

BFES 2021-2025

FIRE MASTER PLAN



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Message from the Fire Chief



It is my pleasure to present the Brampton Fire and Emergency Services 2021 – 2025 Fire Master Plan (Master Plan). As one of the fastest growing cities in Canada, Brampton is home to over 690,000 people, 73,000 businesses and many visitors. Our city is growing rapidly and we will see a future population of nearly 900,000 people by 2041. We will support this growth by delivering progressive public safety services to all those that live, work, study and play in Brampton.

I'm proud to be part of a team of more than 550 staff that serve our community 24 hours a day, seven days a week. We have been doing so since 1853. We are extremely proud of our past service and community involvement, but our focus is on the future. We are excited to align our Master Plan with the Brampton 2040 Vision. We will also continue to assist in attaining the current 2018 – 2022 Term of Council Priorities, and collaborate with our corporate and external stakeholders.

This Master Plan is underpinned by a comprehensive community risk assessment that details the challenges and risks facing our community. We will continue to have a strong focus on public education, community outreach and prevention supported by highly trained first responders in order to reduce all emergencies. Furthermore, we will continue to develop our workforce, enhance our diversity and inclusion efforts, and leverage the latest technology to ensure we are safe, successful and sustainable. Each of us at Brampton Fire & Emergency Services are committed to implementing the objectives outlined within this plan.

Thank you to our staff for all they do each and every day to keep Brampton safe. Together, we will continue to build on the great successes of those who have come before us and continue to make Brampton proud.

A handwritten signature in black ink, appearing to read 'Bill Boyes'.

Bill Boyes, Fire Chief



Executive Summary

This Master Plan outlines a strategy for Brampton Fire and Emergency Services (BFES) to follow over the next five years so that it can continue providing effective and efficient fire protection services. Included in this Master Plan is an action plan that is based on a comprehensive analysis of BFES operations and tailored to the profile of Brampton using industry best practises.

In developing this Master Plan, BFES followed a comprehensive engagement strategy that involved consultations with a variety of internal and external stakeholders. This included over 2,000 Brampton residents, over 200 front-line staff, multiple City departments and BFES' management team. Additionally, a number of significant documents, including a comprehensive community risk assessment, an updated station location study and various pieces of legislation, influenced this plan and its 32 recommendations. Lastly, this Master Plan is meant to be a living document that is continuously evolving to ensure the highest level of fire protection services delivery possible.

This Master Plan was guided by three overarching themes:

- safe
- successful
- sustainable

These themes provide the framework for the recommendations and associated initiatives offered in this Master Plan, which have been organized into the following nine areas of focus:

- emergency response
- fire prevention and education
- emergency management
- community safety
- equity and inclusion
- technological innovation
- empowered workforce
- good governance
- environmental sustainability

A number of challenges and opportunities have been identified within each of the nine focus areas. For example, to address the risks that come with Brampton's growing population, this Master Plan proposes several strategies, one of which is to build three additional fire stations in key neighbourhoods of the city. Strategies to effectively use emerging technologies, such as artificial intelligence and machine learning, to mitigate identified risks are also proposed. Further, this report highlights the importance of building and sustaining meaningful partnerships with internal and external stakeholders, including local schools, community agencies, as well as Brampton's businesses and industries to help disseminate public safety information. This document also sets out initiatives to promote a healthy, inclusive and engaged workforce for BFES staff, ensuring they have the information and tools they need to continuously provide excellent customer service to the residents of Brampton.

1.0 About Us and How Well We Protect the City

1.1 Who We Are

BFES is a modern all-hazards emergency response department within the Corporation of the City of Brampton (the City) that is committed to providing the highest level of fire protection services to those that live, work, play and study in Brampton. The department is comprised of 551 professionals organized under eight of the following divisions:

- Firefighting
- Training
- Fire Prevention
- Fire and Life Safety Education
- Communications
- Apparatus and Maintenance
- Brampton Emergency Management Office
- Administrative Services

BFES is defined by the following mission statement: “To protect our community with trained professionals through active partnerships, providing the highest quality preventative, educational and emergency services.” Its objectives are to:

- provide effective and timely emergency response using the most current techniques and technology;
- provide the public with information, support and direction to improve public safety;
- operate the BFES in an efficient and fiscally responsible manner while meeting all applicable legislative requirements and industry best practices; and
- enhance communication and collaboration with residents, service providers and stakeholders to improve access to resources while raising



awareness through a comprehensive approach to community safety.

The City’s DNA plays a critical role in achieving these objectives that define the culture of the workplace for its employees by having:

- Purpose: Delivering excellent service starts with one inspired team who is passionate about people.
- Values: Our values are our compass and include courage, trust, compassion and integrity.
- Mindset: Being future ready and having aligned values to work together.
- Style: When we bring our values to life, we build a strong corporate culture.

The BFES service model is based on the three lines of defence established by the Office of the Fire Marshal and Emergency Management (OFMEM) in the following order:

1. Public education includes activities such as school education programs, fire safety displays in public spaces and developing educational materials for distribution.
2. Fire safety standards and enforcement includes activities such as inspections, investigations and Ontario Fire Code enforcement.
3. Emergency response includes activities such as responding to emergencies including fires, medical emergencies and motor vehicle collisions.

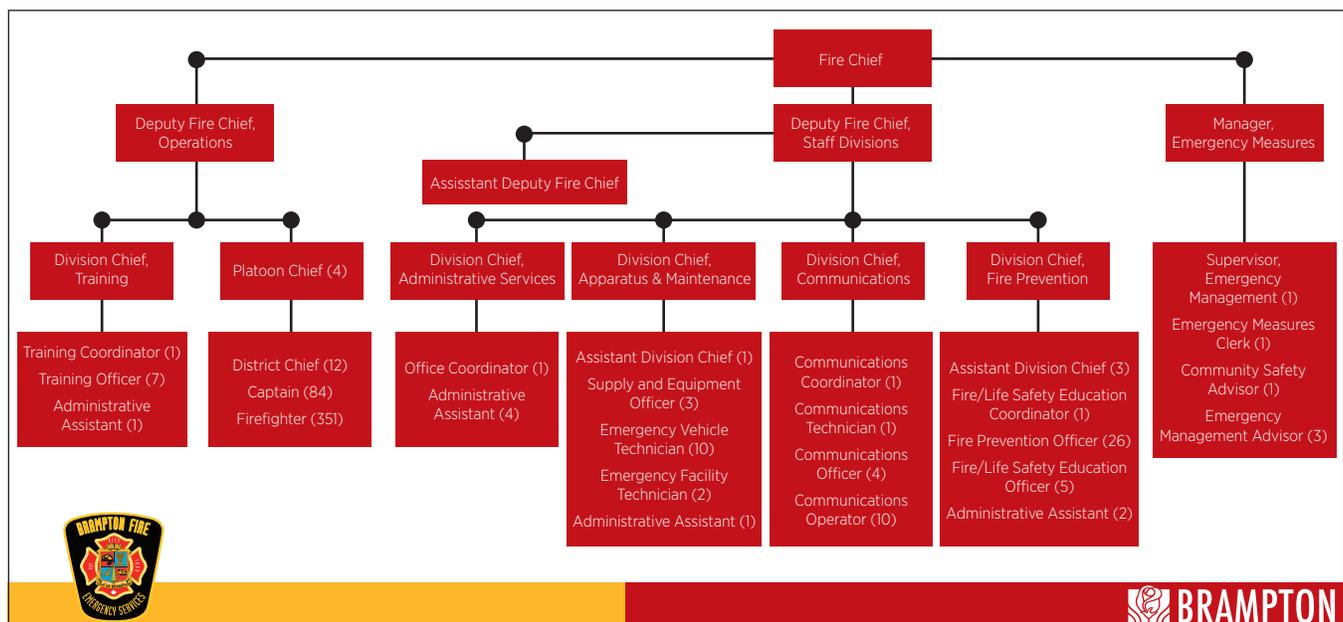
Following this model, BFES is able to provide effective customer service to the residents of Brampton.



1.2 Department Structure

BFES is organized into eight divisions, each of which has an identified leader and assigned number of full-time employees (Figure 1.1).

Figure 1.1: Brampton Fire & Emergency Services Organizational Chart





Firefighting Division

The Firefighting Division provides an all-hazard emergency response function to Brampton's residents, visitors and businesses with protection against loss of life, property and the environment from the effects of fires, accidents, illnesses and other hazards. Crews operate out of 13 fire stations located strategically throughout Brampton to provide these services in an effective and efficient manner. The Firefighting Division is ultimately responsible for the third line of defence, emergency response. This division also has specialized rescue capabilities to perform the following: hazardous material response, confined space rescue, trench rescue, high-angle rescue and ice/water rescue.

Administrative Services Division

The Administrative Services Division is responsible for monitoring and reporting performance metrics, financial oversight, and strategic planning. This division also prepares reports and manages day-to-day administrative processes, such as billing, payroll and record keeping.



Fire Prevention Division

The Fire Prevention Division is responsible for providing fire inspection services, building plan approvals, building retrofit, fire code compliance and complaint inspections. The work carried out by the Fire Prevention staff is vital in ensuring that all structures built in Brampton are in compliance with the Ontario Building and Ontario Fire Codes.



Communications Division

The Communications Division is a partnership encompassing the municipalities of Brampton, Mississauga and the Town of Caledon. Currently, BFES is the Joint Fire Communications Centre manager, which is responsible for the management of the centre. The primary responsibility of the centre is to call-take and dispatch incoming 9-1-1 emergency calls. The Communications Centre serves the general public, partnering emergency services and other commercial agencies.



Fire and Life Safety Education Division

The responsibilities of the Fire and Life Safety Education (FLSE) Division are to deliver public education programs that consider the needs of diverse audiences. Education to residents and business entities include fire injury prevention and juvenile fire-setter intervention.

Training Division

The Training Division is responsible for developing, delivering and evaluating training in compliance with legislated standards and industry best practices. Training activities are conducted for all 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 reclassifications. This division also serves as a research and development arm of the organization to investigate best in-class fire service techniques, technology and equipment while implementing those with sufficient merit.



Apparatus and Maintenance Division

The responsibilities of the Apparatus and Maintenance (A&M) Division include procuring, maintaining and repairing all BFES apparatus, vehicles and equipment. Additionally, A&M is responsible for the maintenance of its facilities in partnership with the City's Building, Design and Construction team.

Brampton Emergency Management Office

The Brampton Emergency Management Office (BEMO) is mandated to prevent, mitigate, prepare for, respond and recover from large-scale emergencies and disasters affecting the residents of Brampton. The community safety function of the City also resides under BEMO, which strives to raise awareness of, and advocate and stimulate action for a safe and healthy community.

1.3 Demand for Services

The largest demand for BFES services is directly driven by emergency call volumes through the 9-1-1 Joint Fire Communications Centre (JFCC).

Figure 1.2: Call Volume by Year

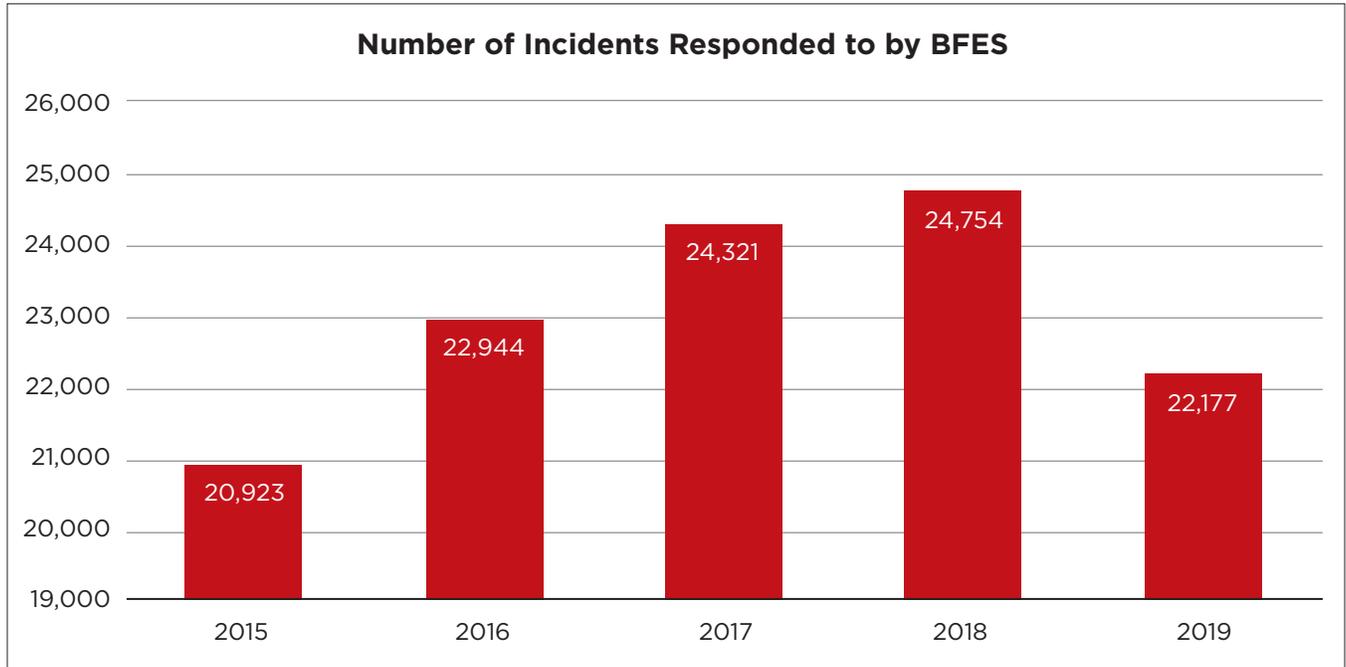


Figure 1.2 illustrates the number of incidents dispatched by BFES within the municipality, which has steadily increased 17% between 2015 through to the end of 2019. The increase in call volume is largely due to Brampton’s growing population. As the number of residents who live in Brampton increases, so do the demands placed on BFES services and its firefighting crews.

In 2019, call volume decreased due to a change in operating protocol at the Central Ambulance Communications Centre. BFES

no longer responds to a specific subset of chest pain emergency calls unless there are extenuating circumstances, which aligns with the regional Tiered Response Agreement. Future medical calls are expected to decrease up to 30% once the Region of Peel implements a new Medical Priority Dispatching System in partnership with the province at its Central Ambulance Communications Centres. An implementation date for this new system has yet to be determined.



Figure 1.3: Call Volume by Time of Day

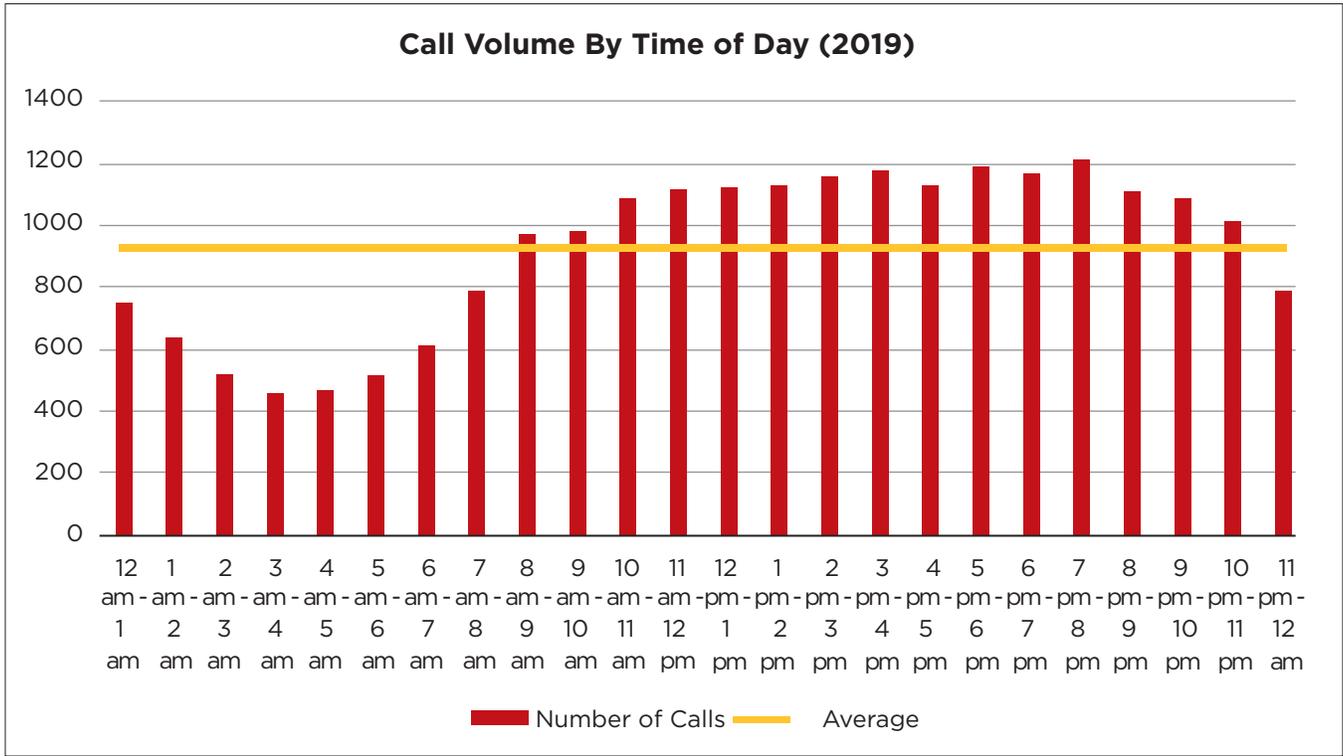
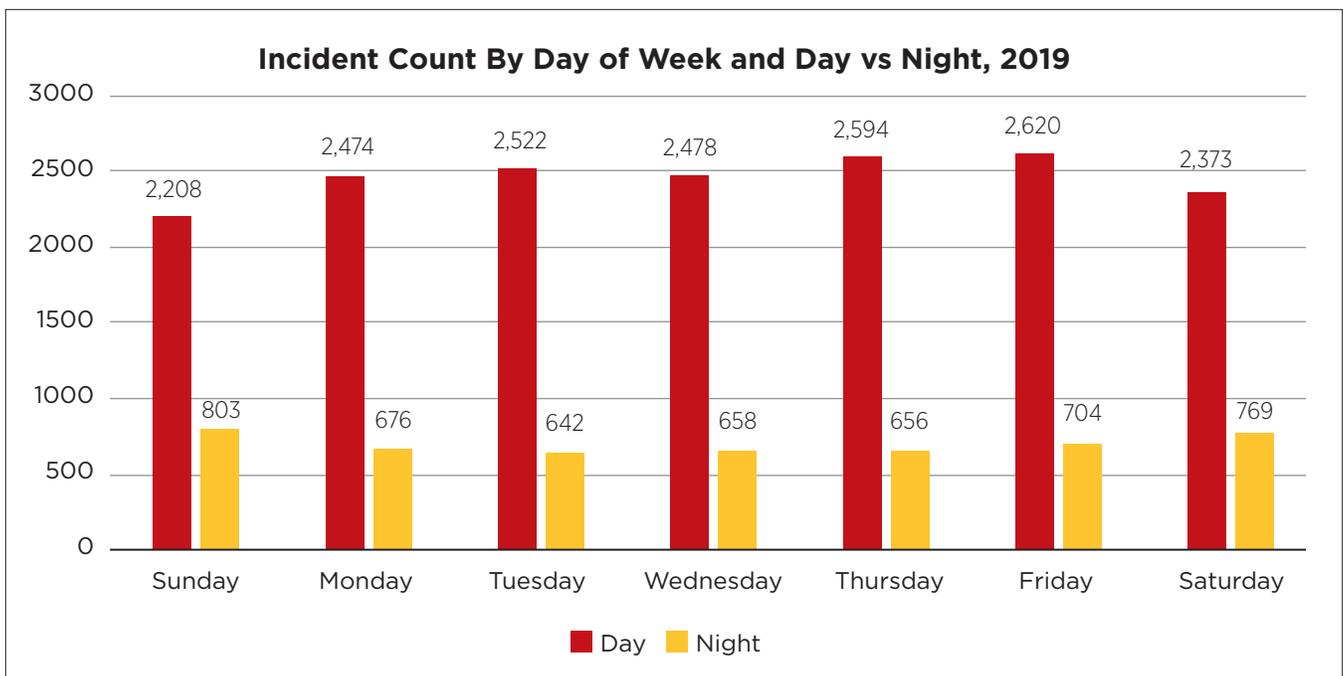


Figure 1.4: Incident Count, Day vs. Night



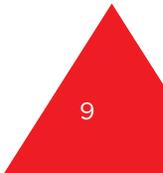
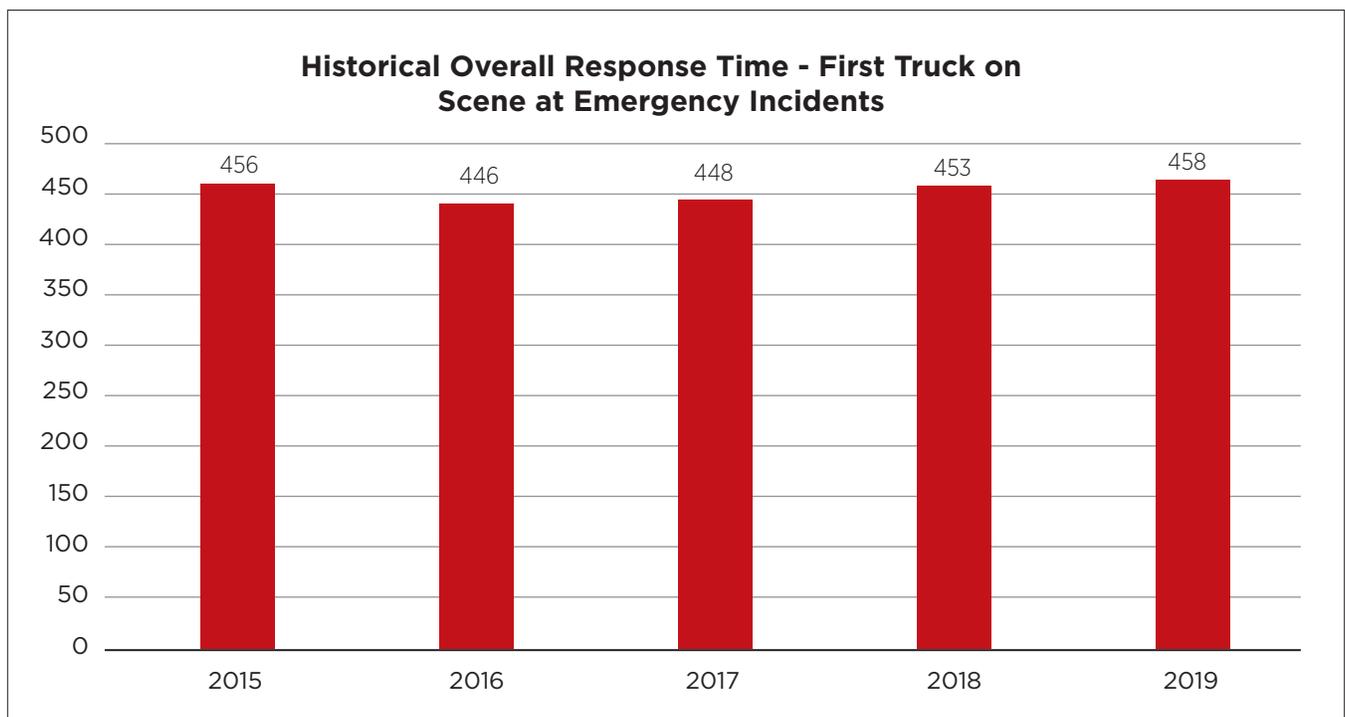


The highest number of emergency incidents occur between the hours of 10 a.m. and 10 p.m. (Figure 1.3). This is common with many suburban cities where an overwhelming majority of incidents occur during the day versus at night (Figure 1.4). Daytime incidents, which are defined to occur between 6 a.m. and 10:29 p.m., occur because much of the population is traveling to work in the morning and back to their homes in the evening. This increases the risk for incidents at these peak times, as well as creates traffic congestion that can directly impact travel time for BFES crews when responding to an emergency. The significantly fewer incidents in the evening are a result of most people using this time to sleep thereby reducing those preventable emergencies caused by humans.

1.4 Overall Response Times

Overall response time refers to the total time it takes to receive a call, dispatch an apparatus (call handling), notify the station, have an apparatus leave the station (turnout time), and travel time for the apparatus to arrive on scene. Over the last five years, BFES has achieved an overall response time of approximately 450 seconds or less (Figure 1.5) to 90% of emergency incidents despite the significant growth Brampton has experienced in recent years. Leveraging best-in-class technology, continuously improving processes and adding resources at the right points in time to keep pace with growth has enabled the department to maintain this level of service.

Figure 1.5: Historical Overall Response Time Performance - First Truck on Scene at Emergency Incidents



1.5 Civilian Injuries and Deaths Due to Structure Fires

Over the last five years, BFES has had historically low injuries and fatalities relative to the province of Ontario as a whole, averaging 0.4 fire-related fatalities per 100,000 population compared to the Ontario provincial rate of 0.62 over the same period of time (2014-2018). Similarly, Brampton averaged 0.52 fire-related injuries per 100,000 population compared to the Ontario provincial rate of 5.64 over the same period of time (2013-2017). Of the injuries and fatalities reported since 2015, a vast majority took place in residential occupancies, which is consistent with the previous years. In an effort to prevent fire-related fatalities and injuries, BFES allocates a significant amount of resources to mitigate the risk of residential fires through targeted education and enforcement programs.

Table 1.1: Civilian Injuries and Fatalities in Brampton Due to Structure Fires, 2015-2019

	2015	2016	2017	2018	2019
Civilian Injuries	2	4	1	3	6
Civilian Fatalities	1	5	5	0	1

1.6 Annual Dollar Loss Due to Structure Fires

BFES analyzes the annual dollar loss resulting from structure fires in order to determine strategies to minimize damages and loss in Brampton. Table 1.2 shows the dollar loss for each of the past five years split by occupancy type. Residential occupancy types make up a substantial portion of annual dollar loss due to structure fires typically followed by industrial occupancies. Functioning fire protection systems in low-rise apartments, high-rise apartments and industrial occupancies are critical to minimizing dollar loss. This data is one of the key components that support the department in implementing a routine inspection program as highlighted in Section 4, which targets these three occupancy types.

Table 1.2: Annual Dollar Loss Due to Structure Fires, 2015-2019

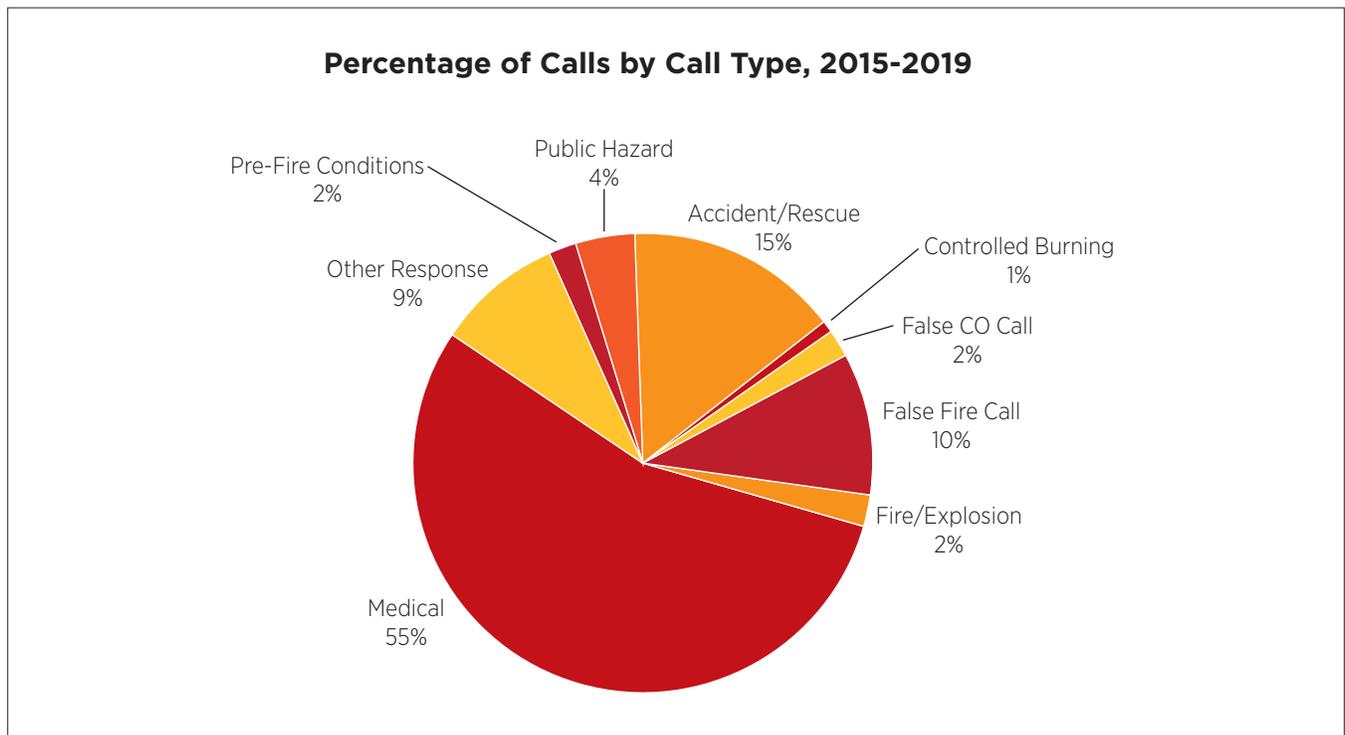
	2015	2016	2017	2018	2019
Assembly Occupancy	\$110,050	\$528,150	\$151,500	\$194,000	\$507,001
Business and Personal	\$123,000	\$38,001	\$297,000	\$110,050	\$125,500
Care and Detention	\$15,135,450	\$250.00	\$100,000	\$31,000	\$5,005,000
Industrial Occupancy	\$993,350	\$351,000	\$1,754,000	\$1,339,000	\$334,250
Industrial Storage	\$27,500	\$382,000	\$979,000	\$263,500	\$90,000
Mercantile Occupancy	\$208,000	\$128,700	\$473,000	\$3,510,000	\$55,650
Residential Occupancy	\$14,551,345	\$9,666,051	\$8,884,850	\$9,057,130	\$12,196,426
Structure/property - Not classified	\$113,050	\$130,896	\$286,751	\$1,118,010	\$900,785
Dollar Loss Due to Structure Fires	\$31,261,745	\$11,225,048	\$12,926,101	\$15,622,690	\$19,214,612

1.7 Response Types

BFES responds to a wide variety of incident types. Of these, medical calls, mostly those related to chest pains and respiratory conditions (e.g., asphyxia), represent 55% of BFES' total calls (Figure 1.6). The majority of medical calls is a result of the tiered response agreement between BFES and Peel Regional Paramedics, which leverages the geographic location of BFES fire stations to more quickly respond to certain medical emergencies in Brampton. This is of benefit to residents, especially those affected by certain medical situations, like heart attacks, where faster access to care can increase the chance of survival. The next largest category of incidents responded to by BFES relate to accidents and rescues of which 95% are a result of motor vehicle collisions. The remaining 5% include responses to elevator rescues, high-angle rescues and water/ice rescues. Although fire incidents only make up 2% of emergency calls, they typically account for 15%-20% of the time crews spending responding to emergencies each year.



Figure 1.6: Percentage of Calls by Call Type, 2015-2019



1.8 Fire Incidents by Occupancy Type

To fully assess the impact of fires and allocate resources efficiently, it is important to evaluate the proportion of fire incidents based on occupancy classification.

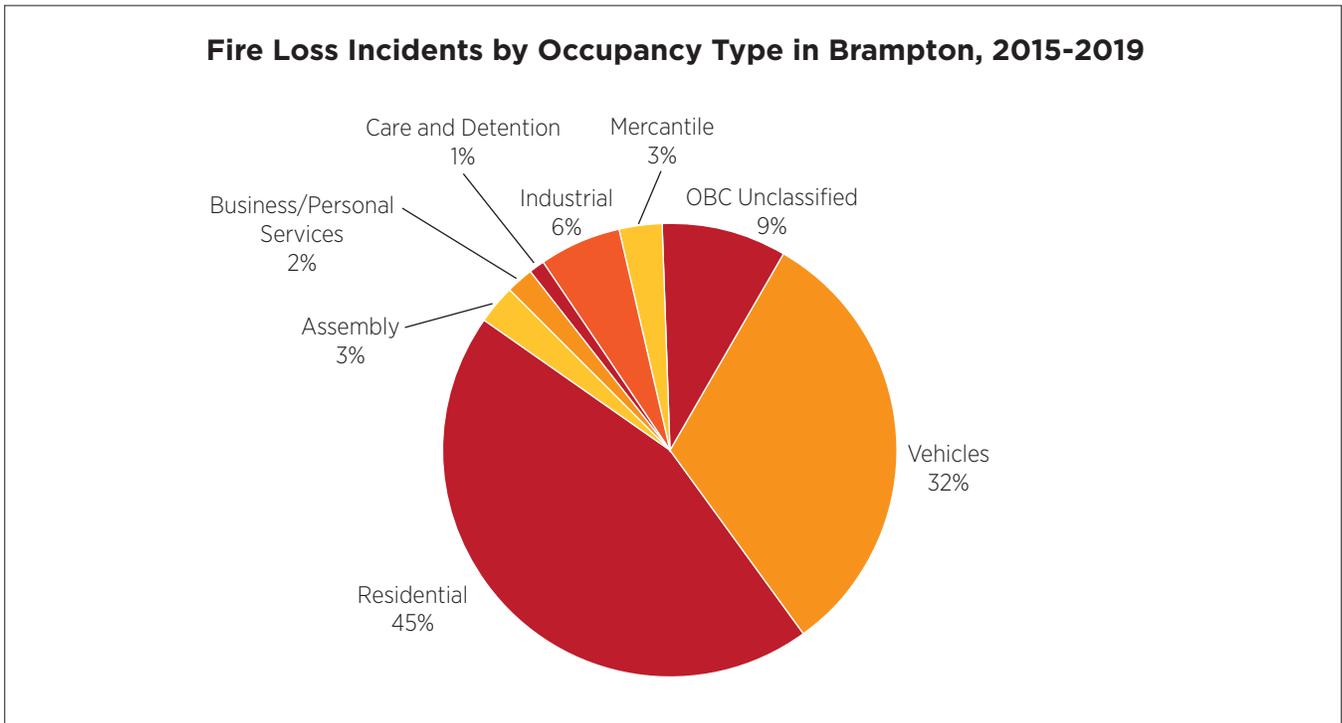
Table 1.3: Total Number of Fire Loss Incidents by Occupancy Type, 2015-2019

Property Category	Property Category Description	Total Number of Fire Incidents with Loss*
Assembly	The occupancy or use of a building, or part thereof, by a gathering of persons for civic, political, travel, religious, social, educational, recreational or like purposes, or for the consumption of food or drink.	34
Business/personal services	The occupancy or use of a building, or part thereof, for the transaction of business or the rendering or receiving of professional or personal services.	21
Care and detention	An occupancy in which persons receive special care and treatment, or an occupancy in which persons are under restraint or are incapable of self-preservation because of security measures not under their control.	11
Industrial	The occupancy or use of a building, or part thereof, for assembling, fabricating, manufacturing, processing, repairing or storing of goods and materials.	81
Mercantile	The occupancy or use of a building, or part thereof, for the displaying or selling of retail goods, wares or merchandise.	36
Residential**	An occupancy in which sleeping accommodations are provided to residents who are not harboured for the purpose of receiving special care or treatment, and are not involuntarily detained.	595
Vehicles	Any fire incident that occurs outside of a building and involves one or more vehicles.	434
OBC unclassified	All other fire incidents which don't fall into one of the above categories (e.g. open land, trash container, shed, sidewalk).	124

*Loss is defined as any damages due to fire with monetary value.

**56 of these fires started in a basement that had a basement apartment of which 51 were not legally registered with the City.

Figure 1.7: Percentage of Fire Loss Incidents by Occupancy Type, 2015-2019



Due to its suburban nature, 45% of Brampton’s fires with loss occur within residential occupancies (Figure 1.7). This includes residential units located within multi-unit buildings such as high-rise buildings and secondary units in a house, which pose additional risks due to egress and firefighting accessibility challenges. To reduce the fire risk associated with residential occupancies, BFES has developed a series of targeted initiatives, including the Hot Zone Program, and the City of Brampton created Second-Unit Task Force.

The Hot Zone Program focuses education and community engagement efforts over a five-year period to reduce the number of fires in three areas of concern within city limits: Armbro Heights, in the south end, Brampton West, located in the central-

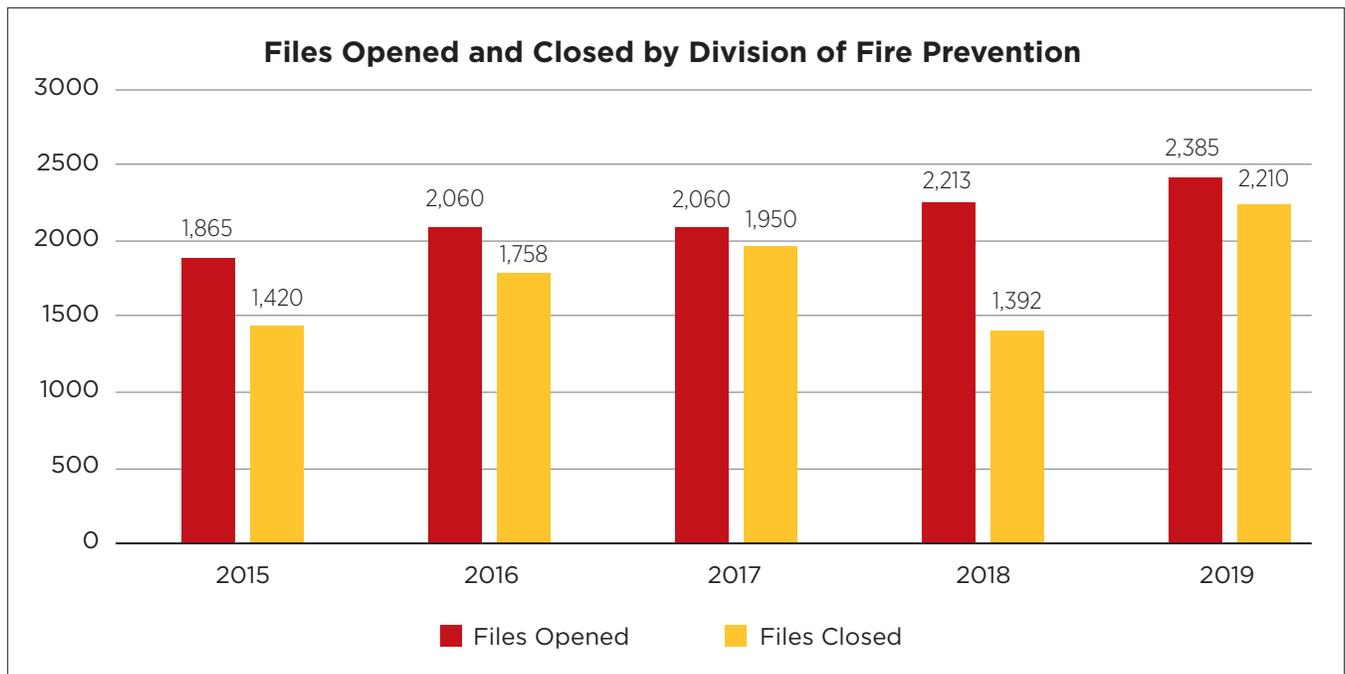
west region of Brampton, and the City Centre, in the area of the Bramalea City Centre mall. This initiative was developed using data-driven strategies to improve the department’s understanding of fire occurrences and to inform education programs to mitigate fire risk behaviour.

The City established the Second-unit Task Force in 2018 in partnership with Enforcement, By-Law Services, Legal and BFES. The Task Force responds to the increased illegal second-unit activity by using advanced and innovative investigative strategies to combat the proliferation of illegal units in housing within the city. In Brampton, a basement apartment or other second unit must be registered with the City to meet the requirements of the Ontario Building Code or Fire Code, Electrical Safety Authority and local Zoning By-law.

1.9 Fire Inspections and Public Education Outreach

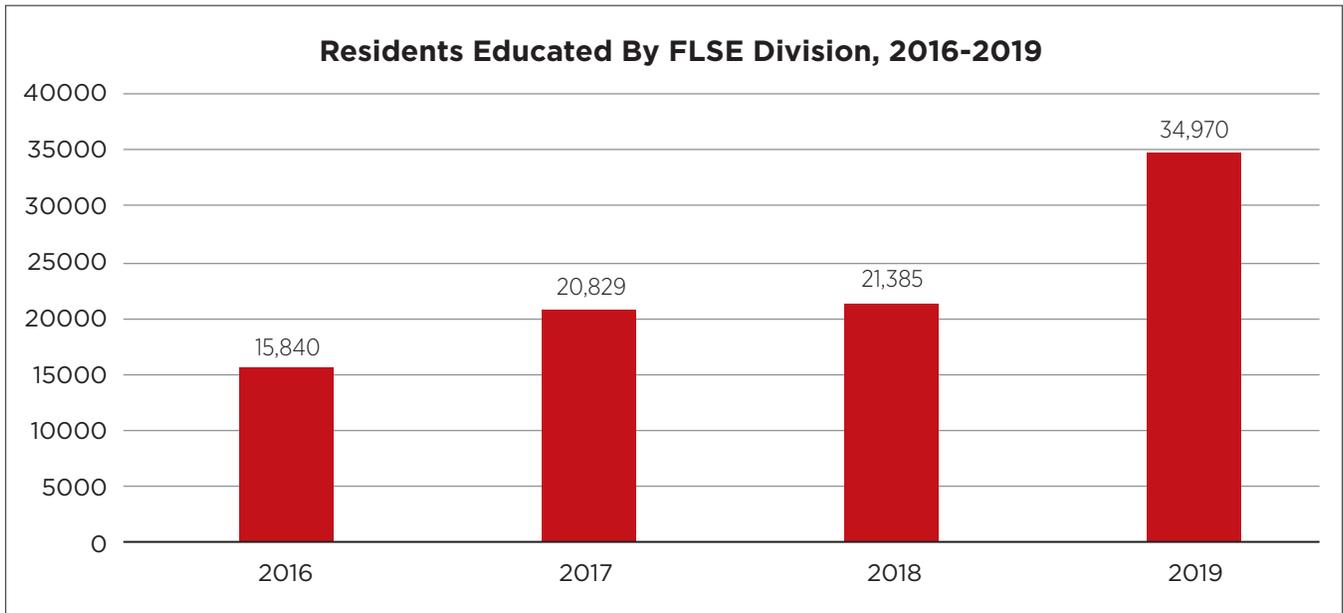
BFES offers code enforcement, fire investigation and education services to reduce the likelihood and magnitude of fire incidents in Brampton. Through its Fire Prevention Division, BFES inspects all types of occupancies in Brampton to ensure they align to the Ontario Fire Code. These inspections are conducted by fire prevention officers and can be initiated from a paid request, complaint or on a routine inspection basis. Figure 1.8 illustrates the growing demand for inspections based on the number of files opened and completed over the last five years.

Figure 1.8: Files Completed by Division of Fire Prevention, 2015-2019



In addition to inspections, the Fire Protection and Prevention Act (FPPA) mandates fire departments to raise public awareness about fire prevention and safety in their municipalities. BFES exceeds this legislative requirement in terms of public education and continues to make innovative investments into preventing fires through education. For example, the FLSE Division improved its service delivery model by using a more community integrated approach to engagement, which resulted in a 24% increase in the number of residents educated between 2016 and 2017 without the need for additional staff (Figure 1.9). In 2019, even more residents had direct contact with a BFES education officer either through one-on-one interactions or by attending one of their presentations.

Figure 1.9: Brampton Residents Educated, 2016-2019



1.10 Fire Causes and Ignition Sources

The National Fire Protection Association (NFPA) defines fire cause as “the circumstances, conditions or agencies that brought about or resulted in the fire or explosion incident, damage to property resulting from the fire or explosion incident, or bodily injury or loss of life resulting from the fire or explosion incident.”¹ Fire cause data is critical to developing effective public education campaigns to reduce the likelihood of reoccurrence.

Table 1.4: Top 5 Causes of Structure Fires, 2015-2019

Causes of Fire Description	Number of Incidents	Total Percentage of Fires
Undetermined	170	19%
Electrical failure	152	17%
Unattended	113	13%
Mechanical failure	63	7%
Suspected arson	60	7%

The most common causes of fire in the city of Brampton are listed in Table 1.4. Undetermined fires are those occurrences where BFES personnel is unable to identify the cause of the incident. Electrical fire incidents are common causes of fire and can be caused by faulty electrical outlets, frayed electrical cords, outdated electrical appliances or other variables. Unattended fires refer to incidents where a machine or device is not in view of the operator or in a position to operate control systems.²

¹ NFPA Glossary of Terms: 2019 Edition. Retrieved from https://www.nfpa.org/-/media/Files/Codes-and-standards/Glossary-of-terms/glossary_of_terms_2019.ashx?la=en pp 173.

² Ibid., pp 1964.



The ignition source, as defined by the NFPA, is “any item or substance capable of an energy release of a type and magnitude sufficient to ignite any flammable mixture of gases or vapors.”³ By determining the common ignition sources, BFES is able to better focus its education efforts so the people living and working in Brampton are aware of the hazards at home and in their workplace, and how to reduce the future risk of fires.

Table 1.5: Top 5 Structure Fire Ignition Sources, 2015-2019

Ignition Source	Number of Total Incidents	Total Percentage of Fires
Undetermined	201	22%
Stove, range-top burner	170	19%
Smokers' articles (lit cigarettes, pipes NOT matches, lighters)	59	7%
Other, not classified	38	4%
Other, electrical	30	3%

According to Table 1.5, the stove is the second most common ignitor of fires in Brampton, a statistic that coincides with the fact that a majority of fires occur in the home. Smokers' articles are the third-most common ignition source.

1.11 Emergency Management

BEMO, now in its 20th year, is recognized as a national leader in emergency management due to its innovative and ground-breaking programs, such as the PX3 board game, Community Emergency Response Volunteer program (CERV) and the Lighthouse program. BEMO is also a leader in government business continuity programs. It was one of the first to create and implement a program for the public sector that is now used by other municipal and provincial government agencies.

BEMO focuses its efforts on effectively delivering the following three core services to the residents of Brampton:

1. Mitigation programs that help prevent incidents or reduce the impact of them before disaster strikes, such as warnings, evacuation, public education, risk assessments and continuity plans.
2. Preparedness programs that build capacity to effectively respond to emergencies, such as emergency plans and procedures, training, exercises, and drills.
3. Response and recovery programs that bring the community back to normal or acceptable conditions, such as activating emergency response protocols, coordinating emergency response efforts and organizing recovery programs.

Over the last five years, BEMO has remained focused on delivering these programs to Brampton's residents, businesses and visitors (Table 1.6).

³ Ibid, pp 1040.

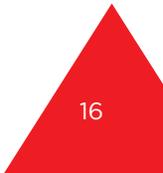


Table 1.6: BEMO Historical Service Levels (2015-2019)

Metrics	2015	2016	2017	2018	2019
Number of residents participating in the Emergency Preparedness Campaign	1,204	2,495	4,420	1,830	2,460
Number of staff completed cross-organizational training (related to emergency management)	286	324	265	425	372
Percentage of legislative Corporate Emergency Preparedness training completed annually	100%	100%	100%	100%	100%
Number of newly trained CERV volunteers	20	12	30	24	14

Within BEMO also resides the City’s community safety function. The community safety function is responsible for advocacy and promotion of community safety programs while also conducting data-driven analysis and research to help address various safety concerns that impact residents and communities in Brampton. This team uses a collaborative approach to achieve community safety objectives by leading a Brampton Community Safety Committee, supporting the Region of Peel Community Safety Committee, and partnering with other internal and external entities.



2.0 Profile of Brampton and its Impact on Service Delivery

2.1 Building Stock

At the time of publishing this report, Brampton has a total of 184,491 occupancies. Each of these occupancies are designated under one of the classifications set by the Ontario Building Code (OBC) as listed in Table 2.1. This classification aims to regulate differences in compliance needed to ensure the building’s safety. For newly constructed buildings, the OBC stipulates specific regulations about the structure’s construction, including its interior finishings and life-safety systems, that must be included prior to occupancy.

Table 2.1: Ontario Building Code Occupancy Classification

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

Source: Ontario Regulation 332/12 (Building Code)

To help classify a structure, the OBC further clarifies some of the activities that could take place in each assembly type as follows:

- **Assembly occupancy:** The occupancy or use of a building, or part thereof, by a gathering of persons for civic, political, travel, religious, social, educational, recreational or like purposes, or for the consumption of food or drink.
- **Detention occupancy:** An occupancy in which persons are under restraint or are incapable of self-preservation because of security measures not under their control.
- **Care and treatment occupancy:** An occupancy in which persons receive special care and treatment.

- **Care occupancy:** An occupancy in which special care is provided by a facility, directly through its staff or indirectly through another provider, to residents of the facility.
- **Residential occupancy:** An occupancy in which sleeping accommodation is provided to residents who are not harboured for the purpose of receiving special care or treatment, and are not involuntarily detained.
- **Business and personal services occupancy:** The occupancy or use of a building, or part thereof, for the transaction of business, or the rendering or receiving of professional or personal services.
- **Mercantile occupancy:** The occupancy or use of a building, or part thereof, for the displaying or selling of retail goods, wares or merchandise.
- **Industrial occupancy:** The occupancy or use of a building, or part thereof, for assembling, fabricating, manufacturing, processing, repairing or storing of goods and materials.⁴

Table 2.2: Occupancy Classification for the City of Brampton

Occupancy Classification	Description of Occupancy	Number of Occupancies	Percentage of Occupancies
Group A	Assembly occupancies	671	0.29%
Group B	Care or detention occupancies	36	0.02%
Group C	Residential occupancies	174,850	96.63%
Group D and Group E	Business, personal services and mercantile occupancies	7,361	2.17%
Group F	High/medium/low hazard industrial occupancies	1,573	0.90%

As detailed in Table 2.2, approximately 97% of the total building stock in the city of Brampton are residential occupancies. This includes all types of residential dwellings from high-rise apartment buildings to row housing and single-detached homes.

2.2 Period of Construction for Residential Occupancies

Brampton's residential boom began in the 1950s when Bramalea was formed as Canada's first satellite community.⁵ Growth in the area was significant and by 1974, the city of Brampton was formed by amalgamating Chinguacousy Township, Toronto Gore Township, the Town of Brampton and part of the Town of Mississauga.⁶ Since then, rapid development in Brampton has made it the ninth largest city in Canada, the fourth largest in Ontario and third largest within the Greater Toronto Area.⁷ As a result, the age of Brampton's residential occupancies are evenly spread over the six decades as highlighted in Table 2.3.

⁴Law Document English View. (2015, April 14). Retrieved from <https://www.ontario.ca/laws/regulation/070213/v8>.

⁵<https://www.brampton.ca/en/Arts-Culture-Tourism/Tourism-Brampton/Visitors/Pages/BramptonHistoryTimeline.aspx>.

⁶Ibid.

⁷Brampton's GeoHub. (n.d.). Retrieved from <http://geohub.brampton.ca/pages/profile-pop-dwelling>.

Table 2.3: Housing Age for Residential Occupancies in the City of Brampton

Housing age	Number of Homes	Percentage of homes
1960 or before	7,615	4.5%
1961 to 1980	36,765	21.9%
1981 to 1990	25,340	15.1%
1991 to 2000	25,355	15.1%
2001 to 2005	29,250	17.4%
2006 to 2010	22,440	13.4%
2011 to 2016	21,245	12.6%

Source: Statistics Canada, Census Profile, Brampton, 2016

Homes today are much larger than those built before 1980. The average house size in North America has increased from 144 square metres in 1973 to 233 square metres in 2008.⁸ Studies have found that larger homes contain more air and fuel, which causes the fire to grow more quickly.⁹ Burn tests conducted on modern homes built with synthetic materials reached flashover temperatures of almost 500°C in under five minutes while older homes built with natural materials took 29 minutes to reach this same flashover temperature.¹⁰ When considering these factors together, modern homes represent a greater risk to the resident and firefighter.

However, it cannot be assumed that older homes are always safer. Older homes were constructed using the OBC of the day and are missing many of the positive benefits of today's standards and regulations. For example, a home built prior to 1975 did not have smoke alarms installed in the home. It was not until 2006 when the Ontario Fire Code required every home in Ontario to install a smoke alarm on every floor in the home, regardless of when it

was constructed. This puts the onus on the home owner to outfit their older home with a sufficient amount of working smoke and carbon monoxide alarms and that they are located appropriately throughout the house. Furthermore, older homes are more likely to have expired smoke and carbon monoxide alarms which should be replaced at least every 10 years, if not more frequently as specified by the manufacturer. Therefore, an older home without a sufficient number of working smoke and carbon monoxide alarms would be considered a higher risk when compared to a modern home with sufficient working smoke and carbon monoxide alarms.

2.3 Industrial Occupancies

While industrial occupancies make up only 0.9% of Brampton's total building stock, they do pose a significant fire risk to the community due to a variety of concerns. Firstly, there are 194 industrial facilities over 100,000 square feet in size of which a substantial portion are considered warehouse facilities. These would have an extremely large fuel load due to the contents stored within and they may even contain materials such as chemicals and consumer goods that are highly combustible if not stored or used properly. Furthermore, some of these industrial occupancies engage in heavy manufacturing processes which can constitute special fire hazards due to their combustible, flammable or explosive content and the possible presence of oxidizing chemicals and gases. Alternatively, processing and other activities that involve various ignition sources also occur in these occupancies. Although many of these facilities do have sprinkler systems in place, they are only effective if properly installed and maintained.

⁸Kerber, S. (2011). Analysis of Changing Residential Fire Dynamics and Its Implications on Firefighter Operational Timeframes. *Fire Technology*, 48(4), 865-891. doi:10.1007/s10694-011-0249-2, pp 867.

⁹Ibid, pp 881.

¹⁰Ibid.

2.4 Vulnerable Occupancies

Currently, there are 36 vulnerable occupancies in Brampton. These occupancies are classified assembly buildings that include retirement homes, treatment occupancies and care occupancies.¹¹ When compared to the total building stock in the municipality, vulnerable occupancies represent a very small proportion. Yet, they pose a higher risk if a fire incident occurred. This is due to the vulnerability of its occupants as well as the flammable and combustible liquids and gases, oxidizers and furnishings stored within them.

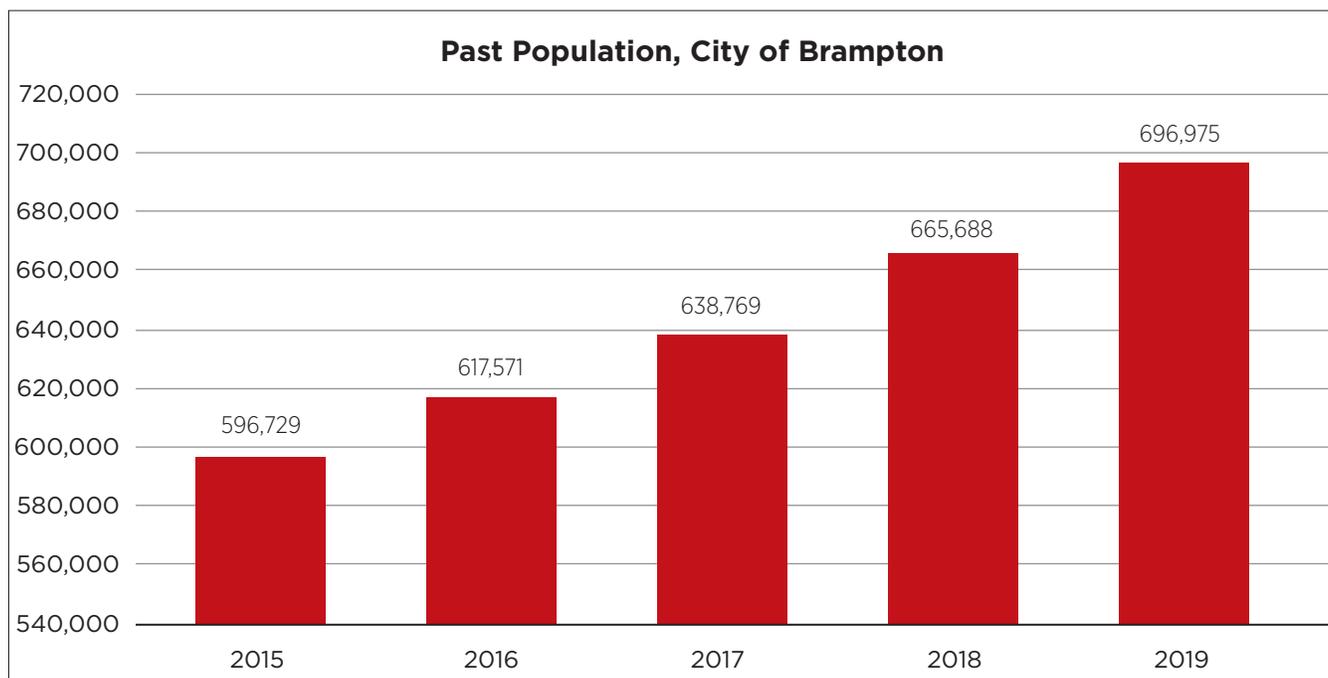
With this risk, the Ontario Fire Marshal placed a priority on vulnerable occupancies in 2014, mandating fire departments in Ontario be more active in their inspections of these occupancies. As part of this directive, fire departments must annually test fire drills in these buildings as well as physically inspect any vulnerable occupancies in their community.¹² As Brampton's demographics shift towards older populations, there will likely be an expected increase in the number of vulnerable occupancies in the city.

2.5 Demographic Statistics

2.5.1 Population Size and Trends

Similar to other municipalities within the Greater Toronto Area, Brampton's population has steadily increased over the past five years, averaging 4% per year (Figure 2.1). This growth comes as a result to the increase in housing supply in the city as well as the growing number of businesses within the region.

Figure 2.1: Past Population Statistics for the City of Brampton, 2015-2019



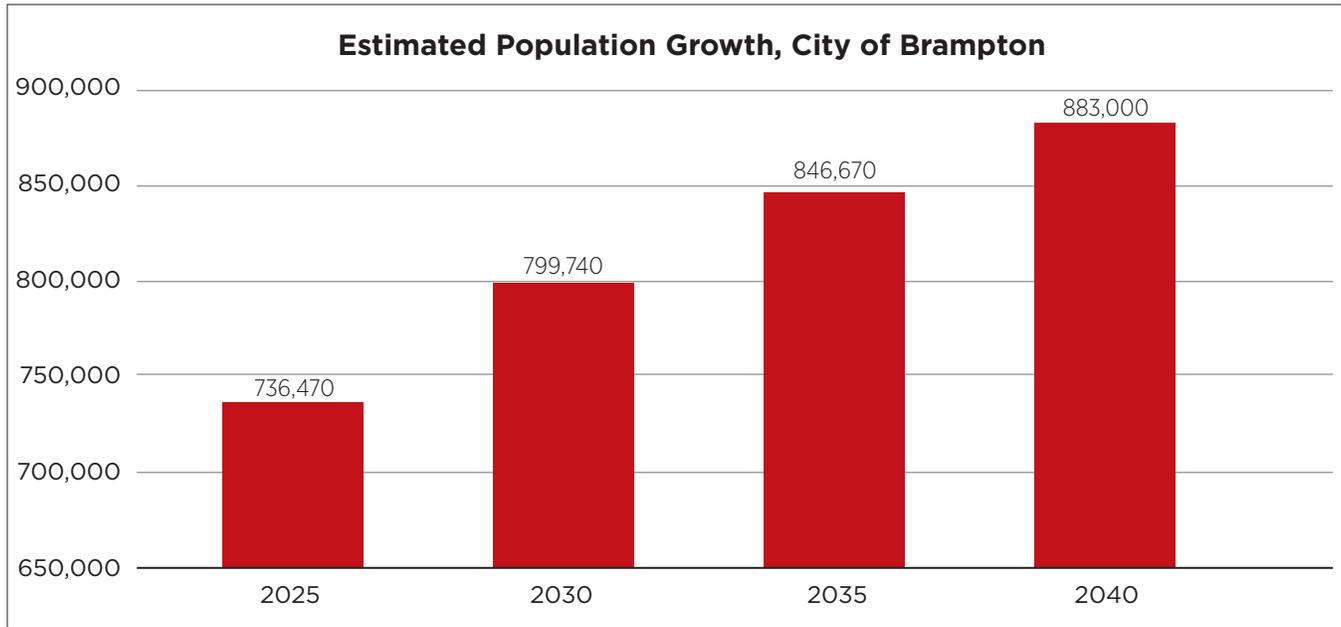
Source: Statistics Canada, July 2020

¹¹OFMEM - Directive 2014-002. (n.d.). Retrieved from <https://www.mcscs.jus.gov.on.ca/english/FireMarshal/Legislation/FireMarshalsDirectives/directive14-002.html>.

¹²Ibid.

Brampton’s population is currently 696,975 and is forecasted to reach almost 900,000 residents by 2040 (Figure 2.2). Demand for emergency services in Brampton is directly impacted by population growth and therefore it is imperative that BFES’ service-level capacity and performance keep pace with the anticipated growth of the city.

Figure 2.2: Estimated Population Growth, City of Brampton



Source: Annualized estimates based on the Growth Scenario 16 five-year forecasts prepared for Peel Region by Hemson Consulting Ltd., 2018

2.5.2 Immigration and Language

Brampton is considered one of the most diverse communities in Canada. According to the 2016 Census, Brampton is home to 234 different ethnic groups.¹³

Table 2.4: Brampton, Toronto and Ontario Immigrant and Non-immigrant Population

	Total Population	Immigrant	Percentage of Population	Non-immigrant	Percentage of Population
Brampton	593,640	308,790	52%	272,365	46%
Toronto Census Metropolitan Area (CMA)	5,862,855	2,705,550	46%	3,020,405	52%
Ontario	13,242,160	3,852,145	29%	9,188,815	69%

Source: Statistics Canada, Census Profile, Brampton, 2016

¹³Census Bulletin #5: Immigration and ethno cultural diversity, City of Brampton (2017, October) Retrieved from: <http://www.brampton.ca/EN/Business/economic-development/Research-and-Data/Documents/2016%20Census%20Bulletin%205%20-%20Ethnocultural%20Diversity,%20Housing%20and%20Aboriginal%20Peoples.pdf>.

Table 2.5: Country of Origin for Immigrant Population Living in the City of Brampton

Place of Birth for Immigrant Population	Population Count	Percentage of Immigrant Population
India	123,660	40%
The Americas (South and North America)	61,640	20%
Europe	35,160	11%
Jamaica	23,215	8%
Pakistan	19,255	6%

Source: Statistics Canada, Census Profile, Brampton, 2016

Immigration growth continues to be a driving factor for the increase in Brampton's population. Brampton's attractiveness for newcomers has put its proportionate share of immigration population higher than the Toronto Census Metropolitan Area (CMA) and the province of Ontario (Table 2.4). The most predominant country of origin for newcomers is India but there is a wide variety of other countries (Table 2.5). As a result, the residents of Brampton speak a range of languages as outlined in Tables 2.6 and 2.7.

Table 2.6: Mother Tongue Language for Residents of Brampton

Mother Tongue	Population Count	Percentage of Total Population
Punjabi (Panjabi)	110,715	19%
Urdu	20,200	3%
Gujarati	16,750	3%
Hindi	14,070	2%
Tamil	12,695	2%
All Non-official Languages	271,545	46%

Source: Statistics Canada, Census Profile, Brampton, 2016

Table 2.7: Language Most Spoken at Home for Residents of Brampton

Language Most Spoken at Home	Population Count	Percentage of Total Population
Punjabi (Panjabi)	79,705	13%
Urdu	12,950	2%
Gujarati	10,695	2%
Tamil	8,535	1%
Hindi	7,355	1%
All Non-official Languages	164,630	28%

Source: Statistics Canada, Census Profile, Brampton, 2016



Table 2.8: Knowledge of Official Languages in the City of Brampton

Total Knowledge of Official Languages	Population Count	Percentage of Population
English only	532,650	90.02%
French only	500	0.08%
English and French	30,200	5.10%
Neither English nor French	28,325	4.79%

Source: Statistics Canada, Census Profile, Brampton, 2016



BFES translates a significant amount of fire and life safety materials in different languages since 46% of Brampton residents consider a language other than English or French to be their mother tongue (Table 2.6) while 28% of residents also speak a language most often at home other than English or French (Table 2.7). However, BFES predominantly communicates in English as less than 5% of the population has no knowledge of English or French (Table 2.8).

2.5.3 Age

Age is a critical factor to consider when assessing risk in terms of injury or death in a fire. People aged 65 and

older are twice as likely to be killed or injured in a fire compared to the general population.¹⁴ Whereas the fire death rate is four times higher at age 85 compared to the average per capita rate.¹⁵ As a result, the older the average age of a municipality, the higher its rate of injury and death due to fire. As identified in Table 2.10, Brampton has a small percentage of residents over the age of 65, which reduces the risk compared to other neighbouring municipalities.

¹⁴Older adults. (n.d.). Retrieved from <https://www.nfpa.org/Public-Education/By-topic/People-at-risk/Older-adults>.

¹⁵Older adults. (n.d.). Retrieved from <https://www.nfpa.org/Public-Education/By-topic/People-at-risk/Older-adults>.

Table 2.10: Age Distribution for City of Brampton

Age Group (years)	Brampton	Percentage of population
≤4	37,520	6.3%
5-9	41,680	7.0%
10-14	41,040	6.9%
15-19	42,820	7.2%
20-24	42,800	7.2%
25-29	40,200	6.8%
30-34	43,095	7.3%
35-39	44,275	7.5%
40-44	43,780	7.4%
45-49	42,865	7.2%
50-54	42,095	7.1%
55-59	35,815	6.0%
60-64	29,380	4.9%
65-69	24,895	4.2%
70-74	17,095	2.9%
75-79	11,370	1.9%
80-84	7,065	1.2%
85-89	3,825	0.6%
90-94	1,575	0.3%
95-99	360	0.1%
≥100	75	0.01%
TOTAL POPULATION	593,625	100%
Distribution (%) of Population by Larger Age Groups		
≤14	20%	
15-64	68%	
≥65	12%	
Average Age of Population	36.5	

Source: Statistics Canada, Census Profile, Brampton, 2016

2.6 Geographic Considerations

2.6.1 Local Roads and Highways

Brampton has a total area of 266 square kilometres and there are 1,857 kilometres of roadway and 165 kilometres of highway that run throughout the city. Its road network includes collector roads, arterial roads, local roads and highways. Highway 410 and Highway 407 both run through Brampton, with maximum speeds of 100 kilometres per hour. There are 16 roads in Brampton that are under the authority of the Region of Peel, who are responsible for the maintenance of roads.

In total, there are 545 intersections in the city that are controlled by a central computing system to move the greatest amount of vehicles with minimal stops and delays (excluding any traffic lights located at highway on and off ramps).¹⁶ The system grants priority to the intersections with the busiest traffic movement and takes factors such as time of day into consideration when coordinating the intersection lights.¹⁷ In terms of emergency response, all intersections in Brampton have EMTRAC infrastructure in place that uses a radio frequency to enable BFES responding vehicles to request priority through signalized intersections, thereby reducing travel times.

2.6.2 Railway

There are two railway lines that pass through Brampton: the Kitchener GO corridor line owned by Canadian National Railway and used by Metrolinx, which runs east-west in the centre of the city; and the Orangeville-Brampton branch line owned by Cando, which runs north-south in the eastern part of the city. In total, there are 159 kilometres of railway tracks that run through Brampton.

¹⁶City of Brampton. (n.d.). Retrieved from <https://www.brampton.ca/EN/residents/Roads/Pages/traffic-signal-locations.aspx>.

¹⁷Ibid.

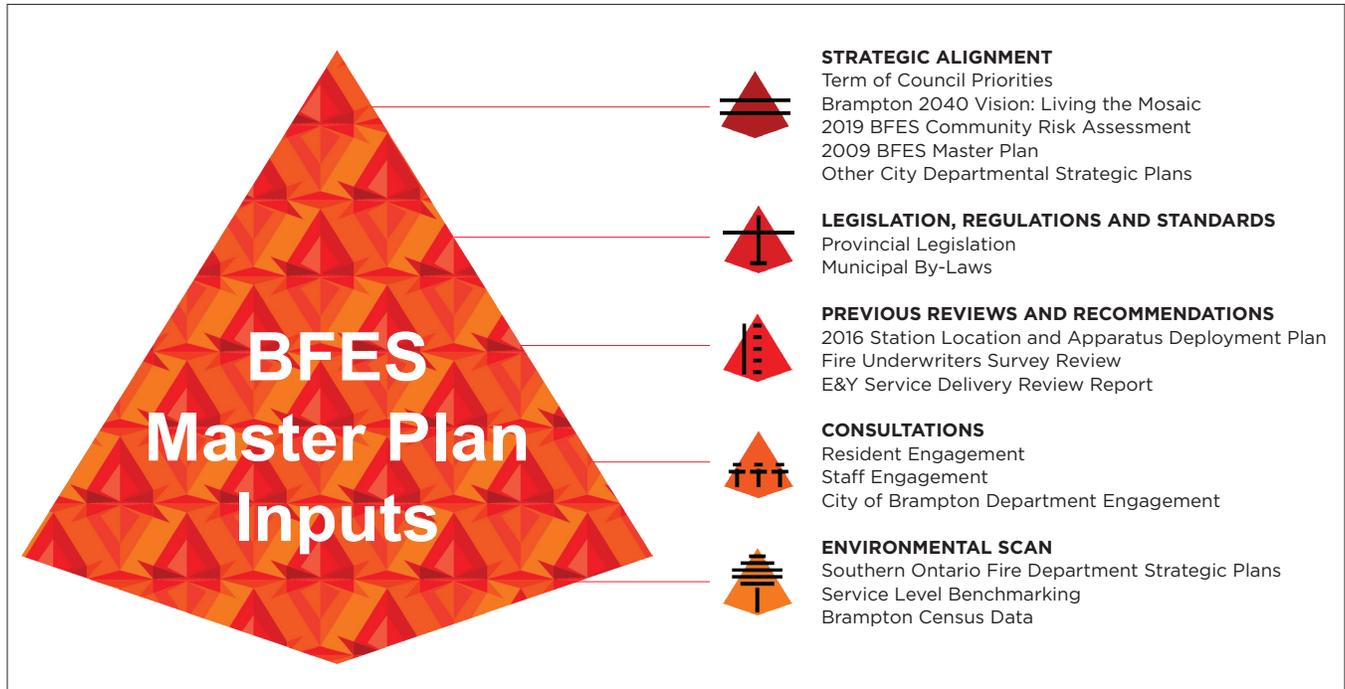
Moreover, there are a total of 41 at-grade railway crossings located in the city of Brampton. These crossings do represent a risk in terms of blocking apparatus that could be responding to an emergency. However, this risk is mitigated by the enhanced road network within the municipality that allows other routes of travel.



3.0 The Planning Process

This Master Plan was informed by several critical elements, which are highlighted in Figure 3.1 and explained throughout this section of the Plan.

Figure 3.1: Planning Process Components of the Master Plan



3.1 Strategic Alignment

This Master Plan was developed by aligning to a number of the City’s strategic directions. It aligns with the values and vision of the City while also directly contributing to the achievement of the City’s Term of Council Priorities established in March of 2019. These priorities will help establish Brampton as a:

- city of opportunities
- mosaic
- green city
- healthy and safe city
- well-run city

This Master Plan also takes into account the City’s vision as outlined in *Brampton 2040: Living the Mosaic*. Commonly known as the

Brampton 2040 Vision (Vision), it builds from the existing base of planning, policies, strategies and programs that are already adopted or underway in the City. The Vision will optimally position Brampton from the perspective of resident preferences, leading practices, competitive advantage and prime responsibility. It incorporates the themes of sustainability, livability, diversity and health. These are the DNA of the Vision for which many the recommendations outlined in this Master Plan are intended to support. The transformations suggested in the Vision, such as increasing population density in identified core areas, will ultimately have an effect on BFES operations and future resource allocation.

Lastly, this Master Plan was informed by the BFES 2009 Master Plan. It offers themes that remain relevant today such as keeping pace with growth, new investments in technology and enhanced efforts in the health and safety of firefighters. As such, these themes were incorporated into this updated Master Plan.



3.2 Legislation and Standards

There are a number of important legislation and standards that affect the way in which BFES delivers fire protection services and emergency management planning. These are outlined below.

Fire Prevention and Protection Act, 1997

As with every other municipal fire department in Ontario, BFES legislative responsibilities are found within the Fire Prevention and Protection Act, 1997 (FPPA). The FPPA mandates that municipalities must establish a program that includes public education on fire safety, and provide other fire protection services as it deems necessary in accordance with its needs and circumstances. This inherently means that firefighting can be considered a mandatory service for the

City to provide to the more than 600,000 residents of Brampton. Furthermore, the FPPA mandates that: incidents are reported to the Fire Marshal as required; regulations as outlined in the Ontario Fire Code are enforced; and a Fire Chief is appointed to be accountable for the delivery of fire protection services for the municipality.

Emergency Management and Civil Protection Act

As established in the department organizational chart (Figure 1.1), the Brampton Office of Emergency Management (BEMO) reports to the Fire Chief. Thus, the provincial Emergency Management and Civil Protection Act and its regulations also influence this Master Plan. The Emergency Management and Civil Protection Act requires that every

municipality develop and implement an emergency management program that consists of an emergency plan, training program, mock exercises and public education. It also requires municipalities to identify and assess the various hazards and risks to public safety, including elements of infrastructure that are at risk of being affected by emergencies.

Occupational Health and Safety Act

The Occupational Health and Safety Act sets out the rights and duties of all parties in the workplace, the procedures for dealing with workplace hazards, and the enforcement needed in response to incidents. Although this legislation applies to all workers in Ontario, there are no specific regulations for firefighters as there are for the construction and healthcare industries. However, a fire service committee was formed as allowed under Section 21 of the Act to identify best practices for protecting the health and safety of fire service workers in Ontario. These protocols focus on apparatus and equipment, communications, environment, personal protective equipment, personal accountability, procedures, and training. The guidance provided by the committee does not replace the Occupational Health and Safety Act and its regulations, and is not to be used as or considered legal advice.

Highway Traffic Act

This legislation offers specific requirements that apply to the operation of fire apparatus, which include not using hand-free devices while operating a vehicle, and emitting loud noises from apparatus while in service.

Establishing and Regulating By-law – City of Brampton By-law Number 158-2013

The Establishing and Regulating By-law 158-2013 outlines the service delivery model and the fire protection services required to meet the needs and circumstances of the community. Other details included in the by-law allow the Fire Chief to respond to emergencies outside the geographical limits of Brampton, and assign the Deputy Fire Chief the duties of the Fire Chief in their absence.

To Adopt an Emergency Plan for the City of Brampton – By-Law Number 265-2014

This By-law 265-2-14 approves the emergency plan for the City of Brampton, when necessary. The plan sets the guidelines to declare an emergency, as well as initiation of the emergency operations centre and requesting assistance from other levels of government.

National Fire Protection Association (NFPA) Codes and Standards

The NFPA has published more than 300 consensus codes and standards intended to minimize the possibility and effects of fire and other risks. NFPA codes and standards, administered by more than 250 Technical Committees comprising of approximately 8,000 volunteers, are adopted and used throughout the world as they are regarded as fire service industry best practices. These codes and standards are not considered law in Ontario, but many Ontario fire departments use these codes and standards to provide high quality fire protection services to their community.

While the FPPA and By-law 158-2013 define the services and responsibilities of BFES, both documents do not establish key performance indicators to measure the level of service. However, the NFPA has established performance standards under section 1710. These standards are recognized as industry best practices and many fire departments use them to evaluate and monitor the effectiveness of their emergency response capabilities. They are outlined in the NFPA's Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Career Fire Departments (NFPA 1710; 2016 edition). One such standard is the NFPA's benchmark response times for career fire departments (Table 3.1).

Table 3.1: NFPA 1710-2016 Response Time Objectives

Performance Indicator	Target Time	Performance Standard
Alarm processing time	64 seconds	90% of the time
Turnout time	80 seconds	90% of the time
Travel time: First responding apparatus	240 seconds	90% of the time
Total response time: First responding apparatus	6 minutes 24 seconds	90% of the time

Source: NFPA 1710 - Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations and Special Operations to the Public by Career Fire Departments, 2016

Section 3.3.53 of NFPA 1710 defines each performance indicator as the following:

- Alarm processing time: The time interval from when the alarm is acknowledged at

the communication centre until response information begins to be transmitted via voice or electronic means to emergency response facilities.

- Turnout time: The time interval that begins when the emergency response facilities and emergency response units notification process begins by either an audible alarm, visual annunciation or both, and ends at the beginning point of travel time.
- Travel time: The time interval that begins when a unit is on-route to the emergency incident and ends when the unit arrives at the scene.
- Total response time: The time interval from the receipt of the alarm at the primary call point and ends when the first emergency response unit initiates action or intervenes to control the incident.

3.3 Previous Reviews

This Master Plan also aligns with previous reviews that were recently conducted including the 2019 BFES Community Risk Assessment (CRA), 2016 Station Location and Apparatus Deployment Plan, Fire Underwriters Survey, and BFES Service Delivery Review Report by Ernst & Young.

3.3.1 Community Risk Assessment

Identifying, evaluating and prioritizing risks allows fire departments to develop and implement targeted solutions to mitigate each risk to a reasonably low level. As a result, Ontario Regulation 378/18, enacted on May 8, 2018, mandates every fire department to conduct a community risk assessment in order to identify, analyze, evaluate and prioritize risks to public safety to inform decisions about the provision of fire protection services.¹⁸

¹⁸Law Document English View. (2018, November 19). Retrieved from <https://www.ontario.ca/laws/regulation/180378>.

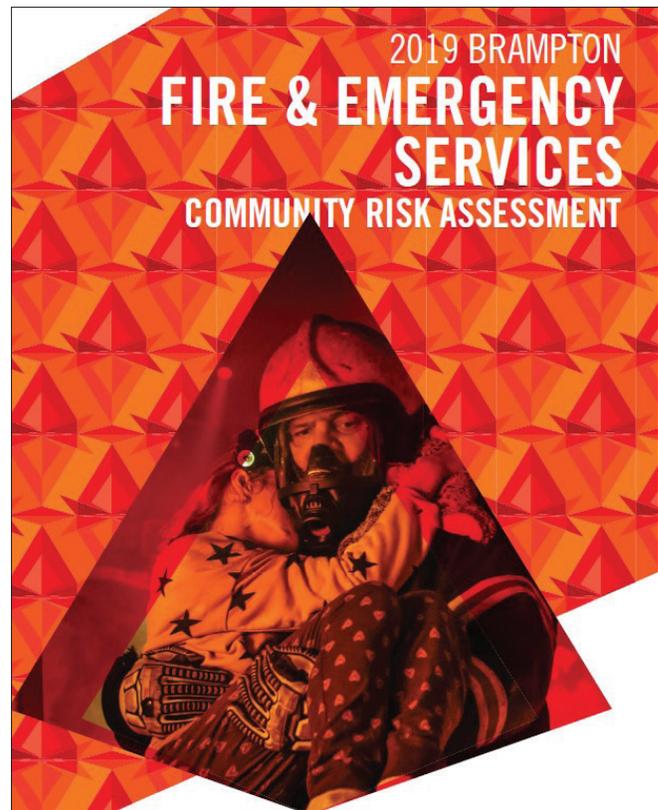
In addition, the regulation outlines the specific profiles to include within the community risk assessment. These are:

- geographic
- building stock
- critical infrastructure
- demographic
- hazard
- public safety response
- community services
- economic
- past loss and event history

Each fire department must complete their CRA by July 1, 2024. BFES completed their CRA in 2019 following the requirements of Ontario Regulation 378/18 and the guidelines provided by *NFPA 1730: Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations*. The BFES CRA informed many of the recommendations outlined in this Master Plan.

The CRA identified the following highest risks for the city of Brampton:

- unregistered multi-unit dwellings;
- illegal boarding/lodging/rooming houses;
- industrial occupancies that are over 100,000 square feet;
- high-rise residential buildings;
- low-rise residential buildings;
- residential homes built prior to 1990;
- vulnerable occupancies;
- areas with large concentrations of households where occupants rent;
- occupancies that are engaged in manufacturing;
- traffic congestion and vehicle collisions affecting apparatus response times;
- fire incidents in the City Centre Area, Ambro Heights and occupancies on Lisa Street where the stove top was a common ignition source;
- fire incidents in the Mount Pleasant area and the apartments on Sir Lou Drive



where smokers article was the ignition source; and

- fire incidents in the Tullamore, Mount Pleasant and Snelgrove Place neighbourhoods where the fire originated in the garage.

3.3.2 2016 Station Location and Apparatus Deployment Plan

The 2016 Station Location and Apparatus Deployment plan that was adopted by Council in 2016 was used as a basis for creating an updated plan as outlined in Section 4.1 of this Master Plan. Future fire station locations were analyzed based on updated variables such as response time predictions, population forecasts, forecasted incident volume, land use designations and projected road networks. In completing this analysis, industry best practices were considered to ensure stations are strategically located throughout the municipality to meet the needs and circumstances of the community as it grows.

3.3.3 Fire Underwriters Study

The Fire Underwriters Study (FUS) is a national organization in Canada that provides data on public fire protection for insurance statistical work and underwriting purposes to subscribing insurance companies. FUS takes into consideration factors such as building stock, water supply, fire department composition and fire safety control (i.e., prevention and education efforts). The organization will then provide an overall score known as the Public Fire Protection Classification (PFPC) where a score of 1 represents the highest and ideal level and 10 reflects the absence of any effective public fire protection that directly impacts commercial insurance premiums in the municipality. Based on its study of the city of Brampton in 2017, FUS assigned Brampton a PFPC score of 2 which is in line with the highest score ever achieved by a North American municipality. As a result, Brampton business owners are paying reduced premiums relative to businesses in other municipalities. The report highlighted many positive aspects of BFES' fire protection abilities such as its best-in-class pre-incident planning program, optimal station locations and adequate supply of hydrants. However, it also mentioned a few opportunities specifically around fire safety control. Most inspections by BFES Fire Prevention are compliant and request driven, with few being done on a routine or proactive basis. With this gap identified, BFES plans to implement a routine inspection program as discussed in Section 4.2 of this Master Plan.

3.3.4 BFES Service Delivery Review Report

Ernst & Young (E&Y) was engaged in September of 2019 to perform a service delivery review of BFES that included an assessment of fiscal effectiveness, organizational structure, BEMO mandate, wellness services and Apparatus & Maintenance Division effectiveness. E&Y found that BFES is an effective organization, consistently demonstrating high levels of operation and fiscal effectiveness, and an innovative approach to service delivery and wellness services.¹⁹ It concluded “that BFES is a leader in fire service within Ontario, if not more broadly”²⁰. When comparing BFES to other fire services in the province, BFES has considerably lower operating costs per capita relative to other Ontario jurisdictions, and serves more residents per fire station with comparable outcomes.²¹

The following recommendations were identified by E&Y:

1. Increase BFES user fees.
2. Realign the mandate of the Community Safety portfolio.
3. Build a wash bay to reduce corrosion on apparatus.
4. Increase investments in wellness programs to limit WSIB liabilities.
5. Leverage machine learning.

These suggestions informed many of the recommendations discussed in Section 4 of this Master Plan with one exception. The increase in user fees was addressed in the 2020 User Fee By-law update that was approved by Council in February of 2020.

¹⁹“City of Brampton Service Delivery Review: Category 5 – Fire & Emergency Services”. Available at: <https://www.brampton.ca/EN/Documents/Brampton%20Fire%20-%20Final%20Report%20-%202011.29.2019.pdf>.

²⁰Ibid.

²¹Ibid.

3.4 Environmental Scan

An environmental scan was conducted to support and inform the Master Plan planning process. Included in this scan are insights gained from the review of neighbouring fire department strategic plans, along with resourcing and service level benchmarking against other large urban fire departments to help guide future resource allocations. Response time benchmarking was not conducted as a provincial framework is not yet in place to ensure all fire departments within the province use a consistent reporting framework.

3.4.1 Southern Ontario Fire Department Strategic Plan Review

BFES reviewed strategic plans from fire departments in other Southern Ontario municipalities to identify best practices in developing its Master Plan, including the:

- 2019 Fire and Emergency Services Master Plan, Mississauga Fire and Emergency Services;
- 2019-2028 Hamilton Fire Department 10-year Service Delivery Plan;
- City of Toronto Master Fire Plan 2015-2019, Toronto Fire Services;
- Town of Caledon Fire Master Plan, February 2018;
- Barrie Fire and Emergency Services Fire Master Plan Update 2016-2025; and
- Kitchener Fire Department Master Plan 2017-2022.

Upon analysis of these various fire department plans, a number of common challenges were identified. One particular concern commonly highlighted are the budgetary pressures faced by many fire departments as a result of rising costs of labour and equipment, coupled with the increased demand for emergency services driven by the continued population growth in the Greater Toronto Hamilton Area

(GTHA). Fire departments are continuously seeking new ways to optimize resources so they are allocated and used most efficiently.

Challenges as a result of development and intensification is another common theme found in these master plans as cities in the GTHA continue to face unprecedented growth. This form of growth typically increases demand for emergency services and negatively impacts response times due to the traffic congestion it creates. Fire departments must be proactive to ensure measures are assessed and put in place to ensure services continue to be delivered effectively and efficiently.

A third concern shared between fire departments within Ontario are the changes in building stock. The proliferation of high-rise buildings throughout the GTHA continues to create more vertical response force challenges while the construction of new building stock coupled with the aging of older building stock create unique risks to manage. It is critical for fire departments to have a clear understanding of the risks associated with their municipality's current and future building stock.

The following solutions were presented as a result of these common challenges found across the fire service:

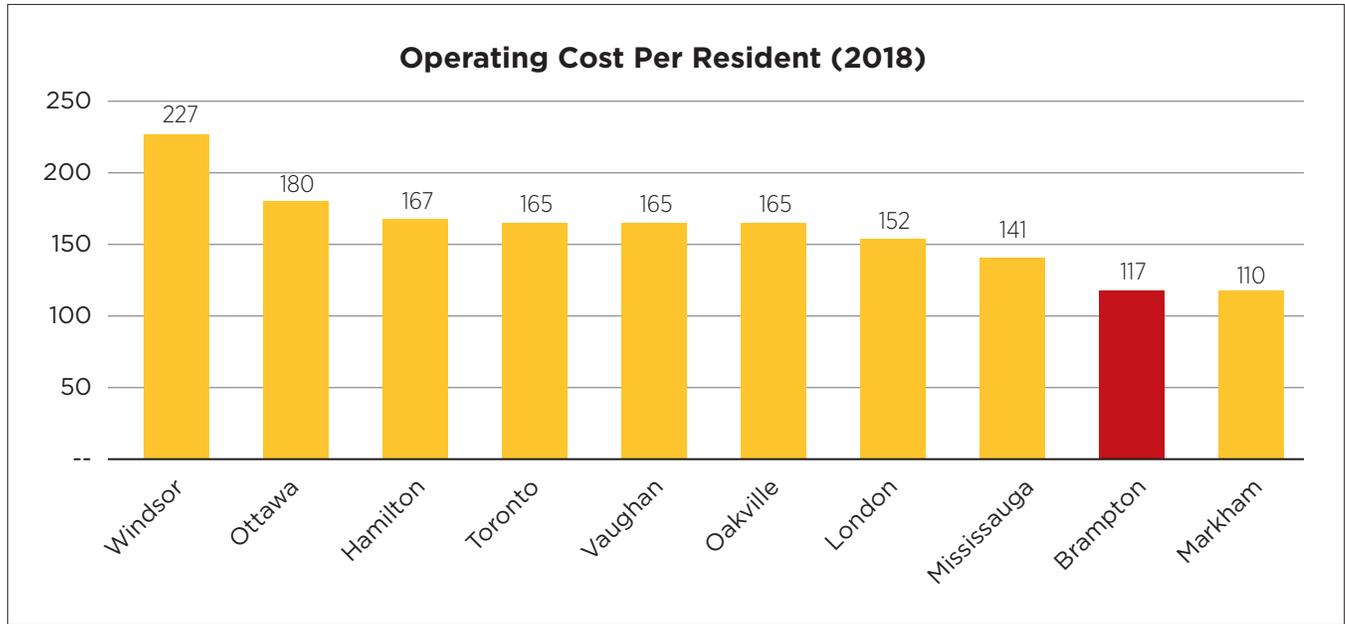
- strategically plan for optimal placement of future stations;
- expand public education efforts;
- increase inspections; and
- strengthen internal and external partnerships.

BFES, which experiences similar challenges as other fire departments, proposes recommendations that are similar to those presented by its counterparts. This confirms BFES remains aligned with best practices and keeps pace with its counterparts.

3.4.2 Benchmarking

In 2019, KPMG concluded Phase 1 of the Service Delivery Review for the City, which identified BFES as a leader in the delivery of fire services. These services were delivered at \$117 per resident in 2018, which is the second lowest operating costs per resident amongst all large urban fire departments in Ontario (Figure 3.2).

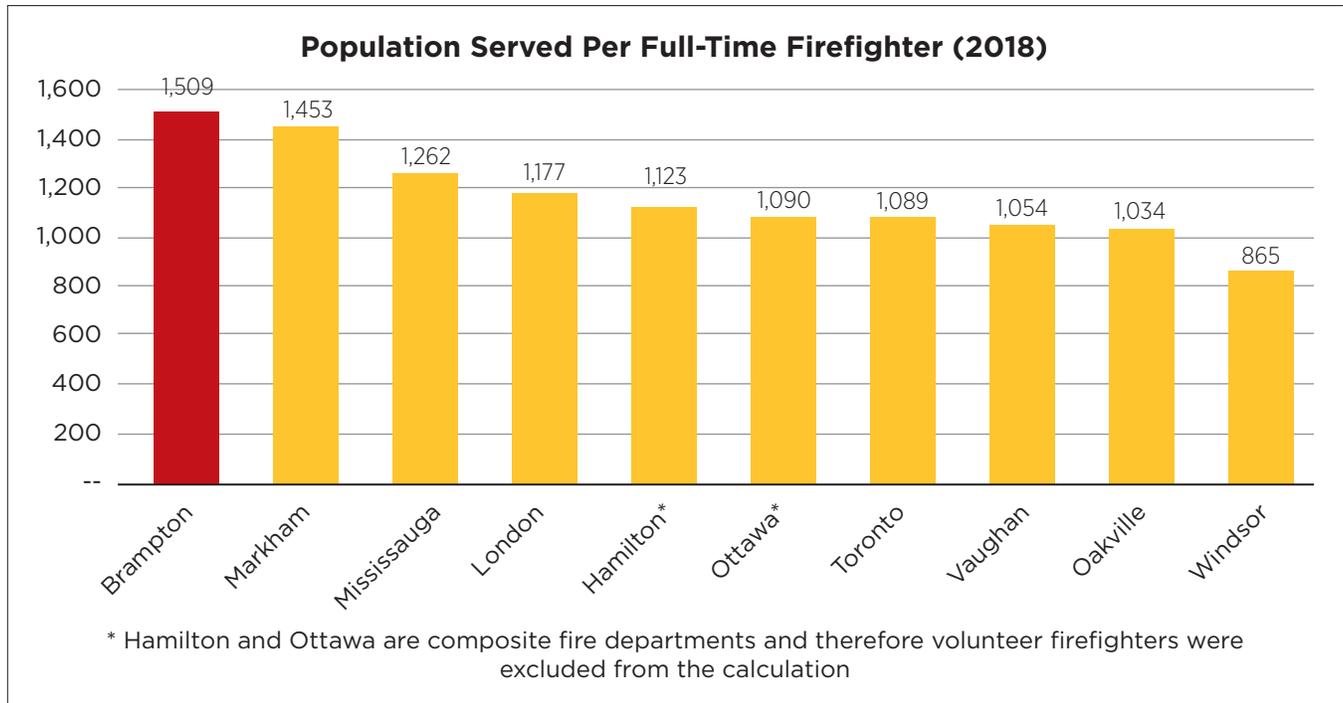
Figure 3.2: Operating Cost per Resident, 2018



Source: Ontario Ministry of Municipal Affairs and Housing municipal Financial Information Returns

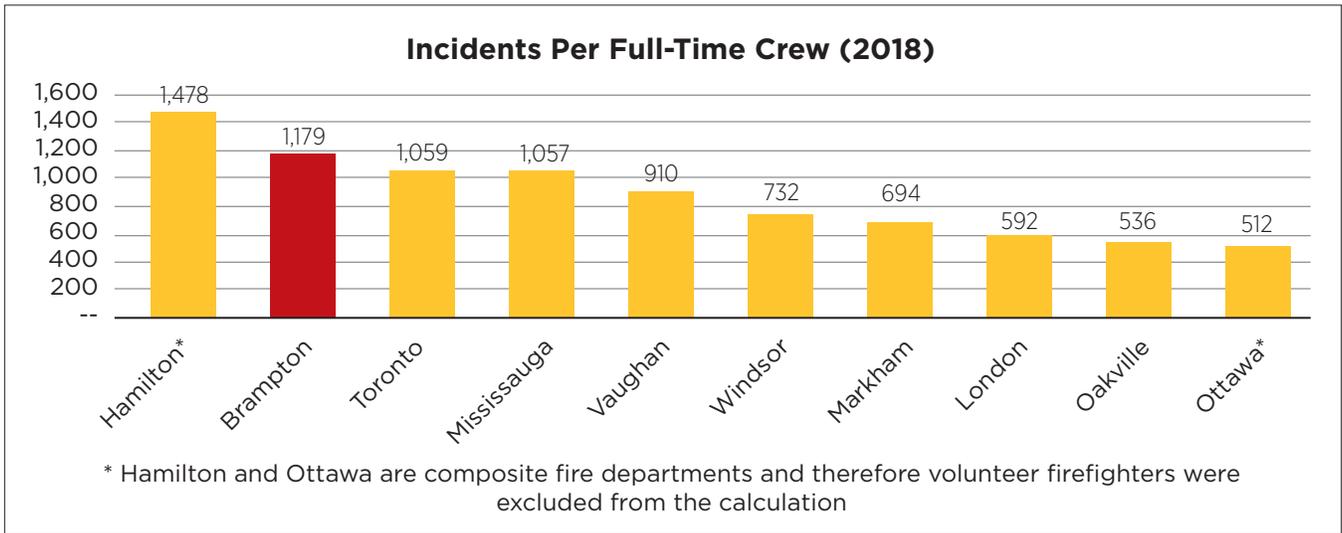
BFES' low per capita operating costs are primarily a result of having fewer firefighters employed per capita when compared to other large urban fire departments in the province as labour costs typically account for 95% of most large urban fire department operating budgets. BFES ranks the highest in terms of population served per full-time firefighter among the 10 municipalities analyzed (Figure 3.3).

Figure 3.3: Population Served per Full-Time Firefighter, 2018



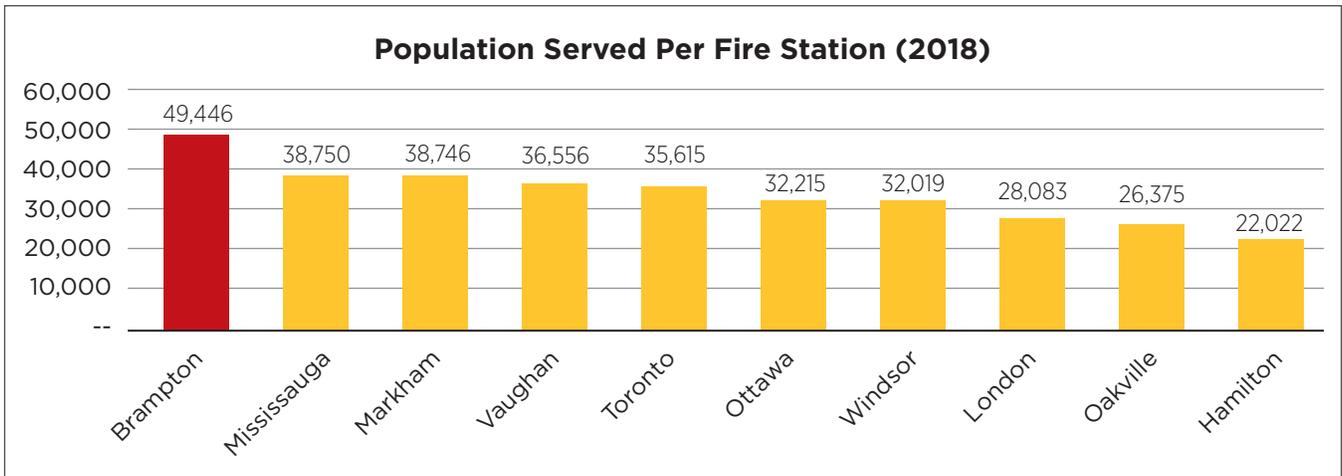
Due to the lower firefighter per capita ratio, BFES firefighters respond to the second-most incidents per full-time crew member in Ontario (Figure 3.4). In reviewing Figure 3.4, it is important to note that Hamilton and Ottawa, unlike BFES, are composite fire departments and are comprised of full-time firefighters as well as volunteers. Therefore, the below figures assume all incidents in Hamilton and Ottawa were responded to by full-time crews where in actuality some were by volunteers thereby lowering their actual incidents per full-time crew ratio. For purposes of this benchmarking exercise, incidents were not split for composite departments as it is difficult to do since some incidents have multiple apparatus sent that can be a mix of full-time and volunteer crews.

Figure 3.4: Incidents per Full-time Crew (2018)



Each of the benchmarking municipalities used in this Master Plan operate multiple fire stations that are located throughout their community to optimize travel and response times. Population is also an important factor to consider as it has a strong correlation to the number of incidents that occur in a municipality. That is, the higher the population per fire station, the higher the number of incidents within its primary response area. As highlighted in Figure 3.5, BFES serves the most people per fire station.

Figure 3.5: Population Served per Fire Station (2018)





3.5 Engagement Strategy

This Master Plan serves as a blueprint, co-created through community engagement and Council direction, along with internal/external stakeholders whose inputs were considered and embraced.

3.5.1 Internal Stakeholder Engagement

Between March 1 and April 3, 2019, a total of 10 consultations were held with representatives from each division of BFES, including all four firefighting platoons. Representatives in the consultations included the Fire Chief, Deputy Fire Chiefs, Division Chiefs, Platoon Chiefs, District Chiefs and Assistant Division Chiefs. Each consultation focused on an analysis of the strengths, weaknesses, opportunities and threats. Although each focus group did identify unique items to their workgroup, there was some common feedback across all divisions.

This included expressed interest to:

- enhance the department's wellness program;
- expand succession planning and leadership development opportunities; and
- review policies and procedures more regularly.

Front line staff were also involved in separate engagement sessions. In November 2019, eight presentations took place over four separate days. The 212 participants in these sessions included firefighters, firefighting captains, fire prevention officers, fire/life safety officers, vehicle technicians and administrative assistants. On-duty firefighting crews that were not able to attend the presentations were able to participate via Skype. The input received from these sessions directly influenced many of the recommendations outlined in this Master Plan.

Lastly, discussions were held with representatives from City departments, including Economic Development, Planning, GIS, By-law and Enforcement, Strategic Communications, Digital Innovation and Information Technology, Traffic Services, and Finance. The information and technical expertise provided by internal partners helped shape the final recommendations outlined in this Master Plan.

3.5.2 Resident Engagement

BFES's core mandate is to protect the residents of Brampton and to provide the highest quality of service. These guiding principles underline each of the recommendations made in this Master Plan. To validate that the department's priorities are in line with the needs of the community, more than 2,700 residents were engaged through three different surveys.

The first survey was conducted independently by fire department staff at large-scale public events throughout the municipality between June and September of 2019. Additionally, an online version of the survey was provided on the City of Brampton website homepage for residents to participate. In total, 734 residents replied to this survey, with 226 responses being conducted in-person. Appendix A details the survey questions and received responses. Overall, the results of the survey offered the following key insights:

- 43% of residents believe that increasing fire prevention and enforcement resources should be the priority to improve the safety of the community;
- 70% of residents indicated that newer forms of communication (i.e., social media and email) are their preferred choice of communication;

- 66% of residents felt that it is important or very important to have BFES personnel that are diverse and reflective of the community it protects;
- 5% believe that the value of services provided by BFES do not justify its costs; and
- 43% of residents indicated that non-working smoke and carbon monoxide alarms to be the most important fire safety issue in the community.

In addition to the survey conducted by BFES, the City's Strategic Communications team included several fire-service related questions in their city-wide telephone survey, which was conducted in August of 2019. This survey, conducted by Mainstreet Research, had a sample size of 868 adults that lived in Brampton (see Appendix A for more details). Responses from this survey found 42% of the respondents believed that more fire safety programming is needed to improve fire protection services. As for safety concerns in their community, 33% of respondents identified basement apartments as the biggest safety concern, while homes without a working smoke alarm was second by 31% of survey participants.

A third survey, conducted by the department of the Chief Administrative Officer, measured resident satisfaction with municipal services. A total of 1,101 adult residents responded to the survey (see Appendix A for more details). Overall, BFES fared well based on the results of the survey as only 2% of the respondents expressed some level of dissatisfaction with the services they received from BFES.

4.0 Recommendations

This section outlines BFES' recommendations for future initiatives that will provide a level of fire service that best meets the needs and circumstances of the Brampton community. In total, there are 32 recommendations that were influenced by and categorized within three themes (Figure 4.1):

Safe

Resident, business and visitor safety continues to be BFES' top priority. This focus aligns with the Council's strategic priority for Brampton to be a safe and healthy city. To ensure resident, business and visitor safety, BFES uses a multi-pronged approach that aligns with the OFMEM's three lines of defence model.

This approach includes:

- **Public education and community outreach:** These core activities empower residents to realize potential fire safety concerns in their home and proactively address them.
- **Code enforcement:** Conducting inspections is an additional preventative measure to keep residents safe.
- **Emergency dispatch and response:** This crucial component enables BFES to provide fire protection services that meet the needs and circumstances of the community in the event the first two lines of defence fail.

In recent years, BFES' role to keep the community safe has expanded by taking on responsibility of the City's emergency management function and leading other community safety initiatives.

Successful

To be successful, BFES and its team must be able to provide exceptional customer service to the residents of Brampton to achieve Council's priority of being a well-run city. This requires having a well-trained workforce that keeps up with the latest firefighting technologies and techniques. It also requires an enhanced wellness program that benefits the physical well-being of the workforce, while also providing the tools and resources needed to support the mental health of first responders. Lastly, BFES plans to enhance its equity and inclusion program to better reflect the community it services and align with Council's strategic priority of Brampton being a Mosaic.

Sustainable

It is critical for fire departments to effectively manage budgetary pressures driven by increasing labour, infrastructure and equipment costs, coupled with the pace of population growth happening in the GTHA. To alleviate these pressures, BFES commits to continue operating a lean fire department while using innovative tools and tactics to stretch every tax dollar received to the fullest. In addition to financial sustainability, BFES is focused on environmental sustainability. Identified as a priority for Council, BFES will help create a greener city by reducing its environmental footprint. This will entail investing in greener technology and the reduction of carbon emissions, among other efforts.

Figure 4.1: Master Plan Themes and Areas of Focus



4.1 Emergency Response

BFES continually considers the appropriate level of service required to manage the anticipated growth of the city. Addressing this issue requires comprehensive long-term planning that considers increased demands from both intensification and greenfield development. Furthermore, an effective emergency response force relies on reliable equipment and infrastructure, and most importantly, a strong focus on the health and safety of its firefighters. As a result, the department plans to adopt the following recommendations:

4.1.1 Implement the recommendations outlined in the Station Location & Apparatus Deployment Study

In 2016, Council endorsed the findings and recommendations of BFES' most recent Station Location and Apparatus Deployment Study. The published report summarized the data inputs, analysis and findings identified from the study, which covered the years between 2010 and 2014. It presented recommendations in relation to fire station location and fire apparatus deployment, based on industry best practices. It also recommended future studies be performed to align with updated growth plans, service level objectives and legislative requirements.

The 2016 study recommended four new fire stations be built in order to satisfy the development and growth expectations of Brampton at strategically located sites in order to meet travel time performance targets. The location of these new stations and their proposed in-service schedule are outlined in Table 4.1.

Table 4.1: BFES 2016 Apparatus Location and Deployment Study Priorities

Priority	Fire Station ID	Location/Vicinity	Recommended In-service Year	Net New Crew Required?
1	214	Chinguacousy Road & Bovaird Drive West	2019	N - A210 moves to Station 214
2	215	Heritage Road & Sandalwood Parkway	2022	Y - Squad
3	216	William Parkway & Mississauga Road	2022	Y - Squad
4	217	Countryside Drive & Goreway Drive	2025	Y - Squad

In terms of apparatus, the 2016 report recommended that 25 frontline apparatus be in operation by 2024 to better serve the growing needs of the community. This recommendation was developed using information available at the time, coupled with a comprehensive analysis of the following factors: first arriving apparatus on scene time, effective response force coverage and incident volumes/demands for each fire station's primary response area.

As part of the process for this Master Plan, BFES performed a comprehensive review of the 2016 study and updated the incident data through to 2018 as the previous version only included incident data up to 2014. As a result, the following changes were made to the 2016 study:

1) The building of Station 214 is underway. Land was procured in 2019 after the budget for the design and construction for the station was approved by Council. Originally, the station was proposed to be completed in 2019; however, the new in-service date will be 2022 as a result of delays in finding available land for sale that was optimally located to service the area. The one crew from Station 210 will move to Station 214 as originally planned since the net new crew hired in 2018 was put in place prior to the station being built to address the significant call volumes in the area. A second apparatus may be needed

in the future to meet increased demands as forecasted by the most recent incident data for Station 210/214's primary response area. However, these forecasts may need to be adjusted downward as Peel Region rolls out its Medical Priority Dispatching System, which could reduce the number of future medical calls BFES will be dispatched to by up to 30%.

2) Stations 215 and 216, which aim to support the growth in north-west Brampton, also known as Heritage Heights, have been delayed far past their original in-service dates of 2022. The delays result from land use planning changes happening in the area, particularly shale protection policies, provincial GTA-West Transportation Corridor decisions and related secondary plans. The shale protection policies were removed from the Regional Official Plan in 2018 based on the recommendations made by planning consultants; however, this decision was recently appealed by the Ministry of Municipal Affairs and Housing. Furthermore, the GTA West Transportation Corridor Route Planning and Environmental Assessment Study, which started up again in June 2019 under the direction of the new provincial government, will have a significant impact on the future growth and land use designations in the area.

A two-station model continues to be the preferred option to service north-west

Brampton with Station 216 to be located on Williams Parkway and Mississauga Road. This location is approximately one kilometre north of its original location as the proposed GTA-West Corridor route plan has been updated and no longer has an exit at Winston Churchill Boulevard and Embleton Road. The recommended in-service dates for Stations 215 and 216 are now much later than originally anticipated as a result of the land use planning delays. Station 216's recommended in-service date is now 2025 to coincide with the most recent population forecasts, which suggest residents will begin to move into the newly constructed homes on the southern boundary of Heritage Heights in 2025. Station 215, which will also service the Heritage Heights area, has been pushed out to 2032 to coincide with the expected rise in density when the new town centre surrounding Sandalwood Parkway and Heritage Road will be built. As a result, Station 215 has been renamed to Station 217 in the updated 2021 Station Location & Apparatus Deployment Plan reflected in this Master Plan.

3) Station 217, which will be renamed Station 215 to keep with the chronological numbering of stations, is still planned to be in service by 2025. However, its location will move to a City-owned parcel of land located at 10539/0 Goreway Drive, pending land use planning approvals. The 2025 in-service date coincides with the expected completion of the Goreway Drive project to widen the road to four lanes, which will ease traffic for crews when responding to emergencies. A net new crew will be required at this station to effectively respond to emergencies in north-east Brampton, especially as the area continues to develop and grow. A pumper is the preferred choice of apparatus to support the area.

As a result of the above changes, the new fire station locations and corresponding recommended in-service dates for each priority are summarized in Table 4.2.

Table 4.2: BFES 2021 – 2025 Master Plan Station Location & Apparatus Deployment Priorities

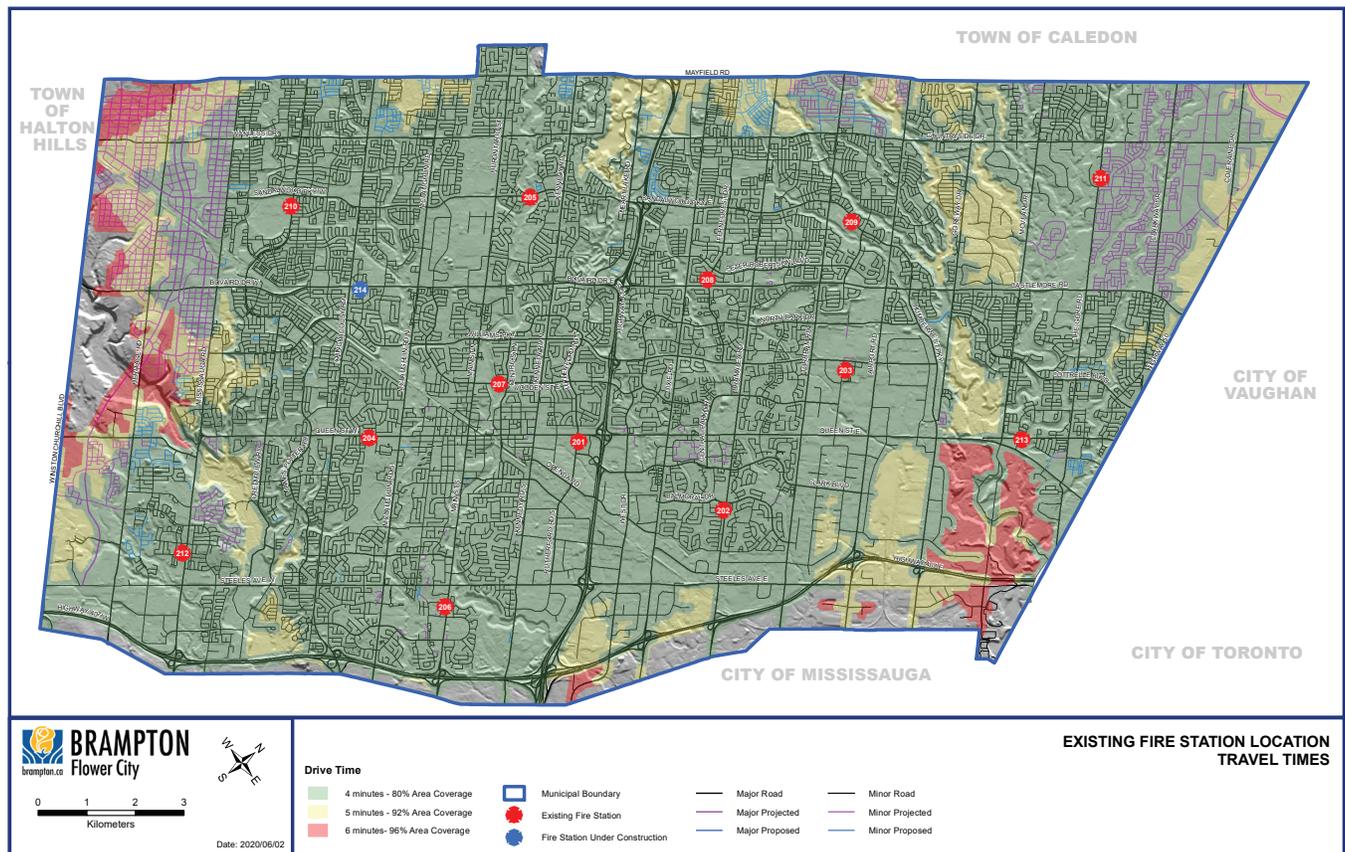
Priority	Fire Station ID	Location/Vicinity	Recommended In-service Year	Net New Crew Required?
1	214	917/927 Bovaird Drive West	2022	N – P210 moves to Station 214
2	215	10539/0 Goreway Drive	2025	Y – Pumper
3	216	Mississauga Road and Williams Parkway	2025	Y – Pumper
4	217	Heritage Road and Sandalwood Parkway	2032	Y – Pumper

The updated 2021 Station Location and Apparatus Deployment Plan best meets the needs and circumstances of the community given the information available at this point in time. BFES will continue to meet historical service levels and response times while making improvements in certain areas where new stations will be constructed.

Theoretical response times within Brampton’s city boundaries were based on a 240-second travel time target using a Geographic Information Systems (GIS) drive time model to assess the impact of the updated Station Location and Apparatus Deployment Plan against the stations that exist today and those that are in the process of being built. Three different scenarios were used to assess first arriving apparatus response force coverage, effective response force coverage and high-rise effective response force coverage.

Figure 4.2 highlights the department’s current first arriving apparatus response force capabilities based on existing stations and those that are in the process of being built.

Figure 4.2: BFES Current Travel Time Coverage Model

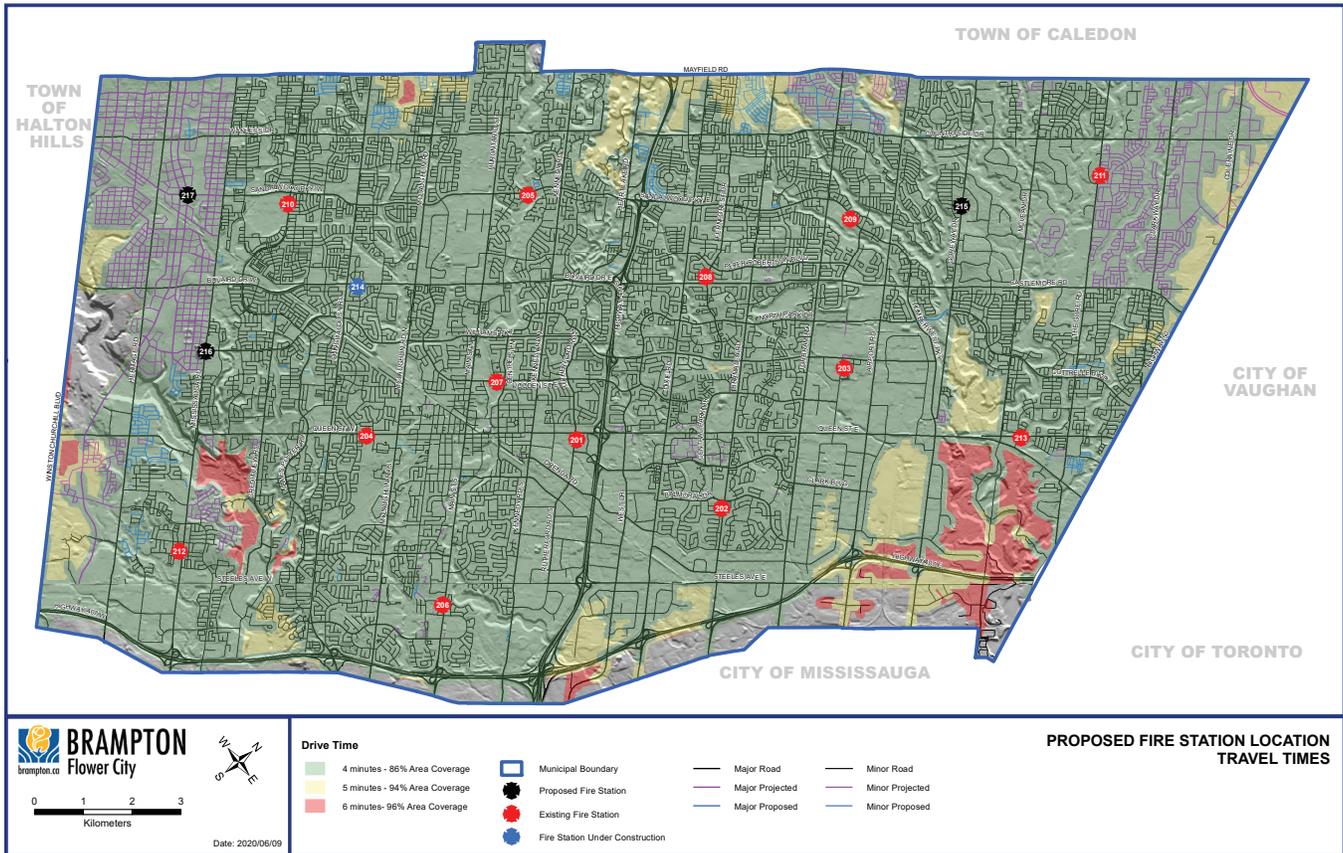


As illustrated in Figure 4.2, the 240-second travel time target is currently not achievable for all areas of Brampton based on the infrastructure currently in place. The proposed new station locations were evaluated in an attempt to improve the 240-second travel time coverage with consideration given to where new development and population growth is projected (Figure 4.3).

The areas which exceed the 240-second travel time target evident in Figure 4.3 are primarily the result of incomplete road networks. For instance, south-east Brampton does not warrant a future fire station because the area is expected to continue to have low call volume as it is home to the large Claireville Conservation lands and the CN Brampton Railway Yard. This area of Brampton does have some industrial occupancies; however, the risk and associated

impact of fires at these properties will be minimized through the department’s new routine inspection program as proposed later in this Master Plan. A similar coverage gap is identified in the north part of Brampton where Heart Lake Conservation Park presents similar factors.

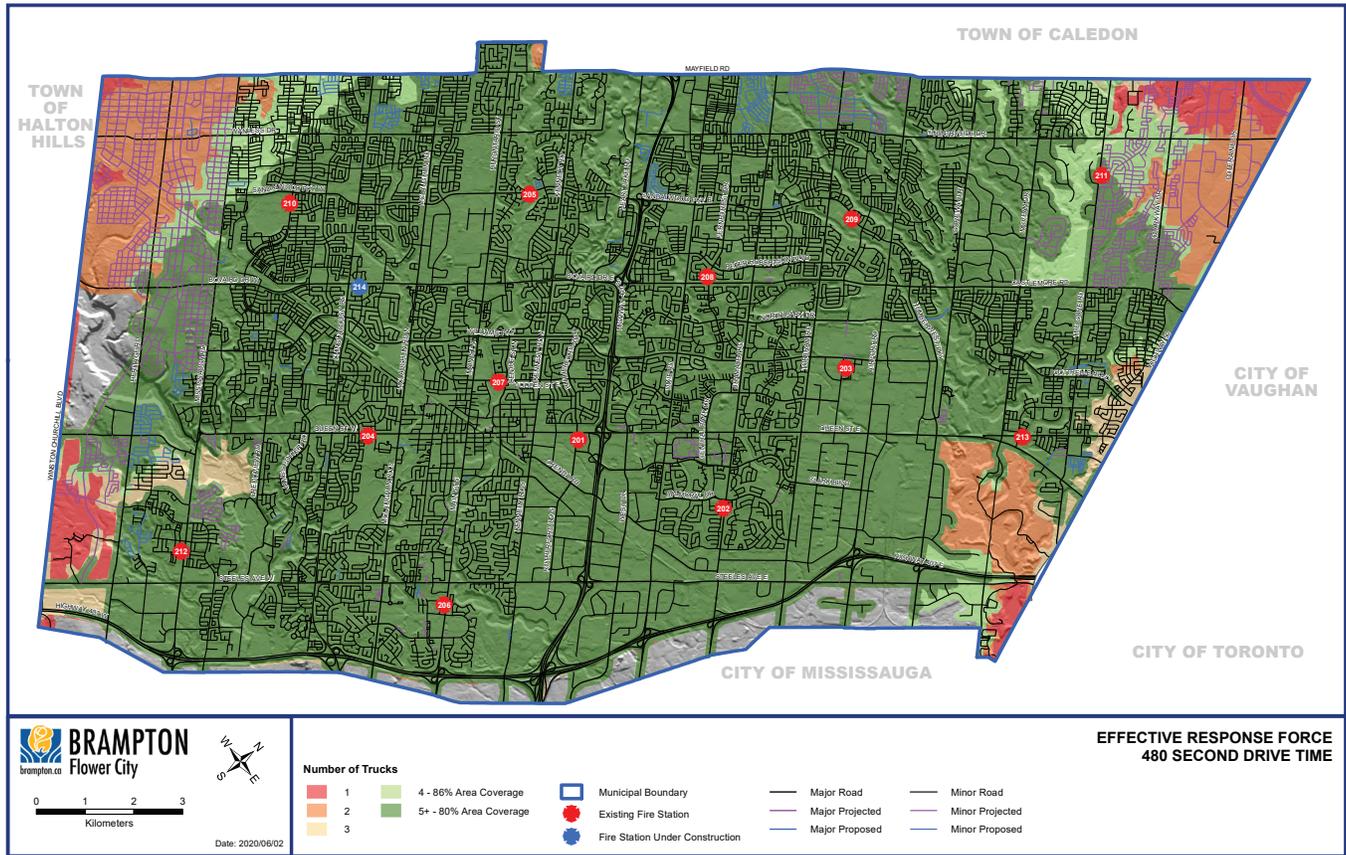
Figure 4.3: BFES Future Travel Time Coverage Model



BFES also considered industry best practices for establishing effective response force travel time targets, which suggest having 15 firefighters on site of a single-family dwelling fire incident within 480 seconds of an initial alarm. BFES plans to continue operating above this standard by sending five apparatus staffed with approximately 18 to 20 firefighters and a chief officer to respond to a single-family dwelling initial full-alarm assignment. It is important to note that incident commanders have the authority to request second or third alarms, depending on the nature of the fire incident.

Figure 4.4 highlights the department’s current effective response force capabilities based on existing stations and those that are in the process of being built using GIS drive time modelling.

Figure 4.4: BFES Current Effective Response Force Coverage Model



As illustrated in Figure 4.5, the new stations being proposed will dramatically improve the effective response force in highlighted gaps once the new stations are in service. For example, the lack of effective response force coverage in north-west Brampton will be eliminated once Station 216 and 217 are in service.

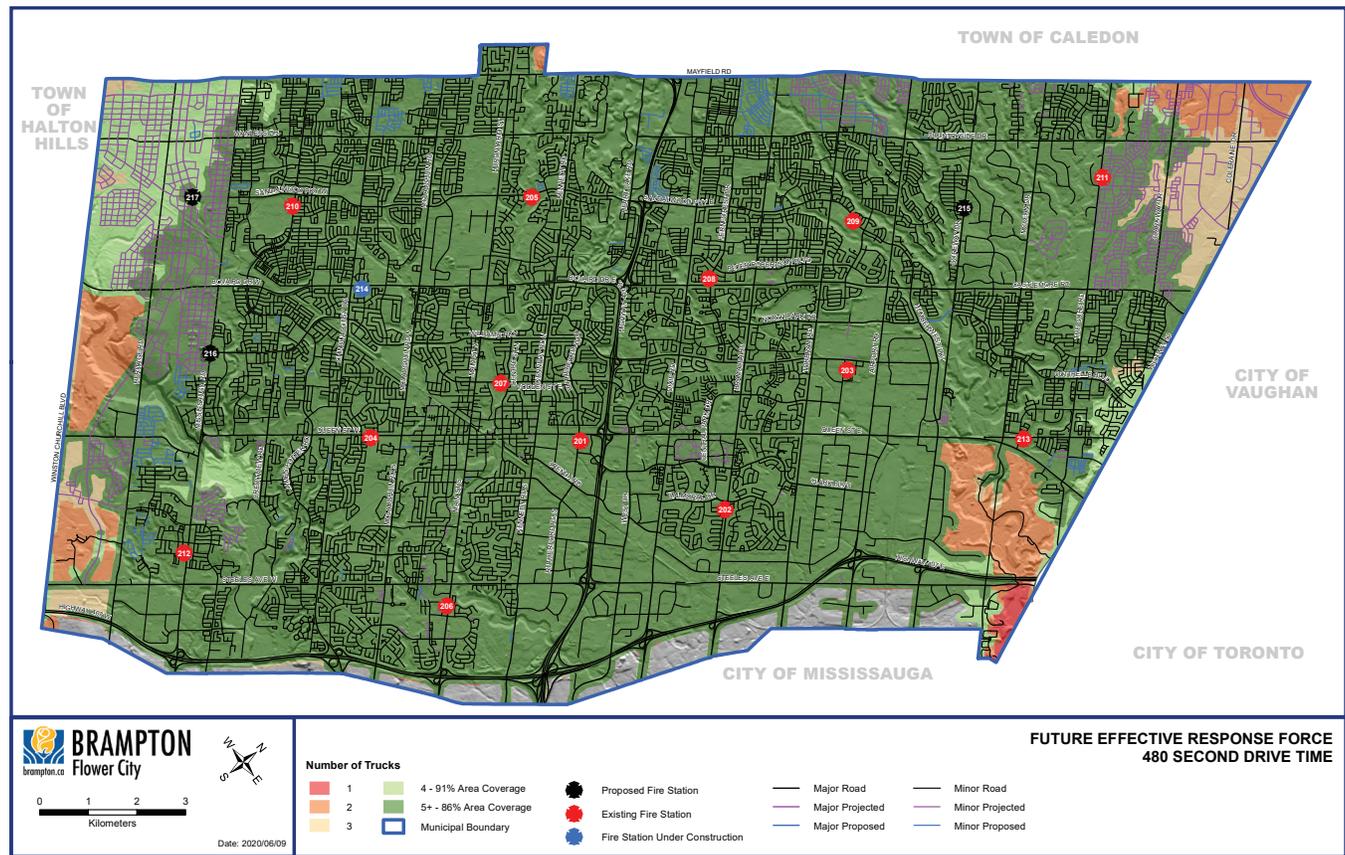
North-east Brampton will continue to have an effective response force gap. However, the risk is lower in this area as much of the remaining lands are zoned for industrial use and industrial buildings will require working sprinkler systems under the Ontario Building Code. In addition, BFES will routinely inspect these buildings, as proposed in this Master Plan. The south-east area of Brampton, too, will continue to experience an effective response force gap due to the incomplete road networks at the Claireville Conservation lands and CN Brampton Railway Yard on Intermodal Drive.

As new stations come into service, BFES effective response force capabilities will improve. In 2019, with the current number of fire stations and crews, BFES effective response force coverage reached 77% of Brampton. In 2032, when four new stations will be in service, overall response capabilities are projected to reach 86% (Table 4.3). Figure 4.5 depicts BFES' future coverage capabilities. It is important to note that the light green area in this model is much larger and covers 91%, which theoretically meets industry best practices for effective response force standards at two-story, single-family homes – the type of residents that make up a vast majority of occupancy types in Brampton.

Table 4.3: BFES Effective Response Force Coverage

	2019	2022	2025	2025	2032
Description of Change	Current Stations In-service	New Station 214 In-service	New Station 215 In-service	New Station 216 In-service	New Station 217 In-service
Percentage of City Where ERF is Achievable	80%	80%	83%	85%	86%

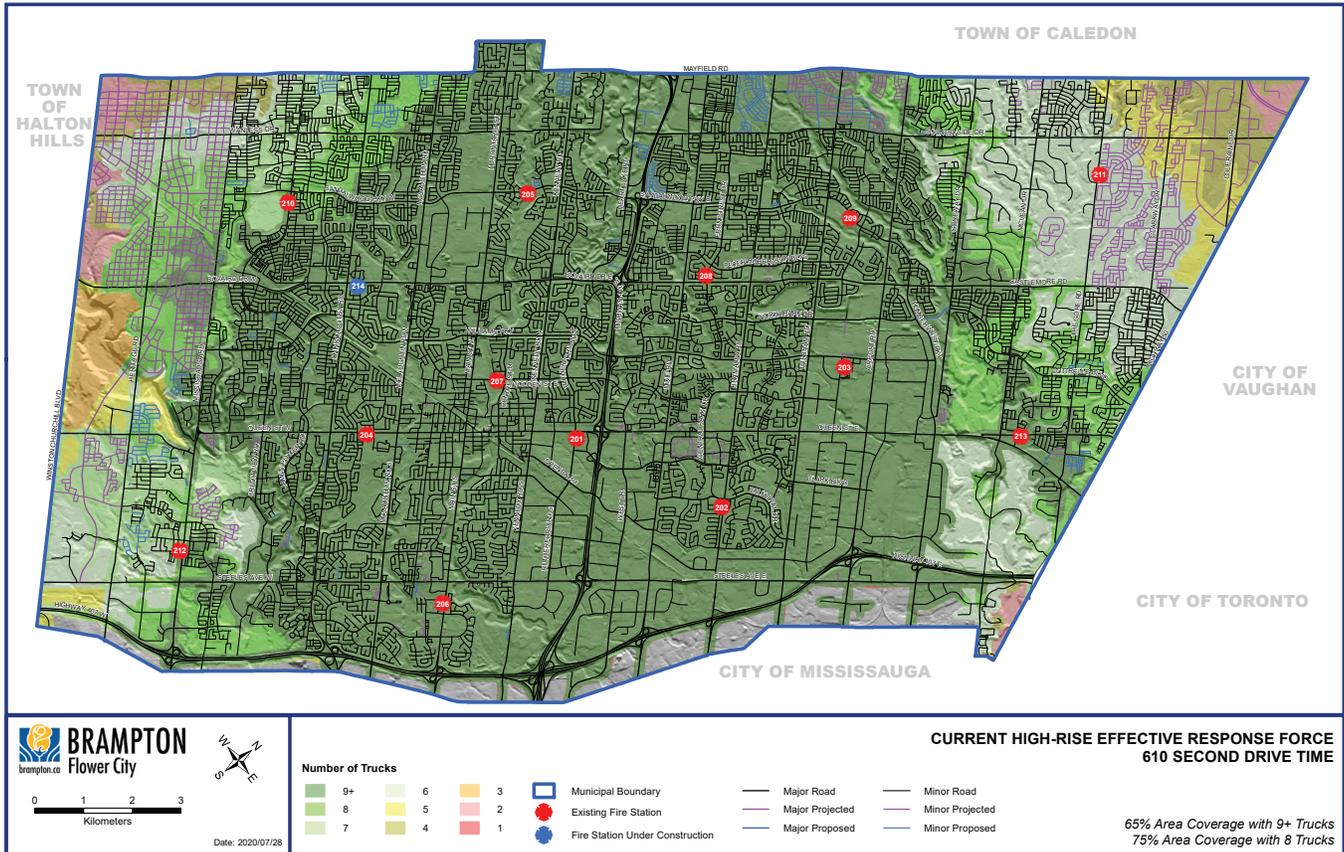
Figure 4.5: BFES Future Effective Response Force Coverage Model



Fire incidents at high-rise occupancies typically require significantly more firefighters to effectively combat the fire than is needed at a single-family dwelling fire incident at a typical two-story home. As a result, it is recommended that 35 firefighters be at a high-rise fire incident within 610 seconds of travel time. Based on the landscape of high-rise buildings in Brampton, including their low number of occupancies of which none are considered skyscrapers (having greater than 40 floors), BFES deems it more appropriate to send seven front-line apparatus with approximately 30 firefighters including two chief officers to a high-rise initial full-alarm assignment. As high-rise fires vary greatly in magnitude, second and third alarms may be called to bring more firefighters onto the scene.

The department's high-rise effective response force capabilities for fighting high-rise fires were assessed using GIS drive time modelling based on industry best practices. Figure 4.6 illustrates the high-rise effectiveness response force travel time coverage for existing fire stations and those that are under construction.

Figure 4.6: BFES Current High-rise Effective Response Force Coverage Model



As highlighted in Figure 4.6, the department can cover 65% of the city based on industry best practices using a 610-second travel time window and nine front-line apparatus. All high-rise buildings fall within the 67% coverage areas as they are primarily concentrated in the downtown core and City Centre areas that are well surrounded by current fire stations.

The future high-rise effective response force capabilities model in Figure 4.7 illustrates an improved coverage figure at 82%, which still covers all high-rise buildings currently in place. BFES plans to closely monitor the major development plans included in the Planning Vision, which takes into account the building of five town centres and three growth areas, as these could result in a significant increase in high-rise development. Should these areas require additional high-rise effective response force support, additional net-new crews can be added at Stations 211 and 215, which each have an additional bay available.

Figure 4.7: BFES Future High-rise Effective Response Force Coverage Model

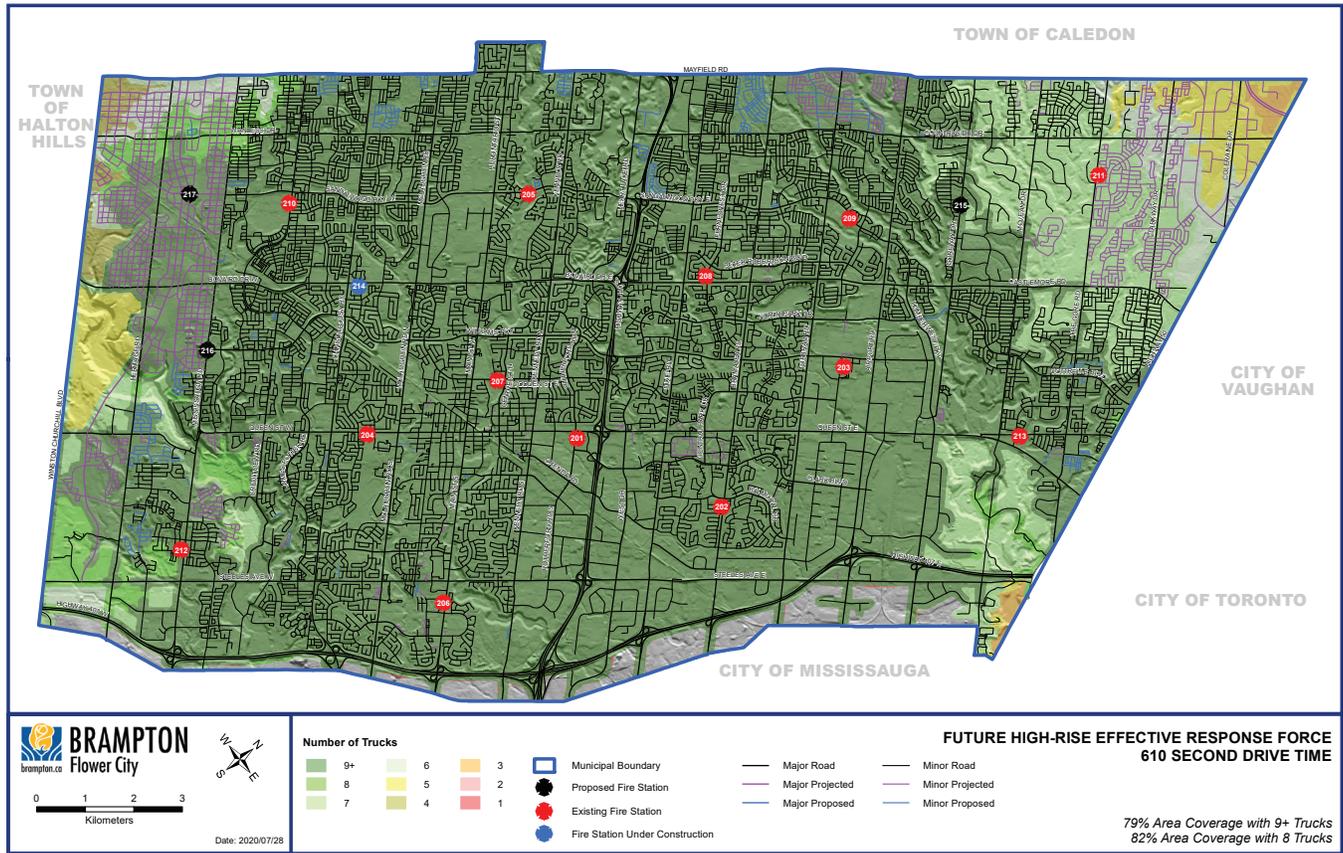


Table 4.4 outlines the operating and capital budget impacts of the location plan.

Table 4.4: BFES 2021-2025 Master Plan Station Location & Apparatus Deployment Financial Impacts

Priority	Fire Station	Location/Vicinity	Operating Budget Impact	Operating Budget Year Required	Capital Budget Impact	Capital Budget Year Required
1	214	917/927 Bovaird Drive West	\$50,000	2022	N/A - Capital budget approved in previous budget	
2	215	10539/0 Goreway Drive	\$2,900,000	2025	\$7,000,000	2022/2023
3	216	Mississauga Road and Williams Parkway	\$2,900,000	2025	\$7,000,000	2022/2023
4	217	Heritage Road and Sandalwood Parkway	\$2,900,000	2032	\$9,500,000	2029/2030



Currently, the City’s long-term financial master plan shows a significant infrastructure gap between the investment needed to upkeep infrastructure (based on age and condition) and the forecasted capital funding available for asset renewal. In 2019, the infrastructure

4.1.2 Continue to collaborate with internal City departments to keep fire stations in a state of good repair

BFES fire stations are currently in good condition based on recently completed condition assessments and it is critical they remain this way. A state of disrepair at fire stations could tragically impact response times and the service offered to the residents of Brampton.

funding gap totalled \$246 million. This is expected to grow to \$743 million by 2027, despite a 2% infrastructure tax levy already in place to help shrink the growing gap.

Table 4.5 details the age of existing stations, the last year they were renovated as well as the future investments required over the next 10 years to ensure fire stations continue to be maintained in good condition.

Table 4.5: BFES Station Infrastructure History and Future State of Good Repair Capital Requirements

Fire Station	Year Built	Age	Last Year Renovated	10-year SOGR Capital Estimate*	Comments
201	1963	56	2016	\$0	To be replaced with new station at 25 Rutherford Rd. S. in 2021/2022.
202	1976	43	2014	\$580,000	
203	1974	45	2012	\$0	To be replaced as part of Fire Campus
204	1976	43	2018	\$0	
205	1978	41	2009	\$180,000	
206	1984	35	2014	\$774,000	
207	1987	32	2014	\$284,000	
208	1994	25	2014	\$180,000	
209	2003	16	N/A	\$445,000	
210	2003	16	N/A	\$340,000	
211	2014	5	N/A	\$105,000	
212	2011	8	N/A	\$115,000	
213	2003	16	N/A	\$420,000	

* Estimates are based on third-party consultant’s building condition assessments. Estimates may change based on the City’s Building, Design & Construction team annual validation of capital budget submissions.

Approximately \$3.5 million of capital funding is required over the next 10 years to keep the City's fire stations in a state of good repair. Doing so will ensure fire apparatus and equipment are stored indoors to avoid potential damage from inclement weather. Alerting systems will remain operational, so fire crews can receive dispatches in a timely manner, and bay doors continue to function properly to avoid any delays in response.



4.1.3 Continue to research and implement mitigation strategies to address apparatus life cycle issues

BFES currently uses their fire apparatus for 12 years before placing them into the secondary service fleet for another five years where they are used when primary service apparatus are not available due to maintenance or repair. In 2018, however, three secondary service apparatus were taken out of service earlier than anticipated because significant corrosion and rust jacking was discovered during the annual inspection. Rust jacking, which creates bulges in between the double frame rails due to rust build up, can lead to serious safety issues in fire emergency apparatus. The rising occurrence of rust jacking is believed to be a result of modern anti-icing materials that are used for winter control purposes.

To fill the gap in secondary apparatus fleet, the department can use the two new pumpers it purchased in 2019 for training purposes when not being used for training. This is a temporary stop gap measure to help mitigate some of the capital budget pressures from the current fleet not lasting as long. However, the department will continue to research and implement other mitigation strategies to reduce the impact of corrosion, including potentially altering

the apparatus life cycle, redesigning the chassis of future fire apparatus and constructing a wash bay.

Moving to a single-frame unit, similar to those used by the City's Public Works and Transit departments, could potentially resolve the issue. Unfortunately,

BFES' current manufacturer of fire apparatus does not offer single frame units due to weight load requirements for fire trucks. BFES will continue to work with its vendors by exploring alternative solutions to potentially alter the design of future apparatus to reduce the impact of anti-icing materials on its lifecycle.

Compounding the rust jacking issue is the inability to effectively clean the underside of the apparatus using the current wash bay facilities available. In addition, the trucks are stored in a heated garage, which compounds corrosion and accelerates the rusting process. E&Y in their Core Service Review report recommends building a dedicated wash bay with hoists so that crews can conduct more rigorous cleaning procedures, which in turn, should mitigate corrosion-related impacts on apparatus.²²

²²"City of Brampton Service Delivery Review: Category 5 - Fire & Emergency Services". Available at: <https://www.brampton.ca/EN/Documents/Brampton%20Fire%20-%20Final%20Report%20-%2011.29.2019.pdf>.

BFES will continue investigating this option, which is anticipated to cost approximately \$1 million per bay. Initially, the return on investment for an improved wash bay may be minimal as corrosion may have already set in for apparatus in the current fleet. Over time, as newer apparatus benefit from more rigorous cleaning procedure, E&Y estimates capital loss due to corrosion can be reduced by as much as 20%.²³ There are operational limitations: a single wash bay has only one centralized location, so only one apparatus can be washed at a time.

Based on thorough research of the above options, BFES will implement the most cost-effective plan to address the apparatus life cycle issue of its fleet so that the department continues to have access to a reliable secondary fleet.

4.1.4 Continue to leverage regional partnerships to deliver 9-1-1 call-taking and dispatching services in an effective and efficient manner

In 1999, the municipalities of Brampton, Mississauga and Caledon formed the Joint Fire Communication Centre (JFCC) for which BFES was appointed to oversee operations as the JFCC Manager. The JFCC facility is located in the Peel Regional Police 22 Division building at 7750 Hurontario Street in Brampton. This was done to optimize a number of operational efficiencies, including leveraging police communication infrastructure and expertise.

The JFCC continues to be an efficient and effective way to deliver fire communications services to Peel Region. However, a number of changes are expected. By February 2027, JFCC will end its current 10-year lease from

Peel Regional Police, which plans to relocate its 22 Division to a new facility. BFES and its JFCC partners in Mississauga and Caledon plan to make the move with the 22 Division to its new facility so that the JFCC can continue to leverage the operational efficiencies working with Peel Regional Police. Should an alternative option be required, BFES, as the JFCC manager, will proactively investigate the feasibility and merits of other options, which include:

- designing and constructing a new JFCC location separate from Peel Regional Police; and
- leasing a new JFCC location separate from Peel Regional Police.



The budget requirements for JFCC's new location will ultimately be dependant on the final option selected and based on market rates at that future time. Current estimates to construct a third floor on top of the Fire Campus for exclusive use by the JFCC are approximately \$5.4 million.

²³Ibid.

4.1.5 Continue to research and implement initiatives that impact the health and safety of firefighters

Firefighters regularly encounter many immediate hazards on the job that could have longer-term health effects. Recent research shows a strong correlation between chronic illnesses, such as cancer and heart disease, and the repeated job-related exposures of firefighting. According to two recent studies conducted by the National Institute for Occupational Safety and Health (NIOSH), firefighters face a 9% increase in cancer diagnoses and a 14% increase in cancer-related deaths, compared to the general population in the US.²⁴

BFES uses occupational awareness campaigns as a starting point to reduce job-related exposures. The department provides new recruits with training on the increased risk of chronic illnesses associated with the profession to reiterate the importance of following protocols to reduce job-related exposures to carcinogens. The department will continue its training for new recruits and will develop an enhanced outreach campaign for all front-line staff to ensure job-related exposures and how to reduce them remain top of mind. This will be done through departmental communications and mandatory e-learning modules.

It is equally imperative to have a well-designed program in place for staff to help minimize their exposure to carcinogens. BFES will enhance personal protective equipment (PPE) and decontamination procedures to reflect the most recent industry best practices. PPE is vital in reducing exposure to carcinogens for firefighters, which is why BFES will continue to research and implement the best available PPE. In 2020, for example,

the department purchased new particulate hoods that block significantly more particles than previous versions.

For BFES, the biggest opportunity to reduce the exposure to carcinogens is to improve decontamination procedures for firefighters, themselves, and the equipment they use. Doing so can reduce the length of exposure to carcinogens for themselves and the next person who will use the equipment, while also preventing the spread of carcinogens at fire halls. As such, BFES will enhance its current Standard Operating Guidelines to ensure staff follow decontamination best practices. Potential guideline changes will include the following as a starting point:

- gross decontamination on scene using decontamination kits for all staff involved in fighting the fire;
- changing out of contaminated gear on scene using temporary change rooms/tents with all gear bagged and then washed back at the station;
- showering immediately upon returning to the fire station after a fire incident;
- decontaminating vehicle cabs and equipment after every fire; and
- decontaminating laundry rooms.



²⁴Firefighters and cancer. (n.d.). Retrieved from <https://www.nfpa.org/News-and-Research/Resources/Emergency-Responders/Health-and-Wellness/Firefighters-and-cancer>.



BFES will also adopt a “clean cab” strategy to minimize, to the greatest degree possible, the fireground contaminants that enter the crew cab of the apparatus, while considering firefighter health and optimal operational outcomes. To support this strategy, BFES plans to procure a new air/light truck with a built-in change room to allow crews to change out of their contaminated gear, which can then be bagged and taken to the station for washing.

In addition to cancer prevention, BFES continues to monitor other evolving threats to the health and safety of its staff during an emergency response. For example, active threat incidents have taken place in the Greater Toronto Area in recent years. Active threats, like the Toronto van attack on April 23, 2018 or the Greektown shooting on July 22, 2018, involve a person or a group of people intent on killing as many randomly chosen people as possible by targeting locations with high concentrations of people, such as schools, theaters, shopping centres or other places of business.

Police are the primary response agency behind any active threat; however, it is not uncommon for EMS and Fire to be involved in the response to provide medical care to victims. In the Greektown incident, for example, the 9-1-1 call was received by Toronto Fire as a medical call. As such, active threat incidents require an integrated response between police, EMS and fire departments to effectively address threats to public safety while mitigating loss of life. BFES will work with Peel Regional Police and Peel Regional Paramedics to develop an

integrated and coordinated response plan and training program for potential active threat incidents. Furthermore, BFES will ensure its staff are certified to NFPA 3000 – Standard for an Active Shooter/Hostile Event Response (ASHER). Taking this step will help the department understand the minimum requirements needed to organize, manage and sustain an active shooter and/or hostile event response program, and how to reduce or eliminate the risks, effects and impact on an organization or community affected by these events.

4.2 Fire Prevention

Under the FPPA, fire departments have a number of responsibilities they must implement in order to keep their communities safe. One of the mandated requirements is that “every municipality shall establish a program in the municipality which must include public education with respect to fire safety and certain components of fire prevention”.²⁵ The legislation does not provide a specific definition of a public education program or what it entails, but many departments across Ontario have made public education and prevention an integral part of providing effective fire protection services.

For BFES, investments into public education and prevention exceed minimum legislative requirements. The team’s focus on mitigating fire risk through preventative measures has played a significant role in improving the safety of the community. BFES plans to implement the initiatives outlined in this section to further enhance fire prevention and education activities.

²⁵Fire Protection and Prevention Act, 1997, S.O. 1997, c. 4. (2018, November 19). Retrieved December 10, 2019, from <https://www.ontario.ca/laws/statute/97f04>.

4.2.1 Enhance the department's routine inspection program to target high-risk occupancies

The Fire Prevention Division responds to complaints and conducts paid inspections. Complaints are driven by residents that have fire safety concerns in their homes or workplaces, such as inoperable smoke alarms in their rental properties or open-air burning concerns. Paid requests, for example, come from businesses that require a fire inspection to receive their permit from the Alcohol and Gaming Commission of Ontario to serve alcohol at their establishment. Due to the high number of service industry businesses opening in Brampton and a large residential building stock, BFES processes hundreds of request and complaint inspections every year.

Many of the inspections performed require a significant investment of time and effort as they include multiple site visits and issued orders that often require appearances in court by the fire prevention officer. This has placed a strain on fire prevention resources. As a result, routine inspections, those not driven by requests, are considered a low priority other than the provincially mandated routine inspections of vulnerable occupancies. The FPPA grants assistants to the Fire Marshal, including all fire prevention officers, the ability to inspect the fire safety of a property without a warrant, thereby allowing for routine inspections. By doing so, BFES fire prevention officers are able to assess if high-risk occupancies in Brampton adhere to the Ontario Fire Code. This is an effective way to identify potential fire safety concerns that would have otherwise gone unnoticed and could lead to a fire.

The lack of a defined routine inspection program at BFES was identified in the Fire Underwriters Study in 2017. Although BFES received an overall high score, there were

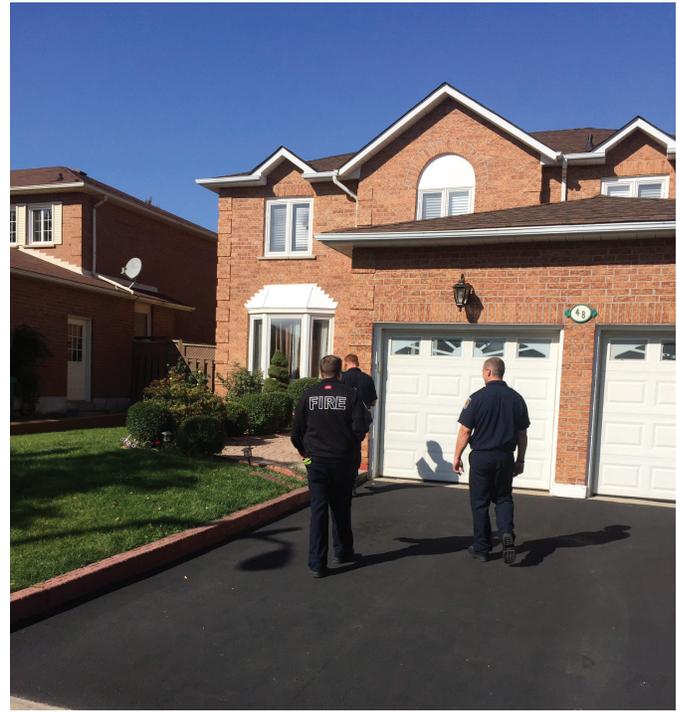
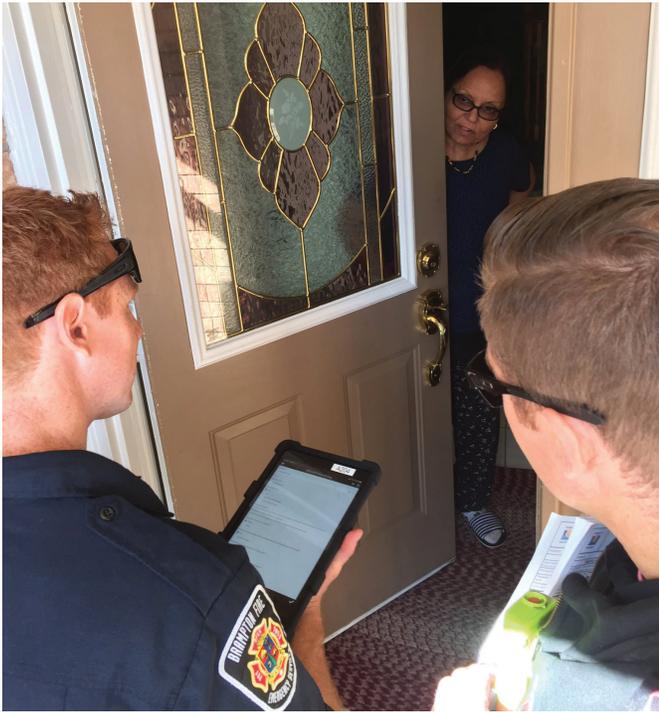
gaps in its routine inspections of most high-rise, industrial and commercial occupancies. As a result, BFES started a residential high-rise routine inspection program in 2018 to begin closing the gap. The department's CRA identified industrial occupancies over 100,000 square feet as high risk for fires due to their potentially large fuel load of combustible materials and the activities that take place within them that may not be approved for its building use. Furthermore, high-rise and low-rise residential occupancies were also identified as high-risk due to not only the large amount of people that can be impacted, but also the potential impact on the effectiveness of responding crews if fire protection systems were inadequately maintained. By performing routine inspections, BFES can become aware of these risk factors earlier and take steps to ensure the occupancy owner corrects them, which ultimately improves the safety of occupants and reduces dollar loss.

To reduce the fire risks in Brampton, it is critical that BFES conduct more routine inspections. However, this is not possible with the current resources available in the Fire Prevention Division. As a result, BFES recommends adding 16 new staff members to the division, which will consist of 14 fire prevention officers and two assistant division chiefs at an annual cost of \$2,300,000. The additional staff would be dedicated to inspecting the 194 industrial buildings over 100,000 square feet on an annual basis. Focusing on large industrial facilities will ensure protection systems are operating effectively, any hazardous materials on site are properly stored and exits are not blocked. In addition, the additional staff would also be dedicated to inspecting all high-rise and low-rise residential buildings within the city. Currently, routine inspections are

conducted only on residential high-rise buildings that are within identified high-risk areas. This practice has corrected many violations to the Ontario Fire Code, which in turn, has made these buildings safer for its residents. Therefore, there is significant merit in expanding this program across the city. This staff will also be used to support the inspections that are recommended by its predictive modelling program once it is in place. Table 4.6 outlines the BFES routine inspection program.

Table 4.6: Routine Inspection Program

Occupancy Type	Risk per CRA	Inspection Frequency
Care and treatment facilities	High	Annual
Residential high-rise buildings	High	Annual
Residential low-rise buildings	High	Annual
Industrial structures (over 100,000 sq. ft.)	High	Annual



4.2.2 Enhance the use of on-duty firefighting staff to deliver formalized public education and inspection programs, focused on high-risk areas

BFES is dedicated to improving the safety of the community through its public education and fire prevention activities. Currently, the Fire & Life Safety Education Division has five public educators and the Fire Prevention Division has 26 fire prevention officers, who together serve nearly 700,000 residents and approximately 174,850 residential units. As such, BFES has had a long-standing tradition of actively engaging firefighters in public education and prevention activities as they make up more than 80% of the department’s workforce. To maximize the use and impact of firefighters in fire prevention activities, BFES recommends enhancing and combining the public education and inspection programs by using new best-in-class technology with a focus on high-risk areas.

BFES crews are well-equipped to deliver enhanced public education programs. Every firefighter in the department has completed training on the fundamentals of NFPA 1035 Standard on Fire and Life Safety Educator, with some obtaining Level 1 certifications. By leveraging these capabilities, BFES can effectively improve public relations and expand fire safety knowledge to more residents in Brampton, which numerous studies have shown to be an effective way to reduce fire incidents. One such study, published by the Surrey Fire Service and the University of the Fraser Valley in 2012, concluded that their firefighters were able to reduce the frequency and severity of residential fires through targeted, door-to-door distribution of fire prevention education in high-risk areas.

In addition to the enhanced educational awareness program, firefighters will conduct more fire safety assessments at residential homes while leveraging best-in-class technology to fill the routine inspection gap as the routine inspection program does not include single-family dwellings. This risk is important to mitigate as more than 90% of Brampton's building stock is residential occupancies, with a large percentage being single-family homes. Unless a complaint is made to the Fire Prevention Division or a paid inspection is requested, inspections are not performed on residential homes. Therefore, the department is committed to allocating more resources to proactively reduce fire risk in the community since 64% of fires in Brampton with loss take place in residential occupancies as noted in the CRA. By performing a fire safety assessment that is non-punitive and focused strictly to raise awareness, BFES can make an impact to increase the safety of Brampton residents.



4.2.3 Refine digital strategies to improve the dissemination of fire safety information to residents

The emergence of high-speed internet and smart phones have changed the way both private and public sector organizations reach their clients. Fire departments, too, must evolve their approaches when reaching residents. Due to the consumption habits of Generation Y or millennials, the traditional methods of fire safety education by visiting schools no longer resonates with this cohort, who will soon be the majority of homeowners. Therefore, BFES must continue to refine its digital marketing techniques to increase fire safety awareness with newly emerging demographic groups.

Fundamentally, digital marketing leverages digital technologies to market services or ideas. While this is a broad discipline and can include a vast array of tools and technologies, it does include some marketing techniques that can be effectively used by BFES to increase fire safety awareness in the community. Currently, BFES predominantly uses Facebook and YouTube as its main advertising platforms in line with a study conducted by Ryerson University in 2017, which identified Facebook, YouTube and LinkedIn as the top three social media channels for Canadian adults.²⁶ Twitter is also leveraged to connect the department's 14,000+ followers on a regular basis. However, for younger

²⁶Gruzd, Anatolii; Jacobson, Jenna; Mai, Philip; Dubois, Elizabeth, 2018, "The State of Social Media in Canada 2017", <https://doi.org/10.5683/SP/AL8Z6R>, Scholars Portal Dataverse, V1 pp 5

audiences, higher use rates occurred with other platforms. Instagram and Snapchat both had over 65% daily use rate in 18- to 24-year-olds.²⁷ It should be noted that the social media habits of millennials, and the emerging Generation Z demographic, is constantly evolving. Despite the Ryerson study being conducted only three years ago, the popularity of mobile applications has already shifted. The emergence of the highly popular video sharing application TikTok has resulted in a rapid decline of Snapchat usage. According to the latest statistics, TikTok was the second most downloaded application in the Canadian Apple store in 2019, with almost 50% of the users being between the ages of 13 and 23.²⁸

Therefore, BFES plans to leverage these new popular social media platforms to capture a larger portion of young adults with fire safety information. In terms of costing, there would be no impact on expenditures, but rather, a reallocation of current funds available for advertising costs. Another digital marketing strategy BFES plans to explore is incorporating a fire safety component as part of the City's mobile app strategy in partnership with the City's Digital Innovation and Information Technology (DI&IT) department. According to a poll conducted by Forum Research Incorporated, 25% of Canadians aged 18 to 34 use their smartphones between two and three hours per day.²⁹ BFES can take advantage of this high-usage rate by developing an application focused on fire safety in residential homes and fire safety concerns in their neighbourhoods. With such an application, there is great potential to reach a large percentage of residents

with relevant safety information and alerts. This could include push notifications to change smoke alarm batteries based on the information inputted by the user when the application is initially set up or specific seasonal safety messaging during the year. Costs are not known at this time and any incremental costs to contribute to the City's mobile application are not considered material in context of this Master Plan.

4.2.4 Develop and strengthen partnerships with internal and external stakeholders to increase safety within the municipality

There are a number of fire safety concerns that currently exist within the municipality that could be addressed with the assistance of relevant stakeholders. One such risk is the increasing amount of student housing. The growing population at the Sheridan College campus in Brampton is bringing more students into the city; however, the lack of affordable housing has led students to live in accommodations that are overcrowded. Such overcrowding can create significant safety concerns, such as lack of proper fire protection systems, electrical hazards and blocked means of exits.

To assist in mitigating the risk associated with student housing, BFES plans to advance its working partnership with relevant internal stakeholders at the City on the student housing committee. Although fire prevention officers can enforce certain sections of the Ontario Fire Code that regulate lodging and rooming homes, the labour resources required to conduct such inspections would be extensive. Instead, leveraging partners from various departments, such as Building or By-law

²⁷Ibid, pp 12 - 13

²⁸Not all fun and memes: What's the trouble with TikTok? | CBC News. (2019, October 26). Retrieved from <https://www.cbc.ca/news/technology/tiktok-criticism-expansion-in-canada-1.5336375>.

²⁹Powers, N. (2018, February 26). Half of young Canadian adults spend two or more hours per day on their cellphones. Retrieved from <https://business.financialpost.com/telecom/half-of-young-canadian-adults-spend-two-or-more-hours-per-day-on-their-cellphones>.

Enforcement, would encourage cohesion between corporate workgroups to develop a strategy that will keep individuals who live in student rooming houses safe.

Additionally, BFES will explore partnerships with post-secondary institutions in Brampton. Coming together with Sheridan College, Algoma University, Brampton U and other private institutions to ensure students remains safe in their homes could be advantageous. This partnership could involve developing strategies with the institutions to educate their students on the concerns with off-campus housing, so they can make safer decisions about their housing.

Multi-unit dwellings attract more than just students in Brampton. A growing number of single-unit residential homes are being renovated to illegally create second and third rental units. In part, this is a result of the 2011 Ontario Strong Communities through Affordable Housing Act that requires municipalities to allow multi-unit dwellings in their official plans and zoning by-laws. As identified in the CRA, multi-unit dwellings are a high risk for fire as they are not being built to code and can pose a safety risk for occupants. Currently, the City is unaware of the exact number of multi-unit dwellings that exist in the municipality. To collect this data, the City created a registration system for residents of multi-unit dwellings to ensure these additional units are being built to be safe, legal and liveable.

To better protect residents living in basement apartments, a comprehensive workgroup made up of internal stakeholders from BFES, and By-Law Enforcement, Legal and Building departments has been developed. Referred to as the Secondary Unit Task Force, this working group uses

a combination of enforcement methods and engaging relevant stakeholders to encourage residents to register their secondary units, and when appropriate, require property owners to dismantle existing secondary units that pose a danger to occupants. By working together, information can be shared between departments to enhance customer service for the safety of residents. Currently, five fire prevention officers are assigned to the Secondary Unit Task Force and it is not anticipated that additional resources will be needed over the next five years to further support this initiative.

BFES also plans to strengthen its relationship with personal support workers and social workers who provide care to residents in Brampton. Working together, BFES could train these workers to make their clients safer in the event of a fire by periodically checking for working smoke and carbon monoxide alarms during visits. Similarly, real estate associations or home inspection providers could also be engaged to encourage a fire safety inspection by a qualified professional. These are just two examples of potential partnerships that BFES will continue to seek out to make Brampton a safer community.



4.3 Emergency Management

Urban resilience is the capacity of individuals, communities, institutions, businesses and systems within a city to survive, adapt and grow no matter the chronic stresses and acute shocks they experience. Chronic stresses, such as homelessness, high unemployment, violence, food insecurity and poverty, weaken the fabric of a city. Acute shocks are sudden, sharp events, such as floods, tornadoes, ice storms, disease outbreaks and terrorist attacks that threaten a city. This section outlines recommendations that will strengthen Brampton's urban resiliency in response to acute shocks that have the potential to occur in the city.

4.3.1 Design and implement a comprehensive public education program that focuses on building emergency kits and obtaining content insurance for vulnerable populations, low-income renters and newcomers

Recent studies have demonstrated that a large segment of the population is often ill-prepared for emergencies due to their socio-economic or health situations. To support these vulnerable groups, BEMO will work with existing social support agencies to coordinate and deliver public education programs. The goal is to provide these residents with the tools they need to build an emergency kit and continue to raise awareness of the importance of securing content insurance to protect them should a fire, flood or other emergency impact their home.

As these vulnerable groups tend to struggle financially, BEMO plans to seek local sponsorship to provide some of the items usually found in emergency kits in an effort to reduce overall costs. Existing partnerships through the Light House

Program network will be leveraged to distribute these emergency kits and ensure they are delivered to those most in need.

There is also an urgent need to educate Brampton residents of the importance of content insurance. Most renters believe insurance is the responsibility of the landlord; however, they are not aware that landlord insurance does not insure the renter's personal contents, and will not replace them if they are damaged or destroyed in a fire or flood. In educating residents about content insurance, which can be done in partnership with the Insurance Bureau of Canada, BEMO will focus their efforts on newcomers to Canada as they are at greater risk of loss due to fire and less likely to be informed about insurance provisions.

4.3.2 Raise awareness of flood risks through a public education campaign and work with partners in the Region of Peel to continue taking steps that address flood risk mitigation

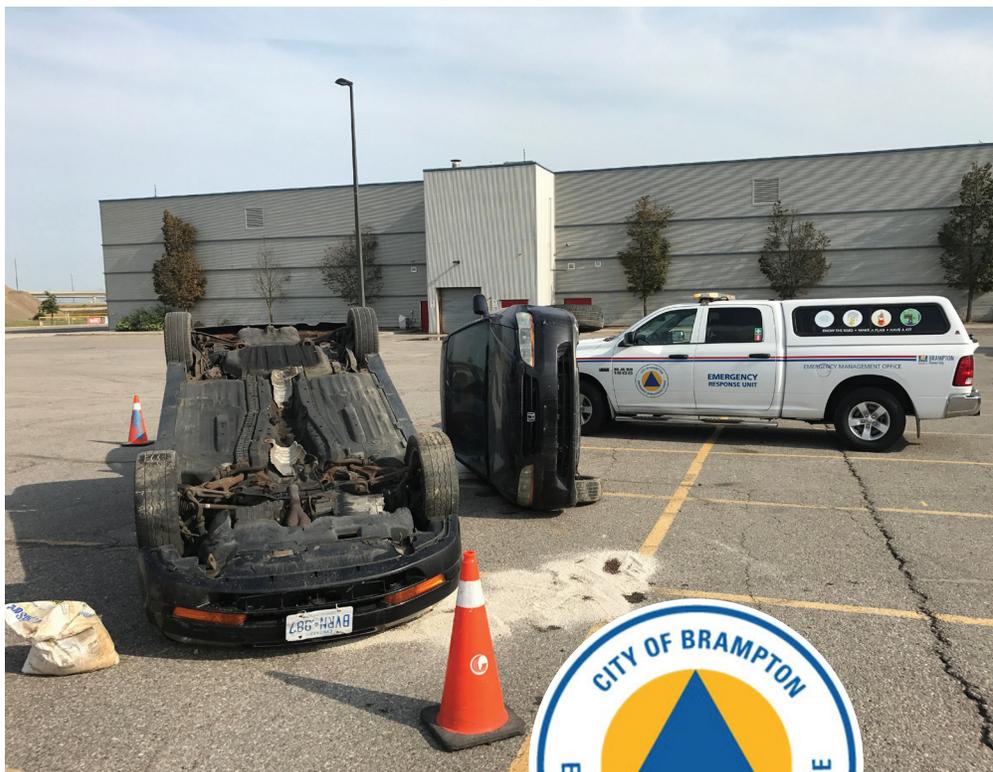
Floods can be caused by melting snow, ice jams, heavy spring rains and intense summer thundershowers. If severe, flood waters do have the potential to cause significant damage to property, and in some cases, injure or kill people. Although flooding is a natural phenomenon and populations have adapted to its effects, there have been recent reports by the federal government that 100-year floods are happening more frequently due to climate change.³⁰ As a result, many regions in Canada could be inundated with flooding incidents that current infrastructure cannot support. For this reason, Public Safety Canada has determined that flooding is the costliest risk currently in Canada, and thus, encourages municipalities to enhance their flood prevention measures.

³⁰Dangerfield, K. (2019, April 26). '100-year floods' are increasing in Canada due to climate change, officials say - is this true? Retrieved from <https://globalnews.ca/news/5206116/100-year-floods-canada-increasing>.

To that end, BEMO plans to pursue opportunities alongside regional stakeholders to assist in flood risk mitigation projects. Such partners would include the Toronto Region Conservation Authority, the Credit River Conservation Authority and the Region of Peel. Working with these various entities will enable BEMO to provide input on flood mitigation projects that affect the safety and well-being of Brampton residents. BEMO also has the knowledge and expertise to communicate with residents about the importance of flood mitigation efforts, the risks associated with flooding as well as flood prevention projects planned for the city of Brampton. These projects, such as the Riverwalk plan and flood mitigation efforts in the flood-vulnerable areas in the Avondale area, can impact the residents of Brampton, causing disruptions due to construction, for example, that will require advance notice.

4.4 Community Safety

The Community Safety portfolio within BFES has been working to create a city that is safe and has a strong sense of well-being. Overall, the goals for this portfolio are to raise awareness, advocate and stimulate action for a safe and healthy community. This will be done through enhancements of various projects by facilitating collaboration, building capacity among service providers, advising and advocating for inclusivity, and engaging stakeholders. To ensure these projects achieve the goals described above, the Community Safety portfolio will work towards the following recommendations:



4.4.1 Develop a community safety and well-being plan in partnership with the Region of Peel to address the root causes of social issues and community safety concerns

Community safety and well-being has been defined as the ideal state of a sustainable community where everyone is safe, has a sense of belonging and opportunities to participate; where individuals and families can meet their needs for education, health care, food, housing, income, and social and cultural expression. Using the provincial principles for social development, prevention, risk intervention and incident response, Community Safety is working with the Region of Peel to develop the Community Safety and Well-being Plan for the Region.



The partnership between the municipality and the Region of Peel is important for addressing and overcoming the root causes of community safety concerns that have been voiced by the residents of Brampton. The plan will identify factors and strategies to reduce identified risks, and in turn, will support and enhance the safety and well-being of the community. Priority areas may include tackling systemic discrimination and other social factors that contribute to crime, victimization, addiction, drug overdose and suicide, to name a few.

The Community Safety and Well-being Plan, which began in 2018 and will be adopted by Regional council, is an initiative led by the Region of Peel Chief Administrative Officer and the Peel Regional Police Chief. It is guided by the System Leadership Table, an advisory group that is comprised of representatives from regional and municipal government, police, health care, social services, and education and community organizations. Working together to develop and implement the plan provides an exciting opportunity for these groups to advance existing priorities related to community well-being and safety. The Community Safety Advisor within BFES represents the City on this committee.

4.4.2 Implement a holistic public education program to build resiliency among residents by focusing on personal and property safety as well as raising awareness of community resources and support

BFES will develop a community safety public education strategy to build a safe and healthy Brampton. This strategy will take a holistic approach to raising awareness about community safety issues, and will introduce a website to centralize information and resources, engage with the community through social media posts,

and participate in community events to share and receive information about safety initiatives. It will also include an engagement strategy to better leverage Brampton's residents who have clearly expressed their interest to keep the city safe. These residents can offer valuable insights to understand current safety issues and where they exist in our community.

BFES has begun to connect with residents through a city-wide community engagement survey by bringing community representatives into the Brampton Community Safety Advisory Committee, supporting the Council approved expansion of the Brampton Neighbourhood Watch program, participating in the Vision 2040 Neighbourhood Audit Walks, and attending and organizing community town halls. Each of these avenues has allowed residents to directly connect with change-makers in the city as well as safety partner agencies, such as Peel Regional Police. By using a variety of tactics, the division is able to learn about residents' thoughts on the complex issues affecting the community. It remains committed to do more to raise awareness and engage residents more broadly and within specific neighbourhoods to understand the needs in those areas. As a next step, Community Safety will dissect and analyze the information collected, and assess what can be done to address the conditions that make people feel unsafe, and in turn, work towards mitigating those conditions.

To share this information, Community Safety will work with internal City departments, such as Strategic Communications and IT, to build a centralized platform for engagement. Here, residents can access information and data about matters related to community safety, including how the City is working to enhance safety

across the community. Additionally, public engagement information, such as meeting dates, agendas and minutes for Brampton Community Safety Advisory Committee, and information about services and support organizations can be accessed. Development for this platform was underway before the COVID-19 emergency.

Longer term, the Community Safety platform will become a source for two-way communications, where residents can access posted information and where information can be collected from residents. The goal is to build an interactive tool where residents can report concerns or identify areas of concern, after which they are directed to resources, such as service agencies, where they can receive immediate support. This tool could potentially be linked to Service Brampton, so inputted concerns can be logged by 311 and routed to the appropriate operating department to address them.

The data collected through the webpage will also be used to track how many

community safety issues are being identified and resolved. This data will be valuable not only for Brampton as a municipality working towards enhancing safety and well-being for its residents, but for the various service agencies who rely on referrals to gain access to vulnerable populations and provide them with support to overcome adversity.

During the response to the COVID-19 emergency, the four Mayor's Task Forces and the City's Strategic Communications team collectively worked towards creating a Community Resource webpage for residents to access resources available during the pandemic. A webpage, along with an interactive map, was created for residents. This resulted in the achievement of a term of Council priority to build a virtual community hub to share information on community/social services and programs. This webpage has become a valuable tool to help individuals find and access the services they need to address and overcome various community safety and well-being issues. The Community Safety plans to build on this initiative by updating the information

to ensure the resources and information continue to be accurate and relevant.

This online tool, as well as continued efforts of Community Safety staff to attend and speak at community public education and engagement events related to safety, including those hosted by other internal City departments (i.e., Recreation, Transit), are enhancing residents' resiliency by raising their awareness of the proper tools and resources to promote their personal safety and the safety of their property.



4.4.3 Advocate to higher levels of government for resources and funding to address community safety and well-being issues

Community safety is a broad and wide-ranging term that encompasses a variety of different and complex topics and perspectives. This includes systemic issues that can create a sense of insecurity and unsafe conditions for residents. For example, Brampton's lack of affordable housing. Such broad-scale issues require advocacy and support from higher levels of government for resources and access to funding to effectively address and overcome these concerns.

The Community Safety function has lobbied the Federation of Canadian Municipalities and the Association of Municipalities of Ontario for support towards certain community safety initiatives. This effort will certainly continue going forward as it is critical for individuals, government agencies and service organizations to collaborate effectively to build upon existing community resources and advocate for a healthier and safer Brampton.

There are other, more diverse community safety-related issues, such as mental health and addiction, family and intimate partner violence, guns and gangs violence, human trafficking, pedestrian safety and traffic safety, that also require social support to help address and overcome these challenges. The principles of the Ontario Community Safety and Well-being Framework, which include social development, prevention, risk intervention and incident response, offer a strong base foundation for building a case of advocacy to other levels of government for resources to address these issues. The Community Safety portfolio will apply the concepts

when advocating to different levels of government and agencies for support.

4.5 Equity & Inclusion

Investing in workplace equity and inclusion makes good business sense and yields numerous benefits that support: human rights and justice, employee engagement, organizational performance, inclusive leadership, and organizational reputation. In 2019, Council approved a new five-year Workplace Diversity and Inclusion Strategy and Work Plan that sets out opportunities to foster a more inclusive organizational culture. A culture that engages, develops and celebrates its people, and attracts a diverse workforce. BFES plans to take the following steps to ensure it contributes in achieving the four priorities identified in the strategy:

- grow a diverse workforce reflective of the community the City serves;
- foster a more inclusive environment where individuals say, stay and strive;
- develop awareness and ability of all employees for diversity and inclusion to thrive; and
- celebrate our uniqueness and shared successes by upholding the City's values of trust, integrity, courage and compassion.

4.5.1 Create innovative recruitment tactics to attract and retain top-talent from under-represented communities and diverse professional backgrounds

BFES realizes it cannot serve the community in the best possible manner if it doesn't understand or reflect the community it serves. As a result, BFES aims to attract employees who have the knowledge, insights and lived experiences from all sections of society by:

- re-evaluating minimum qualifications to reach a wider audience;



- providing 18-month guaranteed conditional offers for applicants that have not yet completed a pre-service firefighting program;
- hosting the BFES' annual Fire Weekend Fire Academy for Brampton residents that are interested in a career in firefighting;
- having all senior management staff complete Check Your Unconscious Bias training to ensure unconscious biases do not interfere in the recruitment process;
- refining the evaluation matrix to capture more diverse professional backgrounds;
- revamping advertising campaigns to target under-represented communities; and
- collecting self-declared census data of all applicants for tracking purposes.

Furthermore, work is underway to create a more accurate and fair recruitment and selection approach to hiring firefighters from all backgrounds. To that effect, the City completed a job analysis of the firefighter role in the spring of 2020 to determine which new tools would best provide a robust and fair hiring process going forward.

In addition, BFES also aims to introduce a variety of new and different strategies to attract and develop a diverse workforce.

These include:

- **Recruitment and selection review:** The selection process for each new recruit class will be evaluated to ensure alignment with our goals of accuracy and fairness for candidates from all backgrounds.
- **Annual review:** The minimum qualifications and 18-month guaranteed, conditional offer will be reviewed annually for their effectiveness in consultation with the City's talent acquisition team.
- **Weekend Fire Academy:** BFES will involve more community organizations, places of worship and community groups to engage under-represented communities in these events.
- **Mandatory training:** The frequency and types of Check Your Biases training will now be conducted twice a year by an industry leader in this field.
- **Youth camps:** BFES will introduce different, specifically tailored week-long camps to engage youth from different under-represented groups.
- **Mentorship program:** BFES will introduce a mentorship program to support interested candidates from under-represented communities. They can connect with specific BFES staff

for guidance, answers and direction, and participate in resume writing and interview preparation workshops from Human Resources.

- **Specific advertising campaigns:** BFES will target its advertising campaigns for local ethnic media to reach under-represented communities in the language they prefer. It will also develop specific campaigns to reach people with specific professional backgrounds that would be an asset to BFES.
- **Targeted job fairs:** BFES will create campaigns targeted to job fairs and forums that attract members of different major communities in Brampton.
- **Joint recruitment drives:** BFES will partner with local community partners, such as Peel Regional Police, and other large public sector organizations to conduct joint recruitment drives, and in doing so, leverage resources and share knowledge.
- **Multi-organization collaboration:** BFES will leverage the Chief's Community Engagement Panel network to further its reach to the community in Brampton while also learning from their tactics and methods.
- **Ethnic media:** Promote recruitment campaigns in local, multi-lingual media to directly reach the under-represented communities in the language they prefer and mediums they follow.

The department will work closely with internal stakeholders within the City, as well as external organizations and local community leaders to further enhance retention initiatives. In doing so, BFES will:



- partner with local organizations to conduct more mandatory all-staff trainings to deepen knowledge of different communities, cultural and religious practices, and the 2SLGBTQ+ community;
- work closely with the City's Human Resources department to identify and implement the leading practices and methodology to eliminate systemic and unconscious biases;
- conduct special employee communication campaigns to reinforce the City's policies of being an Equal Opportunity Employer and the Employee Code of Conduct to foster and maintain an inclusive and respectful workplace; and
- enhance the scope and mandate of the internal Diversity, Equity and Inclusion Committee.

BFES is committed to recruiting candidates from under-represented communities and diverse backgrounds, just as it is committed to fostering, nurturing and maintaining an environment that is equitable and inclusive.

4.5.2 Develop and provide resources to further promote equity and inclusion

Brampton is one of the largest and fastest-growing cities in Canada. As one of the most diverse, the city is home to 234 distinct ethnic backgrounds and a total of 115 different languages (Table 4.8).

Table 4.8: Visible Minority and Aboriginal Population (Canada 2016 Census)

	2016	% of Total Population	2011	% of Total Population	2006	% of Total Population	2001	% of Total Population
Visible Minority Population	433,230	73.31%	346,230	66.41%	246,145	57.03%	130,275	40.20%
South Asian	261,705	44.29%	200,220	38.41%	136,750	31.69%	63,205	19.50%
Black	82,175	13.91%	70,290	13.48%	53,345	12.36%	32,070	9.90%
Fillipino	20,100	3.40%	17,905	3.43%	11,980	2.78%	6,965	2.10%
Latin American	14,045	2.38%	11,405	2.19%	8,545	1.98%	5,225	1.60%
Chinese	8,955	1.52%	8,035	1.54%	7,805	1.81%	5,445	1.70%
Southeast Asian	8,425	1.43%	8,630	1.66%	6,130	1.42%	3,005	0.90%
Arab	6,045	1.02%	4,125	0.79%	2,600	0.60%	1,850	0.57%
West Asian	5,275	0.89%	3,485	0.67%	2,875	0.67%	1,085	0.33%
Korean	430	0.07%	525	0.10%	580	0.13%	615	0.20%
Japanese	530	0.09%	675	0.13%	545	0.13%	535	0.20%
Visible Minority, not included elsewhere	15,950	2.70%	13,555	2.60%	8,895	2.06%	8,180	2.50%
Multiple Minorities	9,585	1.62%	7,385	1.42%	6,095	1.41%	2,110	0.70%
Not a Visible Minority	157,720	26.69%	175,080	33.58%	185,430	42.97%	194,120	59.80%

Source: Statistics Canada, 2016 Census

With such a mosaic of diversity and multiculturalism, it can be difficult to stay informed and updated on cultural, gender and socio-religious aspects of the community that BFES serves. Hence, the department has taken the lead in providing the following training and learning initiatives to staff:

- diversity, equity and inclusion (DEI) training through Peel Regional Police instructors;
- 2SLGBTQ+ 101 training through Peel HIV AIDS Network;
- respectful workplace training through the City's Human Resources department; and
- gender identity and expression protocol.

In addition to the above, BFES has established other committees, programs and practices such as:

- developing a DEI Committee that includes members from BFES senior management;
- reviewing BFES documentation for gender-neutrality; and
- working with the City on a roadmap to have gender-neutral washrooms in the future.

BFES is committed to continue further researching different tools, methods and training that will help staff gain more knowledge about our residents. The department will also

provide, promote and encourage options to acquire different skills that encourage equity and inclusion in the workforce and at the workplace while also further exploring partnerships with external organizations to train, guide and collaborate with BFES staff.

In order to meet this goal, BFES will initiate the following programs in the future:

- **Second-language program:** BFES will create a learning platform for staff who want to learn the basics of the different languages spoken in Brampton, so they can better interact and serve the community.
- **Know your community course and tour:** BFES will include this course in the new recruit curriculum and further enhance it with off-site learning through education tours and presentations about different religions and racialized communities.
- **Mandatory DEI training:** BFES will provide more DEI training that will be mandatory for all staff to complete.
- **The ally group:** BFES will identify and establish a formal group of members from across department divisions to support and raise understanding to others from minority groups.
- **Diversity dashboard:** BFES will create an online resource and shared workspace to collect optional and confidential metrics on diversity, and enable access to relevant materials.
- **Celebrating cultural diversity program:** BFES will create a program to engage BFES staff with different local communities to celebrate major cultural and religious days to foster mutual respect and understanding.

- **Speaker series:** BFES will set up a series of speakers from other fire, police or paramedic services, and client services experts to highlight why a diverse workforce is one of the best ways to serve the community.
- **Diversity and inclusion focus groups:** BFES will set up focus groups to understand the challenges being faced, gauge the effectiveness of different programs and seek recommendations to better integrate DEI programs.
- **Annual review and feedback:** In conjunction with internal stakeholders at the City, BFES will facilitate an annual review to ensure the policies and programs in place are measured and evaluated in line with the department's DEI objectives.

4.5.3 Leverage the Chief's Community Engagement Panel to better engage and serve the community

Community engagement is not a one-size-fits-all process. At the same time, the piecemeal and cookie-cutter approach to engagement provides no real solutions. Strategies that are suitable for a particular issue might be unsuitable for many others. The department is best served by a comprehensive plan to community engagement that uses a variety of methods and techniques for a balanced understanding of the community's needs. This is particularly important for a city as diverse and multicultural as Brampton. Therefore, BFES will leverage the Chief's Community Engagement Panel. Established at the end of 2019, this network, which includes members from the community, can offer their expertise, interpretations, insights and possible solutions to help BFES enhance its outreach and engagement strategies.



The panel members come from different backgrounds and bring a diverse set of professional skills, socio-religious insights, cultural understanding and lived experiences. Community engagement can only succeed when all relevant stakeholders have their say in the conversation, so members will be selected to:

- help mitigate risk and create a safer community together;
- build a larger and denser network of stakeholders;
- create multi-sector collaboration between different organizations;
- achieve broader grassroots outreach;
- ensure no one voice dominates;
- access the latest, most relevant and accurate information on a multitude of issues;
- help forge meaningful, respectful and trusting relationships between BFES and Brampton’s communities;
- bring shared knowledge of cultural insights, professional skills and lived experiences from across Brampton’s communities ;
- facilitate the dissemination of information from BFES in a timely, cohesive and transparent manner to Brampton residents;

- actively participate in discussions on agenda items and transparently provide the panel with evidence-based information; and
- share their expertise, insights and other resources promptly to mitigate risk and provide tailor-made support to our residents during critical events.

Members act as volunteer resources with no monetary or financial compensation. The Fire Chief (or appointed designate) leads discussions and can terminate membership of any individual. All members will adhere to the different policies, including but not limited to the:

- City’s Employee Code of Conduct;
- Panel’s Terms of Reference;
- Respectful Workplace Policy;
- Confidentiality Policy; and
- Ontario Human Rights Code.

The Chief’s Community Engagement Panel will help BFES:

- collect real, unfiltered community-sourced input and feedback;
- receive hard-to-obtain insights and help make data-driven decisions;
- provide various innovative tools and methods for engagement;

- enable BFES to liaise with key agencies who would be most helpful for specific initiatives;
- streamline and identify gaps with the department’s approach to engagement;
- eliminate silos by focusing on issues of interest across multiple programs;
- leverage existing community groups, events and spaces for engagement; and
- create best-in-class strategies that position BFES as a credible leader in this field.

BFES is strongly committed to engaging and receiving regular feedback from the community. The Chief’s Community Engagement Panel will enable BFES to achieve its goal of assuring residents of the good value for their tax dollars and the high quality emergency response they expect.

4.5.4 Develop a multilingual communications strategy and create partnerships with media organizations to disseminate key information

It is crucial to disseminate information to our residents through the most effective mediums available in a language residents will understand. This is especially true during critical incidents and emerging large-scale situations. Statistics Canada released the data on languages in Brampton collected during Census 2016. The top 10 languages in Brampton are listed in Table 4.9.



Often At Home

Language Spoken Most Often at Home	Population	% of Population
Total (Brampton)	591,670	100.00%
English	345,400	58.38%
Punjabi (Panjabi)	79,705	13.47%
Urdu	12,950	2.19%
Gujarati	10,695	1.81%
Tamil	8,540	1.44%
Hindi	7,355	1.24%
Spanish	5,880	0.99%
Portuguese	4,350	0.74%
Tagalog (Phillipino, Fillipino)	4,235	0.72%
Vietnamese	3,100	0.52%

Source: Statistics Canada, 2016 Census

The 2016 Census data showed that the language composition in Brampton has become more diverse, with 115 different languages listed as a mother tongue in 2016, compared to the 89 languages in 2011. Punjabi remains the leading non-official language in Brampton, followed by Urdu. Gujarati, which replaces Portuguese as the third-most spoken language in the city, saw the largest increase with a growth of more than 51% since 2011.





This diverse ethnic makeup makes it important for BFES to partner with multilingual media in Brampton. This includes creating a multilingual ethnic media engagement plan for BFES. The first key component is to research and stay abreast of the most spoken languages and the best sources to disseminate information through radio, print and TV in those languages. Once the target audience is decided upon, BFES will liaise and partner with publishers, hosts and artists from select organizations, and impress upon how their help can make our community safer. BFES plans to work with them to get free or discounted space or airtime in their respective outlets for regular safety messaging to be cost effective. In addition, BFES plans to use earned media with ethnic outlets to further reduce costs of this strategy.

A key component of this engagement plan will be to translate new and existing material in different languages. For example, existing videos and audio files will be recorded with voice-over in different languages. The department will also create new video, voice and interactive safety materials in different languages to appeal to the department's target audiences. This material will be displayed at community places and events, including places of worship, cultural fairs, gatherings and concerts. To capture residents that do not attend these events, BFES will translate online materials using the latest technology like Google Translate, Facebook and Twitter Language Preferences. In addition, cultural and religious day messaging will be enhanced to reach these audiences as each of these communities typically have two to six significant days of worship.

This strategy relies on the strong partnerships that BFES already has with

ethnic media and the new relationships it intends to pursue. As part of this, BFES plans to engage these media outlets to build excitement and recognition for large department-wide initiatives, including recruitment drives, Weekend Fire Academies and youth camps.

When considering which languages and associated ethnic groups to choose, an important consideration will be to balance the size and percentage of the language population with the availability of media outlets to transmit the message. The limited number of publications or channels available, combined with the size of a particular audience, may impact the decision to translate specific materials into specific languages.

Having such a program in place will help BFES expand its reach into the community, and improve the effectiveness and delivery of key messages to achieve a significant return on investment. It will also allow BFES to improve its level of engagement within the various ethnic communities in Brampton and help mitigate risks while creating a safer community.

4.6 Technological Innovation

Technological innovation has been a leading driver of the 21st century and has presented a myriad of opportunities for organizations to capitalize on. More recently, technological innovations in the fire service have focused on modernizing radio communications, improving personal protective equipment and reimagining fire apparatus. BFES is committed to capitalizing on these current and future opportunities by championing technological innovation in the fire service. This will enable BFES to continue to provide the highest quality fire protection services to the public with exceptional customer

service. As such, the department plans to execute the following recommendations.

4.6.1 Explore partnerships with academic institutions where BFES can contribute to relevant research projects using data analytics and predictive modelling to enhance fire prevention strategies

Artificial intelligence and machine learning are at the forefront of disrupting every major industry to various degrees. The use of artificial intelligence and machine learning has begun to be used by some municipal fire departments in the United States to help prioritize property inspections based on predictive models of fire risk.

The Pittsburgh Bureau of Fire (PBF), for example, has developed a relationship with Carnegie Mellon University, under its *Metro 21: Smart Cities Initiative*, to leverage the university's data analysis capabilities to develop a fire risk model. Working together, they have created a predictive model of the likelihood of a fire incident to occur in a commercial property in a given year using both historical fire incident data and property data from other municipal agencies. With the data, a risk score was assigned to each property that was visualized onto an interactive map, which the fire department uses to plan and prioritize inspections across Pittsburgh. The predictive learning model has accurately detected over half (57%) of the fire incidents that occurred in a six-month period. Comparatively, without this model, the department would have based their decisions on random guesses, which would be correct only 0.25% of the time.³¹

A similar predictive risk model application would be highly advantageous for BFES. Resources could be allocated to maximize effectiveness and inspections can be prioritized based on tangible and reliable predictive risk data. Currently, proactive inspections are determined by limited interpretations of past incident data coupled with a risk classification based on specific occupancy types. BFES currently does not have the in-house capabilities to deploy similar predictive model technology. This will require BFES to partner with one of the many post-secondary institutions located in the Greater Toronto Hamilton Area. BFES can leverage their expertise in data analytics to develop a risk model for occupancies in the city of Brampton, including the potential for residential occupancies. In exchange, the post-secondary institution would be able to test the real-world application of their theoretical capabilities.

The cost of such a new endeavour cannot be known until BFES explores what a partnership could look like with a post-secondary institution. However, it is anticipated that this project could cost approximately \$100,000 to acquire the services of a co-op university student and the necessary technology to implement.

4.6.2 Leverage new technology to improve the delivery of fire protection services

The proliferation of smartphones and mobile technology has been one of the most influential advancements in the last decade. Almost 76% of Canadians own a smartphone device, with many disposing of their home landline.³² Although smartphones have had many positive effects on society,

³¹Metro21: Smart Cities Initiative (2018). Predictive Modeling of Building Fire Risk: Designing and evaluating predictive models of fire risk to prioritize property fire inspections. Metro21 Research Publication.

³²Statistics Canada. (2017, November 14). The Internet and Digital Technology. Retrieved from <https://www150.statcan.gc.ca/n1/pub/11-627-m/11-627-m2017032-eng.htm>.

it does place a significant demand on telecommunication infrastructure. Much like vehicle traffic, the more users you have on a cellular network, the slower the network becomes.

BFES frontline responders rely on many sources of mobile information to perform their duties, including computer-aided dispatch data, GPS data and records system access. Access to these systems, as happens with all first responder agencies in Canada, takes place over public cellular networks. Thus, when the network is slow, so are the mobile communication and data devices used by first responders. This is a critical weakness in emergency management capacity.

This issue is being addressed by other agencies in Ontario. In 2017, Halton Regional Police formed a partnership with Motorola to install and operate a private LTE network. Realizing these advantages, the radio communications provider for the Region of Peel has signed a two-year agreement with Motorola to design a high-performance Peel Regional Public Safety LTE data network that is private. The benefits will increase reliability, capacity and decrease service interruptions. In terms of budgetary requirements, there are no additional funds required associated with the implementation of the dedicated network beyond those funds previously approved by Council. However, future budget requests will be made if a decision is made to go beyond the two-year partnership once it has been finalized.

In 2017, the CRTC approved Next Generation 9-1-1 (NG9-1-1), an initiative to modernize 911 technology across Canada. By June 2023, all networks used to make 9-1-1 voice calls must transition to Internet Protocol (IP) technology. Furthermore, text capabilities are to be implemented by December 2023. By switching to an internet-based system, this will allow for more enhanced communications where Canadians will eventually be able to stream video from



an emergency incident, send photos of accident damage or a fleeing suspect, or send personal medical information, including accessibility needs, all which will be passed to first responders and allow them to make more effective life-saving decisions.³³

As a result of these changes introduced by the CRTC, BFES and its JFCC partners have entered into an agreement with Motorola to implement a solution as part of its computer

³³Government of Canada, Canadian Radio-television and Telecommunications Commission, & Crtc. (2017, June 1). Telecom Regulatory Policy CRTC 2017-182. Retrieved from <https://crtc.gc.ca/eng/archive/2017/2017-182.htm>.

automated dispatch (CAD) system upgrade project which commenced in 2020 and is expected to be completed by the end of 2021. There are no additional capital budget requirements anticipated to implement this NG9-1-1 solution as it is part of the overall CAD system upgrade capital project.

BFES also plans to explore leveraging its pre-emptive traffic technology infrastructure (EMTRAC) more once the new CAD system is implemented. Since 2012, BFES emergency apparatus have been equipped with technology that triggers traffic signals when approaching intersections to speed up response times, and keep other drivers and pedestrians safe. This technology can only trigger a light change when the sensor within the apparatus connects to the receiver embedded in the traffic light control box if it is within range. Further advances in this

technology have been made since 2012. For example, the automatic vehicle location (AVL) system, can now be integrated with the new CAD system and connected to the traffic light systems along the suggested route. This will not only allow the fire apparatus to move quicker through Brampton's streets, other vehicles and pedestrians will be prompted ahead of time and will be less likely to have to stop in the middle of an intersection.

To take advantage of this technology, every GPS unit on each apparatus would have to be upgraded. The new units will allow the AVL to sync with the traffic management system and CAD with one single point of transmission rather than continue to have two separate hardware units. Each new unit will cost \$7,000, making the total purchase an estimated capital cost of \$168,000.

4.6.3 Enhance customer service experiences through the use of updated technology

Currently, the Fire Prevention Division uses a web-based enterprise software called AMANDA to process and monitor all workflows associated for a specific property, including fire inspection reports and processed orders. To take full advantage of the application's potential and meet the service delivery expectations of process digitalization, a mobile workspace should be implemented. The newest version of AMANDA offers a mobile-based inspection platform, which will enable fire prevention officers to take notes, upload photos, search through files associated with a property, and in some scenarios, be able to email the occupant the results of their inspection instantly. These enhanced abilities will also improve efficiencies by increasing officer capacity, while at the same time decreasing the time spent at their workstations in the office.





From a customer service perspective, Fire Prevention has historically responded to service requests it receives through email, telephone or in-person only during regular business hours, which can be difficult for residents who work full-time to accommodate. As a result, the division recently launched an online platform for fire inspection and burn permit requests. Transforming this process to a digital one has allowed residents to more conveniently connect with BFES. The division plans to enhance the services it offers online to include fire station tours, fire trucks for public events and file searches so that it is more convenient for the public to make such requests. Making all of these processes digital will also allow the division to seek immediate feedback by implementing customer satisfaction surveys after all digital service requests. These surveys will be imperative for guiding for future process improvements while also ensuring residents and business owners have a positive experience. Lastly, the online platform will be enhanced to accommodate electronic payment processing so that residents do not have to pay in person. The costs associated with implementing these initiatives are expected to be minimal as the department plans to use current City programs and resources.

4.7 Empowered Workforce

Research has regularly demonstrated that when employees feel empowered at work, it is associated with stronger job performance, job satisfaction, and commitment to the organization. This is why BFES is committed to forging a culture that encourages staff creativity, bestowing teams with autonomy, and providing staff with tools to be successful. Officer development workshops and joint committees are one of the many programs that BFES currently has in place

that have proven to be successful. However, programs, policies and opportunities need to continually be tailored so that staff remain empowered and provide an exceptional level of customer service. As a result, the department will take the following actions.

4.7.1 Implement initiatives outlined in the department's wellness strategy and continually investigate new options in cooperation with management, staff and external agencies

BFES has always played an active role in ensuring the safety and well-being of its staff. The nature of the job for firefighters prioritizes physical safety, but if other components of wellness are ignored, they will negatively influence the overall well-being of the individuals. For example, an employee who struggles with mental health issues is more likely to make life choices that can be harmful to their physical health. For this reason, BFES' wellness strategy focuses on three pillars: mind, body and social.

As a first step, a Joint Health and Wellness Committee was established in May 2019, with representation from BFES management and staff to enhance and promote health and wellness across all divisions by providing resources to staff. The Wellness Committee will leverage the information and services already available to City employees, while also investigating potential solutions to fill identified gaps.

Employees are not able to perform or feel their best at work if they neglect their mental health. Stress management, emotional intelligence and positive mental health habits (i.e., meditation) can all encourage a healthier state of mind. As such, the department's wellness strategy to supporting the mind plans to:

- Further promote use of the department's Peer Support Team, which assists other members of BFES through emotionally impactful events. Whether it is personal or work related, members of the department's Peer Support Team are trained to actively listen to the members in their time of need, and when necessary, refer them to external resources for additional assistance. This program has successfully operated in the department since 1994 and continues to be used as evidenced by the 334 calls for support in 2019.
- Reinforce the Working Mind First Responders program is an education-based program designed to address and promote mental health and reduce the stigma of mental illness in a first-responder setting. This training program is aimed to:
 - o improve short-term performance and long-term mental health outcomes;
 - o reduce barriers to care and encourage early access to care;
 - o provide the tools and resources required to manage and support employees who may be experiencing a mental illness; and,
 - o assist supervisors in maintaining their own mental health as well as promoting positive mental health in their employees.
- Encourage staff to use their licensed psychologist benefit coverage offered by the City to reduce the risk of PTSD and the stigma surrounding the use of such services.
- Leverage the mental health resources available to staff and their families through the City's Employee Family Assistance Program, such as help and support for:
 - o stress, mental health concerns, grief, loss;
 - o managing relationships and family;

- o dealing with workplace challenges;
- o tackling addictions; and
- o financial guidance.



BFES is committed to helping its employees stay physically fit to meet the demands of their job today, while ensuring they remain healthy for the long-term. Focusing on exercise, nutrition and preventative health care can ward off chronic illness and maintain a healthy weight. To support a healthy body, the department's wellness strategy plans to:

- Expand the annual health assessment program, partnering with an external vendor to identify longer term risks staff may face due to occupational exposures associated with firefighting, so that they can begin to proactively manage them.
- Provide staff with a document to share with their healthcare provider to help guide appropriate evaluation, treatment and ongoing surveillance of the health and wellness of firefighters.
- Partner with an academic institution to develop a fitness program to improve firefighters' physical ability, stamina and strength so they can continue to perform complex physical tasks under high states of duress.

- Ensure the condition of fitness equipment is maintained in a state of good repair to encourage frequent use by staff.
- Leverage the physical health resources available to staff and their families through the City's Employee Family Assistance Program, such as guidance for improving nutrition and ways to focus on improving physical health.

Social wellness is a commonly overlooked aspect of overall health. Strong work relationships and opportunities for social connection in the workplace are essential for employee job satisfaction, happiness and overall well-being. In fact, lonely employees are much more likely to feel disconnected from their jobs, which can lead to lower work performance. The social wellness component of the wellness strategy plans to:

- Continue to host work celebrations, such as employee recognition nights and the children's holiday party, in partnership with the association hosting team.
- Engage more with the community at local events.
- Offer more volunteer opportunities in partnership with local organizations.
- Increase participation at City-sponsored events.
- Support new wellness challenges.

Funding to kick-off this wellness program was approved by Council as part of the 2019 operating budget. Although some of these initiatives can be developed and implemented without incurring costs, a few will require additional funding. The department estimates an additional \$75,000 to enhance the department's wellness program based on the initiatives outlined above. This additional investment, along with the original one approved by Council are expected to yield a return

on investment by reducing future WSIB liabilities and illness-related leaves.

4.7.2 Enhance leadership development and mentorship opportunities as part of the BFES succession plan

Leadership development programs are critical to the long-term success of organizations. It is essential that organizations continually invest in their people to ensure that the next generation of leaders are prepared with the knowledge, tools and skills they require to succeed. Fortunately, the City provides all staff with a wide range of leadership development opportunities; however, it remains a challenge for staff in certain divisions, such as Firefighting, to attend in-person sessions as they cannot leave their post during their shift. To offer staff greater flexibility, they will be encouraged to use more online tools provided by the City, such as LinkedIn Learning, to develop the skills required for future leadership positions in between their regular job duties. In addition, BFES will continue to promote the City's education assistance program as a means of engaging those who are keener on developing their skills on their own time.

BFES has a long-standing practice of providing voluntary mentorship opportunities for staff members that aspire to become a future leader by assigning them a mentor that is one rank above them. This way, staff members in the program have a dedicated person to go to when seeking guidance. In addition, BFES' mentorship program allows the mentee to shadow one full shift of their mentor to gain a better understanding of what the role involves and what skills it takes to succeed in the role. To enhance the mentorship program, BFES offered formal workshops to aspiring Captains and District Chiefs in the Firefighting Division in 2019 as a pilot

to assist in developing the skills, building the knowledge and understanding the tools it takes to succeed in each of these roles. The workshops were well received by those who attended, and therefore, BFES plans to expand these workshops by offering more sessions, broadening their scope and tailoring them based on the feedback received.

BFES primarily uses NFPA training for fire service-specific leadership development training. This includes requiring training officers, shift-training instructors and captains to complete a Fire Instructor I course to prepare them with the principles of adult education, assessing firefighters learning needs, planning lessons and conducting evaluations. In addition, this group of staff is then encouraged to complete the Fire Officer I program, which provides supervisors with topics covering roles and responsibilities, administration, accountability, cultural diversity, health and safety, human resource management, public relations, functional leadership, incident command, inspection and investigation, budgeting process, basic strategic planning, and basic strategy and tactics.

BFES plans to expand the uses of NFPA certifications to better equip its leaders with the tools, knowledge and skills it takes to succeed as a leader in the fire service by also offering Fire Officer II to the above group of staff in the near future. This course includes a more in-depth look at human resources management, community and government relations, origin and preliminary cause of fires, pre-incident planning, resource deployment and the role local governments and outside agencies play in assisting the fire service. Furthermore, District Chiefs and Acting District Chiefs will be offered to participate in the Incident

Safety Officer program to better prepare themselves for their role as the safety officer when on scene at a fire.

4.7.3 Facilitate a collaborative process to update the BFES mission statement in alignment with the City's 2040 Vision

Brampton is a vibrant, fast growing and diverse city for which BFES has been proud to serve for more than 150 years. Its mission over the last 20 years has been *“To protect our community with trained professionals through active partnerships, providing the highest quality preventative, educational and emergency services.”* It is important that BFES’ mission aligns with the City’s vision to ensure it supports and contributes to the common goal.

In 2017, the City partnered with internationally acclaimed urban planner, Larry Beasley. He led a comprehensive exercise that involved extensive community engagement to develop the City’s vision for the next 20 years. As a result, the Brampton 2040 Vision was developed and endorsed by Council in 2018. Its essence is based on the core principle of Living the Mosaic to reflect Brampton’s diversity and what its residents want for its future: a city arranged, governed, seen and celebrated as a mosaic of people, places and endeavours of all kinds, coexisting in harmony.

To move towards this vision, the City released its DNA framework that highlights how our strengths, character, talents, systems and processes should work together. To achieve this, the City’s DNA includes:

- Our purpose: Why we work together
- Our values: What we stand for
- Our mindset: How we think and work together
- Our style: How we keep it alive

To align to the City's vision and DNA, BFES intends to set up a working group to review and update its current mission statement. A clear and concise mission statement developed in collaboration with staff will help staff remain focused, engaged and motivated in achieving these common goals. Also, a revised mission statement will ensure BFES actively contributes to build a healthy city that is safe, sustainable and successful.

4.7.4 Continue with the implementation of a revised training program that aligns with industry best practices

In April 2013, the OFMEM announced Ontario would adopt the National Fire Protection Association Professional Qualifications (NFPA Pro-Qual) standards when training its staff. In the past, BFES trained their staff to a level they deemed best met the needs and circumstances of the community. Moving to a standard that is considered industry best practice will require a significant investment in terms of time and resources. A grandfathering policy was introduced for members of the fire service as of a certain date, which allowed them to obtain a letter of compliance. This policy exercise was completed for all staff at Brampton Fire & Emergency Services based on the pre-determined qualifications set forth by the OFMEM. This policy officially closed December 31, 2015.

Staff that did not fall within the parameters of the grandfathering policy will need to address the gaps in their qualifications by completing the required trainings and certifications for various NFPA standards for their specific professional responsibilities. These could include:

- NFPA 1002 Chapter 5 - Pump
- NPFA 1006 Chapters 5 - Rope, 7 - Confined Space, 8 - Vehicle, 11 - Trench, 12 - Machinery, 16 - Surface Water, 17 -

- Swift Water, 19 - Ice, 1021 - Officer
- NPFA 1033 - Investigator
- NPFA 1035 - Educator
- NPFA 1041 - Instructor
- NPFA 1061 - Telecommunicator
- NPFA 1072 - Hazmat
- NPFA 1521 - ISO

Training will be offered through formal training courses administered by the Training Division using a combination of on-shift and off-shift time. More specifically, off-shift time will be used to administer professional qualification training whereas adequacy standards training will be conducted during regularly scheduled on-duty shifts.

New curriculum will need to be developed for officer programs and technical rescue disciplines to ensure staff are trained to NFPA standards. The Training Division will dedicate staff to develop and implement a new formal officer program to prepare staff moving through the ranks across all divisions in the department. The Training Division will also develop an NFPA roadmap to clarify the training and certification staff require to pursue specific job paths. As part of the roadmap, it will outline pre-qualifications required to progress through multiple levels of job functions. As an example, awareness level, operations level through to technician level certifications are required for firefighters involved in any technical rescue disciplines.

In order to certify staff to NFPA standards, the Training Division will use its delegated authority granted by the OFMEM in early 2020 to self-proctor and score written exams without the OFMEM's involvement. This provides the flexibility and agility needed for large urban fire departments within the province to certify staff to NFPA standards as the previous model required



an OFMEM proctor and evaluator, which created a bottle neck due to the large number of career firefighters in the province working to obtain NFPA certifications.

A quality assurance program will be required to ensure the NFPA training programs developed and administered meet NFPA's high standard. To achieve this, a three-pronged approach will be applied as follows:

- **Course content:** All training programs and courses will consist of course schedules, lesson plans, skill sheets and formal evaluations using policies, guidelines and templates as administered by the Training Division. This will ensure a standard and consistent form of training applied across all department divisions to meet documentation requirements defined in the FPPA.
- **Program evaluation:** Evaluation is required to set a baseline for obtainable and standardized goals. A key aspect of this program will ensure the course content is created to a high level of standard while ensuring an appropriate segregation of duties during the testing process. For instance, a Training Division staff member not involved in developing the training program will be assigned to the evaluation of all courses and administer tests to ensure an appropriate level of scrutiny is applied.
- **Performance management:** Using applicable NFPA Standards and other industry best practices, more routine evaluations of performance at incidents will be conducted to ensure divisions are meeting the expected levels of service. In collaboration with Fire Administration, data collected from formal assessments will be used to proactively identify

irregular response times at incidents which require an in-depth review and potentially a lessons learned session with the crew involving senior officers to improve future responses. As an example, NFPA 1410 outlines acceptable emergency scene timelines for operational functions.

The Training Division will continue to play an integral role in ensuring BFES remains a progressive public safety leader by researching and implementing new firefighting equipment, technologies and tactics. As a result, more resources will be dedicated to these efforts along with creating comprehensive training programs to implement any new opportunities with sufficient merit. A collaborative approach will continue to be used by the Training Division prior to implementing any new initiatives by seeking feedback and input from other divisions as part of any field-testing scenarios that occur.

Two additional training officers will be requested in an upcoming budget to ensure a sufficient amount of resources are available to administer the NFPA programs outlined above and facilitate the NFPA self-proctored exam process.

4.7.5 Enhance opportunities for flexible training options

A vast majority of training sessions are only offered in a form that requires the physical presence of a trainee to be in the same room as the trainer on a predefined date. This works well for many of the annual job performance requirement (JPR) training programs, such as live fire, emergency medical responder and auto extrication. However, the vast amount of required staff training programs is making it a challenge to coordinate schedules in an effective and efficient manner.



Currently, shift-training instructors (STIs) are used to deliver annual JPR training as defined in the collective agreement. This model has been in place for a number of years and is still operating efficiently and effectively. However, the training required to certify staff to NFPA standards requires a much more robust process. Therefore, the Training Division will administer formal NFPA courses to meet all professional qualifications and legislated NFPA certifications.

The current model of delivering formal curriculum-based programs uses a modular delivery method over an extended duration in which chief officers plan and schedule shift training. This was due to the amount of content, the number of on-shift instructors and the limited availability of staff during a work cycle. As the Training Division aligns the curriculum to NFPA standards, a shift in this delivery model will be critical. Part of this move will involve creating self-directed programs to give staff greater flexibility in completing their certifications. This will allow staff to participate in

courses from beginning to end during a typical week and also provide the opportunity to conduct written and practical evaluations on the final day of a course. This will also result in staff being certified to an NFPA standard quicker.

The department can further enrich the current training delivery model by leveraging video and electronic-based training programs within a self-directed learning environment with the introduction of the City's Talent & Learning Management System (TLMS). These new digital forms of

training will require additional time and personnel effort to create; however, in the long term, they will aid in providing reusable training programs and workshops and produce more consistent learning outcomes. Staff will also have the flexibility to complete mandatory training at fire stations during their on-duty shift, rather than travelling to the training centre for instructor-led presentations, thereby reducing capacity constraints. BFES also plans to further leverage a digital learning experience model for select forms of training using integrated TV screens at the Fire Campus so staff can participate from their stations.

Using this blended model, the department will also have the ability to leverage presentations, various workshops from guest speakers, outside agencies and some accredited courses to deliver this content to the entire fire department. NFPA 1021 Fire Officer and NFPA 1041 Fire Instructor courses, as examples, can use TLMS with a supporting textbook for a blended delivery model.

In addition, annual and on-demand formal courses will be offered to ensure staff have the opportunity to obtain the necessary NFPA certifications to progress through their career roadmap. As a result, an annual education calendar will be created to inform staff of available courses, their scheduled dates, and any eligibility requirements. The Training Division staff will then ensure courses are developed and delivered as per the schedule.

Bringing together a number of approaches to training will allow greater flexibility for staff to complete all required and optional training. No additional budget is required beyond the two additional training officers identified above to assist in the development of programs using self-directed and blended learning models.



4.8 Good Governance

Good governance is the foundation of effective public sector organizations. To ensure resources are used in the best interest of the public, the process to make and implement decisions must be based on sound principles. Good governance has always been a priority for the City and Council, and as a result, City departments

continually assess their policies and programs to confirm they meet the highest standards of governance as set by Council. In its effort to meet this mandate, BFES will perform the actions outlined in this section.

4.8.1 Review and update the BFES and Emergency Plan By-laws to ensure they meet the needs and circumstances of the community, and comply with current legislation

The BFES By-law has been in place for a number of years, and was last updated in 2013 (By-law 158-2013). Appendix A of the By-law thoroughly lays out the general functions and services BFES will provide to the city of Brampton. These include fire prevention, firefighting, fire and life safety education, training, communications, apparatus and maintenance, and fire administration.

Between 2013 and 2019, the city has grown from a population of 570,000 to 697,000, and forecasts suggest Brampton will reach nearly 900,000 residents by 2041. Such growth demands the By-law be continually reviewed to ensure it meets the current needs and circumstances of the community, while preparing to keep pace with the future needs of residents.

One upcoming change to the By-law will be the addition of a structural collapse search and rescue service. This expanded service uses advanced techniques to locate, extricate and stabilize victims within collapsed structures or other confined spaces. Brampton is at risk of a structural collapse occurring due to the potential for improper use of heavy equipment, tornados, windstorms, arson and other emergencies. Toronto Fire's Heavy Urban Search and Rescue (HUSAR) team is currently relied on when these emergencies



arise in Brampton; however, establishing a local BFES team would drastically improve response time capabilities and allow for a seamless response. The department received budget approval in 2019 for the addition of a heavy rescue fire truck that could carry the necessary equipment to provide the enhanced level of service. The new apparatus is expected to arrive in 2021, at which time the team will have completed the specialized training.

An extensive review is also required to ensure the By-law remains current with any changes made to the *Fire Protection and Prevention Act, 1997* since its last update in 2013. At this time, no significant changes are anticipated.

In addition, the Emergency Plan By-law (By-law 265-2014) and associated emergency plan needs to be updated to incorporate the lessons learned from the City's response to the COVID-19 pandemic. COVID-19 had devastating social and economic impacts on the community, and it is imperative that the City's emergency plan be tailored accordingly to reduce the impacts of future waves and future pandemics, if possible. Lastly, a review of the By-law is also required to ensure it remains current with any changes made to the Emergency Management and Civil Protection ACT, R.S.O 1990.

4.8.2 Design and implement an enhanced data quality assurance program to improve the quality of data collected

BFES has strong data collection practices in place. After every incident, firefighting captains must fill out an incident report, which includes a number of required questions as mandated by the OFMEM as well as additional questions relevant to BFES operations, decision-making and

planning. An enhanced quality assurance program will reduce the risk of having incomplete, inaccurate, inconsistent, missing or duplicate information that may compromise the quality of the department's data. Therefore, BFES recommends an enhanced data quality assurance program to enable BFES to become a more data-driven organization. Leveraging the power of big data has proven to be successful in the past as evidenced by the Hot Zone program established in 2017. BFES plans to continue leveraging big data to improve the safety of the community. As the number of new initiatives that leverage the power of big data increase, it is critical that the underlying data that supports them is accurate and complete.

BFES will work in collaboration with the City's Digital Innovation & Information Technology (DI&IT) team to build its enhanced data quality assurance program. The program will involve a combination of proactive and reactive measures. A proactive approach will address the root causes of data inconsistencies before the data is created, while a reactive approach will fix errors through data cleansing efforts after it has been generated. The cost associated with the data quality assurance program are not considered material in the context of this Master Plan as any additional duties are expected to be absorbed by staff as part of their current roles nor are any new software costs anticipated.

4.8.3 Continue to review and update department policies and standard operating guidelines to ensure they remain current

The Ontario Fire Service best practice calls on each fire department to establish departmental policies and standard operating guidelines. Departmental policies provide specific direction to all staff within

a department on the services it provides and the practices it follows in an effort to minimize inconsistencies between divisions or teams. Standard operating guidelines, on the other hand, provide a framework to guide decision making.

The OFMEM PFSG 04-69-13 Co-ordination, Development, Approval and Distribution of Standard Operating Guidelines for Various Disciplines is intended to guide the performance or behaviour of departmental staff, whether functioning alone or in groups. The departmental focus should:

- enhance safety;
- increase individual and team effectiveness;
- allow for easier training and better entry-level orientation;
- improve risk management practices;
- help to avoid litigation;
- form the basis of objective post-incident evaluations; and
- permit flexibility in decision making.

BFES is committed to supporting best practices across its department, and as a result, currently has over 200 standard operating guidelines (SOG) and over 50 policies. With so many guidelines and policies in place, it is difficult to ensure they are routinely updated to reflect the most up-to-date industry best practices. As a result, BFES plans to continue to allocate significant resources to its SOG committees so they can dedicate the appropriate amount of time and effort to update current guidelines and policies, while assessing whether any new ones are needed to fill potential gaps. These committees will meet regularly and will have members from both management and staff. As is current practice within BFES, all new or updated SOGs developed by the committees will be reviewed and approved by the Fire Chief and respective Deputy Fire Chief.



4.8.4 Continue to review internal processes through a continuous improvement lens to streamline operations

Lean thinking is a continuous improvement discipline that analyzes the flow of product, materials, people, information and systems to eliminate inefficiencies. This is all done to add value for the customer. Lean Six Sigma is often used in the private sector to generate greater profits. However, a different lens is required when applying the concept to the public sector, which follows a not-for-profit model. This lens requires staff to inform its customers, which are residents and taxpayers, of the services it provides and how these services are delivered, all the while ensuring every dollar received is used to deliver fire protection services as effectively and efficiently as possible.

Lean thinking and its continuous improvement process can help achieve greater efficiencies, and ultimately, stretch tax dollars. It does this by identifying and eliminating activities that add no value. These wasteful activities are divided into eight categories:

- errors, mistakes, defects (i.e., rework, redo and scrap);
- inventory (i.e., excess storage, handling and carrying costs);
- processing (i.e., redundancies and multiple sign-offs);

- waiting and delays (i.e., for information or people);
- transportation (i.e., materials, inventory, supplies and information);
- motion (i.e., personnel travel time);
- overproduction (i.e., producing more than what is required); and
- under-utilized human capability/talent (i.e., assignment of personnel to non-value-added tasks or knowledge not being leveraged).

All BFES divisions will undergo a continuous improvement review with a particular focus on the above activities. It is anticipated that a number of improvements will be introduced, some of which will be quick wins that can be easily implemented whereas others may require a more comprehensive analysis. As part of these reviews, each division's quality assurance program will also be enhanced to ensure key processes are continually reviewed to ensure they are run effectively and efficiently while providing the highest quality of service.

Digitization is a key area of focus of this review process. This will involve redesigning and standardizing processes by taking advantage of new digital capabilities (i.e., real-time workflow, digital signatures, mobile, location-based services) and embedding efficiencies from the get-go. The department has already begun to make significant strides in this area by digitizing a number of forms, such as the Workplace Injury & Incident Report (WIIR) and uniform order forms, but there are still more opportunities the department can capitalize on.

In the immediate term, BFES will perform a comprehensive analysis of its emergency response Nature Codes to ensure they align

with the risks identified in the Community Risk Assessment. Nature Codes determine the number and types of apparatus to be dispatched to effectively respond to an emergency incident. As every incident is unique, it can be difficult to predict the number and type of resources required on the first shot. If too few resources are sent, this will likely result in a less effective response. If too many resources are sent, this will result in a waste of resources for which they could be performing other activities such as training, public education or inspections. As education and enforcement are the first two lines of defense against fires, it is important that resources are assigned to activities that support these lines of defense rather than over using resources for emergency responses. A comprehensive analysis of historical incident requirements and benchmarking with neighbouring municipalities will be conducted to ensure the right amount of resources are sent to the right place at the right time.

4.8.5 Conduct an annual review of the Community Risk Assessment and revise it as necessary

The Province of Ontario introduced legislation under the Fire Protection and Prevention Act, 1997 in 2018 that mandated all fire departments in the province complete a community risk assessment (CRA) no later than July 1, 2024. A CRA is a process of identifying, analyzing, evaluating and prioritizing risks to public safety to inform decisions about how best to provide fire protection services. BFES completed its CRA in 2019, which was used to inform this Master Plan with the most recent data from 2014 to 2018. As required by legislation, the BFES CRA includes consideration of the following mandatory profiles:

1. **Geographic profile:** The physical features of the community, including the nature and placement of features, such as highways, waterways, railways, canyons, bridges, landforms and wildland-urban interfaces.
2. **Building stock profile:** The types of buildings in the community, and their uses, an inventory of building types and uses, and any building-related risks known to the fire department.
3. **Critical infrastructure profile:** The capabilities and limitations of critical infrastructure, including electricity distribution, water distribution, telecommunications, hospitals and airports.
4. **Demographic profile:** The composition of the community's population, respecting matters relevant to the community, such as population size and dispersion, age, gender, cultural background, level of education, socioeconomic make-up and transient population.
5. **Hazard profile:** The hazards in the community, including natural hazards, hazards caused by humans and technological hazards.
6. **Public safety response profile:** The types of incidents responded to by other entities in the community and those entities' response capabilities.
7. **Community services profile:** The types of services provided by other entities in the community and those entities' service capabilities.
8. **Economic profile:** The economic sectors affecting the community that are critical to its financial sustainability.
9. **Past loss and event history profile:** The community's past emergency response experience, including:
 - a. The number and types of emergency responses, injuries, deaths and dollar losses.
 - b. The community's fire loss statistics compared with provincial fire loss statistics.

The Ontario Fire Marshal's Fire Risk Sub-model was used to analyze and evaluate each risk identified in the CRA to determine their corresponding probability and severity. A combination of the two factors was then used to determine the overall risk and priority level of each risk identified. As a result of the assessment performed, BFES identified 52 risks that are present in its community to varying degrees of which 13 are considered a high priority. Table 4.9 summarizes the high-priority risks identified for the city of Brampton along with BFES' recommended actions to reduce risks to a reasonably lower level, as highlighted in this Master Plan.

Table 4.9: Risk Reduction Plan for High-Priority Risks

Risk	Recommended Course of Action
Unregistered multi-unit dwellings	<ul style="list-style-type: none"> - Increase public education efforts by firefighting staff. - Continue to allocate resources to the second-unit task force and make more progress on the mandate of the task force.
Illegal boarding/lodging/rooming houses	<ul style="list-style-type: none"> - Continue to allocate resources to the student housing task force and progress its mandate. - Leverage partnerships with post-secondary institutions to help spread fire/life safety information to students.
Industrial occupancies that are over 100,000 square feet	<ul style="list-style-type: none"> - Conduct routine inspections by fire prevention officers on an annual basis.
High-rise residential buildings	<ul style="list-style-type: none"> - Continue conducting routine inspections by fire prevention officers on an annual basis.
Low-rise residential buildings	<ul style="list-style-type: none"> - Conduct routine inspections by fire prevention officers on an annual basis.
Residential homes built prior to 1990	<ul style="list-style-type: none"> - Target public education efforts by FLSE and firefighting staff in these areas. - Expand the survey and compliance initiative by firefighting staff.
Vulnerable occupancies	<ul style="list-style-type: none"> - Continue conducting routine inspections by fire prevention officers on an annual basis.
Areas with large concentrations of households where occupants rent	<ul style="list-style-type: none"> - Routine inspections of high-rise and low-rise residential buildings that are rentals. - Enhance targeted public education efforts by FLSE and firefighting staff
Occupancies that are engaged in manufacturing	<ul style="list-style-type: none"> - Conduct routine inspections by Fire Prevention officers on an annual basis.
Traffic congestion and vehicle collisions affecting apparatus response times	<ul style="list-style-type: none"> - Construct new fire stations as recommended in the Station Location & Apparatus Deployment Plan.
Fire incidents in the City Centre Area, Armbrø Heights and occupancies on Lisa Street where the stove top was an ignition source	<ul style="list-style-type: none"> - Enhance targeted public education efforts by FLSE and firefighting staff.
Fire incidents in the Mount Pleasant area and the apartments on Sir Lou Drive where the ignition source was smokers' articles	<ul style="list-style-type: none"> - Enhance targeted public education efforts by FLSE and firefighting staff.
Fire incidents in the Tullamore, Mount Pleasant and Snelgrove Place neighbourhoods where the fire originated in the garage	<ul style="list-style-type: none"> - Enhance targeted public education efforts by FLSE and firefighting staff.

The legislation also requires BFES to complete a review of its CRA within 12 months of every year. This will ensure BFES remains aware of developing risks that may arise as a result of changes in any of the nine profiles. In addition, it will be an opportunity to measure the impact of risk reduction efforts on the priority risks identified in the CRA. As risks are gradually reduced to a reasonably low level, resources can be redirected to other areas that require additional support.



4.9 Environmental Initiatives

On June 5, 2019, Council joined 35 other municipalities across Canada by declaring a climate emergency. Climate change is an important issue to Brampton residents, and the City is committed to preparing residents for its current and future affects. Commonly referred to as green initiatives, environmental initiatives attempt to achieve tangible benefits in curbing negative impacts on the environment. Selected as one of the Council's top priorities, Brampton will build on its "commitment to sustainability by improving transit and active transportation opportunities, focusing on energy efficiency, and revitalizing natural spaces and the urban tree canopy". Furthermore, within the priority is the commitment by the City to lead environmental innovation by developing a community emissions reduction plan to reduce greenhouse gas emissions, increase resilience to climate change and to create economic advantage. The recommendations below outline the

initiatives the department plans to pursue to assist in achieving Council's commitment to the environment.

4.9.1 Invest in vehicles, equipment, facilities and technology that reduces the environmental footprint of BFES

BFES' current fleet of emergency response fire apparatus are dependable, maintained effectively and replaced to keep in line with service demands. However, due to their large engine size and number of pumping systems onboard, these fire apparatus are not fuel-efficient. As a result, the department will investigate the merits of purchasing electric fire trucks in the future to reduce its environmental footprint. Furthermore, the fuel efficiency issue is compounded by the fact that vehicle engines must run idle to power apparatus systems, power all communications equipment and provide required lighting while at a scene. During the colder months, the idling engine is also required to prevent the pumps and water tanks from freezing. While idling, a fire truck consumes a minimum of 4.7 litres of fuel per hour.³⁴

Current idle reduction technology (IRT) is being used by other fire departments in North America to help curb emissions and cut overall fuel costs. BFES plans to build this feature into every future fire truck it purchases. With IRT, the main engine is turned off while a smaller diesel-fueled engine turns on to power the systems onboard, including emergency lighting, communication equipment and compartment lighting. The auxiliary engine will also maintain heating and cooling systems. However, the auxiliary engine would not be able to power water pumping systems, and as result, the main engine would need to be turned on to operate

³⁴Idle reduction technology, Greenstar. (n.d.). Retrieved May 12, 2020, from <http://www.areo-feu.com/trucks/ecoenergetic-fire-truck/idle-reduction-technology-greenstar.html>.



pumping capabilities. Using an auxiliary system offers plenty of environmental benefits since the second, smaller engine only consumes 0.95 litres of fuel per hour.³⁵ As a result, this will lower idling emissions by 80% when powering non-water pumping systems. Each IRT unit costs roughly \$30,000, which will be included in the price of any new apparatus purchased in the future. However, the savings in terms of fuel and maintenance costs will offset this cost after approximately six years.

Looking beyond front-line fire apparatus, BFES can support a greener Brampton and further reduce emissions by investing in hybrid electric vehicles for its non-emergency response fleet, which currently consists of approximately 62 vehicles used by various staff divisions. Hybrid electric vehicles use significantly less fossil fuels than traditional internal combustion engines, which will in turn reduce BFES' environmental footprint. The nature of BFES' non-emergency operations are well suited for hybrid electric vehicles as a substantial portion of driving is on local roads where fuel savings would be maximized unlike highway driving, which requires the internal combustion engine to kick in. These hybrid electric vehicles are marginally more expensive than a model with a standard internal combustion engine; however, the additional cost of a hybrid vehicle will be partially offset by savings from reduced fuel consumption.

To further reduce its environmental footprint, BFES plans to implement a new car share program for its Fire Prevention Division. Currently, the division deploys 25 vehicles, each of which are assigned to a single officer, to conduct on-site

fire inspections of occupancies – a core function of their service delivery. Overall, the process is efficient; however, a car-sharing model will reduce the number of vehicles used by the division, and in turn, reduce BFES' environmental footprint and maintenance costs. Adopting such a program will be done gradually as vehicles are up for replacement to the point where the ratio of staff to vehicles would be 2:3. It is anticipated that this car-sharing program will have minimal impact on service delivery since similar car sharing programs are already being used by many businesses, such as residential cable companies, that provide prescheduled services to clients. Fire prevention officers follow a similar process where all inspections are scheduled on an appointment basis.

Lastly, as BFES constructs its future facilities, it will continue to keep the environmental impact of design decisions top of mind. Following corporate best practices already in place, all buildings constructed for BFES will have a minimum silver rating, according to the Leadership in Energy and Environmental Design (LEED) rating system. LEED is one of the most popular green building certification programs in the world and evaluates buildings on its water efficiency, building materials, resources and sustainable sites, all of which reduces the environmental footprint of the building. Research has also demonstrated that buildings with LEED certification have significantly lower operating costs, with potential savings to up to 40%.³⁶ Furthermore, BFES plans to pursue other innovative design certifications for its future facilities, including Fitwel, Net Zero and Passive House, among others to reduce its environmental footprint.

³⁵Ibid.

³⁶Advanced Solutions International, Inc. (n.d.). Retrieved from https://www.cagbc.org/CAGBC/Programs/LEED/LEED_Commercial_Buildings.aspx#owners_managers.

5.0 Financial Implications of the Master Plan

Fire protection services are typically one of the most expensive services provided by a municipality, and therefore, it was important that every recommendation laid out in this Master Plan was developed and agreed upon in a way that is both fiscally responsible and realistic. To be fully transparent, the financial implications of this Master Plan are outlined in Table 5.1 from a budget request perspective.

Table 5.1: BFES 2021-2025 Fire Master Plan Financial Implications

Recommendation	Operating Budget Impact	Budget Request Year	Capital Budget Impact	Budget Request Year
Construct Station 214 at 917/927 Bovaird Drive West	\$50,000	2022	N/A - Capital budget approved in previous budget	
Construct Station 215 at 10539/0 Goreway Drive	\$2,900,000	2025	\$7,000,000	2022 / 2023
Construct Station 216 near Mississauga Road and Williams Parkway	\$2,900,000	2025	\$7,000,000	2022 / 2023
Acquire land for Station 217	N/A		TBD based on market rates	
Construct Station 217 near Heritage Road and Sandalwood Parkway	\$2,900,000	2032	\$9,500,000	2029 / 2030
10-year state of good repair requirement for fire stations	N/A		\$3,500,000	2021 - 2030
Apparatus reliability solution	TBD based on the merit and feasibility of all options			
JFCC re-location	TBD based on the merit and feasibility of all options			
Enhanced routine inspection program	\$2,300,000	2022 - 2025	N/A	
Hybrid electric vehicles for staff divisions to share	N/A		\$1,000,000	2021 - 2025
Predictive modelling program	N/A		\$100,000	2022
Pre-emptive traffic technology enhancement	N/A		\$168,000	2022
Enhanced wellness program	\$75,000	2021	N/A	
Enhanced training program that aligns with industry best practices	\$270,000	2022	N/A	
Total	\$11,395,000*		\$28,268,000*	

*These estimates do not account for inflation and escalation costs, which can vary from year to year.

6.0 Conclusion

The Brampton Fire & Emergency Services 2021 – 2025 Master Plan provides strategic direction for BFES over the next five years using data-driven decision making by enhancing its emergency response, education and prevention capabilities with an ultimate objective to improve the overall safety of those that live, work, study and play in Brampton. It is also meant to be a living document that is continuously evolving and improving as new information is gathered and analyzed.

This Master Plan is informed by BFES' Community Risk Assessment, guided by the Brampton 2040 Vision, significantly influenced by engagement with residents and staff, and grounded by the Fire Prevention and Protection Act. The following three overarching themes were used to form the foundation of this Master Plan:

- safe
- successful
- sustainable

These themes provided the framework to create recommendations and associated initiatives outlined in this Master Plan, which were driven by the following areas of focus:

- emergency response
- fire prevention and education
- emergency management
- community safety
- equity and inclusion
- technological innovation
- empowered workforce
- good governance
- environmental sustainability

Once this plan is endorsed by Council, it will help guide priorities and investments for BFES over the next five years. A detailed implementation plan will then be developed and executed to ensure all suggested initiatives are carried out in a timely and efficient manner.



7.0 Appendix A – Survey Results and Summary

7.1 Background

The leading objective of the engagement survey conducted is to gain an understanding of residents' concerns, needs and satisfaction levels of the fire protection services provided by BFES. In terms of themes, the survey allowed residents the opportunity to provide feedback on such topics as safety concerns in their neighbourhoods, value for tax dollars and prioritizing future strategic initiatives. The information provided from the data collected has helped influence the creation of this Master Plan.

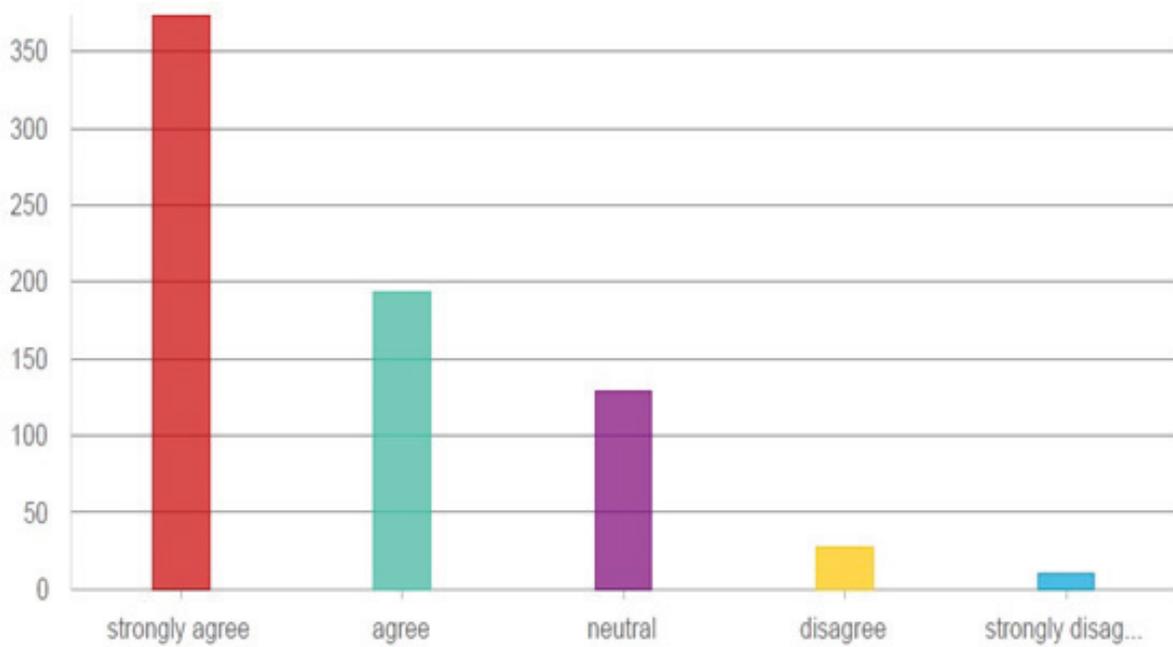
Three surveys were conducted to collect feedback from Brampton residents. One survey was created by a project team that consisted of members from BFES and Strategic Communications staff. The second and third survey were initiated by the Community Engagement team at the corporate level and facilitated by third-party vendors.

7.2 Survey 1 - Master Plan Resident Engagement Survey

The survey that was conducted by the Master Plan project team consisted of an in-person survey collection and an online questionnaire component. Both collection types used the same questions and information collection techniques to remain consistent. To ensure consistency in responses, the survey did not include open-ended questions and only included questions with pre-determined answers participants could select. In total, 734 residents responded to the survey. The survey did not collect demographic information from respondents. Rather, the only criteria required was that the respondents identified themselves as residents of Brampton. The following graphics detail the survey responses received.



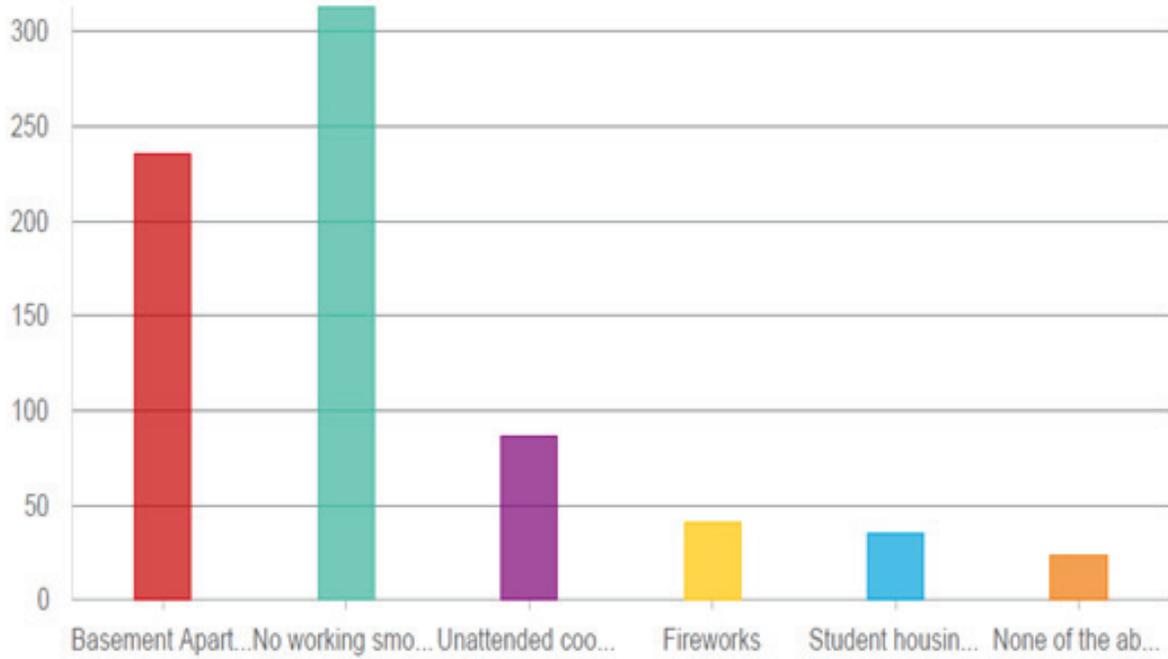
Do you agree with the following statement: the value of the services provided by Brampton Fire justifies the cost? (20...



Answers	Count	Percentage
strongly agree	373	50.82%
agree	194	26.43%
neutral	129	17.57%
disagree	28	3.81%
strongly disagree	10	1.36%

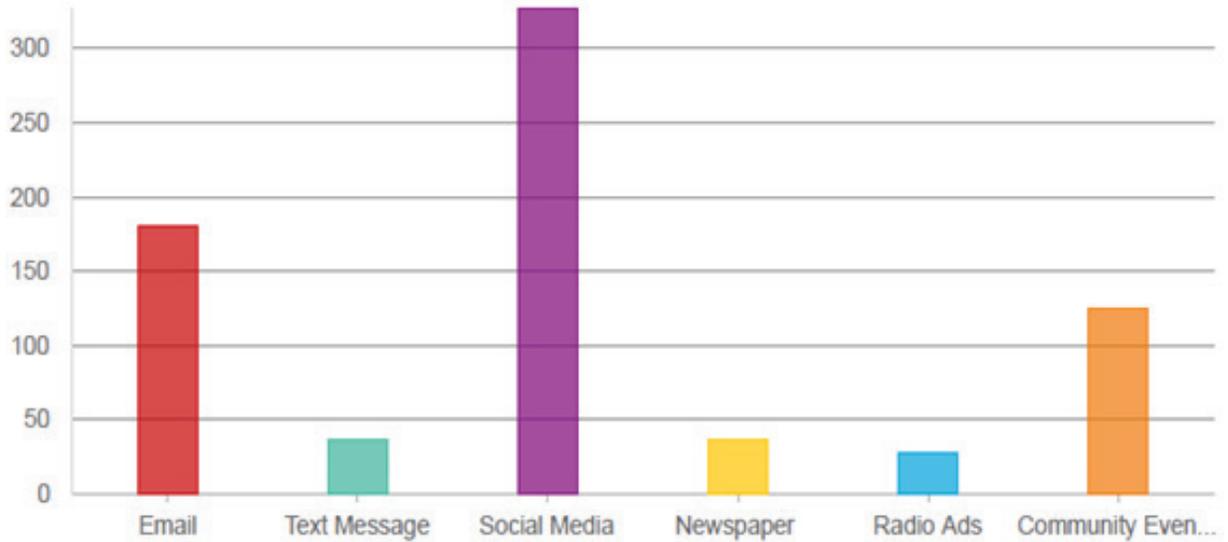


Which of the following do you feel is the most important fire safety issue in your community ★



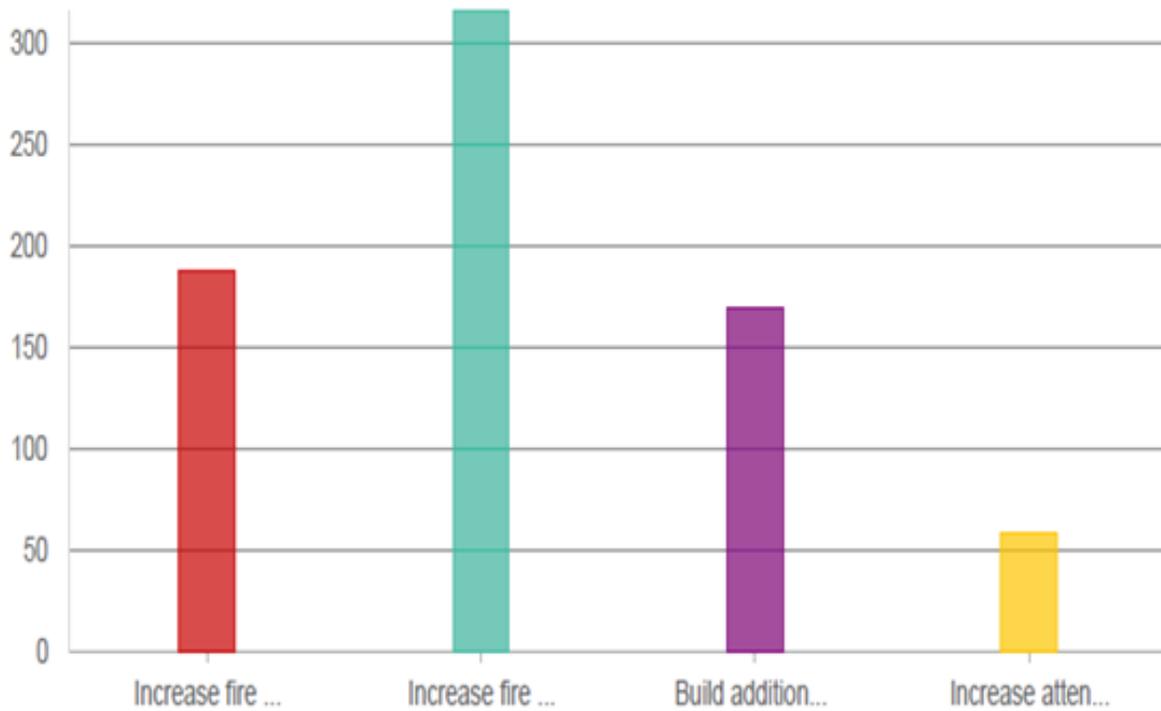
Answers	Count	Percentage
Basement Apartments	235	32.02%
No working smoke/CO alarms	313	42.64%
Unattended cooking	86	11.72%
Fireworks	41	5.50%
Student housing	35	4.77%
None of the above	24	3.27%

What would be the best way to communicate with you about fire safety education? *



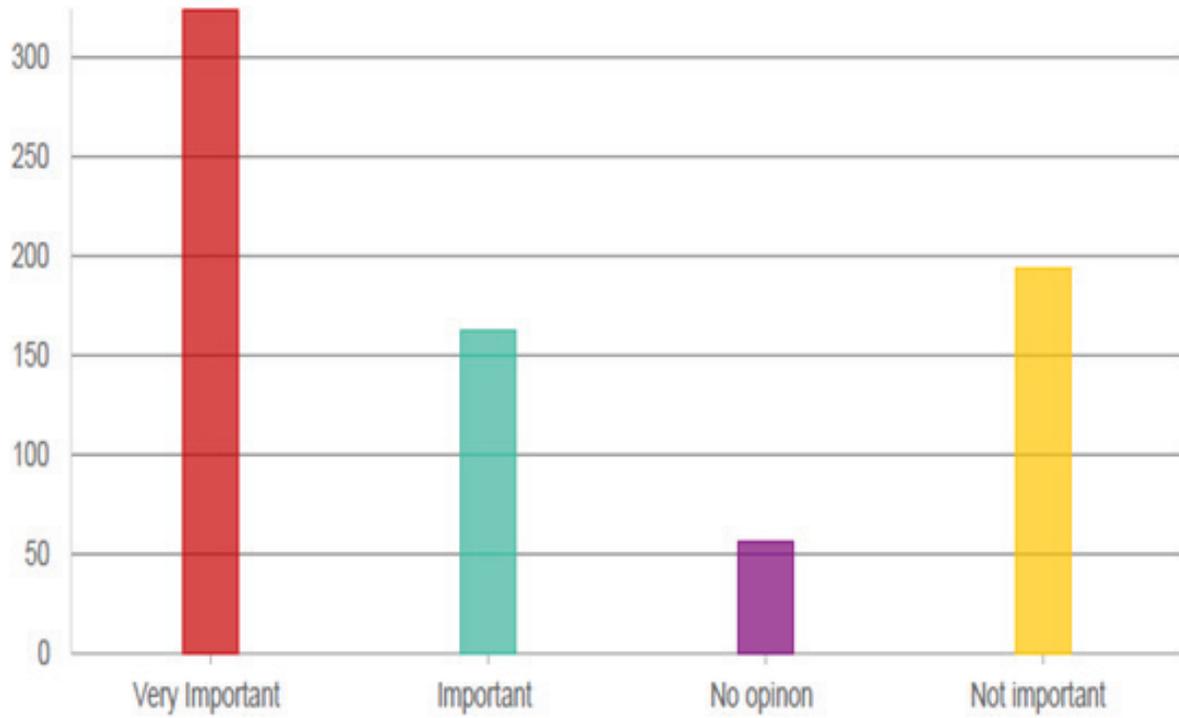
Answers	Count	Percentage
Email	181	24.66%
Text Message	37	5.04%
Social Media	327	44.55%
Newspaper	37	5.04%
Radio Ads	27	3.68%
Community Events	125	17.03%

Over the next five years, which of the following should BFES prioritize to improve the safety of the community? *



Answers	Count	Percentage
Increase fire safety education resources	188	25.61%
Increase fire prevention and enforcement resources	316	43.05%
Build additional fire stations to lower overall emergency response time	170	23.16%
s		
Increase attendance at community events and festivals	59	8.04%

How important is it for Brampton Fire to have personnel that are diverse and reflective of the community it protects? ★



Answers	Count	Percentage
Very Important	323	44.01%
Important	162	22.07%
No opinion	56	7.63%
Not important	193	26.29%

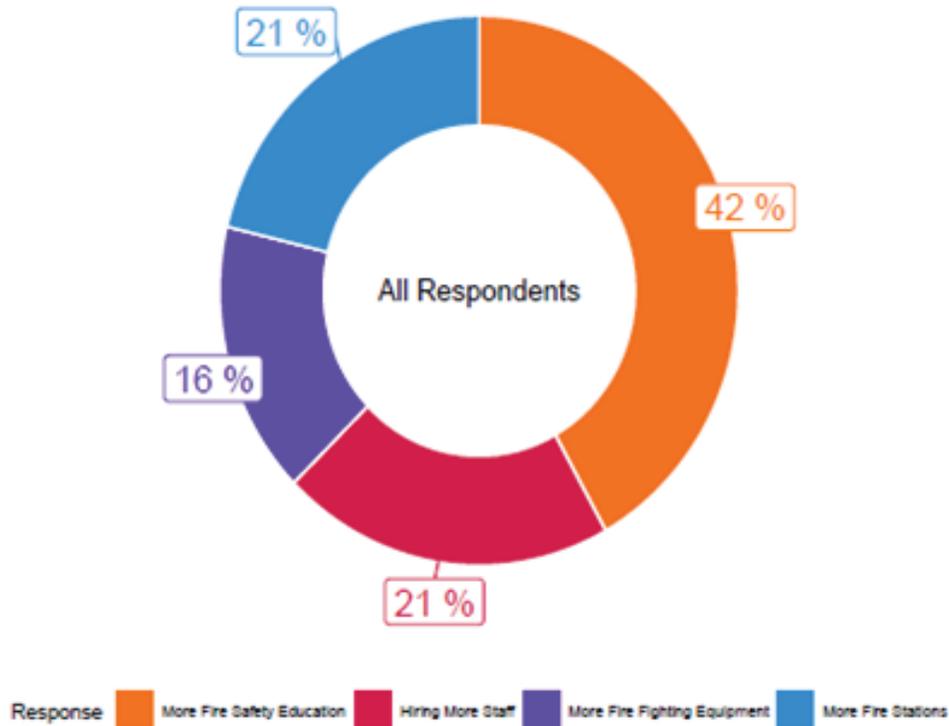


The survey validated the decision to incorporate recommendations focused on preventative efforts into this Master Plan. Nearly 70% of respondents believe BFES should invest additional resources into fire prevention and education activities. Additionally, the survey highlighted residents' preference for BFES' workforce to better reflect the community it serves. Hence, this Master Plan incorporates new and enhanced diversity, equity and inclusion initiatives to achieve this goal supported by residents and in line with the City's Workplace Diversity and Inclusion Strategy and Work Plan. Lastly, a majority of respondents prefer the use of electronic media, such as social media, to receive information on fire safety. This aligns with the recommendations in this Master Plan to continue to explore digital marketing strategies.

7.3 Survey 2 - Mainstreet Survey

The second analysis was conducted by Mainstreet Research on behalf of the City. The survey was conducted from August 6 to 8, 2019 and had a total of 868 respondents. The questionnaire was conducted using automated telephone interviews (Smart IVR) via both landlines and cellular phones. In total, 17 questions were asked that covered a number of topics, including public transit and neighbourhood safety. In terms of fire protection services, two questions were asked about BFES services that were created by the Corporate Communications workgroup. The questions, responses and demographic variables of the participants are detailed in the following graphics.

Over the next five years, which of the following should Brampton Fire prioritize?



broken out by age and gender

	Total	Gender			Age			
		Male	Female	Other	18-34	35-49	50-64	65+
More Fire Safety Education	41.9%	43.8%	40.6%	29%	40.3%	47.2%	41.3%	38.9%
Hiring More Staff	20.8%	16.5%	24.9%	17%	24%	15%	20.5%	23.8%
More Fire Fighting Equipment	16%	18.5%	13.6%	20.1%	15.5%	16.7%	14.4%	17.8%
More Fire Stations	21.3%	21.2%	20.8%	33.9%	20.2%	21%	23.8%	19.6%
Unweighted Frequency	868	382	472	14	156	198	220	294
Weighted Frequency	868	408	443	17	207	208	242	211

broken out by education

	Education					
	Total	HS or less	Bachelor's	Trade College	Postgrad	DKWS
More Fire Safety Education	41.9%	40.3%	43.1%	42.4%	42.3%	38.8%
Hiring More Staff	20.8%	18.6%	17.6%	25.2%	24.5%	21.3%
More Fire Fighting Equipment	16%	16.9%	17.7%	17.3%	9.4%	18.9%
More Fire Stations	21.3%	24.3%	21.6%	15.2%	23.8%	20.9%
Unweighted Frequency	868	203	280	179	147	59
Weighted Frequency	868	196	286	177	153	57

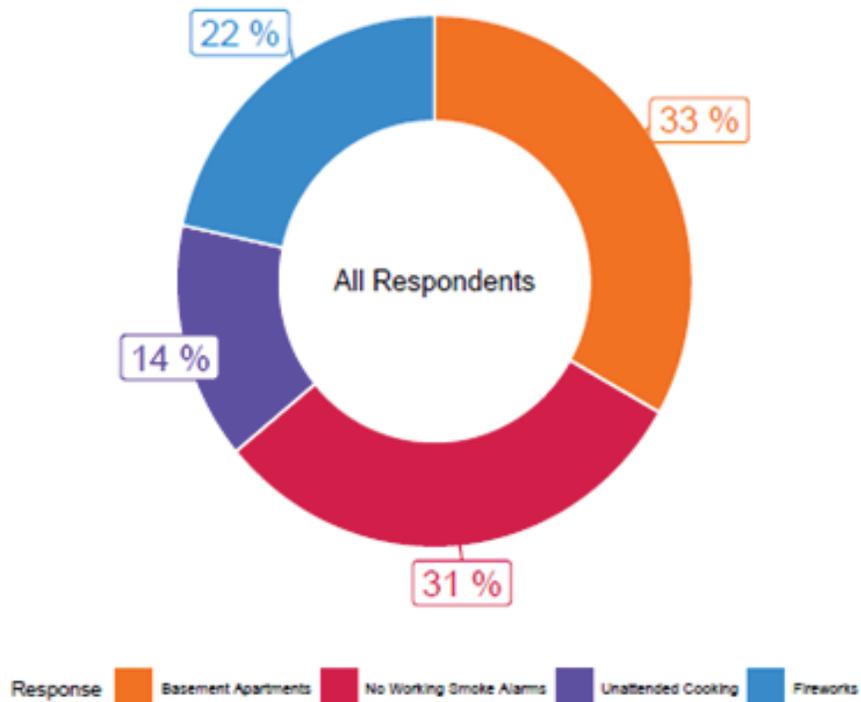
broken out by employment status

	Employment Status				
	Total	Full Time	Part Time	Retired	Won't Say
More Fire Safety Education	41.9%	45.9%	44.8%	36.8%	34.3%
Hiring More Staff	20.8%	16.6%	21.8%	25.3%	26.7%
More Fire Fighting Equipment	16%	15.9%	15.4%	17.2%	14.6%
More Fire Stations	21.3%	21.7%	18%	20.7%	24.4%
Unweighted Frequency	868	373	99	302	94
Weighted Frequency	868	418	109	238	103

broken out by ethnicity

	Ethnicity								
	Total	European	South Asian	East Asian	Black	Latin American	Indigenous	Other	Won't Say
More Fire Safety Education	41.9%	39%	47.8%	39.7%	41.8%	43.2%	22.6%	43.7%	42.6%
Hiring More Staff	20.8%	20.7%	15.9%	11.8%	35.2%	21.7%	35.5%	16.8%	23.4%
More Fire Fighting Equipment	16%	19.8%	12.3%	19.8%	10.3%	0%	20.9%	13.1%	16%
More Fire Stations	21.3%	20.5%	24%	28.7%	12.8%	35.1%	20.9%	26.4%	17.9%
Unweighted Frequency	868	339	145	53	80	14	5	80	152
Weighted Frequency	868	328	155	59	81	12	5	78	150

Which of the following do you feel is the most important fire safety issue in your community?



broken out by age and gender

	Total	Gender			Age			
		Male	Female	Other	18-34	35-49	50-64	65+
Basement Apartments	33.2%	31.1%	36%	8.5%	29.2%	32%	34.8%	36.4%
No Working Smoke Alarms	30.8%	28.6%	32.9%	29.3%	33.1%	27%	28.1%	35.5%
Unattended Cooking	14.4%	15.6%	13.6%	6.7%	15.6%	14.2%	15.4%	12.3%
Fireworks	21.6%	24.6%	17.6%	55.5%	22.2%	26.8%	21.7%	15.8%
Unweighted Frequency	868	382	472	14	156	198	220	294
Weighted Frequency	868	408	443	17	207	208	242	211

broken out by education

	Education					
	Total	HS or less	Bachelor's	Trade College	Postgrad	DKWS
Basement Apartments	33.2%	35.6%	31.8%	36.3%	28.7%	34.3%
No Working Smoke Alarms	30.8%	36.8%	34.7%	25.7%	25.5%	21.3%
Unattended Cooking	14.4%	10%	12.4%	15.5%	25%	7.8%
Fireworks	21.6%	17.6%	21.2%	22.5%	20.8%	36.6%
Unweighted Frequency	868	203	280	179	147	59
Weighted Frequency	868	196	286	177	153	57

broken out by employment status

	Employment Status				
	Total	Full Time	Part Time	Retired	Won't Say
Basement Apartments	33.2%	34.2%	28.6%	38.5%	21.5%
No Working Smoke Alarms	30.8%	28.4%	32.8%	31.8%	36.3%
Unattended Cooking	14.4%	12.7%	19%	16%	12.5%
Fireworks	21.6%	24.7%	19.5%	13.6%	29.7%
Unweighted Frequency	868	373	99	302	94
Weighted Frequency	868	418	109	238	103

broken out by ethnicity

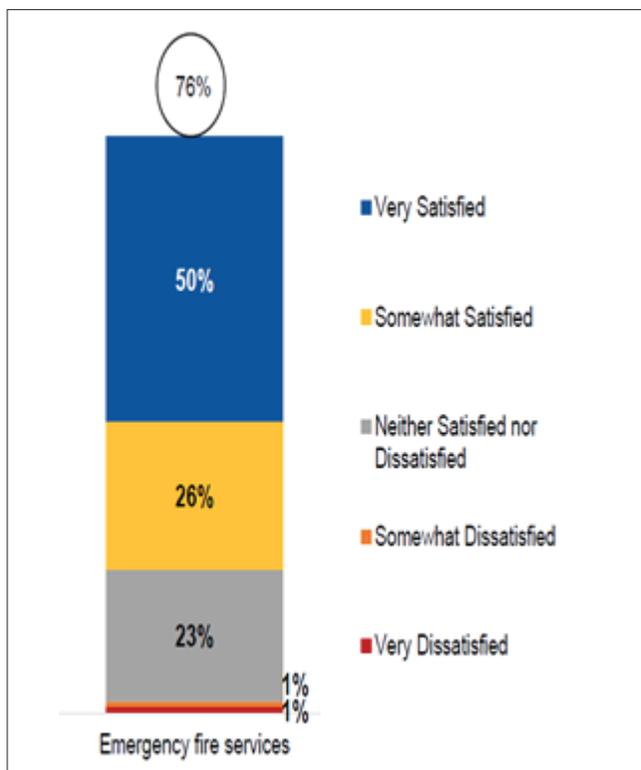
	Ethnicity								
	Total	European	South Asian	East Asian	Black	Latin American	Indigenous	Other	Won't Say
Basement Apartments	33.2%	40.6%	23.5%	24.9%	30.4%	13.5%	22.6%	35.7%	32.4%
No Working Smoke Alarms	30.8%	29.7%	28.6%	23.1%	42.3%	46%	36.4%	33.5%	31.8%
Unattended Cooking	14.4%	11.2%	20.4%	26.6%	13.1%	22.1%	20.9%	7.6%	13.7%
Fireworks	21.6%	18.6%	29.5%	25.4%	14.2%	18.4%	20.1%	23.2%	22.1%
Unweighted Frequency	868	339	145	53	80	14	5	80	152
Weighted Frequency	868	328	155	59	81	12	5	78	150

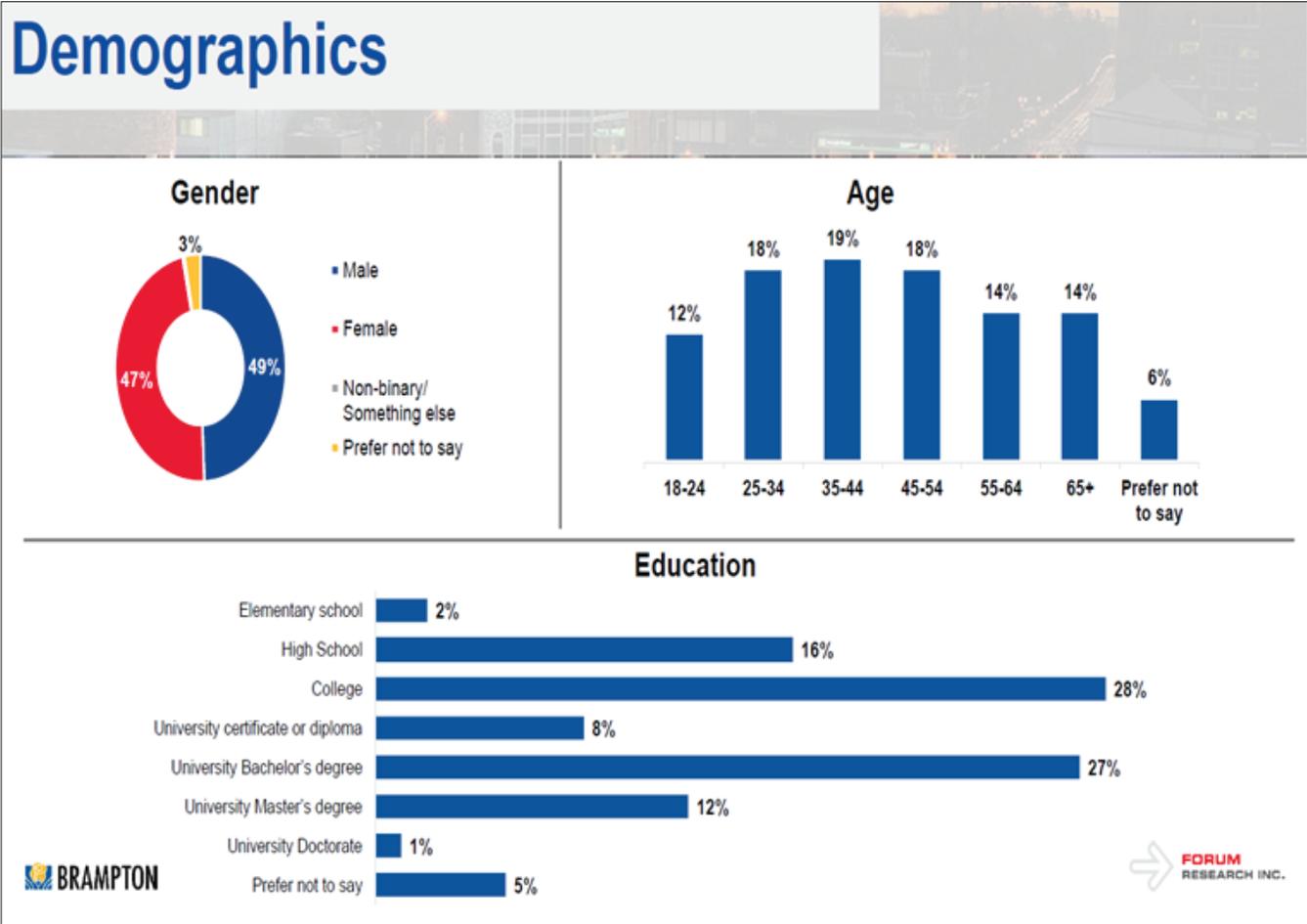
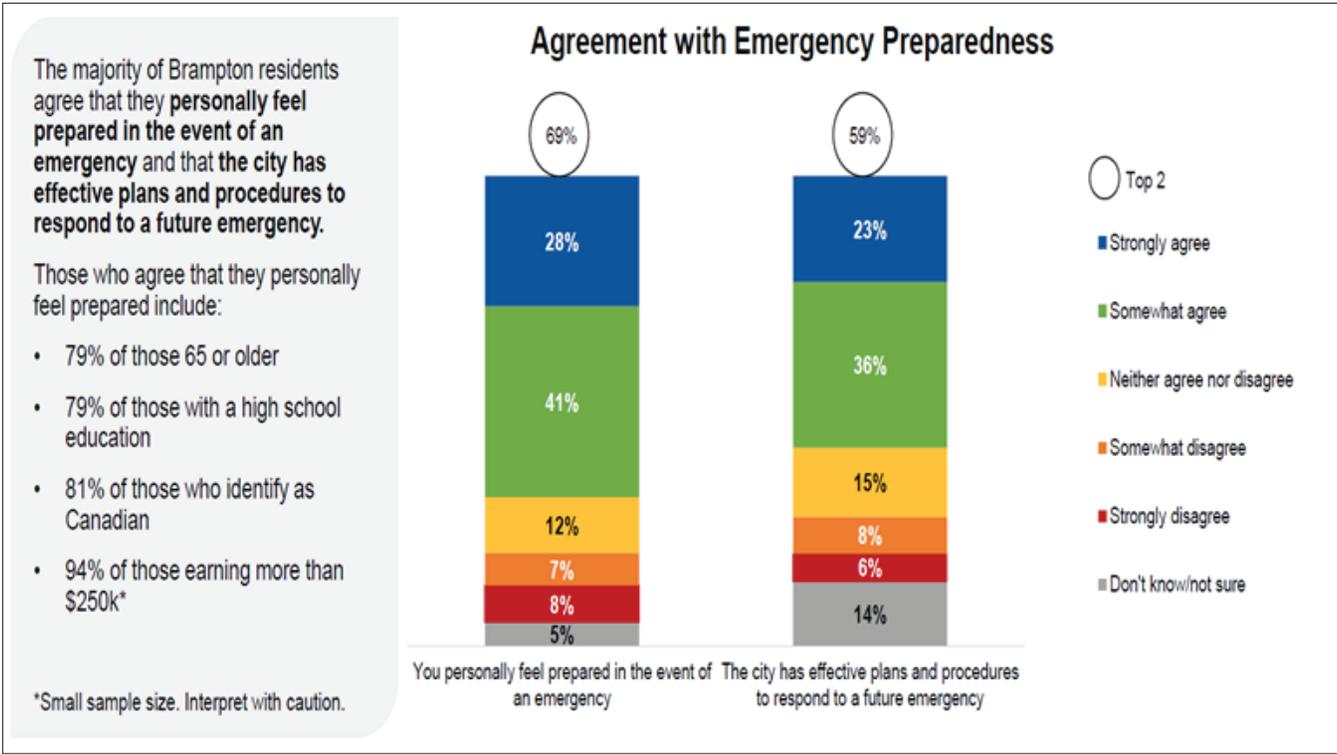
The survey conducted by Mainstreet did ask respondents for some additional personal information about themselves. Demographic factors such as age, gender, education level and employment were also recorded via the telephone survey. Further, in terms of participation criteria, all participants in the survey must have been a resident of Brampton and over the age of 18.

Although the Mainstreet survey included only two questions related to BFES services, it still provided valuable insights from respondents. The results from this survey largely correlated to the one performed by BFES in regard to the importance of prevention and public education activities. In both surveys, investments into public education and fire enforcement gained the majority of responses. For fire safety issues that were most important to respondents, a majority identified that basement apartments and smoke alarms that did not work were a concern. These results were almost identical to the ones observed in the internally conducted engagement survey. For this reason, a major focus of the Master Plan had an emphasis on both enforcement and awareness on two-unit dwellings and smoke alarm compliance.

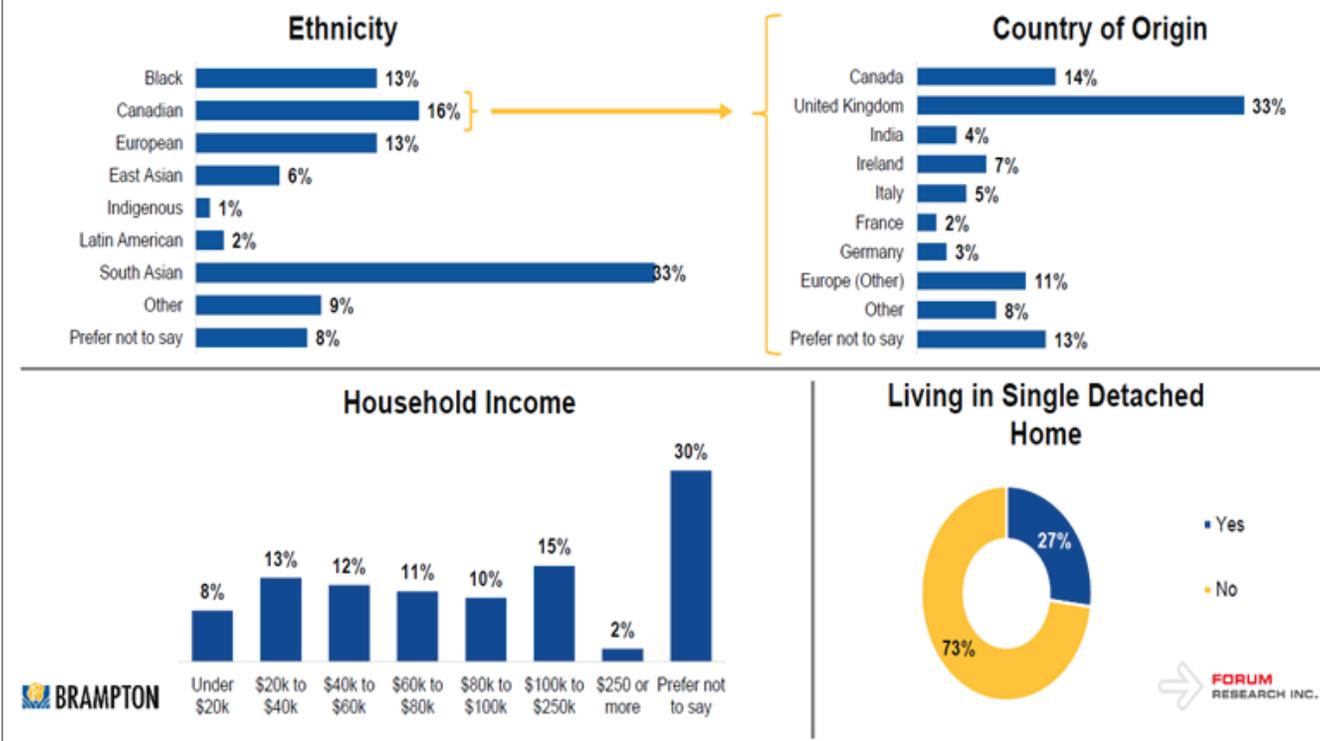
7.4 Survey 3 – Forum Research Inc.

The third survey used for this Master Plan was conducted by Forum Research Incorporated for the City. The total sample size was 1,101 respondents that participated via a computer-assisted telephone interview. The questionnaire was comprehensive on gauging satisfaction levels of residents for all City services, including emergency services and emergency preparedness. The following graphs detail the survey results and demographic profiles of its respondents.





Demographics



The results provided by the Forum Research survey offers resident feedback on their satisfaction of BFES services. In total, 76% of respondents (836) hold the notion that they are very to somewhat satisfied with the services BFES provides. In addition, the survey reports residents' sentiment on emergency preparedness. Of the survey responses, 59% (649 respondents) said they strongly to somewhat agree that the City is prepared if a large-scale emergency occurred.