Submitted By:

DILLON CONSULTING

THE TOWN OF BRADFORD WEST GWILLIMBURY

RFP #: P-13-09

FIRE MASTER PLAN

Final Report

Submitted to:

Town of Bradford West Gwillimbury
61 Holland Street East
P.O. Box 160
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DECEMBER, 2013

Town of Bradford West Gwillimbury

Fire Master Plan
Final Report

December 2013

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Prepared By:

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1.0 INTRODUCTION

The Town of Bradford West Gwillimbury initiated this Fire Master Plan (FMP) study as part of its comprehensive long-term community planning process to guide Bradford West Gwillimbury Fire and Emergency Services (BWGFES) through the next 10-20 years of growth. Completion of the FMP recognizes the continued commitment of the Town and Council to provide the highest level of services and programs to the community in the most cost-effective and efficient manner.

This FMP provides a complete review of the current operations of the Bradford West Gwillimbury Fire and Emergency Services to assist Council in establishing key objectives for the department. The plan includes recommendations and a systematic implementation plan to address both short-term and long-term strategies for the Town, consistent with the fire master planning process outlined within the Office of the Fire Marshal, Ontario, *Shaping Fire-Safe Communities Initiative.*

This FMP study reviewed the overall operations of the department and assessed the current resources against existing and future needs. This report is intended to serve as the strategic planning framework to guide policy, organizational, capital and operational decisions and ensure that current and future needs are met in a fiscally feasible and responsible manner. The plan has also been created to provide flexibility, in order to adapt the future community needs and circumstances. It is recommended that the plan be reviewed and updated every five years to ensure it best reflects the conditions as of that time period.

The following Fire Master Plan outlines the results of the departmental review, considering industry best practices, guidelines and standards, as well as current legislation. The plan provides recommendations for BWGFES to guide it over the next ten years, with considerations for the twenty year horizon. The Fire Master Plan reviewed the following department components and operations:

- Governance, legislation, by-laws and administration;
- Emergency planning;
- Community risk;
- Budgets, development charges and revenues;
- Fire prevention and public education;
- Emergency response and station location;
- Firefighting staffing and service agreements;
- Firefighter training;
- Apparatus, equipment and maintenance; and
- Dispatch and communications.

1.1 Community Background

The Town of Bradford West Gwillimbury (Town or Bradford West Gwillimbury) was established in 1991 and encompasses the former municipality of the Town of Bradford and portions of the former Townships of West Gwillimbury and Tecumseth. The Town is located in the County of Simcoe, south of the City of Barrie and north of the City of Toronto and York Region, situated along the Holland River.

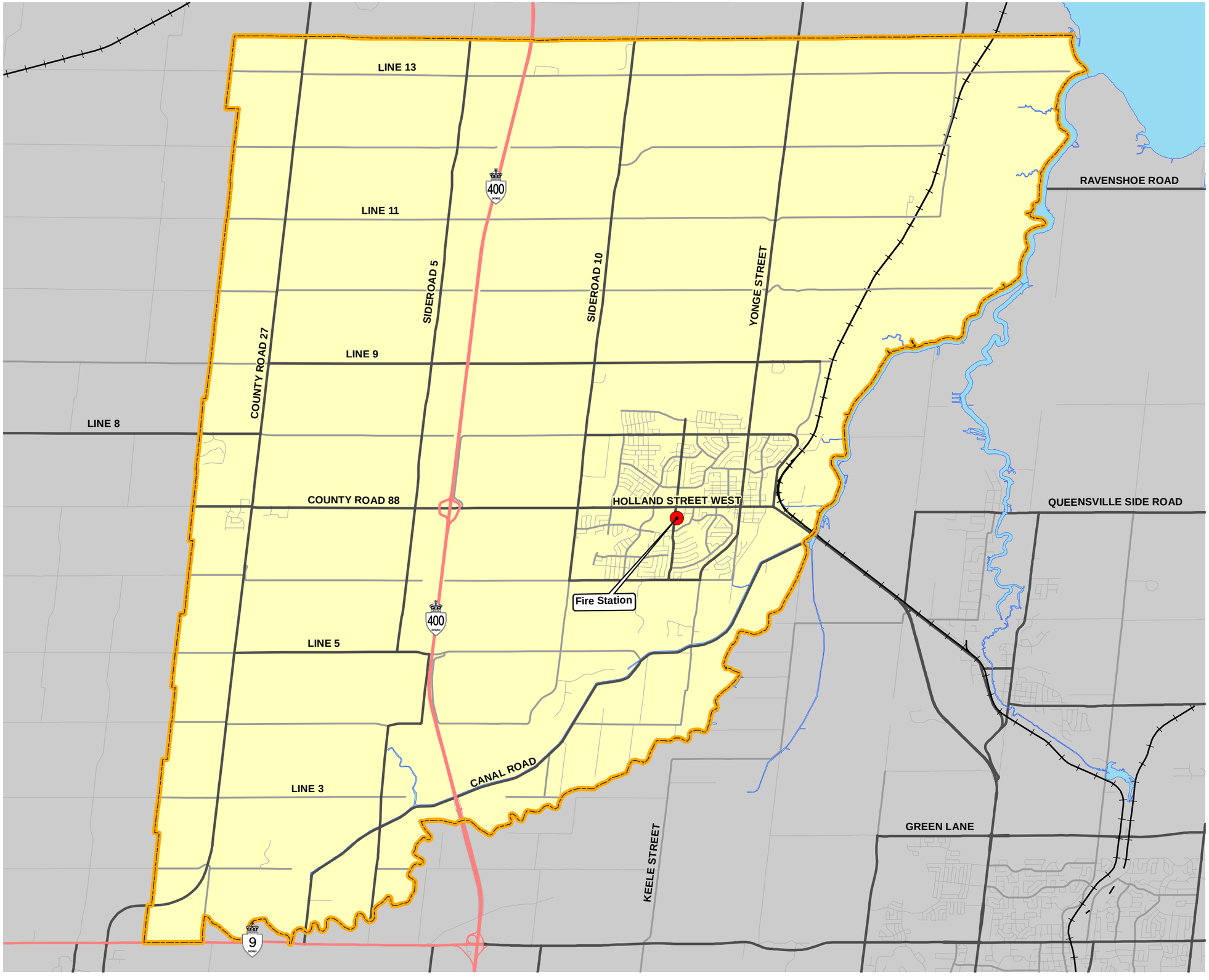
Although it has been known as a predominantly rural and agricultural area, the Town has been experiencing significant residential and commercial growth and development, largely as a result of the Town's proximity to Barrie and the Greater Toronto Area (GTA), as well as a lower cost of living (compared to larger cities in the GTA). The Town also experiences some temporary seasonal population increase during the spring and summer months (mainly on weekends) as a result of outdoor recreational tourism. Its current population is approximately 28,075 people (2011 Census), which has grown by almost 17% since 2006. This growth has been on-going, as the Town experienced an approximate 8% growth rate between 2001 and 2006. There are several settlements and villages within the Town, the largest being the Bradford Urban Area, as well as smaller villages including Bond Head, Newton Robinson, Coulson, Pinkteron, Dunkerron, Deerhurst and Green Valley.

Within the Town of Bradford West Gwillimbury, the urban settlement of Bradford (otherwise known as the Bradford Urban Area) has been designated as a "Primary Settlement Area" for the Simcoe Sub-area under the Growth Plan for the Greater Golden Horseshoe, 2006 (Growth Plan), pursuant to the *Places to Grow Act, 2005*. This designation has, and will continue to attract a lot of growth to the Town. Under the Growth Plan, a strategic settlement employment area has also been designated in Bradford West Gwillimbury, located along Highway 400 (coined the "Highway 400 Employment Lands"). Although the Bradford Urban Area is expected to grow significantly within the 20 year horizon of this plan, the western portion of the Town, including the area along Highway 400 and west of the Highway (e.g. Bond Head Settlement Area) is also expected to experience significant growth; the Bond Head Settlement Area alone is expected to grow by approximately 1,300 additional housing units or more over the next 20 years.

1.2 Department Background

Bradford West Gwillimbury Fire and Emergency Services have evolved into the current model of a composite fire department operating from one station located in the Bradford Urban Area (***Figure 1***). Existing staffing consists of a full-time Fire Chief, Deputy Fire Chief, Fire Prevention Inspector, Fire Training Officer, and Administrative Assistant, and one part-time administrative assistant. Suppression staff includes 12 full-time firefighters (including four Captains) and a complement of 31 volunteer firefighters. BWGFES provides the following services to the Town of Bradford West Gwillimbury:

- Fire Suppression
- Emergency Medical Response
- Rescue Services
- Fire Prevention
- Public Education
- Administration
- Training
- Support Services



BRADFORD WEST GWILLIMBURY FIRE & EMERGENCY SERVICES

TOWN OF BRADFORD WEST GWILLIMBURY
FIRE MASTER PLAN

Station Location

Figure 1: Bradford West Gwillimbury Fire Department Station Location

- Fire Station
- Highway
- Arterial
- Collector
- Local
- Railway
- Waterbody
- Municipal Boundary

0 0.5 1 2 km

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY THE TOWN OF BRADFORD WEST GWILLIMBURY & THE COUNTY OF SIMCOE

MAP CREATED BY: JA
MAP CHECKED BY: SS
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION: I:\GIS\137661 - BRADFORD WEST FMP \DESIGN_GIS\MXDs\STATIONLOCATION.MXD

DILLON CONSULTING

PROJECT: 13-7661
STATUS: DRAFT
DATE: 06/26/13

2.0 LEGISLATION

2.1 Fire Protection and Prevention Act, 1997

Within the Province of Ontario the relevant legislation for the operation of a fire department is contained within the *Fire Protection and Prevention Act*, 1997 (FPPA). The following are applicable sections of the FPPA for reference purposes:

PART I
DEFINITIONS

Definitions

1.(1) In this Act,

"fire chief" means a fire chief appointed under section 6 (1), (2) of (4); ("chef des pompiers")
"fire code" means the fire code established under Part IV; ("code de prevention des incendies")
"fire department" means a group of firefighters authorized to provide fire protection services by a municipality, group of municipalities or by an agreement made under section 3; ("service d' incendie")
"Fire Marshal" means the Fire Marshal appointed under subsection 8 (1); ("commissaire des incendies")
"fire protection services" includes fire suppression, fire prevention, fire safety education, communication, training of persons involved in the provisions of fire protection services, rescue and emergency services and the delivery of all those
Services; ("services de protection contre les incendies")
"municipality" means the local municipality as defined in the Municiapl Act, 2001; ("municipalite")
"prescribed" means prescribed by regulation ("prescript")
"regulation" means a regulation made under this Act; ("reglement")
"volunteer firefighter" means a firefighter who provides fire protection services either voluntarily or for a nominal consideration, honorarium, training or activity allowance; ("pompier volontaire")

Application of definition of firefighter

(3) The definition of firefighter in subsection (1) does not apply to Part IX. 1997, c. 4, s. 1 (2)

Automatic aid agreements

(4) For the purposes of this Act, an automatic aid agreement means any agreement under which,

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

(b) a municipality agrees to ensure the provision of a supplemental response to fires, rescues and other emergencies that may occur in a part of another municipality where a fire department situated in the municipality is capable of providing the quickest supplemental response to fires, rescues and other emergencies occurring in the part of the other municipality. 1997, c. 4, s. 1 (4)

PART II
RESPONSIBILITY FOR FIRE PROTECTION SERVICES

Municipal responsibilities	2.(1) Every municipality shall (a) establish a program in the municipality which must include public education with respect to fire safety and certain components of fire prevention, and (b) provide such other fire protection services as it determines may be necessary in accordance with its needs and circumstances.
Services to be provided	(3) In determining the form and content of the program that it must offer under clause (1)(a) and the other fire protection services that it may offer under clause (1)(b), a municipality may seek the advice of the Fire Marshal
Automatic aid agreements	(6) A municipality may enter into an automatic aide agreement to provide or receive the initial or supplemental response to fires, rescues and emergencies.
Review of municipal fire services	(7) The Fire Marshal may monitor and review the fire protection services provided by municipalities to ensure that municipalities have met their responsibilities under this section, and if the Fire Marshal is of the opinion that, as a result of a municipality failing to comply with its responsibilities under subsection (1), a serious threat to public safety exists in the municipality, he or she may make recommendations to the council of the municipality with respect to possible measures the municipality may take to remedy or reduce the threat to public safety.
Failure to provide services	(8) If a municipality fails to adhere to the recommendations made by the Fire Marshal under subsection (7) or to take any other measure that in the opinion of the Fire Marshal will remedy or reduce the threat to public safety, the Minister may recommend the Lieutenant Governor in Council that a regulation be made under subsection (9).
Regulation	(9) Upon the recommendation of the Minister, the Lieutenant Governor in council may make regulations establishing standards for fire protection services in municipalities and requiring municipalities to comply with the standards.
Fire departments	(1) A fire department shall provide fire suppression services and may provide other fire protection services in a municipality, group of municipalities or in territory without municipal organization. 1997, c. 4, s. 5 (1)
Same	(2) Subject to subsection (3), the council of a municipality may establish more than one fire department for the municipality. 1997, c. 4, s. 5 (2)
Exception	(3) The council of a municipality may not establish more than one fire department if, for a period of at least 12 months before the day this Act comes into force, fire protection services in the municipality were provided by a fire department composed exclusively of full-time firefighters. 1997, c. 4, s. 5 (3)
Same	(4) The councils of two or more municipalities may establish one or more fire departments for the municipalities. 1997, c. 4, s. 5 (4)
Fire chief, municipalities	6. (1) If a fire department is established for the whole or part of a municipality or for more than one municipality, the council of the municipality or the councils of the municipalities, as the case may be, shall appoint a fire chief for the fire department.
Same	(2) The council of a municipality or the councils of two or more municipalities may appoint a fire chief for two or more fire departments.
Responsibility to council	(3) A fire chief is the person who is ultimately responsible to the council of a municipality that appointed him or her for the delivery of fire protection services

Powers of a fire chief (5) The fire chief may exercise all powers assigned to him or her under this Act within the territorial limits of the municipality and within any other area in which the municipality has agreed to provide fire protection services, subject to any conditions specified in the agreement.

PART III
FIRE MARHALL

Appointment of Fire Marshal 8 (1) There shall be a Fire Marshal who shall be appointed by the Lieutenant Governor in Council.

Powers of Fire Marshal 9.(1) the Fire Marshal has the power,

(a) to monitor, review and advise municipalities respecting the provision of fire protection services and to make recommendations to municipal councils for improving the efficiency and effectiveness of those services;

(b) to issue directives to assistants to the Fire Marshal respecting matters relating to this Act and the regulations;
(c) to advise and assist ministries and agencies of government respecting fire protection services and related matters;

(d) to issue guidelines to municipalities respecting fire protection services and related Matters;

(e) to co-operate with anybody or person interested in developing and promoting the principles and practices of fire protections services;

(f) to issue long service awards to persons involved in the provision of fire protection services; and

(g) to exercise such other powers as may be assigned under this Act or as may be necessary to perform any duties assigned under this Act.

Duties of Fire Marshal 9.(2) It is the duty of the Fire Marshal,

(a) to investigate the cause, origin and circumstances of any fire or of any explosion or condition that in opinion of the Fire Marshal might have caused a fire, explosion, loss of life, or damage to property;

(b) to advise municipalities in the interpretation and enforcement of this Act and the regulations;

(c) to provide information and advice on fire safety matters and fire protection matters by means of public meetings, newspaper articles, publications, electronic media and exhibitions and otherwise as the Fire Marshal considers available;

(d) to develop training programs and evaluation systems for persons involved in the provision of fire protection services and to provide programs to improve practices relating to fire protection services;

(e) to maintain and operate a central fire college;

(f) to keep a record of every fire reported to the Fire Marshal with the facts, statistics and circumstances that are required under the Act;

(g) to develop and maintain statistical records and conduct studies in respect of fire protection services; and

(h) to perform such other duties as may be assigned to the Fire Marshal under this Act.

2.2 Office of the Fire Marshal, Ontario

As indicated within the FPPA the duties of the Fire Marshal include responsibilities to assist in the interpretation of the Act, to develop training and evaluation systems and enforcement of the Act and its regulations. One of these roles includes the review of compliance with the minimum requirements of a Community Fire Safety Program, which must include:

- ✓ ***A smoke alarm program with home escape planning;***
- ✓ ***The distribution of fire safety education material to residents/occupants;***
- ✓ ***Inspections upon complaint or when requested to assist with code compliance (including any necessary code enforcement); and***
- ✓ ***A simplified risk assessment.***

The OFM has developed Public Fire Safety Guidelines (PFSG) to assist municipalities in making informed decisions with regard to determining local "*needs and circumstances*" and achieving compliance with the FPPA.

2.2.1 PFSG 00-00-01 "Framework for Setting Guidelines within a Provincial-Municipal Relationship"

PFSG 00-00-01 (attached as ***Appendix A***) is an example of the guidelines that have been developed. Information within the background section of this document includes the following:

> "*Municipalities are compelled to establish a program in the municipality which must include public education with respect to fire safety and certain components of fire prevention. The act also states that municipalities are responsible for arranging such other fire protection services as they determine may be necessary according to their own needs and circumstances. The relationship between the province and municipalities is based on the principle that municipalities are responsible for arranging fire protection services according to their own needs and circumstances".*

As referenced in this document, guidelines represent one component of the strategy that the Ministry of Community Safety and Correctional Services proposes for public fire protection in Ontario. The strategy referenced includes:

- *Clarifying municipal responsibility for local fire protection, while protecting the provincial interest in public safety.*
- *Removing remaining legislative barriers which forestall the restructuring and reorganization of municipal fire services.*
- *Facilitating a shift in focus which places priority on fire prevention and public education as opposed to fire suppression.*
- *Providing municipalities with decision-making tools to help them provide services according to their own needs and circumstances.*
- *Facilitating more active involvement of the private sector and other community groups in fire prevention and public education through the Fire Marshals Public Fire Safety Council.*

2.2.2 FSG 04-40-03 "Selection of Appropriate Fire Prevention Programs"

PFSG 04-40-03 and 04-40-12 (attached as ***Appendix B***) identifies the four minimum requirements of the FPPA Section 2. (1) (a) "establish a program in the municipality which must include public education with respect to fire safety and certain components of fire prevention" including:

- ✓ *Simplified risk assessment;*
- ✓ *A smoke alarm program;*
- ✓ *Fire safety education material distributed to residents/occupants; and*
- ✓ *Inspections upon compliant or when requested to assist with code compliance.*

2.2.3 PFSG 04-08-10 "Operational Planning: An Official Guide to Matching Resource Deployment and Risk"

PFSG 04-08-10 (attached as ***Appendix C***) was developed by the OFM to assist municipalities in meeting their responsibilities under Section 2. (1) (b) "provide such other fire protection services as it determines may be necessary in accordance with its needs and circumstances" of the FPPA.

As stated by the OFM in PFSG *"04-08-10 Operational Planning: An Official Guide to Matching Resource Deployment and Risk":*

> "*The overall public safety objective of a municipality is to provide the community with an optimal level of fire protection. Fire suppression is one aspect of the three lines of defence; the other two lines are Public Education and Prevention and Fire Safety Standards and Enforcement. A municipality needs to evaluate its existing fire suppression capabilities to ensure that it is managing all fire risk levels within the community, responding to and addressing fires that occur, and meeting public and council expectations".*

2.2.4 PFSG 01-02-01 "Comprehensive Fire Safety Effectiveness Model" (CFEM)

PFSG 01-02-01 (Attached as ***Appendix D***) was developed by the OFM to assist communities in evaluating their level of fire safety. The model recognizes that there is more to providing fire protection services than just building fire stations, purchasing equipment and deploying firefighters. The CFEM confirms that the fire service within Ontario is in a period of change. In response to increasing public expectations and diminishing financial resources municipalities are being forced to critically assess their fire protection needs in identifying new and innovative ways to providing the most cost effective fire protection services. The following is an excerpt from PFSG 01-02-01:

> *"This model looks at community fire protection as the sum of eight key components, all of which impact on the fire safety of the community. Deficiencies in one of the components can be offset by enhancements in another component or components".*

The CFEM identifies that every municipality should be guided by a master or strategic plan covering a planning horizon of five to ten years. Shifting from the traditional focus of hazard identification and fire suppression response the CFEM recognizes that more comprehensive risk assessment and optimizing the use of fire prevention and control systems are part of a paradigms shift within the fire service.

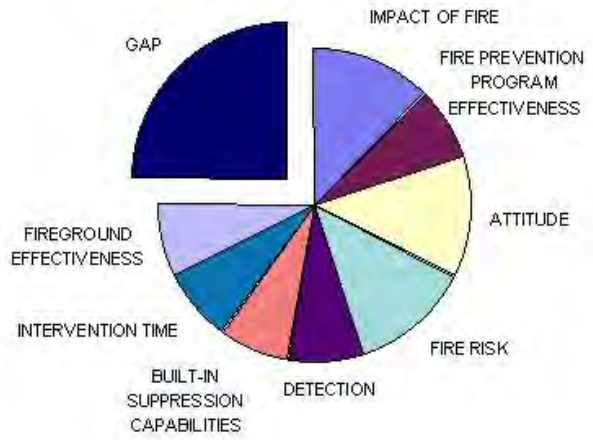
Figure 2 below shows each of the factors which make up the comprehensive model. Although the chart is divided equally, each factor will in reality contribute differently to the total level of protection provided to a community.

Figure 2: Factors in a Comprehensive Fire Safety Effectiveness Model

(Source: OFM PFSG 01-02-01)

Figure 3 illustrates how the comprehensive model can be applied to a typical fire department. The "gap" depicts the difference between the existing level of protection and the ideal.

Figure 3: Comprehensive Model applied to a typical Fire Department



(Source: OFM PFSG 01-02-01)

Utilizing the framework of the CFEM and the fire protection service assessment processes developed by the OFM, the primary objective of this FMP is to identify through evidence based analyses, the presence of any existing gap in fire protection services within Bradford West Gwillimbury Fire and Emergency Services.

In response to any existing gaps identified, this FMP recommends strategies that are intended to optimize the use of the "*three lines of defence*" including:

I. Public Education and Prevention
II. Fire Safety Standards and Enforcement
III. Emergency Response

A further description of each line of defence includes:

I. Public Education and Prevention*:*

Educating residents of the community on means for them to fulfill their responsibilities for their own fire safety is a proven method of reducing the incidence of fire. Only by educating residents can fires be prevented and can those affected by fires respond properly to save lives, reduce injury and reduce the impact of fires; and

II. Fire Safety Standards and Enforcement:

Ensuring that buildings have the required fire protection systems, safety features, including fire safety plans, and that these systems are maintained, so that the severity of fires may be minimized; and

III. Emergency Response:

Providing well trained and equipped firefighters directed by capable officers to stop the spread of fires once they occur and to assist in protecting the lives and safety of residents. This is the failsafe for those times when fires occur despite prevention efforts.

The Comprehensive Fire Safety Effectiveness Model emphasises the importance and value of preventing a fire. This is important from both an economic and public safety perspective, at the same time, ensuring an appropriate level of health and safety for firefighters. The model also recognizes that developing programs and providing resources to effectively implement the first line of defence (a proactive public education and prevention program) can be an effective strategy to reduce and potentially minimize the need for the other lines of defence.

2.2.5 PFSG 01-01-01 "Fire Protection Review Process"

Analysing local circumstances is a core component of the fire master planning process. PFSG 01-01-01 (Attached as ***Appendix E***) identifies the three main issues that define local circumstances including the guidelines to be utilized:

- ✓ *PFSG 02-03-01 "Economic Circumstances" (Attached as **Appendix F**)*
- ✓ *PFSG 02-02-03 "Fire Risk Assessment" (Attached as **Appendix G**)*
- ✓ *PFSG 02-04-01 "Capabilities of Existing fire Protection Services (Attached as **Appendix H**)*

Detailed analysis of these issues is included within this report to provide the background and rational to support the recommendations of this Fire Master Plan.

2.3 Occupational Health and Safety Act

The *Occupational Health and Safety Act, R.S.O. 1990* (OHSA) requires every employer to, *"take every precaution reasonable in the circumstances for the protection of the worker"*. The OHSA provides for the appointment of committees, and identifies the "*Ontario Fire Services Section 21 Advisory Committee"* as the advisory committee to the Minister of Labour with the role and responsibility to issue guidance notes to address firefighters-specific safety issues within Ontario.

Where 20 or more workers are regularly employed at a workplace, the OHSA requires the establishment of a Joint Health and Safety Committee (JHSC). The committee must hold regular meetings including the provision of agendas and minutes.

Firefighter safety must be a high priority in considering all of the activities and services to be provided by a fire department. This must include the provision of department policies and procedures, or Operating Procedures (OPs) that are consistent with the direction of the *OHSA Section 21 Guidance Notes* for the fire service.

2.4 Summary

The Town of Bradford West Gwillimbury initiated the development of this Fire Master Plan to identify opportunities for improvement and outline a process for sustainable growth to meet the challenges facing Bradford West Gwillimbury Fire and Emergency Services in the coming years, and in response to determining the municipalities "*needs and circumstances*" as required by the FPPA.

This FMP has been developed following the framework of assessing the delivery of municipal fire protection services included within the current Public Fire Safety Guidelines authored by the Office of the Fire Marshal, Ontario. Referencing best practices, including relevant standards and legislation, this FMP includes evidence-based analyses of the existing fire protections services provided by Bradford West Gwillimbury Fire and Emergency Services and identifies options for Council's consideration.

Where "gaps" in fire protection services provided by BWGFES may be identified through this assessment, this FMP will optimize the use of the "***three lines of defence***" to identify and recommend options for the delivery of the most cost effective and efficient level of fire protection services, to provide the optimal level of public safety, and to ensure an appropriate level of health and safety for firefighters.

3.0 COMMUNITY RISK PROFILE

The Office of the Fire Marshal, Ontario's (OFM) *Fire Risk Sub-model*[1] introduces the importance of community risk in the following paragraph:

> "*Assessing the fire risk within a community is one of the seven components that comprise the Comprehensive Fire Safety Effectiveness Model. It is the process of examining and analyzing the relevant factors that characterize the community and applying this information to identify potential fire risk scenarios that may be encountered. The assessment includes an analysis of the likelihood of these scenarios occurring and their subsequent consequences.*"

Community fire risks are further explained in detail within the OFM's *Fire Risk Sub-model* as follows:

> *"The types of fire risks that a community may be expected to encounter are influenced by its defining characteristics. For example, a "bedroom community" presents a different set of circumstances over one that is characterized as an "industrial town". Communities that are distinguished by older buildings will pose a different set of concerns over those that are comprised of newer buildings constructed to modern building codes. Communities populated by a high percentage of senior citizens present a different challenge over ones with a younger population base.*
>
> *Assessing fire risk should begin with a review of all available and relevant information that defines and characterizes your community. Eight key factors have been identified that contribute to the community's inherent characteristics and circumstances. These factors influence events that shape potential fire scenarios along with the severity of their outcomes:*
>
> - *Property Stock*
> - *Building Height and Area*
> - *Building Age and Construction*
> - *Building Exposures*
> - *Demographic Profile*
> - *Geography/Topography/Road Infrastructure*
> - *Past Fire Loss Statistics*
> - *Fuel Load*

Utilizing the framework provided within the OFM's Fire Risk Sub-model provides the opportunity to assess the potential fire risk scenarios that may be present by creating a Community Risk Profile. The profile can then be used to assess the current level of fire protection services provided, and identify where if any potential gaps exist, or areas that a municipal Council may want to consider in determining its own needs and circumstances as defined by the FPPA.

This section contains a summary of the observations from each of the categories contained within the community risk profile and assessment. The detailed Community Risk Profile is contained within ***Appendix I.***

[1] Source: *Comprehensive Fire Safety Effectiveness Model, Fire Risk Sub-Model*, June 2009 Office of the Fire Marshal, Ontario

3.1 Summary of Community Risk Profile

The Town of Bradford West Gwillimbury's risk profile represents similar levels of risk that would be expected in comparable municipalities within the Province of Ontario. These include smaller urban centres surrounded by large agricultural and environmentally protected areas (including the Holland Marsh) forming a larger community. The Town's road network layout is primarily a grid pattern of arterial rural roads and local roads (outside of the settlement areas) which provide access to rural residential locations. The settlement areas (including the Bradford Urban Area) within the Town are well served and connected by the road network.

Population and employment estimates predict that the Town of Bradford West Gwillimbury will experience extreme population growth of 50.5% over the next 10 years, representing approximately 5.1% annual growth. This growth is expected to be supported by ongoing residential development, as housing units are predicted to increase by approximately 39.2% over the next 10 years, or 3.9% per year. Similarly, employment is also expected to grow significantly, with an anticipated growth of 64.2% over the next 10 years. Employment lands have been designated inside and outside the Bradford Urban Area, as well as near Bond Head Settlement Area, which will also support this rapid growth.

Residential occupancies dominate the community at 91.5% of the building stock, reflecting the profile of a bedroom community. The second largest percentage of property stock (5.4%) consists of other occupancies that are not classified within the Ontario Building Code (i.e. farm buildings). The Bradford Urban Area is the most populated area in the Town and represents one of the largest numbers of single-detached homes within Bradford West Gwillimbury.

Within the province residential occupancies have historically accounted for approximately 71% of all structure fires and 86% of all fire related deaths. For the five year period between 2007 and 2011 the Town of Bradford West Gwillimbury reported 88 fires of which 71.4% occurred in Group C - Residential occupancies, which is consistent with the provincial average. Undetermined causes representing 30.7% and misuse of ignition source causes representing 20.5% were the leading causes for fires during this period.

The analysis of the buildings within the Town indicates that building height and area represent a typical level of risk found in a municipality the size of Bradford West Gwillimbury. This includes all occupancy classifications. There are a limited number of large area (by square footage) buildings. These include big-box retail buildings and strip malls that are frequented by clientele that are unfamiliar with the emergency exits. There are also some industrial buildings that have large areas and contain combustible contents within the Town (e.g. Solucor located along Reagens Industrial Parkway).

The demographic analysis of Bradford West Gwillimbury indicates that by age category the Town is very representative of the provincial statistics. Seniors as a component of the population are also reflective of the provincial statistics and as such should be considered as a vulnerable component of the population. As well, approximately 19.2% of the Town's population consist of children under the age of 14; this age group should also be considered a vulnerable component of the population. There are a minimum number of buildings identified where the most vulnerable demographic of the community reside, including seniors residences. These buildings should be considered as high risk with regard to developing a pro-active fire prevention and protection program. Public education programs should also be developed and delivered to target these demographics.

English is the predominant language within the community representing 93% of the population. This indicates a low probability for language barriers in the delivery of fire prevention and public education programs. As well, income levels and the percentage of home ownership are generally higher than that of the provincial averages. These factors also relate to a lower percentage of rental housing compared to the provincial averages.

A Geographic Information Systems (GIS) model was developed to assess risk based on historic call locations, risk geography, land use, and the department's existing and future predicted emergency response travel times as they relate to these risks. Using this risk model, calculations were carried out to estimate the number of historic calls that occurred within each risk zone category and the travel time associated. The model was also used to approximate geographic coverage of the existing and future risk zones. These calculations were completed on the basis of NFPA standards. **Section 6.0** of this report outlines in detail the performance measures used to compare BWGFES performance. The detailed results of the risk analysis can be found in ***Appendix I***.

The Community Risk Profile will form the basis for strategically planning the fire protection plans, optimizing the three lines of defence and developing department procedures, programs and services. It should be reviewed and revised on an annual basis in order to maintain an up-to-date assessment of community risk and community needs for fire protection and prevention. This could be done as a component of the process to develop a Simplified Risk Assessment for Bradford West Gwillimbury Fire and Emergency Services, which is required by the OFM.

4.0 ADMINISTRATION

The Administration Division, led by the Fire Chief and supported by the Deputy Fire Chief, oversees and monitors the resources and operations of the entire Fire and Emergency Services department. The Administration Division is responsible for the preparation and management of budgets in addition to personnel management, resource management and records management for the overall department.

4.1 Mission Statement

The OFM identifies the importance of a fire department mission statement within PFSG 03-02-13 "*Master Planning Process for Fire Protection*". A mission statement should identify the goals and objectives of the department, identify the primary stakeholders and acknowledge the types of services and commitments of the department in order to achieve success.

The current mission statement of Bradford West Gwillimbury Fire and Emergency Services states the following:

> *"The mission statement of the Bradford West Gwillimbury Fire and Emergency is to project life, property and the environment within our community from all perils through education, emergency preparedness, fire prevention, rescue, training and life support services. We strive to achieve excellence to support the residents and businesses of our community."*

Bradford West Gwillimbury Fire and Emergency Services also has a vision statement, which states:

> *"The vision of Bradford West Gwillimbury Fire and Emergency Services is to be a well-planned, trained and equipped emergency response agency where the safety and well-being of all involved in any emergency response is the primary goal."*

Bradford West Gwillimbury Fire and Emergency Services' mission and vision statements are relevant and up to date. They relate to the comprehensive fire safety effectiveness model's three lines of defence, as it covers emergency response, life safety, prevention and education. They also specify that the service is provided for the community, which is relevant for the FPPA '*needs and circumstances'* clause.

4.2 Primary Goals

As stated in the Fire Department Establishing and Regulating By-law (*By-Law 2012-87*), the primary goal of Bradford West Gwillimbury Fire and Emergency Services is to:

- Provide appropriate public fire and life safety education and other fire prevention programs and measures as legislated by the FPPA;
- Provide exceptional training to its members through well planned programs followed by appropriate testing and documentation; and,
- Provide emergency response and assistance as appropriate to the needs and circumstances of the municipality, based on the level of training and equipment provided, as approved by council and as required by the FPPA and other applicable legislation.

This Fire Master Plan assesses the fire and emergency services with consideration of the department's primary goal and provides recommendations to assist Council and Bradford West Gwillimbury Fire and Emergency Services to continue to meet this goal under existing and future conditions.

4.3 Department Services

As per the Establishing and Regulating By-law, the department is organized into core services to provide service to the Town of Bradford West Gwillimbury:

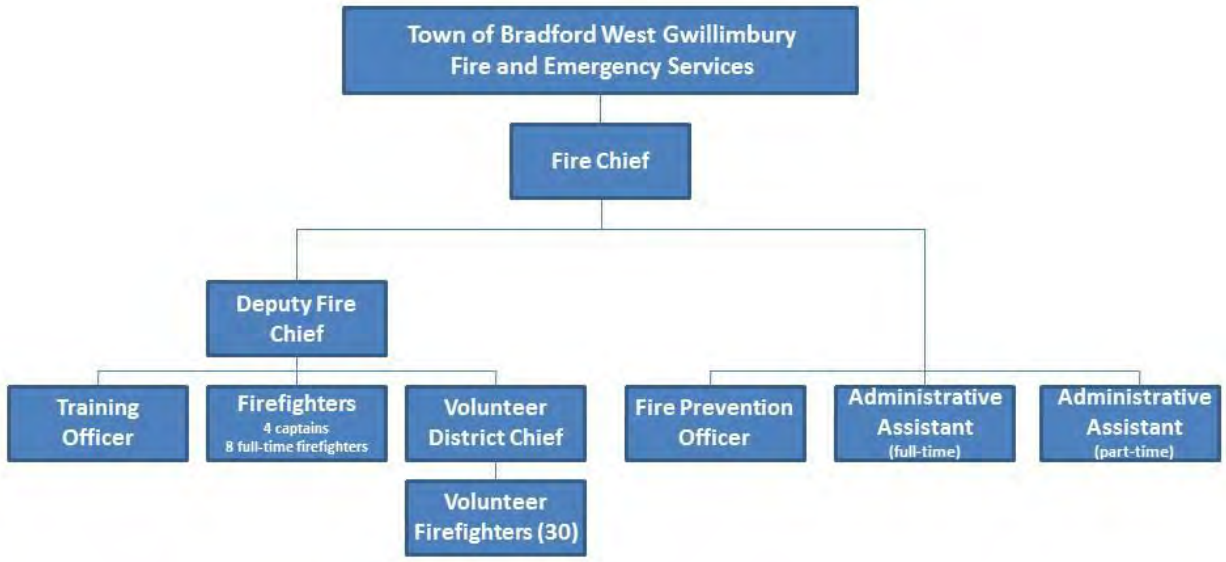
- Fire suppression (e.g. suppression, search and rescue, forcible entry, and ventilation);
- Fire prevention and education (e.g. fire safety inspections, Simplified Risk Assessment Creation, by-law enforcement, and public education);
- Rescue (e.g. automobile extrication, hazardous material incident response, and water / ice rescue); and
- Emergency medical response (e.g. First Aid/CPR and basic life support).

The range of services provided appears to be meeting the needs of the community and are consistent with the services provided to peer municipalities across Ontario.

4.4 Department Organization

The reporting structure for the department is illustrated below in ***Figure 4***.

Figure 4: Department Organizational Chart



(Source: Town of Bradford West Gwillimbury, 2013)

Bradford West Gwillimbury Fire and Emergency Services currently employ 17 full-time staff, one part-time staff and 31 volunteer staff. These staff members are assigned various positions and divisions, as listed in ***Table 1.***

Table 1: Bradford West Gwillimbury Fire and Emergency Services Staffing

Role / Division	#Full-Time Staff	#Part-Time Staff	#Volunteer Staff
Fire Chief	1		
Deputy Fire Chief	1		
Administration Assistants	1	1	
Suppression / Operations: • Volunteer District Chief • Captains • Firefighters	 4 8		 1 2 28
Training Officer	1		
Fire Prevention Inspector	1		
Total Staffing:	**17**		31

4.5 Department Management Team

The current Fire Chief started working for BWGFES in September 2009. The Deputy Fire Chief was hired in June 2011. Since joining the management team, the Fire Chief and Deputy Chief have developed and implemented many new initiatives to continuously improve the fire and emergency services. Both the Chief and Deputy Chief are responsible for specific areas of the department (outlined below in ***Section 4.5.1*** and ***Section 4.5.2***), but both work on common tasks such as operational and capital budgets, health and safety, and specifications for equipment and vehicles. They have faced the challenge of overseeing and managing the department with dedication and together bring to BWGFES a complimentary set of experience and skills.

4.5.1 Fire Chief

As the head of the fire department, the Fire Chief is responsible to Council through the Town Manager for the proper administration and operation of BWGFES. The following is a summary of some of the areas of responsibility and authority assigned to the Fire Chief as stated within the Town's Fire Department Establishing and Regulating By-law:

- Administration, enforcement and review of general orders, policies, procedures and regulations for the fire protection services;
- Executing proper measures for the prevention, control and extinguishment of fires for the protection of life and property, for fire prevention inspections and public education;
- Liaise with the OFM for the proper administration and efficient operation of the department;
- Contribute to and assist in the formulation of mutual aid, automatic aid and emergency service agreements or emergency response plans with other emergency response agencies;
- Submit annual budget estimates for the department to Council for its review and approval;

- Reprimand or suspend any member for infraction of any provision of the by-law, policies, general orders and department rules that would be detrimental to the fire department; and
- Be a fully contributing member of the Corporation's Senior Management Team reporting to the Town Manager and perform the duties of Emergency Control Group member as required.

The Fire Chief is also responsible for administration, fire prevention, emergency management and facilities of the department.

4.5.2 Deputy Fire Chief

The Fire Department Establishing and Regulating By-law currently states that the Deputy Fire Chief is responsible to and reports to the Fire Chief for the activities of the divisional functions that are supervised by the Deputy Chief. The By-law also identifies that, in the absence of the Fire Chief, the Deputy Fire Chief has the same authority and responsibility and shall perform all duties of the Fire Chief.

Although the Deputy Chief assists the Fire Chief to oversee the entire department, he is directly assigned to oversee all fire operations, the training division, department communications and fleet/equipment.

4.5.3 Administrative Support

There are two administrative positions within BWGFES. There is one full-time administrative assistant who reports directly to the Fire Chief and is in charge of the majority of administrative functions. There is also one part-time administrative assistant who is primarily responsible for emergency management but also assists with training and fire prevention.

The administrative assistant is responsible for general office duties, such as picking up and distributing mail, maintaining and ordering office equipment and maintaining the filing system. She is also responsible for a large number of duties, including but not limited to:

- Distributing information to department staff;
- Issuing burn permits;
- Coordination of departmental meetings and preparing of meeting agendas;
- Maintaining the training binder;
- Providing information to the public on matters related to the department (e.g. burn by-laws);
- Preparing breakdown of hours for payroll;
- Collecting of various data and preparation of reports;
- Providing and receiving financial details pertaining to the purchase of goods and services using a very restrictive purchasing by-law;
- Corresponding and communicating with external agencies; and
- Conducting any other tasks directed by the Fire Chief or Deputy Fire Chief in absence of the part-time administrative assistant.

As the department continues to grow in size (e.g. through increasing the firefighter complement or future station expansions) the need for additional administrative support is expected to increase. The current and future workload should be monitored to determine when additional resources should be assigned to the department.

4.6 Administrative Workspace

The existing administrative workspace is located in the fire station, at the front of the station. The administrative assistant is equipped with a desk, computer, telephone and printer, as well as filing cabinets for central filing. Some space limitations currently exist and there is a need for additional storage space for filing. There is potential to update office equipment (e.g. colour photocopier with multiple paper trays) in order to provide efficient processing and administrative work.

All office space is presently occupied, with some areas being shared space. When the complement of full-time firefighters increases, additional office space will be required. It is recommended that as new stations and / or station expansions are considered, that additional office space be incorporated into the plans.

The facilities within the existing fire station are restricted for many functions of BWGFES. It is recommended that a facility review study be conducted in the immediate term. This review can consider implementation options, construction staging and financial comparisons of expanding / renovating the existing facility verses rebuilding a new facility.

4.7 Succession Planning

Recently fire departments and municipalities are recognizing the importance and value that succession planning has within the municipal fire service. Succession planning has not traditionally been an area of concern or consideration within the fire service in Ontario. An effective succession plan requires the implementation of strategies to ensure that opportunities, encouragement and additional training are available for those staff that may be considering further advancement within an organization. A comprehensive succession plan also supports the concepts of coaching and mentoring in support of staff considering future career opportunities.

BWGFES does not currently have a formal succession plan. Succession plans can provide a framework of skills and experience that are required for each position within the department. For candidates seeking promotion or further responsibilities the succession plan can provide a career path to the position of their choosing. Succession planning can also provide the Town Manager and Council with the knowledge that there are trained and skilled candidates available in the event vacancies occur within the department. It is therefore recommended for BWGFES to develop a formal succession plan.

4.8 Annual Report

Ongoing evaluation and monitoring of the level of fire protection services provided by BWGFES, in consideration of the evolution of risk within the community, are the foundation for sustaining an effective and appropriate level of service to meet the community needs. Annual reports are a valuable communication tool to inform Council and the community about the status, performance and achievements of BWGFES.

Preparation of an annual report provides a high degree of accountability, monitoring of department performance and transparency within a fire department. The Fire Chief currently prepares quarterly reports summarizing the activities and operations completed over the course of three months, as well as the impact on town finances that any activities may have. The Fire Chief also prepares an annual Compliance Report as required by the OFM, in order for the OFM to monitor Bradford West Gwillimbury's status with respect to continuing to meet the minimum requirements of the FPPA. It is recommended that the Fire Chief compile the quarterly reports and prepare one annual report at the end of each fiscal year to summarize the activities and operations of the department, to inform Council on the performance of the department, and to identify where new trends may be evolving. Where possible, the administrative assistant should be assigned to assist with duties such as annual reporting.

4.9 By-laws & Agreements

The *Municipal Act*, R.S.O. 1990 requires a municipality to enact a number of by-laws to operate a municipality and specifically its fire services. In addition to meeting this legislative responsibility, by-laws provide the community with important information with regard to the level of service that a municipality intends to provide. By-laws also provide municipal staff with the authorization to provide these services as well as the responsibility to achieve the prescribed service level.

Our review of the existing by-laws approved by the Town of Bradford West Gwillimbury Council for the fire and emergency services indicates that all required by-laws are in place. Ensuring these documents are regularly reviewed and updated to reflect any changes in service level or changes in authority are important functions.

4.9.1 Establishing and Regulating By-Law

The Fire Department Establishing and Regulating By-law (*By-Law 2012-87*) is the by-law that establishes and regulates Bradford West Gwillimbury Fire and Emergency Services and was recently updated and re-enacted on September 18, 2012. It establishes the Fire Chief as the appointed head of the fire department and defines the Deputy Fire Chief as the person appointed in the absence of the Fire Chief. The by-law also describes the Fire Chief's responsibilities and the roles and responsibilities associated with each division of BWGFES.

Subject to Council's approval of the recommendations contained within this Fire Master Plan, we recommend that the current Fire Department Establishing and Regulating By-Law be updated to reflect the changes recommended.

4.9.2 Mutual Aid Agreements

Mutual aid agreements are predetermined plans that allow a participating fire department to request assistance from a neighbouring fire department. Public Fire Safety Guideline (PFSG) 04-05-12 "*Mutual Aid"* provided by the OFM identifies the information required to develop and approve these agreements.

There are two main scenarios when mutual aid agreements are enacted:

1. When a fire department is on-scene at an emergency and has received information that immediate assistance is required, it may ask for mutual aid assistance from a neighbouring fire department.
2. Where distance and/or conditions are such that a neighbouring fire department could provide a more timely response, fire departments may immediately request a simultaneous response from a participating fire department.

In 1994 a Mutual Fire Aid Systems By-Law (*By-law 94-011*) was enacted to provide for the participation of the Bradford West Gwillimbury Fire and Emergency Services in Mutual Fire Aid Systems. It states:

> *"That the Town of Bradford West Gwillimbury Fire Department be authorized to leave the limits of the municipality or fire area, at the discretion of the Fire Chief or his/her designate and under the direction of the County Fire Co-ordinator, to respond to emergency calls for assistance from other municipal Fire Departments authorized to participate in the Simcoe County Mutual Fire Aid System or any other Regional, District or County Mutual Fire Aid System on a reciprocal basis."*

Bradford West Gwillimbury Fire and Emergency Services is an active participant in the "*County of Simcoe Mutual Aid Plan and Program*". The current agreement is serving the municipality well.

4.9.3 Automatic Aid Agreements (Fire Protection Agreements)

In contrast to mutual aid agreements, automatic aid agreements are programs designed to provide and/or receive assistance from the closest available resource, irrespective of municipal boundaries, on a day-to-day basis. PFSG 04-04-12 "*Automatic Aid*" describes the concept of these types of agreements.

The obvious advantage of implementing an automatic aid program is that the person experiencing the emergency receives fire services from the closest available provider by supplying seamless service through the elimination of artificial service boundaries. Some benefits that an automatic aid agreement provides are:

- ✓ An enhancement of the level of public safety;
- ✓ A reduction of the critical element of time between the commencement of a fire and the application of an extinguishing agent to the fire by dispatching the closest available suppression services;
- ✓ The reduction of life, property and environmental losses; and
- ✓ The improvement of public and fire-fighter safety.

The Town of Bradford West Gwillimbury purchases fire protection services from the Township of King through a fire protection agreement within a described fire area in the Town of Bradford West Gwillimbury identified within *By-law 91-056* (amended by *By-law 2012-88*). The Town of Bradford West Gwillimbury also provides fire protection services to the Township of King through the same agreement and by-law. Our review indicates that this is an appropriate agreement for BWGFES.

The Town of Bradford West Gwillimbury purchases fire protection services from the Town of Innisfil through a fire protection agreement within a described fire area in the Town of Bradford West Gwillimbury identified within *By-law 2012-020*. Our review indicates that this is an appropriate agreement for BWGFES.

The Town of Bradford West Gwillimbury provides fire protection services for the County of Simcoe, specifically for County Forests through a wildland firefighting agreement within a described fire area in the County of Simcoe identified within *By-law 99-067*. Our review indicates that this is an appropriate agreement for BWGFES.

4.9.4 Tiered Response Agreement

Within the Province of Ontario emergency response to incidents involving medical aid by the local fire department are commonly included within a regional Tiered Response Agreement. These agreements are valuable in defining the levels of service that a fire department will provide in the context of the county based provision of ambulance services. Under the leadership of the Fire Chief, Bradford West Gwillimbury Fire and Emergency Services is an active participant in the County of Simcoe Emergency Response Agreement. This agreement is bounded under *By-Law 2006-080* (Emergency Tiered Response Agreement) which authorizes the entering into an agreement between Simcoe County Paramedic Services and the Town of Bradford West Gwillimbury for the purposes of Emergency Tiered Response Agreement.

In our experience the participation of local fire departments in a coordinated system of providing medical responses through a formal Tiered Response Agreement can be a beneficial service to the community. The focus of fire service participation should be based on the training and availability of firefighters, and the services that can result in the best value for the community.

Under *By-Law 2006-080* Bradford West Gwillimbury Fire and Emergency Services is identified as a Level A responder to emergency response calls in the County of Simcoe. As such, BWGFES will be activated for the following complaints:

- Non-responsive/not awake;
- Choking – not breathing;
- Profuse bleeding; and
- Cardiac chest pain when paramedic estimated time of arrival is greater than 15 minutes.

Level B responders will only be activated for the above complaints. As a Level A responder, BWGFES will also be activated for the following:

- Cardiac chest pain;
- Acute shortness of breath; and
- Convulsion/seizure of a person greater than 30 years old and with no or unknown history.

Notification of all appropriate services outside of medical aid response will be provided for the following complaints:

- Structure fire with reports of smoke or flame;
- Motor vehicle collisions;
- Multi-casualty incidents or disasters;
- Explosions;
- Carbon monoxide calls with symptomatic patients;
- Chemical, biological, radiological, nuclear and explosive (CBRNE) events;
- Allied agency request post arrival at scene; and
- Any other fire call.

Our review of the current tiered response agreement indicates that medical calls reflect a large percentage of the workload of the department. From 2009 to 2012, 48% of the calls responded to by BWGFES were medical calls, a total of 1,976 medical calls over those four years. Currently the County of Simcoe delivers EMS. Through the provision of this service, the County receives a subsidy from the provincial government for the cost of providing the service. However, BWGFES does not receive funds for the medical service it provides. As the community continues to grow, so too will the number of medical calls, which will increase the workload of the fire department. As per this growth, BWGFES should consult with the County to discuss the potential of adding more EMS resources to help respond to the increasing number of calls.

4.10 Departmental Policies and Standard Operating Guidelines

Best practices within the Ontario fire service reflect the use of department policies as the appropriate tool to communicate specific direction to all staff. In comparison to operating guidelines, which provide a framework to guide decision making, department policies reflect more stringent and defined practices that minimizes variance from the directive given. An example of a fire department policy would be a "*Respect in the Workplace Policy*" where specific direction is given to all members of the department that reflects the policy of the department in consideration of relevant legislation governing the topic.

OFM Communiqué 2010-12 "Notification Criteria and Contact Procedures for Requests for OFM Fire Investigators" identifies the criteria for informing the OFM of fires requiring investigation by the OFM. This is a further example of an area requiring a department policy versus an operating guideline. In situations particularly in the absence of the Fire Chief, emphasis must be placed on the municipality's due diligence and legal requirements in retaining care and control of an emergency scene until arrival of an OFM investigator. Based on our review this is an area where a department policy should be developed.

Standard Operating guidelines (SOGs) are commonly used within the fire service to establish a written statement to guide the performance or behaviour of departmental staff, whether functioning alone or in groups. *PFSG 04-69-13 "Co-ordination, Development, Approval and Distribution of Standard Operating Guidelines for Various Disciplines"* provides the following points to reflect the intent of Standard Operating Guidelines:

- *Enhance safety;*
- *Increase individual and team effectiveness;*
- *Improve training efficiency;*
- *Improve orientation for entry-level staff;*
- *Improve risk management practices;*
- *Prevent / avoid litigation;*
- *Create objective post-incident evaluations; and*
- *Permit flexibility in decision making.*

PFSG 04-69-13 further suggests that creating and empowering a committee of fire service staff to research, develop, and draft operating guidelines can be a successful model for administering these core documents. Activities that impact firefighter safety, the most common emergency operations, or high risk operations should be the top priority for a fire department to have in place. Reviewing and updating SOGs is an ongoing evolution within the fire service. Creating an SOG Committee to conduct regular reviews and updates is considered to be a best practice within the Ontario fire service.

BWGFES has a number of SOGs for a wide variety of topics, including personnel safety, apparatus and equipment, emergency response, incident command, fire ground procedures, communication, administration, fire prevention and public education, training and volunteer firefighters. All SOGs are finalized and approved by the Fire Chief. The Administrative Assistant is responsible for maintaining the SOG Binder to ensure that the information is up-to-date.

Health and safety is an essential consideration for fire and emergency services. In addition to the relevant sections of Ontario's *Occupational Health and Safety Act* (OHSA) the fire service is also required to comply with the OHSA Section 21 Guidance Notes.

Subject to Council consideration and approval of this FMP, there will be a need to conduct a review of all existing SOG's and where necessary complete revisions or develop additional SOG's to reflect all levels of service approved by Council. In our view this should be a priority for the fire department with emphasis on compliance with the OHSA Section 21 Guidance Notes.

4.11 Departmental Records Management

Bradford West Gwillimbury Fire and Emergency services originally used FirePro software as their digital records management platform. However on June 4, 2013 the department switched their software to FIREHOUSE. This switch was made in conjunction with the switch to the City of Barrie's dispatching services.

Both the Fire Prevention Inspector and Training Officer are beginning to utilize FIREHOUSE software for their respective divisions. Training is now recorded in FIREHOUSE. Personnel must sign attendance sheets in order to verify training participation and these sheets are then uploaded into FIREHOUSE for records management purposes. In addition to the revised process of managing the training records, we recommend that a practice be established to ensure each individual personally signs-off on his/her completed training sessions. This practice should also require the trainer to sign the record. This process is considered a best practice with regards to due diligence in providing training evidence to authorities, such as the Ministry of Labour Ontario.

4.12 Budgets, Development Charges and Revenues

4.12.1 Capital and Operating Budgets

The preparation and ongoing monitoring of capital and operating budgets is a significant activity and responsibility within BWGFES. The Fire Chief (with assistance from the Deputy Fire Chief) is directly responsible to Council for its capital and operating budgets. The 2013 budgets include $131,500 in capital and $2.9 million assigned to the operating budget. The Deputy Fire Chief, Fire Prevention Inspector, and Training Officer provide input to the Fire Chief for the areas that align with the respective divisions for which they are accountable.

The capital budgets for BWGFES forecast for the coming five-year horizon. This allows for strategic planning of both new and replacement capital expenses.

4.12.2 Development Charges

Development Charges (DC) provide for the recovery of growth-related capital expenditures from new development. They are calculated and payable upon the issuance of a building permit in relation to each dwelling unit, building or structure on land to which a development charge applies. The Town of Bradford West Gwillimbury collects and administers development charges in compliance with the *Development Charges Act, 1997* (DCA). Development Charges in the Town of Bradford West Gwillimbury are regulated by two by-laws:

- *By-Law 2009-134*: A By-law to establish development charges for the Corporation of the Town of Bradford West Gwillimbury; and
- *By-Law 2013-29*: A By-law to update the water, wastewater and roads development charges for the Corporation of the Town of Bradford West Gwillimbury and to amend *By-law 2009-134* of the Corporation of the Town of Bradford West Gwillimbury.

Currently, the development charges associated with BWGFES (effective March 6, 2013) are as shown in ***Table 2***, under the category of "Fire Protection Services."

Table 2: Town of Bradford West Gwillimbury Development Charge Rates

Service	By-law	Residential				Non-Residential (per ft² of Gross Floor Area)
		Single-Detached Dwelling & Semi-Detached Dwelling	Apartments: 2 Bedrooms +	Apartments: Bachelor & 1 Bedroom	Other Multiples	
Municipal Wide Services						
** Roads	2013-29	$13,413	$7,545	$5,389	$11,298	$5.29
* Roads Related Facilities and Vehicles	2009-134	924	520	372	779	0.40
* Fire Protection Services	2009-134	454	255	183	382	0.29
* Police Services	2009-134	350	196	140	294	0.15
* Outdoor Recreation Services	2009-134	1,040	585	417	875	0.07
* Indoor Recreation Services	2009-134	2,497	1,405	1,004	2,103	0.17
* Library Services	2009-134	584	329	234	492	0.04
* Administration	2009-134	347	194	139	291	0.16
Total Municipal Wide Services		**$19,609**	**$11,029**	**$7,878**	**$16,514**	**$6.57**
* County of Simcoe	N/A	6,172	4,278	4,278	5,127	2.86
* Education (Public)	N/A	718	718	718	718	0.15
* Education (Separate)	N/A	370	370	370	370	0.08
Grand Total Rural Area		**$26,869**	**$16,395**	**$13,244**	**$22,729**	**$9.66**
Urban Services: Bradford Settlement Area						
Water:						
** Studies	2013-29	$48	$27	$18	$41	$0.02
** Treatment & Distribution	2013-29	6,693	3,765	2,690	5,638	3.80
Wastewater:						
** Studies	2013-29	36	19	14	31	0.03
** Treatment	2013-29	5,130	2,885	2,061	4,320	3.70
** Collection	2013-29	2,275	1,280	914	1,916	1.63
Total Urban Services: Bradford Settlement Area		**$14,182**	**$7,976**	**$5,697**	**$11,946**	**$9.18**
Grand Total Urban Area - Bradford Settlement Area		**$41,051**	**$24,371**	**$18,941**	**$34,675**	**$18.84**
Urban Services: Bond Head Settlement Area & BWG Strategic Settlement Employment Area						
Water:						
** Studies	2013-29	$48	$27	$18	$41	$0.02
** Treatment & Distribution	2013-29	12,703	7,145	5,104	10,699	4.97
Wastewater:						
** Studies	2013-29	36	19	14	31	0.03
** Treatment	2013-29	4,079	2,295	1,639	3,436	1.24
** Collection	2013-29	10,803	6,076	4,340	9,100	1.48
Total Urban Services: Bond Head Settlement Area & BWG Strategic Settlement Employment Area		**$27,669**	**$15,562**	**$11,115**	**$23,307**	**$7.74**
Grand Total Urban Area - Bond Head Settlement Area & BWG Strategic Settlement Employment Area		**$54,538**	**$31,957**	**$24,359**	**$46,036**	**$17.40**

* Payable upon Building Permit Issuance
** Payable at Subdivision Agreement

(Source: Town of Bradford West Gwillimbury, 2013)

Eligible categories for inclusion in the collection of development charges are fire stations and firefighting apparatus (including rescue vehicles, pumpers, and aerial devices). Small equipment and protective gear are also eligible, as outlined in ***Table 3***. In recent years the definition of small equipment and gear has been cause for much discussion within the industry. This discussion has been led by Fire Chiefs identifying the high initial capital costs and direct relation of this small equipment and gear to the overall operational functional capability of a fire station and the fire department.

Table 3: Categories of Fire Protection Services to Be Addressed as Part of a Development Charge Calculation

Categories of Municipal Services	Eligibility for Inclusion in the DC Calculation	Service Components	Maximum Potential DC Recovery %
Fire Protection Services	Yes	1. Fire stations	100%
	Yes	2. Fire pumpers, aerials and rescue vehicles	100%
	Yes	3. Small equipment and gear	100%

(Source: Watson and Associates Economists Ltd., 2010)

More recent development charge reviews have included consideration of the equipment assigned to the apparatus and station as being within the definition of equipment. Given the escalating costs of equipment such as Self-Contained Breathing Apparatus (SCBA), hose, auto extrication equipment, and equipment such as portable pumps, this is an important consideration. Including firefighter protective clothing (bunker gear) has also been identified as a consideration. It is also relevant to consider equipment that is "fixed" to the fire station such as SCBA air filling and air compressor systems that can cost in excess of $100,000.

Watson & Associates Economists Ltd. (Watson & Associates) conducted a Development Charge Background Study in 2009 and a Development Charge Background Study Update in 2010 for Bradford West Gwillimbury. The methodology used to allocate the growth related capital costs between the residential and non-residential users of the services begins with an estimate of "the increase in the need for service attributable to the anticipated development" for each service to be covered by the by-law (Watson & Associates, 2010). There must be a link between the anticipated development and the estimated increase in the need for service. The growth forecast on which a municipal-wide development charge is based on (which includes fire protection services) considers increases in population, housing units and non-residential floor area for a "build-out" time frame (a specific forecast period).

The Watson & Associates 2010 study identified several fire service elements as growth-related, and therefore DC eligible. This included an expansion to the current station (e.g. partial second storey) and a second station estimated at 8,800 square feet, including land for the second station (estimated at 1.75 acres). The total potential DC recoverable cost for these fire facilities was $2,034,100, with 66% as a residential share and 34% as a non-residential share. Fire vehicles and small equipment and gear were also identified as DC eligible within the study. As well, based on growth-related needs, the Town has identified additional equipment required over the forecast period to equip additional firefighters. The total potential DC recoverable cost for small equipment gear was $630,750, whereas the total potential DC recoverable cost for fire vehicles was $1,955,000.

Additional development charge studies should be conducted every five years (or as needed) in order to update the Town's development charges to accurately reflect servicing needs and recover costs related to growth in Bradford West Gwillimbury and specifically related to growth within BWGFES.

4.12.3 Fees for Service

Bradford West Gwillimbury has an existing by-law (*By-Law 2012-118*) which identifies fees or charges for services or activities provided or done by on behalf of the Town of Bradford West Gwillimbury. This By-law has a specific section for fees related to the Fire and Emergency Services (see ***Figures 5 and 6***) BWGFES should review the services provided by all divisions and give consideration to completing a full review of all current fees charged. It is recommended that all fees for service be reviewed and revised on an on-going basis to ensure that they accurately represent the fiscal realities of the services.

Figure 5: Town of Bradford West Gwillimbury Fire and Emergency Services Fees

Fire and Emergency Services

ITEM / SERVICES	LAST FEE CHANGES	FEES	COMMENTS
General Administrative Fire Services			
Request for Fire Report	1-Jan-12	$70.00	Fees recover costs of staff, administration and overhead
Request for Information - i.e. file search, clearance letter, change of ownership	1-Jan-12	$70.00	Fees recover costs of staff, administration and overhead
Special Occasion Letter	1-Jan-12	$70.00	Fees recover costs of staff, administration and overhead
Green Sign Replacement	01-Jan-13	$25.00	Fees recover costs of staff, administration and overhead
Fire Inspection Fees			
Inspections of daycare, nursery schools, rooming houses, facilities, etc	1-Jan-12	$105.00	Fees recover costs of staff, administration and overhead
Inspections for trade shows and special functions - site visit required	1-Jan-12	$105.00	Fees recover costs of staff, administration and overhead
Inspection required by Liquor Licensing Board of Ontario	1-Jan-12	$105.00	Fees recover costs of staff, administration and overhead
Inspection of Commercial, Industrial Buildings with occupancy - i.e. requested by owner, insurance, etc	1-Jan-12	$70.00/hour	Fees recover costs of staff, administration and overhead
Inspection of High rise and Low rise residential building as regulated under Part 9 Retrofit, Section 9.5, 9.6 of Fire Code, Ont Reg 454	1-Jan-12	$70.00/hour	Fees recover costs of staff, administration and overhead
Inspection of Apartments in houses - basement apartments as regulated under Part 9 Retrofit, Section 9.8 of Fire Code, Ont Reg 385/94	17-Jun-08	$150.00	Fees recover costs of staff, administration and overhead
Propane Storage and Handling Facilities			
Review of plans, site inspections, recommendations and letter of approval	15-Feb-11	$100.00/hour	Fees recover costs of staff, administration and overhead
Permits (in accordance with By-law 2012-026)			
Burning Permit - Daily	17-Jun-08	$10.00	Fees recover costs of staff, administration and overhead
- Weekly	17-Jun-08	$20.00	Fees recover costs of staff, administration and overhead
Outdoor Wood Buring Appliance (Annual Permit)	01-Jan-13	$10.00	Fees recover costs of staff, administration and overhead
Agricultural Burning Permit (Annual Permit)	01-Jan-13	$100.00	Fees recover costs of staff, administration and overhead
Campgrounds/Camp Sites (Annual Permit)	01-Jan-13	$50.00	Fees recover costs of staff, administration and overhead
Special Burn Permits	01-Jan-13	$100.00 to $500.00 per occurrence	Fees recover costs of staff, administration and overhead
Fireworks Permit	22-Apr-96	$25.00	Fees recover costs of staff, administration and overhead
Marijuana Grow Operation Enforcement (fee per property)			
Inspection Services Inspector (1st class)	1-Jan-11	$350.00	Town of Bradford West Gwillimbury By-law 2010-032
Inspection Service Captain	1-Jan-11	$450.00	Town of Bradford West Gwillimbury By-law 2010-032
Court/Tribunal Attendance Fee	1-Jan-11	$600.00	Town of Bradford West Gwillimbury By-law 2010-032

(Source: Town of Bradford West Gwillimbury, 2013)

Figure 6: Town of Bradford West Gwillimbury Fire and Emergency Services Fees

Fire and Emergency Services

ITEM / SERVICES	LAST FEE CHANGES	FEES	COMMENTS
Other Fire Services Fees			
Emergency Services on Municipal Roads			
-non property owners/non residents	1-Jan-12	$410.00/vehicle-1st hour or current MTO Rate	Fees recover costs of staff, administration and overhead
	1-Jan-12	$205.00/vehicle/each additional 1/2 hour	Fees recover costs of staff, administration and overhead
False Alarms - after 2nd call in calendar year	1-Jan-12	$410.00/hour/vehicle	Fees recover costs of staff, administration and overhead
Elevator Calls - after 2nd call in calendar year	1-Jan-12	$410.00/hour/vehicle	Fees recover costs of staff, administration and overhead
Fire Scene Security, Fire Watch, etc: e.g. providing fire personnel to ensure continuity of evidence until Fire Marshal's Office arrives	1-Jan-12	$70.00/hour/person plus $410.00/hour for vehicle	Fees recover costs of staff, administration and overhead
Fire Apparatus Stand-by: e.g. Use of fire protection during film shoots, exhibitions, demonstrations, etc.	1-Jan-12	$410.00/vehicle-1st hour or current MTO rate plus $70.00/hour/person	Fees recover costs of staff, administration and overhead
	1-Jan-12	$205.00/vehicle/each additional 1/2 hour	Fees recover costs of staff, administration and overhead
Emergency Response such as, but not limited to: Vehicle fire or danger of fire, vehicle rescue extrication, environmental spills, or vehicle accident applies to non-property owners/non-residents of the Town.	1-Jan-12	$410.00/vehicle - 1st hour	Fees recover costs of staff, administration and overhead
	1-Jan-12	$205.00/vehicle/each additional 1/2 hour	Fees recover costs of staff, administration and overhead
Indemnification Technology®	01-Jan-13	$410.00/truck and personnel/hour plus any additional cost for each and every call	Fees recover costs of staff, administration and overhead

NOTES:

All Fire & Emergency Services fees are subject to H.S.T.

Hazardous Material Spill/Clean up

Total replacement cost for any contamination or damaged equipment or materials used in the clean up of hazardous materials and the approved disposal of equipment or materials according to the directions of the controlling Federal and Provincial Agency

Extraordinary Expenses

If Fire and Emergency Services respond to a motor vehicle incident or other emergency at any property in the Town and the Fire Chief or designate determine, that it is necessary to retain a private contractor, rent special equipment not normally carried on a fire apparatus, use more materials than are carried on a fire apparatus in order to suppress or extinguish a fire, preserve property or prevent a fire from spreading or otherwise control and eliminate an emergency

(Source: Town of Bradford West Gwillimbury, 2013)

4.13 Community Emergency Management

Under the Ontario *Emergency Management and Civil Protection Act*, the Solicitor General has authority to make regulations setting standards for the development, implementation and maintenance of emergency management programs required by communities. It is the responsibility of every municipality, minister of the Crown and designated agency, board, commission and other branches of government to ensure that their respective emergency management plans conform to the standards set within the Act. The Act also requires every municipality to adopt the emergency management program by by-law.

Emergency Management Ontario (EMO) has developed a core emergency program, with elements focused on supporting emergency preparedness and response activities. The program requires designating an Emergency Management Coordinator (EMC), having a written emergency response plan and forming a program committee. Part II of the *Ontario Regulation 380/04* lays out the Municipal Standards for emergency management. There are six main standards, relating to:

i. *Emergency Management Program Coordinator;*
ii. *Emergency Management Program Committee;*
iii. *Municipal Emergency Control Group;*
iv. *Emergency Operations Centre;*

v. Emergency Information Officer; and

vi. Emergency Response Plan.

The emergency plan is designed in a generic fashion which allows it to respond to situations that are unexpected and require a coordinated response and recovery. The plan is based on a hazard identification and risk assessment (HIRA), which is a required component under the *Emergency Management and Civil Protection Act*.

The plan also includes a primary Emergency Control Group and Emergency Support Group, which consists of all of the significant stakeholders responsible for managing the community and adjacent areas. This group would be assembled, if the emergency plan is activated, to approve the decisions required to control situations that arise during an emergency.

The Town of Bradford West Gwillimbury had an Emergency Management Program under *By-Law 2004-088*. A new consolidated by-law for the emergency management program and the emergency response plan (By-Law 2013-96) was approved as of October 1, 2013.

An integral component to the program is the creation of an Emergency Response Plan, which the CEMC has to review on an annual basis. In conjunction with Emergency Management Ontario, the Emergency Response Plan meets the provincial standards for prevention, preparation, response and recovery from a major emergency in the Town.

The Town has a revised Emergency Response Plan (as of October 2013). The plan indicates the role of Community Emergency Management Coordinator (CEMC) can be filled by either the Fire Chief, Deputy Fire Chief or other designated fire staff. The CEMC is required to carry-out the duties of this role in accordance with Provincial legislation and policies and Town by-laws. Based on our experience, the position of CEMC plays an important role in a real emergency. Identifying the Fire Chief as the primary CEMC can in an actual emergency create a significant conflict. The Fire Chief is often committed to an operational role within the fire department and quite often assigned as the Emergency Site Manager. Where possible we recommend that the Fire Chief be identified as the alternate CEMC for this reason. This is reflected in the revised emergency plan, by the flexibility for the CEMC role to be filled by either the Chief, Deputy Chief or other assigned fire staff.

Emergency response within Bradford West Gwillimbury is directed and controlled by the Community Control Group (CCG), which is a group of officials who are responsible for coordinating the provision of essential services necessary to minimize the effects of an emergency on the community. The CCG is composed of the following individuals, each with their own set or responsibilities:

- Town Mayor;
- Town Manager (EOC Director);
- Director of Legal Services/Clerk (Risk Management / Legal Officer);
- Fire Chief / CEMC (Liaison Officer);
- Police Chief;
- Director of Engineering Services;
- Director of Leisure Services;
- Director of Planning and Development Services;
- Director of Human Resources;

- Director of Finance / Treasurer;
- Emergency Information Officer; and
- Recording Officer.

The Emergency Response Plan identifies a number of additional personnel who may be called or added to the ECG as required during an emergency.

The existing designated Emergency Operations Centre (EOC) is located within the South Simcoe County Police Station, adjacent to the BWGFES Station (which is the alternate EOC). The primary and alternate EOCs are small and not ideal for the designated functions required from an EOC. As well, having the alternate EOC located right beside the primary does not provide a viable alternative if the area in a state of emergency is at or near the location of the primary EOC. Options for a new EOC facility should be addressed. It is recommended that this be incorporated within the BWGFES facilities needs assessment / review study proposed.

4.14 Administration Division Summary of Recommendations

As a result of our review and assessment of the Administration Division, we recommend that:

- *BWGFES monitor the workload of administrative staff as the department grows, in order to determine when additional resources are needed.*
- *Consideration is made to update administrative office equipment to improve efficiency within the department.*
- *Undertake a facility needs assessment / review in the immediate term to determine options and solutions to the current space and facility restrictions impacting the BWGFES.*
- *BWGFES consider opportunities for additional office and storage space for administrative purposes.*
- *The Fire Chief, with assistance from the administrative assistant, be directed to prepare an annual summary report to inform Council on the performance of the department and to identify where new trends may be evolving, or new programs may be required to reflect best practices in sustaining a responsive and effective level of fire protection services for the community.*
- *Subject to Council's approval of the recommendations contained within this FMP, the current Fire Department Establishing and Regulating By-Law be updated to reflect the changes recommended.*
- *BWGFES consult with the County to discuss the potential of adding more EMS resources to help respond to the increasing number of calls. BWGFES create an SOG Committee to conduct regular reviews and updates of the department's SOGs.*
- *BWGFES conduct a review of all existing SOG's and where necessary complete revisions or develop additional SOGs to reflect all levels of service approved by Council.*
- *FIREHOUSE continues to be utilized as the records management method for all divisions of BWGFES and that any recent initiatives to improve records management processes (e.g. fire prevention and training records) are followed-through.*
- *Development charge studies be conducted every five years (or as needed), and all fees for service be reviewed and revised on an on-going basis.*

- *The role of primary CEMC be assigned to another Town of Bradford West Gwillimbury employee to relieve the Fire Chief from these duties.*
- *Consideration for a new Emergency Operations Centre should be incorporated into the facility needs assessment / review in the immediate term.*

5.0 FIRE PREVENTION & PUBLIC EDUCATION

The minimum requirements of fire prevention and fire safety education programs are outlined within the *Fire Protection and Prevention Act*, 1997 (FPPA). The minimum required services are referenced in the following section of the FPPA:

Section 2. (1) of the Fire Protection and Prevention Act states:

(1) Every municipality shall,

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

PFSGs 04-40-03 and 04-40-12 "*Selection of Appropriate Fire Prevention Programs"* provides further information defining the minimum acceptable level of fire prevention and fire safety education services that a municipality must provide including:

- *Simplified Risk Assessment;*
- *A smoke alarm program;*
- *Fire safety education material distributed to residents/occupants; and*
- *Inspections upon complaint or when requested to assist with code compliance.*

Assessing community risk, including existing and future risk as a result of growth within a community, allows a municipality to determine the level of fire protection services required based on local needs and circumstances. This includes the level fire prevention and public fire safety education required to comply with the minimum levels identified within the FPPA.

Integrating risk analyses into the process to determine the level of fire protection services to be provided by a municipality recognizes that there are alternatives to simply providing fire suppression services and emergency response. The introduction of sprinkler system is an example of integrating alternatives to managing the inherent risks of a building rather than simply developing a larger emergency response deployment plan.

Bradford West Gwillimbury's Fire Department Establishing and Regulating By-Law states that fire prevention activities shall include:

- Inspections arising from complaints, requested inspections, retrofit, self-initiated inspections and fire investigations shall be provided in accordance with the FPPA and policies of the Fire Prevention Division;
- Simplified Risk Assessment creation and the subsequent annual review; and
- Enforcement of the Ontario Fire Code in accordance with the FPPA and guidelines or communique as established by the Office of the Fire Marshal.

5.1 Comprehensive Fire Safety Effectiveness Model

The Fire Prevention and Public Education services provided by a fire department are intended to optimize impact of applying the first two lines of defence identified within the Ontario Fire Protection Model including:

I. Public Education and Prevention

II. Fire Safety Standards and Enforcement

III. Emergency Response

The first two lines of defence have been defined as:

"***I. Public Education and Prevention****:*

Educating residents of the community on means for them to fulfill their responsibilities for their own fire safety is a proven method of reducing the incidence of fire. Only by educating residents can fires be prevented and can those affected by fires respond properly to save lives, reduce injury and reduce the impact of fires; and

II. Fire Safety Standards and Enforcement:

Ensuring that buildings have the required fire protection systems, safety features, including fire safety plans, and that these systems are maintained, so that the severity of fires may be minimized."

Information reported by the OFM indicates that from 2007 to 2011 the number of loss fires described as any fire with an injury, fatality or dollar loss reported have declined from 14,310 in 2007 to 11,501 in 2007 resulting in a decrease of 20%. This occurred during a time period when the population and number of structures across Ontario continued to grow.

Through our discussions with Fire Chiefs across the province and staff from the OFM there is consensus that the efforts of fire departments dedicated at optimizing the first two lines of defence are responsible for reducing fire losses and improving the overall level of fire protection within the community.

Applying these lines of defence across the community and prioritizing these programs to address areas of the community identified by the Community Risk Profile (***Appendix I***) should be considered a strategic priority of this plan. For example, high priority should be given to optimizing the first two lines of defence in areas of the community where vulnerable occupants such as where children or seniors reside.

5.2 Staffing and Key Functions

Prior to 2010, the duties of fire prevention and education were assigned to a full-time firefighter who played a dual role of unofficial fire prevention inspector and firefighter. However, in 2010 BWGFES hired a full-time Fire Prevention Inspector (FPI). The FPI reports directly to the Fire Chief and is responsible for fire prevention and administering fire safety public education. As staff resources for fire prevention and public education are limited to only one FPI, it is essential that the priority of the FPI be directed at the first two lines of defence. However, the current workload for the FPI is quite expansive and burdening for one person; there are a number of duties that the FPI is assigned to complete. The Fire Chief currently provides assistance with larger fire prevention and education projects, but this takes him away from his Chief duties. The following is a list of the FPI's key responsibilities:

- Ontario Fire Code building inspections;
- Plans examination;
- Business/liquor license approvals;

- Monitor fire safety plans;
- Deliver fire safety public education to the public; and
- Monitor the municipality's home smoke alarm program.

In order to target the vulnerable demographics, respond to the community risks identified within the Community Risk Profile, and broaden the public education programs being developed and delivered to the community, we recommend assigning additional resources to the division. Beyond improving and enhancing the depth of public education delivered by BWGFES, a second FPI could assist the current FPI with fire prevention inspections and public education; the workload could be divided. Based on the current workload of the FPI, it is recommended that the department hire a second full-time Fire Prevention Inspector. As a result of future growth and development, additional fire prevention/public education staff resources should be reviewed with consideration of the additional growth-related workload in the interim horizon of 2017 to 2019.

The time requirements for public education events vary depending on the number of events planned or requested. ***Table 4*** below provides approximate time commitments associated with fire prevention and public education activities that BWGFES currently provides. Fire suppression personnel presently assist with the delivery of public education events on an as requested basis.

Table 4: Fire Prevention and Public Education Activities

Activity / Program Name	Current Time Commitment
Fire Safety House (nine elementary schools): Kindergarten to Grade 3	150 hours
Fire Prevention Week Open House (one night)	8-10 hours
Fire Safety Power Point presentation (by request)	2 hours (per request)
Trade Shows (e.g. Annual Home and Garden Show)	8 hours (per event)
Public events	8 hours (per event)
Public education booths (e.g. Canadian Tire)	3 hours (per event)

5.3 Existing Fire Prevention and Fire Safety Programs

Utilizing the Community Risk Profile included within this report we assessed the current fire prevention and public safety programs provided by the fire department in relation to the municipality's legislative responsibilities and our understanding of best practices within the Ontario fire services.

In our view the department should develop a Fire Prevention Policy that reflects the requirements of PFSG 04-45-12 "*Fire Prevention Policy*". An example of the purpose of a fire prevention policy includes:

- *To establish policies and procedures for fire department personnel for fire prevention, public education programs and activities as a primary means of protecting lives and property from fire; and*
- *To maintain compliance with the minimum fire prevention and public education activities as required by the Fire Protection and Prevention Act, 1997.*

The Fire Prevention Policy should also identify the following fire prevention and fire safety education activities such as:

- *Inspection;*
- *Code enforcement;*
- *Fire and life safety education;*
- *Fire investigation and cause determination;*
- *Fire loss statistics; and*
- *Fire department operational guidelines identifying how, when and where activities will be conducted.*

5.4 Fire Prevention and Public Education Activities

The current fire prevention and public education efforts of BWGFES are focused on the first two lines of defence of the Comprehensive Fire Safety Effectiveness Model. These include the delivery of public education and fire prevention programming and activities related to fire safety standards and enforcement. An overview of these programs and activities are included below.

5.4.1 Fire Inspection Program

Bradford West Gwillimbury Fire and Emergency Services currently inspects the Town's "care" occupancies (Group B – Institutional occupancies based on the Ontario Building Code) on an annual basis, including licensed daycare centres, schools, long term care facilities and group homes. Inspections of home daycares, residences, or industrial/commercial occupancies are inspected only by request or following an incident related to a fire. Both the FPI and Fire Chief have been appointed Building Inspectors for the Town of Bradford West Gwillimbury via *By-Law 2009-095* and *By-Law 2007-111* and as such, are responsible for all fire inspections.

As a component of fire inspections, prior to building occupancy the FPI will ensure that compliance with the Ontario Building Code is achieved. The FPI inspects and tests:

- Fire alarm systems;
- Sprinkler systems;
- Emergency lighting;
- Exit signs;
- Portable fire extinguishers;
- Emergency power systems; and
- Standpipe systems.

Additionally, a new Building By-law was recently passed (*By-Law 2013-79*) which discusses fire safety matters within the Town. *By-Law 2013-79* states that the Chief, as an inspector, shall be responsible for fire safety matters in accordance with Section 1.3.4., Division C, of the Ontario Building Code. The Chief's responsibilities (as an inspector) include the following:

- Fire alarm and detection systems;
- Fire suppression (e.g. sprinkler, standpipe and hose systems);
- Voice communications systems;
- Provisions for firefighting;
- Portable fire extinguishers;
- Emergency lighting and exit signage;
- Fire protection and explosion prevention/venting systems for spaces containing hazardous gases, dusts or liquids and exhaust systems for commercial cooking equipment; and
- Spray booth operations and inspection of electromagnetic locking devices.

The FPI logs all inspections in a Microsoft Excel spreadsheet file located on his assigned computer's hard drive and all Ontario Fire Code inspection reports are kept digitally on the department's newly utilized FIREHOUSE software. It is recommended that the FPI save all files onto the department's computer network. Hard copies of the inspection reports are kept in specific property files. There are currently no procedures in place for the issuance of Inspection Orders or for taking individuals to court on Inspection Order violations. As previously stated, the FPI workload is challenging for one staff member to accomplish. The FPI is involved with building code work from the beginning of a project, which contributes to an already large workload. The hiring of a second full-time Fire Prevention Inspector would allow the department to increase their number of annual inspections and improve fire prevention records maintenance. As well, consideration should be made for providing the FPIs with a mobile tablet complete with appropriate software and applications, which would allow for on-site reporting and order issuances, which would expedite the inspection process.

Establishing performance measures for each of the fire inspection activities provided by the department would be an effective tool for Council and the fire department to monitor the effectiveness of these activities. Currently there is no official inspection plan to state what occupancies to inspect; the approach is more reactive rather than proactive. Utilizing the Community Risk Profile (***Appendix I***) to prioritize these activities would be considered an appropriate practice in setting the goals and objectives for the Town of Bradford West Gwillimbury's fire inspection program.

Based on our review of the Community Risk Profile and Bradford West Gwillimbury's legislated responsibilities, the performance measures for fire inspection services identified within ***Table 5*** below reflect an appropriate level of fire protection (fire inspections) for BWGFES. The FPI should create an official inspection schedule based on the information outlined below in order to target specific occupancies.

Table 5: BWGFES Fire Inspection Services

Occupancy Classification (OBC)	Buildings	Performance Measure
Group A – Assembly	Schools, Recreation Centres (Arenas), Curling/Golf Centres	Annually
Group A – Assembly	Licensed Properties, Nursery/Day Care Facilities, Churches, Special Occasion Permits	Upon Request
Group B – Institutional	Hospital, Nursing homes, Homes for Special Care	Annually
Group C – Residential	Apartments regulated by Part 9.3 of the OFC	Annually
	Apartments regulated by Part 9.5 of the OFC	Annually
	Apartments regulated by Part 9.8 of the OFC	Annually
	Hotels, Motels and occupancies regulated by Part 9.9 of the OFC	Annually
	Home Inspection Program	Upon Request
Group D - Business	Business and Personal Services Occupancies	Upon Request
Group E - Mercantile	Mercantile Occupancies	Upon Request
Group F - Industrial	Factories and Complexes	Every 2 years

The fire inspection cycle recommended above reflects the findings of the Community Risk Profile that indicated that a large portion of the property stock (91.5%) represents Group C - Residential Occupancies and focuses the need for dedicated staff resources in this area. The priority of addressing the residential fire risk is supported by the historic data[2] provided by the Office of the Fire Marshal, Ontario that reports for the period from 2007 to 2011 residential fires accounted for 72% of all structure fire losses and for the period from 2002 to 2011 residential fires accounted for 85% of all fire fatalities.

The proposed fire inspection service levels also prioritize strategies that achieve "Ontario Fire Code (OFC) Compliance" for all relevant property classifications. This includes retrofitting requirements identified under 'Part 9' of the Ontario Fire Code for all multi-unit residential buildings.

[2]Sources, OFM website:
http://www.mcscs.jus.gov.on.ca/english/FireMarshal/MediaRelationsandResources/FireStatistics/OntarioFatalities/FatalFiresSummary/stats_fatal_summary.html

http://www.mcscs.jus.gov.on.ca/english/FireMarshal/MediaRelationsandResources/FireStatistics/OntarioFires/FireLossesCausesTrendsIssues/stats_causes.html

5.4.2 Ontario Fire Code Enforcement

In addition to the fire inspection service levels listed above, a fire department is further required by legislation to respond to requests for inspections (to assist with code compliance) or complaints. The recommended Fire Prevention Policy should include strategies such as the following to address this responsibility:

- *"Fire Prevention Inspections are to be conducted for all complaints received by the fire department containing reports of potential Fire Code violations and/or potential fire hazards, and for all requests for inspections to assess fire safety".*

- *"Where the fire department receives a complaint on any premise or building in the municipality, the inspection shall be given priority, and conducted as soon as practical under authority of the Fire Protection and Prevention Act regardless of the frequency established in this Fire Prevention Policy".*

- *"Additional Fire Prevention Inspections may be conducted of any occupancy or building as deemed necessary to address the needs and circumstances of the community or a targeted risk".*

In our view these strategies reflect effective levels of service in addressing the legislated responsibility of the municipality. Considering the addition of further wording to emphasis the department's commitment to responding to request for inspections (to assist with code compliance) would provide further clarity of the strategies.

The OFM recently released Technical Guideline OFM-TG-01-2012 "Fire Safety Inspections and Enforcement". An excerpt from this new guideline states that the scope is "to assist municipalities and their fire services in meeting their fire safety inspection and enforcement responsibilities in the most effective and efficient way possible, as provided by the FPPA".

Our review of this guideline indicates that it supports the direction of the "first two lines of defence" as a means to optimize the level of fire protection services within a community. This technical guideline provides municipalities with strategies particularly related to enforcement of the OFC in situations where achieving compliance has or may be difficult to achieve.

We recommend that this new technical guideline be reviewed by the Fire Chief and where required, be included within the development of the Standard Operating Guidelines for fire inspections to achieve and sustain compliance with the Ontario Fire Code. The additional workload association with enforcement of the code, including potential court time for related legal issues, is expected to be carried by the additional Fire Prevention Inspectors proposed.

5.4.3 Fire Investigation and Cause Determination

Investigations are listed under the responsibilities of the Fire Chief and assistance with fire investigations is assigned to the Deputy Fire Chief. This requires the Fire Chief or Deputy Fire Chief to attend emergencies, interview witnesses, photograph scenes and gather evidence for the purpose of determining the origin and cause of fires. Investigations of the cause of fire are a requirement within the FPPA. The Fire Chief and Deputy Fire Chief conduct these investigations and assist the OFM with their investigations as required.

The workload associated with these services is dependent on the number of fires and required investigations each year. Ideally, with an increased focus on public education and fire prevention, the Town will experience a reduction in annual fires and therefore reduce the number of investigations required. With the allocation of additional Fire Prevention Inspectors, the duties associated with fire investigations could be reassigned from the Fire Chief and the Deputy Chief to prevention personnel.

Investigating the origin and cause of a fire is a municipal fire department responsibility. Where fires meet specific criteria the local fire department can request assistance from the OFM to conduct these investigations. The criteria and process for this request are contained within OFM Communique #2010-12.

The proposed Fire Prevention Policy should include wording to further define the level of fire protection services for consideration by Council. For example the policy wording may state that:

> *"The Fire Chief and/or members of the fire department delegated by the Fire Chief shall investigate the origin and cause of all fires within the municipality" and that*
>
> *"The Office of the Fire Marshall will be notified as per OFM Directives 2011-001 (Please see attached) Fatality or Serious Injury (likely to cause death), gaseous explosions, large loss fire or suspicion of arson. Fire Department Personnel will assist the OFM investigator as requested".*

Subject to the approval of this policy we recommend that a specific Standard Operating Guideline (SOG) be developed and implemented to reflect the intent of the policy. The SOG should further define the OFM reporting process required and the process for evaluating the investigation results and including them within updates to the Community Risk Profile.

5.4.4 Fire Safety Plans

The FPI is responsible for reviewing and monitoring fire safety plans required by the Ontario Fire Code, including reviewing building permit drawings for buildings in accordance with Ontario Building Code Part 3 or Part 9 (excluding single family dwellings). As the Town continues to grow, the amount of time required to review all development plans (including drawing reviews, correspondence, inspections and meetings) will significantly increase. Time spent on the building plans review process competes with the time the FPI needs for Ontario Fire Code inspections of existing buildings, as well as public education administering. The FPI should look for opportunities to share this workload with Building Division staff to identify efficiencies. Additionally, a second FPI would be able to assist with reviewing fire safety plans and building permit drawings. The full-time FPI should focus the specialized skill of reviewing fire safety plans for unique situations that require extra attention. Adding staff capacity to the Fire Prevention Division would add efficiency to this review process and thus, further justifies the need for a second FPI.

5.4.5 Fire and Life Safety Education Programs

Bradford West Gwillimbury Fire and Emergency Services acknowledge the benefits and importance of providing fire and life safety public education programming the community residents. The historical data provided by the OFM report that within Ontario, from 2007 to 2011 the number of loss fires, described as any fire with an injury, fatality or dollar loss reported, have declined from 14,310 in 2007 to 11,501 in 2011. This decrease of 20% further supports the optimization of the first two lines of defence as a strategy to improve the overall level of fire protection within a community.

In our view priority should be given to implementing and expanding fire safety educational programs that address the vulnerable population identified within the Community Risk Profile (***Appendix I***). Children (under 14) currently represent 19.2% of the community population. This is a slightly higher percentage of population in comparison to the Provincial average of 17%. Identifying and implementing fire and life safety education programs targeted at children and other vulnerable groups such as seniors are recommended.

Programs that include information regarding cooking equipment and open flame/smoking articles (which represented 26.1% of the ignition source causes identified within the Community Risk Profile) should also be considered a priority.

The OFM provides a wide variety of educational programs and resource tools to facilitate the delivery of these programs. The department currently provides educational programs based on available resources. Within the proposed Fire Prevention Policy the department should consider the following educational programs as priorities for the department:

- ✓ *Older and Wiser Program (Fire safety program for older adults)*
- ✓ *Alarmed For Life (Community smoke alarm program)*
- ✓ *TAPP-C Program (Arson Prevention Program for Children)*
- ✓ *Kitchen Care Program*

These programs effectively respond to the findings of the current Community Risk Profile and together provide an appropriate level of fire and life safety education service delivery for the Bradford West Gwillimbury Fire and Emergency Services.

Currently, it is the responsibility of the FPI to prepare and evaluate the public education programs delivered by BWGFES. The following are examples of public fire safety programs delivered by BWGFES:

- Fire Prevention Week open house
- Home Fire Safety and Smoke Alarm Program
- Station visits
- Community presentations / public education booths
- Participation in trade shows and town events

Additionally, a large component of BWGFES' school program involves tours of the Surrey Fire Safety House trailer (***Figure 7)***. The trailer is scheduled for replacement in 2015, when it reaches 15 years of use.

Figure 7: Surrey Fire Safety House Trailer

Best practices of other municipalities have proven that expanding and enhancing public education efforts is an effective strategy to increase the overall level of fire protection within a community and can result in a reduction of emergency call volume.

From a public education perspective priority should be given to implementing and expanding programs that address the vulnerable populations identified within the Community Risk Profile (e.g. children) as well as areas of the community where high risks are predicted or emergency response times are extended due to factors such as long travel times (e.g. rural or remote areas). Overall, BWGFES provides an adequate level of public education to the Bradford West Gwillimbury community. However, there is always room for improvement and the addition of more educational events, in order to target all demographics, age groups and identified risks. The hiring of a second full-time FPI and additional full-time suppression staff would help support the expansion of BWGFES' fire prevention and public education events.

5.4.6 Smoke Alarm Program

The provision of a smoke alarm program including home escape planning is a legislated responsibility of the municipality. Achieving compliance with the provincial smoke alarm requirements has been a challenge for fire departments across Ontario. As a result of many recent fire tragedies, the OFM has introduced a "zero tolerance policy" for occupancies requiring smoke alarms.

BWGFES is currently utilizing a Home Fire Safety and Smoke Alarm Program to address their legislative responsibilities for providing a smoke alarm program. This program allows community members to request a free inspection of their house in order for the department to ensure that their house has a working smoke alarm and to point out any fire hazards and solutions to correct them. The department's Standard Operating Guideline #901(Home Smoke Alarm Guideline) was issued in 2009 and revised in 2013 in order to establish guidelines for fire suppression crews to conduct "Home Smoke Alarm" visits. The intent of the program is to provide residents basic fire and life safety information to ensure that their families will be safe from fire and life safety hazards in their home. The SOG outlines a schedule for this program, which takes place between August 1st and October 31st of every year. The FPI and full-time suppression staff help to carry out this program. One option for BWGFES to consider is to involve the volunteer firefighters in a greater number of public education events, such as the Home Fire Safety and Smoke Alarm Program. This would free up some of the FPI's time commitments and would also allow the department to conduct more home visits, due to the additional volunteer resources. As well, the hiring of additional full-time suppression staff would allow BWGFES to conduct more home smoke alarm visits located outside of the Bradford Urban Area (in the rural areas, away from the fire station).

In addition to prioritizing the vulnerable demographics within the community, the Community Risk Profile identifies areas within the community where extended emergency response times are present due to long travel distances. These geographic areas, and specifically residential occupancies containing vulnerable demographics, should be considered a high priority for the department's fire safety education programs and the Home Fire Safety and Smoke Alarm Program.

5.4.7 Fees for Service

As previously stated in **Section 4.11.3**, BWGFES has specific fire inspection fees which are outlined in "Schedule A" of *By-Law 2012-118*. As part of developing performance measures for this division, consideration should be given to completing a full review of all current fees charged. It is recommended that all fees for service be reviewed and revised on an annual basis to ensure that they accurately represent the fiscal realities of the services provided.

As part of developing the proposed Fire Prevention Policy we recommend that a comprehensive review of all current fees for services be completed subject to the consideration and approval of this FMP by Council.

5.4.8 Records Management

As previously stated, BWGFES recently switched their records management software from FirePro to FIREHOUSE software. The FPI keeps digital records of all Ontario Fire Code inspection reports and any public education administrated in FIREHOUSE and also uses Microsoft Excel to log annual fire inspections. Any Ontario Building Code correspondence, such as plans review, zoning letters or occupancy letters are kept digitally on the FPI's computer. Hard copies are kept in the filing cabinets and drawings reviewed from previous years are kept in a storage box in the fire station storage room for reference purposes. The filing cabinets are located in the office trailer.

The Bradford West Gwillimbury Fire and Emergency Services' website currently provides fire prevention and public fire safety information. This is an excellent venue for providing information to the broad community base and opportunities to enhance the information provided should be pursued.

Providing education and awareness to students is another proactive strategy that has shown positive results across the province. In our view, BWGFES should consider methods to optimize the use of readily available technology, such as social networking sites (e.g. Facebook, Twitter, etc.) as well as public media (e.g. radio and television) to broaden the base of exposure for public education information and specifically the student population throughout the community. These strategies are proving effective for other fire services in urban centres within the Greater Toronto Area.

5.4.9 Workspace

The FPI's office is shared with the Training Officer in the office trailer located in the parking lot of the fire station (approximately 50 feet away from the station). The trailer consists of three work stations, a small meeting area, filing cabinets and a printer. The trailer was a temporary solution due to the lack of administrative office space in the fire station. The office trailer is workable; however, there are space limitations and inconveniences. Meetings or phone conversations held in the trailer may be distracting for other staff members. As well, department staff working out of the office trailer have to use the fire station for facilities (e.g. washrooms and kitchen amenities), which is inconvenient during the winter months or when it rains. Consideration should be given to expanding the current fire station to include additional administrative space (including Fire Prevention and Public Education Division workspace), or providing administrative space in a second fire hall. The workspace and storage needs of the division should be incorporated into the facility needs study recommended to follow this study.

5.5 Fire Prevention and Public Education Priority Setting Worksheet

The priority setting worksheet developed by the OFM is an effective tool utilized by fire departments to identify and monitor activities targeted at fire prevention and public education. ***Table 6*** is the current priority setting worksheet which reflects the recommendations of this Fire Master Plan. The current priorities of the fire prevention and public education programs delivered by the division are in line with the vulnerable populations of the community and the risk categories which pose the most likely fire loss potential. The first two target populations are children and seniors. This is consistent with the vulnerable populations and best practices in the industry. The division also targets all residential buildings and the populations who live and sleep within, knowing that this group typically represents the most likely occurrence of historic fire losses. The final priority of the division is industrial and commercial occupancies within the Town.

Thorough tracking and monitoring of BWGFES statistics over the coming years is expected to provide evidence of the effectiveness of the enhanced prevention and education programs. Tracking and reporting this information is essential to relay the importance of added public education resources as a first line of defence in order to reduce the workload on the third line of defence (suppression staff) to Council and the community at large.

Table 6: **Fire Prevention and Public Education Priority Setting Worksheet**

Priority	**Status**		**Effectiveness, Goals/Objectives**		
Fire Safety Priority (List in order of Priority)	**Current fire prevention / public education programmes that address the fire safety priority**		**Existing programmes adequately address the fire safety priority & ensure compliance with minimum FPPA requirements?**		
				Options for Improvement	
	Fire Prevention (Inspection) Activities	**Public Education Activities**	**Y/N**	**Fire Prevention Activities**	**Public Education Activities**
1) Children	• Annual inspection of licenses daycare centres. • Inspection of home daycares (by request). • Review fire safety plans for schools. • Inspect schools. • Home smoke alarm program is conducted by firefighters and fire prevention inspector.	• Visit schools each school year to talk to kindergarten to Grade 3 students about fire safety (November to June). Age appropriate videos are shown; Q & A session; interactive tour of the fire safety house is done with each grade. • Tours of the fire station can be arranged upon request (general public or organizations such as Sparks). • Fire Prevention Week open house. One day event available to the general public. • Fire safety information provided to audience members (i.e. colouring books, brochures, etc.)	Y	Inspect schools annually.	Expand and enhance school programs.
2) Seniors	• Inspection of residence (by request). • Review fire safety plans for care occupancies. • Annual inspection of the town's long term care facility. • Home smoke alarm program is conducted by firefighters and fire prevention inspector. • Respond to complaints.	• Tours of the fire station can be arranged upon request. • Fire Prevention Week open house. One day event available to the general public. • Fire safety presentations to senior organizations by request (i.e. CHATS). Consists of PowerPoint presentation, DVD video ("At our Age") and Q & A session. • Fire safety information provided to audience members (i.e. colouring books, brochures, etc.)	Y	Continue inspection cycles, and include an inspection of senior residences on an annual basis within the official inspection schedule.	Target home smoke alarm programs to areas with senior populations.

Priority	Status		Effectiveness, Goals/Objectives		
Fire Safety Priority (List in order of Priority)	**Current fire prevention / public education programmes that address the fire safety priority**		**Existing programmes adequately address the fire safety priority & ensure compliance with minimum FPPA requirements?**		
				Options for Improvement	
	Fire Prevention (Inspection) Activities	**Public Education Activities**	**Y/N**	**Fire Prevention Activities**	**Public Education Activities**
3) All Residents	• Inspection of residence (by request). • Home smoke alarm program is conducted by firefighters and fire prevention inspector. • Respond to complaints.	• Tours of the fire station can be arranged upon request. • Fire Prevention Week open house. One day event available to the general public. • Participate in trade shows (i.e. Home and Garden). • Participate in town events • Fire safety information provided to audience members (i.e. colouring books, brochures, etc.)	Y	Conduct annual inspections of apartments or multi-unit residential buildings.	Use the Community Risk Profile to target areas for enhanced Home Fire Safety and Smoke Alarm Program.
4) Industrial / Commercial	• Inspect occupancies by request or following an occurrence. • Review fire safety plans.	• Set up a public education booth at commercial occupancies (i.e. Canadian Tire, Home Depot etc.). • Fire safety information provided to audience members (i.e. colouring books, brochures, etc.).	N	• More inspections of industrial buildings need to be performed annually; include under an official inspection schedule.	• Provide fire extinguisher training. • Sit down with supervisory staff annually to review fire safety plans.

5.6 Fire Prevention and Public Education Division Summary and Recommendations

Bradford West Gwillimbury Fire and Emergency Services currently carries out fire prevention enforcement and public fire safety education programs, within the guidelines of the Fire Protection and Prevention Act, 1997 (FPPA), and is meeting the legislated responsibilities of the FPPA. The fire prevention and public education efforts of BWGFES target the first two lines of defence of the Comprehensive Fire Safety Effectiveness Model but are limited by available resources.

The FPI determines the target number of inspections each year, however, no formal inspections schedule or performance measures currently exist. The Fire Chief, with assistance from the Deputy Fire Chief conducts fire investigations and assists the OFM with their investigations as required. Ideally, with an increased focus on public education and fire prevention, the Town will experience a reduction in annual fires and therefore reduce the number of investigations required.

As a result of our review and assessment of the Fire Prevention and Public Education Division, we recommend that:

- *BWGFES hire a second full-time FPI in the immediate future (2014);*
- *The department develop a Fire Prevention Policy that reflects the requirements of PFSG 04-45-12 "Fire Prevention Policy".*
- *The FPI saves all files onto the department's network.*
- *That consideration be made to provide the FPI with a mobile tablet complete with appropriate software and applications, to allow for easier on-site reporting and order issuances.*
- *Formalized and specific performance measures for fire inspection cycles be developed based on the identified risks within the Community Risk Profile. Once developed, these performance measures should be tracked annually to measure division performance and reported to Council.*
- *That BWGFES prioritize inspections utilizing the Community Risk Profile, including creating an official inspection schedule.*
- *The technical guideline OFM-TG-01-2012 "Fire Safety Inspections and Enforcement" be reviewed by the Fire Chief and where required, be included within the development of the SOGs for fire inspections.*
- *Subject to the approval of a Fire Prevention Policy, that a specific SOG be developed and implemented to reflect the intent of this policy.*
- *Priority be given to implementing and expanding public safety education programs to address the vulnerable populations identified within the Community Risk Profile and areas of the community where high risks are predicted or emergency response times are extended due to factors such as long travel times (e.g. rural or remote areas).*
- *Replace the Fire Safety Trailer in 2015, as planned within the replacement cycle.*
- *The Town continue and potentially enhance utilization of on-duty crews and volunteer firefighters for public education events and to optimize the delivery of the Smoke Alarm Program.*
- *Review the need for additional fire prevention / public education staff resources at the interim horizon of 2017 to 2019 to consider and address growth-related increases to workload of the fire prevention inspectors.*

- *Utilizing the Community Risk Profile BWGFES should emphasize the Home Smoke Alarm Program as the "first line of defence" in areas of the community (such as rural residential areas) where extended emergency response times are present due to factors such as increased travel times. It is also recommended to prioritize delivery of the new program to areas of known risks such as older building stock or areas that have experienced historic fire loss.*
- *All fees for service be reviewed and revised on an on-going basis to ensure that they accurately represent the fiscal realities of the services.*
- *BWGFES consider methods to optimize the use of readily available technology, such as social networking sites (e.g. Facebook, Twitter, etc.), as well as public media (e.g. radio and television) to broaden the base of exposure for public education information and specifically the student population throughout the community.*
- *Consideration be given to expanding the current fire station to include additional office and storage space.*

6.0 FIRE SUPPRESSION

Bradford West Gwillimbury Fire and Emergency Services shares the characteristics of many large primarily rural in nature communities in Ontario that include a small urban centre surrounded by rural geography. The Town of Bradford West Gwillimbury is experiencing significant growth and development in its urban centres, specifically in the Bradford Urban Area and Bond Head Settlement Area, which are surrounding by rural, agricultural and open space. The ability for the Town or any other community that shares these characteristics, to provide emergency response in the form of firefighting resources that could effectively mitigate a fire in a timely manner can be difficult and challenging. The level of risk, travel distances and water supply are examples of the factors that can impact the ability to provide this type of mitigation within an established time frame.

The Establishing and Regulating By-law outlines the following roles and responsibilities regarding fire suppression and emergency response for the Town of Bradford West Gwillimbury:

- Suppress any fire or other hazardous condition by extinguishing it or by reasonable action and, for this purpose may enter onto any land or premises and to do anything to those lands or premises as authorized by the FPPA;
- Pull down or demolish any building or structure when considered necessary to prevent the spread of fire or in the interest of public safety where the structure has been damaged by fire and the structure poses a risk to safety from possible collapse;
- The Fire Department may request other appropriate persons or agencies to be present at a fire or emergency to assist in the provision of fire protection services including the extinguishing of fires, pulling down or demolishing buildings and structures to prevent the spread of fire, initiate crowd control, traffic control or other specialized rescue services to deal with rescues or other hazardous conditions in reasonable ways; and
- The Fire Chief, when unable to contact the property owner, may take such actions as may be necessary including, but not limited to, boarding up or barricading of buildings or property to guard against fire or other danger, risk or accident.

The Comprehensive Fire Safety Effectiveness Model recognizes the high importance of the first two lines of defence in mitigating the potential of a fire occurring. In the event a fire does occur and emergency response is required the model defines the third line of defence as:

> "***III. Emergency Response (Fire Suppression)****:*
>
> *Providing well trained and equipped firefighters directed by capable officers to stop the spread of fires once they occur and to assist in protecting the lives and safety of residents. This is the failsafe for those times when fires occur despite prevention efforts."*

In our view the three lines of defence represent a proven model for optimizing the benefits of pro-active prevention and education programs; appropriate use of standards and code enforcement and, as the model suggests, the provision of emergency response as the 'fail safe' for when these efforts when incidents occur despite all efforts towards optimization of the first two lines of defence.

A core component of evaluating the overall effectiveness of providing fire suppression services includes considering a measurement-supported set of performance targets (i.e. service standards) and setting clear goals and objectives. Within Ontario there is no specific legislated standard that a community must achieve with regard to the service level or type of firefighter (career/part-time/volunteer) or the number of firefighters required to respond to any given incident. The FPPA does require that a municipal Council assess this level of resources based on determining its "*local needs and circumstances*".

To assist in the evaluation of the level of fire suppression resources required by Bradford West Gwillimbury Fire and Emergency Services this study identified the different guidelines and standards that are currently relevant within Ontario. Through comparison of each with a typical fire scenario this analysis presents insight into the industry best practices optimizing a risk-based approach.

6.1 Importance of Time with Respect to Fire Growth

Time is a critical component with respect to the growth of a fire and the success of intervention by firefighters. Research conducted by the OFM and National Research Council of Canada indicates that a fire in a non-sprinklered residential occupancy can spread from the room where the fire originates in ten minutes or less. Tests have shown that the fire can extend from this room of origin in as little as three minutes, under fast fire growth conditions.

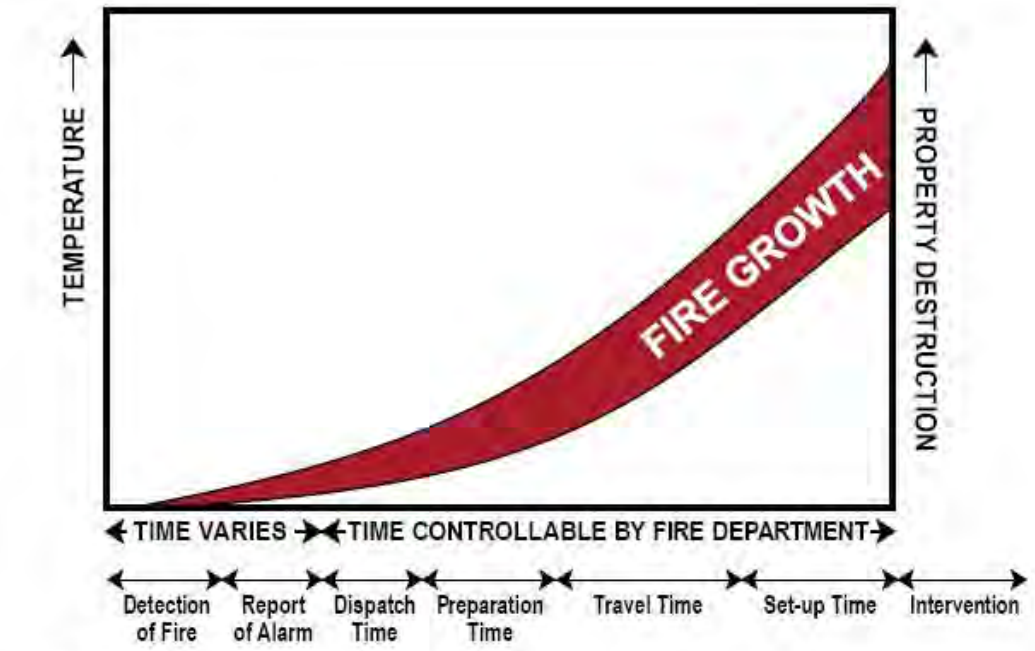
Fire growth rates, defined by the Society of Fire Protection Engineers, as slow, medium and fast are listed in ***Table 7***. The fire growth rates are measured by the time it takes for a fire to reach a 1 megawatt (MW) fire. This is roughly equivalent to an upholstered chair burning at its peak. A 2 MW fire is approximately equal to a large upholstered sofa burning at its peak.

Table 7: Fire Growth Rates as Defined by Society of Fire Protection

Time to Reach 1 MW and 2 MW Fire Growth Rates in the Absence of Fire Suppression		
Fire Growth Rate	***Time in Seconds to Reach 1MW***	***Time in Seconds to Reach 2 MW***
Slow	600 seconds	848 seconds
Medium	300 seconds	424 seconds
Fast	150 seconds	212 seconds
Source: Office of the Fire Marshal, Ontario, 'Operational Planning: An Official Guide to Matching Resource Deployment and Risk', January 7, 2011 (www.ofm.gov.on.ca)		

Within this ten minute time period flashover conditions can occur. Flashover occurs when the combustible items within a given space reach a temperature that is sufficiently high for them to auto-ignite. The graph in ***Figure 8*** highlights the importance of firefighting intervention, given the exponential increase in fire temperature, and the potential for loss of property/loss of life with the progression of time (*Courtesy of the Office of the Fire Marshal, Ontario).*

Figure 8: OFM Fire Progression Curve



NOTES: The fire progression curve is subject to variation due to a number of factors such as the type of material and volume of material involved.

The various factors, from the time the fire begins until intervention takes place, are all subject to variation.

Preparation time for full-time firefighters means the time to dress and depart the station.

Preparation time for volunteer firefighters includes the time to respond to the station as well as to dress and depart the station.

The fire progression curve reflects the importance of time during the "*detection – report*" stage. This is the time period not impacted by any actions by the fire department. The time period controlled by the fire department begins when the call is initially received by "*dispatch"* and includes several other components leading up to the initiation of "*intervention*" by fire suppression staff.

Understanding factors such as "growth rate" and "time" in terms of how quickly a fire can reach a critical stage such as "flashover" are important considerations in assessing fire suppression performance targets. For example, where areas of the community may have extended response times due to long travel distances, in excess of 10 minutes, the potential for the fire to have spread from the room of origin, and or already reached a "flashover" state, will be significantly higher.

In these situations consideration should be given to the first two "lines of defence" including the provision of more public education and fire prevention activities as a means to inform the public on how to be prepared.

6.2 Total Response Time

Measuring the total response time to an emergency call can be defined by three primary components: *dispatch time, turnout time, travel time*. Together these components make up the total response time it takes for a fire and emergency service to receive a call either from someone at the scene or with knowledge of the fire, identify the location of the emergency and dispatch appropriate vehicles and staff, travel to the scene of the incident, and set up to begin fire suppression activities. The common definitions of these four components are:

1. Dispatch Time: The time that it takes for the person responsible for "*alarm answering*", and "*alarm processing*" to be able to receive the call, and dispatch the appropriate apparatus and staff to respond to the emergency.
2. Turnout Time: The time interval that begins from when the emergency response staff receives the required dispatch notification, and ends at the beginning point of travel time.
3. Travel Time: The travel time interval begins when the assigned emergency response apparatus begins the en-route travel to the emergency, and ends when the apparatus arrives at the scene.

One of the important factors to recognize with regard to these times is when the responding fire department begins to take "*care and control*" of the incident. Within PFSG 04-08-10 (***Appendix C***) the OFM describes this as:

> *"Once notified of an emergency, your department accepts its "care and control". If your department handles its own call-taking and dispatching, you can see that you have care and control right from the earliest moment, when the emergency was reported. But if you hire a call-taking or dispatching or both, you do not accept care and control until sometime later. Nevertheless, the fire department has responsibility for ensuring that hired agencies manage call-taking and dispatching effectively, and in accordance with establishes protocols".*

Emergency response times are measured and analyzed according to percentile ranking (i.e. percentage of responses meeting a specified timeframe). The 90th percentile (i.e. where 90% or 90 out of 100 responses meet a specific response time target) is a common industry best practice for reporting and understanding emergency first responder performance. Fire services commonly utilize 90th percentile response time data for system planning and resource deployment purposes.

6.3 Fire Suppression Guidelines, Industry Standards, Industry Best Practices

Within Ontario there is no specific legislated standard that a community must achieve with regard to the type of firefighter (career/part-time/volunteer) or the number of firefighters required to respond to any given incident. As indicated within the OFM 2011 Review the FPPA does require that a municipal Council assess this level of resources based on determining its "*local needs and circumstances*".

Over the past decade there has been a transition within the fire service industry across North America to the utilization of community risk-based analyses to determine the appropriate level of firefighter deployment based on the critical tasks to be performed to effectively, efficiently and safely conduct fire suppression operations.

Utilizing the findings of the Community Risk Profile contained within this FMP this section assesses the relevant PFSG authored by the Office of the Fire Marshal, Ontario, current standards of the National Fire Protection Association.

Together the OFM and NFPA represent the agencies responsible for fire protection within the Province of Ontario, the most highly recognized fire service association in North America. In our view these agencies cumulatively represent the appropriate authorities for identifying an appropriate methodology and process for determining firefighter deployment in the Town of Bradford West Gwillimbury.

6.4 PFSG 04-08-10 Operational Planning: An Official Guide to Matching Resource Deployment and Risk

PFSG 04-08-10 (***Appendix C***) was released by the OFM in January 2011 and includes a "Critical Task Matrix" to assist municipalities in determining the level of fire ground staffing capabilities based upon low, moderate, high and extreme risks. The Critical Task Matrix is defined by the OFM as:

> *"The critical Task Matrix is based on the Incident Management System (IMS). It will assist in identifying fireground staffing capabilities based upon low, moderate, high and extreme risk levels within your community. The Office of the Fire Marshal (OFM) has identified the critical tasks from the Incident Management System that are used during fireground operations. These tasks are consistent with applicable legislation, industry best practices and the Ontario Fire College Curriculum".*

The matrix further recognizes that within the IMS that:

- *Upon arrival and rapid size-up, the incident commander can upgrade or downgrade response;*
- *Crews can be reassigned to other tasks once original assignments are complete;*
- *Response protocols can be established with specific risk levels used to assist with pre-planning to obtain more resources based on the escalating nature of the emergency;*
- *Fire departments perform rescue and building personnel conduct evacuations according to their approved fire safety plans;*
- *Some tasks will never be assigned based on the tactical approach chosen by the incident commander (offensive versus defensive).*

The Critical Task Matrix provides a lower and upper range of the number of firefighters required to respond for each of the four risk levels. The actual number of firefighters within each range is based upon analysis of actual fires, the *Occupational Health and Safety Act Section 21 Guidance Notes* affecting firefighters, and industry best practices. **Figure 9** reflects the PFSG 04-08-10 (***Appendix C***) Critical Task Matrix.

Figure 9: PFSG 04-08-10 Critical Task Matrix

Fireground Critical Tasks		Low Risk		Moderate Risk		High Risk		Extreme Risk	
		LERL	UERL	LERL	UERL	LERL	UERL	LERL	UERL
Incident Response (Note: Where zero or no number has been assigned, the task may be performed at the direction of the incident commander.)	Incident Command *	1	1	1	1	1	1	1	1
	Pump Operator	1	1	1	1	1	1	1	1
	Attack Line (Confine & Extinguish)	2	2	2	2	2	2	2	2
	Additional Pump Operator(s)	0	0	0	2	2	4	4	6
	Additional Attack Line (Confine & Extinguish) + Backup	0	0	0	4	4	8	8	12
	Search & Rescue	0	0	2	4	2	6	2	8
	Initial Rapid Intervention Team (IRIT)	0	0	4	6	8	16	12	22
	Ventilation	0	2	2	2	2	4	2	8
	Water Supply – pressurized	0	1	1	1	1	1	1	2
	Water Supply – non-pressurized	0	3	1	4	2	6	4	8
	Forcible Entry Team	0	0	0	0	0	1	0	1
	Utilities	0	1	1	1	1	1	1	1
	Laddering (Ground Ladders)	0	2	0	2	0	4	0	6
	Laddering (Aerial or elevating device operator)	0	0	0	2	0	2	0	2
	Exposure Protection			0	4	2	6	2	6
	Incident Safety Officer			0	1	1	1	1	1
	Accountability			1	1	1	1	1	1
	Entry Control			0	2	1	4	1	4
	Rehabilitation			0	1	1	1	1	1
	Salvage			0	2	2	2	2	2
	Lighting					0	2	0	2
	Directing Occupants					0	4	0	4
	Scribe					1	1	1	1
	Sector Officers					1	4	1	4
	Air Management (air refilling station, etc.)							1	2
Other or Additional Response Considerations	Logistics Officer								
	Administrative and/or Finance Officer								
	Planning Officer								
	Evacuations (large scale)								
	Communications (dispatch)								
	Public Information Officer								
	Overhaul								
	Additional Firefighters								
Summary	Incident Response Range	4	13	16	43	36	83	49	108
	Total Fire Department Including External								
	Fire Call Incident Response Range (+, - , within)								

Notes:

- LERL = Lower Effective Response Level & UERL = Upper Effective Response Level, [together form the critical staffing range]
- This tool provides a range of staffing requirements only. Actual numbers may vary depending on the fire risk that exists in the municipality. Tasks performed on fireground based on decisions made by Incident Commander.
- Planning moderate, high and extreme risk occupancies/locations will further validate staffing requirements to ensure the optimum level of protection for the municipality.
- Simultaneous events will require further consideration due to additional personnel requirements beyond the scope of this matrix.

* Incident Command will assume responsibilities for the accountability and entry control tasks when no person has been assigned, or until a person has been assigned the task.

The OFM Critical Task Matrix indicates that the lower and upper level incident response range to effectively, efficiently and safely conduct fire suppression operations to safely complete the tasks associated with a fire in moderate risk (Group C - Residential Occupancy) would be 16 to 43.

In comparison, the matrix indicates that the lower and upper level incident response range to effectively, efficiently and safely conduct fire suppression operations tasks associated with high risk occupancy (e.g. Group B – Institutional Occupancy) would be 36 to 83.

6.4.1 National Fire Protection Association (NFPA)

The National Fire Protection Association (NFPA) is an international non-profit organization that was established in 1896. The company's mission is to reduce the worldwide burden of fire and other hazards on the quality of life by providing and advocating consensus codes and standards, research, training, and education. With a membership that includes more than 70,000 individuals from nearly 100 nations NFPA is recognized as one of the world's leading advocates of fire prevention and an authoritative source on public safety.

NFPA is responsible for 300 codes and standards that are designed to minimize the risk and effects of fire by establishing criteria for building, processing, design, service, and installation in the United States, as well as many other countries. Its more than 200 technical code and standard development committees are comprised of over 6,000 volunteer seats. Volunteers vote on proposals and revisions in a process that is accredited by the American National Standards Institute (ANSI).

6.4.2 National Fire Protection Association (NFPA) 1710 Standard

NFPA 1710 "*Standard for the Organization and Deployment of Fire suppression Operations, Emergency medical Operations, and Special Operations to the Public by Career Fire Departments"* provides a resource for determining and evaluating the number of career firefighters required based upon recognized industry best practices.

NFPA 1710 is a standard that is designed for larger municipalities that as a result of many factors are operating their fire department utilizing substantially career firefighters. Relevant references from NFPA 1710 include the following:

- This standard applies to the deployment of resources by a fire department to emergency situations when operations can be implemented to save lives and property.
- The standard is a benchmark for most common responses and a platform for developing the appropriate plan for deployment of resources for fires in higher hazard occupancies or more complex incidents.

The relevance of this particular standard for the Town of Bradford West Gwillimbury is within the introduction of common terms and definitions as benchmarks in considering an appropriate volunteer firefighters deployment strategy. This particular standard identifies the minimum deployment of firefighters based on an "Initial Arriving Company" and an "Initial Full Alarm Assignment" that recognize similar critical fireground tasks as contained within PFSG 04-08-10.

6.4.3 Initial Arriving Company – "Initial Response"

Initial response is consistently defined in the fire service as the number of firefighters initially deployed to respond to an incident. Fire service leaders and professional regulating bodies have agreed that until a sufficient number of firefighters are assembled on-scene, initiating tactics such as entry into the building to conduct search and rescue, or initiating interior fire suppression operations are not safe practices. If fewer than four firefighters arrive on scene, they must wait until a second vehicle, or additional firefighters arrive on scene to have sufficient staff to commence these activities.

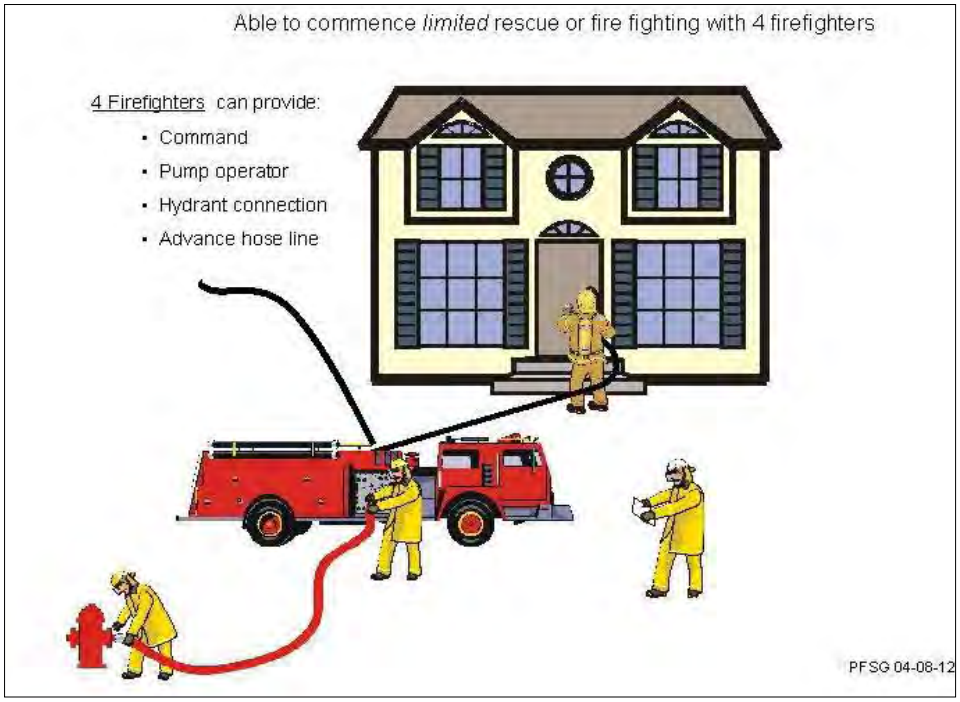
NFPA 1710 refers to the Initial Arriving Company as an Engine Company and further defines the minimum staffing level of an Engine Company as four firefighters whose primary functions are to pump and deliver water and perform basic firefighting at fires, including search and rescue.

An initial response of four firefighters once assembled on-scene is typically assigned the following operational functions. The Officer in charge shall assume the role of Incident Command; one firefighter shall be designated as the pump operator; one firefighter shall complete the task of making the fire hydrant connection; and the fourth firefighter shall prepare an initial fire attack line for operation.

The assembly of four firefighters on the fire scene provides sufficient resources to safely initiate some limited fire suppression operations. This first crew of four firefighters is also able to conduct the strategic operational priority of "size-up" whereby the Officer in-charge can evaluate the incident and where necessary, request an additional depth of resources that may not have been dispatched as part of the initial response.

Fire scene responsibilities of an Initial Response are highlighted in ***Figure 10*** below.

Figure 10: Initial Response Fire Scene Responsibilities



Office of the Fire Marshal, Ontario, Public Fire Safety Guideline 04-08-12, December, 2001. (Rescinded November 10, 2010)

The NFPA 1710 standard identifies an initial response deployment of four firefighters to effectively, efficiently and safely conduct initial fire suppression operations. As listed in the Fireground Critical Tasks shown in ***Figure 9*** the critical tasks with four firefighters on-scene include incident command, pumper operator and an attack line. This relates to a low-risk call response or an initial response for all calls.

6.4.4 Initial Full Alarm Assignment – "Depth of Response"

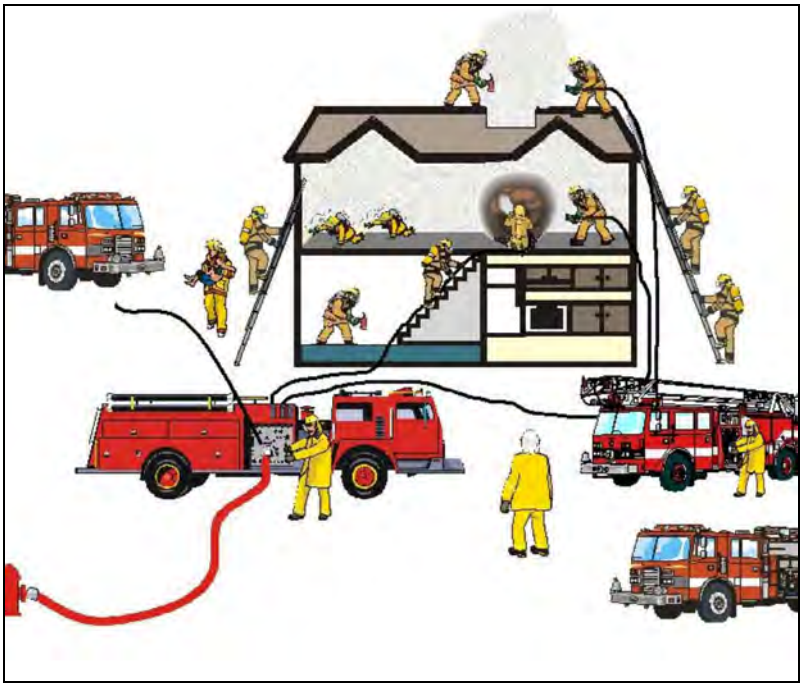
In comparison to the Initial Response the depth of response relates to the "total" number of firefighters initially assigned to an incident. Depth of response is also commonly referred to as "First Alarm" or "Full Response". For example NFPA 1710 defines "*Initial Full Alarm Assignment"* as *"Those personnel, equipment, and resources ordinarily dispatched upon notification of a structure fire"*.

The standard utilizes the example of a fire risk scenario in a 2,000 square foot, two-story single-family dwelling without a basement and with no exposures present. This represents a typical home of wood frame construction located in a suburban neighbourhood having access to a municipal water supply including fire hydrants. Within this study this occupancy would be classified as a Group C - Residential Occupancy (moderate risk).

It is very important to recognize that depth of response is referring to the "total" number of firefighters **initially** assigned to an incident. The total number of firefighters assigned to an incident can vary based on the type of occupancy and the level of risk present. Fires involving occupancies that have been assigned a higher level of risk such as high, or extreme may require a higher number of firefighters as part of the initial depth of response.

The NFPA 1710 standard for depth of response to the fire risk scenario presented is fourteen firefighters, fifteen if an aerial device is to be used. The NFPA 1710 fire scene responsibilities for depth of response including an aerial are highlighted in ***Figure 11.***

Figure 11: Depth of Response Fire Scene Responsibilities



(Shown including an aerial device – 15 firefighters) Modified from the Office of the Fire Marshal, Ontario, Public Fire Safety Guideline 04-08-12, December, 2001. (Rescinded November 10, 2010).

The NFPA 1710 standard identifies a depth of response deployment of 14 firefighters (with one additional firefighter with an aerial on-scene) to effectively, efficiently and safely conduct initial fire suppression operations in a fire risk scenario representing a single-family detached dwelling. Within this FMP this occupancy would be classified as a Group C - Residential Occupancy (moderate risk). As listed in the Fireground Critical Tasks shown in ***Figure 9*** and summarized in ***Figure 11*** the critical tasks for a moderate level risk include:

- *Incident Command / Accountability (1 firefighter)*
- *Pump Operator (1 firefighter)*
- *Two Attack Lines (4 firefighters)*
- *Search and Rescue (2 firefighters)*
- *Forcible Entry (1 firefighter)*
- *Water supply (1 firefighter)*
- *Initial Rapid Intervention Team (2 firefighters)*
- *Ventilation (2 firefighters)*
- *Laddering - Aerial – (additional 1 firefighter, optional)*

6.5 National Fire Protection Association (NFPA) 1720 Standard

NFPA 1720 "*Standard for the Organization and Deployment of Fire suppression Operations, Emergency medical Operations, and Special Operations to the Public by Volunteer Fire Departments"* provides a resource for determining and evaluating the number of volunteer firefighters required based upon recognized industry best practices.

The NFPA 1720 standard further supports the minimum initial response staffing to include four firefighters including "*Initial firefighting operations shall be organized to ensure that at least four fire fighters are assembled before interior fire suppression operations are initiated in a hazardous area"*. This particular standard recognizes that the four firefighters may not arrive on the same vehicle, but that there must be four on the scene prior to initiating any type of interior firefighting operations.

Within this standard the NFPA identifies five different categories described as "Demand Zones" that relate to the type of risk that may be found within a typical community; either by population density, travel distance, or special circumstances. The standard then identifies a minimum level of firefighters that would be recommended for each of these categories. ***Table 8*** presents the NFPA minimum staffing levels by category.

Table 8: NFPA 1720

Demand Zones	Demographics	Minimum # of Firefighters Responding	Response Time (Turnout + Travel) in Minutes	Meets Objective (%)
Urban Area	>1000 people per square mile	15	9	90
Suburban Area	500-1000 people per square mile	10	10	80
Rural Area	<500 people per square mile	6	14	80
Remote Area	Travel Distance + or – 8 miles	4	Dependent upon travel distance	90
Special Risks	To be determined by Fire Department	To be determined by Fire Department	To be determined by Fire Department	90

The NFPA 1720 standard utilizes population density as a factor in evaluating the minimum number of firefighters recommended for depth of response. As a standard primarily for use by volunteer fire departments it recognizes lower population densities are typically found in smaller communities in comparison to much higher population densities found in large urban centres.

The NFPA 1720 standard identifies an initial response deployment of four firefighters to effectively, efficiently and safely conduct initial fire suppression operations. The NFPA 1720 standard identifies a depth of response deployment range of four to 15 firefighters depending on the risks associated with fire demand zones to effectively, efficiently and safely conduct initial fire suppression operations.

6.6 Summary of Fire Suppression Guidelines, Industry Standards, and Industry Best Practices

In our view the framework for identifying community risk and deploying sufficient firefighting resources to address the community risk present is accurately presented in PFSG 04-08-10 *Operational Planning: An Official Guide to Matching Resource Deployment and Risk (**Appendix C**).*

Initial Response:

Having considered PFSG 04-08-10, NFPA 1710 and 1720 Standards and based on our experience in working with other municipalities across Ontario current best practices within the Ontario fire service for deployment of an initial response to effectively, efficiently and safely conduct initial fire suppression operations reflects a minimum deployment of four firefighters.

In our view an appropriate deployment of an initial response within Bradford West Gwillimbury Fire and Emergency Services should include a **minimum initial response of four firefighters** to provide sufficient firefighting resources to effectively, efficiently and safely conduct initial fire suppression operations including the fireground critical tasks of:

- *Incident Command- 1 firefighter/officer*
- *Pump Operation – 1 firefighter*
- *Attack Line - 2 firefighters (Confine and Extinguish)*

Depth of Response:

Current best practices within the Ontario fire service for depth of response reflect the principles of PFSG 04-08-10 (***Appendix C***) that utilizes fireground critical tasks for determining the appropriate number of firefighters to be deployed based on the associated occupancy risk.

Fireground critical tasks refer to the types of activities that are required to be completed by firefighters to effectively and safely mitigate a fire situation. PFSG 04-08-10 provides a lower and upper effective range of firefighters for each of the occupancy risks levels including low, moderate, high and extreme. The OFM has identified the critical tasks from the Incident Management System (IMS) that are used during fireground operations. As indicated within the guideline these tasks are consistent with applicable legislation, industry best practices and the Ontario Fire College curriculum.

Residential occupancies and specifically single family residences provide an example of the type of fire risk present and fireground critical tasks required to effectively, efficiently and safely mitigate an incident. This is particularly relevant to Ontario where residential occupancies have historically accounted for 70% of all structure fires and 90% of all fire related deaths. During the five year period from 2007 to 2017 the Municipality of Bradford West Gwillimbury reported 39 fires of which 69% occurred in Group C - Residential occupancies.

The fireground critical tasks and initial full response assignment (depth of response) identified within NFPA 1710 utilize the following definition of a residential occupancy:

> *"The fire risk scenario in a 2,000 square foot, two-story single-family dwelling without a basement and with no exposures present. This represents a typical home of wood frame construction located in a suburban neighbourhood having access to a municipal water supply including fire hydrants".*

The NFPA staffing deployment for this residential fire risk is 14 firefighters, 15 if an aerial device is deployed.

The identification of fire risk classifications (e.g. low, moderate, high and extreme) is determined based on analyses of all available information that defines the characteristics of a community. The Community Risk Profile included within this FMP (***Appendix I***) provides these analyses for the Town of Bradford West Gwillimbury. The analyses consider the eight key risk factors identified within the OFM Fire Risk Sub-Model.

The fire suppression resources necessary to complete the fireground critical tasks can vary based on the type of occupancy. For example, a fire situation in the example of a single family dwelling (moderate risk) will require sufficient fire suppression resources that are determined based on the Community Risk Profile including the eight key factors and the relevant PFSG and the NFPA 1710 / 1720 and OHSA standards reflecting best practices in fire suppression activities.

High risk occupancies such as a nursing home where higher risks such as on older demographic (seniors) that may become disoriented, or unable to evacuate themselves present a different challenge for responding firefighters. The nature of these occupancies to have more residents than a single family home present further challenges for conducting search and rescue and evacuation activities.

To determine the appropriate firefighter deployment for low, moderate, high and extreme risks occupancies within the Town of Bradford West Gwillimbury, an assessment of the Community Risk Profile, relevant PFSG and the NFPA 1710 / 1720 standards, and OHSA Section 21 Guidance Notes was completed.

These analyses identified a best practices firefighter deployment to complete the fireground critical tasks associated with each occupancy risk level. For low risk occupancies this reflects a minimum deployment of four firefighters. This represents the appropriate fire suppression resources to complete the following fireground critical tasks:

- ✓ *Incident Command - 1 firefighter*
- ✓ *Pump Operator – 1 firefighter*
- ✓ *Initial Attack Line – 2 firefighters*

For moderate risk occupancies including Group C - Residential occupancies (Single – Family Dwelling) a minimum deployment of 14 firefighters is required to complete the additional fireground critical tasks based on the fire risks present. The additional fireground critical tasks include activities such as providing an additional fire attack line requiring two firefighters, and providing a Rapid Intervention Team (RIT) comprised of two firefighters who are assigned the specific task of being prepared to respond quickly in the event one of the fire attack teams or other firefighters on scene require immediate assistance.

In comparison to the low and moderate risk occupancies, high risk occupancies such as the nursing home referenced above require additional fireground critical tasks to be completed and a higher minimum deployment of firefighters. The additional fireground critical tasks include activities such as providing a dedicated crew of two firefighters for positioning ladders on the building to support fire suppression and rescue activities, and the provision of an Incident Safety Officer to oversee and ensure all firefighting activities are conducted safely.

Based on our analyses an appropriate minimum depth of response to the low, moderate and high risks occupancies within Bradford West Gwillimbury to achieve the required critical fireground tasks includes four firefighters to low risk occupancies, 14 firefighters to moderate risk occupancies and 24 firefighters to high risk occupancies.

The recommended depth of response firefighter deployment is identified in ***Table 9*** below:

Table 9: Recommended Depth of Response – Bradford West Gwillimbury

Fireground Critical Tasks		Low Risk	Moderate Risk	High Risk
Incident Response	Incident Command	1	1	1
	Pump Operator	1	1	1
	Additional Pump Operator	0	0	1
	Initial Attack Line (Confine & Extinguish)	2	2	2
	Additional Attack Line (Confine & Extinguish)	0	2	2
	Search and Rescue	0	2	2
	Initial Rapid Intervention (RIT)	0	2	2
	Ventilation	0	2	2
	Water Supply- pressurized	0	1	1
	Forcible Entry Team	0	1	2
	Laddering	0	0	2
	Exposure Protection	0	0	2
	Incident Safety Officer	0	0	1
	Accountability	0	0	1
	Rehabilitation	0	0	2
	Minimum firefighter deployment	**4**	**14**	**24**

In our view the current Simcoe County Mutual Aid Plan reflects the planning and access to additional firefighting resources that may be required in the event of an extreme risk incident within Bradford West Gwillimbury.

Based on our analyses of the relevant PFSG, Industry Standards, Best Practices and the municipalities legislated responsibilities within the FPPA and OHSA determining an appropriate fire suppression deployment model utilizing the minimum firefighter deployment based on risk (**Table 9** above) in conjunction with a comparison of the performance targeted within the NFPA 1720 Standard for depth of response and the NFPA 1710 performance target of an initial response of four firefighters in four minutes travel time to 90% of incidents would reflect an appropriate analyses of fire suppression resource deployment within the Town of Bradford West Gwillimbury. This ensures that the BWGFES is approaching an assured four firefighter initial response with full time firefighters and relying on volunteer firefighters for their depth of response.

6.7 Current Emergency Response Overview

This section presents an analysis of historical call data for Bradford West Gwillimbury Fire and Emergency Services provided by the OFM. Throughout this section calls are referred to and categorized by event type and by response type. These call response types are defined by the OFM and are used by jurisdictions throughout Ontario for reporting purposes. Dillon has grouped the OFM response types for more concise discussion in this report. ***Table 10*** illustrates the relationship between the response types used in this report and the OFM defined response types. ***Appendix J*** provides definitions of the OFM response types.

Table 10: Response Type

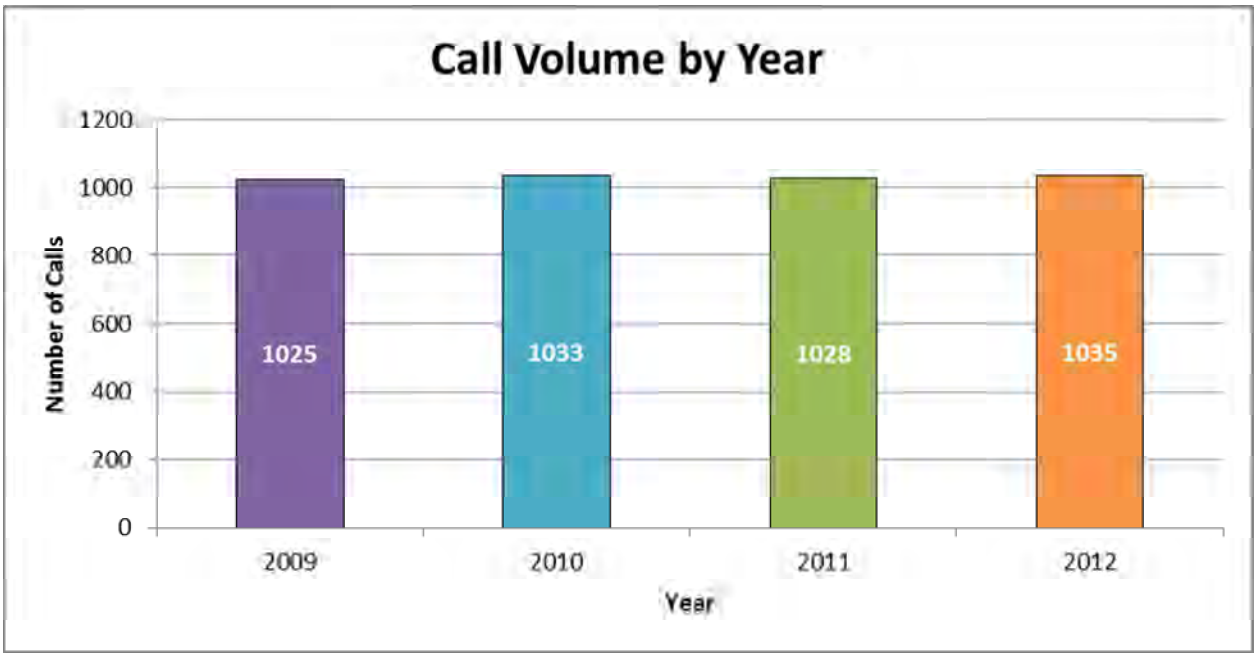
Dillon Response Type	OFM Response Type
Fire	Property fires / explosions
Medical	Medical / resuscitator call
Other	Overpressure rupture / explosion (no fire)
	Pre-fire conditions / no fire
	Burning (controlled)
	False fire calls
	CO false fire calls
	Public hazard
	Rescue
	Other response

The following sections discuss call volume and incident types including all incidents that Bradford West Gwillimbury Fire and Emergency Services has responded to in the period 2009 to 2012. The data have been manipulated to focus on the components of the total response time (dispatch, turnout, and travel). Outliers have been removed from the data set.

6.7.1 Emergency Call Volume

A summary of the volume of emergency calls in the Town of Bradford West Gwillimbury for the period 2009 to 2012 is presented in ***Figure 12*** below. Over this period BWGFES has experienced extremely consistent call volumes. There is an average of 1030 calls within Bradford West Gwillimbury over a four year period.

Figure 12: Historical Annual Call Volume (2009 – 2012)

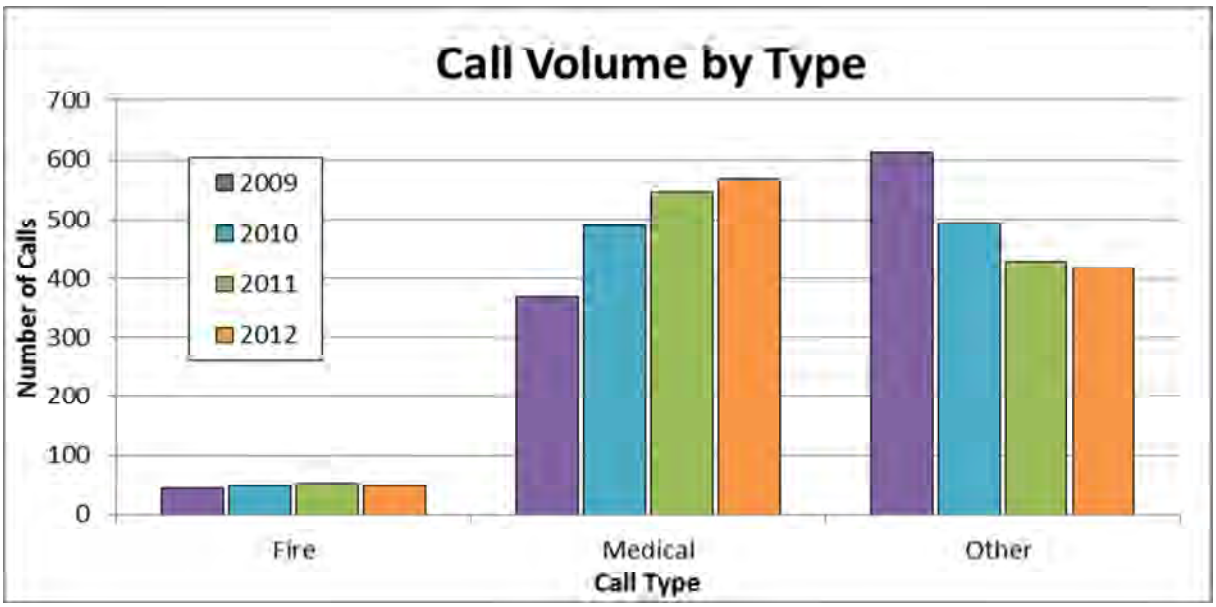


Source: Created based on analysis of call data provided by the Town of Bradford West Gwillimbury.

6.7.2 Emergency Call Incident Types

A more detailed analysis of emergency call response type for the period 2009 – 2012 is presented in ***Figure 13*** below. BWGFES responded to a total of 194 fire-related calls over the four year period (2009-2012) resulting in an average of approximately 49 calls per year. As shown in ***Figure 13***, the volume of fire calls has remained relatively stable.

Figure 13: Historical Call Volume by Type (2009-2012)

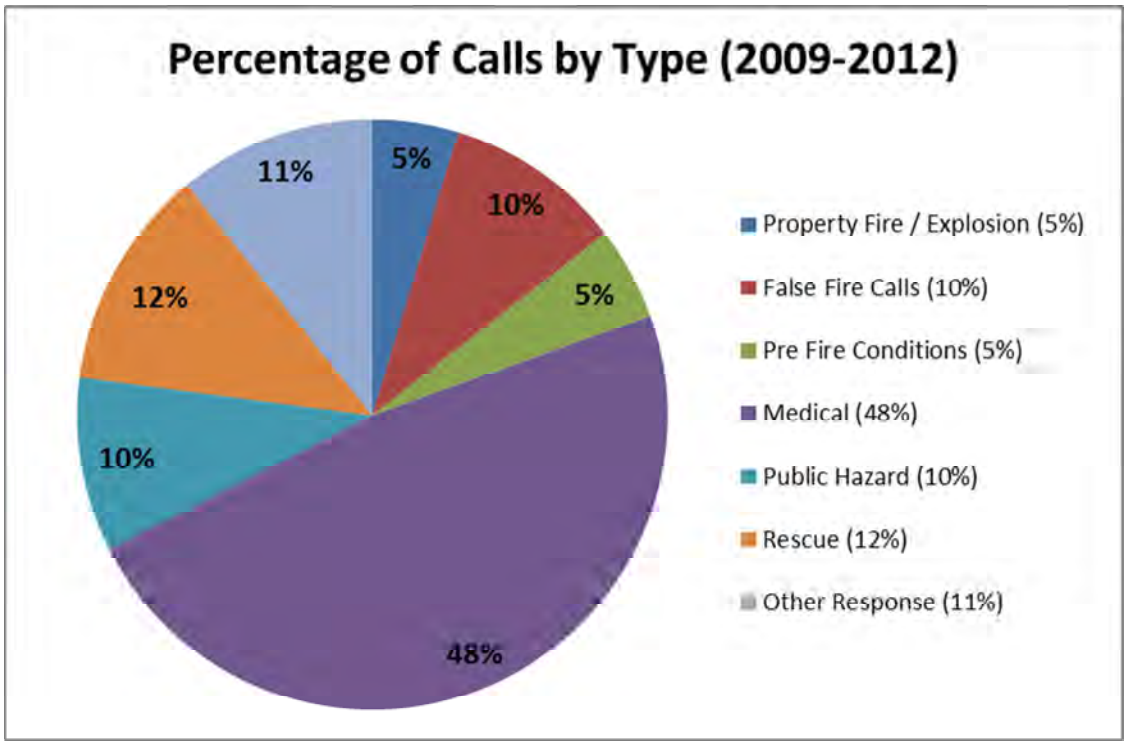


Source: Created based on analysis of call data provided by the Town of Bradford West Gwillimbury.

Figure 14 illustrates the percentages of emergency calls by response type responded to by BWGFES in the Town of Bradford West Gwillimbury. Medical calls comprise the largest response type at 48% of BWGFES' total call volume. The second highest call volume that the department responds are rescue calls, as these comprise 12% of BWGFES' total call volume. Overall, fire related calls represent approximately 20% of the department's total call volume; false fire calls comprise 10% of the department's calls, whereas fire calls and pre-fire calls comprise only 5% each of the total calls. The percentage breakdowns of calls are typical within the industry for a fire department and Town such as Bradford West Gwillimbury.

Based on our analysis, the efforts of Bradford West Gwillimbury Fire and Emergency Services to enhance the delivery of public education and fire prevention programs (first two lines of defence) can be attributed at least in part to the stable fire call volumes and downward trend of other call volumes. The volume of medical calls has been increasing over the past four years (with a slight decrease from 2011 to 2012) as a result of an aging population. Consulting with the County of Simcoe to discuss the potential of adding more EMS resources to help respond to the increasing number of medical calls could result in a decrease in medical call volume and therefore overall call volume. This would reduce some of the burden on the full-time firefighters.

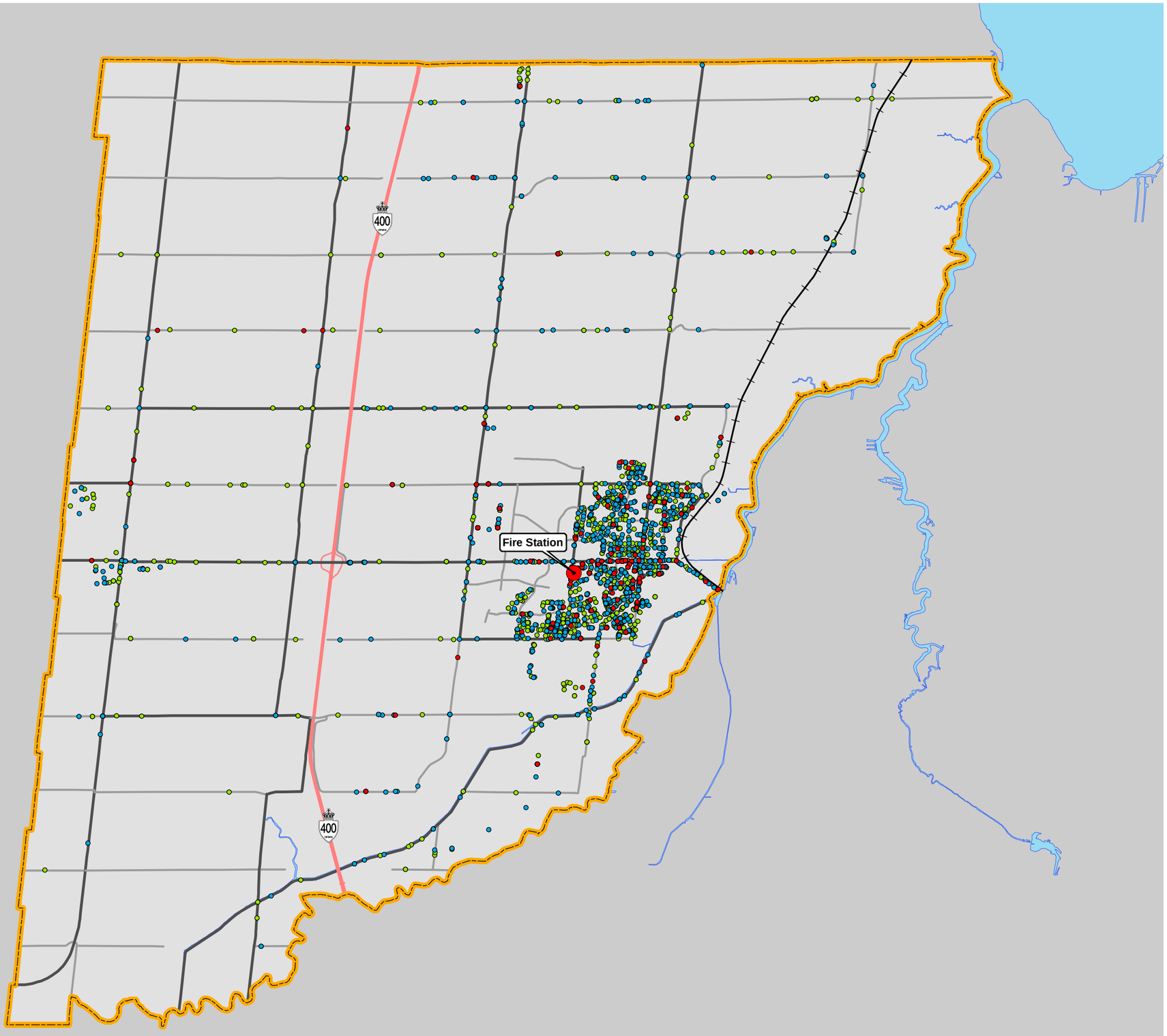
Figure 14: Percentage of Calls by Type (2009 – 2012)



Source: Created based on analysis of call data provided by the Town of Bradford West Gwillimbury.

Figure 15 illustrates the locations of the historic calls, colour coded by type of call. As shown, the majority of calls occur in the Bradford Urban Area within which the fire station and full-time on-duty firefighter are located.

The existing station is well located to respond to historic calls, specifically in the urban centre of the Town. However, ***Figure 15*** also illustrates that a cluster of calls has occurred historically in the Bond Head Settlement Area, located west of Highway 400 along Highway 88.



TOWN OF BRADFORD WEST GWILLIMBURY
FIRE MASTER PLAN

HISTORICAL CALLS: TYPE & LOCATION

Figure 15: Historical Call Locations and Types

- FIRE STATION
- RAILWAY
- HIGHWAY
- ARTERIAL
- COLLECTOR
- WATERBODY
- MUNICIPAL BOUNDARY

HISTORICAL CALL TYPES

- FIRE CALL
- MEDICAL CALL
- OTHER CALL

0 0.5 1 2 km

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY TOWNSHIP OF BRADFORD WEST GWILLIMBURY
COUNTY OF SIMCOE

MAP CREATED BY: JJA
MAP CHECKED BY: SS
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
I:\GIS\137661 - BRADFORD WEST FMP\DESIGN_GIS\MXDs\
HISTORICAL CALLS: TYPE AND LOCATION.MXD

DILLON CONSULTING

PROJECT: 13-7661
STATUS: DRAFT
DATE: 07/24/13

6.7.3 Dispatch Times

Dispatch time is defined by the NFPA in a standard called "*NFPA 1221*[3]*– Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*", as follows:

> "*Emergency Alarm Processing / Dispatching*: *A process by which an alarm answered at the communications centre is transmitted to emergency response facilities (ERFs) or the emergency response units (ERUs) in the field.*"

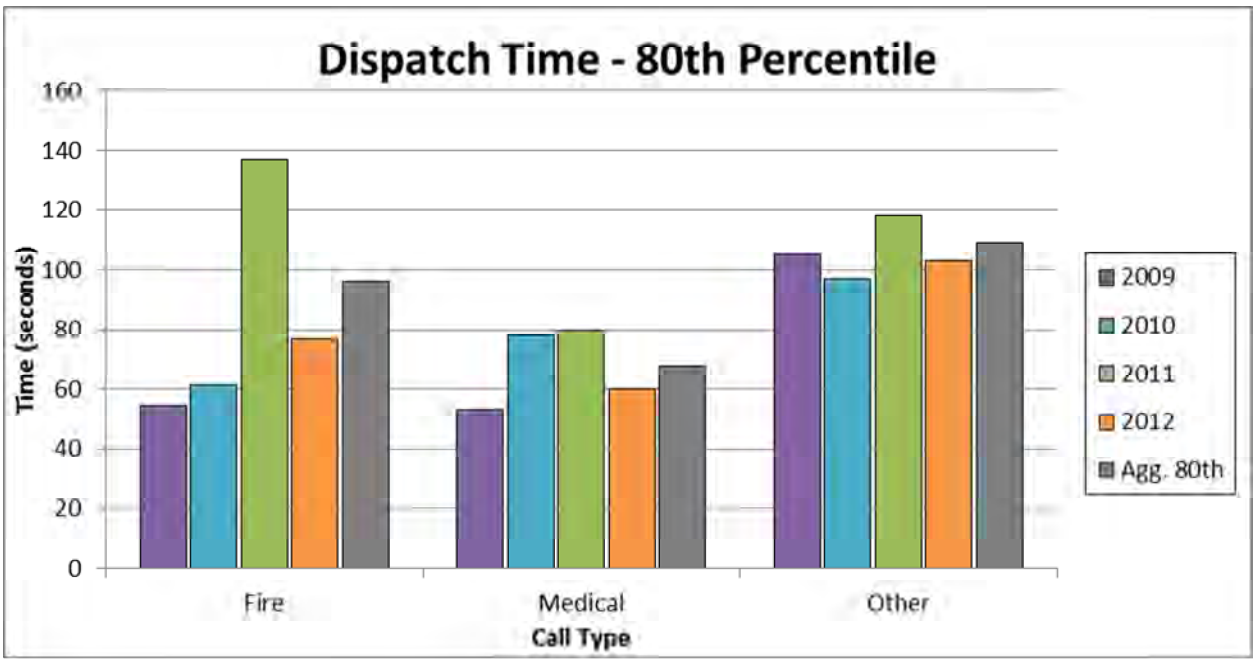
NFPA 1221 is an industry best practice for dispatch time requirements. It requires that 95% of alarms received on emergency lines shall be answered within 15 seconds, and 99% of alarms shall be answered within 40 seconds. It requires processing of the alarm call (dispatching) to be completed within 60 seconds, for 80% of all calls (80th percentile), and within 106 seconds for 95% of calls. This means that 80 out of 100 calls are required to be dispatched within 60 seconds and the 95 out of 100 calls must be dispatched within 106 seconds. There are some exceptions that have been identified. For the following call types, emergency alarm processing shall be completed within 90 seconds 90% of the time and within 120 seconds 99% of the time:

- *Calls requiring emergency medical dispatch questioning and pre-arrival medical instructions*
- *Calls requiring language translation*
- *Calls requiring the use of a TTY/TDD device or audio/video relay services*
- *Calls of criminal activity that require information vital to emergency responder safety prior to dispatching units*
- *Hazardous material incidents*
- *Technical Rescue*

Figure 16 presents a summary of the 80th percentile of historical dispatch times from the period of 2009 to 2012. The "other" call types columns include all calls not defined as fire, medical, or explicitly identified above as requiring a different standard. The aggregate 80th percentile is indicated in the right-most column of each call type. The aggregate 80th percentile dispatching time is 96 seconds for fire calls, 68 seconds for medical calls and 109 seconds for other calls. Bradford West Gwillimbury Fire and Emergency Services' dispatch times increased significantly in 2011 but decreased in 2012, however, they are still not meeting the recommended dispatch time outlined in NFPA 1221. As of June 4, 2013, full-time dispatching services are now being provided by the City of Barrie. It is expected that dispatch times will improve with this transition. Tracking, measurement and review of dispatch times should continue on an annual basis.

[3] NFPA 1221 2013 Edition was referenced within this report

Figure 16: Historical Dispatch Times by Call Type



Source: Created based on analysis of call data provided by the Town of Bradford West Gwillimbury.

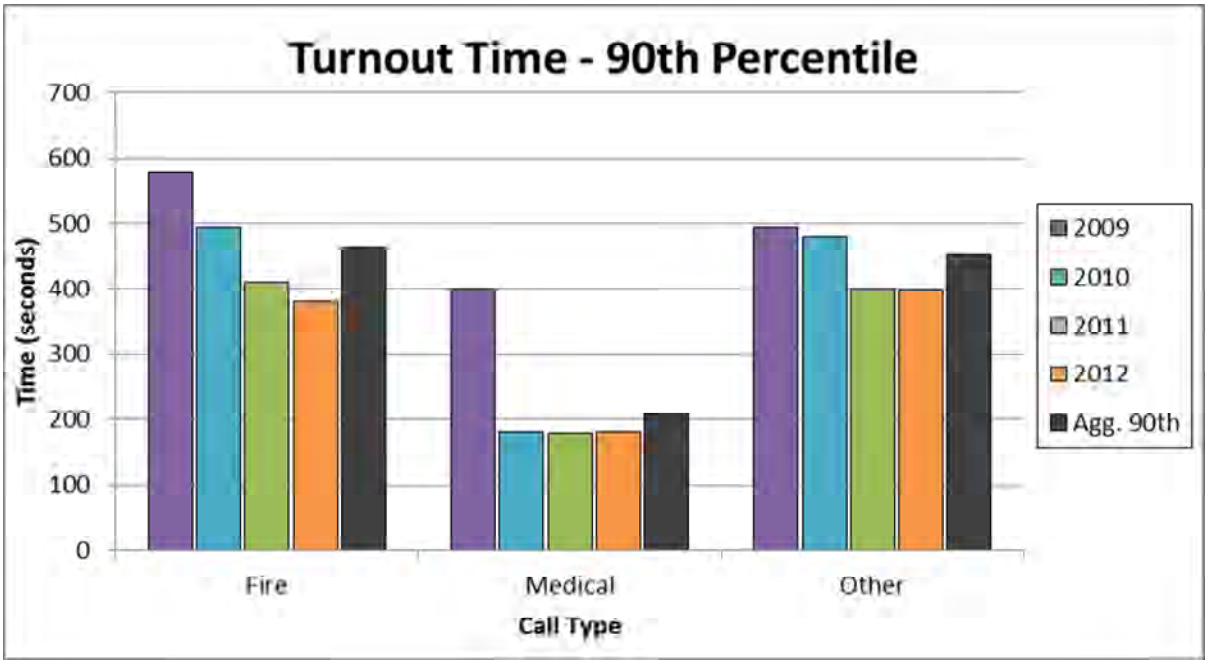
6.7.4 Turnout Time

Turnout time is defined as the time interval that begins from when the emergency response staff receives the required dispatch notification and ends at the beginning point of travel time. Turnout times can vary significantly based on the use of either full-time or volunteer firefighters. Full-time firefighters have the benefit of being located within the fire station and are able to receive the call and safely staff the apparatus ready for response in a very short time frame. Best practices reflect a 60 to 80 second turnout time for full-time firefighters depending on the nature of the call.

In comparison, volunteer firefighters must first receive the call to respond (via pager) travel to the fire station and then safely staff the apparatus in preparation for response. Volunteer firefighter turnout times can vary significantly depending on the location and availability of the individual when the call is received. This variable can have a significant impact on a fire departments total response time and therefore should be monitored on an ongoing basis.

Figure 17 presents a summary of historical turnout times for the period of 2009 to 2012 for BWGFES. The aggregate 90th percentile turnout times are indicated in the right-most column of each call type. BWGFES responds with a 90th percentile aggregate turnout time of 7 minutes and 43 seconds for fire calls, 3 minutes and 28 seconds for medical calls, and 7 minutes and 32 seconds for all other calls. There is no target standard for volunteer fire departments for turnout time alone. However, the data indicates that the department takes the longest when responding to fire calls and the turnout time is significantly higher than the best practices stated for full-time firefighters (60 to 80 seconds). BWGFES staffs a minimum of two full-time firefighters per shift, which means that when every alarm goes off, the department has to wait for additional volunteer firefighters to show up at the station in order to get the first truck out, staffed with a total of four firefighters. This has a significant impact on the department's turnout time and as a consequence overall total response time. Medical calls can be staffed with the minimum of two full-time staff on-duty. Therefore the turnout times for medical calls are much less than for fire or other calls.

Figure 17: Historical Turnout Times by Call Type (2009-2012)



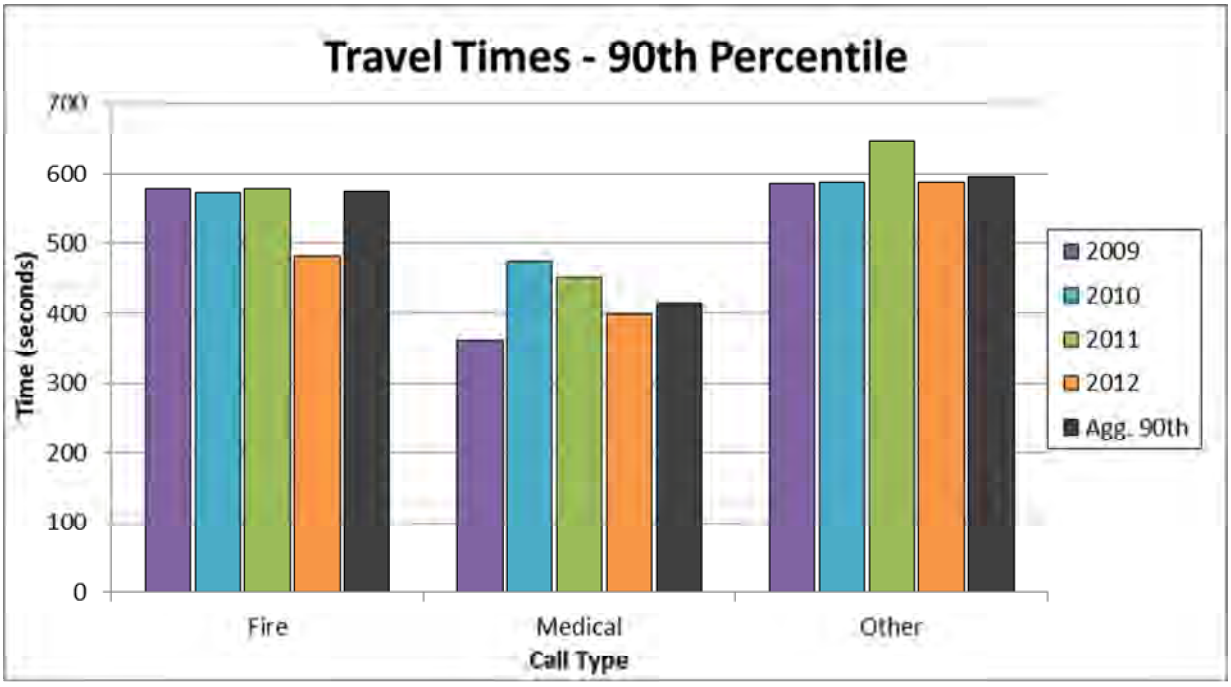
Source: Created based on analysis of call data provided by the Town of Bradford West Gwillimbury.

6.7.5 Travel Time

Travel time is defined as the time interval beginning when the assigned emergency response apparatus begins the en-route travel to the emergency, and ends when the apparatus arrives at the scene. Travel times for emergency response vehicles can be impacted by many factors such as traffic congestion, traffic management systems including traffic lights and stop signs, and extended travel times due to converge of large geographic areas. Many areas of the Town of Bradford West Gwillimbury have extended travel times given the large geographic coverage area of Bradford West Gwillimbury Fire and Emergency Services.

Historical (2009-2012) 90th percentile travel times for BWGFES are summarized in ***Figure 18.*** The aggregate 90th percentile travel times are indicated in the right-most column of each section. The aggregate 90th percentile travel time for fire related calls is 9 minutes and 34 seconds for the period 2009 to 2012. The aggregate 90th percentile travel times for medical calls is 6 minutes and 55 seconds and for other calls is 9 minutes and 56 seconds.

Figure 18: Historical Travel Times (First Arriving Vehicle) by Call Type



Source: Created based on analysis of call data provided by the Town of Bradford West Gwillimbury.

6.7.6 Total Response Time

Total Response Time is noted within *NFPA 1720* (*Table 4.3.2 Staffing and Response Time*) as follows:

> *"Response time begins upon completion of the dispatch notification and ends at the time interval shown in the table."*

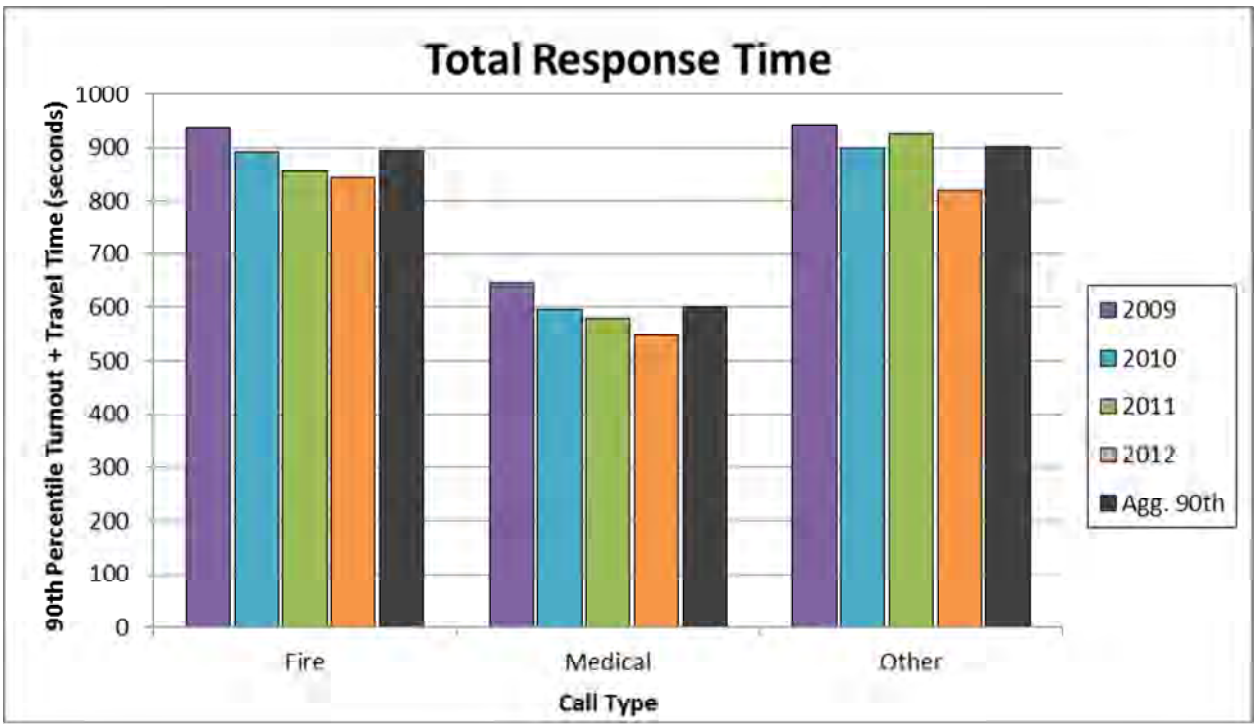
NFPA 1720 is the standard recommended for volunteer fire departments. While we recognize that BWGFES currently has a minimum of two full-time firefighters on staff, given that they are required to wait for additional volunteer firefighters to arrive at the station before responding to a call, we feel that it is appropriate to apply this performance measure to the department. The table referred to in NFPA 1720 is replicated in ***Table 11***. As per NFPA 1720, we assessed the department's response time as turnout time and travel time only (excluding the dispatch component).

Table 11: NFPA 1720 Table 4.3.2 Staffing and Response Time

Demand Zones	Demographics	Minimum # of Firefighters Responding	Response Time (Turnout + Travel) in Minutes	Meets Objective (%)
Urban Area	>1000 people per square mile	15	9	90
Suburban Area	500-1000 people per square mile	10	10	80
Rural Area	<500 people per square mile	6	14	80
Remote Area	Travel Distance + or – 8 miles	4	Dependent upon travel distance	90
Special Risks	To be determined by fire department	To be determined by fire department	Determined by authority having jurisdiction	90

Figure 19 presents a summary of historical total response times for the first arriving vehicle from 2009 to 2012. The total response time for this first response is calculated as the sum of turnout time and travel time. The Town of Bradford West Gwillimbury's four year aggregate 90th percentile total response times are approximately 893 seconds (14.53 minutes) for fire calls, 600 seconds (10 minutes) for medical calls and approximately 902 seconds (15 minutes) for other calls. The data presented in ***Figure 19*** represents the first responding vehicle total response time.

Figure 19: Historical Total Response Times by Call Type (2009-2012)



Source: Created based on analysis of call data provided by the Town of Bradford West Gwillimbury.

6.8 Assessment of Response Coverage

The following sections detail the assessment of response coverage within the Town of Bradford West Gwillimbury. Various methods were employed to assess the fire services emergency response coverage capabilities for existing and future conditions. The analysis was carried out using ESRI's Network Analyst, a GIS tool developed specifically for the purpose of assessing networks, such as roads.

6.8.1 Methodology

This section provides a brief outline of the scope and methodology used in order to provide insight into the modeling procedures adopted to assess existing and future response coverage and to test various combinations of fire suppression resources.

The GIS program was used to assess the fire service's response coverage. Digital copies of GIS layers were provided by the Town of Bradford West Gwillimbury for the existing road network. Relevant base road information, such as road length and speed, was extracted from the GIS data. The historic call locations were then added to the network and coded based on travel time to reach the call. An iterative process was used to adjust the posted speeds throughout the road network to calibrate the model to accurately reflect historic travel times of first responding units.

Industry performance measures used for the response assessment were applied to two different horizons:

- Existing conditions (2013); and
- 10 year future horizon (2023).

Response assessment was completed based on NFPA 1710 and NFPA 1720 as indicated previously in **Section 6.6** above. For NFPA 1710 existing conditions were modelled based on the defined urban area of BWG. The entire municipality was used to assess the municipality against NFPA 1720. The future service boundary includes the existing coverage area plus all future development blocks identified by Town planners that are expected to receive municipal servicing within the next 10 years.

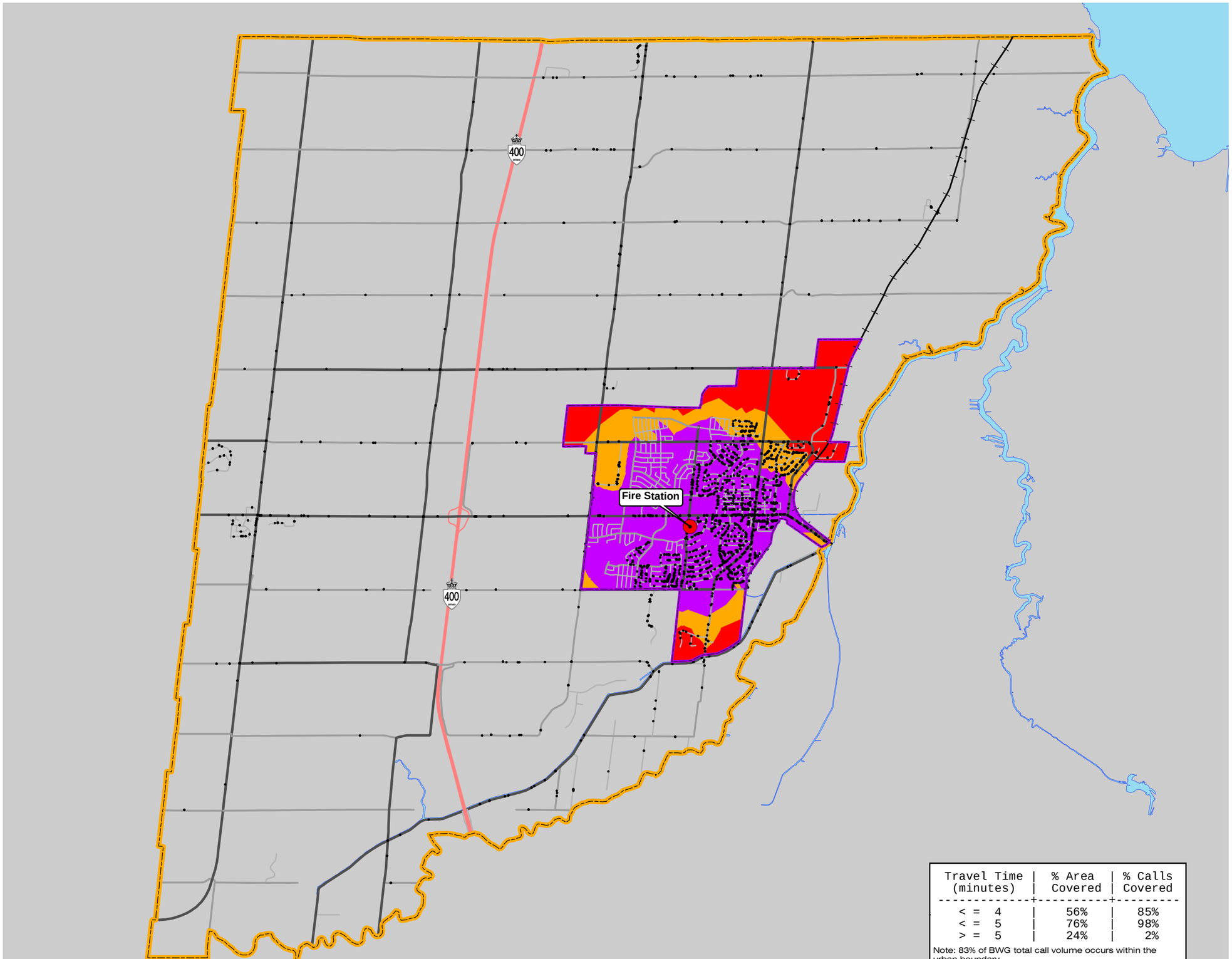
This information, combined with the station location, was used to build graphical "response polygons" around each station. These polygons represent the coverage the station can provide in the specified amount of time. This assesses whether the Town is providing adequate first response coverage according to the NFPA 1710 standard and whether the Town is providing adequate depth of response coverage according to the NFPA 1720 standard. This analysis also identifies the areas where the fire department is not currently able to achieve the response time elements or the staffing elements of the NFPA 1710 and 1720 performance measure.

6.8.2 Current Initial Response

The NFPA 1710 standard for first response of four firefighters in four minutes of travel time is widely accepted as the minimum initial response and best practice in order to commence limited rescue or firefighting involving a structure fire in a typical 2,000 square foot, two-storey single-family dwelling without a basement and without exposures.

The NFPA 1720 supports the minimum initial response staffing to include four firefighters by stating "*Initial firefighting operations shall be organized to ensure that at least four fire fighters are assembled before interior fire suppression operations are initiated in a hazardous area"*. This particular standard recognizes that the four firefighters may not arrive on the same vehicle, but that there must be four on the scene prior to initiating any type of interior firefighting operations.

Bradford West Gwillimbury Fire and Emergency Services currently utilize dispatch protocols to assign the initial response resources based on historical call data and geography. With respect to travel times within the defined urban boundary of the Town, BWGFES is able to provide an initial response to 56% of the urban area within four minutes or less of travel time. The main deficiencies are in the north and south extremities of the urban area. In terms of historical call locations, the department is able to reach 85% of call locations within the urban area in four minutes or less of travel time. ***Figure 20*** presents the current initial response coverage areas within the urban area based on travel time. Typically NFPA 1710 applies to career fire departments where all firefighters are present in the station, resulting in relatively short turnout times; in the case of BWGFES the full time staff on duty are required to wait for volunteer firefighters to arrive at the station to achieve a staffing of four firefighters on truck before responding to a call. The travel time measure depicted in ***Figure 20*** does not take into account that the full-time staff are required to wait before responding, and therefore have longer turnout times than the standard assumes**.** ***Figure 20*** assumes that four firefighters are in the station and are able to respond to call within a turnout time reflective of a full-time department.



Travel Time (minutes)	% Area Covered	% Calls Covered
< = 4	56%	85%
< = 5	76%	98%
> = 5	24%	2%

Note: 83% of BWG total call volume occurs within the urban boundary

BRADFORD WEST GWILLIMBURY FIRE & EMERGENCY SERVICES

TOWN OF BRADFORD WEST GWILLIMBURY
FIRE MASTER PLAN

EXISTING FIRST RESPONSE

Figure 20: Current Initial Response Coverage Areas

- HISTORICAL CALL (2009-2012)
- FIRE STATION
- RAILWAY
- HIGHWAY
- ARTERIAL
- COLLECTOR
- LOCAL
- WATERBODY
- MUNICIPAL BOUNDARY
- URBAN BOUNDARY

TRAVEL TIMES

- < = 4 MINUTES @ NETWORK SPEED
- < = 5 MINUTES @ NETWORK SPEED
- > 5 MINUTES @ NETWORK SPEED

"NFPA 1710: Initial arriving company, minimum of 4 firefighters responding within 4 minutes travel time to 90% of incidents"

0 0.5 1 2 km

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY TOWNSHIP OF BRADFORD WEST GWILLIMBURY
COUNTY OF SIMCOE

MAP CREATED BY: JJA
MAP CHECKED BY: SS
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
I:\GIS\137661 - BRADFORD WEST FMP\DESIGN_GIS\MXDs\
EXISTING FIRST RESPONSE.MXD

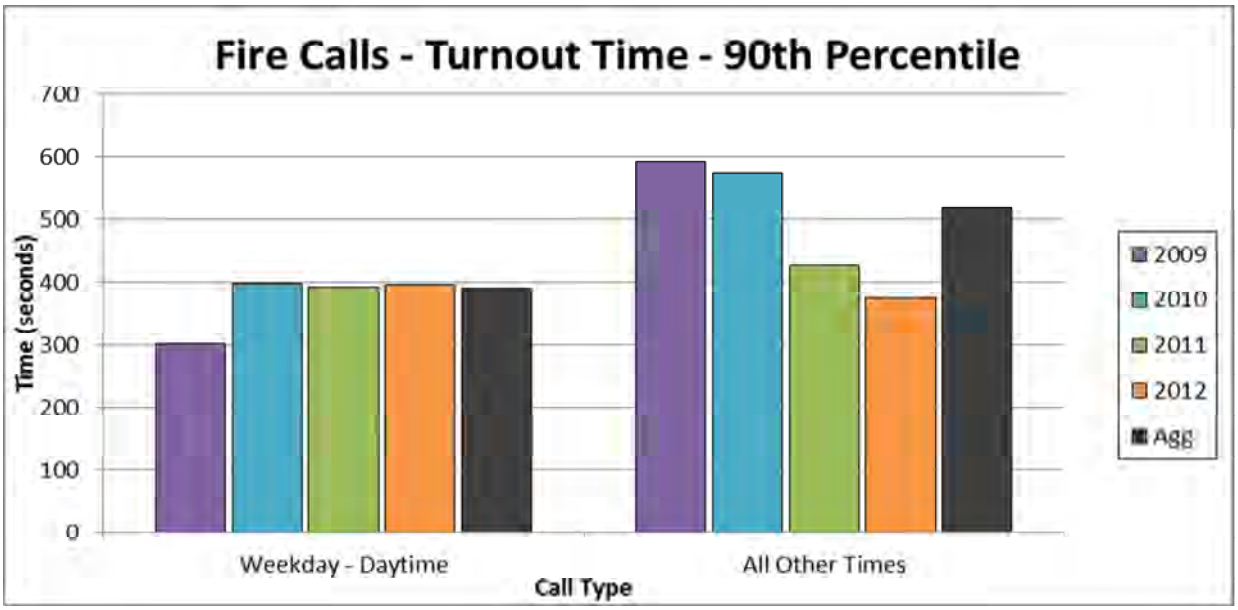
DILLON CONSULTING

PROJECT: 13-7661
STATUS: DRAFT
DATE: 07/04/13

As indicated within the Fire Suppression Performance Measures (***Appendix B***) monitoring the actual number of firefighters responding as the initial response and depth of response are critical components of understanding the overall operational effectiveness, and managing the health and safety responsibilities of the municipality.

Based on the historical call data, an assessment of the average initial response personnel was not possible. However, through discussions with Town Staff, the first vehicle to leave the station is always staffed with four firefighters. BWGFES staffs a minimum of two full-time firefighters per shift, which means that when every alarm goes off, the department has to wait for a minimum of two volunteer firefighters to show up at the station in order to get the first truck out. Although the department is currently meeting the standard of an initial response of four firefighters, it takes a significant amount of time to assemble the first four firefighters. Based on our experience with volunteer fire departments it can often be difficult to assemble volunteers during regular business hours Monday through Friday (8am to 5pm). This can be especially true for a "bedroom" community such as Bradford West Gwillimbury. In this case, the BWGFES is fortunate to have a few volunteer firefighters who live/work in close proximity to the downtown core which allows them to respond faster during the daytime. However, the majority of volunteer firefighters do not live within close proximity which can have significant impacts on the ability to assemble the appropriate number of firefighters for a depth of response. ***Figure 21*** reflects the average 90th percentile turnout time for fire calls separated by time of day and day of the week. As seen below, the aggregate turnout time for fire calls is in excess of six minutes at all times of day, no matter what day of the week it is.

Figure 21: 90th Percentile Turnout Time for Fire Calls



Source: Created based on analysis of call data provided by the Town of Bradford West Gwillimbury.

More recently the fire service is being faced with significant challenges in recruiting and retaining volunteer firefighters that are available to provide normal business hour initial response and depth of response coverage.

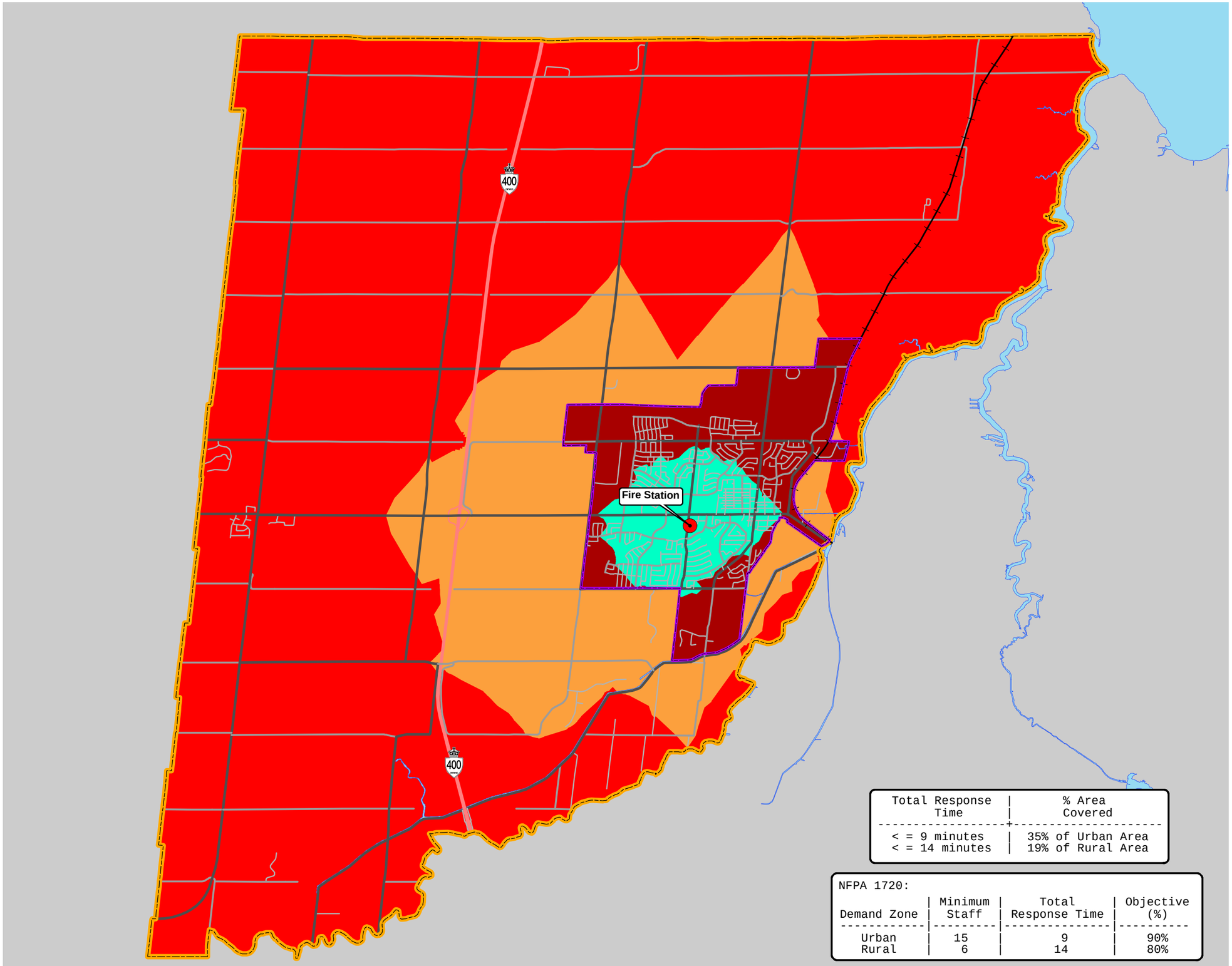
This is an evolution affecting many municipalities across Ontario and beyond. The results of this evolution typically require the consideration of moving to the use of full-time firefighters to support and sustain the effectiveness and efficiencies that the volunteer firefighters continue to provide.

Although BWGFES currently has a minimum of two full-time firefighters on duty (24 hours per day, seven days per week), the requirement to wait for two additional staff before responding to an alarm creates a significant response challenge for the department. It is recommended that BWGFES hire additional full-time suppression staff to maintain a minimum of four firefighters on-duty 24 hours a day, seven days a week. That staffing increase involves a significant impact in operating costs for BWGFES and the Town. Therefore, the staged implementation we recommend is hiring two additional full-time firefighters in the immediate future (2014), daytime weekday shifts only, in order to meet the recommended minimum initial response of four firefighters and significantly reduce the department's turnout time when on-duty. Initially scheduling the two new full-time firefighters specifically during the weekday day-time hours (Monday – Friday, 8:00 am to 5:00 pm) will provide additional coverage during times when it can be difficult to assemble volunteer firefighters due to work commitments. However, these two positions should eventually transition into full-time coverage (24 hour per day, seven days per week), as the department and Bradford West Gwillimbury grow. The addition of two on-duty full-time firefighters would provide an initial response of four firefighters and reduce the department's turnout time to observe best practices of 60 to 80 seconds. This would allow the department to achieve the initial response displayed in **Figure 17** above. The addition of staff will also help reduce the time required to assemble appropriate depth of response staffing numbers.

6.8.3 Current Depth of Response

Bradford West Gwillimbury Fire and Emergency Services currently utilizes dispatch protocols to assign the depth of resources based on historical call data and geography. Due to the large geographic area and resulting travel times, depth of response coverage is a challenge for BWGFES outside of the Bradford Urban Area. Depth of response was assessed against NFPA 1720 (for urban and rural areas) for the Town as well as the recommended depth of response targets presented above in ***Table 9***. ***Figure 22*** presents the depth of response coverage against NFPA 1720 for both the urban and rural areas within the Town. For analysis purposes the urban area as defined within the Town's Official Plan was used for the urban boundary and the remainder of the Town was considered to be the rural area.

The standard stipulates a response time of nine minutes (turnout time + travel time) to assemble 15 firefighters in an urban area. The analysis of turnout time indicates a 90th percentile turnout time of approximately six minutes which results in three minutes of available travel time. Within three minutes of travel time, the department is able to cover 35% of the urban area, however, assembling 15 firefighters in this amount of time is challenging for BWGFES. With the current minimum staffing assumptions, shown in ***Figure 22***, assembling 15 firefighters on-scene is not achieved. For rural areas, the standard stipulates a response time of 14 minutes (turnout time + travel time) to assemble six firefighters on-scene. A six minute turnout was once again assumed which results in eight minutes of available travel time. Within an eight minute travel time, the department is able to cover 19% of the rural area. Assembling six firefighters requires volunteer firefighters to respond with the current on-duty complement of firefighters.



Total Response Time	% Area Covered
< = 9 minutes	35% of Urban Area
< = 14 minutes	19% of Rural Area

NFPA 1720:

Demand Zone	Minimum Staff	Total Response Time	Objective (%)
Urban	15	9	90%
Rural	6	14	80%

BRADFORD WEST GWILLIMBURY FIRE & EMERGENCY SERVICES

TOWN OF BRADFORD WEST GWILLIMBURY
FIRE MASTER PLAN

DEPTH OF RESPONSE - NFPA 1720 URBAN AND RURAL

Figure 22: Depth of Response 1720 Urban and Rural Coverage Areas

- FIRE STATION
- RAILWAY
- HIGHWAY
- ARTERIAL
- COLLECTOR
- LOCAL
- WATERBODY
- URBAN BOUNDARY
- MUNICIPAL BOUNDARY

TOTAL RESPONSE TIMES (TURNOUT + TRAVEL TIME)

- 9 MINUTES
- >9 MINUTES
- 14 MINUTES
- >14 MINUTES

STATIONS AND STAFFING

STATION 1
Pumper - 4 Firefighters
Pumper - 4 Firefighters
Aerial - 2 Firefighters
Chief Vehicle - 1 Firefighters

0 0.5 1 2 km

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY TOWNSHIP OF BRADFORD WEST GWILLIMBURY
COUNTY OF SIMCOE

MAP CREATED BY: JJA
MAP CHECKED BY: SS
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
I:\GIS\137661 - BRADFORD WEST FMP\DESIGN_GIS\MXDs\DEPTH1720.MXD

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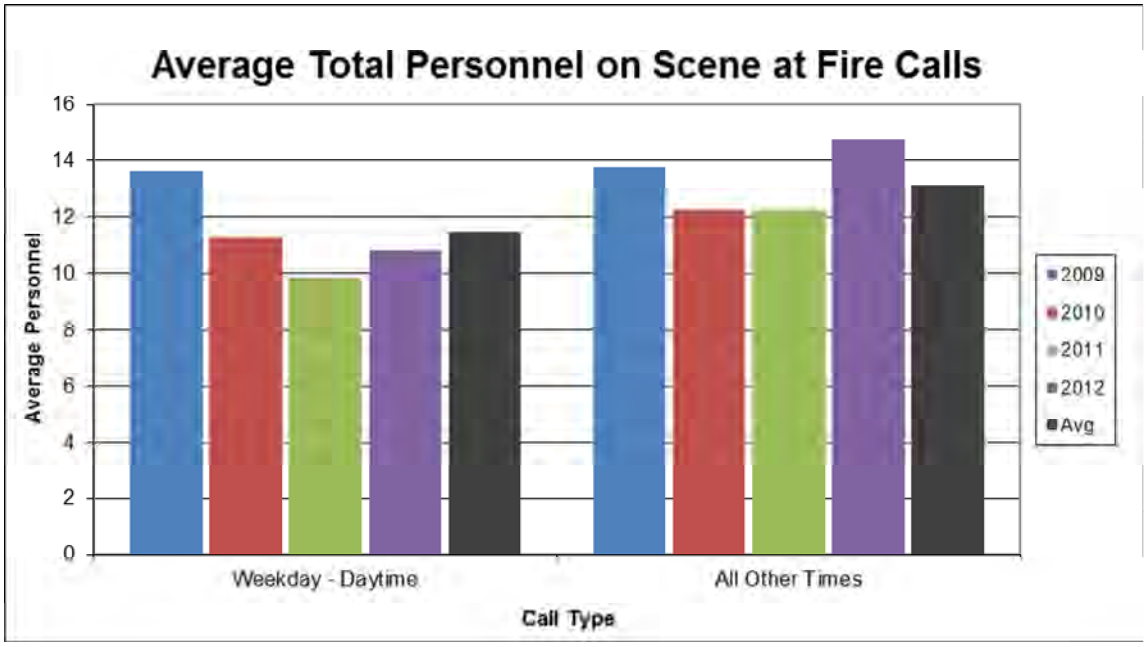
PROJECT: 13-7661
STATUS: DRAFT
DATE: 07/30/13

This review also assesses the actual staffing levels achieved for depth of response utilizing the emergency call data from 2009-2012. Based on our experience with volunteer fire departments our analysis focused on the number of volunteers that actually responded during regular business hours Monday through Friday (8am to 5pm) in comparison to all other times. ***Figure 23*** depicts the average total personnel to respond on scene at fire calls. As expected, the average total personnel to respond during regular business hours is less than at all other times.

Figure 23: Average Total Personnel on Scene at Fire Calls



The analysis indicates that the BWGFES is not able to meet the staffing requirements of NFPA 1720 for the urban area and is not able to achieve the recommended staffing level of fourteen firefighters for a moderate risk alarm and 24 firefighters for a high risk alarm as presented in **Table 9** above. Given the difficulties in assembling the appropriate amount of firefighters for depth of response it is recommended that the BWGFES further increase the complement of volunteer and full-time firefighters.

In the short term horizon it is recommended that the BWGFES hire four additional volunteer firefighters for a total volunteer complement of 35. The addition of volunteer staff would help the fire department in meeting the recommended staffing of 14 firefighters and 24 firefighters to moderate and high risk occupancies should an incident occur.

Given the current space limitations within the existing station, it would be difficult to accommodate full-time crews for evening or night shifts. Therefore, hiring additional full-time staff needs to be staged to coincide with a facility expansion/modification as the current station cannot accommodate more than the existing full-time on-duty firefighter crews. However, flexible interim measures, though not ideal, could be implemented to accommodate additional staff in the immediate future due to the need for more full-time suppression staff.

The space constraints will not impact the recommended immediate hire of two full time day shift staff mentioned above. Beyond these additional staff, and following the facility expansion, it is recommended that two more full-time firefighters be hired in October 2015 and four additional full-time firefighters in the medium term (two firefighters in 2016 and two firefighters in 2017). This would provide a total full-time staff of 20 firefighters. This is the required number of staff to maintain a minimum on-duty crew of four firefighters 24 hours per day, seven days per week. This reflects a staffing ratio of 1.25 staff for each on-duty position. This ratio is the industry best practice to accommodate for sick time, vacation, training course (off-site), lieu time and other such instances. This practice reduces the need to use overtime to staff vacancies for these known or predictable instances.

6.8.4 Potential Relocation of Station 1

One of the options for consideration, following the results of the facility needs study, may include the selection of a new site for Station 1. First response of a fire department is directly related to the location of the fire station. As a component of this study, the impact of relocating the existing station further west was reviewed against the NFPA 1710 first response standards.

As shown above in ***Figure 23***, the first response results from the existing location result in reasonably good coverage of the urban area (56% by area) and good coverage of historic calls (85% of all calls from 2009-2012) within a four minute travel time.

The first response results of relocating the existing station to a site located 750 metres west of the existing location are shown in ***Figure 23.*** This was the farthest west location which maintains the geographical coverage of the urban area at 56% within a four minute travel time, however, the number of historic calls covered within the four minute travel time decreases to 78%. The higher coverage of historic calls indicates the existing location provides a better first response to serve the existing population and development.

6.8.5 Future Station Consideration

Over the next 20 years, Bradford West Gwillimbury is expected to experience significant growth. The population is expected to double in size and housing and employment are also expected to significantly increase as discussed in **Appendix I**. This translates into areas of future risk and will place added pressures on the BWGFES. The majority of growth is expected to occur within the existing urban boundary. As displayed in **Figure 12 – Historic Call Locations and Types** there is also a noticeable cluster of historic calls in the Bond Head Settlement Area, located west of Highway 400 along Highway 88. This area is expected to grow and become an additional urban area within the Town. Another area of development includes the Highway 400 employment lands. It is expected that a number of new industrial and commercial uses will be constructed in that area.

In response to this current and predicted growth, a second station was modeled to provide additional emergency response coverage within the Town. Stations are typically located with consideration of travel time, in particular first response travel time (e.g. four minute first response). Another important factor is the locations where the volunteer firefighters live and work, as this is where they initially respond from (to travel to the station) at the time of alarm. The second station was located within the Bond Head Settlement Area. Taking into consideration the forecasted future growth, the two station model was modelled to assess emergency response coverage in the future.

The Bond Head Station modelled assumed that the second station be staffed with four full-time (on-duty) firefighters in order to achieve a minimum initial response of four firefighters arriving on scene within an appropriate total response time. It is expected that the need for full-time on-duty crews in Bond Head will be beyond the 20 year horizon of this plan.

A second station in Bond Head should be implemented as a volunteer station. This could be accommodated by relocating an existing apparatus from Station 1 to Station 2, staffed with a complement of 35 volunteer firefighters (the same as staff Station 1). This will assist the department with achieving appropriate depth of response numbers to moderate and high risk occupancies should an incident occur.

As the area of Bond Head continues to grow and given the difficulties with sustaining a volunteer model in a "bedroom" community such as BWG future consideration will need to be given to adding full-time on-duty crews as call volume requires.

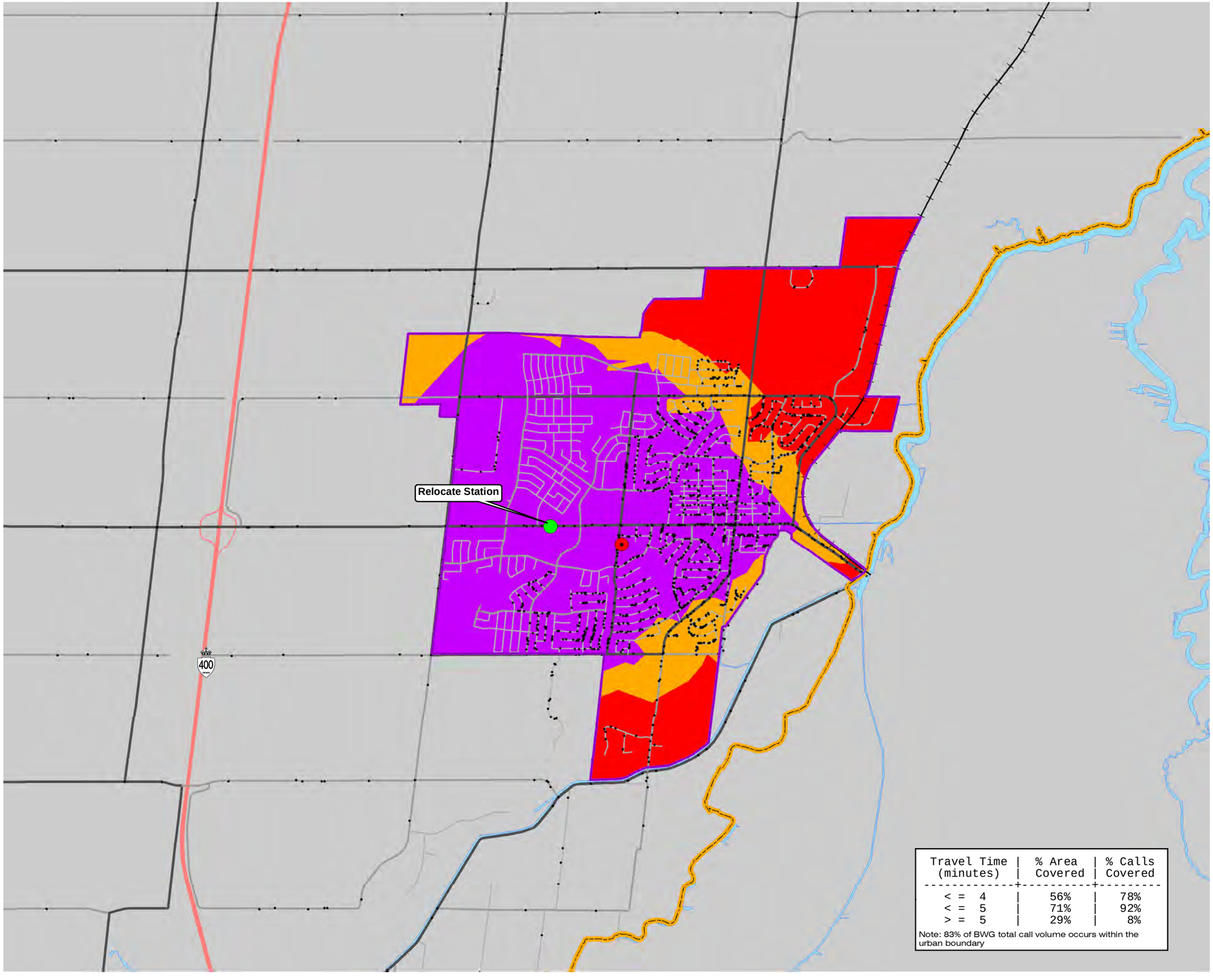
Timing for the design, construction and staffing of Station 2 will need to be based on the following:

- Actual growth of population and dwelling units within Bond Head and the areas of Bradford West Gwillimbury west of Highway 400;
- Call volumes within Bond Head and the areas of Bradford West Gwillimbury west of Highway 400; and
- Number of approved building permits within Bond Head and the areas of Bradford West Gwillimbury west of Highway 400.

These factors should be monitored over the coming 20 year horizon, and reviewed at five year increments. It is expected that as the population of Bond Head grows beyond approximately 2,500 people and the call volumes in the vicinity increase to reflect two to three calls per week (annual call volume of approximately 100-150) a volunteer station would be warranted. In 2012 there were 96 calls west of Highway 400, which includes medical calls and areas that the Township of King and Town of Innisfil cover. The need for full-time staff would likely be warranted when the call volume resulted in more than one call per day. Based on the current growth projections, we have estimated the need for a future volunteer station around the 10 year horizon and the need for full-time on-duty crews beyond the 20 year plan horizon.

Figure 24 presents the initial response coverage areas within the future urban areas based on travel time. With respect to travel times within the defined urban boundary of the Town, BWGFES is able to provide an initial response to 66% of the urban area within four minutes or less of travel time. The main deficiencies continue to be in the north and south extremities of the urban area.

Figure 25 presents the depth of response coverage against NFPA 1720 for both the future urban and rural areas within the Town. Although, we are recommending that both stations be staffed with four full-time firefighters which would greatly reduce the turnout time for the initial responding vehicle, we have continued to model the depth of response scenario with a six minute turnout time. This is because the department will continue to rely on volunteers firefighters as their depth of response resources. The standard stipulates a response time of nine minutes (turnout time + travel time), the analysis of turnout time indicates a 90th percentile turnout time of approximately six minutes which results in three minutes of available travel time. Within three minutes of travel time, the department is able to cover 46% of the urban area. For rural areas, the standard stipulates a response time of 14 minutes (turnout time + travel time), a six minute turnout was once again assumed which results in eight minutes of available travel time. Within an eight minute travel time, the department is able to cover 62% of the rural area.



Travel Time (minutes)	% Area Covered	% Calls Covered
< = 4	56%	78%
< = 5	71%	92%
> = 5	29%	8%

Note: 83% of BWG total call volume occurs within the urban boundary

TOWN OF BRADFORD WEST GWILLIMBURY
FIRE MASTER PLAN

EXISTING FIRST RESPONSE RELOCATE STATION 1

Figure 24: First Response of Relocated Station 1

- HISTORICAL CALL (2009-2012)
- RELOCATED FIRE STATION
- FIRE STATION
- RAILWAY
- HIGHWAY
- ARTERIAL
- COLLECTOR
- LOCAL
- WATERBODY
- MUNICIPAL BOUNDARY
- URBAN BOUNDARY

TRAVEL TIMES

- < = 4 MINUTES @ NETWORK SPEED
- < = 5 MINUTES @ NETWORK SPEED
- > 5 MINUTES @ NETWORK SPEED

"NFPA 1710: Initial arriving company, minimum of 4 firefighters responding within 4 minutes travel time to 90% of incidents"

0 0.5 1 2 km

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY TOWNSHIP OF BRADFORD WEST GWILLIMBURY
COUNTY OF SIMCOE

MAP CREATED BY: JJA
MAP CHECKED BY: SS
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
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EXISTING FIRST RESPONSE.MXD

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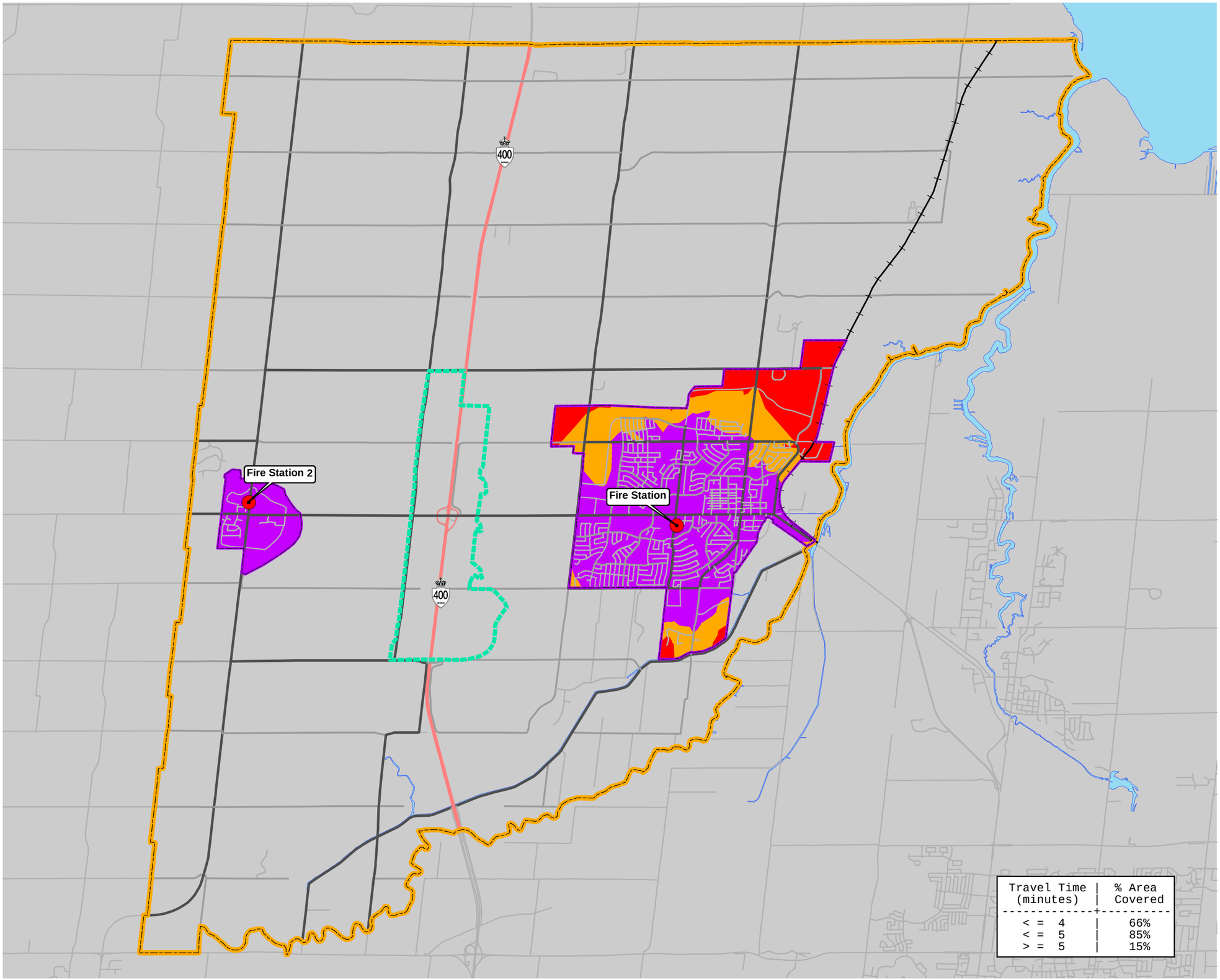
PROJECT: 13-7661
STATUS: DRAFT
DATE: 07/04/13



Travel Time (minutes)	% Area Covered
< = 4	66%
< = 5	85%
> = 5	15%

BRADFORD WEST GWILLIMBURY FIRE & EMERGENCY SERVICES

TOWN OF BRADFORD WEST GWILLIMBURY
FIRE MASTER PLAN

FUTURE FIRST RESPONSE ADD STATION 2

Figure 25: Future First Response – Add Station 2

- FIRE STATION
- RAILWAY
- HIGHWAY
- ARTERIAL
- COLLECTOR
- LOCAL
- WATERBODY
- MUNICIPAL BOUNDARY
- URBAN BOUNDARY
- HIGHWAY 400 EMPLOYMENT LANDS

TRAVEL TIMES

- < = 4 MINUTES @ NETWORK SPEED
- < = 5 MINUTES @ NETWORK SPEED
- > 5 MINUTES @ NETWORK SPEED

"NFPA 1710: Initial arriving company, minimum of 4 firefighters responding within 4 minutes travel time to 90% of incidents"

0 0.5 1 2 km

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY TOWNSHIP OF BRADFORD WEST GWILLIMBURY
COUNTY OF SIMCOE

MAP CREATED BY: JJA
MAP CHECKED BY: SS
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
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EXISTING FIRST RESPONSE.MXD

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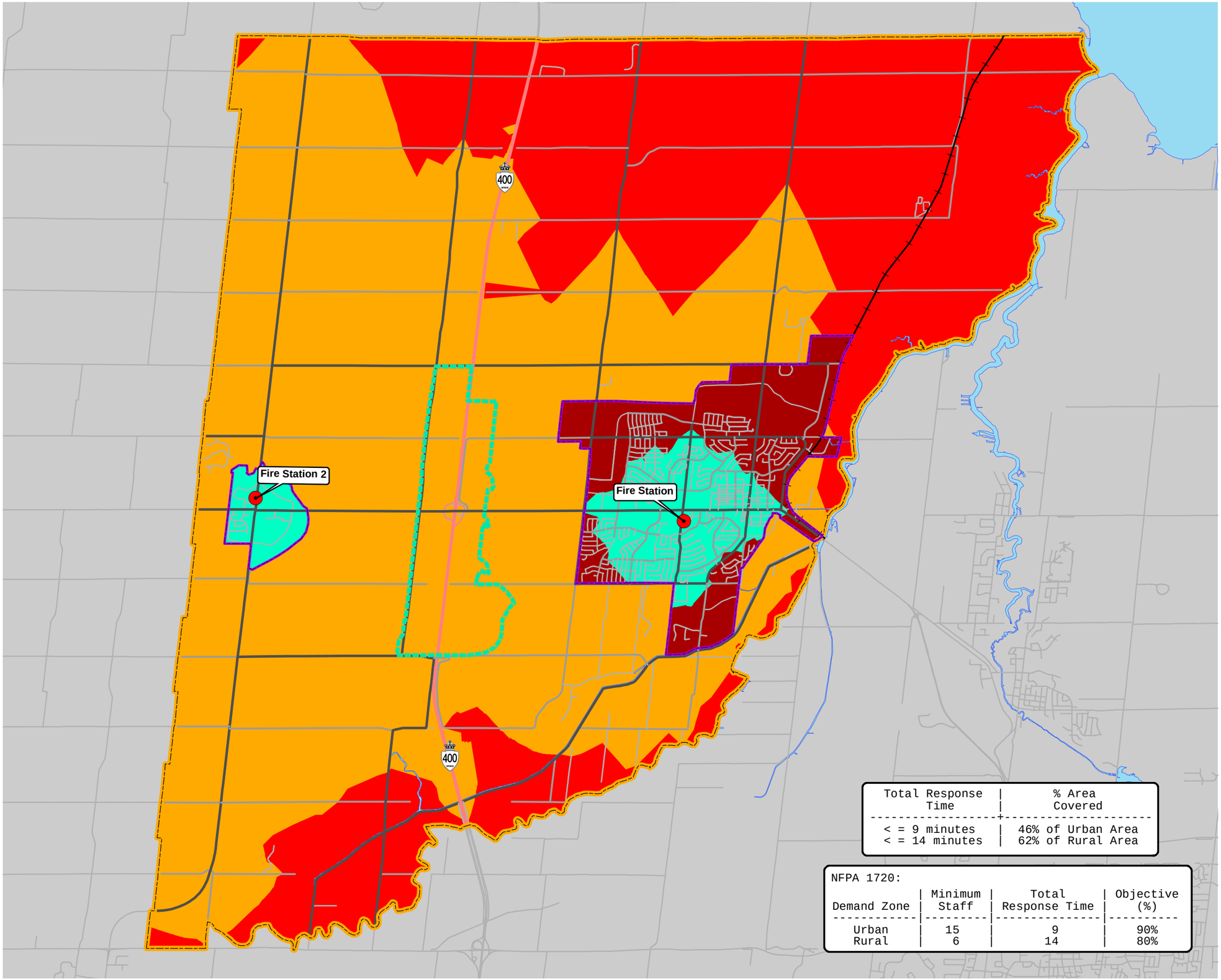
PROJECT: 13-7661
STATUS: DRAFT
DATE: 07/04/13



Total Response Time	% Area Covered
< = 9 minutes	46% of Urban Area
< = 14 minutes	62% of Rural Area

NFPA 1720:

Demand Zone	Minimum Staff	Total Response Time	Objective (%)
Urban	15	9	90%
Rural	6	14	80%

BRADFORD WEST GWILLIMBURY FIRE & EMERGENCY SERVICES

TOWN OF BRADFORD WEST GWILLIMBURY
FIRE MASTER PLAN

DEPTH OF RESPONSE - NFPA 1720 URBAN AND RURAL

Figure 26: Future Depth of Response – Add Station 2

- FIRE STATION
- RAILWAY
- HIGHWAY
- ARTERIAL
- COLLECTOR
- LOCAL
- WATERBODY
- URBAN BOUNDARY
- MUNICIPAL BOUNDARY
- HIGHWAY 400 EMPLOYMENT LANDS

TOTAL RESPONSE TIME (TURNOUT + TRAVEL TIME)

- 9 MINUTES
- >9 MINUTES
- 14 MINUTES
- >14 MINUTES

STATIONS AND STAFFING

STATION 1
Pumper - 4 Firefighters
Pumper - 4 Firefighters
Aerial - 2 Firefighters
Chief Vehicle - 1 Firefighters

STATION 2
Pumper - 4 Firefighters

0 0.5 1 2 km

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY TOWNSHIP OF BRADFORD WEST GWILLIMBURY
COUNTY OF SIMCOE

MAP CREATED BY: JJA
MAP CHECKED BY: SS
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
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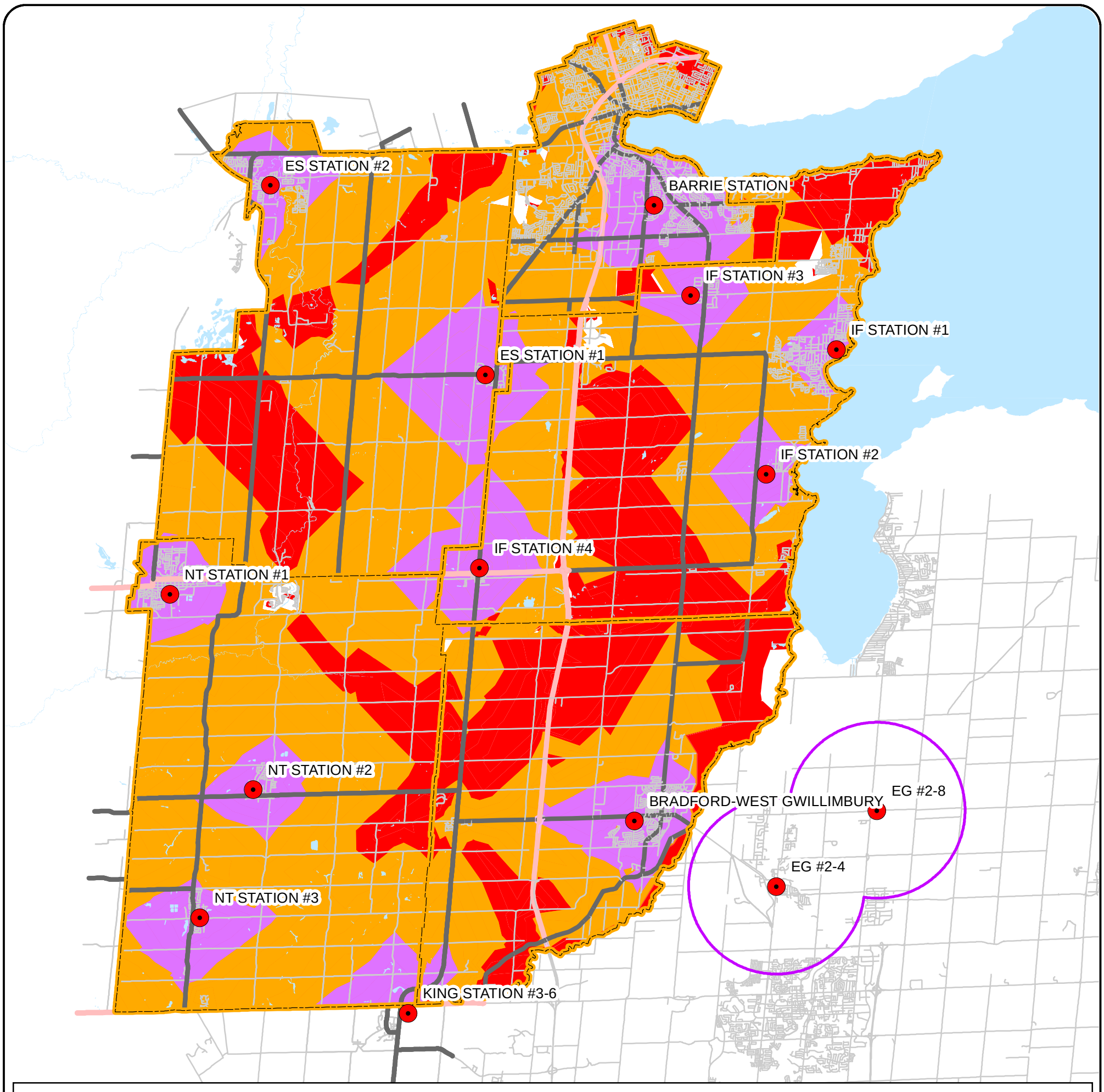
DATE: 07/30/13

6.8.6 Automatic Aid Considerations

Consideration was given to the potential emergency response coverage that could be achieved through automatic aid agreements with the surrounding municipalities of the Town of Innisfil, Town of New Tecumseth, Town of East Gwillimbury, Township of King and City of Barrie. The initial response for all of these municipalities combined is shown in **Figure 27**. The depth of response staffing that could be achieved through automatic aid agreements between all of these municipalities is included in ***Figure 28.*** Additional consideration should be given to potential agreements with the Town of East Gwillimbury. . Bradford West Gwillimbury has pursued a number of opportunities to provide and receive automatic aid from neighbouring municipalities, as discussed in the ***Section 4.0***. It is recommended that the fire and emergency services management team continue to monitor and update these agreements in order to optimize the provision of services (and receipt of services) to (and from) the surrounding municipalities. This will be especially relevant as new stations are considered and opened, both within the Town itself and in surrounding municipalities.



STATIONS AND STAFFING

BARRIE

STATION #1
Pumper - 4 Full-Time Firefighters

KING TOWNSHIP

STATION #36
Pump - 4 Volunteer Firefighters
Rescue Unit - 2 Volunteer Firefighters
Aerial - 1 Volunteer Firefighter
Tanker - 2 Volunteer Firefighters

ESSA

STATION #1
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION #2
Pumper - 3 Volunteer Firefighters
Tanker - 1 Vounteer Firefighter

INNISFIL

STATION #1
Rescue Pumper - 2 FT Firefighters
Pumper - 3 Volunteer Firefighters
Aerial - 1 Call Back Firefighter
Tanker - 1 Volunteer Firefighter

STATION #2
Pumper - 3 Volunteer Firefighters
Tanker - 1 Vounteer Firefighter

STATION #3
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighters

STATION #4
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

NEW TECUMSETH

STATION #1
Pumper - 4 Volunteer Firefighters
Rescue Unit - 3 Volunteer Firefighters
Tanker - 2 Volunteer Firefighters
Chief Officer

STATION #2
Pumper - 4 Volunteer Firefighters
Rescue Unit - 2 Volunteer Firefighers
Tanker - 2 Volunteer Firefighters
Chief Officer

STATION #3
Pumper - 4 Volunteer Firefighters
Rescue Unit - 2 Volunteer Firefighters
Tanker - 2 Volunteer Firefighters
Chief Officer

BRADFORD-WEST GWILLIMBURY

STATION #1
Pumper - 4 Full-Time/Volunteer Firefighters

EAST GWILLIMBURY

STATION 2-8
Pumper - 4 Volunteer Firefighters

STATION 2-4
Pumper - 4 Volunteer Firefighters

AUTOMATIC AID AGREEMENTS

ESSA
INNISFIL
NEW TECUMSETH
BARRIE
BRADFORD-WEST GWILLIMBURY
EAST GWILLIMBURY

Legend

Fire Hall
Highway
Major Road
Local Road
Municipal Boundary

Area covered within indicated travel time
<= 4 minutes
<= 8 minutes
> 8 minutes

Figure 27: Automatic Aid Initial Response

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

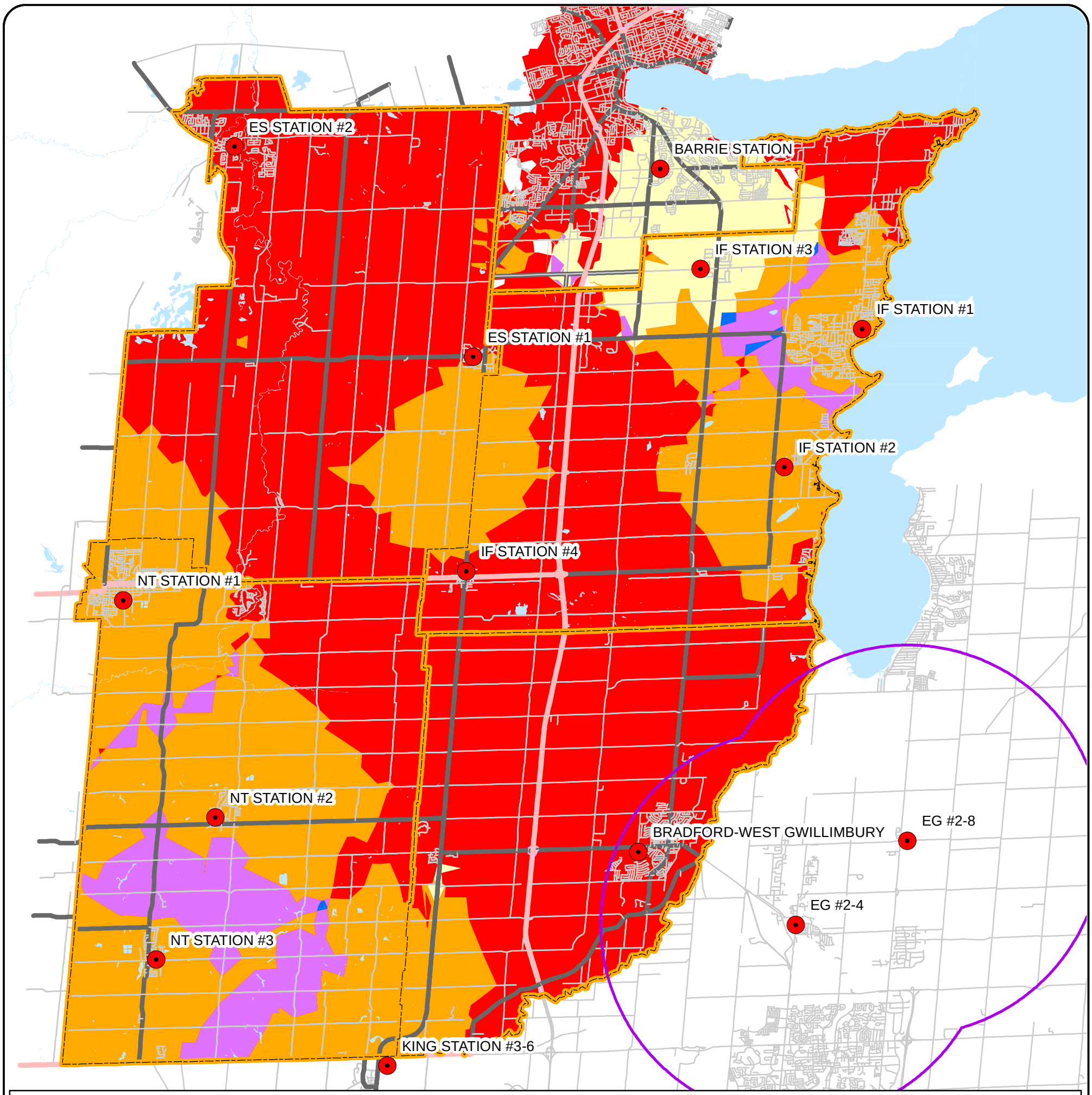
MAP CREATED BY: KSP
MAP CHECKED BY: SC
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
G:\CAD\2012\126627 20\Design_GIS\MXDs

0 1 2 4 km

N W E S

PROJECT: 12-6627 STATUS: DRAFT DATE: 12/19/12



STATIONS AND STAFFING

BARRIE

STATION #1
Pumper - 4 Full-Time Firefighters

KING TOWNSHIP

STATION #36
Pump - 4 Volunteer Firefighters
Rescue Unit - 2 Volunteer Firefighters
Aerial - 1 Volunteer Firefighter
Tanker - 2 Volunteer Firefighters

ESSA

STATION #1
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

STATION #2
Pumper - 3 Volunteer Firefighters
Tanker - 1 Vounteer Firefighter

INNISFIL

STATION #1
Rescue Pumper - 2 FT Firefighters
Pumper - 3 Volunteer Firefighters
Aerial - 1 Call Back Firefighter
Tanker - 1 Volunteer Firefighter

STATION #2
Pumper - 3 Volunteer Firefighters
Tanker - 1 Vounteer Firefighter

STATION #3
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighters

STATION #4
Pumper - 3 Volunteer Firefighters
Tanker - 1 Volunteer Firefighter

NEW TECUMSETH

STATION #1
Pumper - 4 Volunteer Firefighters
Rescue Unit - 3 Volunteer Firefighters
Tanker - 2 Volunteer Firefighters
Chief Officer

STATION #2
Pumper - 4 Volunteer Firefighters
Rescue Unit - 2 Volunteer Firefighers
Tanker - 2 Volunteer Firefighters
Chief Officer

STATION #3
Pumper - 4 Volunteer Firefighters
Rescue Unit - 2 Volunteer Firefighters
Tanker - 2 Volunteer Firefighters
Chief Officer

BRADFORD-WEST GWILLIMBURY

STATION #1
Pumper - 4 Full-Time/Volunteer Firefighters

EAST GWILLIMBURY

STATION 2-8
Pumper - 4 Volunteer Firefighters

STATION 2-4
Pumper - 4 Volunteer Firefighters

AUTOMATIC AID AGREEMENTS

ESSA
INNISFIL
NEW TECUMSETH
BARRIE
BRADFORD-WEST GWILLIMBURY
EAST QWILLIMBURY

Legend

- Fire Hall
- Highway
- Major Road
- Local Road
- Municipal Boundary

Total number of firefighters reaching area within 8 minutes of travel time

- <= 4 Firefighters
- 5 - 10 Firefighters
- 11 - 14 Firefighters
- 15 - 20 Firefighters
- > 20 Firefighters
- 8 min Travel Time

Figure 28: Automatic Aid Depth of Response

DILLON CONSULTING

MAP DRAWING INFORMATION:
DATA PROVIDED BY MNR

MAP CREATED BY: KSP
MAP CHECKED BY: SC
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
G:\CAD\2012\126627 20\Design_GIS\MXDs

0 1 2 4 km

N W E S

PROJECT: 12-6627 STATUS: DRAFT DATE: 12/19/12

6.9 Fire Suppression Staff

6.9.1 Current Staffing

Bradford West Gwillimbury Fire and Emergency Services operate as a composite department, with both full-time and volunteer suppression staff. There is a minimum of two full-time firefighters on per shift and a shift consists either of a 10 hour day or a 14 hour night shift. The full-time firefighters rotate through a 28 day schedule in which they work four day shifts, receive six days off, work four night shifts, receive four days off, and then work six day/night split shifts (three days/ three nights). At all times, a minimum of two full-time firefighters are on-duty 24 hours per day, seven days a week. The full-time crew provides an assured response, however, staffing a first responding apparatus with only two firefighters does not meet the best practice recommendation for initial response of four firefighters arriving on-scene simultaneously. The full-time crew continuously has to wait long periods of time (e.g. more than six minutes) in order for two volunteer firefighters to show up in order to get the first vehicle out. The full-time firefighters will not leave the station until they have four suppression staff on a vehicle (with the exception of medical calls which can be responded to with two).

Recruitment and retention of volunteer firefighters continues to be a major challenge for the fire service across Ontario. Historically the culture of small towns and communities were reflected within the members and culture of their volunteer fire departments. In the past, volunteer departments were comprised of business owners and residents who were able to leave their place of employment or home to respond to the fire station alarm for the call to duty.

As previously stated, daytime staffing of volunteers firefighters within the first ten minutes has become an issue. Changes in employment conditions and individual priorities for work/life balance have negatively impacted recruitment and retention of volunteer firefighters across Ontario. The Town of Bradford West Gwillimbury is no exception and needs to begin introducing proactive volunteer firefighter recruitment strategies, and specifically targeting candidates that are available during normal business hours Monday through Friday. There have been some challenges in ensuring the priorities of BWGFES (e.g. daytime availability, location of employment, location of residence, etc.) are evaluated and considered while following the Town's Human Resources hiring requirements. Currently, there are no set limits as to where a volunteer firefighter has to live (i.e. within a certain radius of the fire station). Targeted recruitment to improve the challenge of daytime volunteer response needs to be a priority when considering BWGFES hires. However, in order to meet the minimum initial response of four firefighters, additional full-time staff is needed.

6.9.2 Future Staffing Considerations

As shown above, responding to an alarm with the recommended initial response deployment of four firefighters is a significant challenge for BWGFES, as turnout times are in excess of six minutes. This is due to the minimum staffing of two on-duty full-time firefighters at the fire station, and the inability to consistently deploy two additional volunteer firefighters on the initial responding apparatus. Therefore, the recommendation of hiring two additional full-time firefighters (daytime on-duty) in 2014, two full-time firefighters in 2015 (increase shift coverage), and four full-time firefighters between 2016 and 2017 (reach 24 hour per day, seven days per week on-duty coverage) will help decrease turnout and response times for the department. The timing of the facility review and station expansion will need to occur before additional staff can be added to the evening or night shifts. Considerations, such as revising agreements or policies to support the call-back of off-duty full-time suppression staff would improve the pool of available firefighters to assemble the required depth of response.

Consideration should also be made to increase the complement of volunteer firefighters, in order to help improve the department's depth of response. Therefore, we recommend that BWGFES hire four additional volunteer firefighters for a total volunteer complement of 35. The policies related to Town staff operating as volunteer firefighters should also be reviewed and revised. Volunteer firefighters who work for the Town are in close proximity to the station for daytime responses. Supporting these employees as active volunteer firefighters, able to response to daytime fire-related calls has the potential to greatly improve the turnout times of the first responding vehicle staffed with a four person crew.

6.10 Tanker Shuttle Accreditation

The Superior Tanker Shuttle Accreditation is a proprietary process managed by the Fire Underwriters Survey™ (FUS), a national organization administered by SCM Risk Management Services Inc. formerly CGI Insurance Business Services, formerly the Insurers' Advisory Organization and Canadian Underwriters Association.

As a method to provide water for firefighting in areas without municipal water supply the Superior Tanker Shuttle Accreditation includes a process that includes the following:

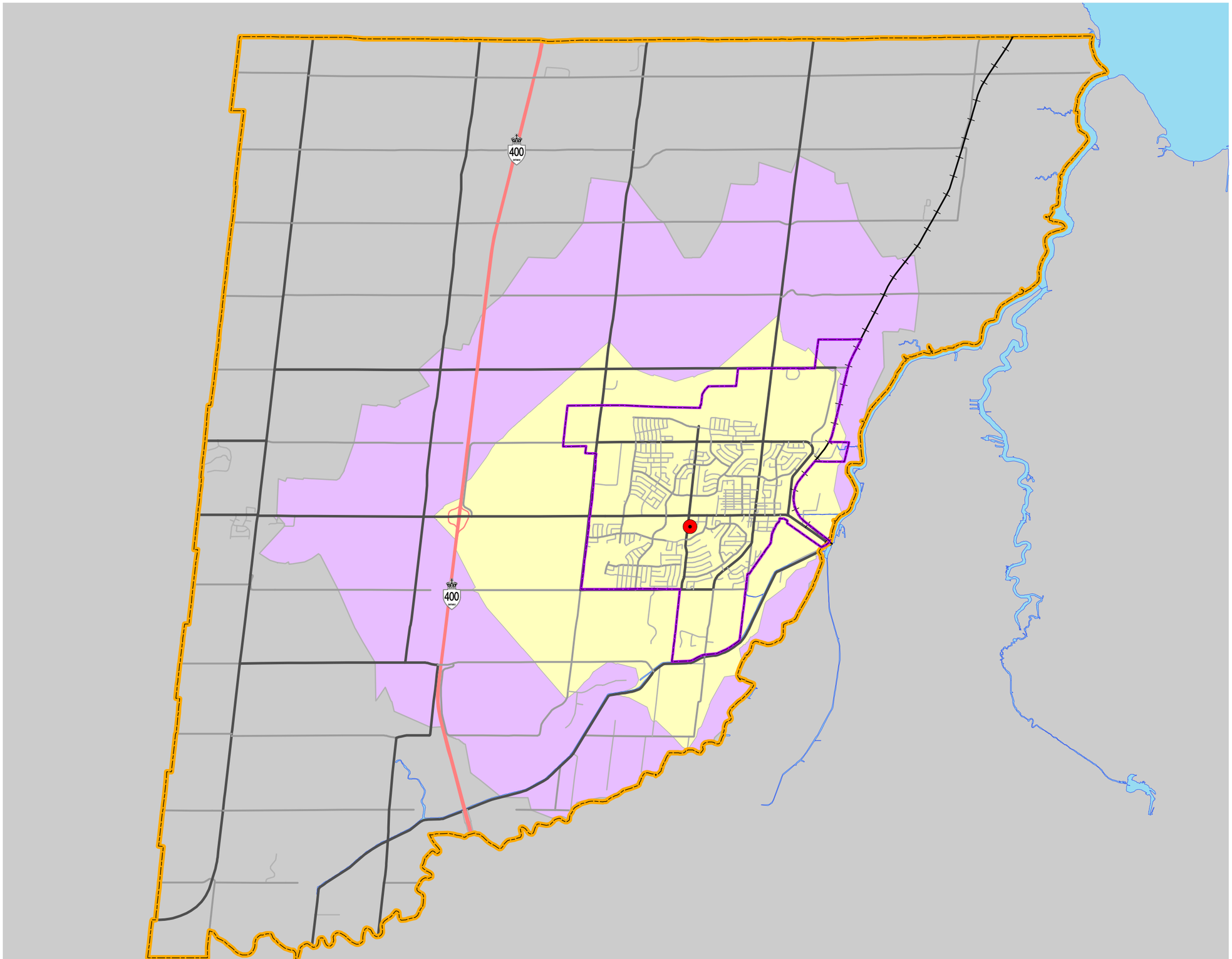
- *set up pumper apparatus at fire event and deliver water from temporary storage facility (ex. portable tank) through fire pump to fire;*
- *draft water (from a location where water supplies are known to be reliable and accessible) into a mobile water supply apparatus;*
- *move water from source location to fire event using mobile water supply apparatus;*
- *dump water into temporary storage facility (ex. portable tank) at fire event location; and*
- *repeat shuttle cycle.*

The 'Levels of Service' assigned with the Tanker Shuttle Accreditation (e.g. Standard Tanker Shuttle Service or Superior Tanker Shuttle Accreditation) are determined by the alternative water supply performance and capabilities provided by the fire service.

As stated by the FUS: "*To be recognized, for Standard Tanker Shuttle Service, the fire department must have adequate equipment, training and continuous access to approved alternative water supplies to deliver standard tanker shuttle service in accordance with NFPA 1142, Standard on Water Supplies for Suburban and Rural Fire Fighting.*"

BWGFES does not currently have this accreditation. Subject to completing and receiving certification of achieving this accreditation, BWGFES will be able to provide written documentation to home owners affected. In our experience this can relate to a reduction in home ownership insurance premiums of 5% to 10% depending on the insurance provider. It is therefore recommended for BWGFES to apply for and participate in the "Superior Tanker Shuttle Accreditation" program offered by the Insurance Underwriters Association. The purchase of a new tanker apparatus will be an important step in moving this process forward. The Town can also consider the use of automatic aid agreements in order to meet the requirements of the accreditation process.

Tanker shuttle accreditation only impacts insurance rates of residential properties within eight kilometres (by road) of a responding fire station and commercial properties within five kilometres (by road) of a responding fire station. ***Figure 29*** shows zones within five and eight kilometres of the BWGFES Station.



BRADFORD WEST GWILLIMBURY FIRE & EMERGENCY SERVICES

TOWN OF BRADFORD WEST GWILLIMBURY

FIRE MASTER PLAN

WATER TANKER SHUTTLE ACCREDITATION REQUIREMENTS

Figure 29: Tanker Shuttle Accreditation Distance Requirements

- FIRE STATION
- RAILWAY
- HIGHWAY
- ARTERIAL
- COLLECTOR
- LOCAL
- WATERBODY
- MUNICIPAL BOUNDARY
- URBAN BOUNDARY
- 5 KM BUFFER
- 8 KM BUFFER

The water tanker shuttle accreditation is only valid within 8km of the fire station for dwellings and 5 km for commercial properties.

0 0.5 1 2 km

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY TOWNSHIP OF BRADFORD WEST GWILLIMBURY
COUNTY OF SIMCOE

MAP CREATED BY: JJA
MAP CHECKED BY: SS
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
I:\GIS\137661 - BRADFORD WEST FMP\DESIGN_GIS\MXDs\
EXISTING FIRST RESPONSE.MXD

DILLON CONSULTING

PROJECT: 13-7661
STATUS: DRAFT
DATE: 07/04/13

6.11 Suppression Division Summary and Recommendations

Fire suppression is the third "line of defence" within an overall community fire safety plan. Effective and efficient fire suppression capability is a critical component in ultimately protecting life safety and reducing property loss as a result of fire within a community.

Our recommendations for the Suppression Division include the following:

- *The Town of Bradford West Gwillimbury establish a performance measure target for initial response by BWGFES of deploying four firefighters to all confirmed, reported or potential structure fires (including alarm activations).*
- *The Town of Bradford West Gwillimbury establish a performance measure target for depth of response by BWGFES of deploying fourteen firefighters to all confirmed, reported or potential structure fires (including alarm activations, which should be responded to as a reported fire).*
- *BWGFES hire 2 full-time firefighters in the immediate future (2014) to be scheduled only for day-time shifts during the weekday (Monday to Friday, 8:00 am to 5:00 pm).*
- *BWGFES hire 2 full-time firefighters in the short-term (2015) for weekday day-shift coverage.*
- *BWGFES hire 4 full-time firefighters in the medium-term (2016 – 2017) to maintain four firefighter on-duty crews 24 hours per day, seven days a week.*
- *BWGFES should consider hiring four additional volunteer firefighters.*
- *BWGFES monitor the population, call volume and building permits in the Bond Head Settlement Area and area west of Highway 400 on an annual basis, to monitor the timing and need for a second fire station west of Highway 400.*
- *As need dictates BWG acquire property for a second fire station within the Bond Head Settlement Area.*
- *As need dictates BWG design and construct a second fire station within the Bond Head Settlement Area.*
- *Timed with the opening of a second fire station within the Bond Head Settlement Area, BWG hire a complement of 35 volunteer firefighters to staff the station.*
- *Bradford West Gwillimbury should conduct proactive volunteer firefighter recruitment strategies, and specifically targeting candidates that are available during normal business hours Monday through Friday.*
- *Recruitment and retention statistics continue to be tracked and monitored by the department.*
- *BWGFES implement a system to track, review and compare turnout times to industry performance measures on a regular basis.*
- *BWGFES continue to monitor and update their automatic aid agreements.*
- *BWGFES investigate resource management tools and technology to provide information regarding volunteers' schedules, availability, location and response status in real-time, with real-time updates directly to the fire station.*
- *BWGFES set a limit as to where volunteer firefighters can live (e.g. within a specified radius of the fire station).*
- *Subject to completion of training, BWGFES should apply for and participate in the "Superior Tanker Shuttle Accreditation" program offered by the Insurance Underwriters Association.*

7.0 TRAINING

Prior to December 2012, Bradford West Gwillimbury Fire and Emergency Services did not have a formalized or standardized training program. There was also no one formally in charge of the training program; training was carried out by the Deputy Fire Chief. However, in 2009 and 2010 the Office of the Fire Marshal, Ontario reviewed and analyzed the department. The number one recommendation resulting from the review was for BWGFES to hire a Training Officer. The department took this recommendation seriously and hired a full-time Training Officer in December 2012. The department currently provides ongoing training for all aspects of firefighting, including suppression, emergency medical responses, and rescue services.

Under the direction of the new Training Officer, many improvements and initiatives have been put into action to improve department training. Continuously improving the Training Division while the department grows will require the assignment of sufficient resources.

Based on our experience and knowledge of the fire service across Ontario, firefighter training is an area that has come under a high level of scrutiny over the past decade. The results of numerous inquests and investigations have concluded that firefighter training must be considered a strategic priority for municipalities in their roles as employers and fire service leaders as supervisors. The Ministry of Labour has committed significant resources to audit and support this strategic priority.

7.1 Staffing and Training Sessions

The Training Division is currently run by the Training Officer, who reports directly to the Deputy Chief. The Training Officer is responsible for the following functions:

- Creating, implementing, delivering and overseeing training topics and information to all suppression staff (including full-time and volunteer firefighters);
- Creating and administrating promotional exams for probationary full-time firefighters;
- Developing and maintaining the firefighter curriculum;
- Providing maintenance training schedules;
- Consulting with the Deputy Fire Chief to create department Standard Operating Guidelines (SOGs);
- Participating in various committees (as assigned);
- Training related record keeping of suppression staff;
- Organizing OFC courses and other external courses as required or requested by department staff;
- Customizing and managing Firefighter Learning Management System (FLMS – an online learning management system); and,
- Providing operational support to the firefighters.

The Training Officer has attempted to standardize the training within the department since he began his position in 2012. Entering into the new role required significant time to ‘catch–up’ for previous years and update the overall training program.

Through discussions with department staff it appears that prior to the hiring of the Training Officer, suppression staff were trained to different levels in various disciplines and that there was no uniform levels of training or certification. The Training Officer role helps to create consistency among training for all staff and has been doing so since his arrival in the department. However, the position is based on a 42 hour work week (regular business hours) with no overtime budget and no dedicated assistance. This creates a challenge for delivery of training to a volunteer department, who typically conduct training sessions outside regular business hours.

BWGFES participates in a Trainer-Facilitator (T/F) program where select officers and firefighters learn how to become trainers or certified instructors to deliver in-house training. The goal is for the participants to eventually provide courses and training to external departments. As a result of this program, BWGFES has a number of trainers who can perform training and sign-off for various training services, including ice/water rescue, first-aid/CPR/defibrillator training, pumping training, and fitness testing.

Currently there is no designated training budget. The Training Officer is presently working to update and create new training policies and procedures, but is limited based on budget restrictions. It is recommended for the department to create a dedicated training budget on a yearly basis in order to adequately plan for and prioritize current and future training programs / division initiatives.

Currently the full-time firefighters conduct training on a weekly basis. During each of their shifts, the firefighters are required to complete training, the type of which is dependent on timing and availability (e.g. ladder training, hose training, etc.).

The volunteer firefighters train two night training sessions a month. These sessions are supplemented by one hour of online training per month. Online training is conducted via the Fire Learning Management System (FLMS).

The Fire Learning Management System (FLMS) is an innovative and cost effective tool for delivering firefighter training. The learning materials are all online and accessed through the internet at any time of day. FLMS allows each member of the fire department to log on to their own account and complete courses created by the fire department. These courses can be self-delivered or supervised and delivered by Trainer Facilitators. Staff can access course materials anytime they want outside of the regular training schedule. Courses contain learning activities and materials, presented in a logical familiar fashion. They can also be designed to follow the familiar OFM curriculum layout.

Based on our review of historical calls for service and the Community Risk Profile we are recommending that consideration be given to enhancing the training provided on rural water supply and pump operations. Training should also be provided to all staff on the apparatus and equipment within the department. Specifically, driver training needs to be enhanced for all suppression staff, with a specific focus for volunteer firefighters. This should be considered a priority and future annual training programs should have a specific subsection for comprehensive driver training.

7.2 Annual Training Program

In partnership with the Ontario Association of Fire Chiefs, the Office of the Fire Marshal, Ontario, has developed training standards for firefighters and company officers. The Ontario Firefighters Standard and Company Officer Standard contain extensive curriculum including the theoretical and practical components of the primary functions and roles and responsibilities of these positions. In our view these standards should form the basis of the annual training program for firefighters within BWGFES.

Addressing an employer's responsibilities as defined by the *Occupational Health and Safety Act* and specifically the *Section 21 Guidance Notes for Firefighters* is another mandatory component of a comprehensive annual training program.

In our view, in addition to responding to the relevant standards, curriculum and health and safety requirements, a comprehensive annual training program should include the following core functions:

- ✓ *Identification of training needs in relation to services provided;*
- ✓ *Coordination / scheduling of theoretical and practical training;*
- ✓ *Monitoring and evaluation in relation to outcomes achieved;*
- ✓ *Ongoing evaluation in relation to industry best practices and legislative requirements;*
- ✓ *Oversight of program objectives and records management; and*
- ✓ *Ongoing assessment of program delivery for efficiency and effectiveness.*

Developing and sustaining an annual training program that includes all of the core functions and addresses the health and safety responsibilities of the municipality is consistent with the strategic priority that fire services across Ontario are initiating. Implementing this strategy should be considered a major priority for BWGFES as the department does not currently have a formalized annual training program. This will require additional resources dedicated to the Training Division.

7.3 Specialized Training Services

In addition to basic firefighting training the department must also consider the training needs associated with specialized services. Specialized services (e.g. technical rescues) are the types of services that typically require a higher level of technical training and equipment to safely mitigate the emergency.

Our review identified that the following specialized services are currently being provided:

- Medical Responses (as per the Tiered Response Agreement);
- Auto Extrication (including scene stabilization, heavy hydraulic tools, and air bags);
- Ice / Water Rescue (shore and boat rescue);
- Low angle/rope rescue (awareness level only);
- Confined space (awareness level only); and
- Hazardous Materials Response (awareness level only; BWGFES is part of the County program and uses the City of Barrie as a resource for Hazardous Materials Response).

Medical calls comprise the highest percentage of BWGFES' call volume annually. Medical training is completed under full-time first responder training.

Subject to Council approval of these service levels, an annual training program should be created to reflect the provision of these service levels and the specialized training programs. Full-time and volunteer firefighters should be trained, competent and certified (where possible) to respond to specialized incidents.

7.3.1 Live Fire Training

The purpose of live fire training provides realistic fire training simulations under safe and controlled conditions. With relatively low volumes of fire calls it is important that the department provides access to suppression staff to simulate safe and effective fire suppression operations in an appropriate training facility. Live fire training exercises are intended to simulate the actual fire conditions that a firefighter may encounter and provide simulated heat, humidity, restricted vision and smoke conditions. This type of training is also very beneficial for firefighters and particularly Company Officers in learning to understand fire behaviour under certain conditions, and smoke conditions as they may relate to the potential for fire extension or conditions such as a "flashover".

The department currently rents the Ontario Fire College for two days every year in order to provide live fire training. The Ontario Fire College is located in Gravenhurst**.** However, it is recommended that BWGFES look for potential partnership opportunities regarding fire training with other municipalities located in the County of Simcoe. One municipality within the County of Simcoe is currently investigating the possibility of constructing a live fire training facility within their Town. This would require support from surrounding municipalities and BWGFES should continue to monitor this initiative, as travelling to a live fire facility within the County which would be more efficient than driving to a facility located further away. In the interim, there is potential to rent out the Richmond Hill Fire and Emergency Services Training Centre which has a state-of-the-art training tower that can accommodate almost every conceivable fire training operation covering a range of scenarios (including live fire). This facility is in relatively close proximity to Bradford West Gwillimbury; the facility is approximately 40 km away and would be a much shorter drive compared to the Ontario Fire College.

Regular access to live fire training on a scheduled basis should be included within the Bradford West Gwillimbury Fire and Emergency Services training program. It is recommended that the new comprehensive annual training program include scheduled participation by all suppression personnel in live fire training exercises on an annual basis, as a minimum. Consideration for facilities providing live fire training should be investigated and pursued, including potential partnerships with neighbouring municipalities or industries.

7.4 Promotional Processes

Although there is no formal succession plan in place, there is a promotional program available as defined in BWGFES Standard Operating Guideline #808: Promotional Policy. This has established a policy and procedure for promotional examinations for ranks and promotions from first class, and is applicable to all BWGFES staff intending to compete in scheduled divisional examinations. This Guideline outlines all of the rules and regulations in order to be qualified for a promotion. For example, to be considered for the role position of Acting Caption, a staff member must be a First Class Firefighter in the Fire Suppression Division for a minimum of one year, combined with four years of satisfactory performance as a non-probationary firefighter with the BWGFES Suppression Division. However, it has been found that there is currently no formal plan in place; it is up to the firefighters to be pro-active and seek out the potential for a promotion on their own.

Improving promotional processes and implementing a formal succession plan will be essential to department succession planning and efficiently and appropriately filling vacancies within BWGFES.

7.4.1 Company Officer Training

Company Officer development is an area of training that the fire service in Ontario has recognized as a priority in order to respond to the roles and responsibilities of Company Officers as supervisors as defined by the OHSA, as Incident Commanders on fire scenes, and as managers within a municipal environment.

The OFM Company Officer Standard and learning curriculum provides a core level of information in this area to prepare Company Officers through self-study for Company Officer Examinations held every two years.

BWGFES currently provides Company Officer training. All Company Officers are enrolled in the Ontario Fire College Company Officer Diploma Program, with an expectation that all officers should complete up to Level 2 of the program at a minimum. The goal of the department is to allow Company Officers to advance their training by providing them with additional leadership training opportunities (in-house or externally). By providing additional training opportunities for Company Officers, this can help to lead to better succession planning within the department.

7.5 Facilities & Workspace

The office for the Training Officer is located in a mobile trailer situated in the fire station parking lot. The trailer provides limited office space with limited resources and meeting space (e.g. there is no audio visual equipment available and only one table is available that can fit three people). Holding small meetings in the trailer can also be disruptive to the other parties who utilize the trailer (e.g. Fire Prevention Inspector). There are new filing cabinets in the trailer which has been allocated to the Training Officer to store training materials. However, firefighters do not have access to the trailer and therefore material has to be divided between the station and the trailer.

There are no classroom training facilities within the fire station. The department has one room (day room) in which some training does take place (see ***Figure 30***). However, the room is not large enough to host all firefighters at once, has a poor layout and is often used for breaks. It is therefore recommended that space be allocated for a proper training classroom during future station expansions.

Figure 30: Station Day Room

The department also does not have adequate space for any type of hands-on training. If training is to take place in the station's bay area, the apparatus and equipment has to first be removed and parked outside to create space. This can be hard on the apparatus and apparatus maintenance during the winter months. There is no room to build any structures or use props due to the lack of space. There is no space available at the station for search and rescue training or firefighter survival training. Although the department does utilize the station parking lot for auto extraction training, it is not a very conducive environment for training due to the potential for glass or sharp objects to be present in the parking lot. In order to improve overall training, the department needs adequate dedicated training facilities, which is why it is important for BWGFES to continue to seek out potential partnerships with nearby fire departments, to consider sharing training space and resources.

7.6 Training Division Summary of Recommendations

As a result of our review and assessment of the Training Division we recommend that:

- *BWGFES create a dedicated training budget on a yearly basis.*
- *An annual training program be developed and sustained that includes all of the core functions and addresses the health and safety responsibilities of the Town. Implementing this strategy should be considered a major priority for BWGFES. This will require additional resources dedicated to the Training Division (e.g. creation of a dedicated training budget).The Ontario Firefighters Standard and Company Officer Standard should form the basis of the annual training program.*
- *Training on rural water supply and pump operations continue to be implemented and enhanced to match community needs and historic call types.*
- *Training be provided to all staff on the apparatus and equipment within the department, with a specific focus on driver training.*
- *Subject to Council approval of service levels, the annual training program should be revised to reflect the provision of service levels and the specialized training programs.*
- *Live fire training facility opportunities and partnerships be investigated and pursued with neighbouring municipalities (e.g. in the County of Simcoe).*
- *The new annual training program includes scheduled participation by all suppression personnel in live fire training exercises on an annual basis, as a minimum.*
- *BWGFES consider the elements of a comprehensive succession plan for the department and in consultation with corporate human resource professionals, develop a strategy for implementation.*
- *Additional training opportunities be provided for Company Officers.*
- *A training classroom and training space be designated when considering future station expansions or a second fire station.*
- *Potential partnerships with nearby fire departments be considered to share training space and resources.*

8.0 FIRE STATION, APPARATUS & EQUIPMENT

8.1 Fire Stations

Bradford West Gwillimbury Fire and Emergency Services currently operate from one fire station (illustrated in ***Figures 31*** and ***Figure 32)***. The station is located within the Bradford Urban Area, as shown previously in ***Figure 1.*** All fire department staff work out of this station, which is a four bay station, built in 1990. The station was originally built for a volunteer fire department, with potential for expansion; through discussions with Town staff, it has been determined that there is potential to add a second floor in the current fire station. However, the station is outdated with improper full-time facilities such as dorm and living areas and kitchen areas, and there are no shower facilities within the station. The station does not have a training area / classroom and there is also no space available for reserve vehicles. As well, the station bay doors provide little insulation and the tarmac requires resurfacing (as moisture is getting into the asphalt and undermining the surface). Investment and life expectancy budgeting has not been completed for the existing fire station.

Based on the current and projected Town growth and the need for additional suppression staff (with the recommendation of hiring full-time firefighters), it is imperative that focus be placed on increasing and expanding station facilities.

Figure 31: BWGFES Fire Station

Figure 32: BWGFES Fire Station

8.1.1 Future Station Considerations

As a component of the Fire Master Plan, the existing station facilities were visited and reviewed. Plans for future station renovations, redevelopments or additions were also discussed and considered.

Due to its age, size, existing facilities, deficiencies and condition, it is recommended that the current fire station be retrofitted and expanded. There are two options for expansion; adding a second floor or expanding the current footprint of the building. BWGFES should conduct a facility review immediately (in 2014) in order to decide on options for expanding the station (e.g. second floor vs. adding to the building footprint). However, there are some concerns that maintaining and renovating the existing station would be difficult due to the nature of the site and the extent of renovations required. These issues should form the basis for the scope of work required within the facility needs assessment recommended within this report. The facility needs review should also examine the potential to construct an entirely new station in an alternate location; this new station would replace the existing station and would still be considered "Station 1." If this option were to occur, the existing station (located at 75 Melbourne Drive) could be used by other Town departments. However, constructing a new station (Station 1) would be dependent upon land availability within the Bradford Urban Area. As discussed above, the station could be located up to 750 metres west of the existing location and maintain the current geographical area coverage of the urban area within a four minute first response, however, the coverage of calls within the four minute first response would likely decrease slightly. Based on the findings of the facility needs assessment BWGFES should move forward with the recommended facility solution, either a station expansion or construction of a new station.

There is also an option being considered to construct a second fire station within the Town of Bradford West Gwillimbury, specifically in an area West of Highway 400 (e.g. Bond Head Settlement Area). This is likely farther out on the horizon (e.g. beyond 2021) and would not solve the existing space and facility challenges facing the department today.

8.2 Apparatus and Equipment

The Deputy Fire Chief oversees the apparatus and equipment for Bradford West Gwillimbury Fire and Emergency Services.

Overall, the apparatus and equipment within the department are in great condition and is meeting the needs of the Town.

The existing fleet and model years are summarized in ***Table 12.*** This table shows that the current fleet is fairly new with only three vehicles being more than ten years old. These include a tanker, rescue pumper and a utility pickup truck, with the tanker being the oldest (20 years old). However, although it is known by the Fire Chief that the 20 year old tanker will have to be replaced in the near future, there is no specified timeline for its replacement, as an official vehicle replacement plan does not exist within the department. The aerial and fire prevention vehicle are the two newest fleet items that were purchased (in 2011 and 2012).

Table 12: Apparatus and Model Year

Vehicle	Description	Year
Unit # 1011 	Pumper/Rescue: Spartan Gladiator	2009
Unit # 1012 	Pumper/Rescue: Spartan Gladiator	1999
Unit # 1014 	Tanker: Auto Car	1993

Unit # 1015 	Tanker: Spartan Metro Star	2006
Unit # 1017 	Aerial: Pierce Platform	2011
Unit # 1019 	Heavy Rescue: Impel Heavy Rescue	2010
Unit # 10-1 (Fire Chief Vehicle) 	SUV: Dodge Durango	2006

Unit # 10-2 (Deputy Fire Chief Vehicle) 	SUV: Dodge Durango	2006
Unit # 10-4 (Fire Prevention Vehicle) 	Dodge Van	2012
Unit # 10-10 	Utility Vehicle/Pickup: Dodge Ram 1500	2003

Unit # 10-11 	Zodiak (12 feet)	-
Unit # 10-19 (picture not available)	RIT Craft 12 foot inflatable (with open back for rescue/recovery)	2011

8.3 Apparatus/Equipment Replacement Plan

Our review of apparatus and major equipment replacement plans for municipalities with similar types of use and wear reflect a best practice strategy of 15 years of service for front-line apparatus (e.g. pumpers and tankers) and a further five years of service in a reserve capacity reflecting a 20 year overall life cycle.

Bradford West Gwillimbury Fire and Emergency Services do not currently have an apparatus or equipment replacement plan. Most vehicles are replaced after 20 years of service. If any new vehicles are to be purchased, the Fire Chief has to go through a restrictive and time consuming purchasing by-law. It is therefore recommended that the department create a fleet replacement plan, including a Council adopted/approved policy with budget support. The best practices life-cycle stated above of 15 years front-line should be taken into consideration when developing a fleet replacement plan.

With regards to equipment, items are replaced when they are worn out and/or break and need to be replaced. This makes it extremely difficult for the department to budget appropriately for new equipment. Creating a replacement plan and budget specifically for equipment (separate from apparatus) would be beneficial to track exactly what is needed, when it is needed, and how much the department can afford to spend.

8.4 Reserve Apparatus

There is no current policy for reserve vehicles within the department. Therefore, it is recommended that the department adopt the best practice stated above (15 years of service for front-line apparatus) and begin to use their apparatus as reserve vehicles after 15 years of service. Reserve apparatus should be included in the Apparatus Replacement Plan. However, consideration must be given as to where to locate reserve vehicles. The current fire station has no room for reserve vehicles. Therefore, a station expansion is necessary to provide additional room for reserve vehicles.

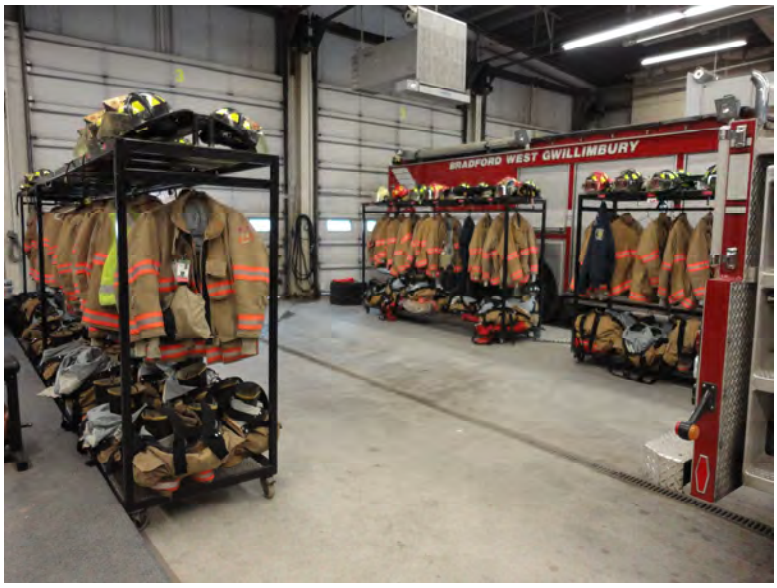
8.5 Major Equipment

Our review of equipment included the following major items:

- Self-Contained Breathing Apparatus (SCBA)
- Personal Protective Clothing (Bunker Gear)

Bunker gear gets stored inside the bay next to the fleet, as illustrated in ***Figure 33***. This current storage practice may subject firefighter bunker gear to increased potential of exposure to airborne diesel particulate within the apparatus room, and sun penetration exposure from open storage. There is also increased potential of residue from a fire that remains on the bunker gear to be released into the station, or onto adjacent gear. Consideration should be given to the provision of separate storage rooms for firefighters bunker gear that includes a separate ventilation system. Bunker gear is replaced every five years to maintain minimum safety standards. This five year replacement plan should be included in future vehicle and equipment replacement plans, to allow for Council to budget accordingly.

Figure 33: Bunker Gear



SCBA equipment and cylinders were recently upgraded and continual replacement should be included in any future apparatus and equipment replacement plan. There should be consistent apparatus and equipment replacement and upgrades across the department.

8.6 Maintenance

Apparatus, Self-Contained Breathing Apparatus (SCBA), bunker gear and the department's air compressor all receive regular maintenance, as outlined in ***Table 13***.

Table 13: Apparatus and Equipment Maintenance Schedule

Item	Maintenance Schedule
Apparatus	Monthly
SCBA	Annually
Bunker Gear	Regular Repair and Maintenance (twice a year)
Air Compressor	Regular Repair (minimum twice a year)

Although the larger apparatus and larger equipment items receive regular maintenance, some apparatus or equipment gets repaired only when a problem is identified. Once identified, a work order is created and issued to administration who forwards the order to the appropriate repair facility. One copy is left for the operational staff to review and update as needed. When the repair is complete, the work order is then forwarded to administration to provide a Purchase Order (PO) to the vendor for payment. However, there can be budget limitations (as no reserve fund exists), for maintenance/repairs) which can lead to partial repairs or deferral of repairs. This has the potential to lead to health and safety issues. Proper repairs and maintenance should be provided as required.

Maintenance of all apparatus and equipment should be a priority for the department and should also not be sacrificed based on cost. A specified budget for maintenance and repair should be allocated to BWGFES to ensure everything is certified and in proper working order. As well, all maintenance and repairs should be recorded and kept up-to-date.

There is limited space in the fire station to complete in-house repairs of smaller items. Proper tool or equipment storage is lacking and one workbench is used to store items. Adequate storage space for repair items (i.e. fluids required for apparatus and equipment) should be made available somewhere inside the station. This further justifies the need to expand the current fire station.

The department should establish routine policies and procedures to facilitate an effective and proactive apparatus and equipment maintenance schedule. Currently everyone in the department assists with inventory input and repair logging but due to staffing limitations, routine maintenance is not as frequent or accurate as it could be. Additional full-time firefighters would provide the resources to allow for more frequent and accurate checks of apparatus and for the repair or smaller items (i.e. small engine tune-ups, bulb replacements, etc.). Additional full-time firefighters could also assist with handling more responsibility with regards to maintenance records management. Consideration should be given to delegating equipment checks and small repair items to crew/captains, which would help improve overall apparatus and equipment performance.

8.7 Diesel Emissions

The Ontario Fire Service has identified health and safety concerns related to diesel exhaust emissions from apparatus stored within a fire station. In response the Ministry of Labour, Section 21 Guidance Note #3-1 was developed to assist municipalities in responding to these concerns raised.

This guidance note includes a number of actions that should be taken to limit the exposure of the diesel emissions. The guidance note strongly recommends the following:

> *"the installation of direct capture type exhaust system extractors when stations are being renovated or newly constructed. Consideration should be given to having direct capture type exhaust extractors installed in all existing fire stations"*

Bradford West Gwillimbury Fire and Emergency Services currently use an air filtration system for diesel emission control. This system is working well for the department and is meeting the recommendations set out in the Ministry of Labour, Section 21 Guidance Note #3-1.

8.8 Future Fleet Considerations

There is the potential to construct a second fire station within the Town. If a second station was constructed, Bradford West Gwillimbury Fire and Emergency Services would require additional front-line apparatus for emergency response coverage. In addition, fleet considerations would have to provide enough seats in order to transport an appropriate depth of response from the new fire station. The current fire station has a sufficient number of fire vehicles for the department's needs. If a new station were to be constructed in the future, BWGFES should consider moving two trucks from the current station to a new second station.

8.9 Apparatus & Equipment Summary of Recommendations

As a result of our review of Bradford West Gwillimbury Fire and Emergency Services' station, apparatus & equipment, we recommend that:

- *BWGFES conduct a station facility review in order to determine how the current fire station should be expanded; as a result of this review, the recommendations should be carried out in order to expand the station.*
- *BWGFES purchase a new tanker to replace the current tanker that was purchased in 1993.*
- *BWGFES formalize and adopt an apparatus replacement plan and a separate equipment replacement plan, including a Council adopted/approved policy with budget support.*
- *BWGFES formalize and adopt a reserve vehicle policy in line with the apparatus and equipment replacement plan.*
- *BWGFES provide separate storage rooms for bunker gear away from any diesel emissions that includes a separate ventilation system (combined with station renovations / new station builds).*
- *A specified budget for maintenance and repair be allocated to BWGFES.*
- *BWGFES provide storage space in the station for small repair items.*
- *Routine policies and procedures be established to facilitate an effective and proactive apparatus and equipment maintenance schedule.*
- *BWGFES consider delegating equipment checks and small repair items to crews/captains to improve apparatus and equipment performance.*

9.0 DISPATCH AND COMMUNICATIONS

9.1 Dispatch

As of June 4, 2013, Bradford West Gwillimbury Fire and Emergency Services entered into an agreement with the City of Barrie for Barrie to provide full-time emergency fire dispatch services to Bradford West Gwillimbury. The agreement includes the following for Barrie:

- Responding to 911 telephone calls and non-911 telephone calls with respect to the area set out in the agreement;
- Alerting the members of BWGFES of an emergency;
- Communicating with BWGFES under both emergency and non-emergency conditions;
- Communicating with BWGFES regarding the potential need for mutual aid and monitoring the level of an on-going emergency activity;
- Communicating with other agencies during an emergency upon the request of BWGFES incident commander;
- Provide information, data and other resources during emergencies and on a day-to-day basis; and,
- Maintain a log of all dispatch calls received, in particular, record the times and information set out in the "Process" section of the Ministry of the Solicitor General Public Fire Safety Guidelines No. PSFG 04-64A-03 and as defined by Barrie Fire and Emergency Service Standard Operating Guidelines.

This agreement is a fee for service agreement in which Bradford West Gwillimbury pays The City of Barrie semi-annually a per capita rate of $1.92 for the entire Dispatch Area.

Best practices in Ontario for the provision of emergency call taking and dispatching reflects the use of the National Fire Protection Association (NFPA) "*1221 Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems*" as the guideline for provision of services. The current agreement does not include any performance measures for call taking and dispatching, such as those contained in the NFPA 1221 standard.

Based on our analyses, the current dispatch agreement should be revised to include the performance measures for service delivery identified within the NFPA 1221 standard. Including this type of performance requirement is consistent with best practices within the fire service industry and appropriate in order to support due diligence on behalf of the municipality.

9.1.1 Radio Repeaters

In order to provide consistent radio communication coverage, mobile repeater units should be considered for select apparatus. This will improve radio communications on-scene and in-building radio coverage.

9.2 Internal Communications

The department currently utilizes a VHF system at a 154 Mhz range, operating with a single channel. However, this system is being upgraded to a digital capable system and equipment to improve internal communication.

Internal communications can be a challenge in composite fire departments. Internal communications appear to be working well at the station level, but would benefit from more interaction and communication at the overall departmental level. Suppression staff has a desire to be informed, be involved, and ultimately help towards achieving the goals and objectives of the department. In our experience there are various strategies that could be considered to enhance communications within the department. This could include use of technology, such as online bulletin boards, station-based electronic message boards or regular email bulletins to all staff. Opportunities for department-wide training sessions or information sessions should be encouraged. Opportunities for the management team, full-time staff and volunteer staff to interact should be fostered and supported.

9.3 Technology

The original records management system used was FirePro Software. However, this was underutilized in previous years and in conjunction with the switch to City of Barrie dispatching, BWGFES has switched its records management system to FIREHOUSE Software. Based on the recent switch to the City of Barrie, Barrie's Information and Communication Technology Department now provides the following services related to technology to Bradford West Gwillimbury:

- Provide Bradford West Gwillimbury with a password protected login to the FIREHOUSE website;
- Store copies of electronic files that are provided by Bradford West Gwillimbury and allow for access through FIREHOUSE.
- Ensure that Dispatching is capable of producing trip tickets; and
- Barrie Helpdesk service for the above and for general FIREHOUSE usage questions from Monday to Friday between 8:00 AM to 5:00 PM.

Bradford West Gwillimbury does not currently use Automatic Vehicle Location (AVL) technology. However, this type of technology is beneficial as it can provide the department more flexibility in monitoring and managing their apparatus and fleet. Consideration should be given to exploring the possibility of installing AVL on the fleet.

Additionally, consideration should be made to provide full-time staff (Fire Chief, Deputy Fire Chief, FPI, and Training Officer) with mobile units (e.g. tablets), which could be linked to FIREHOUSE. This would allow for direct input of reports and records into digital format in a fast and efficient manner. It is recommended that this initiative be followed through and accomplished.

9.4 Dispatch and Communications Recommendations

Based on the assessment of BWGFES Dispatch and Communications it is recommended that:

- *The current dispatch agreement be revised to include the performance measures for service delivery identified within the NFPA 1221 standard.*
- *Consideration be given to installing mobile radio repeaters on select apparatus to improve fireground radio communications and radio coverage.*
- *Consideration be given to install AVL technology on the department's fleet.*
- *Opportunities for department-wide training sessions or information sessions should be encouraged.*
- *Consideration be given to providing mobile tablets to full-time staff for increased efficiency for recording reports and department information.*

10.0 STUDY CONSULTATION

The Town of Bradford West Gwillimbury Fire Master Plan study commenced with a project initiation meeting held on April 29, 2013 at the South Simcoe Police Station (located next to BWGFES fire station). As the study progressed, various forms of consultation activities were employed to engage the public and gather feedback from stakeholders and members of the community. Effective communication and consultation with stakeholders and the community is essential to ensure that those responsible for implementing this Bradford West Gwillimbury Fire Master Plan and those with a vested interest, understand the basis on which certain decisions are made and why particular actions are required.

10.1 Steering Committee

The Steering Committee for the study was comprised of several members of Bradford West Gwillimbury Fire and Emergency Services and Town staff. Committee members included:

- Fire Chief
- Deputy Fire Chief
- Training Officer
- BWGFES Administrative Assistant
- Director of Finance/Treasury
- Director of Planning and Development Services
- Director of Human Resources
- CAO / Town Manager

10.2 Project Meetings

Throughout this study, the Dillon team facilitated project meetings to present project process, findings and recommendations to key staff and stakeholders. The following meetings were conducted as part of the Fire Master Plan process:

- Project Meeting #1 Project Initiation – April 29, 2013;
- Project Meeting #2 Preliminary Findings & Recommendations – July 20, 2013;
- Project Meeting#3 Present Draft Report – October 9, 2013 (Scheduled); and
- Project Meeting#4 Present Final Report to Council – November 19, 2013.

10.3 Stakeholder Consultation

Stakeholders can provide valuable input at each step of the process, providing information about context and background from different perspectives. This helps to identify issues and needs associated with the fire and emergency service. As well it provides information that is used for study analysis and recommendation phases. Engaging stakeholders helps ensure that multiple perspectives can be brought to the fire master planning process.

10.3.1 Interviews with Steering Committee Members

Information and feedback was collected from members of the Project Steering Committee and key stakeholders via informal interviews held following the Project Initiation Meeting. This was an opportunity to gather background information and input on strengths, opportunities, challenges and threats from the point of view of these key stakeholders. This was an essential stage in developing strategic goals and objectives for the fire master planning process.

10.3.2 Council Workshop Education and Training Session

The engagement of Council in the Fire Master Plan process is paramount in ensuring overall municipal goals are met within the study recommendations and Council feel that they have ownership of the study. A workshop session was held with Council on May 28, 2013. This was an education and training session, held with Council outside of Council Chambers. The consultant team delivered a formal presentation to Council to introduce the purpose and background behind the fire master planning process and gather feedback regarding key issues, concerns or interests. The opportunity for questions and discussion followed the presentation.

10.3.3 Full-Time Firefighter Session

A full-time firefighter stakeholder session was held at the Bradford West Gwillimbury Public Library on June 10, 2013 for the Firefighters Association Executive. A presentation was delivered to this stakeholder group to introduce the fire master planning process. This was followed by open discussion to gather feedback from these key stakeholders regarding the strengths, weaknesses, opportunities and challenges of the fire department for consideration in the Fire Master Plan.

10.3.4 Volunteer Firefighter Session

A volunteer firefighter stakeholder session was held at the Bradford West Gwillimbury Public Library on June 10, 2013 for all of the volunteer firefighters; 19 volunteer firefighters attended this session. A presentation was delivered to introduce the fire master planning process. This was followed by open discussion to gather feedback from these key stakeholders regarding the strengths, weaknesses, opportunities and challenges of the fire department for consideration in the Fire Master Plan. The volunteer firefighters were very vocal and provided some great feedback to the consultant team.

10.4 Summary of Study Consultation

Consultation was conducted with key stakeholders, Town staff, Town Council, and BWGFES staff throughout the course of the Fire Master Planning Study. Interviews with key stakeholders and staff members were an essential component of the data collection and project initiation processes. It provided insight into the strengths, weaknesses, opportunities and constraints facing the fire services and the issues to be considered within the FMP. Consultation included Steering Committee Meetings, Project Meetings, and a Council Workshop.

Study consultation allows for input into the FMP by study stakeholders and also provides an opportunity to inform stakeholder and the public about the FMP purpose, goals and recommendations. Support from Town staff and Council is essential to the success of the FMP, therefore, including these key stakeholders throughout the planning process is essential and highly beneficial.

11.0 IMPLEMENTATION PLAN

The recommendations of this Fire Master Plan help to guide Bradford West Gwillimbury Fire and Emergency Services through the next 10-20 years of growth. Many of the recommendations require no additional financial commitment. For those recommendations requiring further financial support by Council the following implementation plan has been developed to provide a high level overview of the potential cost impacts of the recommendations. The operating and capital costs identified reflect cost estimates based our experience.

Our recommendation subject to Council's approval of this Fire Master Plan is to request the Fire Chief to provide a detailed financial implementation plan utilizing the information provided below in ***Table 14***.

Table 14: Implementation Plan

Horizon	Description	Approximate Funding Required *(placeholders for planning purposes only)*	
		Operating Budget	**Capital Budget**
Immediate Term 2014	Hire two full-time (daytime shifts only) suppression staff (including bunker gear, uniforms, etc.)	$214,000	$8,000
	Hire a second full-time Fire Prevention Inspector	$90,000	
	Conduct a fire station facility review	$60,000	$25,000
	Purchase a new Tanker (to replace 1993 Tanker)	$455,000	
Short-term 2015-2016	Hire two full-time suppression staff (including bunker gear, uniforms, etc.) in 2015 *(To provide four firefighter on-duty crews during daytime weekday shifts*)	$214,000	$8,000
	Expand/renovate the station (update office equipment) based on the recommendations laid out in the fire station facility review		$950,000
	Hire two full-time suppression staff (including bunker gear, uniforms, etc.) in 2016 *(To provide additional shift coverage of four on-duty firefighters)*	$214,000	$8,000
	Increase complement of volunteer firefighters to 35. (add three to complement) (including bunker gear, uniforms, etc.)	$30,000	$9,000
	Replace Fire Safety Trailer in 2015		$65,000
	Purchase mobile tablets for the Fire Chief, Deputy Fire		$5,000

Horizon	Description	Approximate Funding Required *(placeholders for planning purposes only)*	
		Operating Budget	**Capital Budget**
	Chief, Fire Prevention Inspector, and Training Officer		
Midterm 2017-2019	Hire two full-time suppression staff (including bunker gear, uniforms, etc.) *(2017) (To provide additional shift coverage of four on-duty firefighters)*	$214,000	$8,000
	Consideration of additional fire prevention / public education resources to address growth related need (to be reviewed by Fire Chief and staff during midterm horizon)	$90,000	
	Property acquisition, for second station (Bond Head)		$750,000
Long-term 2020 to 2022	Design and Construction of Bond Head Station		$2,500,000
	Hire complement of 35 volunteers for Second Station (Bond Head) (including bunker gear, uniforms, etc.)	$350,000	$105,000

APPENDIX A

PFSG 00-00-01 “Framework for Setting Guidelines within a Provincial-Municipal Relationship”

Ministry of Community Safety and Correctional Services :: Public Fire Safety Guidelines

Framework For Setting Guidelines Within A Provincial-Municipal Relationship

Public Fire Safety Guidelines

Subject Coding

PFSG 00-00-01

Section

General

Date

January 1998

Framework For Setting Guidelines Within A Provincial-Municipal Relationship

Page

Purpose

To assist municipalities in making informed choices for providing public fire protection through objective and innovative approaches. Guidelines will be developed for municipal councilors and senior officials as well as municipal fire departments.

Background

The Fire Protection and Prevention Act places new responsibilities on municipalities. The Office of the Fire Marshal has a mandate to assist municipalities to fulfill these responsibilities by providing information which will enable municipalities to make informed choices based on an objective analysis. Municipalities are compelled to establish a program in the municipality which must include public education with respect to fire safety and certain components of fire prevention. The act also states that municipalities are responsible for arranging such other fire protection services as they determine may be necessary according to their own needs and circumstances. The relationship between the province and municipalities is based on the principle that municipalities are responsible for arranging fire protection services according to their own needs and circumstances. The primary roles of the province are to provide leadership and support to municipalities in the exercise of this responsibility, and to ensure public safety is not compromised. Guidelines, developed by the Office of the Fire Marshal in consultation with municipalities, the fire service and others, will be a key vehicle for fulfilling the provincial role to support municipalities. This consultation process will continue on an ongoing basis to ensure the guidelines change and evolve to reflect trends, changing circumstances and new technology. To be useful, the guidelines must remain current, and must have the support and acceptance of municipalities. The province will retain an interest in the development of guidelines and monitoring of their application. However, day-to-day management and delivery will be municipal responsibilities.

Principles

The key principles which will be used to develop the guidelines are as follows:

- Municipal councils are directly accountable to their constituents and municipalities are also accountable to the province.
- There will be opportunities for appropriate stakeholder involvement and consultation during the development stages.
- Local needs and circumstances vary widely across the province. Therefore, the measures required to address these needs and conditions will also vary.

- There are many ways in which individual needs and circumstances can be addressed. Therefore, municipalities require flexibility to employ different strategies to achieve similar objectives.
- Local council, in consultation with the fire chief, will determine the extent to which their needs and circumstances will be addressed. Some may choose to address specific risks more comprehensively than others. Provided serious threats to public safety are addressed, this is a reasonable and legitimate exercise of municipal responsibility.

Content and Implementation

The guidelines will provide:

- The key concepts of risk assessment and risk management
- The factors that affect the level of fire protection in any community
- The options municipalities may wish pursue in addressing risks
- The information required to evaluate those options

Municipalities will be able to use the guidelines in a variety of ways:

- They can assign knowledgeable local officials to gather the necessary data and conduct appropriate cost/benefit analysis internally.
- They can commission independent reviews of their fire protection activities and use the guidelines to monitor the consultant's activities and evaluate its conclusions.
- Staff of the OFM will continue to be available to assist municipalities in the use of the guidelines.

In addition, the OFM will be re-focusing its training and education services to provide municipal and fire department officials with the skills needed to utilize the guidelines effectively.

Basis of Development

The guidelines will be based on the Comprehensive Fire Protection Effectiveness Model. Fire protection in any community is determined by:

1. The risk of a fire occurring
2. The impact a fire may have on the community
3. Public attitude toward fire
4. The effectiveness of its fire prevention activities
5. The deployment of automatic fire detection systems
6. The deployment of automatic fire suppression systems
7. The effectiveness of its fire department's suppression activities
8. The time period between when the fire starts and when the fire department begins suppression activity

The level of fire protection in a given community will reflect an appropriate balance of all of these factors. Changes in any one factor will affect the overall level of protection.

For example, if the general public is complacent about the risk of fire, there will be a greater risk of a fire occurring in the community. A municipality may choose to address the risk by enhancing its fire suppression capability, by deploying more automatic detection and suppression systems, or a combination of any or all of the other factors affecting fire protection. It may also choose to address the issue head on - by raising awareness of public fire safety through effective public education. In short, there are many valid ways of addressing a problem of poor public attitude toward fire. The guidelines will not make value judgments on which course of action is the best, but they will help municipalities evaluate the efficiency and effectiveness of each option, and choose a course of action that suits its needs.

The guidelines will also serve as a tool for improving the overall efficiency and effectiveness of a municipality's fire protection system. If a municipality is generally satisfied with the overall level of protection it provides, the model can help it improve efficiency by demonstrating that there are alternatives which may cost less, while achieving a similar level of protection. For example, it may find that through effective public education, it can reduce the number of fire code violations that persist throughout the community. This may lead to a reduction in the cost of inspecting properties and prosecuting offenders.

The guidelines will also help municipalities to make adjustments to existing services to improve effectiveness and reduce costs. By thoroughly analyzing costs and benefits, municipalities can initiate new work assignments with confidence. For example, fire departments with full-time fire suppression staff can reduce the workload of the fire prevention division by conducting in-service fire safety inspections. Without objective tools for analyzing such innovations, those opposed can prevent change by appealing to public fears and misapprehensions.

The guidelines will also facilitate fire department reorganization and restructuring on a much broader scale. Many smaller municipalities focus almost exclusively on fire suppression. This is often based on limited availability of volunteers' time to carry out prevention activities. The guidelines will help municipalities to see areas where resources can be shared and services can be provided over broader geographic areas. Inter-municipal co-operation will ensure that effective fire prevention and public education are both viable and affordable.

Collectively, these measures can improve public fire safety while, at the same time, stabilizing or reducing costs.

The guidelines are designed to provide municipalities with a new way of thinking about public fire protection. It will encourage them to consider all aspects of fire safety and not just fire stations, fire trucks and firefighters. Each guideline will assist municipalities to apply the Comprehensive Model by expanding further on each concept, outlining decision-points and indicating the information they will require to analyze their options.

Municipalities will have the means to make objective choices about public fire protection, and implement significant changes with confidence.

Overall Strategy

The guidelines represent one component of the strategy the Ministry is proposing for public fire protection in Ontario. This strategy includes:

- Clarifying municipal responsibility for local fire protection, while protecting the provincial interest in public fire safety.
- Removing remaining legislative barriers which forestall the restructuring and reorganization of municipal fire services.
- Facilitating a shift in focus which places priority on fire prevention and public education as opposed to fire suppression.
- Providing municipalities with decision-making tools to help them provide services according to their own needs and circumstances.
- Facilitating more active involvement of the private sector and other community groups in fire prevention and public education through the Fire Marshals Public Safety Council.

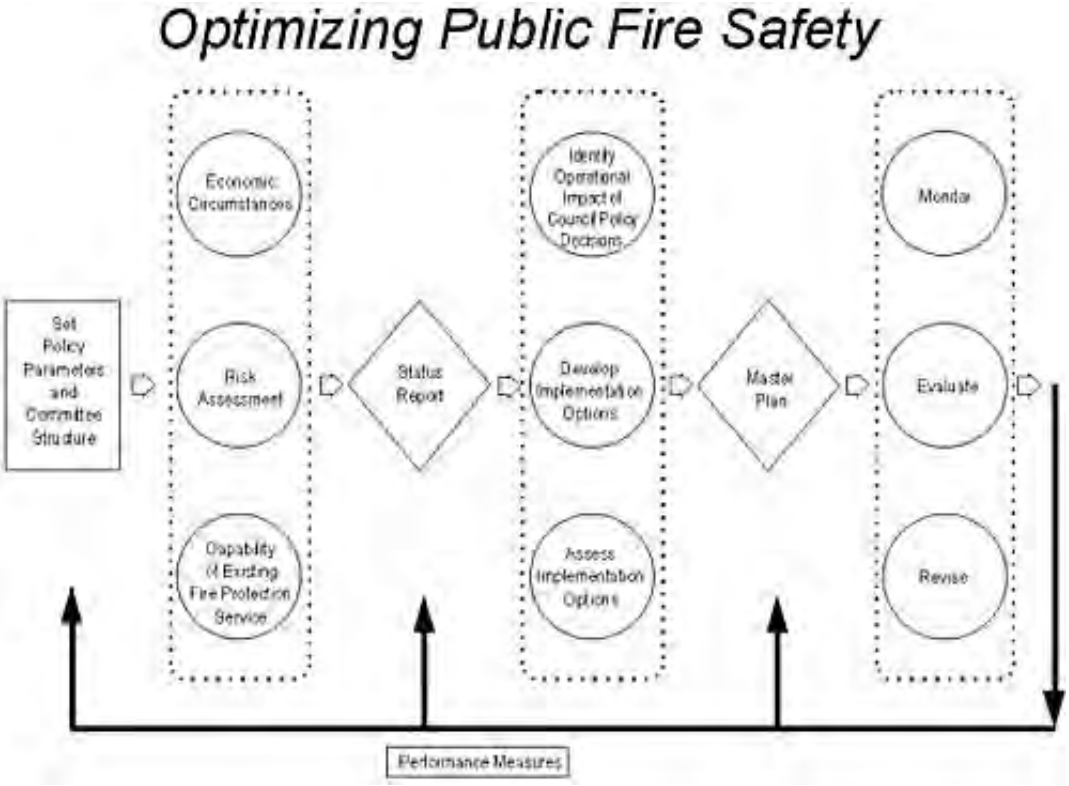
This strategy recognizes that municipalities, with the aid of appropriate tools and support, are fully capable of ensuring adequate fire protection for their communities.

At the same time, this strategy recognizes that the provincial interest would not be met if the level of service provided by a municipality jeopardized public fire safety.

- The guidelines will provide the means for municipalities to make informed choices about public fire protection - responsible choices that will not compromise public safety.
- They are the foundation for measuring and determining adequate fire protection.
- Provincial regulatory authority would be exercised only where there was a clear and identifiable threat to public safety that a municipality or municipalities fail to address.
- Good guidelines, and responsible local government, will ensure that this authority need not be exercised.

Application Options

The model - "Optimizing Public Fire Safety" is intended to be a companion to the guidelines. Its intended use is to provide consistency in application and to ensure all aspects are considered when applying the guidelines.



APPENDIX B

PFSG 04-40-03 “Selection of Appropriate Fire Prevention Programs”

Ministry of Community Safety and Correctional Services :: Public Fire Safety Guidelines

Selection of Appropriate Fire Prevention Programs

Public Fire Safety Guidelines

Subject Coding

PFSG 04-40-03

Section

Fire Prevention and Public Fire Safety Education

Date

March 2001

Subject

Selection of Appropriate Fire Prevention Programs

Page

Purpose:

To assist in developing or selecting programs to meet the four minimum fire prevention and public education requirements of the Fire Protection and Prevention Act.

Introduction:

Municipalities must develop a fire prevention and fire safety education program that addresses their needs and circumstances, as determined by the application of sound risk management principles.

Minimum Required Services:

Section 2. (1) of the Fire Protection and Prevention Act states:

(1) Every municipality shall,

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

Therefore, as a minimum acceptable model municipalities must provide the services listed below. The simplified risk assessment should identify the extent to which additional services may be required to meet the local needs and circumstances of specific municipalities.

Municipalities may develop a different model for fire prevention and public education services provided they are able to demonstrate that their model meets the mandated requirements of the community's local needs.

3. Simplified risk assessment
4. A smoke alarm program
5. Fire safety education material distributed to residents/occupants
6. Inspections upon complaint or when requested to assist with code compliance

Simplified Risk Assessment:

A simplified risk assessment must be done for the community to determine the needs and circumstances of the municipality and to establish the level of fire prevention and public fire safety education required. Any significant risks identified through the analysis should be addressed. For

example; if the risk assessment indicates a significant life or fire loss in multi-unit residential buildings, a program that will adequately improve their fire safety - such as routine inspections - would be appropriate to address the specific need of the community.
The scope and extent of the remaining three required programs can be determined by the results of the simplified risk assessment.

Smoke Alarm Program:

The objective of a smoke alarm program is the provision and maintenance of working smoke alarms and home escape planning activities for all residential occupancies in the municipality. The activities associated with the program may include any combination of the following:

- community surveys
- distribution of pamphlets or other education material
- instruction to residents regarding smoke alarms
- providing smoke alarms at reduced or no cost
- installation of smoke alarms
- inspecting premises to determine compliance with the smoke alarm provisions of the Fire Code.

Fire Safety Material:

Fire safety education material may be distributed to residents and/or occupants consistent with the community's needs and circumstances by any combination of the following activities:

- distribution of pamphlets or other education material
- public service announcements utilizing the available media
- instruction to residents/occupants on fire safety matters
- presentations to resident groups
- attendance at public events

Fire safety education material addresses such issues as preventing fire occurrence, the value of smoke alarms, planning escape from fire, and being prepared to deal with a fire incident. The OFM Regional Office can provide assistance with fire safety education material for the public. Fire safety education material may also be found on the OFM website.

Public Fire Safety Education:

For public fire safety education, the following should be established:

- the audience to be targeted
- the message that needs to be delivered to improve the fire safety situation must be determined.
- an inventory of the available or required resources and programming.
- the most appropriate method of delivering the message.
- the duration or frequency of the message delivery.

Inspections:

Inspections of properties must be done, or arranged for, by the municipality when:

- a complaint is received regarding the fire safety of a property
- a request is made to assist a property owner or occupant to comply with the Fire Code and the involvement of the Chief Fire Official is required by the Ontario Fire Code

Any inspection conducted must include notification of the property owner or responsible person and

appropriate follow-up with enforcement, if necessary.

Inspection Program Considerations:

For inspections, the following factors should be considered:

- The type of inspections to be conducted and the buildings to be inspected. For example: routine inspections of all multi-unit residential buildings, new construction inspections of all buildings, smoke alarm checks of single family residential buildings.
- The methods of inspection appropriate for the circumstance. This will have implications for the amount of time required to inspect, as more comprehensive inspections require more time.
- The category of buildings being inspected and the skills and knowledge required to inspect them. The more complicated the building, the more skill and knowledge required.
- The frequency that the properties will be subject to inspection

Program Selection:

IIn addition to the minimum services outlined above, programs need to be selected, developed and implemented that address any risks identified through needs analysis. Programs being considered need to be effective for the type of concerns identified. For example; a routine inspection program would be effective to address concerns for the fire safety of a group of buildings that demonstrate poor performance during fire incidents. Similarly, a public fire safety education program such as Older and Wiser would be effective where there is a lack of knowledge of fire safety behaviour by the elderly and this lack causes them to suffer significant fire losses.

Each area of program activity has a number of factors which need to be considered.

Service Delivery Options:

The Fire Prevention Effectiveness Model may also assist with informed decision making about fire prevention and public education programs. Once the needs analysis component of the model has been completed, fire department managers can decide what programs are appropriate to address their identified local risks.

There are a number of options for delivery of selected fire prevention programs. They can be provided by fire department staff - personnel dedicated to fire prevention and/or fire suppression staff. Other persons in the community may be used. Agreements with other communities may be made for provision of services. The OFM provides assistance in delivery of fire prevention programs through the Assist Program.

Policy Requirements and Other Relevant Issues:

Any selected/mandated programs must have sufficient resources, human and others, to be effectively delivered.

Persons assigned responsibility for delivering programs must be adequately trained.

Policy decisions must be made with appropriate authority and records made of the level of service decreed.

Appropriate program guidelines must be established for each program to be delivered.

Any fees for services should be discussed and decided upon at the policy level.

Legal counsel should be consulted regarding any changes to the delivery of services to the community.

Codes, Standards, and Best Practices:

Codes, Standards and Best Practices resources available to assist in establishing local policy on this assessment are listed below. All are available at http://www.mcscs.jus.gov.on.ca/ . ***<http://www.mcscs.jus.gov.on.ca/>*** Please feel free to copy and distribute this document. We ask that the document not be altered in any way, that the Office of the Fire Marshal be credited and that the documents be used for non-commercial purposes only.

See also PFSG
01-02-01
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/01-02-01.html> Comprehensive Fire Safety Effectiveness Model
04-12-13
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/04-12-13.html> Core Services
04-40A-03
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/04-40a-03.html> Simplified Risk Assessments
04-40B-12
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/04-40b-12.html> Smoke Alarm Programs
04-40C-12
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/04-40c-12.html> Public Education Programs
04-40D-12
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/04-40d-12.html> Inspection Programs

Ministry of Community Safety and Correctional Services :: Public Fire Safety Guidelines

Selection of Appropriate Fire Prevention Programs

Public Fire Safety Guidelines

Subject Coding

PFSG 04-40-12

Section

Fire Prevention and Public Fire Safety Education

Date

March 2001

Subject

Selection of Appropriate Fire Prevention Programs

Page

Purpose:

To assist fire service managers in identifying the minimum fire prevention and public education activities required to comply with the Fire Protection and Prevention Act

Introduction:

Municipalities must develop a fire prevention and fire safety education program that addresses their needs and circumstances.

Minimum Required Services:

Section 2. (1) of the Fire Protection and Prevention Act states:
(1) Every municipality shall,

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

Therefore, as a minimum acceptable model municipalities must provide the services listed below. The simplified risk assessment should identify the extent to which additional services may be required to meet the local needs and circumstances of specific municipalities.

Municipalities may develop a different model for fire prevention and public education services provided they are able to demonstrate that their model meets the mandated requirements of the community's local needs.

1. Simplified risk assessment
2. A smoke alarm program
3. Fire safety education material distributed to residents/occupants
4. Inspections upon complaint or when requested to assist with code compliance

Simplified Risk Assessment:

A simplified risk assessment must be done for the comm

unity to determine the needs and circumstances of the municipality and to establish the level of fire prevention and public fire safety education required. Any significant risks identified through the analysis should be addressed. For example; if the risk assessment indicates a significant life or fire loss in multi-unit residential buildings, a program that will adequately improve their fire safety - such as routine inspections - would be appropriate to address the specific need of the community .

The scope and extent of the remaining three required programs can be determined by the results of the simplified risk assessment.

Smoke Alarm Program:

The objective of a smoke alarm program is the provision and maintenance of working smoke alarms and home escape planning activities for all residential occupancies in the municipality. The activities associated with the program may include any combination of the following:

- community surveys
- distribution of pamphlets or other education material
- instruction to residents regarding smoke alarms
- providing smoke alarms at reduced or no cost
- installation of smoke alarms
- inspecting premises to determine compliance with the smoke alarm provisions of the Fire Code.

Fire Safety Material:

Fire safety education material may be distributed to residents and/or occupants consistent with the community's needs and circumstances by any combination of the following activities:

- distribution of pamphlets or other education material
- public service announcements utilizing the available media
- instruction to residents/occupants on fire safety matters
- presentations to resident groups
- attendance at public events

Fire safety education material addresses such issues as preventing fire occurrence, the value of smoke alarms, planning escape from fire, and being prepared to deal with a fire incident. The OFM Regional Office can provide assistance with fire safety education material for the public. Fire safety education material may also be found on the OFM website.

Inspections:

Inspections of properties must be done, or arranged for, by the municipality when:

- a complaint is received regarding the fire safety of a property
- a request is made to assist a property owner or occupant to comply with the Fire Code and the involvement of the Chief Fire Official is required by the Ontario Fire Code

Any inspection conducted must include notification of the property owner or responsible person and appropriate follow-up with enforcement, if necessary.

Codes, Standards, and Best Practices:

Codes, Standards and Best Practices resources available to assist in establishing local policy on this assessment are listed below. All are available at http://www.mcscs.jus.gov.on.ca/ .

See also PFSG
01-02-01 Comprehensive Fire Safety Effectiveness Model
04-12-13
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/04-12-13.html> Core Services
04-40A-03
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/04-40a-03.html> Simplified Risk Assessments
04-40B-12
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/04-40b-12.html> Smoke Alarm Programs
04-40C-12
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/04-40c-12.html> Public Fire Safety Education Materials
04-40D-12
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/04-40d-12.html> Inspections Upon Request or Complaint

APPENDIX C

PFSG 04-08-10 “Operational Planning: An Official Guide to Matching Resource Deployment and Risk”

Ministry of Community Safety and Correctional Services :: Public Fire Safety Guidelines

Operational Planning: An Official Guide to Matching Resource Deployment and Risk

Public Fire Safety Guidelines

Subject Coding

PFSG 04-08-10

Section

Emergency Response

Date

January 2011

Operational Planning: An Official Guide to Matching Resource Deployment and Risk

1.0 Purpose

1.1 Municipalities are responsible for the funding and delivery of fire protection services in accordance with Section 2 of the *Fire Protection and Prevention Act, 1997* (FPPA).

In order to meet the intent of Section 2 of the FPPA, municipalities are expected to implement a risk management program.

The evaluation tool ***Operational Planning: An Official Guide to Matching Resource Deployment and Risk***, found in the Appendix, is to be used as part of a risk management program. The purpose of this guideline is to encourage municipalities and fire departments to use this tool so that they can make informed decisions regarding the delivery of fire suppression services.

2.0 Scope

2.1 This guideline applies to all municipalities.

3.0 Risk Management

3.1 In order to be in compliance with clause 2.(1)(a) of the FPPA, a fire department must have completed a simplified risk assessment, one of the four key minimum requirements for fire protection services. It is expected that this assessment be reviewed and updated periodically to support informed decision making and evaluation of program delivery.

4.0 Legislation

4.1 This guideline is issued under the authority of clause 9.(1)(d) of the FPPA.

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

- establish levels of service commensurate with needs and circumstances; and

• provide fiscal resources for staffing, apparatus and equipment to support the established level of service.

4.3 Fire Chief
Person appointed by the council of a municipality, responsible for the delivery of fire protection services, and accountable to the council.

4.4 Fire Department
The fire department delivers the services as approved by municipal council and at the direction of the fire chief.

Operational Planning: An Official Guide to Matching Resource Deployment and Risk can help fire departments to

- assess and analyze fire risk;
- determine current capabilities: staffing, apparatus, equipment, etc.;
- find gaps; and
- work out options, develop recommendations and present them to municipal council using a standardized format.

4.5 Clause 2.(1)(b)
Every municipality shall provide such other fire protection services as it determines may be necessary in accordance with its needs and circumstances

4.6 Subsection 2.(7)
The Fire Marshal may monitor and review the fire protection services provided by municipalities to ensure that municipalities have met their responsibilities under this section and, if the Fire Marshal is of the opinion that, as a result of a municipality failing to comply with its responsibilities under subsection (1), a serious threat to public safety exists in the municipality, he or she may make recommendations to the council of the municipality with respect to possible measures the municipality may take to remedy or reduce the threat to public safety

4.7 Subsection 5.(1)
A fire department shall provide fire suppression services and may provide other fire protection services in a municipality, group of municipalities or in territory without municipal organization.

4.8 Clause 9.(1)(a)
The Fire Marshal has the power to monitor, review and advise municipalities respecting the provision of fire protection services and to make recommendations to municipal councils for improving the efficiency and effectiveness of those services.

4.9 Clause 9.(2)(b)
It is the duty of the Fire Marshal to advise municipalities in the interpretation and enforcement of this Act and the regulations.

4.10 Clause 9.(2)(d)
It is the duty of the Fire Marshal to develop training programs and evaluation systems for persons involved in the provision of fire protection services and to provide programs to improve practices

relating to fire protection services.

5.0 References

OFM documents, programs and courses

- Comprehensive Fire Safety Effectiveness Model
- Public Fire Safety Guidelines
- Shaping Fire Safe Communities – Phases 1 and 2
- Essentials for Municipal Decision Makers [course]
- Essentials for Fire Service Leaders [course]

National Fire Protection Association standards

- NFPA 1710 and NFPA 1720

6.0 Appendix

Evaluation tool:
Operational Planning: An Official Guide to Matching Resource Deployment and Risk.

Workbook
PDF version
<../../../../stellent/groups/public/@mcscs/@www/@ofm/documents/webasset/ecofm001395.pdf>
HTML version
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/04-08-10at1.html>

APPENDIX **D**

PFSG 01-02-01 “Comprehensive Fire Safety Effectiveness Model”

Ministry of Community Safety and Correctional Services :: Public Fire Safety Guidelines

Comprehensive Fire Safety Effectiveness Model Considerations

Public Fire Safety Guidelines

Subject Coding

PFSG 01-02-01

Section

General

Date

January 1998

Subject

Comprehensive Fire Safety Effectiveness Model Considerations

Page

Comprehensive Fire Safety Effectiveness Model Considerations For Fire Protection & Prevention In Your Community

Fire Protection & Prevention In Your Community

Every day, local elected leaders, managers and fire chiefs are faced with decisions relating to the provision of fire and other related emergency services for their community. Now, more than ever there are constant pressures of doing "more with less". Many government officials are hard-pressed to justify any increase in expenditures unless they can be attributed directly to improved or expanded service delivery in the community. This effort has often been hampered by the lack of criteria by which a community can determine the level and quality of fire and other related emergency services it provides to its residents. The *Comprehensive Fire Safety Effectiveness Model* is a document which can assist communities in evaluating their level of fire safety.

The provision of fire protection in Ontario is a municipal responsibility. The level and amount of fire protection provided is determined by the residents of the community through decisions made by and support provided by the local municipal council. Due to a wide variety of factors, the Ontario fire service finds itself in a period of change. Increased community expectations coupled with

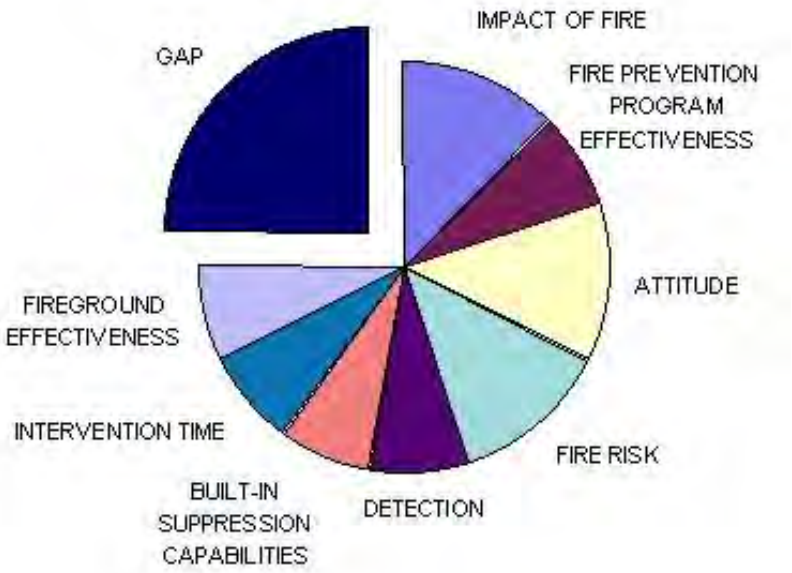
reduced financial resources are forcing all communities to critically assess their fire protection needs and to develop new and innovative ways of providing the most cost effective level of service. A refocus on fire protection priorities is providing progressive fire departments and communities throughout Ontario with an exciting opportunity to enhance community fire safety. There is more to providing fire protection than trucks, stations, firefighters and equipment.

The Office of the Fire Marshal has developed the *Comprehensive Fire Safety Effectiveness Model* which can be used as a basis for evaluating fire safety effectiveness in your community. This model looks at community fire protection as the sum of eight key components, all of which impact on the fire safety of the community. Deficiencies in one of the components can be offset by enhancements in another component or components.

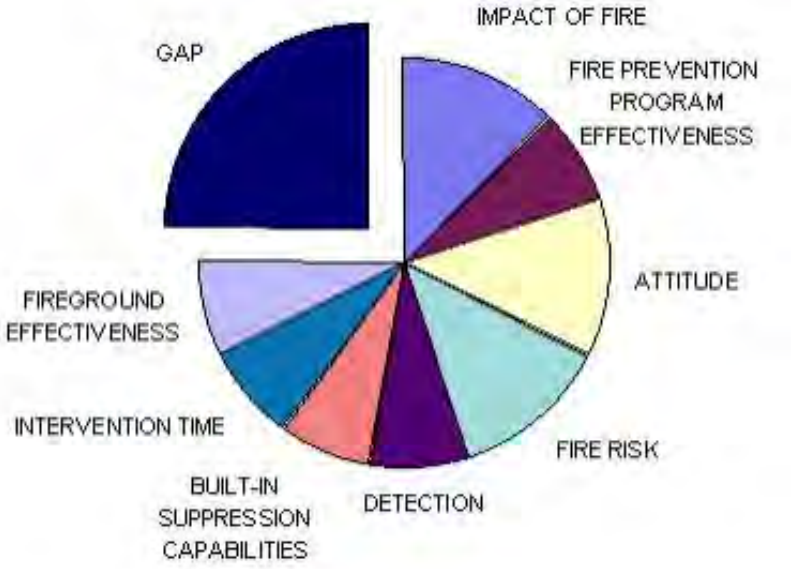
Community Master Fire Protection Plan

Every fire department should be guided by a master or strategic plan. This *Community Master Fire Protection Plan* traditionally focused on the identification of fire hazards and planning an appropriate suppression force response. Today, hazard or risk assessment has expanded well beyond the fire problem in the community to include emergency medical incidents, hazardous materials incidents and many other emergency situations. Paradigms are being shifted to emphasize the concept of fire prevention and control systems as communities attempt to effectively reduce losses experienced. This document should include plans for human resources and program financial support as well as the many external influences that impact on the fire service. The information contained with the *Community Master Fire Protection Plan* should provide a clear and concise overview of the most recently adopted organizational goals and objectives, budgetary commitments, mission statements and assessments of organizational activity. The document should cover a long range planning period of five to ten years.

This chart shows each of the factors which make up the comprehensive model. Although the chart is divided equally, each factor will in reality contribute differently to the total level of protection provided to a community.



This chart shows how the comprehensive model can be applied to a typical fire department. The "gap" depicts the difference between the existing level of protection and the ideal.



This chart shows how the "gap" can be reduced by

strengthening a number of factors in order to increase the overall level of protection provided to the community.

It is critical that the fire department be guided by a written philosophy, general goals and specific objectives which are consistent with the legal mission of the department and are appropriate for the community it serves. These should all be integral components of the Community Master Fire Protection Plan.

Application of the Comprehensive Fire Safety Effectiveness Model will enable municipalities to make informed choices by providing an objective and innovative approach to public fire protection - a new way of thinking. Communities are able to determine if the level of service provided matches the risk in the community.

1. **Impact Of Fire:**

The impact of fire in any community can be significant with far reaching consequences. Not only do fires result in deaths and personal injuries but they also cause substantial property and environmental loss. Often overlooked are factors such as the historical value of unique local properties as well as the potential for lost tax assessment. There are many communities in Ontario where the loss of a particular occupancy will have a serious impact on the local economy. Involvement in fire often has a negative psychological impact on those affected.

Every community should carefully assess the total impact of fire. This assessment should be used as a basis for a Community Master Fire Protection Plan that addresses all areas of community fire safety including fire prevention and life safety as well as the delivery of suppression and rescue services.

- Does your community have a property whose loss would result in a significant financial burden to the community?
- Does your community have a property whose loss would result in a significant impact of local employment?
- Does your community have a property which if involved in fire would pose a significant environment risk?
- Does the master fire protection plan adequately consider the impact of a major fire?

2. **Fire Prevention Program Effectiveness:**

- Perhaps the most important component of and community's fire protection services is the effectiveness of it's fire prevention program. Legislation, regulations and standards pertaining to fire safety focus primarily on fire prevention. Enforcement of these codes is one of the most effective ways of reducing the loss of life and property due to fire. In addition, public fire safety education programs have the potential to substantially reduce the loss of life and property due to fire.

Every community should strive to provide an adequate, effective and efficient program directed toward fire prevention, life safety, risk reduction of hazards, the detection, reporting of fire and other emergencies, the provision of occupant safety and exiting and the provisions for first aid firefighting equipment.

- Does your community have a fire prevention and public education policy that adequately

addresses:

- inspections?
- public education?
- code enforcement?
- investigation?

- Does your community provide inspections upon request?
- Does the fire department respond to complaints?
- Does your community's fire prevention program address public life safety in structures from pre-construction planning until demolition through application of the Building Code and Fire Code?

3. **Public Attitude:**

North Americans tend to be more complacent about fires and the resulting losses than other parts of the industrialized world. Communities often accept the consequences of fire and provide community support. Comprehensive insurance packages are available to mitigate damages.

Communities need to assess the resident's attitudes toward fire to determine what role it plays in determining the extent of fire losses. Properly designed public fire safety education programs will significantly improve public attitudes toward the prevention of fire. This will result in lower fire losses.

Every community should assess public attitudes toward fire and life safety issues. This assessment should be used to develop and deliver public fire safety education programs to enhance community fire safety.

- Do the residents of your community demonstrate an interest in public fire safety?
- Is there a general awareness of fire safety in your community?
- Is there a sense of personal responsibility for one's own safety within the community?

4. **Fire Risk:**

The characteristics of your community affect the level of fire risk that needs to be protected against. Older buildings pose a different set of problems than newer buildings constructed to current construction codes. High rise, commercial and industrial occupancies each present unique factors which must be considered. Construction, occupancy type, water supply, exposure risks, furnishings and the risk which the combination of these factors pose to the occupants must be assessed. The presence of effective built-in suppression and/or protection measures can reduce the fire risk.

36% of all structural fire alarms and 46% of all structural fire deaths in Ontario during the period 1990-1994 occurred in single family, detached, residential occupancies.

Every community should carefully assess its fire risk. The results of this risk assessment should be used as a basis for determining the level, type and amount of fire protection provided and should be a critical factor in the development of the community master fire protection plan.

- Has your community assessed the fire risk?
- Does your community have a master fire protection plan which takes into account the results of your fire risk analysis?
- Has the fire department identified all the possible actions it could take to reduce the number of fire incidents that occur in the community?
- Does your community planning process consider the impact of new developments and industries

on the fire department?

5. **Detection Capabilities:**

The presence of early warning detection capabilities notifies occupants and allows them sufficient time to escape. It also allows for earlier notification of the fire department. Communities who encourage the widespread use of early warning detection systems have the potential of significantly reducing notification time, which, when coupled with effective fire department suppression, results in a corresponding reduction of loss of life, injuries and damage to property from fire.

Every community should develop and implement programs that promote the use of early warning detection systems in all occupancies. These programs should be a fire protection priority.

- Does your community have a program to ensure that all occupancies are provided with adequate early warning detection devices?
- Does your community have a program to ensure that residents are familiar with the importance and proper maintenance of early warning detection devices?
- Does your community promote the use of direct connect early warning detection devices in residential as well as commercial, industrial and assembly occupancies.

6. **Built-In Suppression Capabilities:**

Traditionally, the use of built-in suppression has been limited to fixed fire protection systems associated with assembly, commercial, industrial and manufacturing occupancies. Application of this concept has been limited in the residential environment. These systems, particularly the use of automatic sprinkler systems play an important role in minimizing the effects of fire by controlling its spread and growth. This enables the fire department to extinguish the fire more quickly and easily.

Although effective in newer buildings, it is often difficult if not impossible to provide for built-in suppression systems that effectively control fires in wall cavities and concealed spaces associated with certain older types of construction or reconstruction.

The use of built-in suppression systems should be a fire safety priority in all communities. Programs should be developed and delivered that promote the advantages of built-in suppression systems for residential, commercial, industrial and assembly occupancies.

- Does your community promote the use of built-in suppression devices in all types of occupancies

- residential?
- commercial?
- industrial?
- assembly?
- institutional?

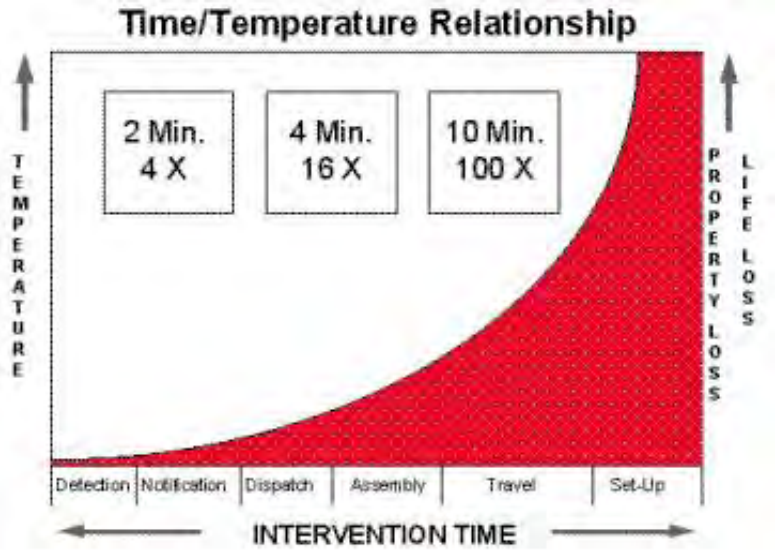
- Does your community consider built-in suppression devices and early warning detection as an alternative to traditional concepts of fire protection?

7. **Intervention Time:**

This is the time from ignition until effective firefighting streams can be applied to the fire. There are many factors influencing this component of the model:

- the time required to detect the fire
- notification time from the public
- notification time to the firefighters
- preparation time for the firefighters to leave the station
- the distance between the fire station and the response location
- the layout of the community
- impediments such as weather, construction, traffic jams, lack of roads, etc.
- set-up time

Fire department intervention time is crucial in determining the consequences of a fire in terms of deaths, injuries and loss of property and damage to the environment. Effective fire prevention and public education programs can reduce intervention time which will result in increased fire department effectiveness.



Every community should develop and implement a range of programs and initiatives that reduce intervention time. These programs and initiatives should address all aspects of intervention time from the time required to detect the fire to the set-up time of the fire department.

- Are all occupancies in your community equipped with suitable smoke alarms and provided with fire emergency escape plans?
- Do all residents in your community know how to report a fire or other emergency?
- Does your community have a common fire emergency reporting number?
- Is the fire department dispatched by an appropriate dispatch facility?
- Does the community's master fire protection plan consider the different turn-out times for volunteer and/or full-time firefighters?
- Has the department instituted an appropriate fire department training and education program?
- Are all structures within the community clearly identified using an accepted numbering system?
- Has the department instituted a policy of having the closest fire department respond even though that fire department may be from another municipality?

8. Fireground Effectiveness:

The fireground effectiveness of the fire department has a wide range of benefits for your community. Not only does the fire department's performance affect the degree of damage to the environment and property, it also has a direct relationship to personal injury and death from fire. Many factors influence the effectiveness of any fire department. Included in these factors are:

- fire department organization
- community support of fire department
- firefighter availability
- firefighter and fire officer training
- adequate resources which are properly maintained
- time effective response to emergency incidents

The fire department should strive to provide an adequate, effective and efficient fire suppression program designed to control/extinguish fires for the purpose of protecting people from injury, death or property loss.

- Does your fire department have a comprehensive training program and evaluation system for all positions?
- Does the fire department have a system to ensure that an adequate number of trained personnel respond to all emergencies within a reasonable time period?
- Is your fire department provided with adequate resources to safely and effectively handle the risks it will be called upon to mitigate?
- Does the fire department use standard operating guidelines to define expected fire department actions for the wide variety of situations it might encounter?
- Does your fire department have automatic response agreements to guarantee an adequate level of personnel at all times?

The answers to the questions in this document will provide you with some indication of the level of fire safety in your community, however this is only the start. Application of the OFM Comprehensive Fire Safety Effectiveness Model will permit you to develop a plan for the safe, effective and economical delivery of fire protection services in your community.

Further assistance is available from your local OFM representative

APPENDIX **E**

PFSG 01-01-01 “Fire Protection Review Process”

Ministry of Community Safety and Correctional Services :: Public Fire Safety Guidelines

Fire Protection Review Process

Public Fire Safety Guidelines

Subject Coding

PFSG 01-01-01

Section

General

Date

January 1998

Subject

Fire Protection Review Process

Page

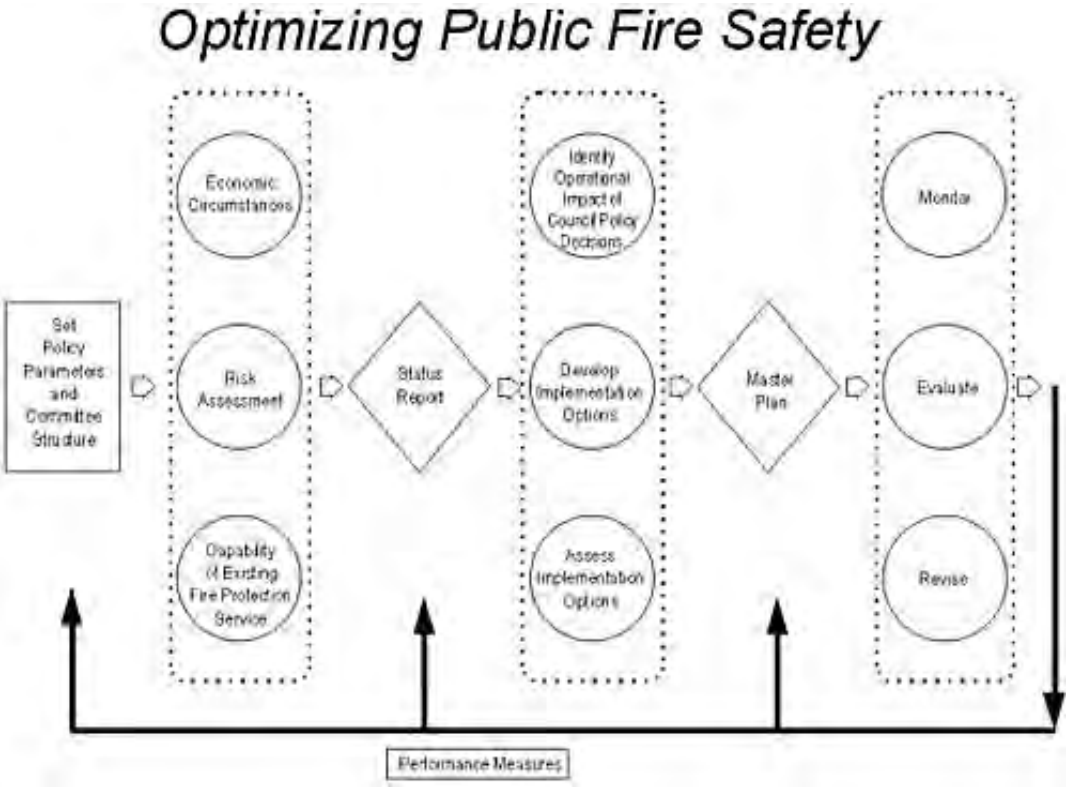
Purpose

To provide a description of a simple and practicable system to enable decision makers to make informed choices.

It ensures formal interaction between council with its policy setting responsibilities, the municipality with its corporate management objectives, and the fire department with its operational expertise.

Introduction

- The overall objective of any fire protection program is to provide the optimum level of protection to the community, in keeping with local needs and circumstances.
- Extensive research has demonstrated that there are a variety of factors that will have an impact on the fire department's capacity to fulfil this objective.
- Conversely, there are many different options that a municipality may pursue to improve the efficiency and effectiveness of its fire protection system.
- Local circumstances will have a profound effect on which factors are most important for any one municipality, and what options are available for its fire protection system.
- Selecting among these options is an extremely complex task.
- Success will require a combination of specialized expertise in fire protection, and a thorough appreciation of your municipality's economic, social and political circumstances.



Overview

Stage 1: Set Policy Parameters
Stage 2: Determine Local Circumstances

Stage 3: Status Report

Stage 4: Determine Fire Protection Strategy

Stage 5: Develop Master Fire Plan

Stage 6: Monitor, Evaluate and Revise

Stage 7: Performance Measures

- Every municipality operates under a specific set of policy parameters -- basic tenets that define the role of the municipal government in the community.
- In essence, it is the political philosophy of the municipality.
- These parameters reflect the culture of the local community and will have a profound impact on the fire protection strategy that you develop.
- Policy parameters include, for example:

- *Public Expectations* -- does the public expect the municipality to address its needs or is there a fairly high level of personal self reliance?
- *Service Delivery Strategy* -- how open is your community to alternate forms of service delivery and financing such as out-sourcing or fee-for-service?
- *Level of Satisfaction* -- are you satisfied with the level of fire protection in your community, and the efficiency and effectiveness of the fire protection system?
- *Funding Policies* -- what impacts do your funding policies and practices have on the services you deliver? How do you account for capital expenditures? Are you prepared to issue debentures?

- *Competing Priorities* -- what priority does public fire safety have in your community in comparison to the other services that you provide?
- *Receptiveness to Change* -- does the public recognize the need for change, and would they accept the implications of such change?

- It is extremely important that you work through these questions from a fire protection perspective, and that you include all of the key participants in the process.
- It need not be an excessively formal process, but everyone involved in the review should have an opportunity to discuss the broader context within which the fire department must operate.
- The results of this discussion should be reflected in the "terms of reference" for the review.
- It will help to ensure that the review remains focused.

It will also encourage participants to be open to innovations, and conversely, it will help to ensure that staff involved in the review do not spend unnecessary time and resources analyzing options that are not viable.

Stage 2:

Analyse Local Circumstances

Separate guidelines are available that address each of the three main issues that define the local circumstances of a municipality:

- Assessing Economic Circumstances from a Fire Protection Perspective (PFSG 02-03-01)
- Assessing Fire Risk (PFSG 02-02-12)
- Assessing the Existing Fire Protection Services (PFSG 02-04-01)

The following is an overview of the issues that these three guidelines address.

Economic Circumstances

- What are your expectations for economic growth?
- How much development do you expect to occur?
- What type of development do you expect?
- How is your population changing? (Demographics)
- If the fire department receives the bulk of its financing from the tax base;
    - is the tax base increasing, shrinking, or relatively steady?
    - is the tax base shifting?
- Describe the assessment
- A review of your economic circumstances should involve more than just an assessment of future demand and available resources:
- A growing community creates new demand for emergency services, but the type of growth you are experiencing may require a very different kind of response. For example, growth resulting from an in-migration of newly retired residents will create very different demands than growth resulting from the recovery of the local resource industry.
- There are many more ways in which your fire protection system can address new residential development than there are for older neighbourhoods. An initial investment in sprinkler and/or detection systems when new developments are being planned can reduce the need for new fire stations in the future.

- Economic development and expansion may have a significant impact on the availability of resources for fire protection. It tends to be easier to attract volunteers in a self-contained community than in a similar-sized area that serves as a bedroom community for a large city. Is the make-up of your community changing?
- This stage of the review is the first opportunity for you to co-ordinate your planning strategy with your fire protection strategy. Accordingly, it is very important for both fire and planning officials to work closely together on this aspect of the review, perhaps by way of a sub-committee

Fire Risk

The Fire Risk in your community is a function of:

- *Potential for Loss*, which depends on the extent to which buildings comply with relevant fire and building codes, how buildings are used, the public's attitude toward fire, and the use of special measures such as automatic detection and/or suppression systems.
- *Consequences of Fire*, such as the effect of a fire at a major industry on local employment, assessment and economic activity. This also includes social impacts resulting from the loss of an historic or recreational facility, or the impact of fire on a sensitive environmental area.
- *Local Infrastructure,* such as water supply, communications, the quality of roads, and physical barriers such as rivers or railroads.
- *Building Stock*, including the age of buildings, the density and type of construction, their height, and the mix of commercial, industrial and residential uses.
- Since there are so many factors that affect fire risk, it tends to vary considerably from location to location. In fact, fire risk in one part of a municipality will often be very different from in another, particularly in rural areas. Accordingly, there is no need for the fire department to provide a uniform level of service throughout the municipality. The service you provide should be tailored to the risks faced.

A thorough risk assessment can also avoid invalid comparisons between your fire department and others. A municipality with a similar population may have very different fire risks, and therefore very different fire protection needs. A good risk assessment will ensure that such comparisons are valid. By providing a valid basis for comparison, a good risk assessment can also provide confidence that innovations introduced elsewhere can be successfully applied in your municipality.

Existing Fire Protection System

- Examining the existing fire protection system is perhaps the most time consuming component of the assessment process. The objective is to obtain a clear picture of the nature of the fire protection system as it exists today. The following broad areas should be examined:

Role and Mandate -- What range and scope of services is the department expected to provide (fire suppression, rescue, hazmat, etc)? How does it relate to neighbouring fire departments (mutual-aid, automatic aid)? How does it relate to other sections of the municipality?

Structure and Organization -- What type of department is it (full-time, composite, volunteer)? What is its total staff, facilities, apparatus and equipment? How many layers of management?

Services and Support -- Briefly describe the services provided by the various functional sections of the fire department and describe the support mechanisms for these services.

Emergency Operations -- Describe the types and extent of emergency operations conducted by the

fire department and include such things as incident command systems and operational support.

Financial & Resource Analysis -- Describe in detail the funding, budgeting and resource allocation of the fire department, including the individual functional divisions.

Fire Protection and Prevention Act - indicate whether or not the department/municipality is in compliance with this Act.

Stage 3:

Status Report

- The purpose of this stage is to assist in the preparation of a report to council outlining the findings of the analysis of the following:
- economic circumstances
- risk assessment
- capabilities of existing fire protection service
- The report will include details of the existing circumstances
- The report will also include and identify strengths, limitations, threats and opportunities respecting the existing fire protection services.
- The purpose of the report is also to elicit the expectations of the decision makers, and confirm their commitment to proceeding to the master planning process.

Stage 4:

Determine Fire Protection Strategy

- This stage of the process involves a review team assisting council in making a determination of the future fire protection strategy.
- The procedure involves analyzing economic circumstances, risk assessment and the capabilities of the existing fire protection service (including core services). This is accomplished in three levels, as follows:

- council considerations
- administrative considerations
- fire department considerations

- Your review should consider, and perhaps emphasize the need for residents, industry and others to accept increased responsibility for the improvement of public safety.
- The review must look beyond the fire department's fire fighting capability in fulfilling its responsibility to provide for public safety.
- Today's economic conditions - evidenced by reduced budgets, revenues, hiring freezes, reductions in staffing levels through attrition or otherwise, delayed apparatus and equipment purchases - forces the making of hard decisions about the resources required for local fire protection.
- Options and alternatives are therefore essential. For example, it may be considered appropriate to re-focus on developing fire prevention and public education programs rather than expanding fire fighting forces, or consider resources in surrounding communities and how those resources might be utilized to meet your needs.
- Determining the future fire protection strategy of your municipality is accomplished by way of

providing options for the consideration of council.
- For this process to be successful, it is imperative that there be full and open consultation with all of the stakeholders.
- Stakeholders are the people and organizations with an interest in the fire service, including:
- fire department staff and management
- municipal staff and management
- municipal administrators
- council
- residents
- business
- industry
- planning and co-ordinating agencies and organizations
- provincial government ministries
- county/district/regional organizations
- other municipalities

- Schematic diagram of the model: Optimizing Public Fire Safety highlighting Stage 3.
- police
- ambulance

- other umbrella organizations:

- firefighter associations (full time and volunteer)
- AMO
- OAFC
- CAFC

- Consultation with stakeholders during the development, assessment and operational impact of various options is necessary for three reasons.
- First the review team will obtain expert advice on key elements of the various options.

Obtaining expert advice from all stakeholders ensures that all parties to the process:

- fully appreciate why the process is being carried out
- clearly understand the strategy, initiative or option that will be evaluated
- participate in identifying potential evaluation questions or issues, and
- help shape the options
- Second, it will help ensure a surprise-free environment for all parties to the review process.

Ensuring a surprise-free environment is necessary for the review team facilitator(s) to create a receptive, productive environment for the option evaluation process. Except in extremely rare cases, stakeholders should be aware of the option evaluation process. Nothing is more damaging to such a process than to spring it on stakeholders. They will usually react suspiciously and defensively, see the process as an intrusion, find fault with it, and actively lobby to circumvent its recommendations.

- Finally, the stakeholders will use the consultation as an opportunity to market the various options.

Marketing the various options and their potential is essential if it is expected that they will lead to program or service changes, particularly significant ones. Change is not an event, but a process, and usually a slow process, and conditions generally needs to be cultivated. Like a building, the

foundation for change needs to be laid well in advance of its construction. Stakeholders must accept the need to change before it can occur. For the review team and its facilitator(s), creating this comfort level is an essential ingredient of success.

- The review team and facilitator(s) usually consult with the stakeholders through established committees. Primary discussions between the facilitators and the stakeholders are usually conducted on an individual basis, with the committee acting as a clearinghouse. Facilitators, who almost always shun formal committees and attempt to consult by **only** using individual or team interviews, enjoy limited success. While individual consultation may provide a more direct and confidential input into the process, this practice has drawbacks. It often results in stakeholders seeing the process as the product and possession of the facilitator. Stakeholders often feel that they have not participated fully and equally in planning the study. And, there is the chance they can complain that the facilitators have filtered their concerns
- This review process will result in alternatives for your existing fire protection services, and options and considerations for council's vision of the future of the fire service.
- All options will be prioritized, assessed, costed where appropriate and clearly indicate the operational impact.
- Then council will be in a position to make better informed decisions for creation of your master fire plan.

Stage 5:

Develop Master Fire Protection Plan

- Master fire plans, properly introduced, are a valuable tool in identifying management options for providing desired fire protection levels to a community. Ultimately, a good plan will lead to a more fire safe community.
- A master plan, pared to its essentials, presents the programs or projects, the costs, and the schedules for developing and maintaining the fire protection system that has been accepted and approved by council on behalf of the community, based on a price which the public can afford.
- Master planning itself is not a new concept. Many municipalities are involved in the process with varying degrees of success.
- Master planning for fire protection allows each community to determine the best allocation of resources to achieve an acceptable level of fire protection.
- An appropriate plan can only be developed under the following conditions.
- Schematic diagram of the model: Optimizing Public Fire Safety highlighting Stage 5.
- The plan forms the basis for the fire protection budget, through identification and description of time-phased programs and projects to be implemented throughout the planning period.
- The plan considers the following factors.

  • The current and future fire protection environment by establishing and maintaining a comprehensive data base.

  • The acceptable life and property risks by setting goals and objectives.

  • The fire protection system that provides the level of service commensurate with the level of accepted risk.

  • The funding required to implement the plan.

- The assignment of authority and responsibility.
- The procedures for carrying out and updating the plan.
- The master fire plan defines the community fire problem and provides the future direction of the delivery of fire protection services.
- The plan will require continuous updating to provide a current picture of the needs of the community.
- There are several benefits to developing a master fire plan.

- Supports the risk management program by identifying programs and levels of service.
- Improves public relations and promotes interest and direct involvement within the community.
- Sets standards of service the fire department is capable of providing.
- Potentially decreases costs, for fire protection and/or insurance coverage.
- Contributes to a reduction in the number of fires, fire deaths, fire injuries and property loss.
- Makes best use of available resources.

Defines by policy of council the types, level and quality of fire protection services to be provided to the community.

Stage 6:

Monitor, Evaluate & Revise

Introduction:

This stage of the municipal fire protection review process involves three parts:

- Monitor
- Evaluate
- Revise
- Just as the type and level of fire services provided are a municipal responsibility, so are the evaluation, monitoring and revision of such services a municipal responsibility.
- They **may,** however, be subject to outside scrutiny.

Objectives:

- The objectives of the municipality, as mirrored in the fire department master plan, are the starting point for any evaluation.
- These objectives should be consistent with the review process mission statement and express what the process is to accomplish.
- The objectives should be both specific and measurable.

Activities:

- The activities are the operational aspects of the identified objectives.
- Activities should be logically related to objectives.
- **Immediate Outcomes** are the effects that are expected to occur as a direct result of activities. These outcomes may include changes that affect people or processes. For example, an immediate outcome might be the improved delivery of a specific service.
- **Ultimate Outcomes** include the larger societal level changes that are expected from the activities. An example would be an expected improvement in compliance with the Fire Code.

Ultimate outcomes are often dependant on immediate outcomes. In this example, success might be dependent on providing an appropriate public education program.

Monitor:

- Notwithstanding it is considered prudent for municipalities to monitor programs, services and activities, the Fire Protection and Prevention Act includes the following:

- **PART II (7)** "The Fire Marshal may monitor and review the fire protection services provided by municipalities to ensure that municipalities have met their responsibilities under this section and, if the Fire Marshal is of the opinion that, as a result of a municipality failing to comply with its responsibilities under subsection (1), a serious threat to public safety exists in the municipality, he or she may make recommendations to the council of the municipality with respect to possible measures the municipality may take to remedy or reduce the threat to public safety." and,
- **PART III FIRE MARSHAL 9.** (1) The Fire Marshal has the power, (a) to monitor, review and advise municipalities respecting the provision of fire protection services and to make recommendations to municipal councils for improving the efficiency and effectiveness of the services.".

- Program monitoring is a systematic attempt to measure both of the following:

a. program effectiveness -- are the programs and services reaching their intended marks?, and

- Program delivery -- does the service being provided match what was intended to be delivered? Program monitoring need not always be complicated and complex, as it often can be as simple as keeping track of the activities involved
- Program monitoring concentrates on program service outputs rather than program outcomes

Evaluate:

- Programs adopted and implemented through the master fire plan should have built-in evaluation procedures
- Evaluations are not simply the responsibility of municipal politicians and or administrators, but additionally, is an administrative function of the fire department.

Internal Evaluators

- as employees of the fire department, internal evaluators have intimate knowledge of the department's policies, procedures, politics and people
- they know both the formal and informal channels for communicating and accomplishing tasks.
- this knowledge permits them to select methods that fit the unique situation of the department
- internal evaluators long term commitment to the fire department can lend credibility to their efforts and help forge positive working relationships with managers and staff
- they can build trust over time that helps reduce the anxiety normally associated with evaluation activities
- because they are employees, internal evaluators are available as an on going corporate resource
- this puts internal evaluators in an excellent position to communicate relevant information in a timely fashion
- it also permits internal evaluators to participate actively in long-range planning by making crucial evaluative information available for strategic planning and policy decisions
- it affords internal evaluators the opportunity to consult with and provide information to various

management levels within the organization, enabling them to enhance the utilization of evaluation information
- internal evaluators are often responsible for correcting problems and advocating change rather than only identifying difficulties and making recommendations
- the focus of internal evaluation often includes not only program outcomes and processes, but also the factors that influence program performance, such as structure, operations and management
- the use of internal evaluators, some of whom could conceivably be part of the problem, then can become part of the solution

External Evaluators

- are usually perceived as being more objective because they are not fire department employees and are therefore not subject to all of the pressures of organizational life
- Internal evaluators now often work in partnership with external evaluators to obtain the external evaluators' specialized skill and objectivity while retaining the internal evaluators' knowledge of the department
- All evaluators, whether internal or external, have their biases.

Revise:

- Consider the benefits and results of the foregoing monitoring and evaluation processes to assist in determining if any revisions are necessary.
- Some of the principal benefits are:
- any gap between goals and performance
- cost effectiveness and efficiency of the program/service
- how is the program operating/functioning?
- issues that could jeopardize the program/service
- program/services strengths
- program/services weaknesses
- to what extent are the citizens being served
- whether desired and/or undesired outcomes have taken place
- This information is useful for:

    - clarifying the mission, purpose and goals
    - describing the programs and services
    - facilitating the refinement and modification of program or service activities
    - fulfilling accountability requirements
    - guiding allocation of resources and personnel
    - maintaining quality of services and programs
    - program decision making, such as continue, cancel, cut back, change, expand
    - setting priorities
    - weighing costs and benefits of alternatives

Stage 7:

Performance Measures

Purpose

- The purpose of this section of the guideline is to assist in developing and using performance measures.
- The guide answers the following questions:

- What are performance measures?
- How can they be used
- What is the best way of doing this?
- Where does one start?

Introduction

- Data and information collected and used by managers in the public sector usually pertain to inputs, outputs and processes.
- Examples of these measures are as follows:

INPUTS :

Amount of money spent on training
Number of staff assigned to fire prevention
Number of staff assigned to training

PROCESS

Number of firefighters at O.F.C.
Number of days to complete a project
Length of time to conduct an inspection

OUTPUTS

Number of training manuals produced
Number of inspections completed
Number of plans reviewed
Number of emergency responses

- Many managers judge their effectiveness by counting and tabulating these inputs, processes and outputs.
- These are measurements of the ***process*** rather than the measurement of ***performance***
- They measure what was done, rather than the impact of the action.

Without meaningful performance measures that directly link the impact of your actions to clear goals and objectives, it may be difficult, if not impossible, to provide a sound and supportable justification for the continued existence of your program or service

Goals and Objectives:

- It is imperative that there is a clearly stated goal and objective for every program, service, and activity.
- Once the goals are clarified in a meaningful way, specific objectives can then be made to operationalize the program.
- For example, the vague goal of improved fire safety can be made more meaningful and specific as follows:

- ***"Increased number of working smoke alarms in the home"***

- With the goal specifically defined, it provides direction and guidance as to what objectives must be achieved in order to reach this goal. For example:

Goal

Increased number of working smoke alarms in the home

Objectives

Public awareness of the value of smoke alarms through media advertising
Promotional campaign as part of Fire Prevention Week
Provide quality smoke alarms to the public at a reduced price

Measuring Performance

- There is merit in linking the results of programs, services and activities to clearly defined objectives.
- It is not sufficient that the goal be achieved; it is necessary to show that the activities of the program were responsible for the achievement of the goal by establishing cause and effect.
- The key questions to determine the **impact** of actions are:

Do you have the resources to achieve the goal?
Why are you doing this?
Are you achieving what you are supposed to be doing?
How do you know? "

- Managers must develop meaningful performance measures and report on their success by measuring performance.
- Decisions on program direction can then be made based on this information

What are Performance Measures?

- The quantitative and qualitative measures which assess the effectiveness and efficiency of a product, service or process
- They are the key indicators of success.
- Performance measures generally fall into six primary categories:

    - Time
    - Effectiveness
    - Quality
    - Efficiency
    - Costs and
    - Productivity Safety

To clarify these six categories of performance measures, each is defined on the following page.

Time :

• Time it takes to complete a process (cycle time) or deliver a service or product

• Effectiveness: Doing the right things, meeting corporate objectives and strategic directions

• Quality: A measure of the extent to which a thing or experience (service) meets a need, solves a problem or adds value for someone (client, stakeholder, taxpayer)

• Efficiency: Outputs relative to inputs; doing things right every time

• Costs & Productivity: Cost to provide a product or service; the relationships among costs, inputs and outputs

• Safety: The extent to which important assets (personnel, property, records) are safeguarded so that the organization is protected from danger of losses that could threaten its success, credibility, continuity, etc.

Why

Why do you use performance measures?

- To demonstrate success
- To identify problems
- To evaluate goal achievement
- To determine whether or not there is performance improvement

Codes, Standards and Best Practices

Codes, Standards and Best Practices available to assist in establishing local policy on the delivery of this service are listed below. All are available at http://www.mcscs.jus.gov.on.ca/ ***<http://www.mcscs.jus.gov.on.ca/>*** . Please feel free to copy and distribute this document. We ask that the document not be altered in any way, that the Office of the Fire Marshal be credited and that the documents be used for non-commercial purposes only.

See also

02-04-01
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/02-04-01.html> & 23
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/02-04-23.html> Capabilities of Existing Fire Protection Services
02-03-01
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/02-03-01.html> Economic Circumstances
02-02-12
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/02-02-12.html> & 03
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/02-02-03.html> Fire Risk Assessment

03-01-13
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/03-01-13.html> Preparation of Draft Report
04-39-12
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/04-39-12.html> Fire Prevention Effectiveness Model

APPENDIX **F**

PFSG 02-03-01 “Economic Circumstances”

Ministry of Community Safety and Correctional Services :: Public Fire Safety Guidelines

Economic Circumstances

Public Fire Safety Guidelines

Subject Coding

PFSG 02-03-01

Section

General

Date

January 1998

Subject

Economic Circumstances

Page

Purpose

To identify considerations for analyzing municipal economic circumstances.

Introduction

Elected officials are responsible for the economic well-being of the community, and measure this in a number of ways. One such way would be with a balanced budget containing no tax increases. This does not necessarily give a complete or clear picture of the community's economic circumstances. For many years various budgetary systems, approaches, and formats have been developed in the continuing quest for political objectivity by elected officials. By the very nature of democracy, which is based on representative elections and the "politics" associated with them, mitigates against objectivity in the usual sense. Such budgeting and/or financial planning could be therefore defined as a rational decision making system working within a less than rational political process.

It is therefore essential that the economic circumstances of a community be thoroughly and objectively analyzed, in addition to the assessment of the existing fire protection system, and risk assessment, if an accurate representation is to be made of the community.

Economic Considerations

Factors to be considered in assessing the local economic circumstances, include the following:

- assessment:

- residential/farm
- industrial
- institutional
- business/commercial
- increases (decreases) in past 5 and 10 years

- tax rates :

- show local and regional/county purposes
  5 and 10 year history of increases (decreases)
- urban and rural service areas, if any
- municipal debt
- revenues

- reserve funds
- other monetary assets
  such as development charge accounts
- total fire protection system costs
- per capita basis
- assessment basis
- per household
- employment, unemployment conditions
- relationship of all of the above in the general area of the local community
- affect on the ability of the municipal tax base to fund appropriate fire protection services
- relationship of all of the above with similar communities
- past and present political philosophy respecting
- budget increases/decreases
- pay as you go
- debenturing/borrowing
  service (budget reductions) necessitated by reduced revenues
- loss impact of single employer, major industry, institution
- barriers to rebuilding, such as zoning and environmental requirements

Related Functions:

- Fire Risk Assessment
  <../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/02-02-03.html>
- Capabilities of Existing Fire Protection Services
  <../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/02-02-03.html>

Codes, Standards, Best Practices:

Codes, Standards, and Best Practices resources available to assist in establishing local policy on this assessment are listed below. All are available at www.ontario.ca/firemarshal ***<http://www.ontario.ca/firemarshal>*** . Please feel free to copy and distribute this document. We ask that the document not be altered in any way, that the Office of the Fire Marshal be credited and that the documents be used for non-commercial purposes only.

See also PFSG
02-04-01
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/02-04-01.html> & 23
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/02-04-23.html> Capabilities of existing Fire Protection Services
02-02-12
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/02-02-12.html> & 03
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/02-02-03.html> Risk Assessment

APPENDIX G

PFSG 02-02-03 “Fire Risk Assessment”

Ministry of Community Safety and Correctional Services :: Public Fire Safety Guidelines

Fire Risk Assessment

Public Fire Safety Guidelines

Subject Coding

PFSG 02-02-03

Section

General

Date

January 1998

Subject

Fire Risk Assessment

Page

Purpose:

To identify considerations for persons conducting municipal fire risk assessments.

Ambient Factors of Risk Assessment:

The following factors should be considered in assessing the local fire risk.

- the municipality:

- urban
- rural
- metropolitan
- other, such as a bedroom community, border community
- predominantly dependent upon a single employer, business, or institutional operation or activity
- describe its uniqueness
- describe its geography
- describe its demographics
  outline current development and development trends
- describe street network and traffic patterns
- describe traffic barriers
- consider applicable by-laws
- labour relations climate and history

- historical

- indicate emergency call volume last year, last 5 years
- the number of fire casualties in the past year, past 5 years
- identify any trends respecting cause and location
- the fire loss for the past year, past 5 years
- indicate trends respecting call types for the past 5 years

- comparisons with other like municipalities should be considered for the following factors:

- population (static/subject to seasonal or other fluctuations)
- geographical area and size of municipality
- type of municipality
- number of residential dwellings

- assessment
- development trends
- growth history and trends
- demographics
- equalized assessment and tax base

- residential/farming vs industrial/commercial assessment

- building stock

- identify, as accurately as possible, the number and percentage of the following:

- single family residences
- multi-unit residences
- high-rise buildings
- large complexes
- farms/agricultural buildings
- commercial buildings
- industrial buildings
- institutional
- business buildings
- storage facilities
- other special buildings
- hospitals
- nursing homes
- with respect to building type, identify specific problems, such as access, density and age
- with respect to building type, identify significant and associated outside storage areas

- building occupancies

- identify, as accurately as possible, the number and percentage of the following occupancies:

- assembly
- institutional
- residential
- commercial
- industrial
- business
- storage
- vacant
- other

- prevention and public education

- if, for example, the municipality does not have a fire department, but purchases fire suppression services, describe what fire prevention and public education initiatives, if any, are undertaken by the community. Describe the significance and impact, or lack of same, of such initiatives.

- public and political resolve

- what is the perceived awareness of fire safety by the general public and the corporate sector?
- what are the expectations for fire protection by the general public, and the corporate sector?
- what is the general tone of press and media coverage of fire related matters?
- how are fire prevention, fire safety, and public education programs generally received and accepted by the community at large?
- what is the local political climate respecting:

  - cost cutting/no budget increases?
  - preserving the status quo?
  - maintaining/improving essential services such as the fire department?

- public and private protection systems

- independent of the assessment of (Analyzing Local Circumstances - Assessing Existing Fire Protection Services), identify and describe:

  - private fire brigades
  - industrial/commercial fire brigades
  - private water supplies and water supply systems

Related Functions:

Click on the related function below to view that function:

- Economic Circumstances
- Capabilities of Existing Fire Protection Services

Codes, Standards, and Best Practices:

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See also PFSG

01-02-01
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/01-02-01.html> Comprehensive Fire Safety Effectiveness Model Considerations
02-04-01
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/02-04-01.html> & 23
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/02-04-23.html> Capabilities of Existing Fire Protection Services
04-39-12
<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/04-39-12.html> Fire Prevention Effectiveness Model

APPENDIX **H**

PFSG 02-04-01 “Capabilities of Existing fire Protection Services

Ministry of Community Safety and Correctional Services :: Public Fire Safety Guidelines

Capabilities of Existing Fire Protection Services

Public Fire Safety Guidelines

Subject Coding

PFSG 02-04-01

Section

General

Date

January 1998

Subject

Capabilities of Existing fire Protection Services

Page

Purpose:

To identify methods to accurately assess existing capabilities of available fire protection services.

This section is a companion to Risk Assessment Analysis and Economic Circumstances Analysis, which are used to provide policy makers with a report on existing fire services. This is a fact finding exercise only and decisions, conclusions, judgments, recommendations, and options are not to be made at this stage, nor on the basis of this section only.

Fire Department:

Is the fire protection for the municipality provided by:

- a fire department organized for the municipality?
- an unorganized community?
- a fire department jointly managed and operated with other municipality(ies)?
- an agreement to purchase protection from another jurisdiction?
- a combination of the above ?

Factors Involved In Assessing The Fire Department:

Regardless of how the fire protection is organized and delivered, the following factors must be considered in assessing the protection services;

- mission statement and mandate
- goals and objectives
- organization
- administration
- by-laws and agreements
- fire prevention, public information, public education
- investigations
- communications
- emergency operations
- training and education
- vehicles and equipment
- financial management and budgeting
- automatic aid and "mutual aid"
- building and facilities
- pre-emergency planning
- disaster planning

- risk management planning
- human resources
- maintenance
- records, reports, data
- water supplies

Related Functions:

- Fire Risk Assessment ***<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/02-02-03.html>***
- Economic Circumstances ***<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/02-03-01.html>***

Codes, Standards, Best Practices:

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See also PFSG

02-03-01 ***<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/02-03-01.html>*** Economic Circumstances
02-02-12 ***<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/02-02-12.html>*** & 03 ***<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/02-02-03.html>*** Fire Risk Assessment
04-39-12 ***<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/04-39-12.html>*** Fire Prevention Effectiveness Model
04-61-12 ***<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/04-61-12.html>*** Human Resources Practices
04-64-12 ***<../../../../english/firemarshal/fireserviceresources/publicfiresafetyguidelines/04-64-12.html>*** Communications/Resource Centre

APPENDIX I

Community Risk Profile Assessment

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I1.0 DETAILED COMMUNITY RISK ASSESSMENT

I1.1 Introduction

The Office of the Fire Marshal, Ontario (OFM) provides a number of tools to assist municipalities, and ultimately municipal councils, in determining local needs and circumstances as required by the FPPA. These tools include the Comprehensive Fire Safety Effectiveness Model; the Fire Risk Sub-Model and Public Fire Safety Guideline 01-01-01 "*Fire Protection Review Process"* ***(Appendix E).***

PFSG 01-01-01 "*Fire Protection Review Process" further identifies the three primary components of assessing community needs and circumstances including:*

- ✓ *Assessing Economic Circumstances from a Fire Protection Perspective (PFSG 02-03-01)* ***(Appendix F)***
- ✓ *Assessing Fire Risk (PFSG 02-02-03)****(Appendix G)***
- ✓ *Assessing the Existing Fire Protection Services (PFSG 02-04-01)****(Appendix H)***

This section provides a detailed assessment of the current and future (planned growth) fire risk within the Town of Bradford West Gwillimbury.

I1.2 OFM Fire Risk Sub-Model

The community fire risk analyses within this report follow the OFM framework and specifically the OFM Fire Risk Sub-Model. The model identifies the importance of community risk in the following introductory paragraphs:

> "*Assessing the fire risk within a community is one of the seven components that comprise the Comprehensive Fire Safety Effectiveness Model. It is the process of examining and analyzing the relevant factors that characterize the community and applying this information to identify potential fire risk scenarios that may be encountered. The assessment includes an analysis of the likelihood of these scenarios occurring and their subsequent consequences.*"
>
> *"The types of fire risks that a community may be expected to encounter are influenced by its defining characteristics. For example, a "bedroom community" presents a different set of circumstances over one that is characterized as an "industrial town". Communities that are distinguished by older buildings will pose a different set of concerns over those that are comprised of newer buildings constructed to modern building codes. Communities populated by a high percentage of senior citizens present a different challenge over ones with a younger population base.*
>
> *Assessing fire risk should begin with a review of all available and relevant information that defines and characterizes your community. Eight key factors have been identified that contribute to the community's inherent characteristics and circumstances. These factors influence events that shape potential fire scenarios along with the severity of their outcomes:*
>
> - *Property Stock*
> - *Building Height and Area*
> - *Building Age and Construction*

- *Building Exposures*
- *Demographic Profile*
- *Geography/Topography/Road Infrastructure*
- *Past Fire Loss Statistics*
- *Fuel Load*

Using the framework provided within the OFM's Fire Risk Sub-model the potential fire risk scenarios present within the community can be assessed by creating a Community Fire Risk Profile. The profile can then be applied to assess the current level of fire protection services provided, and identify where if any potential gaps exist, or identify areas that a municipal Council may want to consider in determining its own 'needs and circumstances', as defined by the Fire Protection and Prevention Act (FPPA).

I1.3 Assessing Fire Risk Scenarios

The Fire Risk Sub-Model provides communities with the flexibility to determine how their municipality should be defined in terms of fire risk scenarios. Specifically, the model states that:

> *For analyses purposes, the community being assessed can be defined as the municipality in its entirety or as a particular segment of it that distinguishes it from other parts. For smaller municipalities, it may be sufficient to simply define the community based on town boundaries. For larger municipalities, it may be appropriate to subdivide it into separate and distinct components to permit more detailed analysis. For example, it may be convenient to subdivide a municipality based on residential subdivision, downtown sections, industrial park, and a rural area. Hence, the first step in conducting a fire risk analyses is to identify and define the community (s) being analyzed".*

The analyses within this Fire Master Plan utilize the major occupancy classifications of the Ontario Building Code (OBC) to define the fire risk scenarios within the Town of Bradford West Gwillimbury.

I1.4 Property Stock

The OBC categorizes buildings by their major occupancy classifications. Each classification has inherent definitions that distinguish it from other occupancy classifications. Utilizing the OBC as the source for defining the occupancy classifications provides a recognized definition and baseline for developing the Community Risk Profile.

The OBC major occupancy classifications are divided into six major building occupancy classifications (groups). Within each group the occupancies are furthered defined by division. The OBC major classification groups and divisions are presented in **Table 1**.

Table 1: OBC Major Occupancy Classification

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

I1.4.1 *Community Risk Profile – Major Occupancy Classifications*

The Fire Risk Sub-model developed by the Office of the Fire Marshal utilizes the major group classifications only (Group A, B, C, D, E, F). The Fire Risk Sub-model does not use the detailed "Division" classifications provided for the respective occupancy groups.

This strategy provides the ability to assess property stock within a community comparatively by major occupancy groups thus providing a consistent and recognized definition for each major occupancy type. Where necessary this strategy provides the opportunity for further analysis of a specific occupancy group. For example a '*Group F Industrial*' that is a '*Division 1*' is a '*High hazard industrial occupancy*'. Subject to any site specific hazards or concerns individual occupancies within this group can be assessed individually and then included where required within the scope of the broader community risk profile.

The following describes the major occupancy classifications used within the Fire Risk Sub-model.

I1.4.2 *Assembly Occupancies (Group A)*

Assembly occupancies are defined by the OBC as the "*occupancy* or the use of a *building* or part of a *building* by a gathering of persons for civic, political, travel, religious, social, educational, recreational or similar purposes or for the consumption of food or drink".

Risks within these occupancies can include:

- overcrowding by patrons
- lack of patron familiarity with emergency exit locations and procedures
- staff training in emergency procedures
- large quantities of combustible furnishings and decorations

Proactive measures for reducing risks can include:

- ✓ *regular fire prevention inspection cycles*
- ✓ *automatic fire detection and monitoring systems*
- ✓ *approved Fire Safety Plan and staff training*
- ✓ *pre-planning by fire suppression staff*

I1.4.3 *Care and Detention Occupancies (Group B)*

A care or detention occupancy means the occupancy or use of a building or part thereof by persons who;

- ➢ are dependent on others to release security devices to permit exit;
- ➢ receive special care and treatment; or
- ➢ receive supervisory care.

Risks within these occupancies can include:

- inability to evacuate or relocate patients
- presence of flammable/combustible gases
- vulnerable occupants
- combustible furnishings

Proactive measures for reducing risks can include:

- ✓ *regular fire prevention inspection cycles*
- ✓ *automatic fire detection and monitoring systems*
- ✓ *approved Fire Safety Plan and staff training*
- ✓ *pre-planning by fire suppression staff*

I1.4.4 *Residential Occupancies (Group C)*

A residential occupancy is defined as one that is used by persons for whom sleeping accommodation is provided but who are not harboured or detained there to receive medical care or treatment or who are not involuntarily detained there.

Within this occupancy classification both the Ontario Fire Code (OFC) and the Ontario Building Code classify residential low-rise buildings as up to and including six stories in building height. Buildings in excess of six stories are considered as high-rise buildings. Comparatively Statistics Canada defines low-rise buildings as being less than five stories in building height and high-rise as five stories and greater.

Another example of a use within this occupancy group would be mobile homes or travel trailers. The common factor is overnight accommodation (sleeping) when an occupant can be at the highest risk. As the primary source for data regarding community risk factors is provided by Statistics Canada this analysis utilizes the Statistics Canada definitions for residential occupancies.

Risks within these occupancies can include:

- overnight accommodation (sleeping)
- combustible furnishings
- secondary units (basement apartments)
- high density
- human behavior (cooking, use of candles, etc.)

Proactive measures for reducing risks can include:

- ✓ Smoke Alarm Program
- ✓ Public Education Programming including Home Escape Planning
- ✓ Retro-fit and compliance inspection cycles for OBC and OFC compliance
- ✓ Pre-planning by fire suppression staff

I1.4.5 *Business and Personal Services Occupancies (Group D)*

Business and personal services occupancies are defined as those that are used for the transaction of business or the provision of professional or personal services.

These occupancies can be located within remodelled single family dwellings, low-rise and high-rise buildings. Each of these building types can present different risks including egress for firefighting operations and evacuation by occupants.

Risks within these occupancies can include:

- high volume of occupants
- high combustible loading
- specialized equipment utilizing high risk substances such as radiation
- consumers unfamiliar with emergency exits and procedures

Proactive measures for reducing risks can include:

- ✓ *regular fire prevention inspection cycles to sustain OFC compliance*
- ✓ *targeted fire prevention inspections for OFC retro-fit compliance*
- ✓ *staff training in fire prevention and evacuation procedures*
- ✓ *public education*
- ✓ *pre-planning by fire suppression staff*

I1.4.6 *Mercantile Occupancies (Group E)*

This occupancy is defined as one that is used for the displaying or selling of retail goods, wares, and merchandise.

These occupancies range in size and potential risk from smaller neighbourhood corner stores to the large “big box” industrial style buildings that survive on the sale of large volume. Large volumes of combustibles are typically present in all applications.

Risks within these occupancies can include:

- high volume of occupants/staff
- high volume of combustible loading/high rack storage
- lack of occupant familiarity with emergency exit locations and procedures
- size of building

Proactive measures for reducing risks can include:

- ✓ *regular fire prevention inspection cycles*
- ✓ *automatic fire detection and monitoring systems*
- ✓ *approved Fire Safety Plan and staff training*
- ✓ *pre-planning by fire suppression staff*

I1.4.7 *High/Medium/Low Hazard Industrial Occupancies (Group F)*

Industrial occupancies are defined as those used for the assembly, fabrication, manufacturing, processing, repairing or storing of goods and materials. This category is divided into low hazard (F3), medium hazard (F2) and high hazard (F1) based on its combustible content and potential for rapid fire growth.

The potential for major fires within this occupancy type is related to the high levels of combustibles that are present in storage and utilized in the manufacturing process. This can include highly flammable and corrosive products.

Risks within these occupancies can include:

- large dollar loss as a result of a major fire
- economic loss in the event of plant shut downs and job loss
- environmental impacts
- presence of ignition sources related to processing activities

Proactive measures for reducing risks can include:

- ✓ *regular fire prevention inspection cycles*
- ✓ *staff training in fire prevention and evacuation*
- ✓ *public education*
- ✓ *pre-planning by fire suppression staff*
- ✓ *installation of early detection systems (smoke alarms, heat detectors)*
- ✓ *installation of automatic sprinkler systems*

I1.4.8 *Other Occupancies/Uses not listed within the OBC (Not Classified)*

There are other occupancies and uses not included within the OBC major building occupancy classifications that should be considered as part of developing the Community Risk Profile. These include occupancies that may be regulated under other legislation such as federally or provincially owned facilities.

Examples of these include:

- *major railway lines*
- *major highways and transportation corridors*
- *outdoor tire storage facilities*
- *farm / agricultural buildings*

I1.4.9 *Property Stock Analysis*

Utilizing the property stock classifications contained within the Fire Risk Sub-model **Table 2** provides a summary of the property stock within the Town of Bradford West Gwillimbury.

Table 2: Property Stock Profile Town of Bradford West Gwillimbury

Occupancy Classification (OBC)	**Occupancy Definition Fire Risk Sub-model (OFM)**	**Number of Occupancies**	**Percentage of Occupancies**
Group A – Assembly	*Assembly occupancies*	44	0.4%
Group B - Institutional	*Care or Detention occupancies*	21	0.2%
Group C - Residential	*Residential occupancies*	9,001	91.5%
Group D/E - Commercial	*Business and Personal Services Occupancies*	159	1.6%
Group F - Industrial	*Industrial occupancies*	80	0.8%
Other occupancies	*Not classified within the Ontario Building Code (i.e. farm buildings)*	530	5.4%
Total		9835	100%

The majority (91.5%) of the Town of Bradford West Gwillimbury property stock is Group C-Residential. The second largest percentage of property stock (5.4%) consists of other occupancies not classified within the Ontario Building Code (e.g. farm buildings, etc.).

This particular analysis confirms that as a community the Town of Bradford West Gwillimbury represents the typical level of risk that would be found in comparable municipalities within the Province of Ontario. These include smaller urban centres surrounded by large tracts of agricultural and environmentally protected areas forming a larger community. Agriculture is very prevalent throughout the Town. Farm buildings (not classified within the OBC) vary in size and use from small utility sheds to large livestock barns.

The Town's other occupancies include assembly, business and personal services, and industrial occupancies. The majority of commercial occupancies are located along Holland Street West and within the Bradford Urban Area, and the industrial occupancies are clustered near 10th Sideroad on Reagens Industrial Parkway and to the west of the Holland River along Industrial Road.

Residential occupancies include a majority of single family residences as well as multi-unit residences and a mobile home park.

I1.4.10 *Property Stock Profile Observations*

The analysis of the Property Stock Profile for the Town confirms that the largest percentage of major occupancies (91.5%) is "Group C" residential. Significant priority should be given to developing a Fire Master Plan that reflects the risks associated with this occupancy category. A key element in mitigating residential risks is maximizing the use of all three lines of defence.

The priority of addressing the residential fire risk is supported by the historic data[1] provided by the Office of the Fire Marshal, Ontario that reports for the period from 2007 to 2011 residential fires accounted for 71% of all structure fire losses and for the period from 2001 to 2010 residential fires accounted for 86% of all fire fatalities.

The second largest percentage of 5.4% consists of occupancies that are not classified within the Ontario Building Code. This is consistent with the large rural area of the Town that contains many original farms and related buildings such as barns and storage buildings.

I1.5 Building Height and Area

Buildings that are taller in height, or contain a large amount of square footage (footprint) can have a greater fire loss risk and life safety concern.

I1.5.1 *Building Height*

One of the unique characteristics and risks of tall / multi-storey buildings is known as the "stack effect". This is characterized as vertical air movement occurring throughout the building, caused by air flowing into and out of the building typically through open doors and windows. The resulting buoyancy caused by the differences between the indoor/outdoor temperature and elevation differences causes smoke and heat to rise within the building. This can have a dramatic effect on smoke permeation throughout the common areas and individual units within the building. This can be directly related to the high percentage of deaths that occur in high-rise buildings as a result of smoke inhalation.

The nature of taller buildings also brings the presence of higher occupant loads and higher fuel loads due to the quantity of furnishings and building materials. Efficient evacuation can also be a challenging process due to a lack of direction / signage and knowledge / familiarity of the occupants which may result in overcrowding of stairways and exit routes.

Ensuring all required life safety systems are in place and functioning is a priority for these occupancies. Taller buildings can experience extended rescue / suppression response times for firefighters to ascend to the upper levels. Options such as "shelter-in-place" whereby occupants are directed by the fire department to stay within their units can be an effective strategy. However, ensuring internal building communications systems are in place and functioning is critical to the success of this strategy.

[1]Sources, OFM website:
http://www.mcscs.jus.gov.on.ca/english/FireMarshal/MediaRelationsandResources/FireStatistics/OntarioFatalities/FatalFiresSummary/stats_fatal_summary.html

http://www.mcscs.jus.gov.on.ca/english/FireMarshal/MediaRelationsandResources/FireStatistics/OntarioFires/FireLossesCausesTrendsIssues/stats_causes.html

There are no high-rise buildings within the Town of Bradford West Gwillimbury. Although there are a few buildings that are over 6 stories high, none of them would be considered "high-rise" buildings.

I1.5.2 *Building Area*

Building area can cause comparable challenges as those present in taller buildings. Horizontal travel distances rather than vertical can mean extended response times by firefighters attempting rescue or fire suppression activities.

Large buildings, such as industrial plants and warehouses, department stores, and the new "big box" stores, can contain large volumes of combustible materials. In many of these occupancies the use of high rack storage is also present. Fires within this type of storage system can be difficult to access and cause additional risk to firefighter safety, due to collapse risks.

The Town has a small number of large industrial and commercial buildings. For example, Solucor located at 10 Reagens Industrial Parkway and Ventra/Flex-N-Gate located at 75 Reagens Industrial Parkway are both large buildings in terms of square footage and have the potential for fire loss risk. Other examples of buildings with large areas and potential fire loss risk include:

- Bradford West Gwillimbury Leisure Centre (located at 471 West Park Avenue, large building);
- Walmart Supercentre (located at 545 Holland Street West, large building);
- West Park Plaza (located on Holland Street West, large building); and
- Home Depot (located at 470 Holland Street West, large building).

I1.5.3 *Building Height and Area Observations*

The analysis of the buildings within the Town in regards to height and area represent a minimal risk. This includes all occupancy classifications. There are also a limited number of large area (by square footage) buildings. These include strip malls and big-box retailers located along Holland Street West. There are also some industrial buildings located along Reagens Industrial Parkway and Industrial Road, which in addition to their somewhat large coverage area represent a potentially significant fire loss risk.

The observations of this section are consistent with the need to prioritize a pro-active fire inspection and compliance program. These strategies should be aligned with optimization of the first two lines of defence within the Fire Master Plan.

I1.6 Building Age and Construction

The Town of Bradford West Gwillimbury is a compilation of hamlets, villages and a small urban area scattered throughout a mainly rural setting, including the hamlets/villages of Bond Head, Newton Robinson, Coulson, Pinkteron, Dunkerron, Deerhurst and Green Valley and the Bradford Urban Area. The Town historically was known as a farming and rural-based community but has diversified into a commercial retail and service community, on top of its heavy agricultural roots. The Town began to develop in the early 1800s when Irish settlers located in West Gwillimbury, north of Bradford (Town of Bradford West Gwillimbury, 2013). Many of the older buildings have historic ties to this era. As the Town has grown, a large majority of new construction has occurred along Holland Street West, and in the Bradford Urban Area (see **Figure 1**). This includes both commercial and residential growth. Residential development has been mainly in the form of low density housing.

I1.6.1 *Building/Fire Code Application*

The Ontario Building Code (OBC) was adopted in 1975. The Ontario Fire Code (OFC) was similarly adopted in 1981. Together these two documents have provided the foundation for eliminating many of the inconsistencies in building construction and maintenance that were present before their adoption.

The OBC and the OFC were developed to ensure uniform building construction and maintenance standards are applied for all new building construction. The codes also provide for specific fire safety measures depending on the use of the building. Examples of the fire safety issues that are addressed include:

- *occupancy*
- *exits/means of egress including signs and lighting*
- *fire alarm and detection equipment*
- *fire department access*
- *inspection, testing, and maintenance*

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

I1.6.2 *Residential Buildings*

The priority of addressing the residential fire risk is supported by the historic data provided by the Office of the Fire Marshal, Ontario that reports[2] for the period from 2007 to 2011 residential fires accounted for 71% of all structure fire losses and for the period from 2002 to 2011 residential fires accounted for 85% of all fire fatalities.

These facts make understanding the age and construction of a community's residential building stock an important component of developing a Community Risk Profile.

The Town of Bradford West Gwillimbury's residential building structural dwelling types are summarized in **Table 3**.

[2] Source, OFM website:
http://www.mcscs.jus.gov.on.ca/english/FireMarshal/MediaRelationsandResources/FireStatistics/OntarioFatalities/FatalFiresSummary/stats_fatal_summary.html

http://www.mcscs.jus.gov.on.ca/english/FireMarshal/MediaRelationsandResources/FireStatistics/OntarioFires/FireLossesCausesTrendsIssues/stats_causes.html

Table 3: Residential Structural Dwelling Type

Structural Dwelling Type	Town of Bradford West Gwillimbury[3]	% of Units	Ontario[4]	% of Units
Single-Detached House	7,075	74.8	2,718,880	55.6
Semi-Detached House	605	6.4	279,470	5.7
Row House	310	3.3	415,225	8.5
Apartment-Duplex	690	7.3	160,460	3.3
Apartment-more than 5 Stories	295	3.1	789,970	16.2
Apartment-less than 5 Stories	440	4.7	498,160	10.2
Other single-attached House	25	0.3	9,540	0.2
Movable Dwelling	20	0.2	15,800	0.3
Total	9,460	100	4,887,505	100

In comparison to the provincial data, the Town of Bradford West Gwillimbury percentage of single-detached housing of 74.8% represents a significantly larger component of the residential dwelling types than that of the province at 55.6%. Apartment-Duplex is the second highest percentage of residential dwellings in the Town at 7.3%.

Historical data provided by the Office of the Fire Marshal indicates that fires in single-detached dwellings are responsible for nearly two thirds of all residential fires. The data further indicates that detached homes generally account for 80% of all single-family dwelling fires, with semi-detached and attached homes evenly contributing the remaining 20%.

The Town of Bradford West Gwillimbury residential buildings age are summarized in **Table 4**.

[3] Source: *Statistics Canada - 2011 Census Data*

[4] Source: *Statistics Canada - 2011 Census Data*

Table 4: Age of Construction

Period of Construction	Town of Bradford West Gwillimbury[5]	% of Units	Ontario[6]	% of Units
Prior to 1946	625	7.9	677,875	14.9
1946 to 1960	365	4.6	690,155	15.2
1961 to 1970	850	10.7	640,660	14.0
1971 to 1980	1,540	19.4	776,745	17.0
1981 to 1985	760	9.6	338,575	7.4
1986 to 1990	1,255	15.8	410,160	9.0
1991 to 1995	755	9.5	291,480	6.4
1996 to 2000	800	10.1	312,215	6.9
2001 to 2006	985	12.4	417,165	9.2
Total	7,935	100	4,554,255	100

An important component of this analysis is the percentage of residential buildings built prior to the adoption of the Ontario Fire Code in 1981. **Table 4** indicates that 42.6% of the Town's residential buildings were built prior to 1981 in comparison to 61% of those in Ontario.

In relation to the OFC the Town has a relatively newer percentage of residential dwelling buildings than that of the province.

I1.6.3 *Non-Residential Buildings*

During the late 19th century and early 20th century's balloon frame construction was a common framing technique used in both residential and small commercial construction. This technique permitted the spread of fire and smoke to move rapidly from the lower floors to upper floors and the roof level. Understanding the age of construction of dwellings can assist in determining if balloon framing may have been utilised.

Modern construction techniques have introduced the use of platform construction whereby each level is built as a component of the overall structure. This technique in addition to the use of fire stops has reduced the extension of fire and smoke by creating horizontal barriers.

Specific information such as the census data is not available for non-residential buildings; however the experience of community planning and development provides a relative comparison when assessing the age and construction of a community. Tours of the community and discussions with Town staff indicate that a percentage of the non-residential buildings also pre-date the OFC adoption in 1981.

[5] Source: *Statistics Canada - 2006 Census Data*

[6] Source: *Statistics Canada - 2006 Census Data*

I1.6.4 *Building Age and Construction Observations*

As a community the current building stock of the Town is representative of a small urban settlement area that has grown over the past century to the current mixed use urban/rural community.

Residential single-detached housing units represent 74.8% of the 9,460 residential dwelling structures. 42.6% of the residential building stock was built prior to adoption of the Ontario Fire Code in 1981.

Although the majority of new residential building stock is comprised of newer construction technology including flame retardant materials and construction techniques, there are still 42.6% of the Town's residential buildings that were built prior to 1981 which represent the highest fire loss risk due to age and construction.

I1.7 Building Exposures

Closely spaced buildings, typical of historic downtown core areas, and newer infill construction, have a higher risk of a fire propagating (fire spreading to an adjacent exposed building). A fire originating in one building could easily be transferred to neighbouring structures due to the close proximity. The close proximity of buildings can also impede firefighting operations due to the limited access for firefighters and equipment.

Adoption of the OBC and the OFC has required spatial separations and the use of fire retardant materials and construction methods to reduce the fire risks. In addition to the construction and planning requirements within the respective codes, basic firefighting practices consider the protection of exposures as a primary function and consideration in the event of a response by the fire department.

I1.7.1 *Building Exposures Observations*

The risk of exposures as a result of a fire can occur in incidents involving buildings that are in compliance with current OBC and OFC requirements as well as those that may have been constructed prior to these public safety initiatives.

As a large percentage of the building stock within the Town of Bradford West Gwillimbury was constructed prior to the current OFC, the probability of a fire spreading to involve other exposures is of concern.

The age and construction of the buildings throughout the residential districts in the Town present the most significant risk for fire spread both internally and to adjacent buildings due to the close proximity and combustible construction of many of these buildings.

I1.8 Demographic Profile

In terms of demographic profile with regard to developing a community risk profile it is important to understand a number of key factors related to residents of the community. Assessing these factors in relation to provincial statistics is an effective tool in understanding where there may be vulnerable groups in terms of fire or life risk, or barriers such as language that could affect communication of public education programs. The key factors within the demographic profile include:

- Population Distribution by Age Group
- Population Shifts
- Vulnerable Individuals or Occupancies
- Language Barriers to Public Education
- Income level

I1.8.1 *Population Distribution by Age Group*

Within Canada our aging population has been recognized as one of the most significant demographic trends. Based on current data it is predicted that by the year 2026, one in every five Canadians will have reached the age 65. Seniors, those 65 and above represent one of the highest fire risk target groups in Ontario.

Information provided by the Office of the Fire Marshal indicates that "*between 2000 and 2004 the leading cause of senior (aged 65 and over) fire deaths were attributed to "open flame tools/smoker's articles" and "cooking equipment". These ignition sources were responsible for 35% and 10% respectfully of fire deaths for this age category during this period. It is believed that the decline in cognitive and physical abilities contributes to the frequency of fire incidents relating to careless use of these ignition sources".*

Identifying a community's population by age category is a core component of developing the Community Risk Profile and identifying specific measures that may be required to mitigate risks associated with a specific age group, such as seniors.

Table *5* provides a comparison of the Town's population by age group to that of the provincial statistics according to the 2011 census from Statistics Canada.

Table 5: Age Group[7]

Age Characteristics of the Population	Bradford West Gwillimbury		Ontario	
	Total	% Total	Total	% Total
Total population	28,075	-	12,851,820	-
0 to 4 years	1,845	6.6%	704,260	5.5%
5 to 9 years	1,720	6.1%	712,755	5.5%
10 to 14 years	1,845	6.6%	763,755	5.9%
15 to 19 years	2,065	7.4%	863,635	6.7%
20 to 24 years	1,795	6.4%	852,910	6.6%
25 to 44 years	8,045	28.7%	3,383,890	26.3%
45 to 54 years	4,790	17.1%	2,062,020	16.0%
55 to 64 years	3,145	11.2%	1,630,275	12.7%
65 to 74 years	1,595	5.7%	1,004,265	7.8%

[7] Source: *Statistics Canada - 2011 Census Data*

Age Characteristics of the Population	Bradford West Gwillimbury		Ontario	
	Total	% Total	Total	% Total
75 to 84 years	895	3.2%	627,660	4.9%
85 years and over	345	1.2%	246,400	1.9%
Median age of the population	37.2	-	40.0	-
% of the population aged 14 and under	5,410	19.20%	2,180,770	17.0%
% of the population aged 65 and over	2,835	10.10%	1,878,325	14.6%

This comparison indicates that the age characteristics of the population within the Town are relatively consistent with that of the province.

Table 6 was prepared using information from the OFM's review of Ontario Fatal Fires during the ten year period from 2001 to 2010 (*revised October 2011*). Although no particular age group stands out as a significantly higher risk, when the number of fatalities per million population is calculated, the seniors' age group are at the greatest risk of fire death compared to other age groups; seniors tend to be more at risk.

Table 6: Provincial % of Fire Fatalities by Age Group

Age Characteristics of the Population	% of Age Group
0 to 10 years	8%
10 to 19 years	6%
20 to 29 years	6%
30 to 39 years	10%
40 to 49 years	19%
50 to 59 years	14%
60 to 69 years	12%
70 to 79 years	13%
80+ years	12%

I1.8.2 *Population Shifts*

The population within a community can shift at various times during the day or week and throughout the year. This can be as a result of residents that are required to leave the community to seek employment as opposed to those having employment opportunities within the community. Other examples can include tourist and vacation destinations within a community. Large population shifts can occur during summer months as a direct result of the seasonal availability of these activities or tourism draws within a community.

Communities that are home to educational institutions such as colleges and universities can have a different population shift during the fall and winter months when students are attending school and residing in the community (e.g. student residences).

In both instances the increased risk due to overnight accommodation (sleeping) either in a trailer/hotel/or school residence can be a major factor which can impact the demand for fire protection services.

The Town of Bradford West Gwillimbury experiences limited population shift throughout the year. The limited population shift takes place in the spring and summer months when various events attract a large number of people to the Town, such as Carrot Fest. Specific fire protection strategies to address population shifts should not be required; they should be accommodated as part of broader services such as pro-active fire inspections of the facilities occupied by this demographic.

I1.8.3 *Vulnerable Individuals or Occupancies*

Identifying the location and number of vulnerable individuals, or occupancies within the community will provide insight into the magnitude of this particular demographic within a community. This demographic is typically defined as requiring some type of assistance due to physical/cognitive limitations, disabilities, drug or alcohol use and others that may require assistance to evacuate in the event of a fire.

Occupancies that should be considered when assessing this demographic include hospitals, seniors' apartments, group homes, rooming houses, residential care facilities, daycare centres and long-term care facilities. **Table 7** lists these occupancies in Bradford West Gwillimbury.

Table 7: Vulnerable Occupancies in Bradford West Gwillimbury

Community/Residence/Apartment	Address
Bradford Valley Specialty Care	2656 Line 6
Seniors' Residence	100 Miller Park
Seniors' Residence	200 Holland Court
Seniors' Residence	40 John Street West
LOFT Bradford House	136 Barrie Street
EduKids Child Care Centre	40 John Street West
Bradford Progress Childcare Centre	118 Barrie Street

I1.8.4 *Language Barriers to Public Education*

Cultural diversity and ethnic background can be factor that fire departments must consider in developing and delivering programs related to fire prevention and public education. Communication barriers in terms of language and the ability to read written material can have an impact of the success of these programs. **Table 8** provides a breakdown of the mother tongue of residents within the Town based on the 2011 Statistics Canada census information.

Table 8: Mother Tongue of Bradford West Gwillimbury Residents

Language	Bradford West Gwillimbury		Ontario	
	Total	% Total	Total	% Total
Total population	**27,740**[8]	-	**12,028,895**	-
English	25,900	93%	8,230,705	69%
French	20	0%	488,815	4%
English and French	1,305	5%	32,685	0%
Other	510	2%	3,276,685	27%

English is the primary language of the Town's population (93%). Therefore language barriers are expected to be relatively infrequent. However, communications barriers, including language differences, should still be taken into consideration, especially when working with specific community groups.

I1.8.5 *Income Levels*

Table 9 summarizes household data from the 2006 Census from Statistics Canada. Bradford West Gwillimbury, as a Town, has a significantly higher population density than the province. Bradford West Gwillimbury also has a much higher median income and a higher average value of owned dwellings than the provincial average. These statistics are typical of a mostly rural community in close proximity to a regional centre.

[8] This is the total population excluding institutional residents.

Table 9: 2006 Statistics Canada Household Data

Census Characteristic	Bradford West Gwillimbury	Ontario
Population Density	119.6	13.4
Median Income (all census families)	$80,453	$60,455
Average Value of Owned Dwelling	$320,974	$297,479
Total # of Dwellings Owned	6,585	3,235,495
% Owned Dwellings	83%	71%
% Rented Dwellings	17%	28%

I1.8.6 *Demographic Profile Observations*

The demographic analysis of Bradford West Gwillimbury indicates that by age category the Town is very representative of the provincial statistics. There are a small number of buildings identified where the most vulnerable demographic of the community reside. These buildings should be considered as high risk with regard to developing a pro-active fire prevention and protection program. Optimizing the first two lines of defence should be considered a priority for these facilities as part of the Fire Master Plan.

English is the predominate language within the community representing 93% of the population. This indicates that there should be a very minimal language barrier in the delivery of fire prevention and public education programs.

In general income levels and the percentage of home ownership are higher than that of the provincial averages. These factors also relate to a lower percentage of rental housing compared to the provincial averages.

I1.9 Geography / Topography / Road Infrastructure

Bradford West Gwillimbury is located in Simcoe County between the City of Toronto and the City of Barrie along Highway 400. The Town is bordered by the Town of Innisfil to the north, the Town of East Gwillimbury to the east, the Town of Newmarket to the south, and the Town of New Tecumseth to the west. The majority of the Town's population is located in the Bradford Urban Area, which is located north and south of Holland Street West in between Side Road 10 to the west and the Holland River to the east, as illustrated in **Figure 1.** The remainder of the Town's population is located within the Bond Head Settlement Area and interwoven into rural areas.

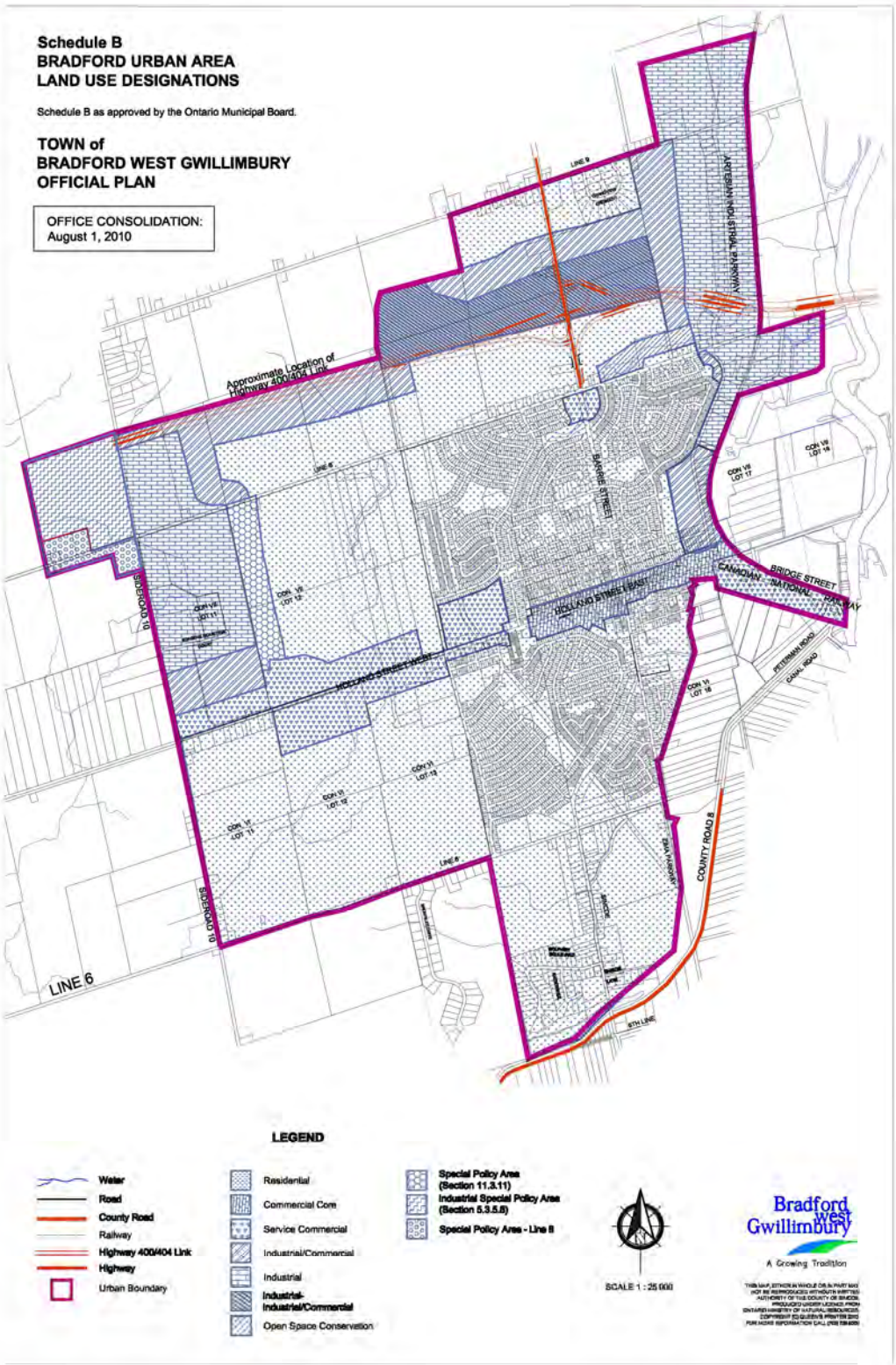
The Town of Bradford West Gwillimbury consists of both urban and rural areas with a variety of different land uses. These include agricultural, rural, environmental, and a variety of residential, commercial and industrial designations. The majority of future growth and development will be accommodated in the Bradford Urban Area as well as in the Bond Head Settlement Area. The existing land uses from the Town's Official Plan are included below in **Figure 2**.

The Town has identified a large number of natural areas within the municipal boundaries which include Provincial Areas of Natural and Scientific Interest (ANSI), provincially significant wetlands, county greenlands, locally significant wetlands, Environmental Significant Areas, and the Scanlon Creek Conservation Area. The Town has a successful agricultural economy with large areas of high quality agricultural lands, including the Holland Marsh, and produces a broad range of diverse crops.

The road network within the Town consists of a mix of local, collector, arterial and county roads, including County Road 27 to the west and County Road 4 (also known as Highway 11) to the east. Bradford West Gwillimbury's transportation network includes a section of Highway 400, which runs north-south throughout the entire Town. In 2009 an Official Plan Amendment came into effect in which the Town's transportation network was updated to include new roads, road designations and road policies. As well, the Ministry of Transportation (MTO) has approved a Highway 400 and 404 Extension Link (Bradford Bypass) which is the construction of a new 16.2 km rural four-lane controlled access freeway, which will run east-west and connect Highway 400 in the Town of Bradford West Gwillimbury to the proposed northerly extension of the Highway 400 in the Town of East Gwillimbury. The Town's existing road network is depicted below in **Figure 3**.

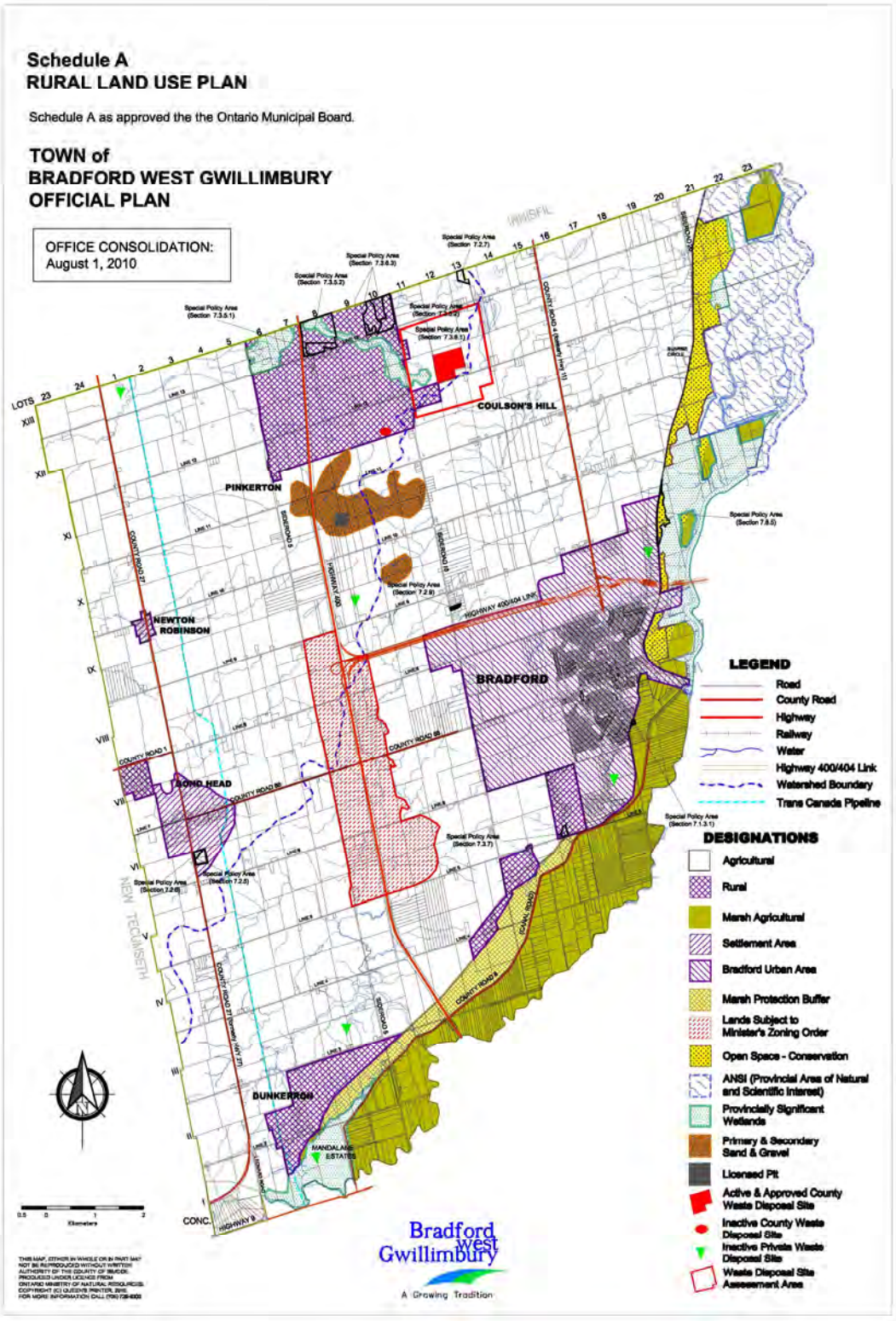
Public transportation is available from the provincially operated GO Transit system and various intercity bus services. However, the Town does not currently operate a municipal transit system, although there are some specific transit activities for seniors and the disabled (The Town of Bradford West Gwillimbury Official Plan, 2002). The Town is currently working to implement a public transit system in the immediate future, with service anticipated to begin in the spring of 2014.

Figure 1: Bradford Urban Area



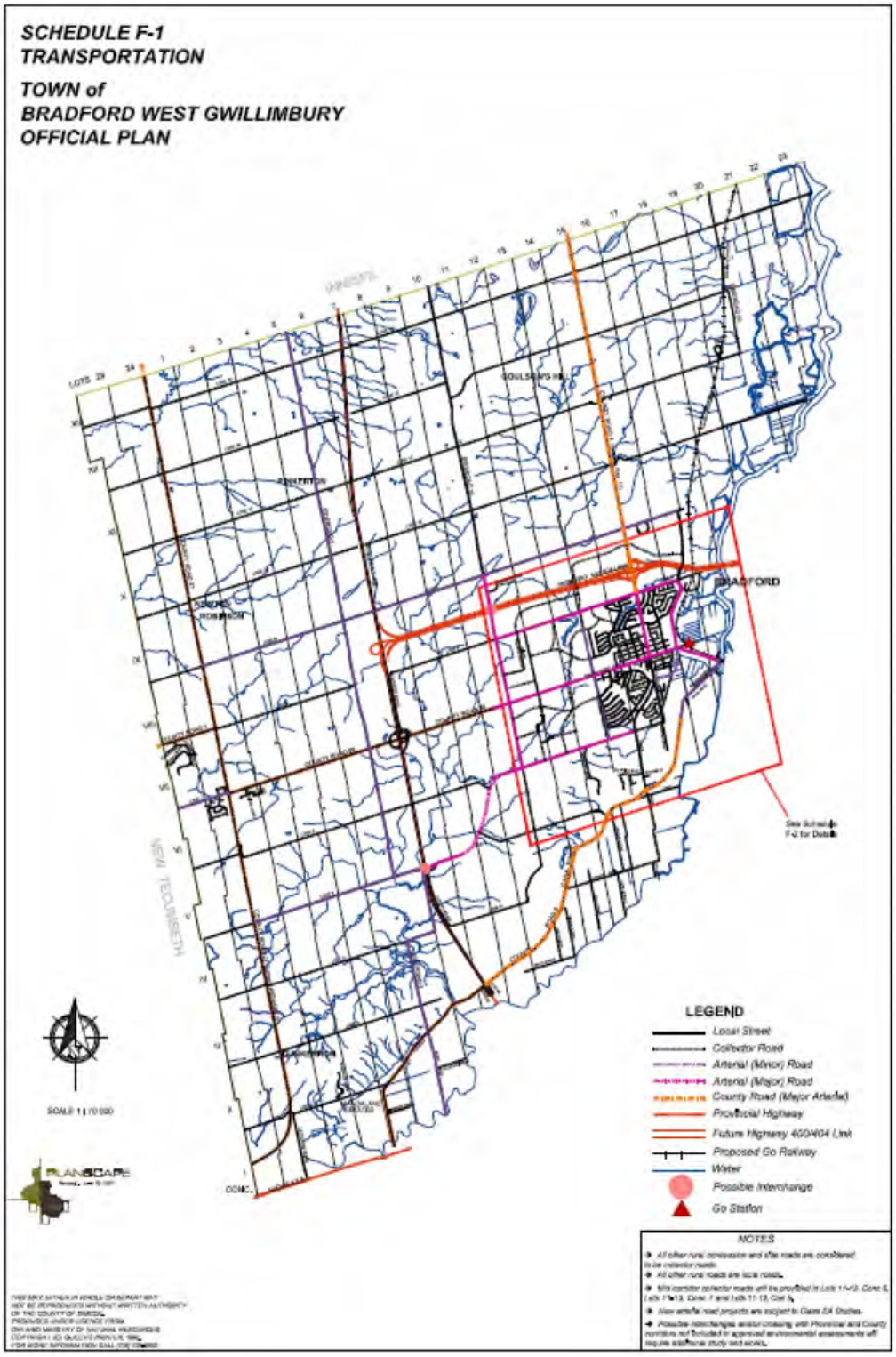
(Source: Town of Bradford West Gwillimbury Official Plan, August 2010)

Figure 2: Bradford West Gwillimbury Rural Land Use Plan



(Source: Town of Bradford West Gwillimbury Official Plan, August 2010)

Figure 3: Bradford West Gwillimbury Revision to Schedule F-1 Transportation Map



(Source: Town of Bradford West Gwillimbury Official Plan, August 2010)

I1.9.1 *Geography/Topography/Road Infrastructure Profile Observations*

The risks associated with the geography, topography and road infrastructure within the Town are predominantly those associated with the large overall size of the municipality and the rural residential areas located outside of the built-up communities. This typically means longer emergency response times from the fire station, located in the urban areas, out to the rural areas and occupancies. In developing the Fire Master Plan, consideration should be given to prioritizing the delivery of public education and fire prevention programs in these areas. This should include optimization of the department's smoke alarm program and home fire safety planning for areas with extended emergency response travel times.

The road network layout is primarily a grid pattern (outside of the Bradford Urban Area) of arterial rural roads and local roads which provide access to rural residential locations. The population centres within the Town, including the Bradford Urban Area and Bond Head Settlement Area are well served and connected by the road network. However, the Bond Head Settlement Area is located further away from the fire station, which is located within the Bradford Urban Area. The future Highway 400 and 404 Extension Link (Bradford Bypass) will improve access to the Bond Head Settlement Area and to the western section of the Town, including providing greater options for emergency vehicles.

The following potential constraints within the Town of Bradford West Gwillimbury have been identified:

- The Go Transit rail line running north-south in the northern section of the Town has the potential to block roads at railway crossings.
- There is high traffic flow through Bradford's downtown core and on Highway 400 during peak commuting hours which may increase firefighter response times.

I1.10 Past Fire Loss Statistics

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

I1.10.1 *Fire Loss by Occupancy Classification*

For the period from 2007 to 2011 there were 64,757 fires within Ontario with a loss reported to the OFM. During this period 58% or 37,559 of these involved a structure and 28% or 18,132 of these fires involved a vehicle.

Table 10*: Provincial Fire Loss by Occupancy Classification Period 2007 to 2011* indicates the provincial fire loss by property classification for the period 2007 to 2011.

Table 10: Provincial Fire Loss by Occupancy Classification
Period 2007 to 2011

Occupancy Classification (OBC)	Occupancy Definition Fire Risk Sub-model (OFM)	Ontario Fire Loss by Occupancy Classification
Group A – Assembly	*Assembly occupancies*	5%
Group B - Institutional	*Care or Detention occupancies*	1%
Group C - Residential	*Residential occupancies*	71%
Group D - Business	*Business and Personal Services Occupancies*	3%
Group E - Mercantile	*Mercantile occupancies*	4%
Group F - Industrial	*Industrial occupancies*	8%
Other occupancies	*Not classified within the Ontario Building Code (i.e. farm buildings)*	8%
Reported fires	*Reported structure fires*	40,854

For this period 71% of the fires with a loss occurred within a Group C - Residential occupancies.

In comparison to the provincial analysis, the Town of Bradford West Gwillimbury property loss as a result of fires is presented in **Table 11** below (OFM data for Bradford West Gwillimbury). The data is similar to that of the province; however the Town has a larger percentage of Group F – Industrial occupancy fire loss than that of the Province (17.9%). For the same period the analysis indicates that 71.4% of the fires reporting a loss occurred in Group C - Residential occupancies.

Table 11: Town of Bradford West Gwillimbury Fire Loss by Property Classification
Period 2007 to 2011

Occupancy Classification (OBC)	Occupancy Definition Fire Risk Sub-model (OFM)	Town of Bradford West Gwillimbury Fire Loss by Occupancy Classification
Group A – Assembly	*Assembly occupancies*	2.4%
Group B – Institutional	*Care or Detention occupancies*	0.0%
Group C – Residential	*Residential occupancies*	71.4%
Group D - Business	*Business and Personal Services Occupancies*	3.6%
Group E - Mercantile	*Mercantile occupancies*	2.4%
Group F - Industrial	*Industrial occupancies*	17.9%
Other occupancies	*Not classified within the Ontario Building Code (i.e. farm buildings)*	2.4%
Reported fires	*excluding buildings under National Farm Building code (4 fires)*	84

I1.10.2 *Property Fire Loss*

Property fire loss is another valuable performance measurement tool in assessing the cumulative impact of the "*three lines of defence"* utilized by a fire and emergency service.

Table 12 provides the Town of Bradford West Gwillimbury's historical property fire loss for the period from 2009 to 2011. An important consideration in evaluating this data is to consider the impact of a major fire with a large dollar loss and/or a series of larger fires with a combined significant large dollar loss. Overall the Town of Bradford West Gwillimbury has experienced a growing level of property loss as a result of fire, especially in the Town's residential occupancies. This further demonstrates the increased need to optimize the first two lines of defence, including public education and prevention and fire safety standards and enforcement.

Table 12: Town Property Dollar Loss (2009-2011)

Occupancy		Year 2009		Year 2010		Year 2011		% Total Dollar Loss (2009 – 2011)
Classification		# of fires	Dollar Loss ($)	# of fires	Dollar Loss ($)	# of fires	Dollar Loss ($)	%
Group A	Assembly	1	500	0	0	1	500.00	1.75
Group B	Institutional	0	0	0	0	0	0	0
Group C	Residential	7	325,100	15	854,500	15	2,173,000	66.1
Groups D & E	Commercial	2	305,100	2	5,100	1	5,001	8.9
Group F	Industrial	2	61,000	3	102,000	4	1,600,000	16.1
Mobile Homes & Trailers		0	0	1	100,000	0	0	1.75
Other		1	3,000	1	10,000	1	50,000	5.4
Total Losses		*13*	*694,700*	*22*	*1,076,600*	*21*	*3,773,000*	*100%*

(Source: Town of Bradford West Gwillimbury Fire Department)

I1.10.3 *Reported Fire Cause*

Assessing the possible cause of the fires reported is an important factor in identifying any potential trends, or areas that may be considered for introducing additional public education of fire prevention initiatives as part of the community fire protection plan.

Table 13*: Town of Bradford West Gwillimbury 2007 to 2011 Reported Fire Cause* provides a summary of the reported possible cause of the 88 fires reported during the period 2007 to 2011 for the Town of Bradford West Gwillimbury (OFM data for Bradford West Gwillimbury).

Table 13: Town of Bradford West Gwillimbury 2007 to 2011 Reported Fire Cause

Nature	Fire Cause	Number of Fires	% of Cause
Intentional	Arson	11	12.5%
Intentional	Vandalism	0	0.0%
Unintentional	Children Playing	1	1.1%
Unintentional	Design/Construction/Maintenance deficiency	11	12.5%
Unintentional	Mechanical /Electrical failure	11	12.5%
Unintentional	Misuse of ignition source	18	20.5%
Unintentional	Other unintentional	5	5.7%
Unintentional	Undetermined	2	2.3%
Other	Other	2	2.3%
Undetermined	Undetermined	27	30.7%
Total number of fires and percentage (excluding buildings under National Farm Building Code)		88	100.0%

There are four categories of cause utilized to classify the cause of a fire. These include intentional, unintentional, other, and undetermined.

The "intentional" category recognises the cause of a fire to be started for a specific reason. These are typically classified as arson fires, and for example can be related to acts of vandalism, or to achieve personal gain through insurance payment. There was 11 arson fires reported and no acts of vandalism reported fires for this period.

The "unintentional" category recognises a number of the common causes of a fire that represent both human behavioural causes such as playing with matches, and equipment failures such as a mechanical failure. Unintentional misuse of ignition source represents 20.5% of the cause for the 88 fires between 2007 and 2011.

The cumulative percentage of "*unintentional–other unintentional (5.7%), "unintentional-undetermined (2.3%), other-other (2.3%) and undetermined-undetermined (30.7%)"* represents a total of 40.9% of all fire causes. This indicates that there was no specific cause identified for almost one half of all fires during this period.

I1.10.4 *Reported Ignition Source*

Table 14 similarly provides the reported ignition source for the 88 fires that occurred during the period between 2007 and 2011 (OFM data for Bradford West Gwillimbury).

Table 14: Town of Bradford West Gwillimbury 2007 to 2011 Ignition Source Class

Reported Ignition Source	Number of Fires	% of Cause
Appliances	6	6.8%
Cooking equipment	12	13.6%
Electrical distribution	9	10.2%
Heating equipment chimney etc.	8	9.1%
Lighting equipment	1	1.1%
Open flame tools/smokers articles	11	12.5%
Other electrical/mechanical	4	4.5%
Processing equipment	0	0.0%
Miscellaneous	11	12.5%
Exposure	1	1.1%
Undetermined	25	28.4%
Unknown, not reported	0	0.0%
Total number of fires and percentage	88	100%

Undetermined ignition sources represent the largest percentage at 28.4%. The second largest ignition source in the Town is cooking equipment at 13.6%.

I1.10.5 *Reported Civilian Injuries and Fatalities*

Table 15*: Town of Bradford West Gwillimbury 2009 to 2011 Reported Civilian Injuries and Fire Deaths* indicates the number of fire related civilian injuries and fatalities that occurred within the Town of Bradford West Gwillimbury during the period 2009 to 2011.

Table 15: Town of Bradford West Gwillimbury
2009 to 2011 Reported Civilian Injuries and Fire Deaths

Occupancy Classification (OBC)	Occupancy Definition Fire Risk Sub-model (OFM)	Injuries	Fatalities
Group A – Assembly	*Assembly occupancies*	0	0
Group B - Institutional	*Care or Detention occupancies*	0	0
Group C - Residential	*Residential occupancies*	0	0
Group D - Business	*Business and Personal Services Occupancies*	0	0
Group E - Mercantile	*Mercantile occupancies*	0	0
Group F - Industrial	*Industrial occupancies*	0	0
Other occupancies	*Not classified within the Ontario Building Code (i.e. farm buildings)*	0	0

(Source: Town of Bradford West Gwillimbury Fire Department)

During this period there were no reported fatalities or injuries as a result of a fire in any occupancy.

I1.10.6 *Past Fire Loss Profile Observations*

Based on the historical data for the period 2007 to 2011, the Town of Bradford West Gwillimbury experienced the highest rate of fires within the Group C - residential occupancies. This result is consistent with that of the provincial profile.

Undetermined causes representing 30.7% and misuse of ignition source causes representing 20.5% were the leading causes for fires during this period. The cumulative percentage of fire causes that could not be determined represented 40.9% of the 88 fires reported during this period.

Undetermined ignition sources at 28.4% and cooking equipment sources at 13.6% represented the two leading ignition sources of the 88 fires reported during this period. However, there were no reported civilian injuries or fire deaths between 2009 and 2011.

The analysis of the past fire losses within the Town further defines that Group C- Residential occupancies represent the highest level of risk within the community, due to the fact that between 2009 and 2011 the total loss for residential occupancies was $3,352,600.

Enhancing the first line of defence, including pro-active prevention and education programs, targeted at the areas identified within this Community Risk Profile, should be considered a priority within the Fire Master Plan.

I1.11 Fuel Load Profile

Fuel load typically refers to the amount and nature of combustible content and materials within a building. This can include combustible contents, interior finishes as well as structural materials. Combustible content tends to create the greatest potential fire loss risk. This can include industrial materials, commercial materials or typical office furnishings. Higher fuel loads results in increased fire loss risk due to increased opportunity for ignition and increased fire severity.

In many communities large amounts of fuel load can be contained within a single occupancy such as a building supply business, or alternatively within a large multi-occupancy building such a historical downtown core.

As presented previously within this report, age and construction of a building can also have an impact on fuel load given that older buildings likely have a larger volume of combustible construction such as wood framing rather than newer construction utilizing concrete and steel products.

The buildings or occupancies where significant fuel loads are present are outlined in **Table 16**. Our analysis of fuel load within the Town of Bradford West Gwillimbury indicates that there are a small number of buildings or occupancies where significant fuel loads are present that would be cause for any specific identification. The two main areas where significant fuel loads are present are located along Reagens Industrial Parkway and along Industrial Road (including Industrial Court). One significant area of concern for the Town is Solucor, which is a plastics and chemical product manufacturing factory located just outside of the Bradford Urban Area. Regular fire prevention inspection cycles and strategies to enforce continued compliance with the OFC are considered as best practices to achieving the legislative responsibilities of the Town and providing an effective fire protection program to address fuel load risks.

I1.11.1 *Fuel Load Profile Observations*

In comparison to the number of buildings within the Town of Bradford West Gwillimbury there are a small number of buildings having a site specific fuel load concern. In addition to ensuring compliance to the requirements of the OBC and the OFC there are operational strategies that a fire department can implement to address fuel load concerns. These include regular fire inspection cycles and pre-planning of buildings of this nature to provide an operational advantage in the event of a fire.

Table 16: Town of Bradford West Gwillimbury
Fuel Load Concerns

Building Name	Address	Concern
Solucor	10 Reagens Industrial Court	Plastics and misc. chemical product manufacturing
Ventra / Flex-N-Gate	75 Reagen's Industrial Parkway	Automotive; plastics products, painting, and assemblies
Bradford Co-Op Storage Ltd	61 Bridge Street	Vegetable, greenhouse and farm supplies
Simcoe Energy & Technical Services Inc.	285 Dissette Street	LP Propane Gas, gas connection, gas patio heaters, propane, propane heaters
Faurecia	100 Reagens Industrial Court	Automotive, interior/exterior
Closure Metal Products / Magna	3066 Line 8	Automotive closure modules
Spectra Aluminum Products	95 Reagens Industrial PW	Aluminum extrusions, surface finishes, wet paint line, fabrication and assembly
Vins Plastics Ltd	12 Industrial Court	Manufacturer of plastic packaging and plastic film
Mitek Canada Inc.	100 Industrial Road	Metal products; building components industry
Kumi Canada Corporation	55 Reagens Industrial Parkway	Injection molding of plastics
Channels Industry Group	60 Reagen's Industrial Parkway	Custom heavy & light manufacturing and fabrication and painting
Cericola	65 Reagens Industrial Parkway	Poultry slaughtering/processing
Royal Woodworking Inc.	60 Industrial Road	Manufacturer/distributor of lumber; wood millwork
Kernaghan's Husky	3479 County Road 88	Gasoline service stations and restaurant, truck stop
Home Depot	470 Holland Street West	Construction materials and building supplies, indoor/out-door living
Bradford Tim-Br-Mart	90 Dissette Street	Building supplies and lumber, paint
Home Hardware	30 Dissette Street	Building supplies, hardware, paint, indoor/outdoor living

Building Name	Address	Concern
Karlos Building Supplies	20400 Highway 11	Building & construction supplies
Canadian Tire	430 Holland Street West	Wholesale & retail: tires/wheels, tools & hardware, automotive, home, kitchen, sports & recreation, outdoor
Zehrs	500 Holland Street West	Supermarket, grocery store and pharmacy
Walmart Supercentre	545 Holland Street West	Department store
Array	35 Reagens Industrial Parkway	Fine woodworking, store fixtures
Bruce Chambers Period Furniture	Line 7, Bond Head	Wood cabinet/furniture maker and products
Lloyd Furniture	9 Holland Street East	Wood furniture store
Create-A-Floor	126 Bridge Street	Supplier of carpet, laminate and vinyl flooring
Bradford Greenhouses Garden Gallery	3817 HW 11 / Yonge Street	Indoor climate controlled nursery; nursery stock & garden centre
Decorator's Edge Benjamin Moore	284 Holland Street West	Paints and Sikkens products and wall coverings/wallpaper
BWG Public Library & Cultural Centre	425 Holland Street West	Large archive printed materials

(Source: Town of Bradford West Gwillimbury Fire Department)

I2.0 COMMUNITY GROWTH & DEVELOPMENT

I2.1 Historic Growth

The following table indicates the historic populations within the Town of Bradford West Gwillimbury, as provided by Statistics Canada, Census Profiles. Historic household population statistics are also included, where available.

Table 17: Historic Growth in Population and Households

Year	Bradford West Gwillimbury Population	% Change in Population	Bradford West Gwillimbury Population by Household	% Change in Households
1996	20,213	N/A	6,375	N/A
2001	22,228	10.0%	7,248	13.7%
2006	24,039	8.1%	8,128	12.1%
2011	28,075	16.8%	9,979	22.8%

From 2006 to 2011 the population of Bradford West Gwillimbury grew by 16.8%, approximately 3.4% per year. This is greater than the population growth of the province over the same time period, which was 5.7%, closer to 1.14% per year. Households in Bradford West Gwillimbury grew even more by 22.8% from 2006 to 2011, approximately 4.6% per year.

I2.2 Growth Projections

Table 18 summarizes the growth projections for the Town from 2006 to 2031.

Table 18: **Population and Employment Growth Projections**

Year	2006	2011	2016	2021	2026	2031
Population	24,039	28,075	36,040	42,260	46,700	50,500
Household	8,128	9,979	11,716	13,891	15,516	16,941
Employment	8,000	9,787	12,809	16,073	18,669	21,216

The population and employment estimates shown above in **Table 18** predict that over the next 10 years the Town of Bradford West Gwillimbury will experience significant population growth of a 50.5% increase, representing approximately 5% annual growth. Over a 20 year time period (between 2011 and 2031), the Town will face an even larger population growth of approximately 80%, or 4% annual growth. This means that over the next 20 years, the Town's population is expected to almost double. Households are expected to grow at a slower pace, with a 39% increase from 2011 to 2021.

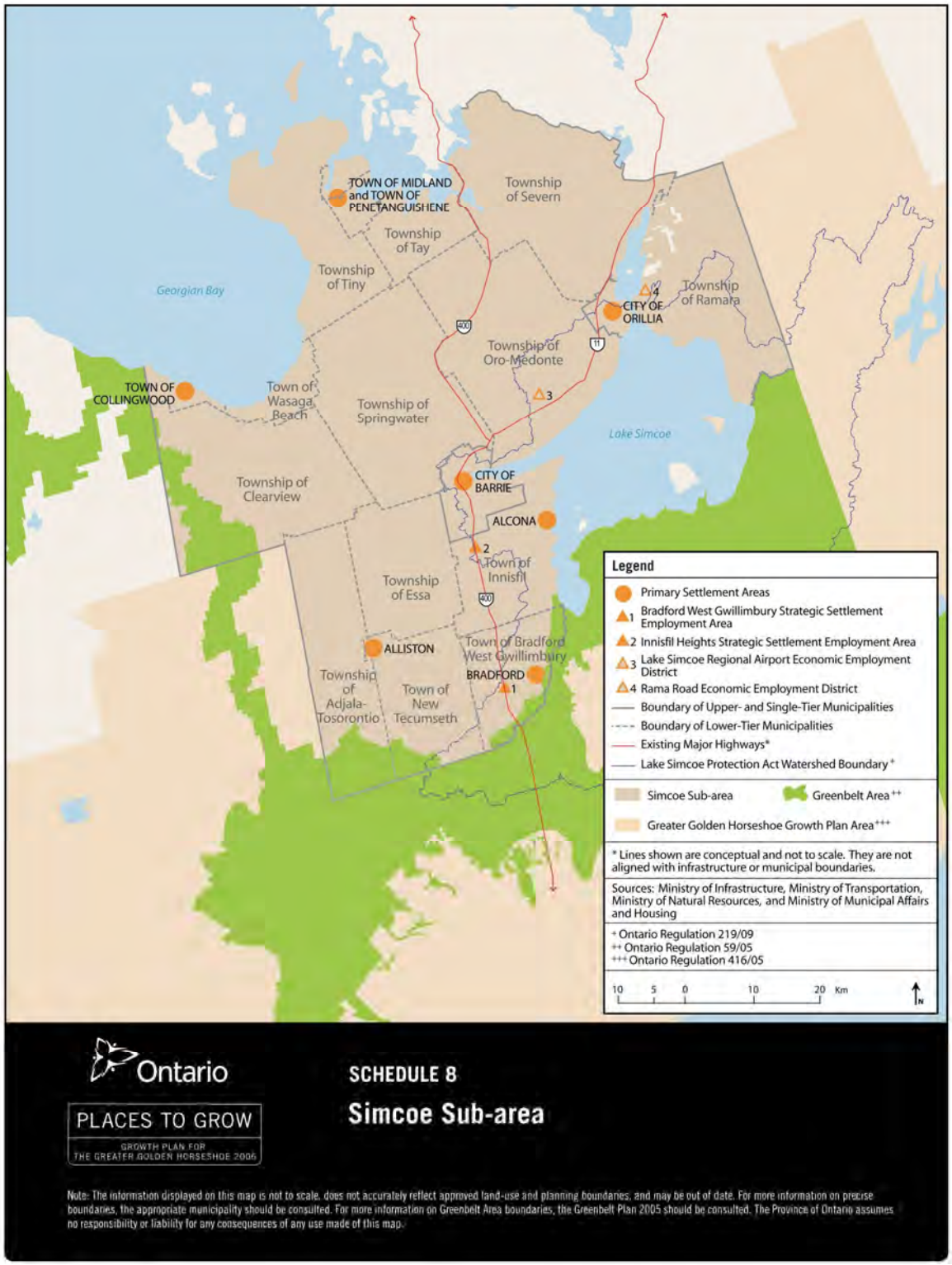
It is important to note that the urban area (coined "Bradford" specifically in the Growth Plan for the Greater Golden Horseshoe) located in the Town of Bradford West Gwillimbury has been designated as a "Primary Settlement Area" for the Simcoe Sub-area under the Growth Plan for the Greater Golden Horseshoe, 2006 (Growth Plan), pursuant to the *Places to Grow Act, 2005*. The Growth Plan has also designated a specific strategic settlement employment area within Bradford West Gwillimbury, as illustrated in **Figure 4**. The strategic settlement employment area is further described below.

With regards to Primary Settlement Areas, the Growth Plan states that:

> *"Municipalities with primary settlement areas will, in their official plans and other supporting documents -*
>
> *a) Identity primary settlement areas*
>
> *b) Identify and plan for intensification areas within primary settlement areas*
>
> *c) Plan to create complete communities within primary settlement areas*
>
> *d) Ensure the development of high quality urban form and public open spaces within primary settlement areas through site design and urban design standards that create attractive and vibrant places that support walking and cycling for every activities and are transit-supportive"*

Ultimately, this means that the Town of Bradford West Gwillimbury will be directing a large portion of its projected population and employment growth to the designated Primary Settlement Area.

Figure 4: Simcoe Sub-area's Primary Settlement Areas and Strategic Settlement Employment Areas



(Source: Growth Plan for the Greater Golden Horseshow, 2006, Office Consolidation, June 2013)

Employment, however, is predicted to increase by approximately 116% over the next 20 years, or an average of 5.8% per year. This represents a significant increase in employment for the Town of Bradford West Gwillimbury.

Growth within the Town is expected to occur within four main areas: the greenfield area within the Bradford Urban Area (within the existing built boundary), the Bond Head Settlement Area, the Strategic Settlement Employment Area, and within the rural area of the Town (Town of Bradford West Gwillimbury Consolidated Report of the September 12, 2013 Development Charge Background Study and the February 4, 2013 Addendum Report by Watson and Associates Economists Ltd.).

Bradford Settlement Area – Greenfield Area

This area is anticipated to yield approximately 4,690 additional housing units between 2011 and 2031, representing approximately 59% of the total housing forecast.

Bradford Settlement Area – Built Boundary

This area is anticipated to yield approximately 1,410 additional housing units between 2011 and 2031, representing approximately 24% of the total housing forecast.

Bond Head Settlement Area

This area is expected to yield approximately 1,300 additional housing units between 2011 and 2031, representing approximately 16% of the total housing forecast.

Bradford West Gwillimbury Strategic Settlement Employment Area

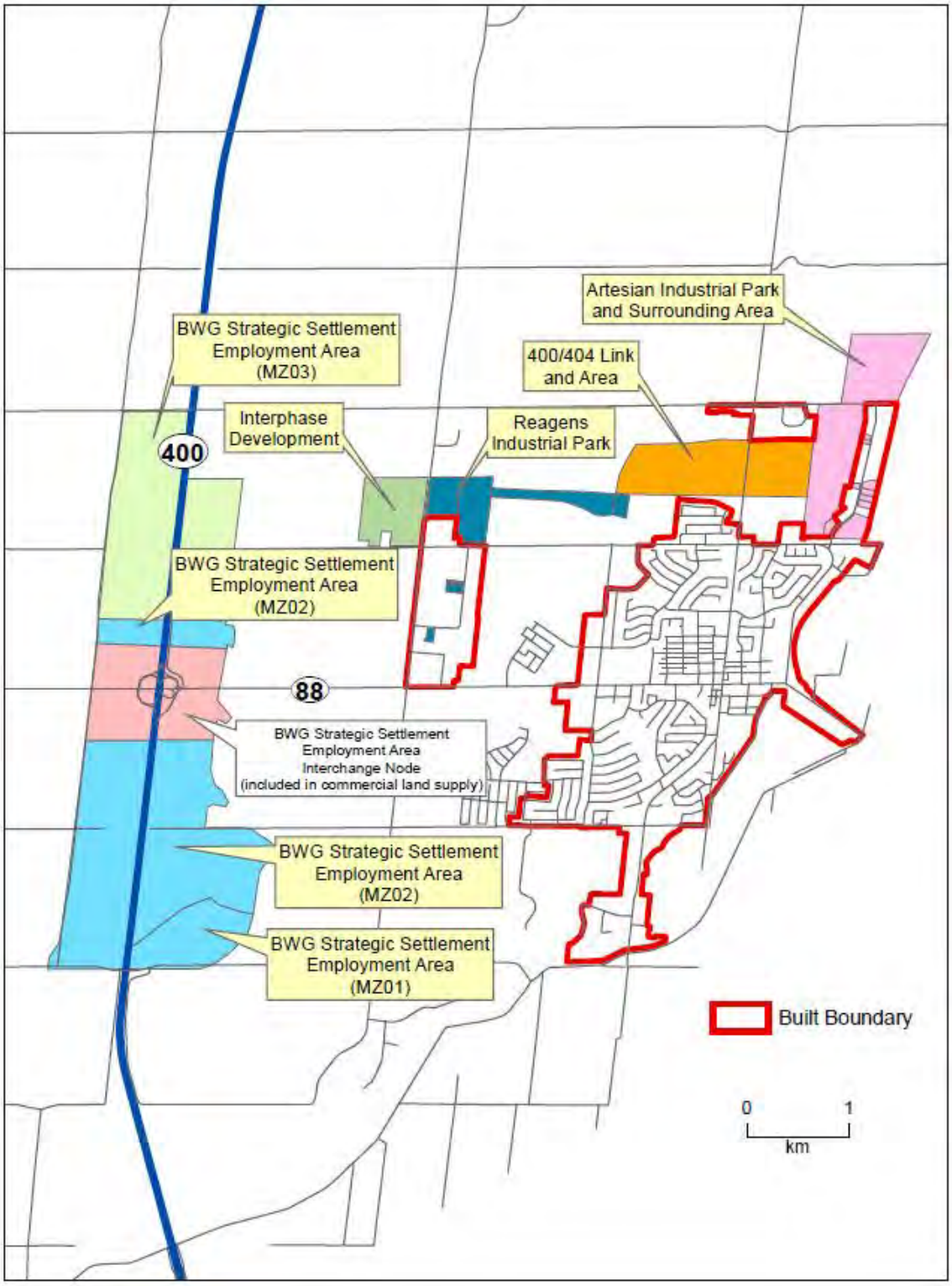
The Highway 400 Employment Lands development (illustrated above in **Figure 4**) is anticipated to yield approximately 7,300 employees by 2031. The majority of the development is anticipated to be a mix of industrial and commercial employment. **Figure 5** illustrates a closer view of the designated employment lands within Bradford West Gwillimbury.

Rural

It is anticipated that an additional 100 housing units will be built within the rural area of the Town by 2031, representing approximately 1% of the total housing forecast. The future rural development is shown previously in **Figure 2**.

Figure 5 displays the vacant designated employment lands within the Town and **Table 19** summarizes the anticipated growth in each of these areas within Bradford West Gwillimbury.

Figure 5: Bradford West Gwillimbury Vacant Designated Employment Lands



(Source: February 4, 2013 Consolidated Background Study Report - Water, Wastewater and Road Services)

Table 19: Bradford West Gwillimbury Summary of Anticipated Residential and Employment Growth

Location	Timing	Total Population	Housing (# of new units)	Employment (# of new employees)
Bradford Settlement Area (or Bradford Urban Area) – Greenfield Area (Urban)	2011 - 2016	12,800	1,882	623
	2011 - 2021	17,200	3,277	1,267
	2011 - 2026	19,800	4,092	1,515
	2011 - 2031	21,700	4,687	1,803
Bradford Settlement Area (or Bradford Urban Area) – Built Boundary (Urban)	2011 - 2016	18,800	283	115
	2011 - 2021	19,200	623	256
	2011 - 2026	19,800	1,008	364
	2011 - 2031	20,400	1,413	480
Bond Head Settlement Area (Urban)	2011 - 2016	700	85	12
	2011 - 2021	2,100	500	83
	2011 - 2026	3,300	900	139
	2011 - 2031	4,700	1,300	206
BWG Strategic Settlement Employment Area (Hwy 400)	2011 - 2016	-	-	1,715
	2011 - 2021	-	-	3,601
	2011 - 2026	-	-	5,468
	2011 - 2031	-	-	7,285
Rural	2011 - 2016	3,800	25	2
	2011 - 2021	3,800	50	5
	2011 - 2026	3,800	75	9
	2011 - 2031	3,800	100	18
Bradford West Gwillimbury	2011 - 2016	36,000	2,275	2,467
	2011 - 2021	42,300	4,450	5,212
	2011 - 2026	46,700	6,075	7,495
	2011 - 2031	50,500	7,500	9,793

(Source: February 4, 2013 Consolidated Background Study Report - Water, Wastewater and Road Services)

I2.2.1 *Growth Projections Profile Observations*

The population of the Town of Bradford West Gwillimbury is anticipated to grow at a rate of 4% per year over the coming 20 year period. Specifically within the next 10 years, the population is expected to grow significantly by 50.5%, which will be accommodated primarily in the Bradford Urban Area and Bond Head Settlement Area. The Town of Bradford West Gwillimbury Official Plan states that 85% of anticipated population and household growth will be directed to the Bradford Urban Area, with the balance of the growth to be distributed throughout the other settlements and rural areas. Key factors influencing this extreme growth is location, affordability and quality of life; the Town is situated on the edge of the Greater Toronto Area (GTA) and residents have easy access to Highway 400, which makes it easy to commute throughout the GTA. As well, housing costs are significantly less than homes in the City of Toronto. Current employment rates are low based on the fact that the Town is considered a "bedroom community", where most of the population commutes to a location outside of the Town for work. However, with new employment lands being designated both inside and outside of the Bradford Urban Area, employment is also expected to grow significantly by 64% over the next 10 years.

Ultimately, the Town of Bradford West Gwillimbury is expected to see significant growth over the next 20 years. Although the majority of new growth will occur in existing settlement areas, the future geographic locations of population and employment within Bradford West Gwillimbury are expected to expand within the 10-20 year study horizon. The Bradford Urban Area and Bond Head Settlement Area will see a slight expansion and a new employment area will be developed along Highway 400.

I2.3 Risk Profile Model

The OFM Fire Risk Sub-model defines risk "*as a measure of the probability and consequence of an adverse effect to health, property, organization, environment, or community as a result of an event, activity or operation. For the purposes of the Fire Risk Sub-model, such an event refers to a fire incident along with the effects of heat, smoke and toxicity threats generated from an incident*".

The OFM model develops an overall risk assessment "*by assigning probability and consequence levels to potential adverse events or scenarios due to fire and combining the two to arrive at an overall risk level*". The OFM Fire Risk Sub-model provides a matrix as one option in arriving at the level of risk for a range of scenarios.

Alternatively the model provides the opportunity "*for analysis purposes, the community being assessed can be defined as the municipality in its entirety or as a particular segment of it that distinguishes it from other parts*". The model further provides that "*it may be convenient to subdivide a municipality based on residential subdivision, downtown sections, industrial park, and a rural area*".

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

The methodology within this report includes a further process of assigning 'weighting factor' to each of the eight risk factor categories identified by the OFM Fire Risk Sub-model. Utilizing a range from 1 (lowest) to 3 (highest) each of the factors is assigned a weight factor, to calculated a weighted average. The weight factor assigns more or less priority to each of the given factors. For example, the demographic profile that identifies the number of vulnerable residents has been assigned the highest factor weight of 3. This process results in the most relevant categories having more impact on the risk priority level calculated.

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

This methodology then coordinates the assigned risk level for each major occupancy classification with the Council approved zoning by-law information and mapping. This process provides the opportunity to create a visual model (map) of the Community Risk Profile. This provides the opportunity to view both the current and projected level of risk within the community based on the Council approved Official Plan.

Creating the Community Risk Profile Model provides the opportunity to evaluate the current level of fire protection services provided. The model can further identify where risk levels may increase or change based on growth and long-term planning of the community.

I2.3.1 *Probability Levels*

The probability of a fire occurring can be estimated in part based on historical experience of the community. The experience of other similar communities and that of the province as a whole can also provide valuable insight into the probability of a fire occurring. The experience of the evaluator and the local fire service staff in collaborating on determining probability is also a key factor.

The OFM Fire Risk Sub-model categorizes the probability of an event occurring into five levels of likelihood. ***Table 20: OFM Fire Risk Sub-model Likelihood Levels (Probability) Likelihood Levels (Probability)*** identifies the OFM Fire Risk Sub-model categories.

Table 20: OFM Fire Risk Sub-model Likelihood Levels
(Probability) Likelihood Levels (Probability)

Description	Level	Specifics
Rare	1	- may occur in exceptional circumstances - no incidents in the past 15 years
Unlikely	2	- could occur at some time, especially if circumstances change - 5 to 15 years since last incident
Possible	3	- might occur under current circumstances - 1 incident in the past 5 years
Likely	4	- will probably occur at some time under current circumstances - multiple or reoccurring incidents in the past 5 years
Almost Certain	5	- expected to occur in most circumstances unless circumstances change - multiple or reoccurring incidents in the past year

I2.3.2 *Consequence Levels*

The consequences as a result of a fire relate to the potential losses or negative outcomes associated should an incident occur. The Fire Risk Sub-model identifies four components that should be evaluated in terms of assessing consequence. These include:

- ***Life Safety:*** Injuries or loss of life due to occupant and firefighter exposure to life threatening fire or other situations.
- ***Property Loss:*** Monetary losses relating to private and public buildings, property content, irreplaceable assets, significant historic/symbolic landmarks and critical infrastructure due to fire.

- ***Economic Impact:*** Monetary losses associated with property income, business closures, downturn in tourism, tax assessment value and employment layoffs due to fire.
- ***Environmental Impact:*** Harm to human and non-human (i.e. wildlife, fish and vegetation) species of life and general decline in quality of life within the community due to air/water/soil contamination as a result of fire or fire suppression activities.

The OFM Fire Risk Sub-model evaluates the consequences of an event based on five levels of severity. **Table *21: OFM Fire Risk Sub-model Consequence Levels*21** identifies the OFM Fire Risk Sub-model categories.

Table 21: OFM Fire Risk Sub-model Consequence Levels

Description	Level	Specifics
Insignificant	1	- no life safety issue - limited valued or no property loss - no impact to local economy and/or - no effect on general living conditions
Minor	2	- potential risk to life safety of occupants - minor property loss - minimal disruption to business activity and/or - minimal impact on general living conditions
Moderate	3	- threat to life safety of occupants - moderate property loss - poses threat to small local businesses and/or - could pose threat to quality of the environment
Major	4	- potential for a large loss of life - would result in significant property damage - significant threat to businesses, local economy and tourism and/or - impact to the environment would result in a short term, partial evacuation of local residents and businesses
Catastrophic	5	- significant loss of life - multiple property damage to significant portion of the municipality - long term disruption of businesses, local employment, and tourism and/or - environmental damage that would result in long-term evacuation of local residents and businesses

I2.3.3 *Risk Levels*

Once probability and consequence are determined for each major occupancy classification the level of risk is calculated by multiplying ***"probability x consequence = risk level (priority)".*** **Table 22** identifies the four levels of risk identified within the OFM Fire Risk Sub-model including the lower and upper range of each risk classification and the relative definition of each.

Table 22: OFM Fire Risk Sub-Model Risk Levels

Risk Level	Priority Level	Lower – Upper Range	Definition
Low Risk	L1	0 to 6.3	- manage by routine programs and procedures, maintain risk monitoring
Moderate Risk	L2	6.4 to 12.5	- requires specific allocation of management responsibility including monitoring and response procedures
High Risk	L3	12.6 to 18.7	- community threat, senior management attention needed
Extreme Risk	L4	18.8 to 25.0	- serious threat, detailed research and management planning required at senior levels

I2.3.4 *Ontario Fire Code Compliance*

A major determinate in assessing risk within a community and the major building classifications is compliance with the Ontario Fire Code. The Ontario Fire Code which was adopted in 1981 and the Ontario Building Code were developed to ensure uniform building construction and maintenance standards are applied for all new building construction. The codes also provide for specific fire safety measures depending on the use of the building. Examples of the fire safety issues that are addressed include:

- *occupancy*
- *exits/means of egress including signs and lighting*
- *fire alarm and detection equipment*
- *fire department access*
- *inspection, testing, and maintenance*

In 1983 the OFC was further expanded to include retrofit requirements for many of the building constructed prior to 1981. Retrofit requirements were established to ensure a minimum acceptable level of life safety is present. A number of occupancy types are included within the retrofit requirements including assembly, boarding, lodging and rooming houses, health care facilities, multi-unit residential, two-unit residential, and hotels.

Determining the status of compliance or non-compliance including the status of retrofit requirements particularly for major building occupancies is an important component of developing the Community Risk Profile. This is particularly important within the major occupancies classifications where there is a documented history of property loss as a result of fire, and/or injuries and fatalities as a result of fire. Group A – Assembly and Group B – Institutional occupancies are the two primary occupancies types where more detailed analysis of compliance and non-compliance should be considered.

Where compliance has been achieved and documented these occupancy classifications can be considered as part of the standard risk identification methodology within this report. Where compliance has not been achieved including retrofit requirements these occupancies should be evaluated independently adding a further assessment of OFC compliance.

Completing the independent evaluation provides the opportunity to assess these buildings on a case by case basis and as such does not impact the overall risk level for the occupancy classification. In the event an individual property is assigned a higher level of risk as a result of non-compliance this methodology provides the opportunity for re-evaluating the risk level for that specific property once compliance is achieved.

Group A – Assembly Occupancies – Non-Compliant OFC

There are four non-compliant buildings in this occupancy, including one school. The buildings are located at 105 Colborne Street, 5 Barrie Street, 425 Holland Street West, and 471 West Park Avenue. BWGFES is currently working with the owners of these occupancies to resolve this issue.

Group B – Institutional Occupancies – Non-Compliant OFC

Information provided by the Town indicates that all Group B - Institutional Occupancies are currently in compliance with the OFC.

Group C – Residential Occupancies – Vulnerable Demographics

There are six non-compliant buildings in this occupancy. Utilizing the "first line of defence" including pro-active fire prevention and public education programming in addition to a regular fire inspection program to sustain compliance with the OFC is an effective strategy in managing this risk. BWGFES is currently working with the owners of these occupancies to resolve this issue.

Group D – Commercial Occupancies – Fuel Load High Risk

Information provided by the Town indicates that all Group D - Commercial Occupancies are currently in compliance with the OFC.

Group E – Mercantile Occupancies – Non-Compliant OFC

There is one non-compliant building in this occupancy, located at 54-64 Holland Street West. BWGFES is currently working with the owner of this occupancy to resolve this issue.

Group F – Industrial Occupancies – Non-Compliant OFC

There are two non-compliant buildings in this occupancy, located at 285 Dissette Street and 4337 Line 5. BWGFES is currently working with the owners of these occupancies to resolve this issue.

I2.4 Town of Bradford West Gwillimbury Risk Evaluation

Table 22 presents the completed risk evaluation for the Town of Bradford West Gwillimbury. The evaluation utilizes the methodology described above following the framework of the OFM Fire Risk Sub-model.

The risk evaluation summary incorporates all community risk factors within the Town of Bradford West Gwillimbury for each major occupancy classification. The summary identifies that the Town has no extreme risk occupancies. Institutional occupancies were assigned high risk. This should be reflected in the department's fire prevention and public education program planning. Assembly and residential occupancies are identified as moderate level risks. If, however, any buildings under this occupancy are non-compliant, they may be considered high risk. This would apply specifically to higher density residential units or assembly occupancies. Another consideration would be residential buildings which specifically house higher risk age-groups (e.g. seniors or vulnerable persons), which should be given a higher priority for programming based on increased risk. Business and mercantile occupancies in Bradford West Gwillimbury represent a moderate risk.

Table 23: Risk Evaluation Summary

Community Risk Profile Factors		Property Stock	Building Height	Building Age	Building Exposures	Demographic Profile	Geography Topography	Past Fire Loss	Fuel Load	Prob. Level	Cons. Level	Priority Level	Risk Level
Weight Factor		***1***	***2***	***3***	***1***	***3***	***1***	***3***	***2***				
OBC Major Occupancy Classification		**Risk Level Assessment**											
Group A	**Assembly**	3	2	3	2	4	2	1	2	2.4	3	7.2	RL-2
Group B	**Institutional**	4	3	4	3	5	3	1	3	3.2	4	12.8	RL-3
Group C	**Residential**	4	2	3	3	5	2	3	2	3.1	3	9.3	RL-2
Group D	**Business**	3	3	3	4	2	2	2	3	2.6	3	7.8	RL-2
Group E	**Mercantile**	3	3	3	4	2	2	2	3	2.6	3	7.8	RL-2
Group F	**Industrial**	3	2	2	2	2	2	2	4	2.3	3	6.9	RL-2
Mobile Homes & Trailers		2	2	3	3	5	2	3	2	3.0	3	9.0	RL-2

Probability:		**Consequence Level:**		**Priority Level**		**Risk Level**
1 – Rare		1 – Insignificant		0 to 6.2 = Low	=	RL-1 – Low Risk
2 – Unlikely		2 – Minor		6.3 to 12.5 = Moderate	=	RL-2 – Moderate Risk
3 – Possible	**X**	3 – Moderate	=	12.6 to 18.7 = High	=	RL-3 – High Risk
4 – Likely		4 – Major		18.8 to 25.0 = Extreme	=	RL-4 – Extreme Risk
5 – Almost Certain		5 - Catastrophic				

I2.5 Town of Bradford West Gwillimbury Risk Model

I2.5.1 *Methodology*

This section provides a brief outline of the scope and methodology used in order to provide insight into the modeling procedures adopted to assess Town risk. A Geographic Information Systems (GIS) model was developed to assess risk based on historic call locations, risk geography, land use, the department's existing and predicted emergency response travel times relate to these risks, and the Fire Risk Sub-Model (form 100).

The basis of the GIS risk model is to develop geographical risk zones that represent areas of low, moderate, high and extreme risk categories based on land use. The Town's existing land use zoning was used to determine the boundaries and building occupancies associated with each zone. Subsequently, all buildings located in areas outside of the Town's official land use zoning were identified using a buildings shapefile provided by the Ministry of Natural Resources. The shapefile displays the buildings as points, thus each point/building was given a 100m buffer in order to approximate the building along with its corresponding property. All remaining un-zoned areas were given a land use classification of open space. Next, building occupancies were assigned to their associated land use in order to determine the base risk category (assumes that all buildings are in compliance). The base risk zones associated with each occupancy category are listed in **Table 24**. Finally, several occupancies had their risk levels up-graded or down-graded based on a review of the risk evaluation summary with department staff.

Table 24: Base Risk Zone Category by Occupancy

Occupancy Classification (OBC)	Occupancy Definition Fire Risk Sub-model (OFM)	Base Risk Zone Category Assigned
Group A – Assembly Assembly	*Assembly occupancies*	*moderate*
Group B - Institutional Institutional	*Care or Detention occupancies*	*high*
Group C - Residential Residential	*Residential occupancies*	*moderate*
Group D - Business	*Business and Personal Services Occupancies*	*moderate*
Group E - Mercantile	*Mercantile occupancies*	*moderate*
Group F1 - Industrial	*Industrial occupancies*	*low*
Group F2 - Industrial		*moderate*
Group F3 - Industrial		*high*
Other occupancies	*Not classified within the Ontario Building Code (i.e. farm buildings)*	*low*

I2.5.2 *Existing Risk and Response (Call Locations)*

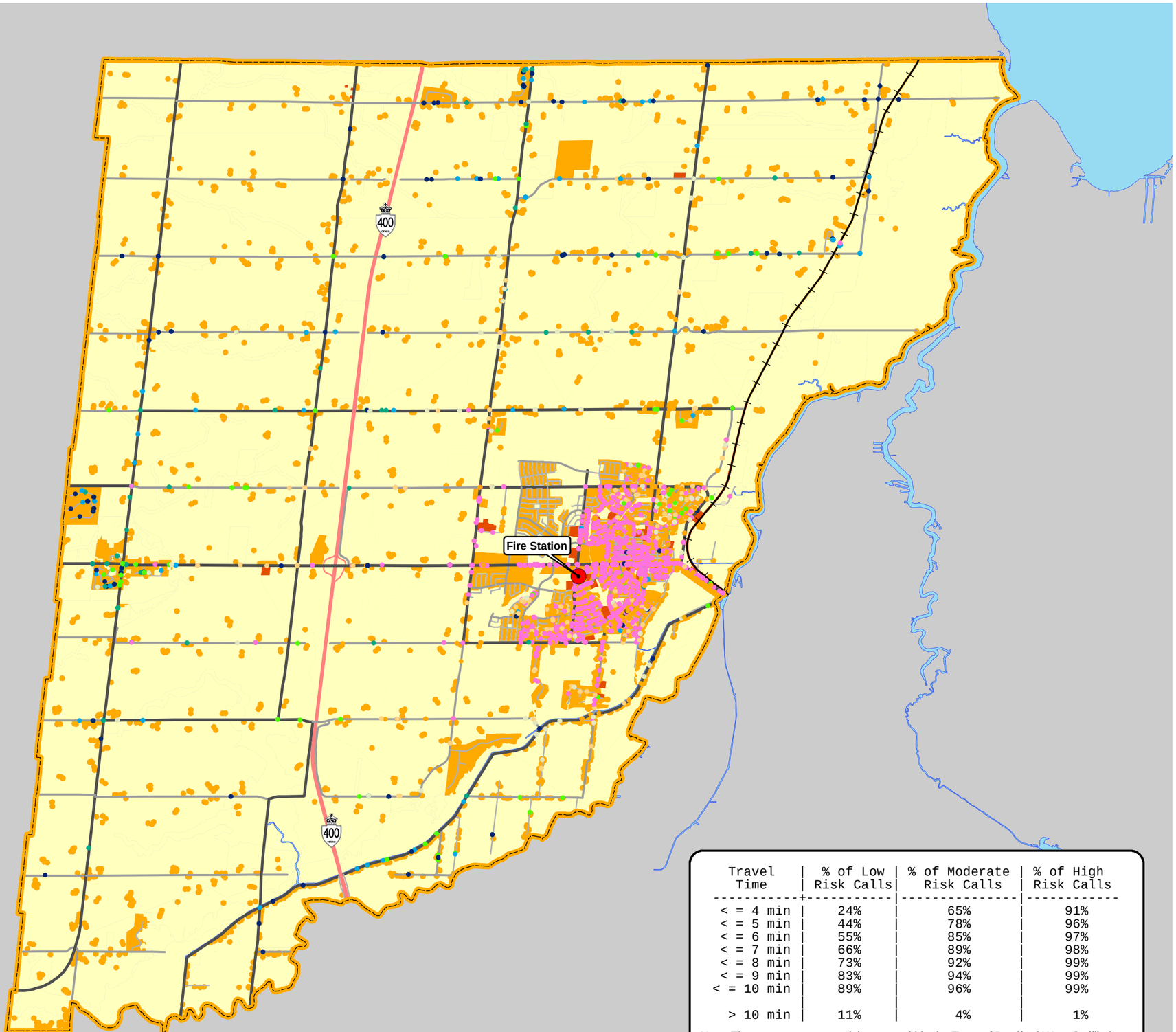
The existing risk zones and existing emergency response are presented in **Figure 6**. This figure depicts historic call data from 2009, 2010, 2011 and 2012 (all calls) overlaid onto the existing risk zones represented in the model. These calls were colour coded according to travel time. Calculations were carried out to estimate the number of calls within each risk zone category and the travel time associated. From the calculations table, 91% of high risk calls were responded to in four minutes or less of travel time. The table also indicates that 65% of the moderate risk calls were responded to in four minutes or less of travel time and 92% of moderate risk calls were responded to in eight minutes of travel time or less. The figure also shows that 24% of the low risk calls were responded to in four minutes or less of travel time, 73% in eight minutes of travel time or less and89% in ten minutes of travel time or less. This indicates that, based on where the majority of the calls occur, the department is able to respond in a timely manner.

I2.5.3 *Existing Risk and Response (Geography)*

The GIS model was used to approximate existing geographic coverage of the existing risk zones within the urban and rural areas, shown in **Figure 7** and **Figure 8**. **Figure 7** depicts the geographic coverage of risk within the existing urban area with regards to travel time. This coincides with NFPA 1710 response measures. As illustrated in the figure, 70% of high risk zones, 84% of moderate risk zones and 54% of low risk zones are covered within four minutes of travel time. The figure also demonstrates that the fire department is able to reach 97% of high risk areas, 100% of moderate risk areas and 99% of low risk areas within eight minutes of travel time. **Figure 8** depicts the geographic coverage of risk within the rural area of the municipality with regards to total response time (turnout and travel time). This coincides with NFPA 1720 response measures. Based on historical call data, an average turnout time of 6 minutes was assumed for the station. As illustrated in the figure, the department is able to respond to 35% of high risk areas, 25% of moderate risk areas and 18% of low risk areas within a total response time of 14 minutes.

I2.5.4 *Future Risk and Response (Geography)*

The model was used to approximate geographic coverage of the future risk zone areas. Given the development that is predicted in the future, approved growth areas and secondary plans were incorporated into the risk model. The methodology for this scenario was the same as for the Existing Risk and Response discussed above. The results are shown in **Figure 9** and **Figure 10**. **Figure 9** depicts the geographic coverage of risk within the future urban area with regards to travel time. This coincides with NFPA 1710 response measures. As illustrated in the figure, 69% of high risk zones, 66% of moderate risk zones and 41% of low risk zones are covered within four minutes of travel time. The figure also demonstrates that the fire department is able to reach 93% of high risk areas, 82% of moderate risk areas and 96% of low risk areas within eight minutes of travel time. **Figure 10** depicts the geographic coverage of future risk within the rural area of the municipality with regards to total response time (turnout and travel time). This coincides with NFPA 1720 response measures. Based on historical call data, an average turnout time of 6 minutes was assumed for the station. As illustrated in the figure, the department is able to respond to 52% of high risk areas, 32% of moderate risk areas and 26% of low risk areas within a total response time of 14 minutes.



Travel Time	% of Low Risk Calls	% of Moderate Risk Calls	% of High Risk Calls
< = 4 min	24%	65%	91%
< = 5 min	44%	78%	96%
< = 6 min	55%	85%	97%
< = 7 min	66%	89%	98%
< = 8 min	73%	92%	99%
< = 9 min	83%	94%	99%
< = 10 min	89%	96%	99%
> 10 min	11%	4%	1%

Note: There are no extreme risk zones within the Town of Bradford West Gwillimbury

BRADFORD WEST GWILLIMBURY FIRE & EMERGENCY SERVICES

TOWN OF BRADFORD WEST GWILLIMBURY
FIRE MASTER PLAN

EXISTING RISK AND RESPONSE - HISTORICAL FIRE CALL LOCATIONS

Figure 4: Existing Risk and Response Call Locations

- FIRE STATION
- RAILWAY
- HIGHWAY
- ARTERIAL
- COLLECTOR
- LOCAL
- WATERBODY
- MUNICIPAL BOUNDARY

TRAVEL TIME TO HISTORICAL CALLS (2009-2012)

- < = 4 min
- < = 5 min
- < = 6 min
- < = 7 min
- < = 8 min
- < = 9 min
- < = 10 min
- > 10 min

RISK

- LOW RISK
- MODERATE RISK
- HIGH RISK
- EXTREME RISK

0 0.5 1 2 km

N W E S

MAP DRAWING INFORMATION:
DATA PROVIDED BY TOWNSHIP OF BRADFORD WEST GWILLIMBURY
COUNTY OF SIMCOE

MAP CREATED BY: JJA
MAP CHECKED BY: SS
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
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EXISTING RISK AND RESPONSE - GEOGRAPHY.MXD

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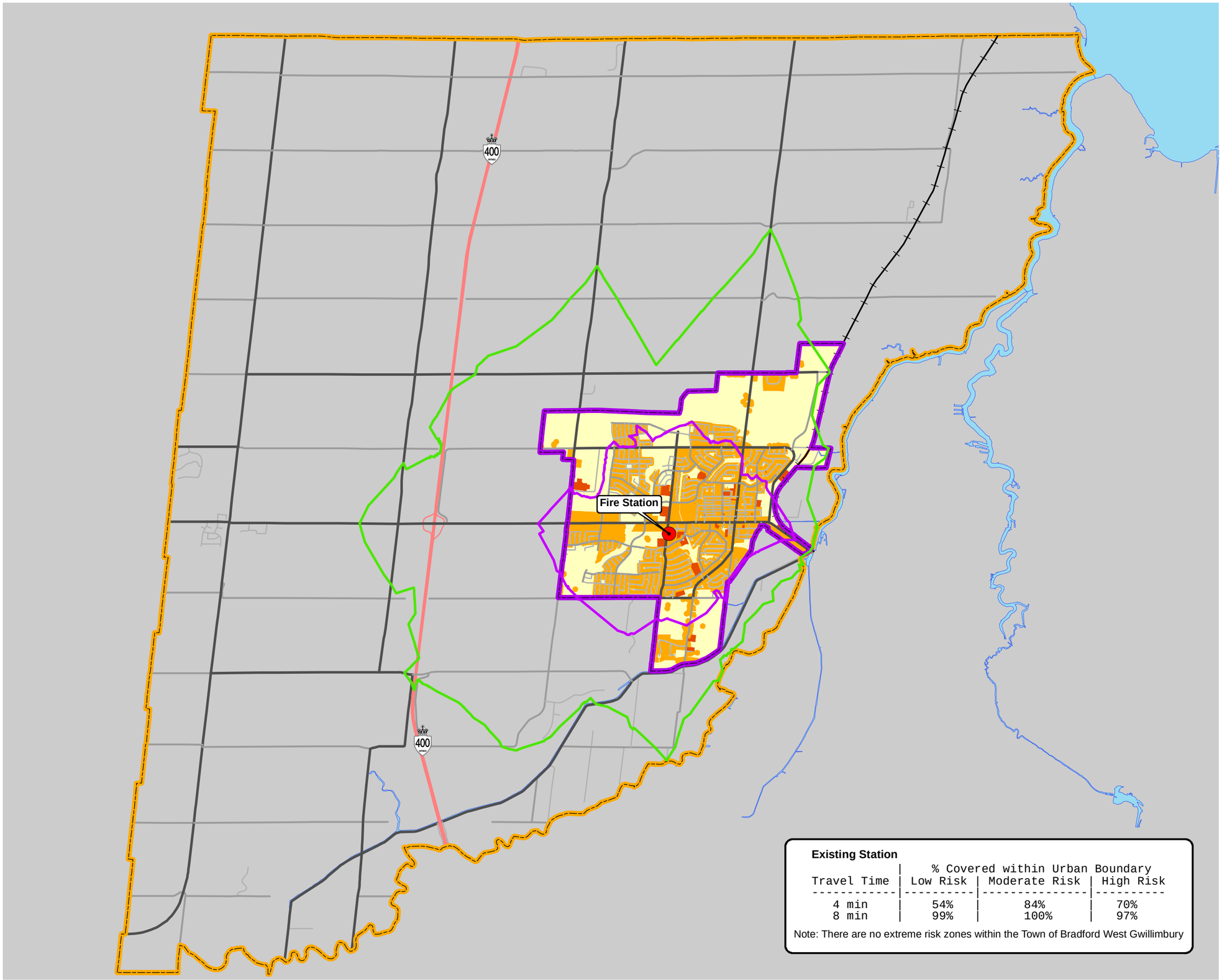
PROJECT: 13-7661
STATUS: DRAFT
DATE: 07/23/13



Existing Station

Travel Time	% Covered within Urban Boundary Low Risk	Moderate Risk	High Risk
4 min	54%	84%	70%
8 min	99%	100%	97%

Note: There are no extreme risk zones within the Town of Bradford West Gwillimbury

BRADFORD WEST GWILLIMBURY FIRE & EMERGENCY SERVICES

TOWN OF BRADFORD WEST GWILLIMBURY
FIRE MASTER PLAN

EXISTING URBAN RISK AND RESPONSE - GEOGRAPHY

Figure 5: Existing Urban Risk and Response (Geography)

- FIRE STATION
- RAILWAY
- HIGHWAY
- ARTERIAL
- COLLECTOR
- LOCAL
- WATERBODY
- MUNICIPAL BOUNDARY
- URBAN BOUNDARY

TRAVEL TIMES

- 4 MINUTES @ NETWORK SPEED
- 8 MINUTES @ NETWORK SPEED

RISK

- LOW RISK
- MODERATE RISK
- HIGH RISK
- EXTREME RISK

0 0.5 1 2 km

N W E S

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DATA PROVIDED BY TOWNSHIP OF BRADFORD WEST GWILLIMBURY
COUNTY OF SIMCOE

MAP CREATED BY: JJA
MAP CHECKED BY: SS
MAP PROJECTION: NAD 1983 UTM Zone 17N

FILE LOCATION:
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PROJECT: 13-7661
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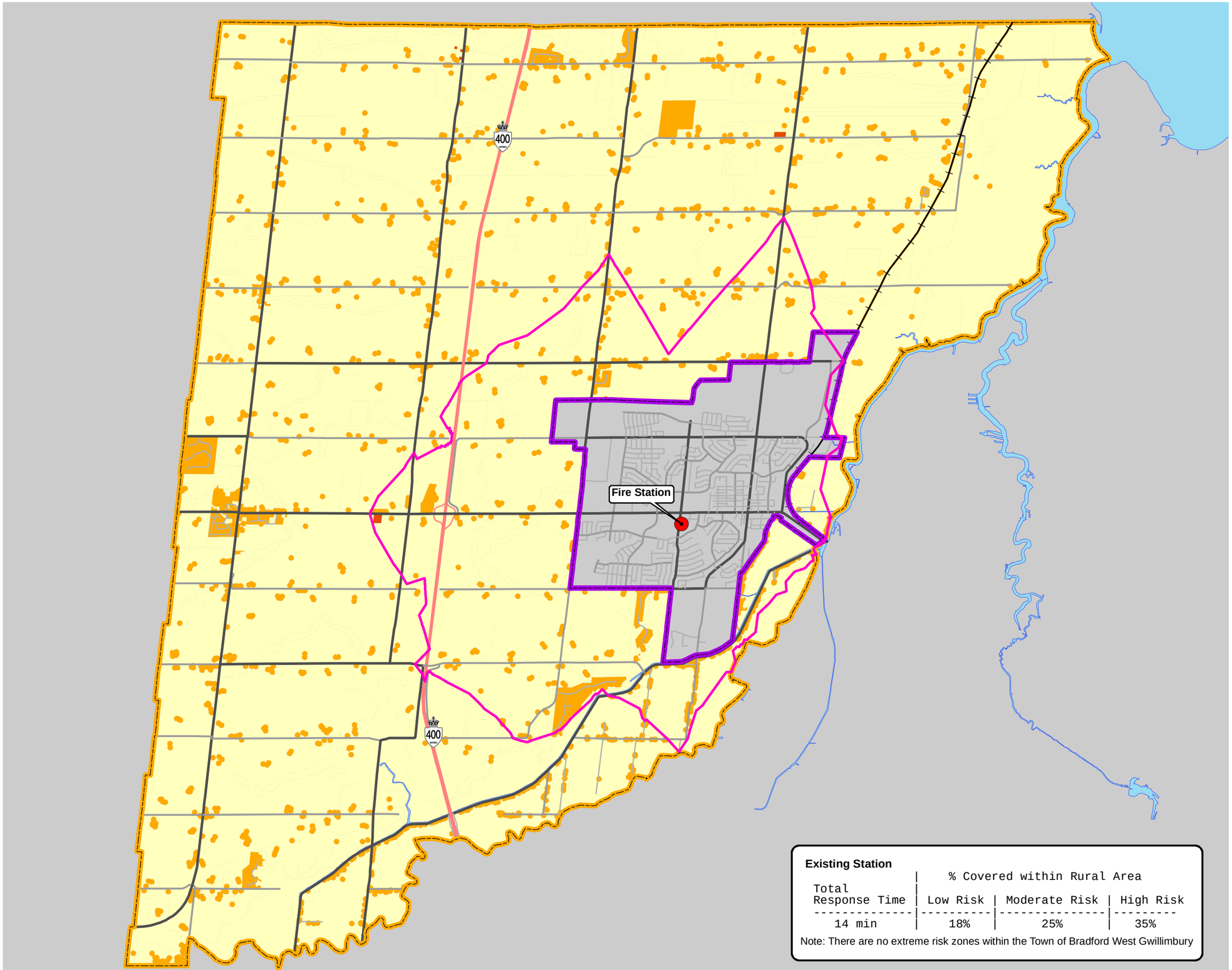
DATE: 07/05/13



Existing Station

Total Response Time	% Covered within Rural Area		
	Low Risk	Moderate Risk	High Risk
14 min	18%	25%	35%

Note: There are no extreme risk zones within the Town of Bradford West Gwillimbury

BRADFORD WEST GWILLIMBURY FIRE & EMERGENCY SERVICES

TOWN OF BRADFORD WEST GWILLIMBURY

FIRE MASTER PLAN

EXISTING RURAL RISK AND RESPONSE - GEOGRAPHY

Figure 6: Existing Rural Risk and Response (Geography)

- FIRE STATION
- RAILWAY
- HIGHWAY
- ARTERIAL
- COLLECTOR
- LOCAL
- WATERBODY
- MUNICIPAL BOUNDARY
- URBAN BOUNDARY

TOTAL RESPONSE TIME

- 14 MINUTES @ NETWORK SPEED

RISK

- LOW RISK
- MODERATE RISK
- HIGH RISK
- EXTREME RISK

0 0.5 1 2 km

N W E S

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COUNTY OF SIMCOE

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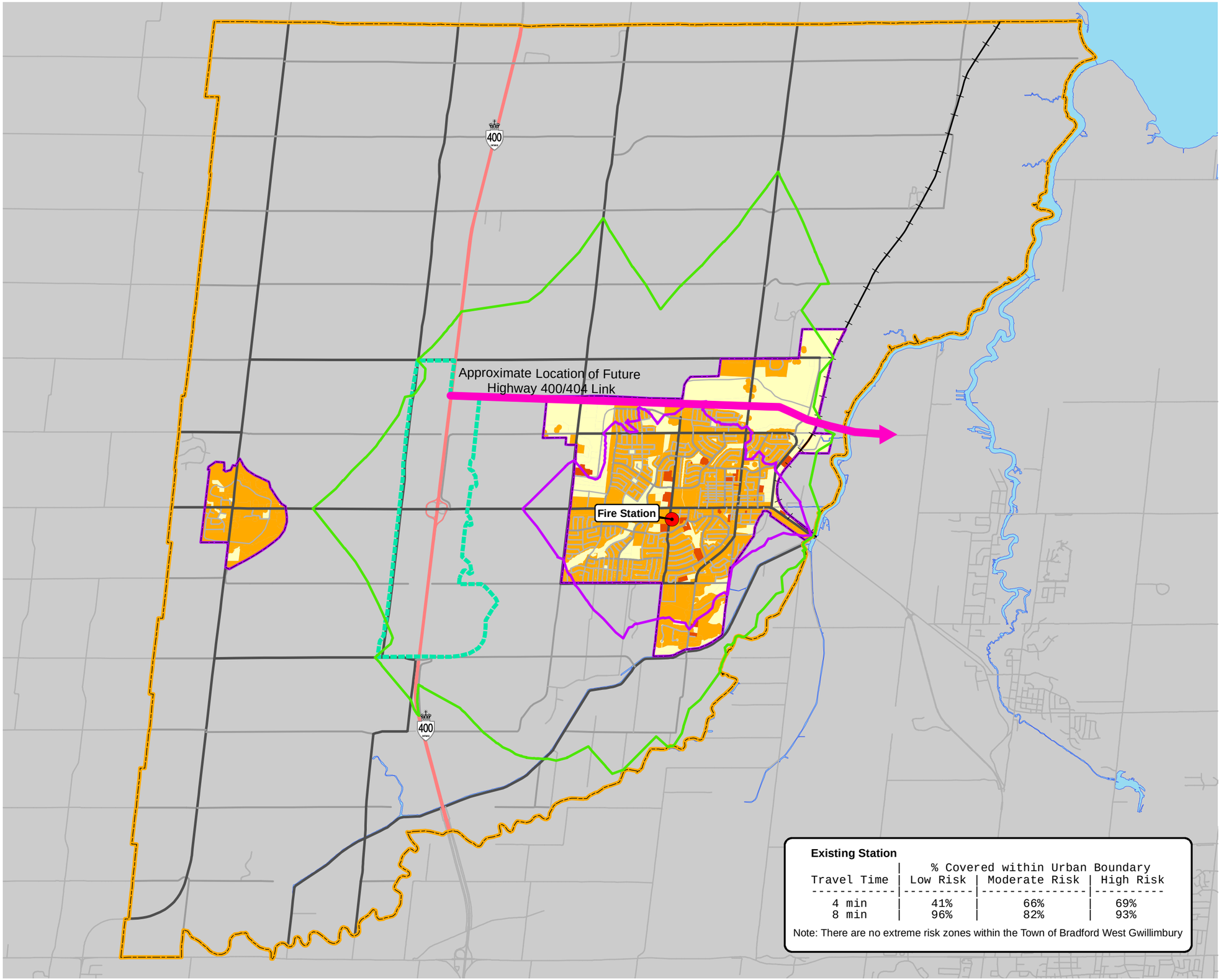

Existing Station

Travel Time	% Covered within Urban Boundary		
	Low Risk	Moderate Risk	High Risk
4 min	41%	66%	69%
8 min	96%	82%	93%

Note: There are no extreme risk zones within the Town of Bradford West Gwillimbury

BRADFORD WEST GWILLIMBURY FIRE & EMERGENCY SERVICES

TOWN OF BRADFORD WEST GWILLIMBURY
FIRE MASTER PLAN

FUTURE URBAN RISK AND RESPONSE - GEOGRAPHY

Figure 7: Future Urban Risk and Response (Geography)

- FIRE STATION
- RAILWAY
- HIGHWAY
- ARTERIAL
- COLLECTOR
- LOCAL
- WATERBODY
- MUNICIPAL BOUNDARY
- URBAN BOUNDARY
- HIGHWAY 400 EMPLOYMENT AREA

TRAVEL TIMES

- 4 MINUTES @ NETWORK SPEED
- 8 MINUTES @ NETWORK SPEED

RISK

- LOW RISK
- MODERATE RISK
- HIGH RISK
- EXTREME RISK

0 0.5 1 2 km

N W E S

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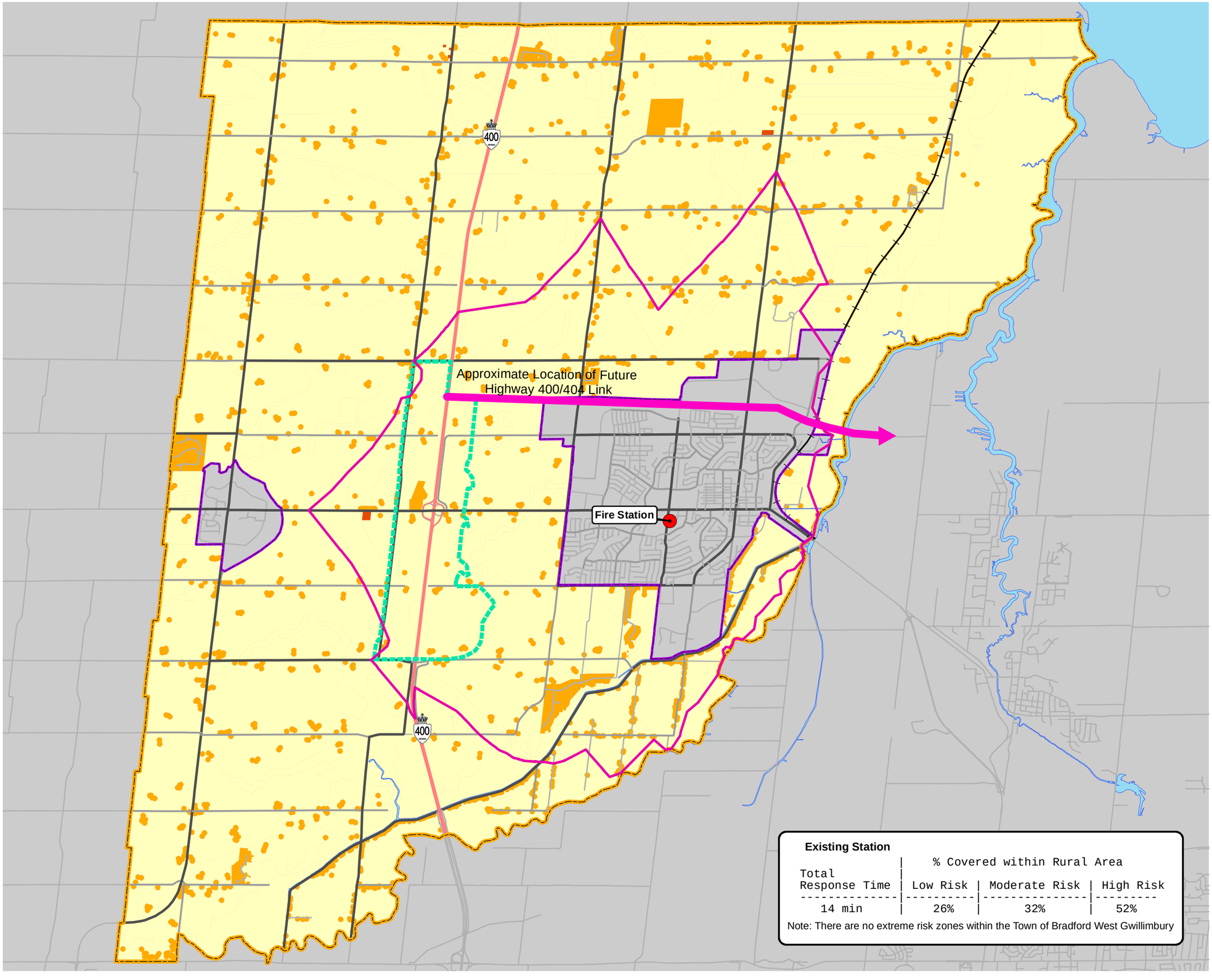

Existing Station

Total Response Time	% Covered within Rural Area		
	Low Risk	Moderate Risk	High Risk
14 min	26%	32%	52%

Note: There are no extreme risk zones within the Town of Bradford West Gwillimbury

BRADFORD WEST GWILLIMBURY FIRE & EMERGENCY SERVICES

TOWN OF BRADFORD WEST GWILLIMBURY
FIRE MASTER PLAN

FUTURE RURAL RISK AND RESPONSE - GEOGRAPHY

Figure 8: Future Rural Risk and Response (Geography)

- FIRE STATION
- RAILWAY
- HIGHWAY
- ARTERIAL
- COLLECTOR
- LOCAL
- WATERBODY
- MUNICIPAL BOUNDARY
- URBAN BOUNDARY
- HIGHWAY 400 EMPLOYMENT AREA

TOTAL RESPONSE TIME

- 14 MINUTES @ NETWORK SPEED

RISK

- LOW RISK
- MODERATE RISK
- HIGH RISK
- EXTREME RISK

0 0.5 1 2 km

N W E S

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PROJECT: 13-7661
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APPENDIX J
Definitions of OFM Response Types

The Office of the Fire Marshal

Ontario

Standard Incident Report Codes List

Jan 2009 **Bolded code** indicates new in 2009

ALL EMERGENCY RESPONSES	
AID FROM OTHER DEPARTMENT(S)	
1	Mutual aid
2	Automatic aid
3	Fire Protection agreement
4	Not applicable
INCIDENT LOCATION	
NFPP	
See separate code listing	
FIRE DEPT ID CODE	
NFPP OR FD	
See separate code listing	
ALARM TO FIRE DEPARTMENT	
1	911
2	Telephone from Civilian (other than 911)
3	From Ambulance
4	From Police Services
5	From Monitoring Agency
6	Direct Connection
7	Verbal Report to Station (in person)
8	Two-Way Radio (fire department)
9	Other Alarm
10	No Alarm Received - No Response
11	No Alarm rev'd - incident discovered by FD personnel
RESPONSE TYPE	
Property Fires/Explosions	
1	Fire
2	Explosion (exc. types 3, 11 to 13)
3	No loss outdoor fire (excluding arson, vandalism, children playing, recycling or dump fires)
Overpressure rupture/explosion (no fire)	
11	Overpressure Rupture (no fire, e.g. steam boilers, hot water)
12	Munition Explosion - (no fire, e.g. bombs, dynamite)
13	Overpressure Rupture - gas pipe (no fire)
Pre fire conditions/no fire	
21	Overheat (no fire, e.g. engines, mechanical devices)
22	Pot on Stove (no fire)
24	Other Cooking/toasting/smoke/steam (no fire)
25	Lightning (no fire)
26	Fireworks (no fire)
29	Other pre fire conditions (no fire)
Burning (controlled)	
23	Open air burning/unauthorized controlled burning (no uncontrolled fire)
36	Authorized controlled burning - complaint
False fire calls	
31	Alarm System Equipment - Malfunction
32	Alarm System Equipment - Accidental activation (exc. code 35)
33	Human - Malicious intent, prank
34	Human - Perceived Emergency
35	Human - Accidental (alarm accidentally activated by person)
39	Other False Fire Call
CO False calls	
37	CO false alarm - perceived emergency (no CO present)
38	CO false alarm - equipment malfunction (no CO present)
Public Hazard	
53	CO incident, CO present (NOT false alarm)
41	Gas Leak - Natural Gas
42	Gas Leak - Propane
43	Gas Leak - Refrigeration
44	Gas Leak - Miscellaneous
45	Spill - Gasoline or Fuel
46	Spill - Toxic Chemical
47	Spill - Miscellaneous
48	Radio-active Material Problem
49	Ruptured Water, Steam Pipe
50	Power Lines Down, Arcing
51	Bomb, Explosive Removal, Standby
54	Suspicious substance
57	Public Hazard no action required
58	Public Hazard call false alarm
59	Other public hazard
Rescue	
61	Vehicle Extrication
62	Vehicle Collision
63	Building Collapse
64	Commercial/Industrial Accident
65	Home/Residential Accident
66	Persons Trapped in Elevator
67	Water Rescue
68	Water Ice Rescue
69	Other Rescue
601	Trench rescue (non fire)
602	Confined space rescue (non fire)
603	High angle rescue (non fire)
604	Low angle rescue (non fire)
605	Animal rescue
698	Rescue no action required
699	Rescue false alarm
Medical/resuscitator call	
701	Oxygen administered
702	CPR administered
703	Defibrillator used
71	Asphyxia, Respiratory Condition
73	Seizure
74	Electric Shock
75	Traumatic Shock
76	Chest pains or suspected heart attack
82	Burns
84	Medical Aid Not Required on Arrival
85	Vital signs absent, DOA
86	Alcohol or drug related
88	Accident or illness related - cuts, fractures, person fainted, etc.
89	Other Medical/Resuscitator Call
898	Medical/resuscitator call no action required
899	Medical/resuscitator call false alarm
Other response	
921	**Illegal grow operation (no fire)**
922	**Illegal drug operation (no fire)**
910	Assisting other FD: Mutual Aid
911	Assisting other FD: Automatic Aid
912	Assisting other FD: Fire Protection Agreement
913	Assisting other FD: Other
92	Assisting Police (exc 921, 922)
93	Assisting Other Agencies (exc 921, 922)
94	Other Public Service
96	Call cancelled on route
97	Incident not found
98	Assistance not required by other agency
99	Other Response
FIRES AND EXPLOSIONS	
STATUS ON ARRIVAL	
1	Fire extinguished prior to arrival
2	Fire with no evidence from street
3	Fire with smoke showing only - including vehicle, outdoor fires
4	Flames showing from small area (one storey or less, part of a vehicle, outdoor)
5	Flames showing from large area (more than one storey, large area outdoors)
7	Fully involved (total structure, vehicle, spreading outdoor fire)
8	Exposure involved
9	Unclassified
WATER	
1	Hydrant within 150 meters
2	Hydrant within 150 to 300 meters
3	Hydrant 300 or more meters
4	Tanker shuttle service available (NO hydrant)
5	None of the above
9	Undetermined
FIRE CONTROL	
1	Extinguished by fire department
2	Extinguished by automatic system
3	Extinguished by occupant
4	Fire self extinguished
5	Action taken unclassified