

Transit

Hamilton Street Railway (HSR) is the provider of conventional transit services within the City as a division of the Public Works Department. With over 175 buses on the road each day, HSR is one of the most visible public services in the community. HSR serves over 70,000 passengers on an average weekday, which equates to approximately 21 million passengers per year. An approximated 7% of Hamilton's population travels by transit every day, with an estimated 30% of the population using the transit system at some point during the year (IBI Group, 2010).

The City of Hamilton is currently in the planning and design phase of a new Light Rail Transit (LRT) system which will feature new, modern light rail vehicles on a 14-kilometer rail line between Eastgate Square in the east end of the City to McMaster University in the west end. Construction of the LRT is currently scheduled for 2019 – 2024. The LRT project will have an impact on emergency response travel times. The LRT project runs along the main east-west corridor in the City of Hamilton. This route is utilized by many of our stations in the lower City.

Currently, in the west end of the lower City, many apparatus responding to a structure fire come from the downtown core (Station 11 and Station 1). King Street and Main Street are the primary roadways that firefighters utilize to access this area of the City, and they will become more congested with the LRT construction.

Firefighters must undergo a wide range of additional training to become qualified to respond to incidents on the LRT line. This would include learning about the rail cars themselves to preparing for search and rescue within tunnels or on elevated structures.

The Hamilton Fire Department has been involved in the planning phase of this project to ensure that all challenges the Hamilton Fire Department face are addressed.



Hamilton International Airport

John C. Munro Hamilton International Airport serves as a low-cost gateway for passenger travel to and from the Greater Toronto Hamilton Area while being based in Canada's largest catchment area with approximately 20% of the Canadian population. The Airport is one of the fastest growing airports in Canada. During the first half of 2017, Hamilton International saw a significant passenger traffic growth of 127%.



Hamilton International Airport is Canada's largest overnight express cargo airport and the third largest domestic air cargo distribution airport. In 2017, Hamilton International Airport saw an increase of 14% in cargo movement with 499,211,000 kg in cargo passing through the airport and 599,146 passengers travelled to various destinations on airlines servicing the airport. This was an increase of 80% over the number of passengers in 2016. In conjunction with the air cargo movement at the airport, there is significant truck traffic at all times of the day moving goods from the airport by land.

Since amalgamation, the Hamilton International Airport has provided airport firefighting that meets Transport Canada regulations and the City has played a support role.



The Hamilton Fire Department does not provide fire response for air crash rescue response on the airport grounds.

The Hamilton Fire Department will respond to an aircraft emergency/crash at the airport and provide first aid services along

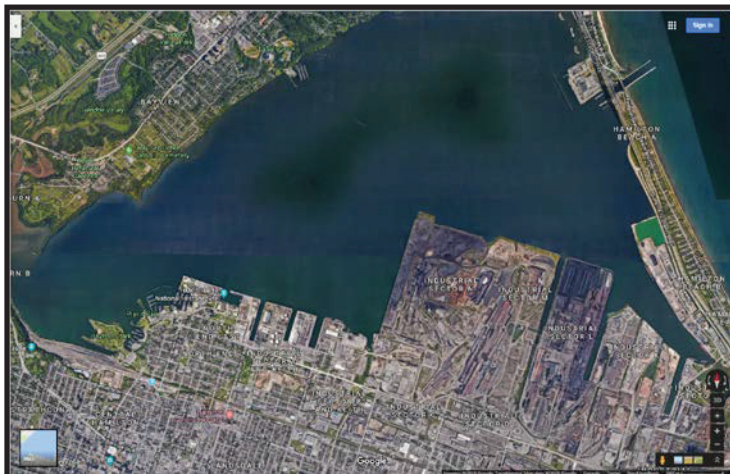
with water supply requirements for Airport Fire. The Hamilton Fire Department is responsible for all hazardous material incidents and structural firefighting at Hamilton International Airport.

An aircraft accident occurring outside of the airport and within the City of Hamilton falls under the jurisdiction of the Hamilton Fire Department who would respond. The Hamilton Fire Department can request assistance from Airport Fire for an accident outside of the Airport.

Continued growth at Hamilton International Airport has resulted in increased arrivals and departures of both; passenger and cargo aircraft, larger aircraft, increased passengers in the terminal building and increased traffic including transport trucks moving cargo. Currently, the closest station to the airport is Fire Station 19 which is located 1.5km outside of the airport and is a volunteer station.

Hamilton Port Authority

Hamilton's port is the largest in Ontario - moving more cargo than all other southern Ontario ports combined. In recent years, the port has diversified its commodity mix, driven by the expansion of the agri-food sector, and attracting more than \$300 million in private sector investment. Hamilton is now southern Ontario's largest export gateway for grain, and the largest import gateway for crop inputs.



The Port of Hamilton is self-funded and is home to 130 tenant companies. It is one of the city's largest employers, and one of its top business taxpayers. The number of jobs on port property has increased by 30% in the last decade.

To keep pace with the demands of a growing GTHA region, the Port of Hamilton must continue to grow. The Hamilton Port Authority (HPA) is working on strategies to increase its footprint and to make more efficient use of existing space, to achieve higher employment densities and attract higher value uses, such as the new \$50 million flour mill that opened in 2017.

The Port of Hamilton contains four grain export/processing facilities (soybeans, corn, wheat, canola, sugar, packaged foods, fertilizer, flour milling, edible oils, biodiesel and food packaging), and three liquid bulk terminals. The Port handles approximately 9.8 million metric tonnes of highly diversified cargo with approximately 562 vessel calls in 2017. Cargo handled in 2017 included:

Steel Making	6.79 million metric tonnes
Agricultural	2.29 million metric tonnes
Aggregates	304,377 metric tonnes
Liquid	275,208 metric tonnes
General/Other	200,901 metric tonnes

The cargo transiting the Port of Hamilton each year has a value of \$1.9 billion. There are 2,100 employees on-site at the Port of Hamilton and over 38,000 jobs in Ontario connected to the cargo that transits the Port of Hamilton.

The Port is strategically located and allows for easy access to the QEW and Ontario's 400 series of highways, services to CN and CP railways and direct connections to key markets in Central Canada and the United States.

Some risks identified in the 2016 HIRA report are found on the Port Authority lands. These include:

- Hazardous Materials Incident: Spills/Fire/Explosion – Fixed Site Incident: There are several Industries located on Port Authority land that contain large storage facilities of petroleum-based products and flammable gases. In the event of a fire or explosion, the Hamilton Fire Department has limited supplies of foam which would be required for fighting fires involving these flammable/combustible liquids.
- Hazardous Materials Incident: Spills/Fire/Explosion – Transportation Incident: Many hazardous materials are transported in and out of industrial sites by pipeline, rail and transport trucks at all times of the day. In many cases these modes of transport intersect with each other and accidents are a possibility. Once these rail cars or transport trucks leave a facility, they will typically travel along Burlington Street in order to reach highways leading out of the City.
- Transportation Emergency – Marine – The Hamilton Fire Department is responsible for fighting fires onboard ships and other marine vessels while they are docked. It should be noted that all firefighting is land based as the Department is not equipped with a fire boat.

These hazardous material incidents described above require a specific response including firefighting capabilities involving the use of larger quantities of foam. Currently, Hamilton Fire Department apparatus carry limited supplies of foam. The purchase and commissioning of a foam truck would address a response to either a fixed site incident or along the transportation network.

An additional risk associated with any incident along the waterfront is the risk of environmental damage including smoke plumes generated by a large industrial fire resulting in evacuations of neighbouring areas and any potential fire run-off into the Port slipways and harbour.

Critical Infrastructure

The City of Hamilton Emergency Management Office maintains a list of all critical infrastructure across the City of Hamilton which includes owner/operator information and contact information for responsible parties. Critical Infrastructure in the City of Hamilton is grouped into different occupancy types which include the following:

Public Safety and Security

- Emergency Operation Centre – Primary and Alternate Sites
- Evacuation Centres – eight locations
- 911 Communications – Police, Fire and Paramedic dispatch centres all of which operate from separate locations and 11 tower sites across the City of Hamilton.
- Jails – Hamilton Detention Centre
- Dams – three dams operated by Conservation Authorities

Electricity

- Alectra – two service centres and 23 substation locations
- Hydro One Distribution – 19 locations

Food and Water

- Wastewater Pumping Stations – 70 locations
- Combined Sewer Overflow Tanks – 13 locations
- Sluice Gates – five locations
- Landfill Leachate Pumping Stations – eight locations
- Pumping Stations – 21 locations
- Communal Wells – eight locations
- Reservoirs – 19 locations
- Wastewater Treatment – eight locations

Transportation

- Hamilton Port Authority
- Burlington Lift Bridge
- Burlington Canal
- Highways/Roads – Hwy 403, QEW, RHVP, Lincoln Alexander Parkway, Industrial Drive, Burlington Street
- Bridges/Overpasses – 10 locations
- CP Rail – Rail lines, two yards, one tunnel and two bridges
- Southern Ontario Railway – Hamilton Terminal
- Hamilton International Airport
- Hamilton Street Railway
- GO Transit

Continuity of Government

- City Hall
- Operations Centre

- IT Information – three locations

Telecommunications

- Cable network – three locations
- Radio Stations – three locations

Gas and Oil

- Union Gas
- Enbridge

Health System

- Hospitals – nine locations
- Long Term Care Facilities – 27 locations
- Walk-in Clinics – 22 locations

The 2016 Hazard Identification and Risk Assessment Report (HIRA) listed in the top 10 risks some components of critical infrastructure such as:

Energy Emergency – Supply Network

An Energy Emergency is defined as the disruption of the supply, production and transportation of electricity, natural gas, and/or oil severe enough to threaten public safety, business and the economy. If energy supply emergency progresses to the point that there is a complete lack of electricity, natural gas, or oil then it may become a critical infrastructure failure emergency. There are many processes and facilities that if disrupted could result in an energy supply emergency. These include:

- Pipelines: the transportation of gas or oil through a pipeline will be halted if the structural integrity of the pipeline is compromised or destroyed.
- Terminals and Storage Facilities: computer, storage and loading systems are used to track and handle exportation of the fuel. Very few countries keep a significant reserve of fuels, so the loss of even one terminal or storage facility can have a serious impact on the market.
- Electricity: generation, transmission and/or distribution failures; loss of SCADA systems due to hostile cyber intrusions and technology failures in connected sectors e.g. telecommunications.

Power outages occur on a regular basis, however, they become a concern when the power outage is for a significant period of time, when the temperatures are very low

or high and effect critical infrastructure, persons, livestock or businesses are affected. An energy emergency occurring during the winter months is more severe and could result in a number of consequences. Other potential impacts of an energy supply emergency would be a possible increase in foodborne illnesses as well as potential impacts on the wastewater and the water distribution systems.

Some historical data for Hamilton on events involving the energy supply network include:

- 2013: An ice storm of freezing rain, ice pellets and snow started on Saturday December 21, 2013 and continued on Sunday December 22, 2013. The storm damaged a large percentage of the tree canopy and it also caused damage to properties as a result of fallen trees. The storm knocked out the electricity to thousands of homes and businesses mostly due to ice-coated trees and branches falling onto power lines. The weather hindered the efforts to protect the public, restore hydro service and clear debris. The City opened four warming centres for residents without power.
- 2007: Fuel shortage resulting from a fire at the Nanticoke refinery affected gasoline supplies across the province. Hamilton prepared for fuel shortages so there were no impacts from this particular incident. If the fuel shortage impacts a larger geographic area, there may be additional strain on the supply and shortages could occur.
- 2003: Hamilton was affected by the blackout that occurred in eight U.S. states and Ontario. The blackout affected more than 50 million people. Parts of Hamilton were without power for as long as three days.

Specific areas of concern would be hospitals, long-term care facilities, vulnerable populations dependent on electricity, transit systems, large industry, public safety (homes broken into) and security, and the agricultural industry.

An additional identified risk within Hamilton's 2016 HIRA report involving critical infrastructure is telecommunications.

In general, a critical infrastructure failure is defined as the disruption of any of the interdependent, interactive, interconnected networks of institutions, services, systems and processes that meet vital human needs, sustain the economy, protect public safety and security and maintain continuity of and confidence in government. For the telecommunications sector this would include failures of landlines, cell phones, internet, as well as communications systems relied on by emergency responders.

Interruptions in the telecommunications system, particularly cellular communication outages, occur a few times each year. Internet communication

failures have occurred on a similar frequency. Although these outages have not caused a significant impact, there is the potential for the impact to be great, particularly if the emergency communication system, water system or traffic systems are affected. Outages in telecommunications could impact many defined critical infrastructure sectors, such as: public safety and security; continuity of government; food and water; financial services and the transportation networks. Some of the greatest impacts could be on the SCADA systems like the City’s water services, any utilities that are provided by a third party, traffic system (traffic lights), and the emergency services departments.

Past Fire Loss Statistics (2013 – 2017)

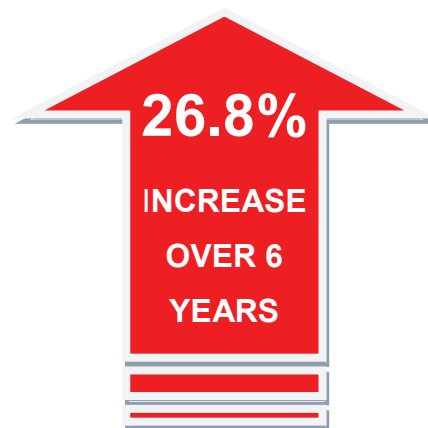
Over the past five years the Hamilton Fire Department has experienced an increase in responses from a total of 26,359 dispatches in 2013 to a total of 32,509 dispatches in 2018. This represents an increase of approximately 23.3% in call volume or an average of 3.88% annually.

Year	TOTAL INCIDENTS
2018	32,509
2017	31,615
2016	30,157
2015	28,282
2014	26,352
2013	26,359



Dependent upon the type of call being responded to, either a single piece of apparatus or several pieces of apparatus may be dispatched. The following chart provides an overview of apparatus dispatches over the past six years.

Year	TOTAL APPARATUS DISPATCHES
2018	42,234
2017	39,757
2016	37,823
2015	35,361
2014	33,504
2013	33,300



The Hamilton Fire Department responds to many varied types of incidents. The following chart provides a breakdown of these responses for 2017.

RESPONSE GROUP	TOTAL RESPONSES	% OF RESPONSES
Life Threatening Medical Call	20,744	65.61%
Alarm Investigation (Nothing Found)	4,309	13.63%
Other Responses	2,760	8.73%
Rescue	1,112	3.52%
Property Fires / Explosion	793	2.51%
Pre-Fire Conditions / Smoke, No Fire	671	2.12%
Gas Leak, CO, Hydro	623	1.97%
Open Air Burning	567	1.79%
Reports Pending Classification	30	0.09%
Ruptures/Explosions (No Fire)	6	0.02%
TOTAL	31,615	

The following chart provides an overview of the same responses in 2018 along with the corresponding increase or decrease in calls.

RESPONSE GROUP	TOTAL RESPONSES	% OF RESPONSES	% INCREASE/DECREASE FROM 2017
Life Threatening Medical Call	21,306	65.55%	0.06% decrease
Alarm Investigation (Nothing Found)	4,535	13.95%	0.32% decrease
Other Responses	2,582	7.94%	0.79% decrease
Rescue	1,200	3.69%	0.17% increase
Property Fires / Explosion	865	2.63%	0.12% increase
Pre-Fire Conditions / Smoke, No Fire	752	2.31%	0.19% increase
Gas Leak, CO, Hydro	703	2.16%	0.19% increase
Open Air Burning	543	1.67%	0.12% decrease
Reports Pending Classification	15	0.06%	0.03% decrease
Ruptures/Explosions (No Fire)	8	0.02%	No change
TOTAL	32,509		

While these statistics show that the greatest percentage (65.55%) of responses in 2018 were for medical related calls; it is important to clarify that the Hamilton Fire Department does not respond to all medical calls along with the Hamilton Paramedic Service. In an agreement with CACC (Central Ambulance Communications Centre) and the Hamilton Paramedic Service, the Hamilton Fire Department are tiered or dispatched to all Code 4 (life threatening) medical calls. Examples of Code 4 calls are as follows:

1. Absence of breathing / Cardiac or Respiratory Arrest
2. Unconscious / Unresponsive / Seizure
3. Choking / Sudden Shortness of Breath (onset within last 48 hours)
4. Other trauma;
 - Penetrating Trauma (i.e. gunshot or stabbing)
 - Pedestrian / Cyclist Struck (motorcycle, bicycle, etc)
 - Motor Vehicle Collisions on all rural roads and highways
 - Multiple Victim Incidents (including Motor Vehicle Collisions with suspected or confirmed multiple victims)
 - Falls Greater than 10 feet
5. Chest pain
6. Burns / Electrocution
7. Calls where the CACC Ambulance Communications Officer estimates the interval from the time the Paramedic unit is dispatched until the time it will arrive on-scene will exceed 15 minutes.

In addition to the above noted, the Hamilton Fire Department will be tiered on a response whenever there is any indication that there may be Hazardous Materials involved (including chemicals, spills of gasoline, diesel fuel, propane, etc.), a victim trapped, reports of fire, structural hazards, any rescue, and as requested by Paramedics on scene of an incident.

A review of the top five responses other than medical calls over the past six years (2013-2018) indicates the following:

DISPATCHED AS	TOTAL RESPONSES	% OF RESPONSES
Alarm Conditions	14,618	8.30%
Vehicle Accident	7,983	4.50%
Carbon Monoxide Detector Activated	5,654	3.22%
Burning Complaint	3,563	2.03%
Fire Department Assistance	2,933	1.67%

Responses for alarm conditions include both accidental and malicious alarms in residential and commercial occupancies. In the past six years (2013 – 2018), Hamilton firefighters have been dispatched on 14,618 alarm condition calls. Alarm condition dispatches can occur for a number of reasons however it is important to note that many of these incidents were classified as false fire calls.

There have been 5,654 dispatches for a carbon monoxide problem in a premise over the past six years. Many of these responses found no levels of CO present in a home and were determined to be a false alarm.

There have been 3,563 open air burning complaints dispatched in the past six years. What is notable is that many of these responses occurred in Wards of the City that are entirely urban where open air burning is not permitted.

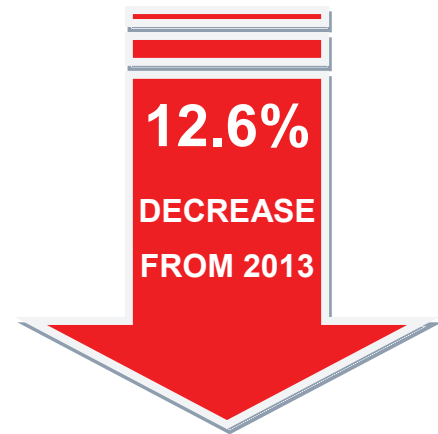
Additional public education initiatives on both carbon monoxide detectors and open air burning regulations would assist in reducing the number of responses.

Fire Department assistance calls included but were not limited to assistance to other agencies (Police and Paramedics), medical related issues, persons trapped in an elevator and other general assistance type calls.

City of Hamilton Structure Fires

There has been a total of 1,771 structure fires in the City of Hamilton in the past six years. The total number of structure fires in the City of Hamilton has steadily decreased over the past five years from a high of 323 in 2013 to 282 in 2018.

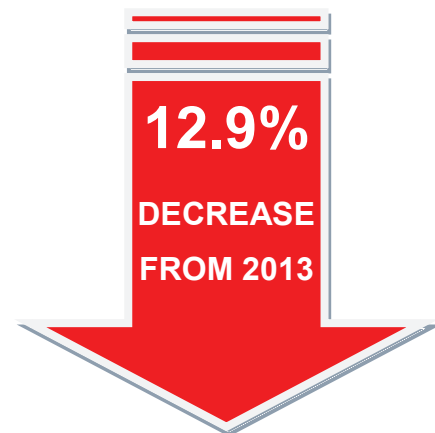
YEAR	TOTAL STRUCTURE FIRES
2013	323
2014	305
2015	299
2016	290
2017	272
2018	282
TOTAL	1,771



Residential structure fires account for 75.4% of all structure fires in the City of Hamilton. While the number of residential fires continues to decrease over the past 6 years, citizens continue to be injured or killed in their homes due to fires that are clearly preventable.

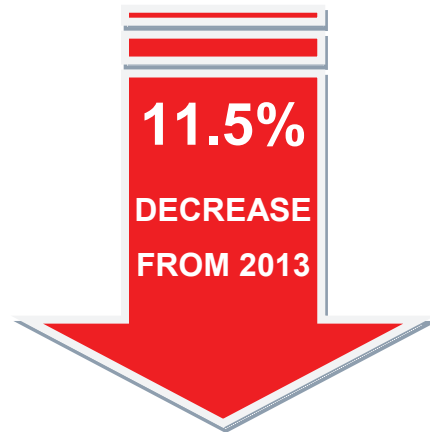
The Province of Ontario has not yet released 2017 statistical information but in the five year period from 2012 – 2016, residential fires accounted for 73% of all structure fires.

YEAR	RESIDENTIAL FIRES
2013	254
2014	215
2015	230
2016	216
2017	200
2018	221
Total	1,336



The number of commercial building fires in the City of Hamilton has decreased from 69 in 2013 to 61 in 2018.

YEAR	COMMERCIAL FIRES
2018	61
2017	72
2016	76
2015	72
2014	92
2013	69
Total	442



The order of risk in Hamilton based on the number of structure fires in each occupancy over the past five years (2013 – 2017) would be:

Occupancy Type	Number of Structure Fires
1. Residential Occupancies	1,115 fires (74.9%)
2. Industrial Occupancies	147 fires (9.8%)
3. Assembly Occupancies	69 fires (4.6%)
4. Mercantile Occupancies	66 fires (4.4%)
5. Institutional Occupancies	45 fires (3.0%)
6. Business and Personal Service Occupancies	30 fires (2.0%)
7. Farm Properties (Barns)	16 fires (1.0%)

The Province of Ontario statistics are available in the five-year time frame from 2012 – 2016. There have been 54,457 fires with loss reported to the OFMEM from 2012 – 2016.

The order of risk in the Province of Ontario would be:

1. Residential Occupancies	(49%)
2. Industrial Occupancies	(5%)
3. Assembly Occupancies	(3%)
4. Mercantile Occupancies	(2%)
5. Business and Personal Service Occupancies	(2%)
6. Institutional Occupancies	(1%)

The order of risk based on percentage of fires in both the City of Hamilton and the Province of Ontario is similar with the exception of institutional occupancies and business and personal services occupancies. Farm buildings were not included as the Provincial statistics include farm buildings in a category with other structures not classified by the Ontario Building Code.

Property Fire Loss

Property fire loss is another performance measurement tool utilized to assess the impact of fire. The following chart contains the dollar loss for each of the past six years.

YEAR	Property Fire Loss
2013	\$11,467,533
2014	\$17,651,009
2015	\$12,623,315
2016	\$14,806,052
2017	\$13,059,420
2018	\$21,222,200
Total	\$90,829,527

Reported Fire Cause

Assessing the possible cause of the fires reported is an important factor in identifying any potential trends, or areas that may be considered for introducing additional public education of fire prevention initiatives as part of the community fire protection plan.

	Fire Cause	% of Cause
Intentional	Arson	7.9%
	Vandalism	3.8%
Top 3 Causes	Careless Smoking	12.1%
	Electrical	11.8%
	Unattended Cooking	11.6%
Other Unintentional	Other Causes	32.9%
Undetermined	Undetermined	19.6%

The top cause of fires in the City of Hamilton over the past six years is careless smoking (12.1%). This is closely followed by electrical (11.8%), arson/vandalism (11.7%) and unattended cooking (11.6%). Other causes include combustibles too close to an ignition source, maintenance issues, mechanical issues etc.

Civilian Injuries and Fatalities

The following table indicates the number of injuries and fatalities that occurred in the City of Hamilton from 2013 – 2018. Residential occupancies accounted for 94.2% of all fire fatalities and 85.4% of all fire related injuries.

Occupancy Type	Injuries	Fatalities
Assembly	2	0
Institutional	21	0
Residential	182	33
Business and Personnel Service	1	0
Mercantile	3	0
Industrial	4	0
Other	0	2 (Vehicles)
Total	213	35

8. Fuel Load

Fuel load typically refers to the amount and nature of combustible content and materials within a building. This can include combustible contents, interior finishes as well as structural materials.

Combustible content tends to create the greatest potential fire loss risk. Modern buildings are burning and collapsing faster than those built 50 – 100 years ago. Residential fires are becoming more difficult to escape and tend to have quicker flashover rates due to fuel load.

In residential construction, larger homes with open floor plans coupled with increased fuel loads and the use of newer construction materials results in a fire burning faster, a shorter time to flashover, rapid changes in fire dynamics, shorter escape times and shorter times to collapse of a structure.

The challenge of rapid fire spread is exacerbated by the use of building contents that have changed significantly in recent years, contributing to the decrease in time to untenable or life threatening conditions. Changes include the increased use of more flammable synthetic materials such as plastics and textiles, the increased quantity of combustible materials and the use of goods with unknown composition and uncertain flammability behavior.

As previously identified within this report, age and construction of a building can also have an impact on fuel load given that older buildings likely have a larger volume of combustible construction such as wood framing rather than newer construction utilizing concrete and steel products.

Within the City of Hamilton there are a number of buildings and occupancies where significant fuel loads are present. Older buildings in the downtown core and multi occupancy structures present the highest fuel load concentrations.

The City of Hamilton has many industrial occupancies which require emergency response plans through the Ministry of the Environment. The Environmental Emergency Regulations aim at enhancing the protection of the environment and human health in environmental emergency situations by promoting prevention and ensuring preparedness, response and recovery. They require persons who own or manage specified toxic and hazardous substances at or above the specified thresholds to provide required information on the substance(s), their quantities and to prepare and implement environmental emergency plans.

There are 34 industrial occupancies across the City of Hamilton requiring these emergency response plans through the Ministry of Environment that store quantities of product in excess of thresholds such as acetic acid, anhydrous ammonia, benzene, chlorine, gasoline, hydrochloric acid, hydrogen, propane, methane, naphthalene, propylene and sodium dichromate.

In addition to ensuring compliance to the requirements of the OBC and the OFC there are operational strategies that the Hamilton Fire Department can implement to address fuel load concerns. These include regular fire inspection cycles and pre-planning of buildings of this nature to provide an operational advantage in the event of fire.

Growth and Development

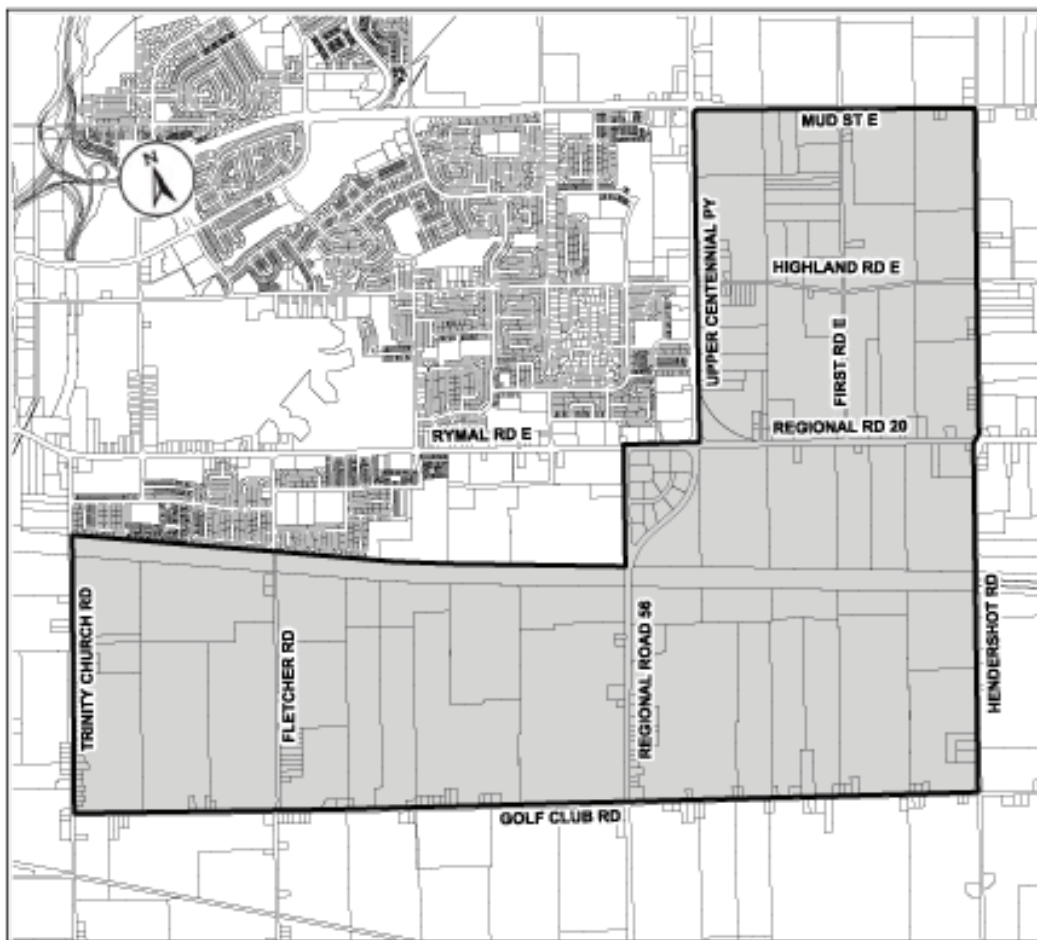
The population of the City of Hamilton is projected to increase to 660,000 by 2031. While the City has made efforts to intensify within the current urban boundary to meet targets for intensification, a future urban boundary expansion growth area is required to accommodate population growth. The following chart provides an overview of growth in each of the areas.

Growth will occur primarily in the residential sector with the largest percentages in Upper Stoney Creek (Elfrida) and Winona. The Upper Stoney Creek (Elfrida) Growth area is projected to become an urban area with a population of over 20,000 by 2031 and estimates for 2041 indicate a population of 72,000 – 80,000 people and jobs. The Winona growth area consists of the lands east of Fruitland Road, north of Highway No. 8, south of Barton Street, including Winona and the lands east of Winona, north of Highway No. 8, south of the QEW, and west of the City limits.

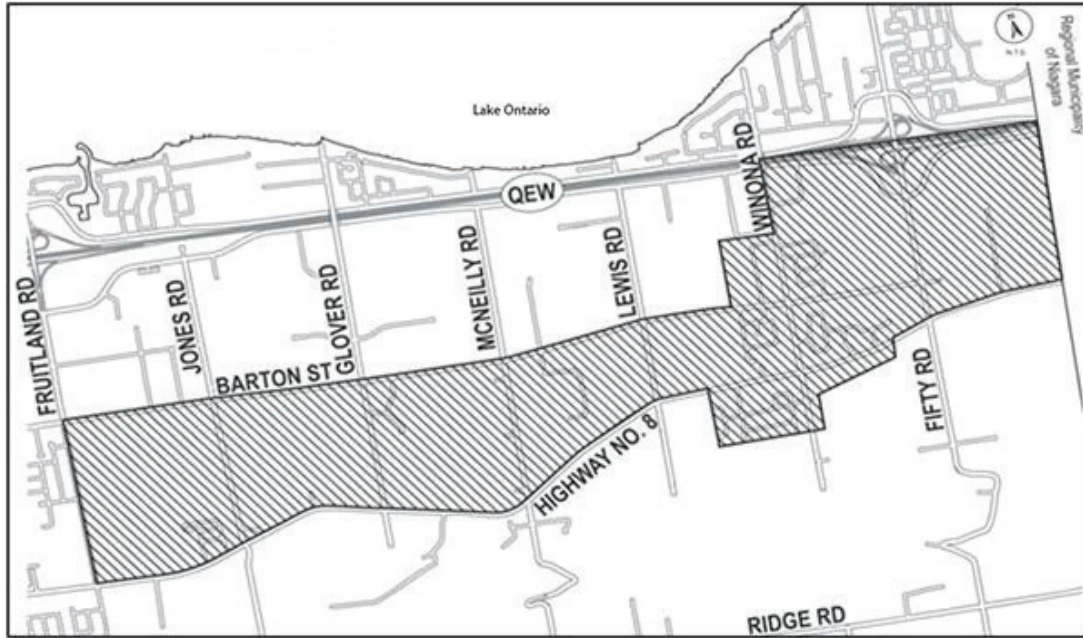
Hamilton Fire Department Forecasting

Existing Unit Mix

Growth Areas	2016		2031		15 year		Existing Unit Mix		
	Units	Pop	Units	Pop	PopGrowth	% Growth	Low	Med	High
Binbrook	3,704	10,026	5,832	16,011	5,985	60%	64%	33%	3%
Waterdown	7,603	20,263	12,748	32,067	11,804	58%	71%	21%	9%
Elfrida	1,840	4,985	3,397	20,427	15,442	310%	55%	45%	0%
Winona	1,315	3,626	5,161	13,297	9,671	267%	86%	12%	2%
Downtown Hamilton	7,076	12,726	14,168	25,206	12,480	98%	4%	2%	94%
West Harbour	2,281	5,628	3,870	8,419	2,791	50%	59%	12%	29%
Ancaster	6,987	19,022	9,587	26,327	7,305	38%	78%	19%	3%
TOTAL	30,806	76,276	54,763	141,754	65,478				



Upper Stoney Creek (Elfrida) Growth Area



Winona Growth Area

Binbrook and Waterdown are also expected to see significant growth in the next 10 years. These areas of the City are primarily served by either volunteer stations or composite stations. Other factors that can impact risk in these growth areas include multi-unit type construction and changes in road design.

As previously identified; service delivery in growth areas must be evaluated based not only on population changes and construction starts, but on effective response to all types of events including structure fires. In areas served by composite or volunteer stations, evaluation of effective response must include availability and response data of firefighters at all times of the day and different response models such as day-time crews should be considered.

In addition, it is recommended that the Hamilton Fire Department work with developers to promote the installation of residential sprinklers in new homes and examine the passing of a By-law requiring sprinkler installation in new home construction. Every home must have smoke alarms installed on every floor level and outside of all sleeping areas but while they will warn you of a fire in your home, they cannot extinguish a fire. Home fire sprinklers can contain and may even extinguish a fire in less time than it would take firefighters to arrive on the scene. Only the fire sprinkler in the immediate area of the fire would activate, controlling or extinguishing the fire and providing occupants the opportunity to escape. Another benefit of fire sprinklers would be the reduced time firefighters spend on the scene of a structure fire. If a sprinkler system activates shortly after a fire starts, the fire is smaller when firefighters arrive, or it is completely out already. Often, all the firefighters have to do is ensure that all hot spots are out and clean up. Fire sprinkler systems provide a level of protection that no other technology can offer.

According to the Canadian Automatic Sprinkler Association, installing both smoke alarms and a fire sprinkler system reduces the risk of death in a home fire by 82%, relative to having neither. Nationally, on average, home fire sprinkler systems add 1% to 1.5% of the total building cost in new construction and home fire sprinklers use only a fraction of the water used by fire department hoses. Fire sprinklers save lives, reduce property loss and can even cut home insurance premiums.

The Harbourfront/Pier 8 redevelopment is expected to see 1,227 condominium units along with 65 affordable housing units constructed. In addition, there will be some non-residential uses such as a fitness/health and wellness centre, some retail outlets and a proposed community hub.

In addition to the Harbourfront and Pier 8 development, there are a number of high-rise developments planned for the downtown core. These include:

1. Student Residence

Location: 925 Main Street West

Developer: Plaza Imports Limited and Columbia International College.

Stories: 15 & 15

Status: Proposed

This student residence will bring a mixed-use complex, with a four-storey podium for commercial space at the base of both towers. There is also a plan for the lands to the south as outdoor space and sports fields. There are 457 units, 107 parking spaces, and 50 bike spaces planned for this development.

2. George Centre For Living & Learning

Location: McMaster University

Developer: McMaster University

Stories: 12

Status: In construction

This 359,000 square foot student residence will also house classrooms, a food centre, childcare, and a student wellness centre.

3. Platinum Condos

Location: 15 Queen Street South

Developer: Coletara Development

Stories: 23

Status: Proposed

A 23-storey condo at the corner of King and Queen, Platinum Condos will be mixed-use, with a new 6,000 square foot All Saints Church (which will have space for community events) situated at the ground floor of the 4-storey

podium along King Street beside commercial business space. Entrances will be located at both King and Queen Streets. It will have 212 condos and 170 parking spaces distributed between one below-grade parking level and four-above grade levels.

4. Beverly Hills Apartment Addition
Location: 644 Main Street West
Developer: Effort Trust
Stories: 18
Status: Proposed

Located where their outdoor pool currently resides, this 18-storey, 93,000 square foot addition to the current 15-storey midcentury tower will have 167 rental units (with seven designed for students in mind), 73 parking spaces, and a one-storey podium connecting to the current circular breezblock podium. The podium will have indoor amenities complete with a gym, party room, and lounge, while the rooftop will provide outdoor amenities.

5. Gatsby
Location: 81 Robinson Street
Developer: New Horizon Development Group
Stories: 12
Status: In Construction

The third phase of City Square has been rebranded as The Gatsby. It will look identical in design to the previous two phases and will complete the complex situated in the heart South Durand. The Gatsby will have 102 units ranging between 522 and 1,000 square feet. It is slated to be complete by the fall of 2019.

6. Television City
Location: 163 Jackson Street West
Developer: Lamb Development Corp
Stories: 40 & 22
Status: Proposed

Two tall towers will be constructed in the Durand neighbourhood. Connected via a two-storey podium, the predominately glass towers will feature 17 different floor plans, and will include studio, one bedroom, one-plus-den, two bedroom, two-plus-den, three bedroom and penthouses. Television City is expected to be complete by 2022.

7. 20/22 George Street
Location: George Street & Caroline
Developer: Vrancor Group
Stories: 32
Status: In Construction

At 32 stories, the 230-unit tower will have a seven-storey podium with three commercial spaces at grade, two levels of commercial parking, four levels of public parking, and two levels of underground parking. Completion is scheduled for 2019.

8. Tivoli Theatre
Location: 108 James Street North
Developer: Diamante Investments
Stories: 22
Status: Proposed

Planned for 22-stories with 100+ condominiums, the current rendering of the tower features staggered, offsetting balconies, and a slim, needle-like profile.

9. Rebecca Street
Location: 71 Rebecca Street
Developer: Sonoma Development Group
Stories: 40
Status: Proposed

Sonoma Development Group have planned to construct a 40-storey tower with 371 residential units, 350 parking spaces between two underground and three aboveground levels, and over 13,000 square feet of commercial space.

10. King & Hughson
Location: King & Hughson
Developer: LiUNA Local 837 Lister Property Corporation & The Hi-Rise Group
Stories: 30 and 30
Status: In Construction

There are two 30-storey towers planned for the site. One of the towers will be condominiums, while the other will be rental units. There will be approximately 1,869 square meters of commercial space. The development will have two below grade and five above grade parking levels with 420 parking spaces.

11. William Thomas Residence

Location: 46-52 James Street North
Developer: LiUNA Local 837 Lister Property Corporation & The Hi-Rise Group
Stories: 21
Status: Completed

This mixed-use tower is geared towards students. It has 146 multiple dwelling units with building access at Rebecca Street. Facing James, the old four-storey William Thomas Building is being recreated with its original nine-bay stone facade and will have room for commercial space.

12. Location: 98 James Street South

Developer: Stanton Renaissance
Architects: 30
Status: Receivership

This proposal included a 30-storey tower connected to the remaining façade of James Street Baptist Church. They tore down 80% of the historic church for the development and the facade was to be connected to a podium with lobby and commercial space along Jackson Street. There were to be 259 condos and 11 different floor plans ranging from 451 to 2,077 square feet. Completion was scheduled for 2019.

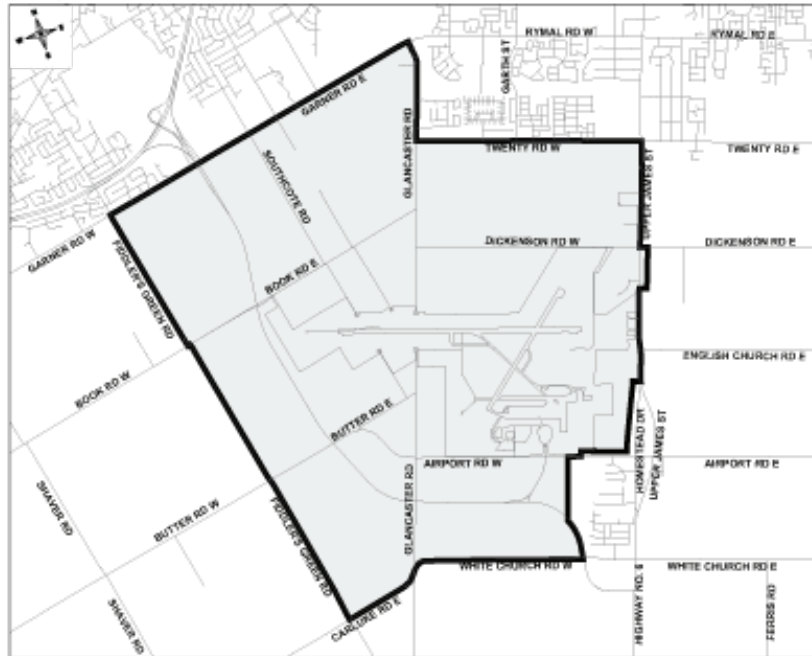
13. Oxford

Location: 64 Main Street East
Developer: Rockwater Group
Stories: 18
Status: Proposed

This development will offer one and two bedroom suites.

Intensification due to the construction of high-rise buildings in the downtown area along with the harbourfront development may increase call volumes in the downtown area.

The Airport Employment Growth District Secondary Plan Area comprises 1,204 hectares of land. The general boundaries extend between Garner Road/Twenty Road West in the north, Upper James Street in the east, and Highway 6 as both the most southerly and westerly boundaries in some areas. The Airport Employment Growth District is intended to offer a range of employment and employment-related land uses in the context of an industrial park. In general, this industrial park concept provides for industrial, light industrial and airport-related business and institutional development. This development may result in additional calls for service from the Hamilton Fire Department.



Airport Employment Growth Area

Fire Risk Profile Model

After the identification of fire risks, through the eight key factors, the next step is to consider the probability and consequence of fires.

The methodology within this report uses the OFMEM Fire Risk Sub-model major occupancy classifications as the basis for segmenting the community by primary building use. Each major occupancy classification is assigned a probability level based on the OFMEM Fire Risk Sub-model definitions. A consequence level also using the OFMEM Fire Risk Sub-model definition is then assigned for each major occupancy classification.

The methodology within this report includes a further process of assigning 'weighting factor' to each of the eight risk factor categories identified by the OFMEM Fire Risk Sub-model. Utilizing a range from 1 (lowest) to 5 (highest) each of the factors is assigned a weight factor, to calculate a weighted average.

The weight factor assigns more or less priority to each of the given factors. For example, the demographic profile has been assigned the highest factor weight of 3 as many fires are caused by occupants. This process results in the most relevant categories having more impact on the risk priority level calculated.

The level of risk (Priority Level) for each major occupancy classification is determined by multiplying "**probability x consequence = risk level (priority).**"

This provides the ability to determine an overall risk level for each major occupancy classification within the community.

Risk Levels

Once probability and consequence are determined for each major occupancy classification the level of risk is calculated by multiplying “**probability x consequence = risk level (priority)**”. The table below identifies the four levels of risk identified within the OFMEM Fire Risk Sub-model including the lower and upper range of each risk classification and the relative definition of each.

Risk Level	Priority Level	Lower-Upper Range	Definition
Low Risk	L1	0 – 6.3	<ul style="list-style-type: none"> manage by routine programs and procedures, maintain risk monitoring
Moderate Risk	L2	6.4 – 12.5	<ul style="list-style-type: none"> requires specific allocation of management responsibility including monitoring and response procedures
High Risk	L3	12.6 – 18.7	<ul style="list-style-type: none"> community threat, senior management attention needed
Extreme Risk	L4	18.8 - 25	<ul style="list-style-type: none"> serious threat, detailed research and management planning required at senior levels

Fire Risk by Occupancy Type

In reviewing responses in Hamilton, it is apparent that Hamilton statistics for fires in occupancy types are quite similar to those of the Province of Ontario.

The table below provides an average number of fires in each of the occupancy types utilizing the past five year statistics (2014 – 2018).

Occupancy Type	Number of Structure Fires	Number of Buildings	Average/Year
Assembly	65	1,046	13
Institutional	46	186	9.2
Residential	1109	161,267	221.8
Business and Personnel Service	27	756	5.4
Mercantile	68	1441	13.6
Industrial	144	2,620	28.8
Barns (Farm Properties)	14	2,963	2.8
Total	1473		

The methodology within this report includes a further process of assigning ‘weighting factor’ to each of the eight risk factor categories identified by the OFMEM Fire Risk Sub-model. Utilizing a range from 1 (lowest) to 3 (highest) each of the factors is assigned a weight factor, to calculate a weighted average.

The weight factor assigns more or less priority to each of the given factors. This process results in the most relevant categories having more impact on the risk priority level calculated. Weight factors in this risk assessment have been identified as mid-range (2) with the exception of demographics which is weighted as high (3) and geography/topography which is weighted at low (1).

Demographics was weighted as high due to the fact that in most cases structure fires are caused as a direct result of human behaviors. Geography/topography was weighted low as this does not have a direct impact on the probability of fire.

The score in each category for an occupancy type is multiplied by the weight factor. Once a total score is determined, it is divided against the total weight score (16) to give a final probability score. This is then multiplied by the consequence score to provide a final risk score.

Based on the analysis of responses for both assembly occupancies and residential occupancies, additional risk scores for schools and social housing units were completed. In both cases these specific occupancy types were identified a high risk.

Community Risk Profile Factors	Property Stock	Building Height	Building Age	Building Exposures	Demographic Profile	Geography Topography	Past Fire Loss	Fuel Load	Probability Level	Consequence Level	Priority Level	Risk Level
Weight Factor	2	2	2	2	3	1	2	2				
Risk Level Assessment												
OBC Major Occupancy Classification												
Group A Assembly	3	2	3	2	4	2	4	2	2.8	3	8.4	2
Group B Institutional	4	3	4	3	5	2	4	3	3.6	4	14.4	3
Group C Residential	5	2	3	3	5	2	5	2	3.5	3	10.5	2
Group D Business/Personal Service	2	2	3	2	2	2	4	3	2.5	2	5.0	1
Group E Mercantile	2	2	3	2	2	2	4	3	2.5	2	5.0	1
Group F Industrial	3	2	2	3	2	2	4	4	2.6	3	7.8	2
Occupancies not Classified Farms	3	1	3	3	2	2	3	2	2.3	2	4.6	1

Probability 1 - Rare 2 - Unlikely 3 - Possible 4 - Likely 5 - Almost Certain	X	Consequence 1 - Insignificant 2 - Minor 3 - Moderate 4 - Major 5 - Catastrophic	=	Priority Level 0 - 6.2 = Low 6.3 - 12.5 = Moderate 12.6 - 18.7 = High 18.8 - 25.0 = Extreme	=	Risk Level 1 - Low Risk 2 - Moderate Risk 3 - High Risk 4 - Extreme Risk
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Schools

Community Risk Profile Factors	Property Stock	Building Height	Building Age	Building Exposures	Demographic Profile	Geography Topography	Past Fire Loss	Fuel Load	Probability Level	Consequence Level	Priority Level	Risk Level
Weight Factor	2	2	2	2	3	1	3	2				
Risk Level Assessment												
Group A Schools	5	2	3	2	5	2	5	4	3.7	4	14.1	3

Social Housing

Community Risk Profile Factors	Property Stock	Building Height	Building Age	Building Exposures	Demographic Profile	Geography Topography	Past Fire Loss	Fuel Load	Probability Level	Consequence Level	Priority Level	Risk Level
Weight Factor	2	3	2	2	3	1	3	2				
Risk Level Assessment												
Group C Social Housing	5	5	3	3	5	2	5	4	4.2	3	12.6	3

<u>Probability</u>		<u>Consequence</u>		<u>Priority Level</u>		<u>Risk Level</u>
1 - Rare		1 - Insignificant		0 - 6.2 = Low		1 - Low Risk
2 - Unlikely		2 - Minor		6.3 - 12.5 = Moderate		2 - Moderate Risk
3 - Possible	X	3 - Moderate	=	12.6 - 18.7 = High	=	3 - High Risk
4 - Likely		4 - Major		18.8 - 25.0 = Extreme		4 - Extreme Risk
5 - Almost Certain		5 - Catastrophic				

Assembly Occupancies

There have been a total of 65 fires in assembly occupancies in the past five years (2014-2018) or an average of 13 annually. This represents 4.4% of all structure fires in the City of Hamilton. Thirty-three (50.7%) of fires in assembly occupancies have occurred in schools. The number one cause of fires in schools is arson/vandalism (73%) and these fires have caused \$421,511 in damages. The second highest number of fires in assembly occupancies occur in restaurants having a capacity of 30 or more. The main cause of these fires is maintenance deficiencies in cooking equipment and exhaust hoods.

Assembly Occupancy	Number of Structure Fires	Percentage of Assembly Fires
Library	1	1.5%
Bowling Alley/Billiard Hall	1	1.5%
Community Hall/Exhibition Space	1	1.5%
Social Club	4	6.1%
Gymnasium	4	6.1%
Non-Residential Club	1	1.5%
School - Elementary	12	18.5%
School - Secondary	17	26.1%
School – Post Secondary (College, University, Trades)	4	6.1%
Railway Station	1	1.5%
Restaurant (30+ capacity)	6	9.2%
Bar/Tavern/Nightclub	2	3.0%
Church	3	4.6%
Bleacher/Grandstand	2	3.0%
Other Assembly	6	9.2%
Total	65	

Utilizing the Risk Analysis Matrix, Assembly occupancies are classified as moderate risk, however as identified above, there is an obvious issue with fires in schools across the City which must be addressed. Schools would be classified as a high risk.

An additional risk associated with assembly occupancies that has manifested itself in recent years is that of criminal attacks. These attacks have shown the importance of proper event safety and security planning, and the value of effective emergency response. Sporting events, fairs, festivals, concerts, political campaigns, and exhibitions, by their very nature attract crowds and may also become targets for crimes such as theft, robbery, assault and terrorism. These events become bigger

targets as crowds assemble and grow. They may also become opportunities for special interest groups to publicly demonstrate. Poor event planning, management, crowd control, security, and ineffective emergency response, increase the likelihood of injuries, property damage and even catastrophic attacks. Proper event safety and security must be tailored to each specific event and potential exposure.

The City of Hamilton has several large sporting venues including Tim Horton’s Field and First Ontario Place in which thousands of citizens attend sporting events. In addition, cultural events such as Supercrawl bring thousands of citizens and visitors to the streets of Hamilton. All emergency response agencies including Hamilton Fire Department must work with event coordinators and pre-plan and prepare for a response to these events.

Institutional Occupancies

There have been 46 structure fires in institutional occupancies within the past five years. This represents 3.1% of all structure fires in the City of Hamilton. Group homes accounted for 41.3%% of all institutional occupancy fires while retirement homes accounted for 19.5% of all institutional occupancy fires.

The primary cause of fires in group homes was arson/vandalism accounting for 47.3% of the fires while careless smoking accounted for 15.7% of the fires in group homes. The number one cause in retirement home fires was careless smoking.

Institutional Occupancy	Number of Structure Fires	Percentage of Institutional Fires
Jail/Prison/Penitentiary	4	8.7%
Psychiatric Hospital/Detention	5	10.8%
Public/Private Hospital	4	8.7%
Convalescent Home	1	2.1%
Seniors Long Term Care	3	6.5%
Group Home	19	41.3%
Shelter	1	2.1%
Retirement Home	9	19.5%
Total	46	

Vulnerable occupancies (Hospitals, Retirement Homes, Nursing Homes, Group Homes, Homes for the Aged) are inspected on an annual basis by Inspectors from the Fire Prevention Division of the Hamilton Fire Department and annual fire drills are witnessed by Inspectors. Records of these inspections and drills are forwarded to the OFMEM annually.

There have been four structure fires at the Hamilton Detention Centre which have resulted in 10 civilian injuries and one firefighter injury. All fires were arson related and one resulted in the alarm being upgraded to a multiple alarm.

There have been five structure fires at St. Joseph's Psychiatric Hospital in the past five years, each fire caused by arson/vandalism. This facility provides unique challenges in terms of evacuation, smoke removal and suppression due to unique design features.

Utilizing the Risk Analysis Matrix, Institutional Occupancies are considered high risk.

Residential Occupancy

Residential structure fires account for the highest percentage of structure fires in the City of Hamilton at 75.2%. There have been 1,109 residential fires in the past five years. The majority of fire fatalities and injuries occur in residential fires.

Within the classification of residential occupancies, detached dwellings account for 48.3% of all residential fires while multi-unit dwellings (high-rise) account for 22.3% of all residential fires.

Residential Occupancy	Number of Structure Fires	Percentage of Residential Fires
Detached Dwelling	536	49.1%
Semi-Detached Dwelling	39	3.6%
Attached Dwelling - Townhouse	79	7.1%
Rooming/Boarding/Lodging House	14	1.1%
Multi-Unit Dwelling 2-6 Units	73	6.8%
Multi-Unit Dwelling 7-12 Units	33	3.2%
Multi-Unit Dwelling 13+ Units (Includes Highrise)	248	22.3%
Apartment with Business Attached	12	1.0%
Detached Dwelling with Business	6	0.1%
Attached Dwelling with Business	14	0.7%
Motor Home/Camper/Trailer	6	0.4%
Mobile Home	3	0.3%
Hotel/Motel/Lodging	4	0.1%
School/College Dormitory	4	0.2%
Detached Garage	30	2.5%
Other Residential (Structures on Residential Property)	8	0.7%
Total	1,109	

Unattended cooking and careless smoking remain as the two top causes of residential fires, both of which are preventable and behavioural based.

Historically, residential occupancies have accounted for the majority of all structural fires in the Province of Ontario and 90% of all fire deaths. Single-family dwellings (detached, semi-detached and attached homes) combined with multi-unit dwellings (low-rise and high-rise buildings) account for 93% of total fire deaths. Due to the significant fire losses attributed to this occupancy class, the following information focuses on construction features relevant to older and newer residential multi-unit buildings and single-family dwellings that may contribute to some of these losses. The Ontario Building Code and Ontario Fire Code classify residential low-rise buildings as those that are up to and including six storeys in building height, whereas high-rise buildings are as those that exceed six storeys.

Despite higher residential low-rise fire loss rates, code writers generally perceive high-rise buildings to be the greater risk due to their unique fire safety challenges, as previously discussed. These inherent features can potentially lead to significantly more severe fire losses than other types of residential buildings. As a result, both the Ontario Building Code and Ontario Fire Code contain more stringent construction and retrofit requirements for high-rise buildings.

Fires in single-family dwellings are responsible for nearly two thirds of all residential fires in Ontario. Generally, detached homes account for 80% of all single-family dwelling fires, with semi-detached and attached homes evenly contributing to the remaining 20%.

These statistics are reflected here in Hamilton with 48.3% of all residential structure fires occurring in detached dwellings while 22.3% occur in multi-unit residential dwellings.

Changes in construction features over the years have resulted in improvements from a fire safety perspective. With the introduction of the OBC in 1975, one of the significant changes was the requirement for newly constructed single-family dwellings to be equipped with hard-wired smoke alarms outside all sleeping areas. Smoke alarm requirements have become even more stringent with the OBC requiring them to be installed on all storeys and interconnected with each other.

The Ontario Fire Code now requires homeowners to ensure that working smoke alarms are installed on each storey of the home and outside all sleeping areas.

A fire safety concern associated with older single-family residential buildings is the use of balloon frame construction, which was a common framing technique used in the late 19th and early 20th centuries. This method involved the use of long continuous wood studs to erect walls from the foundation up to the roofline, which created long, concealed, and unobstructed vertical channels. Floor joists were subsequently hung from the wall studs. This type of construction permits fire and smoke to spread rapidly from the lower floors up to the roof level, which also increases the risk of structural collapse. Modern platform framing construction involves constructing wall and floor systems one level at a time. It is an improvement over balloon construction as it provides a horizontal barrier to ensure concealed wall voids do not extend for more than one floor.

In the older downtown section of Hamilton, it is common to find long rows of attached residential/commercial buildings constructed with their attic spaces interconnected with each other. These common attic spaces are often not adequately fire separated from the floor area below within the respective buildings. Hence, this type of configuration allows a fire that originates in one building to rapidly spread to the adjacent ones and potentially impacting an entire city block.

The interior walls and ceilings in older homes are often finished with combustible materials such as wood paneling and plastic acoustic ceiling tiles. These contribute to rapid horizontal and vertical fire spread and can be a major factor contributing to flashover and the speed with which exit pathways become unusable. The use of drywall for interior wall and ceiling construction is more common in newer construction. Although acoustic ceiling tiles are still found in many newer homes,

particularly in finished basements, many current manufacturers incorporate fire retardant features into these products.

Other fire safety improvements associated with current building construction practices include the use of flame-retardant chemicals on cellulose insulation, more stringent chimney construction standards, and improved electrical wiring systems to support the electrical loads of modern appliances. An area of concern as previously identified is the use of lightweight construction components which may fail more rapidly under fire conditions leading to structural collapse.

A review of residential responses has also identified some risk associated with social housing buildings. In the years from 2014 to 2018, Hamilton firefighters have responded to 5,999 incidents in social housing buildings. The majority of these responses were medical related calls (4,440 or 74.0%). There have been 47 structure fires in social housing buildings in the past 5 years. Six of the thirty-two fire fatalities (18%) that occurred in the City between 2014 and 2018 occurred in social housing buildings, three in a high-rise building and three in one single family home.

The City of Hamilton is seeing significant growth in the next ten years, particularly in Waterdown, Winona, Elfrida and the downtown/Bayfront areas.

In the Waterdown, Winona and Elfrida growth areas, there is limited career apparatus currently in stations and the majority of a first alarm response would come from the Volunteer Division. This added response time for volunteers to respond increases the risk of fire spread prior to intervention. Sprinkler systems installed at the time of construction would be an initial step in alleviating this risk.

Building height and area contribute to risk as taller structures pose unique fire safety concerns and have the potential for significantly greater fire losses over shorter buildings of the same area due to its inherent physical features.

There are currently approximately 286 high-rise buildings in the City of Hamilton. The majority of these high-rises are occupied as residential occupancies (hotels, apartments, condominiums) while others are occupied as offices and institutional type occupancies (hospitals).

From a suppression standpoint, the Hamilton Fire Department recognizes the additional risk associated with a fire in a high-rise building and as such when a fire incident is confirmed, it is policy that the alarm is upgraded to a multiple alarm which brings additional resources to the scene.

Utilizing the Risk Analysis Matrix, Residential Occupancies are considered moderate risk.

Business and Personal Services

There have been a total of 27 fires in business and personal service occupancies in the past five years or an average of 5.4 annually. This represents 1.8% of all structure fires in the City of Hamilton.

Utilizing the Risk Analysis Matrix, Business and Personal Service occupancies are considered low risk.

Business and Personal Service Occupancy	Number of Structure Fires	Percentage of Business Fires
Barber Shop	1	3.7%
Laundry/Dry Cleaner	2	7.4%
Business Office	15	55.5%
Dental/Medical Office	3	11.1%
Engineering/Architectural Office	1	3.7%
Computer Office	1	3.7%
Furniture/Upholstery	1	3.7%
Parking Garage	3	11.1%
Total	27	

Mercantile Occupancy

There have been 66 structure fires in mercantile occupancies in the past five years which account for 4.4% of all structure fires.

Mercantile Occupancy	Number of Structure Fires	Percentage of Mercantile Fires
Restaurant (1-30) Food and Drink	41	60.3%
Supermarket/Grocery Store	8	11.7%
Specialty Food/Butcher	4	5.8%
Convenience/Variety Store	2	2.9%
Liquor/Wine/Beer Store	1	1.4%
Shopping Mall	4	5.8%
Department Store	2	2.9%
Furniture/Appliance Store	1	1.4%
Building Supply Store	3	4.4%
Garden Supply Store	1	1.4%
Big Box Store	1	1.4%
Total	68	

The majority of fires (60.3%) in mercantile occupancies occurred in restaurants having a capacity of 30 or less and two of the major causes were electrical and arson. Utilizing the Risk Analysis Matrix, Mercantile occupancies are considered low risk.

Industrial Occupancy

There have been 144 structure fires in industrial occupancies across the City of Hamilton in the past five years which accounts for 9.7% of all structure fires.

Industrial Occupancy	Number of Structure Fires	Percentage of Industrial Fires
Motor Vehicle Repair Garage	9	6.2%
Motor Vehicle Parts	2	1.4%
Car Wash	1	0.7%
Marina	1	0.7%
Hydro Distribution Facility	5	3.5%
Other Utilities	2	1.4%
Chemicals/Paint/Varnish	8	5.5%
Meat/ Poultry Fish Products	4	2.8%
Dairy Goods	1	0.7%
Grain Products/Bakery	6	4.2%
Vegetable/Animal Oil Production	5	3.5%
Canning/Preserving/Processing	1	0.7%
Textile Manufacturing	2	1.4%
Pulp/Paper Processing	1	0.7%
Metal processing	14	9.7%
Recycling Facility/Waste Transfer	14	9.7%
Wood/Furniture Manufacturing	8	5.5%
Rail Car Manufacturing (National Steel Car)	8	5.5%
Steel Processing/Manufacturing	8	5.5%
Vehicle Parts	10	6.9%
Coal Products	1	0.7%
Precision Goods/Instruments	1	0.7%
Appliance Parts	1	0.7%
Grain Elevator	2	1.4%
Printing	1	0.7%
Agricultural Products	3	2.1%
Warehouse	4	2.8%
Electrical Supply/Misc Industrial	5	3.5%
Total	144	

The majority of fires in industrial occupancies occurred in recycling facilities and steel manufacturing facilities (9.7%). Utilizing the Risk Analysis Matrix, Industrial occupancies are considered moderate risk.

The City of Hamilton is home to nine business parks/districts. (Note: Red Hill North and South are listed as one). They include:

1. **Airport Business Park** - The Airport Business Park is located in the southern portion of the City of Hamilton, above the Escarpment. The lands have a gross site area of approximately 735 acres primarily located on the west side of Highway No. 6, east of the Hamilton International Airport. In addition, the City of Hamilton has established a special policy area within the Official Plan to study further for the creation an employment area known as the Airport Employment Growth District over the next several years. The study is intended to provide for the development of employment lands surrounding the Hamilton International Airport and along New Highway 6 critical to meet the needs of the City's growing population.
2. **Ancaster Business Park** - The Ancaster Business Park is situated between Shaver and Trinity Church Roads north and south of Wilson Street. There is a total of 660 gross site acres of employment land within the Ancaster Business Park.
3. **Bayfront Industrial Area** - The Bayfront Industrial Area is located in the north end of the City bounded by Queen Street in the west, Nash Road to the east, north of Barton Street and south of Hamilton Harbour and the Queen Elizabeth Way. The total area is approximately 3,700 acres. There are many large industrial sites within the Bayfront Industrial Area that can be considered a higher risk than other industrial sites.
4. **East Hamilton Industrial Area** - The East Hamilton Industrial Area is located in the north-east end of the City adjacent to the Red Hill Valley Parkway and Queen Elizabeth Way. The area is approximately 560 acres and is bounded by Nash Road in west, Grays Road in the East, Barton to the south and Queen Elizabeth Way to the north.
5. **Flamborough Industrial Park** - The Flamborough Business Park is located above the Escarpment at the intersection of Highway Nos. 5 and 6 in the former Town of Flamborough. This location, commonly referred to as Clappisons Corners, includes approximately 630 acres of land within the boundary of the Park. The Flamborough Business Park is divided into 4 quadrants by the intersection of Highway Nos. 5 and 6. The Business Park abuts the west end of the Waterdown Urban Area.
6. **Red Hill Business Park North and Red Hill Business Park South** - The Red Hill Business Parks are 1,552 acres (in two distinct parcels- Red Hill Business Park North, and Red Hill Business Park South), zoned industrial, and located at the south end of the city. The Parks reside within the urban

boundary of the City and is strategically located at the junction of the Lincoln M. Alexander Parkway and The Red Hill Valley Parkway, and only minutes from the Queen Elizabeth Way and Highway 403.

7. **Stoney Creek Business Park** - The Stoney Creek Business Park is situated generally between Grays Road and Fifty Road, south of the Queen Elizabeth Way, north of Barton Street. There is a total of 1,856 gross acres of employment land within the Stoney Creek Business Park.
8. **West Hamilton Innovation District/McMaster Innovation Park** - The West Hamilton Innovation District Special Policy Area will be a regional technology node that will function as a centre of innovation for corporate, academic and government research in science and technology and will be recognized as a major entry point in to the City. The area includes the land to the south of Main Street West, west of Dundurn Street South and the CP railway line, north of Aberdeen Avenue, and east of Highway 403, as illustrated on the map. It contains the former Camco manufacturing site along both sides of Longwood Road between Highway 403 and Aberdeen Avenue. This site has been acquired by McMaster University for development of the McMaster Innovation Park.

These industrial/business parks are critical to the economy of Hamilton. Some industries located within these districts present a higher risk.

The 2016 City of Hamilton Hazard Identification Risk Assessment (HIRA) report identifies a hazardous materials incident/spill at a fixed site as one of the top 10 risks in the City of Hamilton. A Hazardous Materials Incident is defined as the unintentional release of a material that is considered to be hazardous to humans, animals, plants or the environment due to its explosive, flammable, combustible, corrosive, oxidizing, toxic, infectious or radioactive properties. A Fixed Site Incident is one in which the release occurs at a location in which the hazardous material is stored, produced or utilized.

Many potentially hazardous materials are used daily for a variety of purposes. When properly contained and stored, hazardous materials are fairly stable and safe. Many communities have facilities that store, produce or utilize a hazardous material. These facilities can include: water treatment plants, textiles manufacturers, dry cleaners, chemical manufactures and even schools. Depending on the type of hazardous material, it can become a threat when their container is ruptured, exposed to extreme heat/cold, exposed to fire, water or another substance that when combined produces a reaction. A hazardous material incident at a fixed site or during transport can be caused by a human error or a technological malfunction.

Specific concern within the City of Hamilton would include industrial sites along Burlington Street and within many of the above noted industrial parks.

Farm Properties

There have been 14 structure fires in farm buildings across the City of Hamilton in the past five years which accounts for 0.95% of all structure fires. The majority of fires (78.6%) on farming properties occur in barns housing equipment or produce.

Barns	Number of Structure Fires	Percentage of Barn Fires
Barn Containing Equipment or Produce	11	78.6%
Barn Containing Animals	1	7.1%
Greenhouse	2	14.3%
Total	14	

Utilizing the Risk Analysis Matrix, farm properties are considered low risk.

Summary of Risk Considerations

In Ontario the provision of fire protection services is based on the three lines of defense. No one measure on its own provides the level of fire protection necessary to reduce the loss of life from fire. Traditionally, fire services concentrated its efforts on extinguishing fires. Today's fire service views public education and prevention, fire safety standards and code enforcement, and fire suppression as equally important. Fire prevention and public education use a proactive approach in reducing the probability of fires occurring and help to limit the loss of life and property. Fire suppression is the failsafe.

The Hamilton Fire Department will continue to use the three lines of defense as the basis for service delivery to ensure a consistent approach to addressing challenges and in order to meet the Department's responsibility under the *Fire Protection and Prevention Act*.

1. Public Education and Prevention:

Education is the best way to reduce the incidence of fire. Residents must be educated to take responsibility for their own fire safety and to take the steps necessary to prevent fires. The top two causes of residential fires in Hamilton are unattended cooking and careless smoking which are both behavioural based.

2. Fire Safety Standards and Code Enforcement:

By ensuring that buildings are in compliance with the Ontario Fire Code and have the required fire protection systems and detection systems in place, fire damage and casualties can be reduced.

3. Emergency Response (Firefighting/Rescue):

When a fire does occur, emergency response will occur. Destructive fires cannot be eliminated totally; there will always be fires, whether the cause is accidental, deliberate or natural. In those cases, services must be available to respond and lessen the impact.

Although there are similarities in fire protection delivery, each municipality has its own unique set of needs and circumstances which is reflected in the fire protection services and programs delivered. One model does not fit all municipalities. This risk assessment provides the basis for the development of programs that are comprised of the three lines of defense.

The following list is a summary of risks identified in the City of Hamilton to be considered in planning fire service delivery for the Hamilton Fire Department:

- Increased development in residential construction in the City of Hamilton which includes single family dwellings, high-rise developments and other high density multi-unit dwellings. Utilizing the risk analysis matrix, residential occupancies have been identified as a **moderate risk**. It is identified that most structure fires (75.2%) and fire deaths (93%) occur in residential occupancies. The increase of high-rise developments results in the need for reassessing service delivery due to the impact of vertical response times. Vertical growth can result in extended response times as firefighters require extra travel time to get to the location of the emergency incident. It must be noted that new high-rise development will require sprinkler protection which will assist in reducing the risk associated with both fire growth and spread. Multi-unit construction presents risks associated with fire spread.
- Both newer residential construction and older residential construction present unique risks. Older buildings can present hazards such as balloon construction and the use of asbestos in flooring, plaster and piping while newer buildings can present hazards such as open spaces allowing for the spread of fire or the use of lightweight construction components and green roofs and photo-voltaic systems which can impede ventilation procedures. Within the category of residential occupancies, the majority (71.4%) of structure fires occur in detached dwellings and multi-unit buildings having more than 13 dwelling units. Increased inspection and public education initiatives should be developed to manage this risk.
- Social housing units have been identified as a **higher risk** within the residential category. A review of residential responses has also identified some risk associated with social housing buildings. In the years from 2014 to 2018, Hamilton firefighters have responded to 5,999 incidents in social

housing buildings. The majority of these responses were medical related calls (4,440 or 74.0%). There have been 47 structure fires in social housing buildings in the past 5 years. Six of the thirty-two fire fatalities (18%) that occurred in the City between 2014 and 2018 occurred in social housing buildings, three in a high-rise building and three in one single family home. Increased inspection and public education initiatives should be developed to manage this risk.

- Assembly occupancies have been identified as a **moderate risk**. Schools accounted for 50.7% of all structure fires in assembly occupancies and present a higher risk. The primary cause (73%) of all fires in schools is arson or vandalism. Restaurants having a capacity of 30 or more account for 9.2% of all fires in assembly occupancies and the main cause of these fires is maintenance deficiencies in exhaust hoods and cooking equipment. Increased public education and prevention initiatives should be developed to manage these risks.
- Institutional occupancies have been identified as **high risk** occupancies. The Hamilton Fire Department's fire prevention and public education programming must identify and define the causes of fire among those who reside in these institutions and the barriers associated with reducing and/or eliminating these incidents and any associated deaths or injuries. Pre-planning is crucial to an effective response in many of these institutional occupancies. Of particular note is that there have been four structure fires at the Hamilton Detention Centre which have resulted in ten civilian injuries and one firefighter injury. All fires were arson related and one resulted in the alarm being upgraded to a multiple alarm. In addition, there have been five structure fires at St. Joseph's Psychiatric Hospital in the past five years, each fire caused by arson/vandalism. Both the Hamilton Detention Centre and St. Joseph's Psychiatric Hospital provide unique challenges in terms of evacuation, smoke removal and suppression due to unique design features.
- Industrial occupancies are identified as **moderate risks**. If, however, any buildings under this occupancy category are non-compliant, they may be considered a **higher risk**. This would apply specifically to some high hazard (F1) industrial occupancies and recycling facilities. There are 34 industrial occupancies across the City of Hamilton requiring emergency response plans through the Ministry of Environment that store quantities of product in excess of thresholds (as determined by the Ministry of Environment) such as acetic acid, anhydrous ammonia, benzene, chlorine, gasoline, hydrochloric acid, hydrogen, propane, methane, naphthalene, propylene and sodium dichromate. Industrial parks across the City are vital to the economy of the City. Emergency response to these industrial (business) parks as well as pre-fire planning must be a priority.

- Recent criminal attacks globally on large groups (assembly of citizens) have shown the importance of proper event safety and security planning, and the value of effective emergency response. It is noted that the 2017 Hazard Identification Risk Analysis for the City of Hamilton identifies as the 10th top risk in the City an active shooter/violent situation. The City of Hamilton is host to a number of events such as Canada Day celebrations, Art Crawls and Supercrawl which bring thousands of citizens to these events. All emergency response agencies including the Hamilton Fire Department must work with event coordinators and pre-plan and prepare for a response to these events.
- Diverse populations should be considered when determining public education initiatives. Diversity in the City of Hamilton provides challenges in meeting the needs with respect to fire prevention and public education efforts. These initiatives must increasingly be offered in many languages and forms to ensure messages are transmitted in a way that resonates with residents. In addition, diversity in the City provides opportunities for the Hamilton Fire Department to review and improve upon recruitment practices in order to attract a workforce that reflects the diversity of the City
- Growth areas such as Waterdown, Winona, Upper Stoney Creek (Elfrida) and Binbrook are areas of the City currently served by volunteer or composite stations. As the population in these areas increase, the potential for additional demands on service also increases. Service delivery in growth areas must be evaluated based not only on population changes and construction starts, but on effective response to all types of events including structure fires. In areas served by composite or volunteer stations, evaluation of effective response must include availability and response data of firefighters at all times of the day and different response models such as day-time crews should be considered.
- Socio-economic factors such as income levels can have an impact on fire risk as building owners may be less likely to make repairs due to affordability which can lead to increased risk due to lack of maintenance. In addition, households with lower income are less likely to purchase fire safety products (i.e. smoke alarms, carbon monoxide alarms) due to affordability or in other cases renters may experience difficulties in having a landlord supply these detection devices. Residents who are unable to make utility payments in order to make rent payments, may resort to using space heaters for heat which can lead to fires if placed too close to combustibles or due to the use of extension cords.
- Intensification and congestion will have an impact on emergency response travel times due to the increasing amounts of traffic in the City and this will only be heightened as the City of Hamilton continues to grow and develop. The construction and development of the new LRT system will also impact

response travel times. In addition, as changes are made to provide more pedestrian friendly neighbourhoods, the combination of smaller turning radii, narrower streets, on street parking, bicycle lanes will impact emergency response times. The Hamilton Fire Department must be in a position to respond to these changes effectively and in alignment with the new City of Hamilton Transportation Master Plan.

- Transportation related incidents, whether it involves vehicles such as transport trucks or tanker trucks and rail vehicles may require a specific response including in some cases firefighting capabilities involving the use of larger quantities of foam. Fire Department apparatus carry a limited supply of foam which in larger scale incidents may be insufficient. The purchase and commissioning of a foam truck would address this transportation risk as identified in the HIRA report.
- The physical geography of the City of Hamilton which includes the escarpment and waterways, present risks in terms of specialized rescue. The Niagara Escarpment presents risks associated with rope rescues while the many inland waters as well as Lake Ontario and Hamilton Harbour present risks associated with ice-water and water rescue.

Persons calling 911 for help often utilize visual landmarks or sounds to help guide rescuers to their locations. When effecting a rescue within the City's trail system, Fire Department apparatus cannot access the trails due to their size and weight. The Hamilton Fire Department dispatches a Senior Officer's vehicle (District Chief or Platoon Chief) to the scene to transport firefighters to a victim and to assist in removal of a victim. There are limitations to areas these vehicles can access as well. An off-road vehicle such as an all terrain vehicle equipped with a pump to extinguish small fires on the trail system and capable of carrying a stretchered patient off a trail would assist firefighters in affecting a rescue in a timely manner.

Both water and ice water rescues are low in frequency but are high in terms of risk to both citizens and emergency responders. The City of Hamilton has recently approved the implementation of a tri-service ice water rescue team involving the Hamilton Fire Department, Hamilton Police Service and Hamilton Beach Rescue Unit. The potential risk for water rescue is equal if not greater to that of ice water and currently the Hamilton Fire Department can only provide shore-based water rescue. Future development will see an increase in citizens living near and visiting these areas which may have an impact on emergency responses.

- The physical geography of the City of Hamilton which includes the escarpment present risks in terms of specialized rescue for persons lost or injured on one of the many trails or along the edge of the escarpment.

Persons calling 911 for help often utilize visual landmarks or sounds to help guide rescuers to their locations. The use of drone technology with thermal imaging capabilities would assist rescuers in locating victims in a timely manner.

- Increased storms and climatic events have an impact on the City of Hamilton's critical infrastructure (hydro, water, sewers) and in turn have an impact on Hamilton Fire Department's service delivery as these events create many simultaneous events. The Hamilton Fire Department should establish action plans that would be implemented when a significant storm or climatic event occurs.
- The Hamilton International Airport continues to expand and grow in terms of cargo and passenger traffic. It is important that the Hamilton Fire Department collaborate with Airport Management in the development of a clear and concise emergency response plan that identifies action plans in the event of an emergency.
- Continued growth and development in the Port of Hamilton has resulted in the Port becoming the busiest in land port in Canada. The increase in the storage and transportation of goods along with the location of many higher risk industries on the Port lands will require the Hamilton Fire Department to work collaboratively with the Port Authority and its associated businesses in mitigating these risks. Much like transportation related incidents, the HIRA report identifies fixed site incidents involving hazardous materials including flammable/combustible liquids as one of the top 10 risks in the City. These types of incidents also require a specific response including in firefighting capabilities involving the use of larger quantities of foam. The purchase and commissioning of a foam truck would work towards addressing this fixed site risk particularly on the Port lands as identified in the HIRA report.

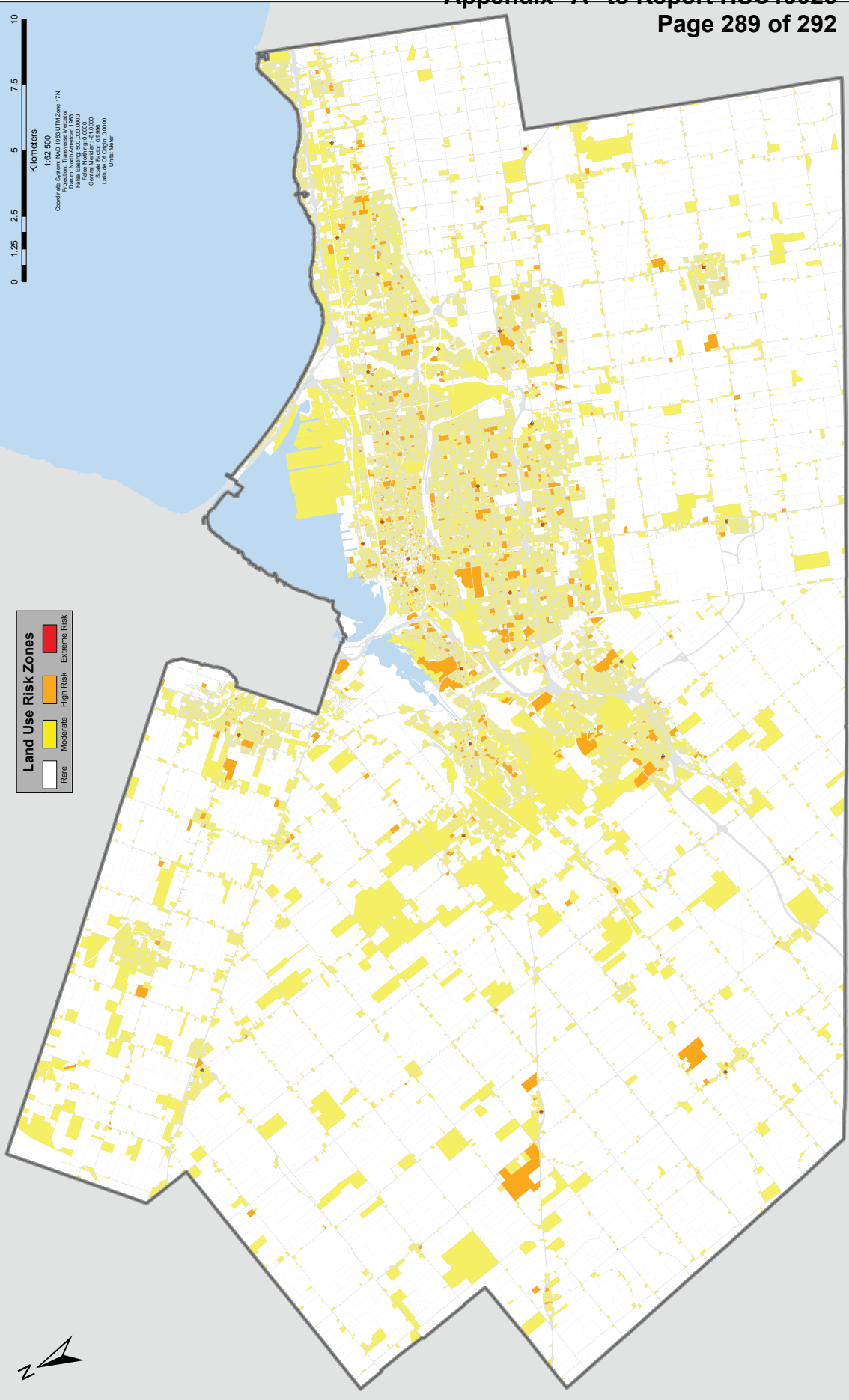
COMMUNITY RISK ASSESSMENT - LAND USE RISK FACTORS

Hamilton
Spatial Solutions Services, IT Services
City of Hamilton, Ontario

FIRE STATION
ROADWAY
CITY BOUNDARY



1:62,500
UTM Zone 17N
Coordinate System
Projection: Transverse Mercator
False Easting: 500,000.0000
False Northing: 10,000.0000
Central Meridian: -77.0000
Scale Factor: 0.9999
Datum: NAD 83
Units: Meter



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