



FIRE MASTER PLAN – Update 2016 - 2025



ACKNOWLEDGEMENTS

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Barrie Fire and Emergency Service would like to thank all its internal business partner departments that have contributed to this Fire Master Plan.

EXECUTIVE SUMMARY

Barrie Fire and Emergency Service is the City of Barrie’s “all hazards” emergency response organization and provides City of Barrie residents, visitors and businesses with protection against loss of life, property and the environment from the effects of fire, illness, accidents and all other hazards through preparedness, prevention, public education and emergency response with an emphasis on quality, efficiency, effectiveness and safety.

The City of Barrie’s population has and will continue to grow steadily, increasing the demand for emergency services. Combined with climate change, extreme weather events present an increasing need for BFES to continue to be proactive in terms of emergency planning and specialized training.

The Fire Master Plan is also designed to be a precursor as BFES embarks on its upcoming application for accreditation with the Commission on Fire Accreditation International (CFAI). The accreditation process and commitment to continuous improvement, based on local needs and circumstances, will support BFES in achieving its objectives.

Barrie Fire and Emergency Service have undertaken this review and provide recommendations to update the current Fire Master Plan for the years 2016-2025, with an outlook to 2031. This review is necessitated in part because of the anticipated development into the annexed lands within the next few years, and with any successful master plan there should be an ongoing review of the plan to keep it current and focused on the direction of the department, the city, and levels of service set by Council.

The previous Fire Master Plan was adopted in part (Short Term Goals) by Council in 2015 and directed the department to further consider the Medium and Long Term goals and report back to the Community Services Committee. As 2015 is nearing end and an annual review of the Fire Master Plan is scheduled, the department has adjusted the plan. This update was produced in partnership with multiple other City Business Partner Departments, external consultants and members of Barrie Fire and Emergency Service.

The following scope was utilized to update the Fire Master Plan:

- Conduct a current gap analysis on the risks identified;
- Determine the current effectiveness and efficiency of the department against the risks identified and present options to mitigate, respond and manage the risks;
- Evaluate the current and anticipated infrastructure and station locations by measuring the risk and anticipated growth identified matched with deployment standards to arrive at future facility, site, spatial and infrastructure requirements, and;

- Make recommendations to reflect short, intermediate and long term objectives with an outlook to 2031.

There are two basic risks that are considered in the fire service, operational risk and organizational risk. Operational risk is the responsibility of the department to determine the risk associated with the varying aspects and responsibilities within the department. Operational risk streams from the Fire Chief down, following the organizational chart. Organizational risk is the responsibility of the Council to determine the disciplines, level of service, staffing, number of stations and business planning request based on the risk assessment of the community as recommended by the Fire Chief.

There are many factors that are increasing the level of risk facing the community and the department, but several are especially important over the period of this Fire Master Plan period. They include:

- Increasing stock of residential infrastructure due to a rise in population
- Increasing stock of commercial, industrial and institutional facilities
- Increasing volumes of traffic on city streets and highways
- Increasing density requirements in growth node areas and vertical growth
- Climate change, emergency preparedness and business continuity planning

There are several aspects of the current resources available to the department that requires continued monitoring for effectiveness and efficiencies. They include:

- The need to ensure that the communications systems, a major component of enhancing the life safety of responders/citizens, and reducing property loss, continues to be staffed with highly qualified communications operators, and that the communications infrastructure remains current to rapid technological change.
- Monitor and adjust staffing levels in all branches consistent with the service delivery needs based on growth, intensification and balancing the needs with the business plan process yearly.
- Ensure training, policies, standard operating guidelines are kept to current legislated, mandated and best practice standards to enhance safety and increase efficiency and effectiveness in the department.
- Apparatus must meet the strenuous conditions required to respond and mitigate incidents in a safe and timely fashion. Apparatus should be reviewed for condition on an ongoing basis and replacement scheduling should be formalized to ensure it meets current standards and meets the needs of the department.

SUMMARY OF RECOMMENDATIONS

Short Term Objectives (1 – 3 years) 2016-2018

- A records and data management system should be integrated into the Fire Prevention Branch as soon as reasonably practicable using business intelligence software to better analyzes historical data. **Underway**
- Initiate accreditation with the Centre for Public Safety Excellence, a nonprofit organization that helps local public safety agencies around the world streamline and improve the services they provide their communities. **Underway**
- **Work with other City Departments to ensure an all hazards approach to business continuity planning that supports the City of Barrie Emergency Plan. Underway**
- Complete a communications service delivery standard between IT and BFES, and develop a communications service delivery standard between BFES and its communications customers. **Underway**
- Improve statistical data with improved reporting processes using business intelligence software to better analyze historical data. **Underway**
- **Conduct a comprehensive qualitative and quantitative risk assessment for the City of Barrie. Developing**
- Develop a plan to increase the number of pre-incident plans with a focus on high risk buildings by occupancy code. **Developing**
- Land acquisition and design for a station in the south-east quadrant consistent with the Genivar Station Location Study (2013).
- Renovations and alterations to Stations 3 and 4 to increase functionality of both stations. **Underway**
- **Develop an inspection schedule where the frequency of inspections is appropriately suited to the risk profile of each occupancy.**
- BFES, the Engineering Department, Corporate Asset Management, IT and Water Operations should develop a strategic plan to implement the recommendations contained in the Fire Underwriters Survey and report the improvements to FUS.
- Explore partnerships with other municipalities to provide technical rescue disciplines on a total cost recovery basis and possible source of revenue through response and/or training initiatives. **Underway**
- Implement a sustainable back-up communications location consistent with best practices and standards. **Developing**
- **Explore partnerships opportunities with academic institutions, organizations and government agencies where BFES can contribute to relevant and current research projects. Underway**

- Review the service levels provided to maintain and repair the growing fleet balanced against capital costs of replacement. **Underway**
- Begin implementation of a Computer Aided Dispatch, Automatic Vehicle Locator and GPS traffic pre-emption link project to enhance response times throughout the city.
- Review staffing levels in the branches consistent with an organizational review of service delivery needs of the department/public and anticipated growth aligned with the annual business planning process.
- Work with the Building Department to develop a bidirectional antenna strategy
- Annually review and revise as necessary the Fire Master Plan.

NEW OBJECTIVE

Intermediate Term Objectives (3 - 5 years) 2018-2020

- Construction of Station 6 in the south-east.
- Hire staff for Station 6 based on service delivery standards and legislative requirements.
- Acquisition of a Pumper for Station 6.
- Review staffing levels in the branches consistent with an organizational review of service delivery needs of the department/public and anticipated growth aligned with the annual business planning process.
- Upgrade communications equipment and associated systems consistent with current and advanced technology.
- Land acquisition and design for a Training Facility to meet fire department training requirements and support other city and regional requirements.
- BFES, the Engineering Department, Corporate Asset Management and Water Operations should continue to implement the recommendations contained in the Fire Underwriters Survey and report the improvements to FUS.
- Review and revise the Fire Master Plan.

Long Term Objectives (5 – 10 years) 2020-2025

- Phased construction (Phase 1) of the Fire Training Facility based on balancing demand and the Business Planning process.
- Construction of a permanent Station 5 in the south-west quadrant.
- Upgrade communications equipment and associated systems consistent with current and advanced technology.

- Review staffing levels in the branches consistent with an organizational review of service delivery needs of the department/public and anticipated growth aligned with the annual business planning process.
- Develop a deployment strategy based on service delivery standards and legislative requirements with a full review scheduled for 2018.
- BFES, the Engineering Department, Corporate Asset Management and Water Operations should develop a strategic plan to implement the recommendations contained in the Fire Underwriters Survey and report the improvements to FUS.
- Review and revise the Fire Master Plan.

Outlook to 2031

- Continue phased Fire Training Facility.
- Upgrade communications equipment and associated systems consistent with current and advanced technology.
- Replacement of Station 2.

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SECTION 1 - INTRODUCTION:

1.1 Background

In 2007, the City of Barrie Council passed a motion to create a Fire Master Plan to provide strategic directions for the fire service that would take them into 2013 with a vision for an additional five (5) years. In 2009, the City of Barrie Council passed and adopted the Fire Master Plan that contained short, intermediate and long term goals. The Fire Master Plan was developed prior to the annexation of the new lands in Innisfil. As part of the planning exercise of the new lands in 2012, a station location study was conducted by Genivar with the assistance of multiple City of Barrie Departments. As a result, in 2014, Barrie Fire and Emergency Service amended the existing Fire Master Plan with update information and outlooks for the period 2014 – 2023, with a vision out to 2031. This update was presented to the Community Services Committee in March of 2015. The Committee recommended to Council:

1. That the Short Term Goals (1-3 years) for the period of 2014 – 2016 identified in the Fire Master Plan Update 2014 – 2023, with the exception of the implementation of the marine response service levels and capabilities for open water rescue, be adopted in principle to provide strategic direction for the Barrie Fire and Emergency service Department.
2. That the marine response service levels and capabilities for open water rescue, as well as the Medium and Long term Goals identified in the fire Master Plan Update 2014 – 2023 be referred back to staff for further consideration and report back to Community Services Committee.

Council approved the recommendation.

Staff have reviewed and revised the Fire Master Plan, taking into consideration that as we are late in 2015, the entire plan should be updated, and as a result created an updated version covering the years 2016-2025.

1.2 Project Scope

The following scope was considered in the development of this Fire Master Plan update:

- Review the Fire Master Plan and update and revise the short, intermediate and long term objectives,
- Re-evaluate the current infrastructure and station locations to recommend future facility, site, spatial and infrastructure requirements based on projected growth.
- Weigh the effectiveness and efficiency of the department to manage and mitigate incidents.

- Make recommendations as to the implementation strategy for the short, intermediate, long term objectives with a vision extending to 2031.

1.3 Methodology

A systematic approach was used to develop this updated Fire Master Plan by using current legislative requirements, provincial guidelines, fire service standards and best practice benchmarking using the following:

- The Fire Master Plan – 2009 & 2014
- The Genivar Station Location Study – 2012
- The Fire Underwriters Survey - 2014
- The City of Barrie Draft Secondary Plan
- Annexed Lands Secondary Plan Fiscal Impact Assessment
- The Thomas Brown – Design Study for the New BFES Training Facility – 2009
- Barrie Fire and Emergency Service Establishing and Regulating By-law 2012-200
- Barrie Fire and Emergency Service Simplified Risk

The Fire Master Plan – 2009 & 2014 - Recommendations were reviewed for progress updates and categorized into completed, in-progress, pending and incomplete. A total re-examination of the document and background information was conducted to ensure that changes were identified and updated as required. The review concluded that there needs to be changes to the 2014 version to reflect current status and new data with respect changes in the City of Barrie.

The Genivar Station Location Study – Genivar completed a station location study based on data provided by the City of Barrie in combination with other related studies they were conducting in relation to the annexed lands. In order to have a robust station location study as current fire response zones intersect one another for multiple apparatus, it was necessary to review existing station locations and review previous modelling on response capabilities throughout the city.

The Fire Underwriters Survey – Fire Underwriters Survey is a national organization that represents more than 85% of the private sector property and casualty insurers in Canada. Fire Underwriters Survey provides data to program subscribers regarding public fire protection for fire insurance statistical and underwriting evaluation. It also advises municipalities if the desire to review the current levels of fire defense in the community and provide direction with recommendations where improvements will enable them to better deal with fire protection problems.

The City of Barrie Draft Secondary Plan – The draft secondary Plan was a major component of this review as it sets out projected growth phases relating to land uses, arterial networking and major components of the city until 2031. Development phasing will play a major role in the growth needs of BFES. Capital and operating business plan needs are established throughout this Master Plan based on current assumptions of development growth.

Annexed Lands Secondary Plan Fiscal Impact Assessment – This report produced with the cooperation of various city departments that deliver capital needs to BFES was reviewed with the Draft Secondary Plan to distinguish in which years capital projects are projected to occur.

The Thomas Brown – Design Study for the New BFES Training Facility – 2009 – This study was commissioned in 2009 as a feasibility study to review the current and future needs of maintaining legislated and industry best practice training requirements for BFES. It resulted in a phased approach from land acquisition through phased construction phases. This facility could be developed to suit the needs of other city departments including Barrie Police, and assumptions that the possibility of renting out this facility to other Simcoe County agencies will off-set operating cost.

Barrie Fire and Emergency Service Establishing and Regulating By-law – The Establishing and Regulating by-law is a legislated under the Fire Protection and Prevention Act and was updated and passed by Council in November of 2012. The by-law sets out the mandated services, classification and task objectives of the mandated services. This is the fundamental principle of providing service delivery needs to the community.

Barrie Fire and Emergency Service Simplified Risk Assessment – this report prepared by Fire Prevention Officer Dave Lalonde is a report legislated by the Fire Protection and Prevention Act. This report looks at a gap analysis and means to reduce or eliminate the gaps through the three lines of defense of the fire service – public education, code enforcement and response capabilities.

SECTION 2 – ACCOMPLISHMENTS

2.1 Background

The original Fire Master Plan was approved by Council in 2009, and set out short, intermediate and long term objectives. Since that original plan was adopted several goals have been achieved, while others are still underway in different phases of completion. The ability of BFES to accomplish these would not have been possible without the collaboration of several other city departments that BFES relies on for the service delivery needs of BFES. Another important aspect is the willingness of City Council to support the ongoing commitment to the department in its deliberations of the annual business plan. The following is an update on completed and underway goals that were targeted objectives.

2.2 Short Term Objectives (1 – 3 years)

- Construct new Station 1, Communications Centre and Emergency Operations Centre – **Completed**
- Complete a fire station location and current station feasibility study – **Completed**
- Upgrade communications equipment and associated systems consistent with current and advanced technology as part of Station 1 replacement – **Completed**
- Implement an internal process review of the Communications Branch effectiveness in providing service to municipal fire service clients, including possible increase in client base – **Completed**
- Training needs to reorganize delivery modules as soon as possible in order to ensure firefighter safety in enhanced through knowledge and practical training experience – **Completed**
- Review and have Council approve a Service Delivery Standard (Establishing and Regulating By-law) – **Completed**
- Review and revise of the Fire Master Plan on a continuous basis – **Completed**
- Review the service levels provided to maintain and repair the fire fleet balanced against capital cost of replacement - **Underway**

2.3 Intermediate Term Objectives (3 – 5 years)

- Construction of Station 5 to open in 2011 – **Completed**
- Hire staffing for Station 5 (20 fire fighters) – **Completed**
- Fully implement a succession plan for all positions in the department for sustainability – **Underway**

SECTION 3 – RISK ASSESMENT

3.1 What is Risk Assessment?

Risk assessment is the process utilized to identify the City of Barrie’s fire protection and other emergency service needs by measuring the probability and consequence of an adverse effect to health, property, organization, environment, or community as a result of an event, activity or operation.

There are two basic risks associated with the fire service, operational risk and organizational risk. Operational risk is the responsibility of the Barrie Fire and Emergency Service to determine risks in the community and plan strategic, tactical and task oriented plans to mitigate incidents. Organizational risk is a function and responsibility of Council to determine the disciplines, level of service, staffing, stations and approval of the department business plan based on the overall risk assessment of the community as recommended by the Fire Chief.

It is the process of examining and analyzing the relevant factors that characterize the City of Barrie and applying this information to identify potential risk scenarios using results based accountability and evidence based decision making. The assessment includes an analysis of the likelihood of these scenarios occurring and subsequent consequences. In essence, risk assessment attempts to answer the following questions:

- What could happen?
- When could it happen?
- Where could it happen?
- Who could it happen to?
- Why could it happen?
- How likely is it to happen?
- How bad would it be if it happened?
- What can be done to lessen or prevent any or all the above?

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

The City of Barrie has a legislated responsibility under the Fire Protection and Prevention Act (FPPA) to provide public education with respect to fire safety and certain components of fire prevention. Conducting a simplified risk assessment is the first step towards compliance with these requirements and is intended to identify information required by a municipality to make informed decisions about the programs and

activities necessary to effectively manage the community fire risk based upon local needs and circumstances.

The Office of the Fire Marshal and Emergency Management has two risk assessment tools; the Simplified Risk Assessment model as described above is an annual compliance document that is submitted to the Office of the Fire Marshal and Emergency Management. The second model is a more expansive Comprehensive Risk Assessment model that is one of seven components of the Comprehensive Fire Safety Effectiveness Model. The OFMEM has recently introduced an “Integrated Risk Management Web Tool”. The tool is intended for municipal and fire service decision-makers to determine building risks by taking into account building characteristics and assist municipalities in fulfilling the responsibilities prescribed in Section 2 of the Fire Protection and Prevention Act, 1997.

It is important to note that the legislative requirements for risk assessment required by the Office of the Fire Marshal and Emergency Management relate only to fire related public education, fire prevention and fire protection and Carbon Monoxide regulations. It does not address the multiple disciplines that the Barrie Fire and Emergency Service deliver to the citizens of the City of Barrie; therefore it would not be practical to base the Fire Master Plan solely on this requirement. A risk assessment must be conducted for all services and service levels that Barrie Fire and Emergency Service provide that besides those listed above include but are not limited to:

- Hazardous Materials Response & Protection of the Environment
- Extrication and Rescue
- Land and Vessel Based Ice/Water Rescue
- High/Low Angle Rescue
- Confined Space Rescue
- Tiered Medical Response
- Trench Rescue
- Elevator Rescue
- Public Assistance
- Fire Inspections
- Fire Code Enforcement
- Municipal Code and By-law Enforcement
- Public Education
- Fire Investigations into Origin and Cause
- Provisions of the Propane Handling Act
- Communications (dispatch services)

- Community Emergency Preparedness
- Corporation of the City of Barrie Business Continuity Planning

The Emergency Management and Civil Protection Act states: “in developing its emergency management program, every management program, every municipality shall identify and assess the various hazards and risks to public safety that could give rise to emergencies and identify the facilities and other elements of the infrastructure that are at risk of being affected by emergencies.”

3.2 Risk Analysis

A thorough review of the 2009 and 2014 Fire Master Plan information, present levels of service and assumptions on growth and service delivery in the foreseeable future has resulted in the following areas of risk that require a review to eliminate, control or manage the risk, based on the three principles of public education, inspection and enforcement and finally response.

3.3 Areas under Review

3.3.1 Infrastructure

- Current Fire Stations, lifecycle analysis and locations
- Future Station locations
- Training Facility
- Communications Centre back-up location

3.3.2 Apparatus/Equipment

- Aerials, pumpers, rescues, tankers and specialty apparatus
- Technical rescue equipment
- Legislated equipment replacement
- Minor capital equipment purchase and replacement

3.3.3 Communications

- Radio system components and infrastructure
- Computer Aided Dispatch system
- Software and information technology systems
- GIS,
- GPS, AVL and traffic pre-emption systems

3.3.4 Personnel

- Staffing in Administration, Operations, Fire Prevention, Public Education, Communications, Mechanical and Logistics
- Support Services

- Succession planning (leadership training and career development)
- Performance development plans (evaluations)

3.3.5 Administration

- Records Management
- Policy Manual
- Service Delivery Standards
- Medical Response Protocol
- Business Planning
- Position Descriptions
- Standard Operating Guidelines
- Occupation Health and Safety
- Legislative Requirements

Given the increasing growth the city will experience during the development of the annexed lands and anticipated vertical growth as a result of intensification, BFES will need to evaluate this growth to maintain current levels of service and address the gaps in the areas of identified risks.

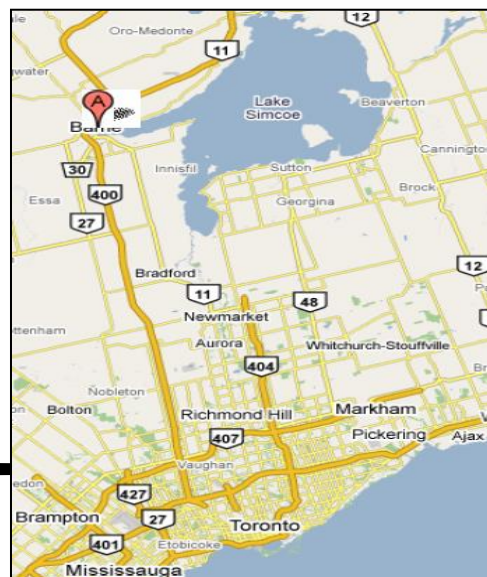
The following risks need to be considered by BFES and the City of Barrie for action to be planned and implemented in the future as outlined. Some will require attention in the short term while others seek longer term solutions and phased approaches to help control or spread costs over a period of time.

3.4 Area Characteristics

The characteristics of the City of Barrie are documented by collecting historical data, current data and growth forecasts by which risks are identified; defined and potential organizational and operational objectives and objectives are established. The City of Barrie is a city of 144,000 residents, is the 34th largest City in Canada and the 16th in Ontario according to the 2011 Stats-Canada Census. With the pending development of the annexed lands, the City will again be one of Canada’s fastest growing cities in the very near future.

3.4.1 Geography

Barrie is located on Kempenfelt Bay, an arm of Lake Simcoe in the central region of Southern Ontario. Although geographically lies inside the County of Simcoe, the City of Barrie is a



separated city from the County of Simcoe and is a single tier municipality.

The city is predominantly a bowl shape around Kempenfelt Bay and elevation rises from the shores of Kempenfelt Lake outward. Highway 400 running north and south intersects the city. The total land mass with the inclusion of the annexed lands is $100km^2$

3.4.2 Economy

There are multiple manufacturers located in and around Barrie and Canadian Forces Base Borden is nearby. Barrie has established itself as a commercial hub for the area north of the GTA.

The Royal Victoria Regional Health Centre has just completed a major expansion and also becomes the regions Cancer Care Centre. The hospital total workforce is 3200 people. Georgian College has its main campus in Barrie and has recently undergone an expansion and is another major employer in Barrie current enrolment is 10,000 full-time and 30,000 part-time students.

In recent years Barrie has attracted some major financial institutions to Barrie including four data centres, establishing itself as an economic sector centre.

Several large developments are underway or proposed to begin in the next couple of years, including plans for intensification in the downtown core and approved growth corridors.

3.4.3 Demographic and Geographic Risks

Population

- The City of Barrie has experienced tremendous growth in the past and is posed to experience this growth again with the development of the annexed lands in the next few years. Barrie has a typical mix of residential occupancies ranging from low density single family residential through to high density high rise complexes. Future plans for population intensification in the growth nodes will result in higher density development in these areas and in particular the downtown core. The staffing required to evacuate, contain and extinguish a fire in a multi-residential complex far exceeds the required staffing level for a single family residential structure. A fire in a high rise structure demands a response of significant staffing that would tax the current on-duty minimum staffing of the fire service. The National Fire Protection Association defines a Low Hazard Occupancy as a one, two or three family dwelling and some small businesses, Medium Hazard Occupancies include apartments, offices, mercantile and

industrial occupancies not normally requiring extensive rescue or firefighting forces and High Hazard Occupancies include schools, hospitals, nursing and care facilities, high-rise buildings and other high life hazard or large fire potential occupancies.

- In May, 2014, the Ontario Office of the Fire Marshal and Emergency Management issued a Public Fire Safety Guideline, “Integrated Risk Management Web Tool”. The purpose of the guideline is to assist municipalities in meeting their obligations as set out in Section 2 of the Fire Protection and Prevention Act, 1997 (FPPA). This evaluation system is part of an overall package of risk management tools designed to provide a systematic process for determining community risks, evaluating current fire service resource capabilities, identifying gaps, and developing options and recommendations for council consideration. The principles of this evaluation system build upon and enhance the Office of the Fire Marshal and Emergency Management’s risk management tools and other tools of recognized leaders in the North American fire service.
- The increase in the volume of housing is directly relative to the overall risk. The projected population growth for the city is
 - 2016 146,700
 - 2021 170,000
 - 2026 191,000
 - 2031 210,000

Residential

- Increasing size of an average single family dwelling, and decreasing property separations continue while the common construction methods have lowered tenability in terms of rescue and greater risk to fire fighting operations. Lightweight engineered wood construction products and other code compliant but potentially hazardous materials have also affected levels of risk. Incident Commanders must accurately assess building construction; develop attack strategies for the type of residential building which depending on construction, and pose a threat to firefighters in terms of early floor separation and collapse.
- The Ontario Government through its legislated “Places to Grow” program has established Barrie as an urban growth centre which will require intensification within the original boundaries adding stressors to the current transportation infrastructure and the ability of the fire department to respond to all types of incidents within Council approved timelines.

- The increasing number of multi-residential, apartment and condo units (vertical growth) impose a firefighting, rescue and recovery risk on the community for a number of reasons
- Vertical growth: the proliferation of high-rise developments increases the need for re-assessing overall placement of stations and firefighting apparatus due to the impact of vertical response times. Vertical growth can result in extended response times as firefighters require extra travel time to get to the location of the emergency incident. Vertical response issues can be tempered somewhat through recent changes to the Building code requiring sprinklers in new multiple unit residential buildings over three storeys (since 2010), although a significant stock of older buildings exist in the city with no retrofit requirements
- Fires in these occupancies are very labour intensive and require significant resources to control
- Even if confined to a unit of origin, these incidents can displace a large number of people during the incident and at times until the building is declared safe after repairs are completed.

Industrial

Barrie has a vibrant and diverse economy with major exports from industry that includes: automotive parts, medical instruments, communications software and household products just to name a few.

- The city has a mix of light and medium industrial occupancies serving a number of industries including heavy equipment parts, corrugated packaging and automotive parts, along with continuous support to the local college, hospital and the military.
- The importance of Barrie as a hub cannot be underestimated with its ideal location for product assembly, upgrading and redistribution to 6.2 million consumers living within a 100 mile radius of Barrie. Planning and responding to this specialized growth will be a challenge for emergency responders. With the advanced technology in the industrial sector, a fire in any of these occupancies can create economic loss to the business, the employees and the city for extended periods.
- There is need for collaboration in terms of land use planning for future development in the city to maintain safe distances between residential and industry, so firefighters can focus on controlling the incident and not be overwhelmed by evacuations or health issues because of close proximity of the two occupancy types.

Technological

The City of Barrie has been successful in attracting a new emerging sector into Barrie. Currently four data centres have established large complex data centres in the city. This industry requires distinct attention from the fire service.

- Typically large buildings with construction methods to ensure security and the ability to withstand the forces of nature or humans. This creates communication issues with crews entering the complex and their ability to communicate outside to the incident commander or others.
- These buildings are also constructed to ensure their ability to continue to function during any power outage and require massive battery and fuel backup systems.
- The technology contained in these buildings is the most sophisticated systems and an incident in one of these could have a devastating effect on the company, the employees and the City of Barrie and result in many millions of dollars in damage.
- These buildings normally have very special fire detection and extinguishment system that require special training for the firefighters who may be required to enter these locations.

Commercial

The growth of the commercial sector in the City of Barrie has been phenomenal, and has made Barrie the commercial hub north of the GTA. The number and variety of commercial occupancies has expanded Barrie's catchment area to vast areas well beyond the Barrie area. There are currently draft plans that will continue to see the amazing growth of this sector in Barrie

- The majority of new commercial occupancies appear to be in three broad categories, big box mercantile, service occupancies and a boom in the restaurant business.
- The big box stores represent potential large loss fires due to the design of large open areas combined with significant combustible fire loads, but are usually single occupancy and meet code requirements for rated fire separations, smoke detection and fire containment (sprinklers). A fire in one of these occupancies would tax the current ability of the department to contain, control and extinguish a fire without recalling firefighters to assist or provide coverage for the rest of the city. A large percentage of multiple firefighter fatality fires are in these types of occupancies.
- The City of Barrie being a commercial hub attracts people from a large surrounding area that not only contributes to the economy, but also adds

pressure to the traffic patterns in the commercial sections of the city, increasing the congestion and ultimately affecting the response times of the department in these areas.

- The heart of Barrie is its downtown core, generally made up of historic interconnected buildings that share stairwells and are interconnected internally with open halls. Most contain retail and businesses on the street level and various residential occupancies on the floors above. Barrie has a historic experience with downtown fires, with three occurring in the last few years. Total damage in these three fires exceeds \$9 million. Required in excess of 100 firefighters, 7 apparatus from Barrie, 5 Mutual Aid departments and left the rest of Barrie protected by outside departments that are rural in nature and not trained to the distinct requirements of the City of Barrie. Much of the construction now is new and low maintenance, but has a relatively short life cycle and should be monitored to ensure the fire and life safety risks are not exceeding the original design criteria. However, there is still considerable aging infrastructure in the older sections of the city such as water mains, undersized mains, hydrants and transportation patterns.

Institutional

The growth in the institutional sector in Barrie has also seen tremendous growth over the years and will continue as the percentage population age median increases. This varies from smaller seniors residences to larger nursing homes and complexes. This type of occupancy, with its high density of seniors and their ability to self-evacuate or react in a timely fashion adds to the task of evacuation and rescue required for the generally slower or handicapped population. Responses to these types of occupancies are basically two simultaneous incidents at the same time, one for evacuation and the other for containment and control of the incident, obviously requiring a substantial response of personnel to mitigate the incident. Several Ontario fires in these vulnerable people care facilities in the past decade have contributed to multiple fire deaths of the residents and resulted in numerous Coroner's Inquests. Some of the larger institutional facilities in Barrie are:

- Royal Victoria Regional Health Centre
- Georgian College
- 75 Public, Separate and Private Schools
- IOOF
- Roberta Place
- Woods Park

- Victoria Village
- Tollendale Village
- Grove Park Home
- Coleman Health Care
- Leisureworld
- Little Lake Seniors Community

Road/Rail

- Highway 400 provides access to both Canadian and US markets to over 125 million consumers within one day's travel for the trucking industry. Highway 400 is the major route for road transportation to western Canada.
- The road network through Barrie has not developed in unison with the growth of Barrie. Highway 400 intersects the city and is constructed with several bridges and interchanges built in the 1960's and 70's that were not designed to carry current traffic volumes being experienced. With anticipated growth of Barrie and the surrounding municipalities this will increase dramatically in the near future if not addressed. Closure of the Highway 400 due to weather or incidents on the highway force traffic through the city and cause major transportation interruptions throughout the city and greatly impact response times. Highway 400 is the major north/south transportation route to Central/Northern Ontario and Western Canada. Increased growth in the Barrie area and reliance on more road transportation since the highway was constructed has exceeded design volumes, increasing the risk of incidents on the highway.
- The rail line separates Barrie into north and south sections. The rail line is used for both passenger and freight trains. Currently there are two GO stations in Barrie with daily train service into Toronto. The freight trains carry a variety of materials, including hazardous materials, through the city. A hazardous materials incident on the rails in Barrie could require evacuations of business and/or residents and have an effect on the environment through gaseous release or ground penetration. Derailments that result in a hazardous material release are usually long term events that require tremendous staffing and resources to evacuate, control and mitigate the event. A train derailment in Medonte Township in 1982 lasted 11 days before the threat was totally mitigated.
- The arrival of the GO train service to Barrie in 2007 has had a positive influence in Barrie and the second station opened in 2011. With increased rail traffic, the

risk of an incident increases. To date, only one incident involving the GO service has been reported and that was a suicide.

- Rail is an important factor in the city's development and the railway users need to partner in controlling incidents and improving access for responders.

Water

Kempenfelt Bay is the crown jewel of the City of Barrie. The waterfront is at the heart of major tourism attractions with events throughout the year including Kempenfest, the arts and crafts festival that attracts more than 300,000 people. Every year the events along the waterfront increase in numbers and size. The number of boats and on-water recreational events has a direct impact for Barrie Fire and Emergency service in response, rescue and recovery during incidents that occur both in the summer and winter.

As the city boosts the waterfront as the crown jewel, it would be expected that with this would be the due diligence to enhance the safety of the citizens and visitors in providing timely response capabilities in the event of an incident on the bay.

The current ability of the department to respond, evacuate and mitigate an incident on the bay is limited in the summer by its dependency on the Barrie Police Marine Unit.

Currently, the ice rescue capabilities of the department are adequate with the use of an air boat that is basically designed for winter operations. This vessel has been responsible for multiple lifesaving missions to date, multiple assistance and fire calls since put into service both inside the city and at other events on Lake Simcoe in other jurisdictions.

The Office of the Fire Marshal and Emergency Management's Public Safety Guideline 04-83-01 deals with selecting a water/ice rescue capability. The City of Barrie is the authority having jurisdiction, and is responsible for setting the level of service for water/ice rescue in the city.

There are currently 3 marinas in Barrie with a total of 569 boat slips, which will more than likely increase as Barrie builds out further.

Air

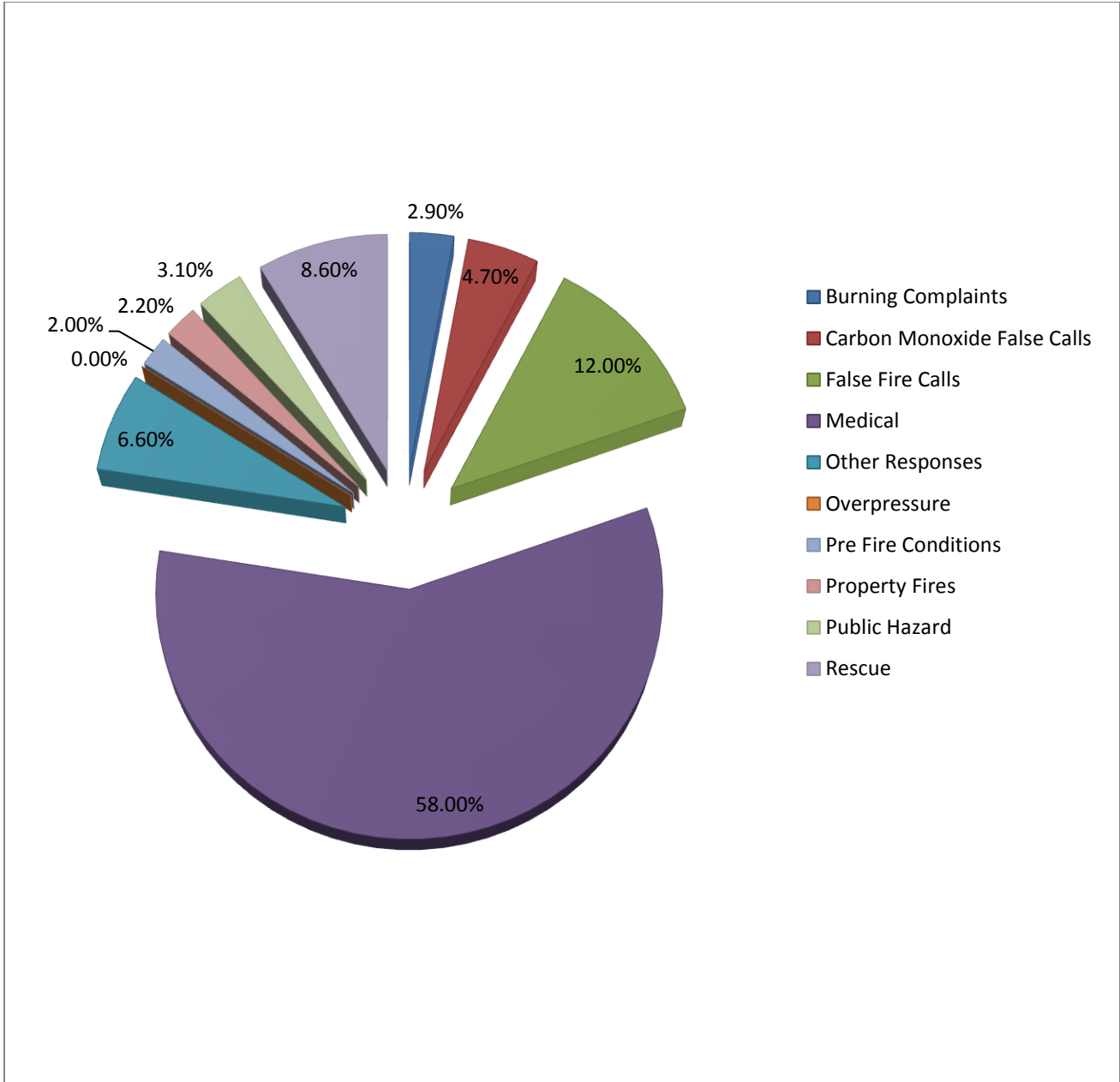
The Lake Simcoe Regional Airport is one of the newest and most sophisticated regional airports in Canada. Located less than 20 minutes from Barrie, it boasts a 6000 ft. lighted runway capable of handling a broad range of aircraft including

helicopters and commercial jet aircraft. Services include; terminal building, car park, restaurant, aviation fuel, aircraft parking, lease areas for hangers and instrument access. Lake Simcoe regional Airport offers Port of Entry status, full Canada Customs facilities for all in-bound international flights. Although the airport is not located in the city of Barrie, flight paths of departing and landing aircraft cross the city. Barrie Fire and Emergency Service with its advanced technical rescue training and capabilities in extrication, hazardous materials response and foam capabilities could be requested to respond to the airport in the event of an incident beyond the capabilities of the local fire department. The City of Barrie also co-owns the airport. The Barrie Executive Airport lies on the north-west boundary of Barrie, with flight paths over the large Bayfield Street commercial/residential sector. Although generally smaller size planes utilize this airport, a crash short of the runway within the city's higher populated areas could exceed normal response and rescue capabilities of the department.

3.5 Statistics

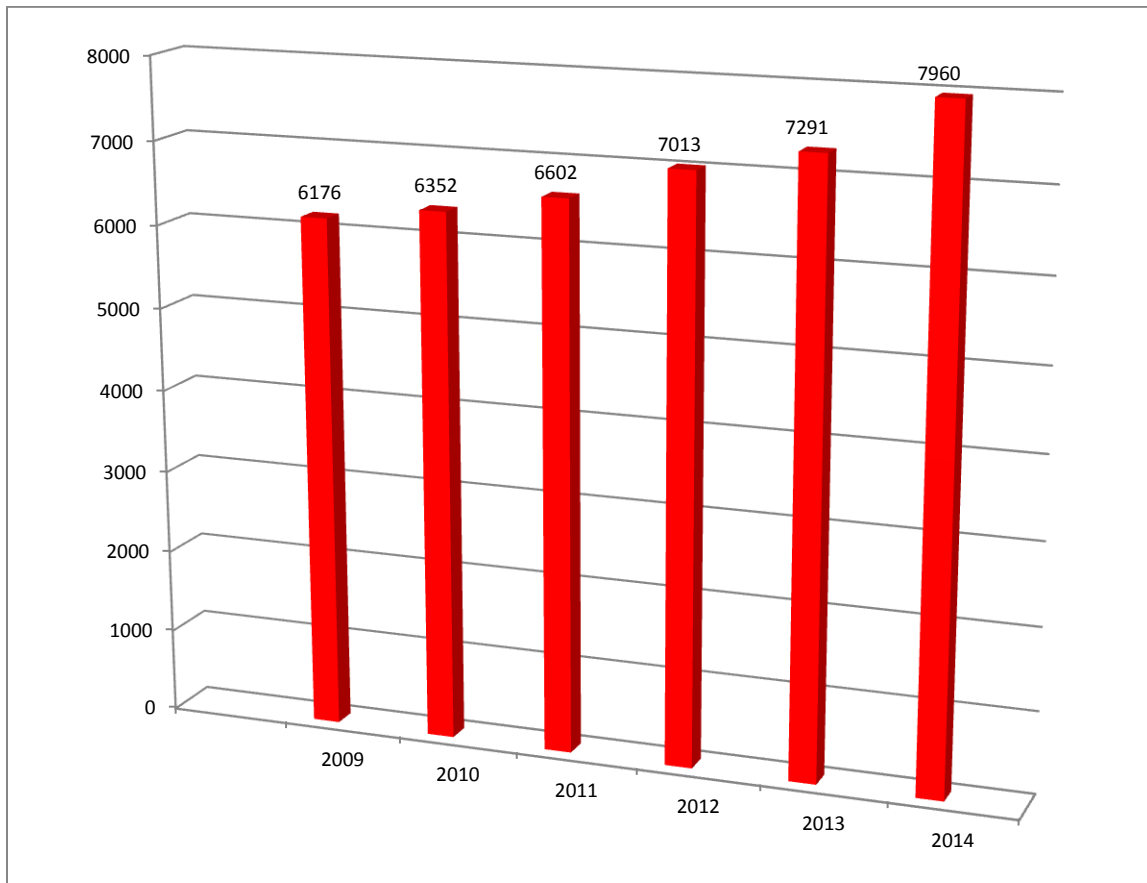
Statistics are a valuable measure of current and past risks and trends for the department and can be used to predict future trends, risks and conduct gap analysis to better determine methods to reduce the gaps and risks through evidence based decision making. The types of calls and resources needed to deal with those emergency responses provide the starting point. The following graph shows incident calls by response type class and covers the years 2008 – 2012. The data is classified in accordance with the reporting criteria to the Office of the Fire Marshal and Emergency Management in the following categories:

- Burning Complaints
- Carbon Monoxide False Calls
- False Fire Calls
- Medical/Resuscitator Calls
- Other Responses
- Overpressure Rupture/explosion (no fire)
- Pre Fire Conditions/no fire
- Property Fires/explosions
- Public Hazard
- Rescue



5 Year Average Calls by Response Type Class 2009-2013

The following graph shows the total number of responses for the period 2009 – 2014



Annual Responses by Year

30% increase in incident responses

SECTION 4 – PROGRAMS & SERVICES

4.1 Introduction

The level of service, activities and responses provided by Barrie Fire and Emergency Service for the community are designed, organized and operated in compliance with the Establishing and Regulating By-law, the Fire Protection and Prevention Act, 1997, the Emergency Management and Civil Protection Act, 1990, other legislation relative to the operation of a fire service, Council motions and the departments mission, goals and objectives. The key elements of evaluating the effectiveness and efficiencies of the department determine the ability to identify gaps and methods to eliminate or reduce risks.

The current Establishing and Regulating By-law was passed by Council in 2012 and was amended to update the previous 2002 By-law and several Council motions into a more comprehensive document that reflects the current level of service and Council endorsed time response criteria for emergency responses. This By-law establishes the basic mandates of the department (the organizational mandated is updated yearly with Council approval of the business plan) which includes:

- Public Education
- Fire Prevention and Fire Code Enforcement
- Fire Suppression
- Technical Rescue
 - Control of Hazardous Materials Incidents
 - Extrication and Rescue
 - Vessel Based Ice/Water Rescue
 - Rope/Confined Space Rescue
 - Trench Rescue
 - Medical Tiered Response
- Public Assistance
- Fire Cause and Determination
- Training
- Communications

Details of the Establishing and Regulating By-law are contained in Appendix “C” and was amended and passed by Council in 2012, combining several Council motions into one document.

4.1.1 Vision

The **Vision** of Barrie Fire and Emergency Service is to be a dynamic organization recognized and respected by the community as being on the leading edge of service provision.

4.1.2 Mission

The **Mission** of Barrie Fire and Emergency Service is to protect the lives, well-being and property of the people of Barrie through dedication to life safety, commitment to community service and preservation of the environment.

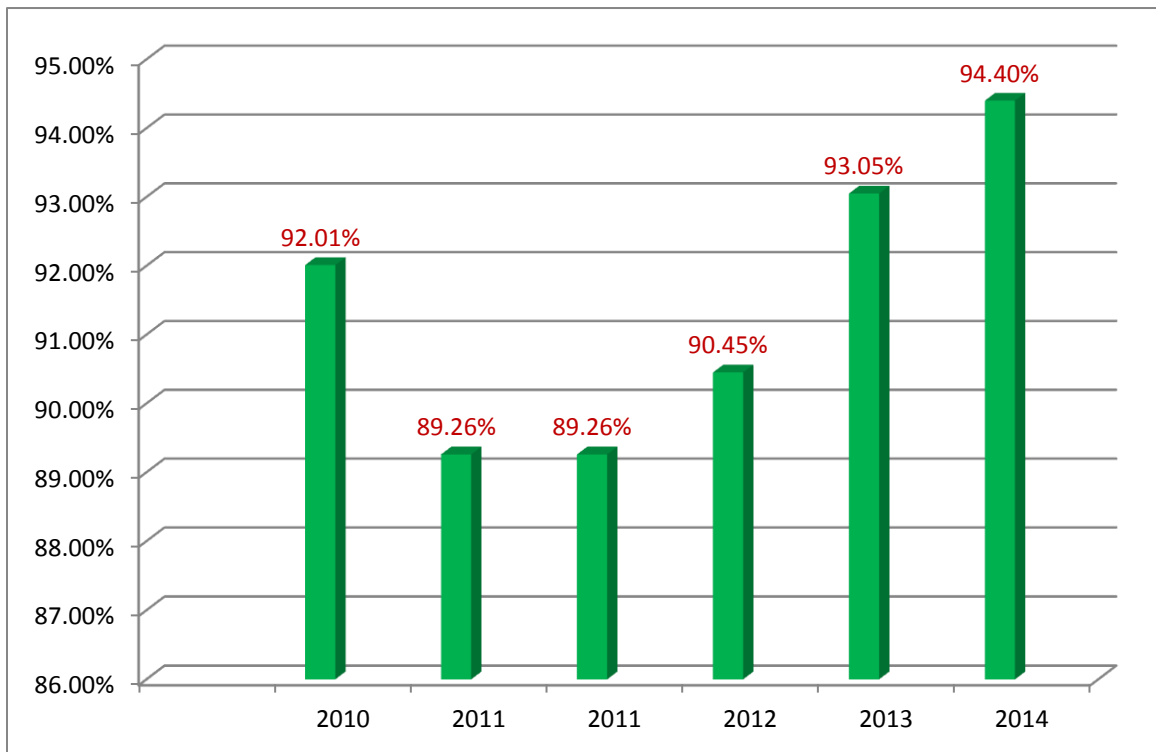
4.1.3 Values

The **Values** of Barrie Fire and Emergency Service reflect leadership through team involvement encompassing:

- Safety
- Professionalism
- Commitment
- Accountability
- Efficiency
- Integrity
- Innovation

4.2 Fire Operations Branch

The 2004 Council motion directed the department to have a less than 6 minute road response to structure fires and alarms sounding, 90% of the time. The 2012 Establishing and Regulating by-law was amended to a desired road response time of less than 6 minutes to all emergency responses, 90% of the time. The following chart shows the historical data to achieve the less than 6 minute road response.



Less than 6 minute road response

The Office of the Fire Marshal and Emergency Management (OFMEM) has developed an evaluation tool entitled, “Integrated Risk Management Tool” to assist municipalities in meeting their obligations as set out in Section 2 of the Fire Protection and Prevention Act, 1997 (FPPA). This evaluation system is part of an overall package of risk management tools designed to provide a systematic process for determining community risks, evaluating current fire service resource capabilities, identifying gaps, and developing options and recommendations designed for fire incidents for council consideration. The principles of this evaluation system build upon and enhance OFMEM risk management tools and other tools of recognized leaders in the North American fire service.

Municipalities are responsible for the establishment, funding and delivery of fire protection services in accordance with the obligations set out in Section 2 of the FPPA. It

is the expectation of the OFMEM that all municipalities have conducted a risk assessment to determine their own level of service. Historically, guidelines for resource deployment have been based solely on the single-family dwelling. This guide, which includes a Critical Task Matrix, addresses the overall structural fire risk in a community and the need to plan for it, and takes a more comprehensive approach than previous OFMEM guidelines.

The FPPA and the requirements it created for municipalities have been in place since 1997. But the concepts and the value of matching level of service to risks in the community pre-date the FPPA. In 1983, when Justice Webber prepared the “Report of the Public Inquiry into Fire Safety in High-rise Buildings,” he recognized that “to determine the level of fire department staffing, one must consider the history of fire in the community and the size of the responses which have been necessary, and the anticipated need to protect adjacent properties and rescue endangered persons. Consideration of the type of buildings and fire hazards which exist in the municipality is also necessary.” The following recommendation of Justice Webber is as relevant today as they were in 1983:

- There should be adequate fire protection for the citizens of Ontario commensurate with the needs of each municipality

Recent studies and articles from organizations such as the National Institute of Standards and Technology (NIST) and the National Fire Protection Association (NFPA) have identified the need to provide additional guidance to determine an effective fire ground response for buildings that are more complex and of a higher risk. This guide, in conjunction with an overall risk management program, will provide information for councils to make informed decisions in meeting their legislative responsibilities regarding the delivery of fire protection services.

The National Fire Protection Association standard 1710 indicates that a fire department requires 14 to 17 firefighters to fight a residential structure fire. Currently BFES has a minimum on-duty staffing level of 27, consisting of a minimum of 4 on 5 pumpers and 3 on the current 2 staffed aerials and a Platoon Chief.

Incidents involving occupancies larger than a single family residential structure such as a high-rise, commercial, industrial or institutional require a larger proportionate number of firefighters to mitigate the situation. This requires more firefighters and equipment which must travel further distances and increase response times to complete; evacuation, rescue, fire suppression and ventilation of a large structure. Historic events have required the commitment of all or most on-duty staffing and the requirement to

recall off-duty staff on overtime and/or mutual aid to assist with the emergency or provide coverage to the other areas of the city to provide coverage. With the current provincial mandate for intensification within growth nodes in Barrie, there has been and will continue to be an increase in the construction of high-rises, along with large commercial complexes as Barrie continues to be a commercial hub and Barrie's current attraction to large expensive data centres. This will require further strategic planning as the city develops further, intensification increases and the new lands are developed.

It should be recognized that incidents that involve rescue and suppression or mitigation tasks should be considered as two simultaneous incidents requiring adequate and additional staff for both incidents.

4.3 Fire Prevention Branch

The Fire Prevention Branch is divided into three intertwined disciplines; code enforcement/inspections, origin and cause investigation, and public education. All of these are legislated by the Fire Protection and Prevention Act. The Ontario Fire Marshal and Emergency Management has established the three lines of defense, a fundamental model to try and reduce loss of life and reduced property loss in Ontario; public education and fire prevention, fire safety standards and enforcement, emergency response.

4.3.1 Public Education

As stated, public education is the first line of defense and one which continues to grow in importance within BFES and the community. In 2011, BFES hired a Public Fire and Life Safety Officer. There are several aspects to this important portfolio including marketing of important safety information, developing school programs, media messaging for specific educational messaging, targeting specific areas or groups in the community on specific safety concepts and community awareness of important developments that have/or are occurring in the province or community. This position also has involvement as a public information officer during and post incidents of significant interest to the public. As the city continues increase in population and ethnic diversity there will be an increased demand and requirement for public education.

4.3.2 Inspections and Code Enforcement

The Fire Prevention Branch is responsible for community life safety issues concerning fire code inspections and enforcement of the Fire Code. Fire inspections of all types of occupancies in the municipality, with the intent of compliance with the Fire code, is crucial to the protection of persons and property from the hazards of fire. The reduction of risks from fire and other life safety hazards with detection

and reporting through the inspection process is necessary for the creation of a fire safe community, occupant safety and building preservation. Inspections also provide assurances that fire detection equipment in buildings meet code standards, is present and operational and that firefighting equipment in buildings have been tested to the standards.

Currently the Fire Prevention Branch is capable of carrying out the legislated requirements of the Fire Protection and Prevention Act, for “complaint and request inspections”; there continues to be limited capability to conduct high-risk occupancies on a regular basis based on the current work load of the branch. Development of an inspection schedule that set the frequency of inspections which is appropriately suited to the risk profile of each occupancy should be an objective of the Branch. Annually, the number of required inspections has increased. It is anticipated that several recent legislated changes by the provincial government will further increase the work load on the department. New provincial legislation now require carbon monoxide detectors in all residences is the responsibility under the Fire Code for inspection and code enforcement through the municipal fire services. Also, changes to care facilities and the requirements for inspections and reviews every year have further taxed the branch.

Consideration must be given to developing a new building stock data management program with auditing capabilities to communicate and connect with other city departments. It is suggested that the fire department utilize a records/data management system compatible with the Building Department. The system must be user friendly, mobile and able to record notes, print records and manage timelines of the Fire Prevention Officers. There is a legislative requirement to conduct a Hazard Identification Risk Analysis under the “Emergency Management and Civil Protection Act” and here is currently no obvious comprehensive building stock in the City of Barrie. The implementation of such a program would definitely lead to effectiveness and efficiencies in the branch and greatly assist in the ability to reduce the gap identified above with regard to increased workloads. This will also enhance the requirements under Emergency Management and Civil Protection Act to meet preparedness obligations under the act.

4.3.3 Origin and Cause

The Fire Protection and Prevention Act require the Barrie Fire and Emergency Service to investigate and determine the origin and cause of all fires. Currently five Fire Prevention Officers are certified Fire Investigators. Knowledge from determining origin and cause assist in targeting groups or causes to better educate

the public on fire safety. Another purpose is to ensure fire code compliance, such as were working smoke alarms present and working. The Fire Investigators respond when the Officer on scene at a fire cannot determine origin and cause, damage exceeds \$50,000, there is serious injury or a fatality, there is an explosion, the Fire Marshal's Office is called in, or if arson is suspected.

4.4 Technical Rescue

As directed in the Establishing and Regulating By-law, BFES is responsible for many forms of technical rescue. These include land and vessel based and ice/water, extrication and rescue, control of hazardous materials incidents, high/low angle and confined space rescue, tiered medical response, trench rescue and elevator rescue. Each of these disciplines requires a commitment of on-going training, recertification and providing the equipment necessary to conduct the rescue in a proficient manner and enhance the safety of the firefighters performing the rescue. BFES is always in the process of enhancing their ability to respond to these technical rescues.

The level of service provided for technical rescues are defined by the National Fire Protection Association (NFPA), these are; awareness, operations and technician. The skills required increase with each level. Barrie Fire and Emergency Service operate at various levels depending on the technical rescue. Barrie Fire and Emergency Service operates at the technician level for Extrication and Rescue, hazardous materials incidents and operations level for land/vessel based ice/water rescue, high/low and confined space rescue, tiered medical response, trench rescue and elevator rescue. BFES is at the awareness level for structural collapse at this time due to the training commitment and cost associated with the training and equipment that would be required.

4.5 Hazardous Materials Response

Hazardous Materials responsibilities encompass emergency response to spills and air borne releases or accidents. Being able to respond to such events requires strategic planning, very in-depth training, recertification and an array of expensive specialized equipment. BFES is now qualified to NFPA 472 Technician level, in 2009 BFES was at awareness level, this is a major milestone for the department in a short period of time. Currently over 100 staff are trained to the operations level and more than 25 are trained to the technician level, which allows the department to operate at the technician level. There is an ever increasing volume of types of chemicals that are used by various manufacturing industries in Barrie and transported into and through the city daily. The number of responses to hazardous materials incident is growing annually for the department. With growth, both within the boundaries of the city and our neighbour

municipalities, higher traffic flow on the major transportation route to western Canada, the number of responses is expected to continue to grow. The role of BFES in hazardous materials response is not only rescue but also protection of the environment including land, air and waterways.

As Barrie Fire and Emergency Service is the largest fire service provider in the geographical Simcoe County and has the ability to respond to hazardous materials incidents, they have entered into an agreement to provide this service throughout the county on a cost recovery basis for life threatening situations. It should be noted that BFES does not clean-up hazardous materials, they respond to rescue, protect the environment and where possible control the spill or leak. Clean-up is the responsibility of the spiller and there are specially trained private contractors that do the clean-up.

4.6 Community Emergency Management

Pursuant to the Emergency Management and Civil Protection Act, the City of Barrie's Community Emergency Management Program uses the principles of risk management to save lives and money, to protect property and the environment, to maintain economic stability and to assure the continuance of critical infrastructure during emergencies and disasters. The City of Barrie takes an "all hazards" approach to emergency management and develops plans to prioritize risk through probability and consequence, whether manmade or natural.

Community Emergency Management Program activities include: identifying the hazards and assessing the associated risk to public safety and security, having emergency plans governing the provision of necessary services during an emergency and the procedures by which employees of the municipality and others respond to the emergency, conducting training and exercises to ensure the readiness of municipal employees and other persons to act under the plan, and carrying out public awareness and education programs on the risks to public safety and on public preparedness for emergencies. The program also includes an emergency operations centre from which to control and coordinate the City's response to an emergency where it can be efficiently exercised.

The current gap in regards to Community Emergency Management is a lack of a sustainable building stock inventory in the City of Barrie. It is essential, that if a community is to be prepared for disaster management that they are aware of the hazards that are present in the community. There is currently a gap in identifying buildings that would be expected to survive a given risk and provide the basis for mitigating an incident.

In May, 2013, responsibility for Community Emergency Management was transferred to the fire service. This adds increased workload on the service.

4.7 Training Programs

The Training Branch of BFES holds the responsibility for the education, skills development, practical preparation, record keeping and maintaining legislative requirements for the entire department of 179 personnel whose responsibility is for the mitigation of any emergency the community may experience. BFES requires numerous types of training to provide the community with a successful, safe response. A successful training program requires a commitment to ensure adequate resources are provided for skills development and the corresponding maintenance training required remaining satisfactorily qualified to meet Occupational Health and Safety. The delivery of most of the specialized training is possible with the use of Shift Training Instructors (STIs). The STIs provide the knowledge, commitment and time required to deliver the specialized training on-shift thus reducing the dependency on overtime. Further, the future of training is to an e-learning model and BFES is in the process, with the assistance of the IT Department, of developing this model and should be implemented in the near future. Skills development, education, e-learning, records management and career path development are some of the areas the Training Branch is involved with at this point in time.

Barrie Fire and Emergency Service have undertaken to contribute to the health and well-being of the citizens of the City of Barrie during medical emergencies. BFES has partnered with Barrie based physicians to oversee the medical protocols delivered by BFES to ensure they meet the standards. Simcoe County Paramedic Services is another partner to this program. This program provides the knowledge and skills necessary in an emergency to help sustain life, reduce pain, and minimize the consequences of injury or sudden illness until the next level of health care takes over. Barrie was the second city, next to Toronto to implement this program which has a proven record of increased survivability. The program is called the Emergency Medical Responder Program and includes the latest First Aid and CPR guidelines, meets the Paramedic Association of Canada National Occupational Competency Profiles for the practitioner level of Emergency Medical Responder (EMR). The course is an 80 hour course with flexible scheduling options, carries a 3 year certification as an EMR with CPR level HCP (Healthcare Professional) and includes AED (Automated External Defibrillation) certification, all under the guidance and monitoring off doctors from Barrie. In 2014 BFES added certification to use epinephrine auto-injector for the emergency treatment of severe allergic reactions.

4.8 Water Supplies

The City of Barrie's water system design is based on standards which include various firefighting components such as minimum size water mains (150mm), fire hydrants with set spacing, reservoirs/elevated tanks, wells, pumping stations and minimum/preferred fire flow requirements. Several major projects have been undertaken by the City of Barrie since the 2009 Fire Master Plan, including the Surface Water Treatment Plant and the Sunnidale Reservoir. BFES, in conjunction with the Engineering Department, Corporate Asset Management and Water Operations have completed a Fire Underwriters Survey. This survey could result in reduced fire insurance premiums for all taxpayers in Barrie if, some or all recommendations are applied.

4.9 Fire Department Administration

The Administration Branch will experience an increase in workload as a result of a growing staff compliment, changes to legislation and reporting requirements. Currently, the Administration staff beside the Fire Chief and three Deputy Fire Chiefs, consist of an Office Coordinator, Payroll/Administrative Assistant and three Clerk/Secretaries assigned to Fire Prevention and Training. 2014 saw an Administration review established that changed the roles and responsibilities to make the branch more effective and efficient.

4.10 Communications

The Communications Centre continues to shift to new technology, new operational methods of dispatching and new growth of clients. BFES now dispatches 18 other municipalities in Simcoe County, Dufferin County, District of Muskoka and Christian Island First Nations, creating revenue for BFES and IT. Another from Grey County is anticipated in 2015. There continues to be interest from other fire services for delivery of dispatch services. As Barrie develops the annexed lands call volume is expected to increase at a steady rate as is the growing population in the municipalities we deliver service to. A review of the limits of the Branch should be conducted in partnership with their IT partners to determine capacity thresholds currently and in the future.

Working with the Ministry of Health and Long-Term Care, Barrie was the second municipality in Ontario to have simultaneous dispatch with the provincially run ambulance dispatch centres. This new technology allows simultaneous downloading of calls being answered in the ambulance dispatch centres to BFES, resulting in reduce response times for tiered medicals that BFES responds to, and has resulted in increased survivability for someone suffering a life threatening condition and reduce the pain and suffering for citizens.

New technology in Computer Aided Dispatch, Automatic Vehicle Locator and GPS traffic pre-emption link project to enhance response times throughout the city should be explored. This is new emerging technology that is being implemented in other municipalities in Ontario with very positive results.

The technology is rapidly changing in the industry and must be kept current and replaced before end of life cycle to avoid downtimes that threaten the safety of the firefighters and the public.

SECTION 5 – RESOURCES

5.1 Human Resources

Human resources include all aspects of personnel administration. The heart and soul of any organization is its people and their commitment and dedication to the organization, this section is dedicated to appraise the importance and results of the human resources program in BFES. It is recognized that the completion of this human resources section involves members from other governing entities and other elements of the community.

5.2 Personnel and Administration

BFES is comprised of six Branches; Administration, Operations, Training, Fire Prevention/Public Education, Communications and Community Emergency Management.

- Administration Branch – Fire Chief, Deputy Fire Chief of Operations and Training, Deputy Fire Chief of Fire Prevention and Community Emergency Management Coordinator, Deputy Fire Chief of Communications and Business Services, Office Coordinator, Payroll/Administrative Assistant and three Fire Support Administrators assigned to Training and Fire Prevention for a total of nine staff. As stated previously, an Administration Review was conducted and resulted in a realignment of responsibilities that resulted in the reduction of one FTE in Administration.
- Operations Branch – 4 Platoon Chiefs, 28 Captains and 112 firefighters. Operations consists of four shifts of 36 working out of 5 stations, staffing 5 pumpers, 2 aerials and the Platoon Chief’s car. There are several other pieces of specialty apparatus that are not staffed, but used on an as needed basis using on-duty personnel from one of the above mentioned apparatus to respond with it. Minimum staffing is 27 per shift, allowing for 4 personnel on each pumper, 3 on each aerial and a Platoon Chief. This level of staffing allows for a response to a residential structure fire and two other simultaneous single apparatus responses. An incident at a large incident such as a high rise fire would require the entire on-duty staff and require a call back of off-duty firefighters.
- Training Branch – consists of a Chief Training Officer and 4 Training Officers who are assigned to each of the four platoons of firefighters. Their duties besides delivering specialized training are to operate at incidents as an Incident Safety Officer to enhance the safety of firefighters. They are also seconded to straight days to deliver recruit training and as required to develop and deliver special programs.
- Fire Prevention/Public Education Branch – consists of a Chief Fire Prevention Officer, a Fire and Life Safety Officer (Public Education) and 6 Fire Prevention Officers with

one specializing in plans examinations for fire and life safety issues with new and existing buildings.

- Communications Branch – consists of 4 Communications Supervisors, 8 full-time Communications Operators and up to 3 part-time Communications Operators.
- Community Emergency Management – Emergency Management was brought under the umbrella of BFES in June of 2012 and is assigned to the Deputy Chief of Fire Prevention and CEMC. The Emergency Management and Civil Protection Act require all municipalities in Ontario to have a designated CEMC and appointed by by-law.
- The total complement of the department is 180 personnel.

5.3 Recruitment, Selection, Retention and Promotion

Unlike the 2009 Fire Master Plan, the future attrition plan is concerning, in the past few years, 12 Officers have retired and currently over the next 5 years, an additional 15 officers are expected or can retire. A sustainable succession plan is needed. Most of the planning material is available but needs to be collated into a simple format for all positions in the department to enhance career path development both department developed and self-guided. This concern will continue in future years as rapid growth of the department in past years has created large generation levels where multiple retirements in a short time span are expected.

The department is developing an Officer Program that will enhance the skill level and abilities of the Officer complement in Operations. The examination process is realistic, credible and able to promote qualified individuals to sit in the “Captains seat”. The task is to continually re-evaluate the process conducive to enhancing the promotion of an excellent class of Officers able to manage any emergency of any size and at any time with skill, command presence and operational precision. The development needs to extend beyond the Operations Branch to include all Branches in the department.

5.4 Policies and Standard Operating Guidelines

Corporate and BFES policies have been developed and are reviewed and revised as required. There are corporate programs that reflect legislative requirements and others that are in place to support corporate values and expectations of its employees in a positive human relations direction.

Standard Operating Guidelines are developed by a joint Labour/Management team and guide both administrative and personnel behaviour and addresses emerging issues with an emphasis on health and safety. The SOGs are reviewed regularly and submitted to the Fire Chief for approval and implementation. SOGs give fundamental direction to all staff on the various aspects of job performance and expectations under certain

conditions. All SOGs have an enabling policy attached that drives the SOG. In the past few years the Policies and SOGs have been transformed from paper to electronic, making for easy access for all staff to locate.

5.5 Use of Human Resources

Development and utilization of human resources is consistent with the established mission, vision and objectives.

Through a cooperative approach the management team and the association have started developing performance appraisals that are job specific to the various jobs within the department, because of the diversity of the job functions from branch to branch. When developed, all personnel will have an appraisal conducted on a yearly basis, which is currently absent except for step increase in the Operations Branch.

The Association and management should develop the appraisals to ensure performance measures on an annual basis for all staff, which will help develop individuals.

Consideration for creating a sustainable Labour/Management Relations Committee should be explored to meet on a regular basis to discuss emerging issues and matters of mutual interest or concern in an effort to overall improvement to labour relations.

5.6 Compensation

Compensation and working conditions are established in the Collective Agreement and legislated by the Fire Protection and Prevention Act. In the past, there have been long periods of time where the Collective Agreement has expired with long processes of negotiations and arbitrations of long duration. This is in part to the current arbitration process in the province where awards are normally longer than a year after the arbitration hearings, depending on the complexities of the matters before the Board.

The number and nature of grievances are mostly policy grievances. With mutual understanding these have been resolved without the need to proceed to grievance arbitrations. There have been no grievance arbitrations since 2006 to date.

5.7 Risk Management and Personnel Safety

There is a risk management program designed to protect the organization and personnel from unnecessary injuries or losses from accidents or liabilities. The fundamental principles are that the department will risk a life to save a life, take a calculated risk to save valuable property, and take no risk to save what is lost.

A Joint Occupational Health and Safety Committee have been well established in BFES and matters are dealt with in a timely fashion.

All Ontario Fire Service Advisory Committee, Section 21 Guidance Notes as approved by the Ministry of Labour are adhered to and SOGs developed based on the contents of the Guidance Notes.

Recently, Labour and Management have agreed to implement a Wellness Fitness Program. The program is designed for the wellbeing both mental and physical of firefighters with early screening for occupational diseases that are normal to the fire service. It is proven by other departments in both Canada and the United States that prevention, early detection and treatment of a disease that is considered under presumptive legislation saves the corporation a considerable amount of money that may otherwise have to be paid out through WSIB or Line of Duty Death Benefits.

5.8 Training

5.8.1 Introduction

Training and competencies are the specific programs, resources and capabilities within a Fire Service which exist to support the services the Fire Service provides, and thereby accomplish organizational purposes required by each Branch within the service.

Training and educational resource programs express the philosophy of the organization they serve and are central to its mission. Learning resources should include a library, other collections of materials that support teaching and learning, instructional methodologies and technologies, support services, distribution and maintenance systems for equipment and materials, instructional information systems, such as computers and software, telecommunications, other audio visual media and the facilities to utilize such equipment and services.

Key to the success of the training and educational process is a learning resources organizational structure and a technically proficient support mechanism. The training staff should provide services that encourage and stimulate competency, innovation, and increased effectiveness. The department and service providers must provide those learning resources necessary to support quality training. The adequacy of a system's success should be judged in terms of its goals, objectives, and programs supporting the organization in achieving its mission.

5.8.2 Training and Education Program Requirements

Training and education program activities are identified to support the Fire Service's needs.

The current training for command officers, who ensure overall incident control including safety of both firefighters and the public, is a challenge. Although there is a current lack of a facility in Barrie to train and hone the skills of the Incident Commander, the creativity of department personnel has enhanced our personnel to receive minimum training on command procedures through a mentoring program with senior Officers and in a virtual world with their imagination to guide them through the incidents that they may face. The department with the assistance of the IT department is currently developing more virtual training through modern technology. This will enhance the delivery of theoretic education and allow for visual e-learning throughout the department.

Barrie Fire and Emergency Service have entered into a short term lease agreement with Innisfil Hydro for vacant property on Saunders Rd. in Barrie. This will allow BFES staff to set up a temporary training facility consisting of several props designed to be used in the training of staff on some of the technical aspects that require practical evolutions to maintain competencies. There is an industry standard to provide live fire training to new and incumbent members of the department. Obviously, the solution would be for Barrie Fire and Emergency Service to have its own permanent facility in the city limits, where on-duty crews could train without the reliance on bringing in overtime. There would also be the benefit of BFES revenue by offering the facility when not in use to other municipalities or agencies. The goal would be to have a multi-purpose, multi-scenario station concept that could be used by various City of Barrie Departments and could be used simultaneously by different users. The 2003 inquest into the death of Barrie Fire Fighter Bill Wilkins recommended the development of a training facility in Barrie, and would enhance the health and safety of the firefighters and the public. This realistic training is irreplaceable for this profession as was determined by the Coroner's Inquest into Bill Wilkins death.

Career Path and Succession development planning has started with a database of educational opportunities. Any firefighter or Officer can request a printout from the Training Branch of courses suggested to be taken to enhance their career responsibilities. While this "cut and paste" approach is a beginning, it does not allow the firefighter a formal education pathway to follow which is credible and realistic. An actual document on career succession planning will be produced for all positions in the department

BFES have been working with the IT Department to establish and develop a number of e-learning programs, including the provision of a training website where training

videos and video conferencing can be hosted. This initiative has been an ongoing process that requires time and business planning budgeting to complete. This initiative will greatly enhance the Training Branch and their ability to extend training by allowing flexibility so firefighters can access the training tool, allow versatility in the messaging tools to deliver training, allow training to be delivered to more than one firefighter at a time and not require the movement of crews and apparatus from their designated and pre-determined area of optimum response capabilities. E-learning is the future of progressive and quality training delivery in the fire service.

5.8.3 Training of Firefighters

There are several legislative requirements that dictate standards for safety, equipment and training for the fire service. There are also standards and industry best practice guidelines that have been widely accepted throughout International, North American, Canadian and Ontario standards of level of service that form the basis of firefighter safety, equipment and training and are relied upon in inquests, court cases and charges under the Occupational Health and Safety Act. One of the most predominate is the National Fire Protection Association (NFPA) Standards which are widely accepted as minimum standards not only in firefighter standards for firefighter safety, equipment and training but is recognized in most building codes, professional codes and fire codes based on these comprehensive standards. This standard is the recognized standard by the Ontario Fire Marshal and Emergency Management and is an accredited certification program endorsed by the International Fire Service Accreditation Council (IFSAC) and the Pro-Board Accreditation, both internationally recognized agencies that review course criteria for educational quality and recognition.

5.8.4 Training of Communications Branch

Past training was generally conducted by the Communications Supervisors or individual taught programs. In 2015 a Certified Communications Process was undertaken with the assistance of the Training Branch, the Ontario Fire College and the Ontario Association of Fire Chiefs. With the above stated shift to NFPA standards, the shift should now be to align with the NFPA Standard for Communication Operators. This alignment should bring the Communications Centre into a more comprehensive and standardized centre ensuring consistency with public expectations and the Branch's ability to meet or exceed industry standards of call taking and dispatch.

5.9 Fire Prevention

Fire Prevention currently consists of eight personnel to provide a comprehensive program for the City of Barrie to meet the first to lines of defense, public education and inspection/code enforcement. The assignments include a Chief Fire Prevention Officer, a Fire and Life Safety Officer, a Fire Prevention Officer whose main purpose is in engineering and plans examination, and five assigned for inspection/enforcement, origin and cause determination and other statutory mandates of the City and the Province. There are currently over 4000 open files. The current program is more reactive than proactive as a result of an ever increasing workload and added responsibilities placed on the Branch.

Fire Prevention is mandated under the Fire Protection and Prevention Act to investigate complaint and request inspections which consume a major portion of their work-plans. Currently the city is divided into 5 districts with each of the above 5 Fire Prevention Officers assigned to a district. Their responsibilities range from inspecting/enforcing the Fire Code through-out all occupancies, complaint investigation, licensing inspections as per the identified occupancies under the City's Licensing By-law, court appearances and accurate report documentation.

Another important facet of the profession is to maintain qualifications through continuing education and professional upgrades with changing standards, codes and knowledge of industry best practices. This is achieved through courses, conferences, research and educational opportunities hosted by stakeholder groups and companies throughout the year.

The current court system in Ontario is a contributing factor in the amount of time Fire Prevention Officers are spending time in the court system for code infractions and tickets issued under the municipal by-laws. Fire Prevention Officers are required to attend on multiple appearances for each case where businesses or persons are charged with a violation.

Several recently passed pieces of Provincial Legislation have or will add more pressure and workload to the Branch. In 2010, the government passed the Propane Handling Act, which puts reliance of the Fire Service to inspect propane dispensing locations of a certain size and to review annually their safety plans. Recently, the Legislature passed a bill to require carbon monoxide detectors in Ontario residences; the Fire Code has been amended to make inspection and enforcement a Fire Service responsibility under the Act. Another change recently in legislation that will affect the Fire Prevention Branch has been changes to Care Facilities that will require more inspections and fire safety

reviews and approvals for all care facilities in Ontario. Barrie currently has over 20 such facilities ranging in size and will consume a considerable amount of staff time on an annual basis.

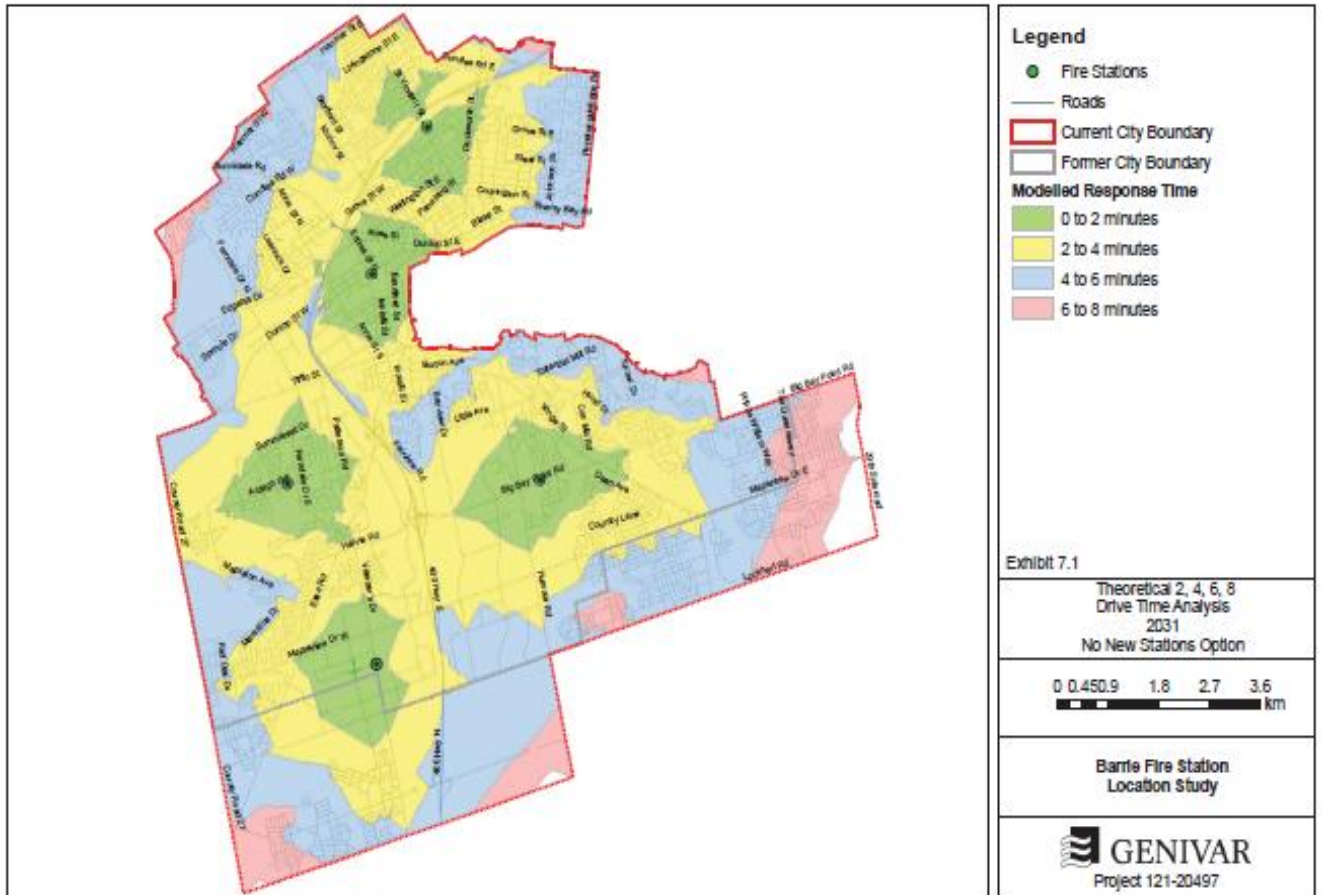
The Fire Prevention Officers are meeting the minimum legislated requirement for complaint and request inspections, however, improvements in the number of inspections requires a new method of recording and documenting data that would be more efficient and better suited to maintain the building audit and records management. Extending the use of records/data management system into the Branch will greatly assist the Fire Prevention Officers in terms of efficiency and productivity. With the annexed lands starting to be developed in 2016/2017, the additional requirements for more Fire Prevention Officers will increase relative to the growth.

5.10 Physical Resources

Physical Resources include fire stations, training facilities, fire apparatus, communications systems and other capital expenditures and outlays that make up the property assets of Barrie Fire and Emergency Service. Considerable attention is necessary to obtain and maintain the physical resources in a high state of readiness and functionality. Facilities that are leased, and/or, jointly operated are also considered for the fire service use if this is accomplished in accordance with properly adopted and clearly established policies.

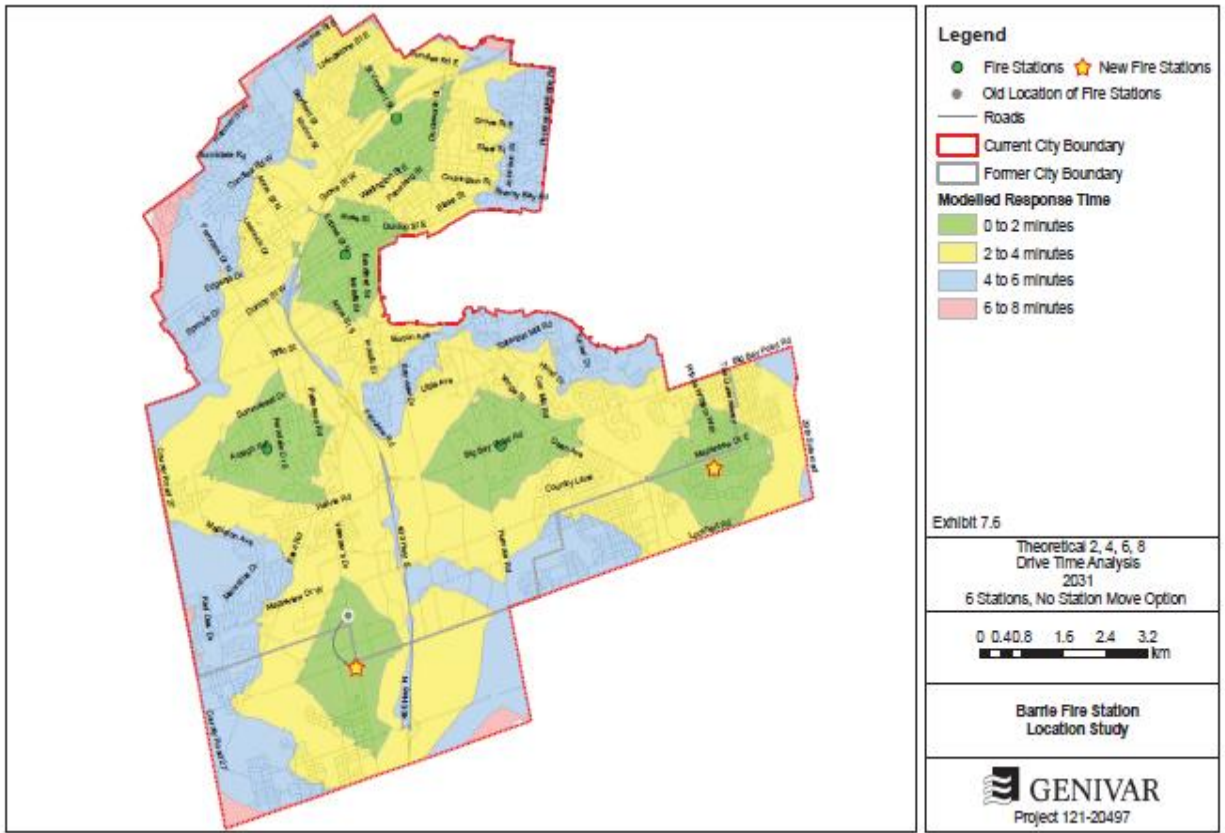
5.10.1 Fixed Facilities

The following map shows the locations of the 5 stations currently being operated by Barrie Fire and Emergency Service and the associated theoretical response times from each location.



BFES Locations of the 5 Current Facilities (March 2013)

The above map shows that current station locations can provide the current Council mandated less than 6 minute road response, 905 of the time, to a large percentage of the City of Barrie with the largest gap analysis areas in the south-east and south-west quadrants of the City. The recently conducted Station Location Study undertaken with the assistance of Genivar looked at all the current stations in Barrie and the results of moving stations to provide best proposed coverage with minimal capital and operating expenses. The Fire Master Plan recommendations result in the following maps theoretical response times from 6 stations.



BFES Proposed Station Locations

As can be observed in the above map, the recommended relocation of the current temporary Station 5 and the addition of a sixth station in the south-east quadrant result in substantial improvement to the response times mandated by Council.

The above map reflects proposed road network improvements as of 2031, thus the ability of the department to achieve this level of coverage is dependent on these road network improvements and the timing of these improvements including upgrading and adding additional Hwy 400 interchanges.

It does not include possible growth in other municipalities and possible traffic congestion as a result of increased traffic on the major corridors throughout Barrie.

Current Station Locations and Apparatus

Below are the current locations and apparatus that are located in the stations. Not all apparatus are staffed. If required, staff would either split their crews, or move from a staffed apparatus to the required apparatus, depending on the nature of the incident.

- Station 1 – Headquarters – 155 Dunlop St. W.



- One Pumper – Staffed with a minimum of 4 firefighters
 - One Aerial – Staffed with a minimum of 3 firefighters
 - Platoon Chief’s Car – Staffed with a Platoon Chief
 - Incident Safety Officer’s Car – Staffed with a Training Officer
 - Squad Truck – Staffed 20% with a minimum of 2 Firefighters
 - Mini-Pumper – Not staffed
 - Marine 1 – Not Staffed
 - Tanker – Not staffed
 - Trench Rescue Trailer
 - Special Operations Trailer
 - Simcoe County Hazardous Materials Response Trailer
-
- Station 2 – 15 Bell Farm Rd.



- One Pumper – Staffed with a minimum of 4 firefighters

- Station 3 – 340 Big Bay Point Rd.



- One Pumper – Staffed with a minimum of 4 firefighters
 - One Aerial – Staffed with a minimum of 3 firefighters
 - One Hazardous Materials Apparatus – Not Staffed
- Station 4 – 250 Ardagh Rd.



- One Pumper – Staffed with a minimum of 4 firefighters
- Station 5 – 361 King St.



- One Pumper – Staffed with a minimum of 4 firefighter

5.11 Apparatus Maintenance

The maintenance of the BFES fleet of apparatus is coordinated and delivered by the City of Barrie's Fleet Services Branch. Due to the complexity of today's fire apparatus there may be an extended period of downtime while awaiting specialized parts that are normally shipped from the United States. Fire apparatus are custom built for each fire

service's particular needs. Since the 2009 Fire Master Plan, Council has approved a standardization of the fire fleet including brand specific, including manufacturer, chassis and fire pump. This direction has several benefits in many areas:

- Less time to train firefighters
- Ability of firefighters to drive any truck without the need for supplemental training on different manufacturers' models
- Ease of maintaining and repairing apparatus by vehicle technicians
- Ability to stock regularly used parts that fit a number of the same apparatus
- Decreased downtime

Below is a list of the current BFES Fleet Assets:

BFES EMEGENCY RESPONSE APPARATUS

STATION	DESIGNATION	APPARATUS TYPE	YEAR	MAKE
1	Pump 1+	Pumper	2006	La France
1	Brush 1	Wildland	2006	Seagrave
1	Squad 1	Heavy Rescue	2005	Seagrave
1	Tank 1	Tanker	2010	Danko
1	Tower 1	Aerial/Platform	2004	Smeal
1	Marine 1	Air Boat	2005	1000 Island
2	Rescue 2	Pumper/Rescue	2008	Seagrave
3	Haz-Mat 3	Haz-Mat	1991	Seagrave
3	Tank 3+	Pumper/Tanker	2003	Superior
3	Tower 3	Aerial/Platform	2009	Smeal
4	Rescue 4	Pumper/Rescue	2007	Seagrave
5	Rescue 5	Pumper/Rescue	2012	Smeal
1	Trench 1 Trailer	Trench Rescue	2012	Wells Cargo
1	Special Ops 1	Special Ops Trailer	2012	Wells Cargo
1	FP 1	Community Events Trailer	2012	American Utility
Reserve	Reserve 8	Pumper/Rescue	2000	Seagrave
Reserve	Reserve 9	Pumper/Rescue	2002	Seagrave
Reserve	Quint 10	Pumper/Squirt	2002	E-One

Reserve	Ladder 11	75' Aerial	1996	KME
Misc.	Command Centre *	Command Centre	1984	RV
Training	Pump 7 *	Training Pump	1990	Superior
Simcoe County	County Haz-Mat	Haz-Mat Trailer	2011	Wells Cargo

+ Budget approved in 2015 for replacement in 2016

* Taken out of service in 2013 as not road worthy

BFES LIGHT DUTY FLEET

CAR #	USE	YEAR	MAKE	MODEL
Car 1	Fire Chief	2012	Ford	Expedition
Car 2	Deputy Chief	2009	Ford	Expedition
Car 3	Deputy Chief	2009	Ford	Expedition
Car 4	Platoon Chief	2012	Ford	Expedition
Car 5	Training	2013	Dodge	Pick Up
Car 6	Fire Prevention	2013	Dodge	Pick Up
Car 7	Fire Prevention	2002	Dodge	Caravan
Car 8	Fire Prevention	2007	Toyota	Camry Hybrid
Car 9	Fire Prevention	2009	Dodge	Neon
Car 10	Fire Prevention	2007	Toyota	Camry Hybrid
Car 11	Fire Prevention	2005	Ford	Freestar
Car 12	Training	2006	Dodge	Ram
Car 14	Incident Safety Officer	2012	Dodge	Ram
Car 15	Fire Prevention	2007	Toyota	Camry Hybrid
Car 17	Fire Prevention	2010	Jeep	Patriot

The Fleet Services Branch currently has one mechanic trained and certified to the Emergency Vehicle Technician level. The servicing of fire apparatus by certified technicians will provide more reliable equipment, thus enhancing the safety of the public and the firefighters. The City of Barrie, employing certified EVT personnel will benefit by having knowledgeable technicians who are trained to work on the complex sophisticated vehicles.

As the fleet of fire apparatus grows there should be consideration to training more current staff or new staff to the EVT certification to assist in speedy diagnosis and repairs to the fleet.

5.12 Safety Equipment

The safety equipment and accessories are adequate and designed to meet the department's needs, goals and objectives, meeting current fire service standards. All new apparatus, bunker gear, self-contained breathing apparatus (SCBA) and equipment meet current National Fire Protection Association Standards, Canadian Safety Association Standards and provincial legislation where required. These standards are reviewed and revised on a scheduled cycle with upgrades and changes and set replacement schedules for certain equipment such as Bunker Gear and other personal protective equipment. These standards also set lifecycle replacement programs. It is important that the fire service keep current on these changes and implement replacement programs of aging equipment consistent with the standards and legislative requirements.

5.13 Communications Branch

5.13.1 Current Status

BFES currently dispatches for over 80% of the fire services in Simcoe County, dispatching 16 of the 20 department, 39 fire stations and over 1,000 firefighters serving a population of over 350,000. The department also dispatches Georgian Bay Township, Huntsville and Lake of Bays. The dispatch centre's call volume has increased to 17,000 emergency calls dispatched per year. With the increased call volumes, the current customer base and potential new customers, a review of the existing capabilities both in human resources, technological advances and support, should be reviewed to ensure compliance with best practices from the Office of the Fire Marshal and Emergency Management, and the NFPA 1061 Standard for Professional Qualifications for Public Safety Tele-communicators. NFPA 1221: Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems should also be referred to during this review as this

document is referenced in the best practices document from the Office of the Fire Marshal and Emergency Management. It is believed that this review, including process reviews can be conducted internally with little requirements for budget funding.

A requirement for operating a Communications Centre regardless of the size is to ensure redundancy. This includes a requirement for a back-up dispatch centre. Currently, the BFES back-up is at the Police Station and consists of a radio and telephone; there is no ability to page out firefighters. This does not meet current industry standards or best practices. There is an established need to review this situation and determine the best possible location for a back-up centre that meets the needs of emergency services and other departments in the city (IT, Water, and Council).

The existing radio system including infrastructure and user hardware was implemented in 2000. By the end of 2014 infrastructure changes included a fourth simulcast tower location. Radio coverage continues to be something that requires regular attention and review. This is a health and safety issue for the first responders. In order to address these and other public safety issues, such as opportunities to optimize communications tower sites in order to provide ideal radio coverage and correct existing redundancy issues, a joint Emergency Services Technology Steering Committee, consisting of BFES, Barrie Police and the City of Barrie IT Department, has been established to continue to review the status of the current system and look at future needs. The intent of this committee is to update the overall communications strategy for the City of Barrie from emergency services prospective. The existing user hardware is being updated that began in 2013. The newest Motorola portable and mobile radios will be put in service and equipment being used since 2000 will be retired.

The future of Barrie Fire and Emergency Service Communications includes projects such as expanded simultaneous dispatching ambulance and fire vehicles to achieve better service to the public, extensive changes to the 9-1-1 infrastructure that will move us to the next generation of features in 9-1-1 such as the ability to text emergencies to 9-1-1 as well as sharing information with the media and public using various forms of methods including the internet and twitter. Quality assurance within Communications Centres is something that requires policies, procedures and an overall program to be established and implemented.

5.14 External Resources and Partnerships

- BFES has close ties with the surrounding fire services. Currently, BFES has an agreement with the Township of Springwater to provide suppression and rescue services for area adjacent to Barrie, where Barrie can respond in a more effective and efficient fashion.
- BFES has entered into an agreement with the County of Simcoe in the geographical area to provide hazardous materials response on a full cost recovery basis. The County also contributes annually to the training required to maintain this discipline.
- Barrie has dispatch agreements with 19 municipalities currently, covering 80% of the county's population and includes adjacent municipalities with the exception of Oro-Medonte.
- Barrie Fire and Emergency Service is the largest fire service in Simcoe County and possess higher levels of service and capabilities than can be expected in other smaller municipalities. These disciplines are not part of the County Mutual Aid Agreement. Because of this there is an expectation that Barrie would/could provide some of these disciplines to other municipalities. BFES has and should continue to explore partnerships with other municipalities to provide technical rescue disciplines on a total cost recovery basis and possible source of revenue through response and/or training initiatives. These should be entrenched in legal agreements between the municipalities outside of the standard County Mutual Aid Agreement.

SECTION 6 – GAP ANALYSIS

6.1 Risks

The major changes in risk will be as a result of the anticipated growth of the entire region, increased demand for service and maintaining service levels at their present level. Since the 2009 Fire Master Plan, the department has seen a 30% increase in responses over an expanded municipality. This will increase as the annexed lands are developed and the population of both residents and workforce increase. This same risk will also present itself in the growth nodes identified throughout the city. As a part of the Ontario Government's Places to Grow legislation, Barrie will be required to intensify population in the original boundaries of Barrie. These will increase the demand for response and result in an increase of simultaneous incidents occurring throughout the city.

6.2 Policies

The establishment and regulating of a fire service must meet the needs and anticipated service levels of the citizens and businesses in the community. The department never knows when the need or what required service level will be required prior to the call coming in. Some citizens may never have to request the services of the department, but when the emergency occurs the expectation is high that the fire service will respond, deliver a high quality service and provide value for the taxes they pay.

It is the organization risk responsibility of Council to establish, set the regulating service levels and provide direction for the department and ensure that the department's business plans (budgets) are executed as directed. The legislated document for this guidance is the Establishing and Regulating By-law (E&R By-law), which was updated in 2012 (attached in Appendix "C"), and outlines the basic expectations of Barrie Fire and Emergency Service. The by-law outlines the expected level of service and the annual Business Plan should set out the appropriate resources to meet the by-law. This has been established with Council's adoption of the vision, mission and values of the department, the mandate and the classification and task objectives of the mandated services, including a less than 6 minute road response of all emergency responses. The Establishing and Regulating By-law should be reviewed and revised on a regular basis to keep it current with Council's and the public's expectations of the department.

The fire service creates Policies and Standard Operating Guidelines (SOG) to interpret and expand on the classification and task objectives contained in the E&R By-law and other legislated requirements such as the Occupational Health and Safety Act. Barrie Fire and Emergency Service have developed the necessary Policies and SOGs in an

electronic format for easy access to all personnel. A SOG Team consistently reviews and revises SOGs as required to stay current with legislation and industry best practices.

6.3 Facilities

The Barrie Fire and Emergency Service currently operate five stations that are strategically located throughout the city for optimized response coverage across the city. The annexation has left the newer areas with longer than desired intervention times. Intervention time is defined as the time from ignition or when an emergency occurs until effective firefighter operations are conducted to mitigate the incident. Factors that impact intervention time include, but are not limited to:

- The time required to detect an emergency
- The time it takes the public to notify the fire service
- The time it takes Communications to notify the stations
- Preparation time for firefighters to gear-up
- The distance between the Fire Station and location of the incident
- The geographical layout of the travel route
- Impediments such as weather, construction, traffic congestion
- Set-up time
- Type and size of the incident

Fire service intervention time is crucial in determining the outcome and consequence of an incident in terms of death, injuries and loss of property and damage to the environment. Effective fire prevention and public education programs can reduce intervention time and in turn, reducing intervention time can significantly increase the overall fire service effectiveness. Increased intervention times can have three significant impacts; increased rate of injury or death, increased property loss and the possibility of higher insurance premiums.

The new Headquarters was opened in 2011 and combined with the opening of the temporary Station 5 in December of 2012 has led to reduced intervention times in some parts of the city.

6.4 Station Location Study

As a result of the annexation combined with the growth and continued intensification of the city there was a need to study the current and future station location. This exercise was conducted during 2012 with the final report being issued in March, 2013. The Genivar Station Location Report is contained in the Appendix "E" to this plan.

The study viewed current station locations and looked at possible locations for any identified stations to achieve optimal response coverage for the city until 2031. Genivar with the assistance of the IT Department and Barrie Fire and Emergency Service conducted extensive time response modeling using response data and geographical road information, both present and projected to produce optimal station locations.

The review of the existing stations considering their life expectancy and current location in comparison with the planned future growth of the city were rationalized for long term station location planning.

Since 1993, several previous studies have identified the need for a station in the northwest quadrant of the city. During this review considering the road diets and proposed road network improvement, and in particular interchange improvements over the Highway 400, this study shows that the need is greatly reduced based on this information.

6.5 Equipment

Apparatus is the largest equipment capital expenditure. Every department needs to have an integrated maintenance and replacement program to ensure that maximum value is achieved from the purchase. The amount and costs of maintenance must be balanced against the expected life cycle, particularly in the latter years of life cycle. The average age of current apparatus is in line with industry best practices and legislated requirements, however a few older units should be considered for replacement over the next few years. The Technical Rescue Unit and the Command Centre are well past their life cycle. In 2013 the Command Centre was decommissioned as it was not road worthy. Several other units will be approaching this in the next few years. BFES and Fleet Services should continue to build business cases to be considered during the Capital Budget Justification Process.

Apparatus is very specialized equipment and takes a special skill set to repair and maintain. As the fleet is expected to grow in the coming years, attention should be on bringing current Fleet staff up to Emergency Vehicle Technician level or hiring certified technicians.

Other major equipment expenditures should be subjected to life cycle management to ensure maximum usage but timely replacement. The life cycle management must align with industry standards and legislated requirements for replacement.

6.6 Staff

The current Operations Branch staffing level was adjusted in 2012 to staff the additional requirements when Station 5 opened. Aerials in the department are allowed to be staffed with a minimum of 3 personnel. Current best practices and Nation Fire Protection Association Standards are to staff aerials with a minimum of 4 personnel. For BFES's aerials to operate in an efficient and safe manner, it should be staffed with a minimum of 4 personnel, 1 at the pump panel, 1 at the turntable and 2 in the platform to operate the nozzles or effect rescue. During several incidents an aerial was required to ghost operate with no personnel at the turntable (no personnel at this position to monitor the platform operation and ensure safe operations) due to the lack of staffing on the aerial, which is not in accordance with the manufacturers' operating procedures and could be considered an unsafe practice by Occupational Health and Safety.

The Fire Prevention Branch staffing is dependent on service level expectations and their ability to conduct legislated inspections and buildings of a high hazard nature. The level of staffing needs to reflect addressing the legislated complaint and request inspections and the Fire Code inspections in order to allow for regular building inspections of commercial and industrial units on a yearly basis. Staff pressures are increasing for complaint and requested inspections and Fire Code enforced driven inspections are hampering efforts to address any significant number of building inspections. Provincial driven legislation and download on the fire service is increasing. In 2011, the province enacted the Propane Handling Act which requires the fire service to inspect facilities and review/approve safety plans for these facilities. In 2014, amendments to the Fire Protection and Prevention Act will place additional requirements for the fire service to inspect and enforce carbon monoxide detectors in all residences. Further, changes to Care Facilities will require annual inspections, fire drills and safety plan review.

The Communications Branch has seen an increase in its client base and annual increases in call volumes in the Communications Centre. Currently, Communications dispatches 18 other municipalities with another client due to join in 2016. Staffing levels are sufficient at this time to manage the business of the Branch. Although the department is always looking for more client base to reduce the dependency of tax based funding, a strategic review of capabilities within the branch needs to be conducted to determine maximum levels of service and the need to add additional staff.

The Training Branch currently is in the process of developing new methods of training delivery consisting of e-training and the use of Shift Training Instructors. As such, the current level of staffing is sufficient. In the future there could be the need for a Training

Program Coordinator. The main role will be the development of new training programs for all members of the department.

The Administration Branch should be conducted to review current and future needs as the demand for administration and support staff increase. Business cases need to be developed and submitted during the Business Plan process for consideration.

6.7 Communications

The needs in the Communications Branch ranges from the requirement stated above in regards for the need for a service delivery review, a need for service level agreements both inside the city and outside (with vendors, suppliers and customers), a sustainable back-up centre, being able to achieve industry benchmarks and a provincial certification program. As always one of the forefront requirements and one that consumes considerable budget implications is the need to keep current with technology and life cycle replacements of technology on a scheduled basis. The move to the new Headquarters in 2011 has greatly improved the Branch's effectiveness and efficiencies and ability to take on new clients. This also resulted in improvements and replacement to some aging equipment that was at end of life cycle.

6.8 Training

The current training delivery in general, meets the requirements of the Occupational Health and Safety Act. Some adjustments need to be developed to better identify areas identified in the risk assessment. The fire service is governed by the Ontario Fire Service Advisory Committee, Section 21 Guidelines, this committee and the guidelines distributed by this committee fall under Section 21 of the Occupational Health and Safety Act. These guidelines are considered regulations under the Act by inspectors. These guidelines are specific to the fire service in Ontario.

The required amounts of training range from recruit training to team training. Occupation Health and Safety has increased the formal requirements for training and training records. The Ministry of Labour has increased inspections of the fire service throughout Ontario as the result of several firefighter fatalities and close calls over the past few years.

Staff currently trains to standards as established by the Office of the Fire Marshal and Emergency Management, covering all positions in the fire service. This change in 2014 will align the Province of Ontario to the National Fire Protection Association Standards which are universally accepted as industry best practices. Many U.S. States have regulated NFPA Standards; however, will remain as standards in Ontario at this time.

The transition will take time to complete and will require BFES to adjust their training programs to align with NFPA.

6.8.1 Training Facility

In 2015 City Council approved entering into an agreement with Innisfil Hydro to lease some vacant land adjacent to Barrie owned vacant land for the purposes of developing a temporary training facility for the next 5 years. The purpose is to reduce the associated costs of sending personnel on overtime to remote training centres outside of Barrie. On-duty personnel are required to cover the city on a daily basis, so if training is required outside the city it requires overtime. A normal live fire training session would require 8 – 12 personnel on overtime. The cost of renting an outside facility is another expensive cost and there are limited resources available in the immediate area. These were identified in the 2003 Bill Wilkins Inquest.

This is a temporary lease agreement until a permanent Stn. 5 and Training Facility can be considered in the Long Term Objectives.

The cost a developing a Training Facility in Barrie is expensive, however would allow for BFES to meet the requirements of the Occupational Health and Safety Act, the Section 21 Committee and NFPA Standards. There is also the possibility of revenue generation from other municipalities in the area renting the facility and offsetting some of the operating and maintenance costs.

6.9 Safety

Currently, each Training Officers is assigned to a shift. These Training Officers are responsible for ensuring minimum training standards are met on each shift and coordinate the technical rescue capabilities that require specialized and maintenance training to meet certification requirements on a yearly basis. The other important role they perform is as an Incident Safety Officer at incidents. This role supports the Incident Commander and improves the overall safety at the scene and complies with the requirements of the Occupational Health and Safety Act and the Section 21 Guideline.

6.10 Fire Prevention

Fire prevention is mandated by the Fire Protection and Prevention Act (FPPA). The Ontario Fire Marshal and Emergency Management have established the “Three Lines of Defence”; public education and prevention, fire safety standards and Fire Code enforcements and emergency response. The public is used to the lights and sirens of BFES in response to an incident; prevention is the primary focus of the department and

can limit the need for response to an incident. The mitigation of risk of response better serves the city than providing the cost of response.

It is very difficult to measure the actual impact of fire prevention and public education on incident response in a growing community with increased response, however prevention and public education is a positive step. Over time if the prevention and public education program is effective, the data will show this result through less response and a reduction of loss of life, injury and property damage.

Complaint and requested inspections plus targeted area inspections coupled with public education and plans examinations, fire origin and cause investigations absorb almost all of the work plan allocations of the branch. There is a current need to be more proactive in regular inspections and high risk establishments and trying to reduce the frequency of false alarm responses from the Operations Branch.

- Currently, the Fire Prevention Branch has in excess of 4000 open files with a total Branch compliment of 8 personnel. One staff member spends 100% of their time on public education; a second member spends 25% of time to assist on public education and another spends 90% of their time on plans examination. If you calculate origin and cause investigation, time training staff to keep current with code changes and enforcement, there is limited time after legislative complaint and request inspections to conduct regular inspections on high risk buildings. With the anticipated increased requirements on legislative requirements this will increase the pressure on the Branch and will require a further service delivery review of the branch. The Branch has become more reactionary than proactive, without the requested efficiencies, this will continue to be the case.
- Current Fire Underwriters Standards suggest 1 inspector for every 15,000 population and does not include supervisory staff or those involved in plans examinations. The City of Barrie with a population of 141,000 would suggest there should be 9 inspectors.

6.11 Public Fire and Life Safety Officer

Public Education is a requirement under the Fire Protection and Prevention Act and is currently managed by the Public Fire and Life Safety Officer with assistance from other Fire Prevention Officers when time permits. Current Fire Underwriters standards suggest 1 Public Education person for every 50,000 population; therefore theoretically there should be at least 2 and in the near future 3 Public Fire and Life Safety personnel.

Generally it is believed the public tend to be complacent about fires and the resulting losses. The public tends to accept the consequences of fire and offers community support and comprehensive insurance packages to mitigate damages.

Public attitude towards fire needs to be assessed in order to identify, what role it plays in determining the extent of fire losses. An understanding of how the attitude of different groups (e.g. juveniles, people in various socio-economic categories, the aged and vulnerable sectors, etc.) affect fire losses, fire safety and fire awareness will assist in determining some of the underlying causes of fires in Barrie. Properly designed public fire and life safety education programs may significantly improve public attitudes toward prevention of fire and thereby help reduce fire losses in Barrie. This requires a five step process:

- **Conduct a Community Analysis** – A community analysis is a process that identifies fire and life safety problems and the demographic characteristics of those at risk.
- **Develop Partnerships in the Community** – A community partner is a person, group or organization willing to join forces and address a community risk. The most effective risk reduction efforts involve the community in the planning and solution process.
- **Create a Strategy to Solve the Problem** – An intervention strategy is the beginning of the detailed work necessary for the development of a successful fire and life safety risk reduction process.
- **Implement the Strategy in the Community** – Implementing the strategy involves testing the interventions and then putting the plan into action in the community. A well-coordinated and properly sequenced implementation is essential. Implementation occurs when the intervention strategy is put in place and the implementation plan schedules are followed.
- **Evaluate the Results** – The primary goal of the evaluation process is to demonstrate that the risk reduction efforts are reaching target populations, have the planned impact, and are demonstrably reducing loss. The evaluation plan measures performance on several levels, including formative, process, impact, and outcome objectives.

SECTION 7 – RECOMMENDATIONS

7.1 Executive Recommendations

The executive recommendations are incorporated and support the level of services established in the Establishing and Regulating By-law in order to accomplish the departments mandate and mission as approved by Council. Barrie Fire and Emergency Service are committed to the major programs that include, but are not limited to:

- Fire Prevention
- Public Education
- Fire Suppression
- Technical Rescue
 - Control of Hazardous Materials Incidents
 - Extrication and Rescue
 - Land and Vessel Based Ice/Water Rescue
 - High/Low Angle and Confined Space Rescue
 - Tiered Medical Response
 - Trench Rescue
 - Elevator Rescue
- Public Assistance
- Fire Cause and Origin Investigation
- Training
- Communications/Dispatching Services
- Emergency/Disaster Management

The major components that guide and govern Barrie Fire and Emergency Service are the Establishing and Regulating By-law, the Fire Protection and Prevention Act the Emergency Management and Civil Protection Act, and the Occupation Health and Safety Act. There are a host of other municipal by-laws and legislation that affect the operations and business delivery; however, the service delivery of the department is considered appropriate for the community it serves.

Short Term Objectives (1 -3 Years) 2016 - 2018

- **A Records/Data Management System should be integrated into the Fire Prevention Branch as soon as reasonably practicable** – The City of Barrie’s Building Department has an existing database application (AMANDA) which houses comprehensive building and premise information.
 - As part of the requirements of the Fire Protection and Prevention Act, the City of Barrie has to conduct annual simplified risk assessments of the City, a portion of this assessment examines the current building stock in

the City. Currently this is spread between the Building Department and the Fire Prevention Branch that currently uses a different database program. There is a need to conduct a Comprehensive Risk Assessment of the city and this will greatly simplify that data collection.

- There are considerable benefits to the Fire Prevention Branch to be gained through the facilitation of access to this worthy information, including the elimination of duplicate records and redundant work processes. This has been a recommendation since the 2009 Fire Master Plan. Various city departments have been involved in a committee (APLI) and are in the process of implementing a program from Accela. It is a program that provides solutions to automate and streamline civic processes around land, licensing, asset management, environmental health and safety, legislative management, recreation and resource management, and more. This will lead to improved efficiencies and facilitate an increase to the current level of inspections that can be conducted annually.
 - Currently Fire Prevention staff does not have the ability to enter inspections and data in the field and are required to return to the station to enter the data. A Records/Data Management System combined with the use of laptops will allow this automatic transfer.
 - This will also provide a reliable data source for future file searches, eliminate duplication and improve structure and procedures when considering departmental and interdepartmental information and procedure sharing.
 - Fire Prevention Staff will also be able to better communicate risk and safety concerns that are identified in the field when an incident occurs.
- **Initiate accreditation with the Centre for Public Safety Excellence** - a nonprofit organization that helps local public safety agencies around the world streamline and improve the services they provide their communities.
 - The Centre for Public Safety Excellence (CPSE) supports and encourages agencies and personnel to meet international performance standards through various programs and the work of two commissions: the Commission on Fire Accreditation International (CFAI) and the Commission on Professional Credentialing (CPC).
 - Accreditation is a comprehensive self-assessment and evaluation model that enables organizations to examine past, current, and future service levels and internal performance and compare them to industry best practices. This process leads to improved service delivery.
 - CPSE's Accreditation Program, administered by the Commission on Fire Accreditation International (CFAI) reflects a comprehensive self-assessment and evaluation model that enables fire and emergency service organizations to examine their service levels and performance in a way that allows them

to compare to industry best practices. This process leads to improved service delivery by helping fire departments to:

- Determine community risk and safety needs.
 - Evaluate the performance of the department.
 - Establish a method for achieving continuous organizational improvement.
 - The CFAI accreditation process provides a well-defined, internationally-recognized benchmark system to measure the quality of fire and emergency services.
 - The self-assessment process demands the largest portion of time to achieve accreditation. Although there is a substantial commitment of time and resources, departments nationwide have realized the value of the self-assessment process and accreditation model because you are documenting policies and procedures that you should have in place already. You are simply documenting what you are doing. The benefit of the accreditation process is realized more in the journey, than the destination.
 - The accreditation process results in the development of planning documents, including short-term action and long-term strategic plans, important tools in the budgeting process and a basis for justifying departmental programs and services. Accreditation has the potential to dramatically improve a department, its services, and its vision for the future.
 - The CFAI process is being undertaken in a number of urban fire departments within Ontario and completing this process will assist in BFES remaining a progressive and future focused organization.
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- **Work with City Departments to ensure an all hazards approach to business continuity planning that supports the City of Barrie Emergency Plan** – the Emergency Management and Civil Protection Act states:
 - 3. (1) Every municipality shall formulate an emergency plan governing the provision of necessary services during an emergency and the procedures under and the manner in which employees of the municipality and other persons will respond to the emergency and the council of the municipality shall by by-law adopt the emergency plan. 2002, c. 14 ,s. 5 (1) .
 - The services that the City of Barrie provides to the public and interdepartmental are vast. Disruptions of some of these services could potentially impact public safety and security. Therefore, the City of Barrie must continue providing such critical services and/or limit their disruption as a result of emergencies.
 - Continuity of Operations/Business Continuity is a component of the Emergency Management Program (legislated under the Emergency Management and Civil Protection Act, 1990) that ensures the City of Barrie will be able to provide critical functions and services during an emergency. The Continuity of Operations/Business Continuity process provides a framework for the determination of functions and services that are time-

sensitive and critical, and utilizes a risk management approach to assure the continuity of such critical functions/services by identifying and assessing hazards, risks and the impact of potential disruptions; to develop viable mitigation, response and recovery strategies and plans; to earmark resources; to train personnel and to test and maintain plans. Continuity of Operations/Business Continuity should be an ongoing process that is supported by senior management, properly resourced, integrated into the City of Barrie's emergency management planning framework and reviewed for currency from time to time.

- "CSA Z1600-14 Emergency and Continuity Management Program" is a standard that outlines the requirements for an emergency and continuity program. The standard serves as an effective benchmark to allow organizations to evaluate conformity of their emergency and continuity management program to this Canadian Standard.
- 6.2.6.1 The organization shall implement documented plan(s) that detail how the organization will manage a disruptive event and how it will recover or maintain its critical activities to a predetermined level based on management approval.
- 6.2.6.2 The organization shall establish a continuity management structure that provides for capabilities to:
 - confirm the nature and extent of an incident;
 - implement appropriate actions;
 - have processes and procedures for the activation, operation, coordination, and communication of continuity strategies and plans;
 - have resources available to support the processes and procedures to manage an incident; and
 - communicate with stakeholders.
- The residents of Barrie would expect and anticipate that during any type of emergency the City of Barrie would maintain essential services and bring back all services in a timely manner. City staff needs to prioritize the 80 plus services they provide into categories of how long they can withstand not being delivered. Reallocating staff to maintain essential services and methods of bring services back on-line.
- **Complete a communications service delivery standard between IT and BFES, and develop a communications service delivery standard between BFES and its communications customers** – The communications centre is a complex technical system of multiple varying components and require 24/7 service in case of failure or incidents that hamper the ability of the Branch to operate and receive emergency calls or dispatch fire apparatus to required incidents. In addition, as the Branch has expanded its customer base over several years, there is a need to address these complexities.

- BFES, service partners and IT all play critical roles in this process. It would make for a more seamless process if the levels of service delivery by each partner were well defined and, responsibilities and procedures are in place.
 - Response times for repair, maintenance and trouble shooting incidents need to be established. An on-call structure needs to be included to limit the time required to contact the systems analyst required.
 - The Communications Branch dispatches 19 fire services throughout a large geographical area including Simcoe County and the District of Muskoka. Each fire service has its own uniqueness, levels of service and dispatch requirements. A service delivery standard would outline the responsibilities of BFES and its customers.
 - BFES revised its current contracts with a more compressive option based contract, spelling out each option and the costs associated with each option. This will allow for more revenue based on each individual customers needs and should be included in the service delivery standard.

- **Improve statistical data with improved reporting processes** – There are several legislated requirements on the department for reporting statistical data. There are also several corporate requirements with internal and external partner organizations to report accurate data. Appropriate and accurate data is the cornerstone of reporting and maintaining results based accountability.
 - There is significant manual data entry required across the department to complete all the statistical data. Each process does not align with each other’s reporting requirements or is easily transferable. This consumes considerable staff time. An example is listed above with the use of the records/data management program. This is only one example.
 - Currently, there are approximately 60 personnel that enter data into the provincially required records management system using the FIREHOUSE program. Further education and training is required to ensure that all are entering the data using the same definitions and criteria based on the required standards from the province. Furthermore, a review should be completed in the value of retaining the current data warehouse or transitioning to a different data warehouse compatible with or in conjunction with another corporate solution.
 - Meaningful Key Performance Indicators need to be reviewed and developed to be successful in achieving the previously recommended accreditation. These KPIs have to be consistent with results based accountability and lead to evidence based decision making.

- **Conduct a comprehensive qualitative and quantitative risk assessment for the City of Barrie** - Risk assessment is the process utilized to identify the City of Barrie’s fire protection and other emergency service needs by measuring the

probability and consequence of an adverse effect to health, property, organization, environment, or community as a result of an event, activity or operation. It is the process of examining and analyzing the relevant factors that characterize the City of Barrie and applying this information to identify potential risk scenarios using results based accountability and evidence based decision making. The assessment includes an analysis of the likelihood of these scenarios occurring and subsequent consequences.

- The Office of the Fire Marshal and Emergency Management has two risk assessment tools; the Simplified Risk Assessment model as described above is an annual compliance document that is submitted to the Office of the Fire Marshal and Emergency Management. The second model is a more expansive Comprehensive Risk Assessment model that is one of seven components of the Comprehensive Fire Safety Effectiveness Model. The OFMEM has recently introduced an “Integrated Risk Management Web Tool”. The tool is intended for municipal and fire service decision-makers to determine building risks by taking into account building characteristics and assist municipalities in fulfilling the responsibilities prescribed in Section 2 of the Fire Protection and Prevention Act, 1997.
 - The Emergency Management and Civil Protection Act states: “in developing its emergency management program, every management program, every municipality shall identify and assess the various hazards and risks to public safety that could give rise to emergencies and identify the facilities and other elements of the infrastructure that are at risk of being affected by emergencies.”
 - The risk assessment must not only look at the physical risk assets, but also the demographics of the population in order to effectively deliver public education and fire prevention programs to target audiences.
 - A comprehensive risk assessment will result in improved response times and improved risk-to-resource allocation.
- **Develop a plan to increase the number of pre-incident plans with a focus on high risk buildings by occupancy code** - pre-incident planning is one of the most effective tools a fire department has in controlling or reducing the damage caused by fire. Planning for fire in industrial, commercial and high risk occupancies increases the confidence and ability of the fire service in handling the fires and reduces the risk to the life safety of the fire fighters involved.
 - In the recently completed Fire Underwriters Survey, BFES scored very low in this category.
 - A pre-incident planning program has been developed, however to receive additional credit within fire insurance grading and to help improve fire fighter effectiveness during emergency events, the number of completed pre-incident plans should be increased.

- As the fire department continues to develop its pre-incident planning program, additional credit up to the maximum can be achieved.
 - It is strongly recommended that the pre-incident plan continue to expand and should be developed in accordance with NFPA 1620, Recommended Practice for Pre-Incident Planning, or a similar standard/guideline.
- **Land acquisition and design for a station in the south-east quadrant consistent with the Genivar Station Location Study (2013)** – The Genivar Station Location Study is attached in Appendix “E” and sets variable modelling that was conducted to reach the preferred station modelling with an outlook to 2031.
 - The preferred model combined with projected roadway geometry and projected population demographics forecasting demonstrate a need for a station in the south-east quadrant as the area is developed. The need to have services available during development is a Council approved direction with proposed development in the annexed lands.
 - The Genivar report was published in 2013 and recommended that Station 6 be operable by 2016. The short term objectives in the 2014 Fire Master Plan recommended operational in 2017. Since then reviews and revisions to the timing and development in the south-east now lead to the recommendation that consideration be given to operational in late 2018, or early 2019.
 - The preferred model shows the best location to be in the Prince William Way and Mapleview Drive area.
 - The proposed new fire station should be operational in late 2018 or early 2019 in order to accommodate projected growth in this area. Station 6 is the first expansion of current coverage that BFES should implement due to the need to ensure proper coverage. As 2018 is fast approaching, the fire service must secure the land and start planning for construction in the short term.
 - As population grows on the eastern side of the annexed lands, Station 3 will be covering too many residents and workers for the station to offer proper response times and the new Station 6 is required. The industry standard is one pumper for every 20,000 – 25,000 population based on response times and other variables.
 - The Fire Station Location Study takes into account that the proposed location will be available for implementation in 2018. Construction and planning of the new location should be planned accordingly. Construction could take 12 or more months depending on the site and design.
- **Renovations and alterations to Stations 3 and 4 to increase functionality of both stations** – Both stations need renovations to increase the functionality and increase capacity for apparatus, meet legislative requirements for accessibility and health and safety requirements.

- Add a third apparatus bay to the east of the existing structure at Station 3 and remove the existing hose tower which is cosmetic. Also increase the kitchen and lounge area to accommodate 2 crews of up to 10 firefighters including the appropriate accommodations for male and female firefighters.
 - For Station 4 renovate and expand existing structure for female quarters and the ability to house 2 crews of up to 10 firefighters including the appropriate accommodations for male and female firefighters.
- **Develop an inspection schedule where the frequency of inspections is appropriately suited to the risk profile of each occupancy/target group** – In conjunction with the above mentioned comprehensive risk assessment, an inspection schedule based on the outcomes of the evidence based risk assessment should be developed to reduce the risk or impacts of incidents.
 - This will lead to improved fire code compliance by targeting occupancies or target groups that have been identified through a risk assessment as being non-compliant or lacking knowledge of the regulations.
 - There will be improved risk-to-resource allocation focusing on the occupancies or target groups where we can make a larger difference.
 - This is a recommendation of the Fire Underwriters Survey and could lead to higher rating, thus reducing insurance premiums for citizens and businesses in Barrie.
 - The Fire Protection and Prevention Act require inspections based on “complaint and request”, which take up a considerable amount of current resources of the Branch. The development of an inspection schedule will assist in directing available remaining resources to concentrate on the targets with the most significant life safety and hazards first then each occupancy of the same type should be inspected to remain fair and consistent. Thus, leading to results based accountability.
 - An aggressive routine inspection schedule may result in reduced complaints and improved fire safety in our highest risk occupancies.
- **BFES, the Engineering Department, Corporate Asset Management and Water Operations recently concluded a Fire Protection and Water Supply Survey in conjunction with Fire Underwriters Survey** – The value of a Fire Protection and Water Supply Survey is multi-functional and will assist the departments listed and the residents and businesses in Barrie.
 - A Fire Protection and Water Supply Survey are used by the named departments to plan new infrastructure and improve existing infrastructure that needs replacing and upgrading. The survey considers; fire service delivery, fire prevention, and water delivery for firefighting operations and communications.

- The last survey was conducted in 2004 by Fire Underwriters Survey (FUS). Since that time there have been major changes to the fire service and water supply throughout the city. As a result of the 2009 Fire Master Plan, some work was completed on certain areas of the city where there is under-sizing of the current watermains.
 - The water supply for fire protection has increased dramatically since the 2004 Survey. The upgrade in watermains, the addition of the Surface Water Treatment Plant and the recently commissioned Sunnidale Reservoir are some of the improvements over the years.
 - The 2004 FUS noted on the lack of growth of the fire service compared to the growth of the city. Recent growth of the fire service in staffed apparatus and the addition of Station 5 will no doubt bring the service to a more sustainable position in going forward with a current survey.
 - The results of a Fire Protection and Water Supply Survey are communicated to insurance companies in Canada and are used to base the fire insurance premiums on residential and business insurance ratings. A positive report could result in lower fire insurance premiums for the City of Barrie taxpayers.
 - The report contained several recommendations for the City of Barrie to consider in an effort to improve its overall ratings.
- **Explore partnerships with other municipalities to provide technical rescue disciplines on a total cost recovery basis and possible source of revenue through response and/or training initiatives** – A joint objective of Council and City departments is to try and reduce the dependency on tax based revenue through increased revenue and cost recovery.
 - There is a growing trend in the fire service to look at regionalization for certain services, to try and help reduce fire service costs of providing an ever increasing number of disciplines that can tax the service with expensive training and equipment costs.
 - Barrie Fire and Emergency Service is the largest fire service in the geographical area of Simcoe County. The current full-time staff exceeds the total full-time staff of all fire services in the county. Barrie currently has more full-time staff than any municipality to the north of Barrie.
 - BFES has the ability to provide those services to other municipalities that do not have the ability to provide those technical rescue services. The Municipal Act and the Fire Protection and Prevention Act allow municipalities to enter into agreements for this type of service delivery. This is based on full recover costs of response and contributing to the ongoing training requirements to maintain annual training requirements and certification.
 - BFES currently has an agreement with the County of Simcoe and all municipalities to provide Hazardous Materials response to life threatening

situations on a cost recovery basis, some ongoing annual training requirements and equipment purchasing for the delivery of the service.

- BFES should continue looking at entering into legal agreements to provide technical rescue capabilities with other municipalities on a cost recovery basis for delivery of services and an annual contribution to the ongoing training and maintenance of training and equipment.

- **Implement a sustainable back-up communications location consistent with best practices and standards** – With today’s technology, there is always an inherent risk of failure, system slow-downs, cyber-attacks, natural disaster, or human caused interruptions to the technology. The one most effective resolve is to create dynamic redundant systems.
 - Current, redundancy in the Communications Centre is being addressed by BFES and IT.
 - Currently, the back-up location in case of failures or the need to evacuate BFES Headquarters is located at the Barrie Police Facility on Sperling Drive. BFES Headquarters could need to be evacuated for any number of reasons.
 - The capability of the back-up location is primitive considering today’s technology and available redundant solutions. Even a system failure of the Barrie phone exchange would create an outage in both locations. Consideration must be given to have outside Barrie exchange capabilities to ensure all emergencies services can continue to operate at a desired level of service.
 - With the pending new Police Facility in the plans, strategic planning for the requirements for both services and the costs associated with a sustainable back-up for both agencies should be undertaken as part of the process.
 - The Police Back-up is at Headquarters and is basically in the same condition as Fire’s. A viable alternative might be to consider a joint back-up location that could serve both services at another location. With the planned construction of Station 6 or the permanent Station 5, these may have additional space added to them to accomplish this.

- **Explore partnership opportunities with academic institutions, organizations and government agencies where BFES can contribute to relevant and current projects** – there are partnership opportunities that exist that can help BFES in becoming more effective and efficient and contribute to advancements of new and improved methods of service delivery.
 - There is an ever increasing reliance on the fire service to become more results based accountable and make evidence based decisions. The best way to achieve this is through data collection and analysis. This can be extremely time consuming and would be based on the expertise level in

- the fire service to determine the accuracy of the results. Partnership with other experienced organizations would lead to more accurate and accountable results.
- There is a vast array of “industry best practices” in the fire service and are for the most part generalized. Partnerships would be tailored to the local needs and circumstances in Barrie and reflect a more contextual result based on the City of Barrie.
 - Partnerships can lead to improved research and knowledge in BFES and also the possibility of external funding to assist.
- **Review the service levels provided to maintain and repair the growing fleet balanced against capital costs of replacement** – One of the biggest capital outlays for BFES is apparatus, whether it be new fleet or fleet replacement. Combined with significant maintenance and repair costs, there needs to be a systematic approach to weighing the cost of repair against the value and replacement cost of apparatus.
 - The size of the department’s fleet is going to increase with the growth of the city and the fire service. The cost of apparatus has increased significantly with new legislated emission controls in Canada, the technological advancements of the apparatus and new requirements under the National Fire Protection Association Standards.
 - A fleet replacement schedule should be developed based on the criteria established by both the Capital Asset Management criteria and industry standards for replacement or refurbishment. Although the fleet for the most part is considered adequate, there are a number of apparatus that are well past life cycle and costly to repair. The 75ft ladder truck is in need of being replaced, the Technical Rescue truck needs replacing and the Command Centre (decommissioned in 2013) is well beyond its life cycle and is all but unreliable to operate.
 - The Fleet Services Technicians that maintain and repair the fire apparatus need to be Emergency Vehicle Technician Certified. The increasing size and complexities of the fleet is creating a strain on Fleet Services to maintain, repair and schedule regular maintenance of apparatus. Fleet Services should review current staffing levels, services levels and training combined with the required facilities to maintain the apparatus. The current Fleet Services Branch location is in an older building that may require renovations or replacement to be able to properly maintain the fire fleet.
 - **Begin implementation of a Computer Aided Dispatch, Automated Dispatch, Automated Vehicle Locator and GPS traffic pre-emption link project to enhance response times throughout the city** – traffic pre-emption is the ability of responding fire apparatus to change the traffic lights to respond and allow for the ability to make changes to traffic lights to speed up response times.

- The current system employs 1970's technology that uses line of sight opticom process to see the apparatus coming and then turns the traffic signal green as the apparatus approaches. There is considerable cost and upkeep to this system for every set of traffic lights in Barrie.
 - This is problematic with current road design and the geographical nature of the City of Barrie, often pre-emption is not successful by the time the apparatus reaches the intersection because of curves, hills and apparatus turning onto roads in close proximity to the traffic signals. The pre-emption system must receive the signal from the responding apparatus and then go through a full cycle of turning lights in the opposite direction, yellow then red and allow for pedestrians to clear the intersection.
 - The new system links the Computer Aided Dispatch system (CAD), automated vehicle locator (AVL) and GPS to determine the route the apparatus is going to take and enhance pre-emption thereby decreasing response times and does not rely on line of sight. This would allow for a safer cycling as referred to above and allow the traffic signal to be green when the apparatus reaches the intersection.
 - Some of the systems are already in place such as the CAD and AVL. This modern technology is actually cheaper to install and operate than the current system and will increase firefighter and public safety.
 - This project will require a coordinated project involving BFES, Roads, Roads Engineering and IT.
- **Work with the Building Department and IT to develop a bidirectional antenna strategy** – bidirectional antennas are antennas built into new or existing buildings to increase firefighter and public safety by enhancing firefighter communications in buildings.
 - The need for adequate and reliable in-building communication in emergency situations has gained momentum across the nation in recent years. It requires new buildings to adequately ensure first responder communications.
 - First responders, including fire, police and emergency medical services often cannot effectively use their radios in larger structures. It is crucial to implement properly designed fire repeater systems; improperly installed systems can create interference either to the fire department channels or to other public safety radio systems.
 - With the anticipated intensification that will occur in Barrie there is a need to ensure Barrie enacts by-laws that require builders ensure radio communications in these buildings meet the requirements of emergency service agencies. The use of modern building components and construction methods are limiting communications in these buildings.

- Georgian College agreed to install a bidirectional antenna in their newly built Sadlon Centre for Health and Wellness. Testing has confirmed great radio communications within the complex.
 - In 2015, Royal Victoria Regional Health Care Centre installed a bi-directional antenna that serves both BFES and Barrie Police for radio communications within the hospital.
 - Some U.S. cities have passed a by-law requiring newly constructed buildings, or buildings modified affecting the fire alarm system with levels below grade shall be tested for fire department radio signal strength. Any building that is two stories or greater below grade or greater than 70 feet in height will automatically be required to have a BDA.
- **Review staffing levels consistent with an organizational review of service delivery needs and anticipated growth in conjunction with the annual business planning process** – the City of Barrie is posed to experience substantial growth in the next decade with development of the south-end lands and future intensification in the established growth nodes.
 - In the past few years, the province has changed several pieces of legislation and downloaded responsibility on the municipalities without any funding and limited support. Changes to the Propane Handling Act, the Fire Prevention and Protection Act, and Vulnerable Occupancies have added workload to the municipal fire services. This trend is expected to continue.
 - As the City of Barrie enters into another anticipated growth expansion, one of Councils directions is to develop city services in conjunction with the growth.
 - A review of the anticipated future service delivery needs should be conducted considering the anticipated growth of the department and the city and possible efficiencies. Business cases should be developed to be considered during the annual business planning process.
- **Annually review and revise as necessary the Fire Master Plan** – Master Plans are living documents and must be reviewed on a constant and consistent basis to guide the department in reaching its strategic priorities.
 - Every year the department builds its business case for both operating and capital projects and processes. The Business Plan sets the direction and objectives for the upcoming year. After Council passes the Business Plan, it would be an opportune time to review and revise the Fire Master Plan based on what has been accomplished over the past year and review expectations for the coming year.
 - Changes must also be reviewed that affect the department and include but not limited to:
 - Growth

- Changes in Legislation
- Increased demands on the department
- Efficiencies and effectiveness initiatives
- Technology advancements
- Fiscal responsibility
- Any major changes to the Fire Master Plan should be presented to Council for review and acceptance before implementation.

Intermediate Term Objectives (3 -5 Years) 2018 – 2020

- **Construction of Station 6 in the South-East** – construction of a station could take as long as 12 - 16 months to completion, depending on site and design. The population growth expectations and preferable station location are contained in the Genivar Station Location Study attached in Appendix “E”.
 - The current population and employment density expectations in 2017 show that the current Station 3 would be required to protect a population density of 47,445 and employment of 12,991. This far exceeds the industry best practice of 20,000 – 25,000 population (dependent on geography, building type, age of the buildings and response times) for each responding apparatus.
 - By 2021, Station 6 would be responding to a population of 25,938 and employment of 2,964. This again is pushing limits as there are several growth nodes that this station would respond to.
 - The need to have services available during development is a Council approved direction with proposed development in the annexed lands. This station will also provide secondary coverage to Station 3 and provide coverage when Station 3 is on a call or backing up other Stations at multiple Station response calls.
 - All new stations in Barrie should be constructed to house a minimum of two apparatus, have facilities for at least two operating crews and provisions for additional Fire Prevention Officers to work out of reducing the travel requirements and lead to efficiencies in the future.
- **Hire staff for Station 6 based on service delivery standards and legislated requirements** – with the construction of Station 6, there needs to be the additional staffing required operating the station and ensuring staffing requirements for the entire city meet with best industry practices.
 - It is anticipated that a pumper will be located in the new Station 6, which will require the recruitment of an additional 20 firefighters.
 - Lead time before the station opens is required to allow for 12 weeks of training for the recruits. The recruits would be blended into the existing staff complement to ensure the new Station is staffed with a blend of experienced firefighters.

- A recruit class of 20 firefighters has been a challenge in the past for the Training Branch. As previously discussed, the anticipated retirement and recruitment could exceed 20 firefighters adding increased demand on the Training Branch.
 - A review should be conducted to determine if a phasing of recruitment can benefit the Training Branch and the department by splitting the recruitment over two years and the benefits of possible overtime avoidance, pre-opening of the new Station.

- **Acquisition of a Pumper for Station 6** – a pumper is the basic apparatus utilized by the fire service to respond to a variety of incidents that require multiple disciplines and is staffed with a Captain, Driver and 2 Firefighters.
 - With the opening of Station 6, there will be the additional need for an additional pumper apparatus for the station.
 - Currently, BFES has a sole source agreement passed by Council for specific body type and manufacturer of apparatus in order to enhance the safety of firefighters by all apparatus being the same.
 - Pumpers are custom built according to the specifications desired by each department and can take 12- 14 months to build.
 - There will also be the need to equip the apparatus with the appropriate supplementary equipment carried on BFES pumpers.

- **Review staffing levels consistent with an organizational review of service delivery needs and anticipated growth in conjunction with the annual business planning process** – the City of Barrie is posed to experience substantial growth in the next decade with development of the south-end lands and future intensification in the established growth nodes.
 - In the past few years, the province has changed several pieces of legislation and downloaded responsibility on the municipalities without any funding and limited support. Changes to the Propane Handling Act, the Fire Prevention and Protection Act, and Vulnerable Occupancies have added workload to the municipal fire services. This trend is expected to continue.
 - As the City of Barrie enters into another anticipated growth expansion, one of Councils directions is to develop city services in conjunction with the growth.
 - A review of the anticipated future service delivery needs should be conducted considering the anticipated growth of the department and the city and possible efficiencies. Business cases should be developed to be considered during the annual business planning process.

- **Upgrade communications equipment and associated systems consistent with current and advanced technology** – a dispatch centre is only as effective and efficient as the equipment and systems allow it to be.
 - Firefighter and public safety are reliant on this communications equipment and systems to operate fully, and be technically advanced to allow for the department to meet Council’s and legislated service delivery standards.
 - The technology surrounding communications is in a constant state of advancements and upgrades that requires constant monitoring and research. Failure to stay current with technological advancements and upgrades could jeopardize and increase the chance of system failures.
 - A life-cycle analysis should be conducted by BFES and the IT Department on all systems in communications to assist with future asset management and plan for capital and operating expenditure that will be required during the business planning process.
 - Service Level Agreements should be reviewed to stay current with upgrades to the communications equipment and associated systems both with internal and external business partners.

- **Land acquisition and design for a Permanent Training Facility to meet fire department training requirements and support other city and regional requirements** – constant training is not only a necessity for firefighter and public safety, but is legislated through the Occupational Health and Safety Act.
 - Under the Occupational Health and Safety Act is the Section 21 Fire Service Advisory Committee with representation from the Ministry of Labour and the various fire service stakeholders. This committee produces guidelines for the fire service that deal with the overall health and safety of the firefighters and the public. Although these are guidelines, they are considered regulations under the OH&S Act by inspectors and the courts. They also set certain requirements for firefighter training.
 - The National Fire Protection Association Standards also has requirements for annual training to maintain certification in multiple disciplines both for firefighting operations and the specialty rescue disciplines. Some with minimum requirements that require 40 or more hours of annual training in order to remain current. These require props and facilities designed specifically for the desired outcomes
 - The 2003 inquest into the death of Barrie Fire Fighter Bill Wilkins recommended the development of a training facility in Barrie, and would enhance the health and safety of the firefighters and the public. This realistic training is irreplaceable for this profession as was determined by the Coroner’s Inquest into Bill Wilkins death.
 - The solution would be for Barrie Fire and Emergency Service to a permanent facility in the city limits, where on-duty crews could train

without the reliance on bringing in overtime staffing. There would also be the benefit of BFES revenue by offering the facility when not in use to other municipalities or agencies. The goal would be to have a multi-purpose, multi-scenario station concept that could be used by various City of Barrie Departments and could be used simultaneously by different users.

- **BFES, the Engineering Department, Corporate Asset Management and Water Operations recently concluded a Fire Protection and Water Supply Survey in conjunction with Fire Underwriters Survey** – The value of a Fire Protection and Water Supply Survey is multi-functional and will assist the departments listed and the residents and businesses in Barrie.
 - A Fire Protection and Water Supply Survey are used by the named departments to plan new infrastructure and improve existing infrastructure that needs replacing and upgrading. The survey considers; fire service delivery, fire prevention, and water delivery for firefighting operations and communications.
 - The last survey was conducted in 2004 by Fire Underwriters Survey (FUS). Since that time there have been major changes to the fire service and water supply throughout the city. As a result of the 2009 Fire Master Plan some work was completed on certain areas of the city where there is under-sizing of the current watermains.
 - The water supply for fire protection has increased dramatically since the 2004 Survey. The upgrade in watermains, the addition of the Surface Water Treatment Plant and the recently commissioned Sunnidale Reservoir are some of the improvements over the years.
 - The 2004 FUS noted on the lack of growth of the fire service compared to the growth of the city. Recent growth of the fire service in staffed apparatus and the addition of Station 5 will no doubt bring the service to a more sustainable position in going forward with a current survey.
 - The results of a Fire Protection and Water Supply Survey are communicated to insurance companies in Canada and are used to base the fire insurance premiums on residential and business insurance ratings. A positive report could result in lower fire insurance premiums for the City of Barrie taxpayers.
 - The report contained several recommendations for the City of Barrie to consider to improve its overall ratings.
- **Review and revise the Fire Master Plan** - Master Plans are living documents and must be reviewed on a constant and consistent basis to guide the department in reaching its strategic priorities.
 - Every year the department builds its business case for both operating and capital projects and processes. The Business Plan sets the direction and

objectives for the upcoming year. After Council passes the Business Plan, it would be an opportune time to review and revise the Fire Master Plan based on what has been accomplished over the past year and review expectations for the coming year.

- Changes must also be reviewed that affect the department and include but not limited to:
 - Growth
 - Changes in Legislation
 - Increased demands on the department
 - Efficiencies and effectiveness initiatives
 - Technology advancements
 - Fiscal responsibility
- Any major changes to the Fire Master Plan should be presented to Council for review and acceptance before implementation.

Long Term Objectives (5 -10 Years) 2020 – 2025

- **Phased construction (Phase 1) of the Fire Training Facility based on balancing demand and the Business Planning Process** – as previously recommended there is a need for the Training Facility in the City of Barrie to train and maintain the required training for members of the department.
 - It is proposed to construct a number of buildings and props, over a three year period, which will facilitate the training of firefighters to meet current recommended standards for firefighter certification and NFPA 1402 – Guide to Building Fire Service Training Centres.
 - It is suggested that the acquisition of an appropriately sized property of 12 -14 acres would meet the requisite needs of a Fire Training Facility and provide for possible future expansion.
 - It is proposed that if a site can be found in a location appropriate for the proposed permanent Station 5, the two projects could be linked on one site to reduce financial costs by co-habiting the two projects.
 - It also recommended that this facility contain areas for all fire attack classes including Class A and Class B burns, as well as other training props including a Driver Training Course, all of which have the possibility of being used to generate on-going income to recover operating costs.
 - Phase 1 would consist of:
 - Driver Training Course
 - Fire Tower (Class B burns – natural gas or propane)
 - Residential Burn House (Class A burns – wood, combustible materials)
 - Auto Extrication Area
 - Storage and Ancillary Shelter plus Parking and Road Facilities

- **Construction of the permanent Station 5 in the south-west quadrant** – the current Station 5 is in a leased commercial facility with a lease agreement that expires in 2021.
 - There was a demonstrated need in 2010 to proceed with a temporary Station 5 to enhance response times in the south-west quadrant of the existing boundaries and infrastructure at that time.
 - As the city develops the annexed lands and consistent with the Genivar Station Location Study conducted in 2012, a permanent Station 5 should be constructed in the recommended area.
 - As stated above, it is proposed that if a site can be found in a location appropriate for the proposed permanent Station 5 and the Training Facility, the two projects could be linked on one site to reduce financial costs by co-habiting the two projects.
 - Construction of a station could take as long as 12 - 16 months to complete, depending on site and design. All new stations in Barrie should be constructed to house a minimum of two apparatus, have facilities for at least two operating crews and provisions for additional Fire Prevention Officers to work out of, reducing the travel requirements and lead to efficiencies in the future.

- **Upgrade communications equipment and associated systems consistent with current and advanced technology** – as reflected in the Intermediate Objectives, advancing technology plays an important aspect of a modern Communications Centre.
 - One notable and evident aspect of today's technology is the shortened life cycle expectancy of the technology and the manufacturers support for these systems once newer systems and hardware are developed.
 - As new technology is launched, there will be increased dependency on the city to keep abreast of the changes and the effects on current operating systems.
 - Along with the above, will be the requirement to review and amend the service level agreements with all stakeholders.

- **Review staffing levels consistent with an organizational review of service delivery needs and anticipated growth in conjunction with the annual business planning process** – the City of Barrie is poised to experience substantial growth in the next decade with development of the south-end lands and future intensification in the established growth nodes.
 - In the past few years the province has changed several pieces of legislation and downloaded responsibility on the municipalities without any funding and limited support. Changes to the Propane Handling Act, the Fire Prevention and Protection Act, and Vulnerable Occupancies have

added workload to the municipal fire services. This trend is expected to continue.

- As the City of Barrie enters into another anticipated growth expansion, one of Councils directions is to develop city services in conjunction with the growth.
 - A review of the anticipated future service delivery needs should be conducted considering the anticipated growth of the department and the city and possible efficiencies. Business cases should be developed to be considered during the annual business planning process.
- **BFES, the Engineering Department, Corporate Asset Management and Water Operations completed Fire Protection and Water Supply Survey in conjunction with Fire Underwriters Survey in 2014** – The value of a Fire Protection and Water Supply Survey is multi-functional and will assist the departments listed and the residents and businesses in Barrie.
- A Fire Protection and Water Supply Survey are used by the named departments to plan new infrastructure and improve existing infrastructure that needs replacing and upgrading. The survey considers; fire service delivery, fire prevention, and water delivery for firefighting operations and communications.
 - The last survey was conducted in 2004 by Fire Underwriters Survey (FUS). Since that time there have been major changes to the fire service and water supply throughout the city. As a result of the 2009 Fire Master Plan some work was completed on certain areas of the city where there is under-sizing of the current watermains.
 - The water supply for fire protection has increased dramatically since the 2004 Survey. The upgrade in watermains, the addition of the Surface Water Treatment Plant and the recently commissioned Sunnidale Reservoir are some of the improvements over the years.
 - The 2004 FUS noted on the lack of growth of the fire service compared to the growth of the city. Recent growth of the fire service in staffed apparatus and the addition of Station 5 will no doubt bring the service to a more sustainable position in going forward with a current survey.
 - The results of a Fire Protection and Water Supply Survey are communicated to insurance companies in Canada and are used to base the fire insurance premiums on residential and business insurance ratings. A positive report could result in lower fire insurance premiums for the City of Barrie taxpayers.
 - The report contained several recommendations for the City of Barrie to consider to improve its overall ratings.
 - A business case needs to be developed to recommend an updated Fire Underwriters Survey be conducted to upgrade the ratings for the City of Barrie.

- **Develop a deployment strategy based on service delivery standards and legislative requirements with a full review scheduled for 2020** – a full review should be conducted in 2020 of the department’s deployment based on realistic population growth, intensification, building stock and legislative changes.
 - This current Fire Master Plan is based on assumptions of growth and intensification projections in 2013. A full review should be conducted every 5 years to keep the plan current and sustainable.
 - A comprehensive risk and gap analysis should be conducted to ensure effectiveness and efficiencies in the department branches are current and realistic.
 - Adjust the objectives consistent with the deployment strategy using current data and report to Council.

- **Continued phased construction of the Fire Training Facility** - as previously recommended there is a need for the Training Facility in the City of Barrie to train and maintain the required training for members of the department.
 - It is proposed to construct a number of buildings and props, over a three year period, which will facilitate the training of firefighters to meet current recommended standards for firefighter certification and NFPA 1402 – Guide to Building Fire Service Training Centres.
 - Phase 2 would consist of:
 - Drafting Pond and ponds for settlement and storm management
 - Trench Rescue Prop
 - Structural Collapse Prop
 - Confined Space Prop
 - Storage plus Road and Parking Facilities
 - Stretched Fabric Covered Structure
 - Tanker/Railcar Prop
 - Spill Containment Prop
 - Ring Road and Fire Hydrant Loop

- **Review and Revise the Fire Master Plan** - Master Plans are living documents and must be reviewed on a constant and consistent basis to guide the department in reaching its strategic priorities.
 - Every year the department builds its business case for both operating and capital projects and processes. The Business Plan sets the direction and objectives for the upcoming year. After Council passes the Business Plan, it would be an opportune time to review and revise the Fire Master Plan based on what has been accomplished over the past year and review expectations for the coming year.
 - Changes must also be reviewed that affect the department and include but not limited to:
 - Growth
 - Changes in Legislation

- Increased demands on the department
- Efficiencies and effectiveness initiatives
- Technology advancements
- Fiscal responsibility
- Any major changes to the Fire Master Plan should be presented to Council for review and acceptance before implementation.

Outlook to 2031

- **Continued phased construction of the Fire Training Facility** - as previously recommended there is a need for the Training Facility in the City of Barrie to train and maintain the required training for members of the department.
 - It is proposed to construct a number of buildings and props, over a three year period, which will facilitate the training of firefighters to meet current recommended standards for firefighter certification and NFPA 1402 – Guide to Building Fire Service Training Centres.
 - Phase 3 would consist of;
 - Teaching and Administrative Centre

- **Upgrade communications equipment and associated systems consistent with current and advanced technology** - as reflected in the Intermediate and Long Term Objectives, advancing technology plays an important aspect of a modern Communications Centre.
 - One notable and evident aspect of today’s technology is the shorten life cycle expectancy of the technology and the manufacturers support for these systems once newer systems and hardware are developed.
 - As new technology is launched there will be increased dependency on the city to keep abreast of the changes and the effects on current operating systems.

- Along with the above, will be the requirement to review and amend the service level agreements with all stakeholders.

- **Replacement of Station 2 – Bell Farm Rd.** – end of life cycle for this facility.
 - This facility was built in 1972 and underwent a renovation in the early 2000s. This facility will be 50 years old in 2022 and is not considered the best design for a fire station.
 - Built under the building code of the day, it does not meet modern day building code requirements for fire stations, that are required to meet post-disaster building standards and requirements.
 - A review should be conducted at that time on possible relocation or rebuild on the current site.

SECTION 8 – SUMMARY

Barrie Fire and Emergency Service has been successful in maintaining a reasonable pace with the development of the community and improved fire protection capabilities, as is witnessed in its accomplishments to date since the 2009 Fire Master Plan. With any organization faced with rapid changes and subject to fiscal pressures not only in the municipality but also provincial, federal and globally, the challenges and successes must be reviewed regularly to ensure resources are being used effectively and efficiently.

The Fire Master Plan indicates a number of areas that will require attention in the future, however, it should be noted that no serious unexpected risk to the citizens exists currently. The City of Barrie is expected to undergo rapid growth starting in the next few years. One of the challenges will be for BFES to keep pace with the growth and maintain the current service levels. Incident call volumes will rise and simultaneous responses will increase proportionately adding pressure.

The Fire Prevention/Public Education Branch will see an increase in workload as a result of anticipated legislative changes coming and certainly experience more legislated request and complaint inspections as the city enters this rapid growth mode.

Barrie Fire and Emergency Service is a well-respected fire service in the Province of Ontario, recognized by its peers for its innovative approach to service delivery to its citizens. BFES, through its month citizen surveys of individuals who require our service consistently rate the service as high (32%) and Medium (51%).

Adoption of the recommendations will improve existing service levels for the future and provide better use of existing resources to meet the expectations of Council and the citizens of Barrie.

John Lynn, Fire Chief

APPENDIX A

Acronyms and Glossary

Index of Acronyms

O AFC	Ontario Association of Fire Chiefs
CCPA	Canadian Chemical Protection Association
CBRNE	Chemical, Biological, Radiological, Nuclear and Explosive
CIC	Coordination and Information Centre
CSA	Canadian Standards Council
DDS	Director of Disaster Services
DND	Department of National Defense
DSS	Disaster Social Services
EMS	Emergency Medical Services
ESPC	Emergency Services Planning Committee
EOC	Emergency Operations Centre
EUB	Energy and Utilities Board
EPWS	Early Public Warning System
ERCC	Emergency Response Communications Centre
ERD	Emergency Response Department
FCO	Fire Commissioner's Office
FUS	Fire Underwriters Survey
IC	Incident Commander
ICP	Incident Command Post
ICS	Incident Command System
MCI	Mass Casualty Incident
MCR	Medical Co-Respondent
MEP	Municipal Emergency Plan
MOH	Medical Officer of Health
MVC	Motor Vehicle Collision
NGO	Non-Governmental Organization
OFCA	Ontario Fire Chiefs Association
OH&S	Occupational Health and Safety
OOFM	Office of the Ontario Fire Marshal
PIO	Public Information Officer
PSEPC	Public Safety and Emergency Preparedness Canada
RCMP	Royal Canadian Mounted Police
REOC	Regional Emergency Operations Centre
SOG	Standard Operating Guidelines
SOP	Standard Operating Guidelines

Glossary of Terms

Alert	Is a phase of emergency response in which there is a possibility of an emergency situation occurring within the near future? During the 'Alert' phase of the response, selected Emergency Operations Centre personnel monitor the situation and provide informational and instructional bulletins to department, agencies, and the general public, as appropriate.
Council or Councils	The Councils of the City of Barrie
Declaration of a State of Local Emergency	A resolution of the Disaster Services Committee to create a Temporary legal state in which extraordinary action may be taken to address a major emergency or disaster.
Director of Disaster Services	The Director of Disaster Services who assumes the position of EOC Director upon activation.
Disaster	An occurrence of a natural catastrophe, technological accident, or human caused event that has resulted in severe property damage, deaths, and/or multiple injuries. Beyond the capability of the Town to handle with its resources.
Emergency Operations Centre (EOC)	The protected sites from which civil officials coordinate, monitor, and direct emergency response activities during an emergency or disaster.
Emergency	Any occasion or instance that warrants action to save lives and to protect property, public health and safety. A situation is larger in scope and more severe in terms of actual or potential effects.
Emergency Services Planning Committee	Emergency Services Planning Committee made up of representatives of all Regional Partners and Stakeholders
Evacuation	Organized, phased, and supervised dispersal of people from dangerous or potentially dangerous areas.

Evacuees	All people removed or moving from areas threatened or struck by a disaster.
Fire Chief	Fire Chief who is responsible for a designated area within the Municipality
Governance Body	Council members of the City of Barrie and Stakeholders
Hazard Analysis	A document which identifies the local hazards that have caused, or possess the potential to adversely affect public health and safety, public and private property, or the environment.
Hazard	A potential threat to the health or life of individuals, to property and/or to the ability of individuals to maintain their livelihoods and regular daily activities. Hazards could include natural forces (such as wind, drought, earthquakes etc.) or technologically induced threats (such as aircraft and highway mishaps, industrial accidents, explosions etc.)
Impact	The effect that each hazard will have on people such as injury and loss, adverse effects on health, property, the environment and the economy.
Incident	A situation that is limited in scope and potential effects.
Incident Commander (IC)	The individual responsible for making operational decisions to manage an incident.
Incident Command Post (ICP)	A location from which the Incident Commander directs the site response to the emergency. Incident objectives, strategies and tactics for the site are formulated and directed from the ICP
Incident Command System (ICS)	A standardized organizational structure used to command control, and coordinate the use of resources and personnel that have responded to the scene of an emergency.
Interface Fire	A fire in an area where combustible wildland fuels are found adjacent to houses and other structures.

Level of Service Bylaw	Defines service and identifies roles and responsibilities
Local Authority	Councils of the Regional Partnership
Mass Care	The actions that are taken to protect evacuees and other disaster victims from the effects of the disaster. Activities include providing temporary shelter, food, medical care, and other essential life support needs to those people that have been displaced from their homes because of a disaster or threatened disaster.
Response	Those measures undertaken immediately after an emergency has occurred, primarily to save human life, treat the injured, and prevent further injury and losses. They include response plan activation, opening and staffing the EOC, mobilization of resources, issuance of warnings and direction, provision of aid, and may include the declaration of a State of Local Emergency.
Risk	The chance or likelihood of an occurrence based on the vulnerability and known circumstances of a community.
Standard Operating Guidelines	A set of instructions constituting a directive, covering those (SOG) features of operations which lend themselves to a definite, step-by-step process of accomplishment.
Wildland Fire	A wildfire, also known as a wildland fire, forest fire, vegetation fire, grass fire, peat fire, bushfire, or hill fire, is an uncontrolled fire often occurring in wildland areas, but which can also consume houses or agricultural resources.

APPENDIX B

Legislation Affecting the Fire Service

Fire Protection and Prevention Act (new Carbon Monoxide Regulations added)

Occupational Health and Safety Act

OH&S Section 21 Fire Service Committee Guidelines

Municipal Act

Propane Handling Act

Environmental Protection Act

Emergency Management and Civil Protection Act

Employment Standards Act

Labour Relations Act

Municipal Freedom of Information and Protection Act

Ontario Fire Code (new regulations for vulnerable occupancies)

Ontario Building Code

Coroners act

Workplace Insurance Safety Act

Ontario Fire Marshal's – Public Fire Safety Guidelines

Highway Traffic Act

Canadian Safety Association

National Fire Protection Association Standards

New Legislation before Parliament

- Changes to the FPPA Labour Relations Amendments
- WSIB Presumptive Legislation - PTSD

APPENDIX C

Establishing and Regulating By-law

APPENDIX D

Financial Matrix

2014 FIRE MASTER PLAN - FINANCIAL MATRIX

OPERATING BUDGET:											
Facility	Fire Master Plan Financial Item	Notes	2014 Approved Budget	2015 Proposed Budget	2016 Proposed Budget	2017 Proposed Budget	2018 Proposed Budget	2019 Proposed Budget	2020 Proposed Budget	2021 Proposed Budget	2022 Proposed Budget
Fire Operations Annual Operating Budget:			23,140,918	23,835,146	24,601,700	25,494,251	28,682,926	30,339,861	31,250,057	32,187,559	33,230,436
	Hire 1 Public Education Officer	Pro-rated to 1/2 year for 2015		50,000	50,000						
	Outfit Public Education Officer			4,000							
	Hire 2 Fire Prevention Officers	Pro-rated to 1/2 year for 2016			100,000	100,000					
	Outfit Fire Prevention Officers				8,000						
	Support Staff	Hire 1 Equipment Coordinator			100,000						
	Administration Staff	1 additional FT Clerk Secretary			60,000						
Station 6	Hire 20 Fire Fighters	To staff the new station fire apparatus *Annual salaries pro-rated for 3/4 for 2017				1,500,000	500,000				
Station 6	Facility Operating Costs	Pro-rated to 1/2 year for 2017				33,250	33,250				
	Hire 8 District Chiefs	2 District Chiefs per shift (North and South) pro-rated to 3/4 year for 2017				720,000	240,000				
	Outfit 28 New Hires					154,000					
Training	Facility Operating Costs									75,000	
Training	Training equipment									50,000	100,000
Station 1	Hire 20 Fire Fighters										2,000,000
	Outfit 20 New Hires										110,000
Development Charges for Outfitting New Hires				-2,640	-5,280	-101,640					-72,600
Revised Fire Operations Annual Operating Budget:			23,140,918	23,886,506	24,914,420	27,899,861	29,456,176	30,339,861	31,250,057	32,312,559	35,367,836
Impact of Fire Master Plan on Fire Operations Annual Operating Budget:			0.0%	0.2%	1.3%	8.6%	2.6%	0.0%	0.0%	0.4%	6.0%

Operating Budget Notes:

- Annual financial budgets beyond 2013 have been prepared for the master plan financial matrix exercise and have not been formally approved.
- Annual projection assumptions: Fire salaries will increase 3% based on history of contract rate increases. As salaries and benefits are 85% of the annual gross expenditures the annual increase projection will be 3% overall.

CAPITAL BUDGET:											
Facility	Fire Master Plan Financial Item	Notes	2015 Proposed Budget	2016 Proposed Budget	2017 Proposed Budget	2018 Proposed Budget	2019 Proposed Budget	2020 Proposed Budget	2021 Proposed Budget	2022 Proposed Budget	
	Public Education Van	Addition - Growth	35,000								
	Fire Prevention Cars (2)	Addition - Growth		70,000							
	District Chief Cars (2)	Addition - Growth				120,000					
	Marine Boat	Addition		250,000							
	Traffic Pre-emption Link	Replacement & upgrade	100,000								
Station 4	Renovate and Expand existing structure	Add female quarters and expand to accommodate 2 crews of up to 10 firefighters	325,000								
Station 3	Expand existing structure	Addition of third apparatus bay and expand to accommodate 2 crews of up to 10 firefighters		575,000							
Station 6	Pumper for fire station in south-east	Addition - Growth - Includes cost of apparatus equipment		300,000	425,000						
	Construction of new fire station in the south-east quadrant of the City	Land acquisition	600,000								
		Design		1,500,000							
	Communications infrastructure				3,000,000						
	Communications radios	Radios, hall alerting and other related equipment			90,000						
					40,000						
Training	Construction of a training facility	Land acquisition				2,000,000					
		Construction Yr 1					2,500,000				
		Construction Yr 2						9,600,000			
Training	Communications infrastructure					150,000	150,000				
Station 5	Construction of a permanent station 5 in the south-west quadrant of the City	Land acquisition				600,000					
		Construction Yr 1					1,500,000				
		Construction Yr 2							3,000,000		
	Relocation of radio equipment							7,000			
Radio Growth Coverage	Upgrade SWTP tower	Upgrade voting receiver to full simulcast site						200,000			
Station 1	Purchase pumper	To address growth to maintain service delivery needs - includes cost of apparatus equipment							300,000	425,000	
Total Capital Budget			1,060,000	2,695,000	3,555,000	2,120,000	3,250,000	11,450,000	3,307,000	425,000	27,862,000
Projected Development Charges			-400,574	-1,179,642	-2,065,950	-1,337,348	-1,955,556	-7,002,151	-2,081,721	-173,477	-16,196,417
Total Funding \$ Required			659,426	1,515,358	1,489,050	782,652	1,294,444	4,447,849	1,225,279	251,523	11,665,583

Notes:

- 2014 to 2022 capital budgets based on growth capacity and expansion coverage

May-14

APPENDIX E

Genivar Station Location

APPENDIX F

Fire Underwriters Survey 2014

APPENDIX G

Thomas Brown – Design Study for a New Training Facility