

Town of Orangeville **FIRE MASTER PLAN**



5th March 2015

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Introduction

The Town of Orangeville developed a Request for Proposals (RFP) to complete a Fire Master Plan (FMP) for the Orangeville Fire Department (OFD) for the fire department to address the operational and fire protection needs of the town.

T L. Powell & Associates Ltd (TLP) in conjunction with *Cyril Hare & Associates Inc* responded to the RFP and were successful in securing the contract to complete the outlined requirements of the RFP.

This Fire Master Plan addresses the current level of fire protection provided to the residents and businesses of the Town of Orangeville and the rural municipalities that purchase fire protection from the OFD. The purpose of this plan is to assist the Town of Orangeville and the OFD in determining the most appropriate delivery model for fire emergency services within the municipality and to its customers.

The Municipalities Act and the Fire Protection and Prevention Act (FPPA) provided municipalities with the authority to establish a fire department. The FPPA also contains mandatory requirements for the provisions of fire safety education and fire prevention.

For a number of years the province has gradually delegated fire prevention responsibilities for institutions and hotels to municipalities. With the autonomy provided to municipal fire departments by the province and the Ontario Fire Marshal (OFM), municipalities are under pressure to achieve more with less.

As a role model for the province, the Town of Orangeville (the “Town”) is determined to ensure that fire protective services are provided in the most effective and efficient manner possible and that the resources are aligned with the department’s evolving mandate.

The scope of work outlined in the Request for Proposal issued in April 2014 requested a complete review of the following:

1. Governance - review the applicable legislation relative to the Orangeville Fire Department including all relative by-laws such as the Establishing and Regulating By-Law, Fire Route By-Law, Fireworks By-Law, Appointment and Duties By-Law.
2. Emergency Response - examine the emergency call volume including type of calls, number of calls, equipment deployment, staffing, safety, and deployment and make recommendations where required.
3. Training and Education - research and make recommendations regarding the Fire Fighter Training Program.
4. Fire Prevention - review and make recommendations regarding the Fire Prevention Program including fire inspections, investigations, and public education.

5. Human Resources - review and make recommendations regarding fire department staffing including the full time positions and VFFs. Examine and review fire fighter recruitment, retention, promotional policy, succession planning, and demographics. This includes review of the applicable job descriptions.
6. Fire Station / Apparatus and Equipment - examine the fire station, fire apparatus and major pieces of equipment including the types of vehicles, age, and effectiveness. The provision of fire protection services to other municipalities should be referenced and taken into consideration under the Fire Protection Agreements section.
7. Maintenance Program – review the maintenance program of the fire apparatus and equipment on a life cycle basis.
8. Dispatch and Radio Systems – review the current dispatch system, paging, and radio systems. Make recommendations as required.
9. Budgets – review the fire department operating budget, capital budget, reserves (equipment, vehicles), and development charges. Examine revenues and potential revenues, including current fees for service and recommended fee structures.
10. Review and assess the Community Risk Profile and update as appropriate.
11. Review the Fire Protection Agreements in place with other municipalities with respect to best practices and fees for service. Review the coverage with respect to growth (see 14. below) and the potential need for expansion of services.
12. The study is to be conducted with best practices, industry standards and current legislation as the foundation for all work undertaken.
13. The study will assess the station, staffing and apparatus implications of NFPA 1710 and 1720, and that of the Ontario Fire Marshal’s Public Fire Safety Guidelines.
14. The study will consider the growth in population and employment over the next 5 and 10 years and the potential impact to service delivery, and operations of the fire department.

Methodology

T L Powell & Associates Ltd (TLP) team met with all the stakeholders. The purpose of the meetings was to discuss any issues that may have been a concern of any stakeholder and to determine if any other issues needed to be addressed through the process.

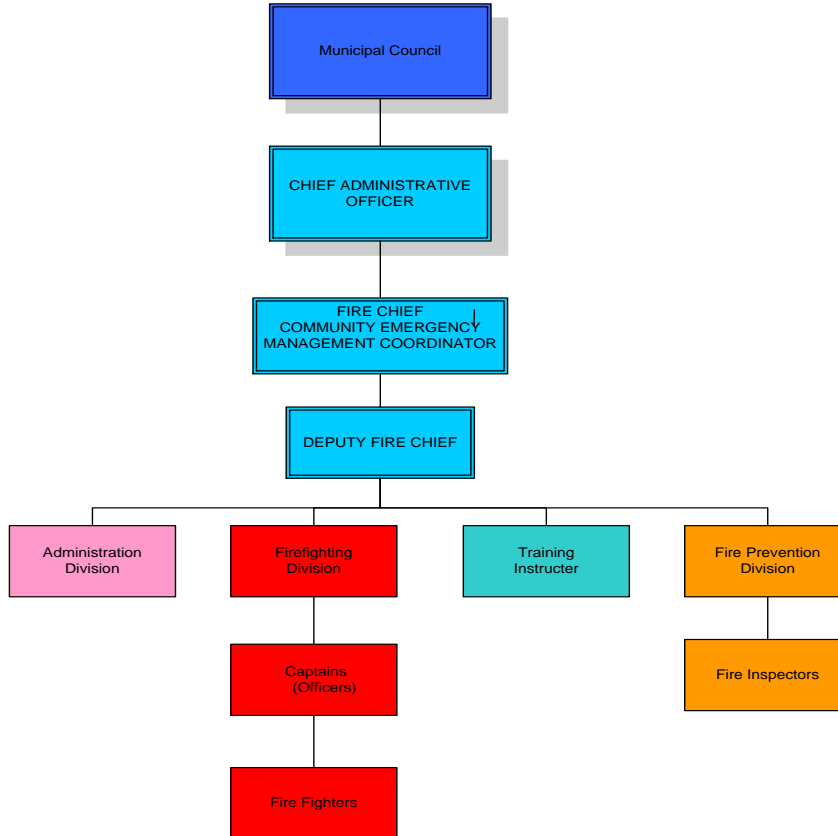
The consultants met with all senior staff members of the Orangeville Fire Department (OFD) including the Fire Chief, Deputy Fire Chief, Chiefs of Training and Fire Prevention and technical staff, senior members of corporate staff including the CAO. They also met with the Mayor, members of Council, the General Managers, Finance and clerical staff. There was also a visit to the fire station, communications and other locations.

The consultants conducted a review of all documents and data related to the operation and service level of the fire department provided by the Fire Chief during the review phase of the project.

Fire Administration

The Current Fire Department organization chart is as follows:

Town of Orangeville Fire Department. Current Organization Chart.



The Fire Prevention and Protection Act, 1997 outlines the management positions that may be excluded from the collective agreement. Currently the Town of Orangeville has three positions in the fire department that are excluded. They are the Fire Chief, Deputy Fire Chief and the Administrative Assistant. All other full time members of the fire department are members of the Orangeville Professional Fire Fighters' Association, local 4328.

In addition to being the Fire Chief the holder of that position is also responsible for the requirements under the Emergency Management Act 1999. The Fire Chief is the Community Emergency Management Coordinator (CEMC). The person holding this position is responsible for coordinating the municipal emergency program and providing training and exercises to ensure the municipal emergency plan is current and actionable in the event of a situation that requires the implementation of the plan.

Establishing and maintaining the Emergency Operations Center and an alternate location in the event the first location is compromised is just one of the rolls of the CEMC. Maintenance

of the plan, training of staff and conducting exercises to ensure the plan is current in other aspects of the position.

In addition to the CEMC roll the town is under contract with three surrounding municipalities to provide emergency response fire protection services that are provided and managed by the fire department administration.

The Fire Chief is responsible for managing the full-time and VFFs. The budget for this department is broken down into two areas, operational and capital. The operational budget covers all the day to day financing of the emergency service.

The capital budget for each year varies with the capital purchase schedule for the town. The capital budget includes such items as Emergency Vehicles, Pumper Trucks, Tanker Trucks, Aerial Trucks, Squads and Rescue Trucks. Other capital purchases may include, Personal Protection Equipment (PPE), Self-Contained Breathing Apparatus (SCBA) and several other rescue tools and specialized equipment. All of these items require detailed specifications, monitoring and maintenance during their life span.

There is one Administrative Assistant/Receptionist support position assigned to the OFD administration. All of the management/administrative duties are carried out by the Fire Chief and the Deputy Fire Chief. The need for a strong management team and a support administrative group is very evident in today's world of litigation and life threatening environments which emergency service workers increasingly find themselves in.

The following list outlines best practices of well-managed organizations:

The Organization is focused on performance of key results

A focus and common direction on meeting the community's needs.

A consistent understanding of its results in concrete, measurable terms.

An ability to set priorities and follow them through.

Productivity

A continuous search and assessment of whether activities and resources add value in terms of customer-oriented service results.

Economical acquisition and use of resources.

Constant attention applied to putting sufficient resources into areas yielding high paybacks.

Responsiveness and Adaptability

Ability to problem solve and respond to events which do not fit the mould.

Feedback which authentically challenges conventional wisdom.

Entrepreneurship

Proactively identifying the needs of customers and stakeholders, and finding ways to respond.

People look for, and the organization prizes, initiatives and experiments that uncover better ways to improve results.

Teamwork and Communications

People throughout the organization have a common sense of goals in concrete terms.

People understand their personal accountability for results as a team member, and care about, and have pride in, the success of their team.

Cooperation exists both horizontally and vertically.

Making organizations more effective also involves clarifying roles and relationships and improving management processes and practices. The effectiveness of any organization depends on how well roles are designed, how clearly and appropriately relationships are developed, and how well practices for planning, decision-making and communication are established.

The OFD executive management level consists of two positions, namely, the Fire Chief, who has the overall responsibility of the Service and a Deputy Fire Chief. A reorganization of the management group could provide a second Deputy Fire Chief to be excluded from the association by nature of rank, duties and responsibilities.

The Administrative/Receptionist carries out various routine administrative duties, spending a considerable amount of each day inputting response data and maintaining records from all aspects of the operations of the service.

Conclusions:

The current organization needs to be revisited in light of the challenges facing the fire department now and in the future. The mandatory records and files that are to be retained by the department through the FPPA, Health and Safety and the ever increasing threats of litigation against the department and the municipality.

The training program and the fire prevention and public education programs are both going through changes and dealing with additional responsibilities and challenges.

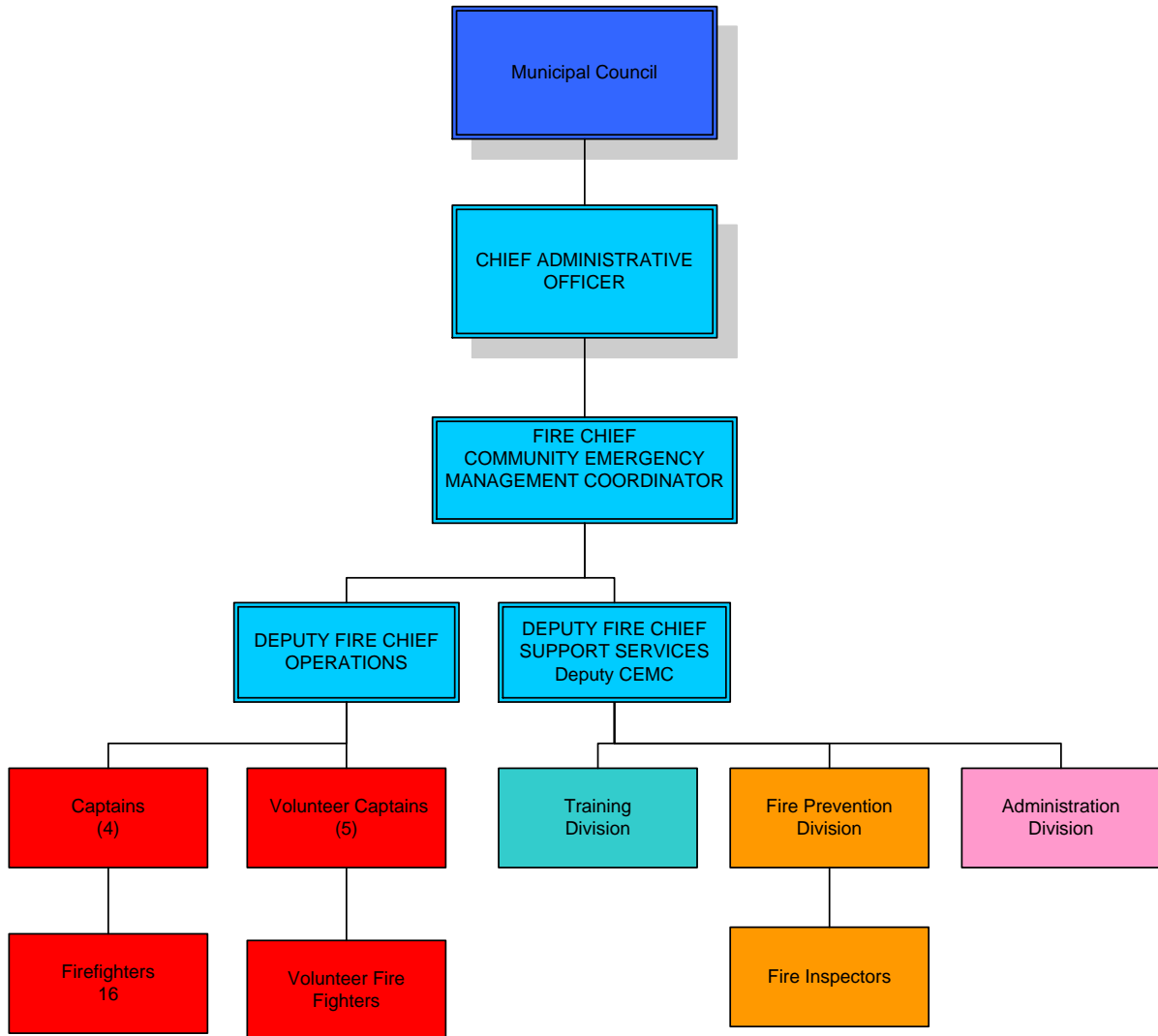
The staffing of the department is expected to go through some major changes in the not too distant future to deal with the operational emergency demands of the public for the services and the mandatory requirements for fire inspections.

Increasing the full time compliment directly impacts the senior management capabilities and increases the administrative workload which is already dealing with increases in responsibilities in other areas.

The current organization chart has served its purposes and needs to be updated to deal with the additional mandatory requirements and the many proposed changes within the 5 to 10 year Fire Master Plan.

The proposed organization chart below should be adopted and implemented through the annual budget process.

Town of Orangeville Fire Department. Proposed Organization Chart 2015



Fire Operations

Statistical Analysis

The annual statistics indicate that the number of emergency calls in the town were 1,290 in 2013. The 2014 statistics were not completed at the time of drafting this report; they do however, appear to be indicating a similar total for the year end. The following statistics highlight the responses on a yearly basis.

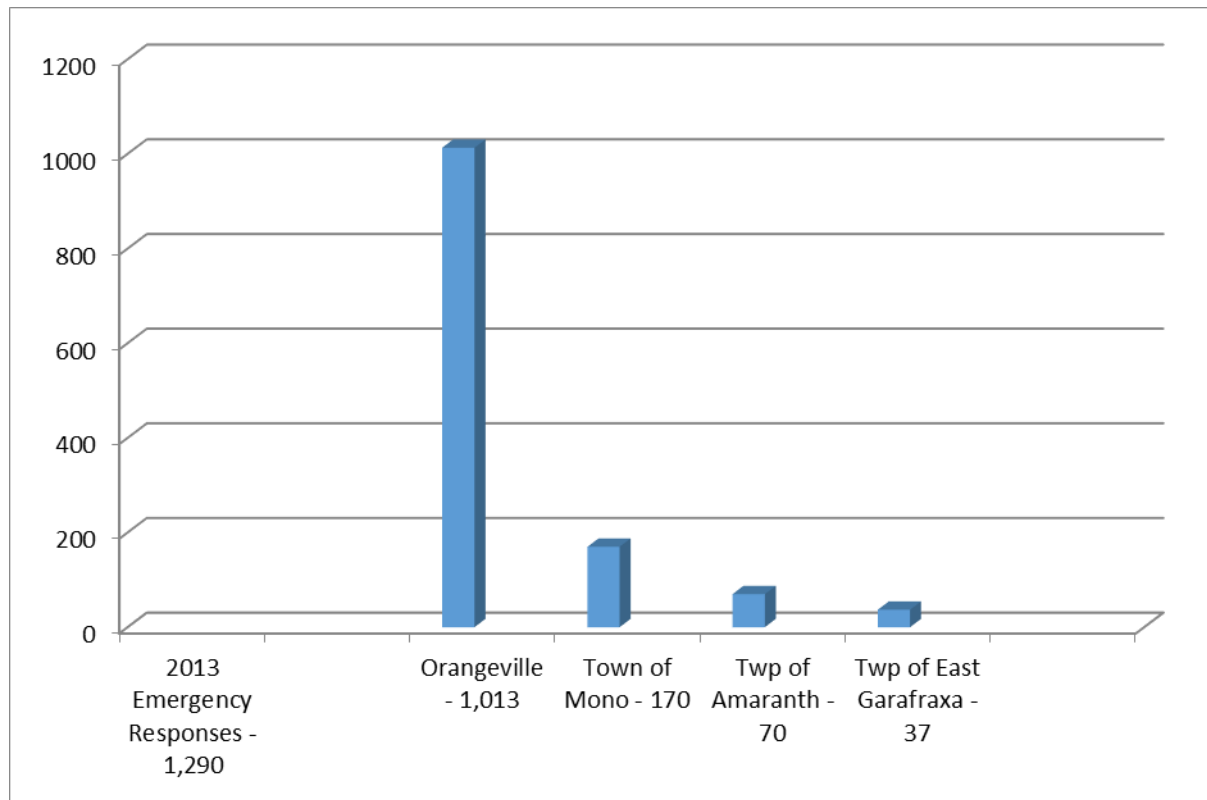
The Orangeville Station is also the Department Headquarters Station and provides the emergency responses to all incidents in the town. In addition to providing fire protection for the Town of Orangeville this department has fee per call agreements with the Town of Mono, East Garafraxa and Amaranth Townships, covering approximately 259 square kilometers and a population of 35,000 people.

The number of responses is generally trending upwards over the years as populations and the number of buildings increase. The variations in the types of services being demanded by the public is also evolving from what was no more than a fire suppression role to a more general assistance and rescue role.

This change in the services provided often result in fire departments amending their title to reflect the services they supply. Including such words as Emergency Services and or Rescue into the title.

Annual total emergency responses					
	2010	2011	2012	2013	
Town of Orangeville	1044	1001	1007	1013	
Town of Mono	134	125	158	170	
Township of Amaranth	60	54	43	70	
Township of Garafraxa	33	32	31	37	
Totals	1271	1212	1239	1290	

2013 Total Emergency Responses in each Municipality

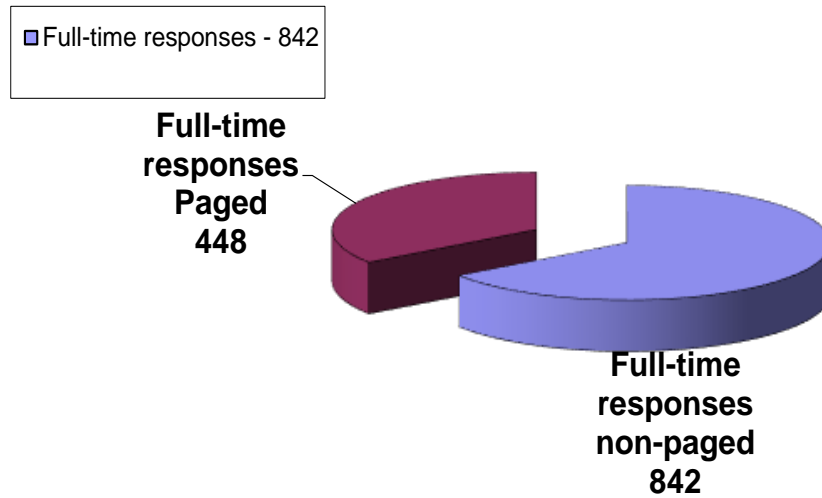


It can be seen that responses within the town boundaries are by far the highest number of responses, followed by the Town of Mono.

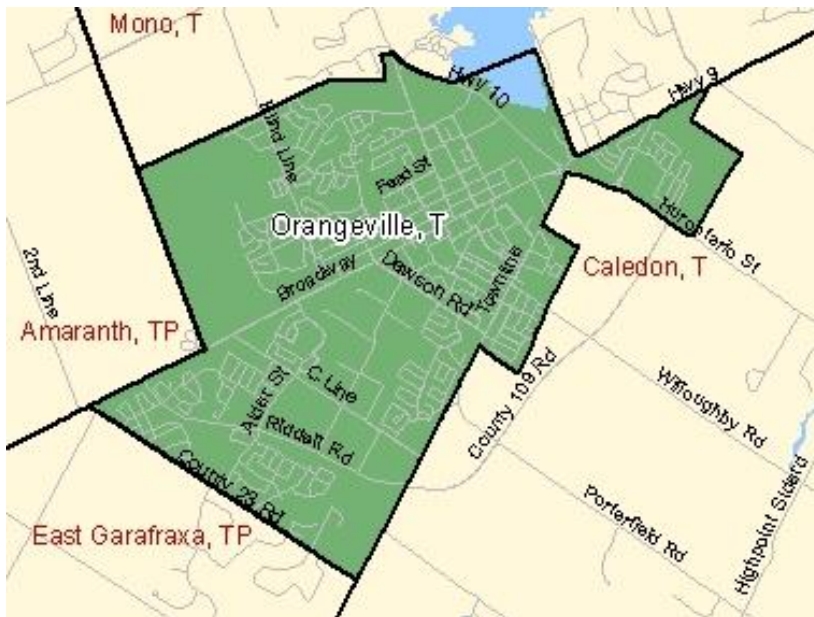
The fire protection for the town is provided through a composite firefighting staff. The full time staff of 10 provides the service seven days a week from 6 am to 6 pm supported by the 34 Volunteer Fire Fighters (VFF), when additional staff are required at the scene of an incident.

From the hours of 6 pm to 6 am the fire protection is provided by full time and VFF who are called out by the paging system.

2013 Emergency Responses - 1,290



Statistics Canada Data



In 2011, Orangeville (Town) had a population of 27,975, representing a percentage increase of 3.9% from 2006. This compares to the national average growth of 5.9%.

Land area is 15.61 square kilometres with a population density of 1,791.6 persons per square kilometre. This compares to the provincial land area of 908,607.67 square kilometres with a population density of 14.1 persons per square kilometre.

In 2011, Orangeville (Town) had 10,069 private dwellings occupied by usual residents. The change in private dwellings occupied by usual residents from 2006 was + 6.8%. For Canada as a whole, the number of private dwellings occupied by usual residents increased by 7.1%.

Table 4 Orangeville, T – Age distributions by broad age groups and sex, 2011 Census

Age groups	Both sexes	Males	Females
0 to 14	20.0%	20.5%	19.6%
15 to 64	68.5%	69.6%	67.4%
65 and over	11.5%	10.0%	13.0%

In 2011, the percentage of the population aged 65 and over in Orangeville, was 11.5%, compared with a national percentage of 14.8%. The percentage of the working age population (15 to 64) was 68.5% and the percentage of children aged 0 to 14 was 20.0%. In comparison, the national percentages were 68.5% for the population aged 15 to 64 and 16.7% for the population aged 0 to 14.

The population projections are modest. The following extract was taken from the town’s official plan updated in 2013.

“In 1996 the Town of Orangeville’s population was 21,498. By 2008 this had grown to 27,300, meaning an average annual growth rate of 1.88% per year over the 13 year period. The population is expected to increase to approximately 36,490 by the year 2031, provided that adequate sewage treatment capacity and water supply is available to accommodate additional growth.

In 1996 the Town was home to 9,570 jobs. By 2006 this had grown to 12,255 meaning an average annual growth rate of 2.5% over the 10 year period. By the year 2031, it is expected that the number of jobs will increase to approximately 14,740.”

The population projections and growth rate of the town should have a minor impact on the delivery of emergency services over the next 10 to 15 years.

The fire protection program in the town has a direct effect on the insurance grades and the subsequent insurance policy rates to the residents of the town. The FUS grading system is a guiding factor to insurance companies when determining the insurance rates for properties within the town limits.

FUS Rating

Insurance rates are governed by many factors one of which is the rate determined by Fire Underwriters for the municipality. Numerous factors related to delivery of fire protection are considered in determining the rate. The last FUS grading for Orangeville was conducted in 1988.

The insurance grading for the areas protected by the Orangeville Fire Department are set out in the following chart.

Town and contract protected areas	PFPC	COMMENTS
Town of Orangeville , Mono - Hydrant Protected Area	6	Hydrant Protected - Commercial Lines insured properties within 150 m of a fire hydrant and within 5 road km of the Orangeville Fire Hall
Rest	10	Unprotected – Commercial Lines insured properties further than 5 km by road from the Orangeville Fire Hall

Town and contract protected areas	DPG	COMMENTS
Town of Orangeville, Mono - Hydrant Protected Area	3A	Hydrant Protected - Personal Lines insured properties within 300 m of a fire hydrant and within 8 road km of the Orangeville Fire Hall
Contracted areas	3B	Fire Hall Protected - Personal Lines insured properties within 8 road km of the Orangeville Fire Hall but not within 300 m of a fire hydrant on a recognized water distribution system
Rest	5	Unprotected – Personal Lines insured properties further than 8 km by road from the Orangeville Fire Hall

Commercial properties risk categories are graded 1 to 10, with 1 being the best and 10 being unprotected. The grading is based upon the FUS assessment of the fire department's ability to fight fires, the water supply and the enforcement of building/fire codes and standards.

Residential insurance risk categories are broken down into five classes. The residential grading system is outlined in Appendix 'C'.

Proximity to a fire station is a major factor in determining insurance rates. Residential properties located more than 8 km (5 miles) and commercial properties located more than 5 km (3 miles) from a fire station are normally rated as unprotected. All of the residential structures in Orangeville are within the 8 km limit and all industrial/commercial properties are within the 5 km limit.

Water supply constitutes 30% of the insurance rating. There is a fire hydrant and water main system in Orangeville. There is also a fire hydrant and water main system in the area of Mono at the east side of Orangeville. The insurance industry will consider a residential

property hydrant protected if it is within 300 m (1000 ft) of a fire hydrant and commercial properties that are within 150 m (500 ft) of a fire hydrant that has an acceptable fire flow. Fire hydrants are provided on most streets.

The FUS will recognize hydrant protection for properties that are further than 300/150 m from a fire hydrant if the fire department can demonstrate that they have the equipment and are able to establish a water supply at a further distance. There is a number of rural properties that are not hydrant protected.

Another factor in determining insurance ratings for water supply is adequate flow. The required fire flow is determined by a number of factors including occupancy, special hazards, type of construction and proximity to exposures. Areas with limited flow fire hydrants may not have sufficient water supply for a worst case fire in the neighbourhood.

In the rural areas where water mains are not provided, a dry hydrant on a pond, cistern, stream or river can be counted as a fire hydrant for the purposes of determining water supply for fire protection.

The insurance rates are dependent on the grading for the municipality. The difference in premiums between a residential grade 5 and grade 1 is approximately a 70% reduction. The residential grading system is currently under review by FUS. There are proposals to link the residential grading more closely with the industrial/commercial grading system.

Staffing Fire Apparatus

Fire responses are subject to response time requirements to provide for sufficient numbers of Fire Fighters (FF) on scene to deal with the emergency situation. In Ontario, the Ontario Fire Marshal provides guidance to the municipalities on all fire protection matters and has a comprehensive web site that provides that guidance.

The Comprehensive Fire Safety Effectiveness Model produced by The Ontario Fire Marshal's Office explaining the fire ground sub model can be found at the following link:

http://www.mcscs.jus.gov.on.ca/english/FireMarshal/FireServiceResources/ComprehensiveFireSafetyEffectivenessModel/FireGroundEffectivenessSub-Model/fireground_submodel.html

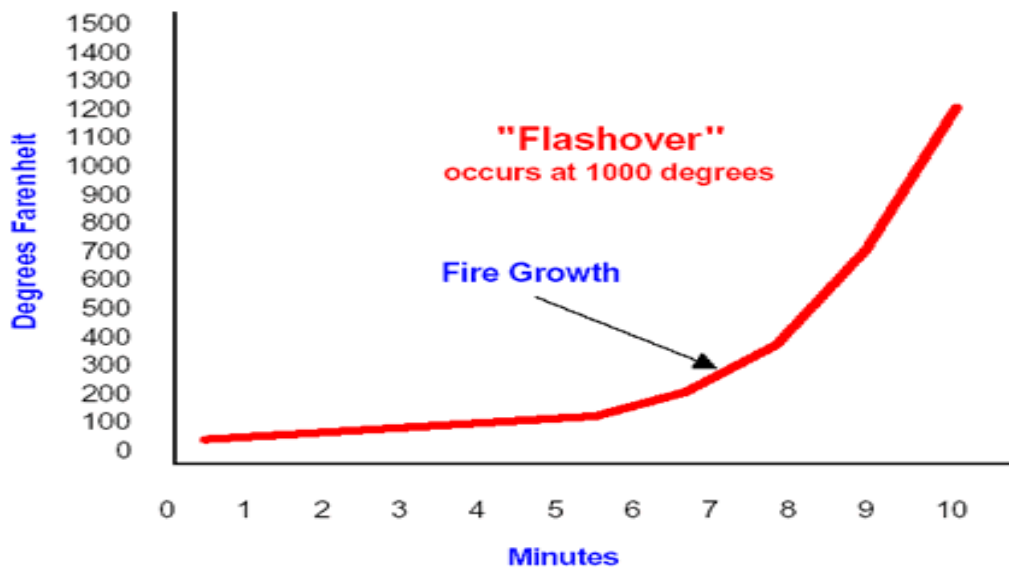
An extract of that sub model states the following:

“The OFM recommends, where practical, a minimum of 4 persons be dispatched on the initial apparatus.”

The model goes on to state that firefighters should be assembled on the fire ground in a coordinated, rapid and consistent manner prior to flash over with at least 1 pumping capability vehicle.

Time and Temperature Curve

Predicting when flashover occurs is fairly easy to do. Tests have been conducted and conclude that flashover occurs between six and ten minutes after ignition. Measuring flashover is a function of time and temperature. Fire growth occurs exponentially; fire doubles itself for every minute of free burning that is allowed. We can plot fire growth on what is known as the time and temperature curve:



Models have shown that flashover in the room of origin of a fire can occur within 6 to 10 minutes from ignition, depending upon the fire load and available air to support combustion. Recent testing has demonstrated that flashover can occur in shorter time periods, depending on the materials involved, the room configuration and amount of ventilation. When these facts are applied to the models, other guidelines tell us that firefighters need to be on the scene within the time indicated above.

The number of firefighters recommended to be on the scene prior to flash over is not random, but rather a practiced and proven number of personnel who are required to do all of the tasks at the initial fire scene. The following chart was produced by the Ontario Fire Marshal, depicting what tasks are required by 10 firefighters upon arrival prior to flash over.

**Ministry of Community Safety and Correctional Services:
Appendix 2 - Fire Ground Fire Suppression Staffing Chart
Comprehensive Fire Safety Effectiveness Model
Appendix 2: Fire Ground Fire Suppression Staffing Chart**

COMPLEX RESCUE AND SUBSEQUENT FIRE CONTROL	FIRE FIGHTER FUNCTIONS	NUMBER OF STAFF
ESTABLISH WATER SUPPLY	Water supply hook-up to hydrant	1
	Pump operator / driver	1
SIZE UP	Supervisor - Command and Control	1
RESCUE	Search & Rescue	2*
	Back-up, 60 m of pre-connect 38 mm hose	2*
EXPOSURES	60 m of Pre-connect 38 mm hose. Water supply person assists when water supply is secured	1 (2)**
VENTILATION	Raise 7 m ladder plus equipment	2
CONFINEMENT	Sequential, rescue back-up team begins confinement when rescue operation is complete	-
EXTINGUISHMENT/SALVAGE & OVERHAUL	Sequential, other staff assigned when earlier duties completed	-
TOTAL		10***

The above chart indicates the tasks to be performed on the scene when 10 FF are assembled.

Reviewing the statistics of the Town of Orangeville, it is clear that during the hours of 6 am to 6 pm 4, firefighters and a pump truck respond to all calls within the town supported by the VFFs who are called on their pagers. It is also clear from the following chart that during the hours of 6 pm to 6 am the 10 firefighters have assembled on the scene prior to flash over on only 2 occasions.

Full time firefighters who staff the station from 6 am to 6 pm provide the first response within the time parameters set out in the NFPA 1710 and 1720 standards. The support back up of VFF is inconsistent, but generally in line with all other volunteer fire departments across Ontario. When a known structure fire occurs the VFF are usually reliable and respond in numbers to the emergency. When unknown emergency calls occur, or one pump responds such as EMS, calls are responded to by the day shift FF; the VFF are not normally paged.

The Orangeville statistical records show that in the first 6 months of 2014 there were 32 emergency responses to fires by the VFFs between the hours of 6 pm to 6 am. The following table indicates the time of dispatch of the VFFs by pager, the time that the first truck arrives on the scene and the time the second truck arrives at the scene.

The 5 responses shown in blue were 1 truck responds, the second truck may have been cancelled by the Incident Commander who was at the scene. The two responses shown in green denote the firefighters were at the scene before flashover in sufficient numbers to deal with the situation. The remaining calls, shown in maroon, did not meet the OFM guideline or NFPA 1720 response standard.

VFFs across Canada are experiencing increasing difficulties juggling work, family and volunteer time. The traditional VFF based in small towns and villages do not appear to have the same problems as their counterparts based in medium and large towns. The number of emergency calls in the larger towns increases in line with training and remain qualified to perform all the tasks they are called upon to deliver.

The Health and Safety aspect of firefighting has become more complicated and demanding for the volunteer firefighters. This fact has also impacted the ability to attract new members in many communities, necessitating the introduction of full time firefighters in order to meet public demand for emergency and fire services.

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.

The staffing of fire apparatus has been the subject of many articles and interpretations of the above named standard. The following is a synopsis of the three most prominent organizations.

- International Association of Fire Chiefs (IAFC) NFPA 1710: Decision Guide
- IAFF Safe Fire Fighter Staffing Critical Considerations
- Office of the Fire Marshal, "Shaping the Future" Fire Ground Staffing and Delivery Systems within a Comprehensive Fire Safety Effectiveness Model.

It should be stated that the NFPA 1710 standard is not mandatory in Canada; it is however, the standard that fire departments are generally using as a guideline to the delivery system. The 1710 standard states:

5.2.2 Operating Units Fire company staffing requirements shall be based on minimum levels for emergency operations for safety, effectiveness and efficiency.

5.2.2.1 Fire companies whose primary function is to pump and deliver water and perform basic firefighting at fires, including search and rescue shall be known as Engine companies.

5.2.2.1.1 These companies shall be staffed with a minimum of four on duty personnel.

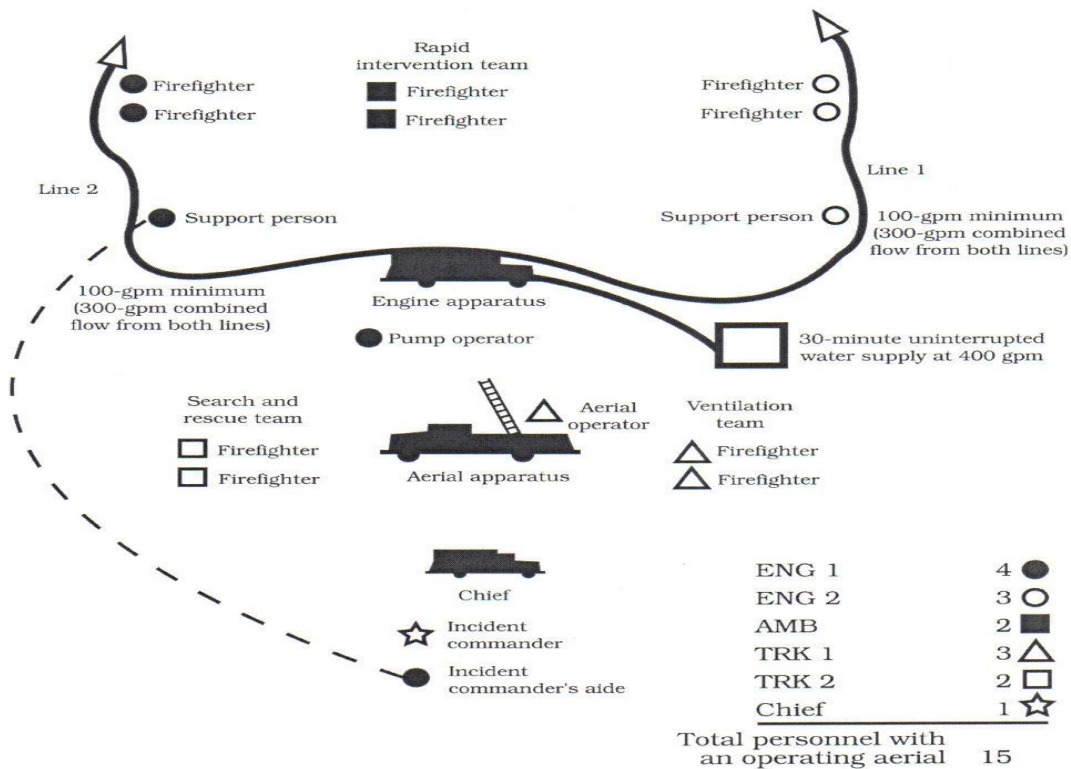
5.2.3.1.1 The fire department's fire suppression resources shall be deployed to allow for the arrival of an Engine company within a 4

minutes response time and/or the initial full alarm assignment within an 8 minute response time to 90% of the incidents as established in chapter 4.

The following 8 minute initial attack diagram was used to support the IAFC position on NFPA 1710. The intent of the standard is not the number of trucks that respond to the incident but rather the total number of firefighters to be assembled at the incident.

This diagram shows one of many variations possible given 1710's initial full alarm staffing requirements.

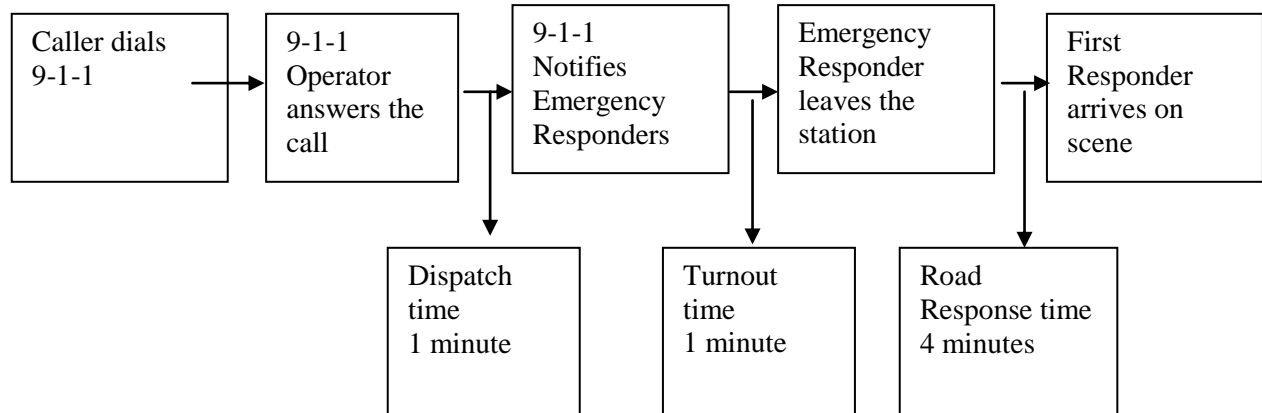
Example: Organization of 8-Minute Initial Attack



In the International Association of Fire Chiefs (IAFC) NFPA 1710: Decision Guide, depicts the concept showing several pieces of apparatus being dispatched to ensure that 14 or 15 personnel arrive on the scene within the standard's allowable 8 minute response for a full initial assignment.

The response times have been reduced onto a diagram by the IAFC to demonstrate how the 4 and 8 minute responses are arrived at. The following diagrams indicate the fire

responses as they relate to full time firefighters delivering the first alarm assignment to an incident. Volunteer responses add additional response time to the station of at least 4 minutes, which impacts the response to fires before flash over occurs.



On the other hand, the International Association of Fire Fighters produced “IAFF Safe Fire Fighter Staffing Critical Considerations”, a comprehensive report on the subject matter complete with statistical analysis, photographs and the statement that there should be 5 Fire Fighters on every Engine and Truck Company.

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 is most applicable to the current Orangeville deployment model. This standard is often used when evaluating the response effectiveness of composite (combination) Fire Departments. The following table sets out the recommended response numbers based upon population concentration and travel distances. The recommended objectives for Orangeville are outlined in line 1.

Table 4.3.2 Staffing and Response Time

Demand Zone ^a	Demographics	Minimum Staff to Respond ^b	Response ^c Time (minutes)	Meets Objective (%)
Urban area	>1000 people/mi ²	15	9	90
Suburban area	500–1000 people/mi ²	10	10	80
Rural area	<500 people/mi ²	6	14	80
Remote area	Travel distance ≥ 8 mi	4	Directly dependent on travel distance	90
Special risks	Determined by AHJ	Determined by AHJ based on risk	Determined by AHJ	90

- a) A jurisdiction can have more than one demand zone.
- b) Minimum staffing includes members responding from the AHJ's department and automatic aid.

- c) Response time begins upon completion of the dispatch notification and ends at the time interval shown in the table.

The conclusions which can be drawn from these standards and reports are that the fire ground first alarm staffing of 4 FFs and a pumper should be assembled within 5 minutes of the initial call to 9-1-1, and a full first alarm assignment of 15 FF should arrive within 9 minutes. The town employs full time Fire Fighters at the Station, 6 am to 6 pm, 7 days a week on a rotation shift system and relies upon the VFFs from 6 pm to 6 am. The present response program is failing to meet these criteria 90 % of the time.

The following table is taken from the Orangeville statistical data to determine the actual response times during the evening and nights when no full time firefighters are resident in the station. Only one response was under a ten 10 minute response time.

Orangeville Volunteer Emergency Responses Between 1800Hrs (6 PM) and 0600Hrs (6 AM)						
Month	Alarm #	Dispatch Time	1st truck arrival	2nd truck arrival	First Alarm response 10 & 10	NFPA 1720 Response Standard
January	5	20:20	20:23	20:35	15 minutes	
	6	19:00	19:00	19:13	13 minutes	
	48	23:17	23:17	23:35	18 minutes	
	60	19:28	19:35	19:39	11 minutes	
	61	21:03	21:09	0:00		
	62	4:02	4:15	4:23	21 minutes	
	64	21:21	21:32	21:35	14 minutes	
	91	23:21	23:32	23:34	13 minutes	
	106	5:03	5:18	5:22	19 minutes	
February	146	3:40	3:57	3:57	17 minutes	
	214	20:52	21:02	21:18	26 minutes	
	216	23:32	23:43	23:56	24 minutes	
March	313	18:05	18:13	18:16	11 minutes	
	351	1:52	2:03	2:06	14 minutes	
April	429	18:33	18:44	18:46	13 minutes	
	441	0:48	0:58	1:01	13 minutes	
May	511	18:40	18:50	18:55	15 minutes	
	518	23:09	23:17	23:20	21 minutes	
	540	23:52	0:03	0:05	13 minutes	
	592	21:23	21:31	21:35	12 minutes	
June	623	20:17	20:28	0		
	628	19:08	19:15	19:15	7 minutes	
	632	3:57	4:08	4:09	12 minutes	
	634	4:28	4:38	0		
	688	18:24	18:32	18:37	13 minutes	
	699	3:03	3:14	0		
July	725	19:31	19:42	19:45	14 minutes	
	727	20:25	20:35	20:37	12 minutes	
	775	5:02	5:18	5:18	16 minutes	
	778	22:05	22:15	22:16	11 minutes	
	796	18:45	18:54	19:01	14 minutes	
	798	4:06	4:21	0		

Blue: indicates one truck response

Green: indicates the response meets the guideline

Red: indicates in excess of 10 minutes the guideline was not met

Merging of Fire Services

A question was raised by a stakeholder related to merging the fire services of Dufferin County. The county contains eight (8) municipalities as follows;

- Township of Amaranth
- Township of East Garafraxa
- Town of Gran Valley
- Township Of Melancthon
- Town of Mono
- Township of Mulmur
- Town of Orangeville
- Town of Shelburne

No formal discussions relating to merging of fire services have taken place. However, it is reported that there are concerns being expressed regarding the fire inspections and the requirement of more fire inspectors in the county in order to meet the mandatory requirements of provincial legislation.

The amalgamation of Fire Protection and inspection services would prove to be cost effective, not only delivering an enhanced response service county wide, but also affording savings in such areas as bulk purchases of materials and equipment.

To determine if there is any interest by municipalities to participate in a shared service model, it would be prudent to canvass the representatives of each jurisdiction to explore the concept.

Conclusions:

There is an opportunity to improve the FUS grading for industrial and commercial properties. In order to improve the insurance rates it would be necessary to have a crew of full time staffing on a 7/24 basis.

There are a number of rural properties that could benefit from the installation of dry hydrants. Although some properties are adjacent to static water they are considered as not having a water supply if there are no dry hydrants. This is due to the time required to access the water during freezing weather.

There are opportunities to improve the insurance grading for residential properties. Full time staffing is a major factor in determining residential insurance rates. If the fire department had full time staffing for 24 hours a day the residential insurance grade could be improved from a 3A to a 1.

The Full time crew on day shift provides a first in response in all areas of the town within 5 minutes. The response data for the hours between 6:00 pm and 6:00 am indicate that responses do not meet the OFM guideline or any other guidelines, this presents a challenge that must be addressed.

Increasing the number of volunteers who live and work in the town may increase the possibility of increased numbers responding in a timely manner. Providing further incentive and advertising the positions as part time employment together with an increase in the hourly rate for part time firefighters may increase the numbers of residents who are willing to provide the time and commitment to train as firefighters. Even with sufficient new members joining the training of the part time firefighter can take up to two years.

The ratio of supervisors to volunteer firefighters needs to be addressed by increasing to 5 captains with an appropriate number of acting captains to ensure there is an officer for every 3 volunteer firefighters on the fire ground.

The only clear option appears to be increasing the full time members to provide an on duty crew overnight 7 days a week. This will require the hiring of an additional 10 firefighters, 5 on each shift to maintain 4 on duty.

If there are sufficient trained firefighters in the current volunteer force who are suitable to the department to become full time, this could provide the department with trained firefighters on shift immediately.

Fire Stations, Facilities and Headquarters



The fire station is located at 10 Dawson Road.

This headquarters complex constructed in 1970/71 and officially opened in 1972 also serves to host the Senior Management and Administration of the OFD, as well as the Fire Prevention and Public Education Division, and the Training Division. The building is located in a flood prone area and is restricted from having any additional floor space or buildings on the site.

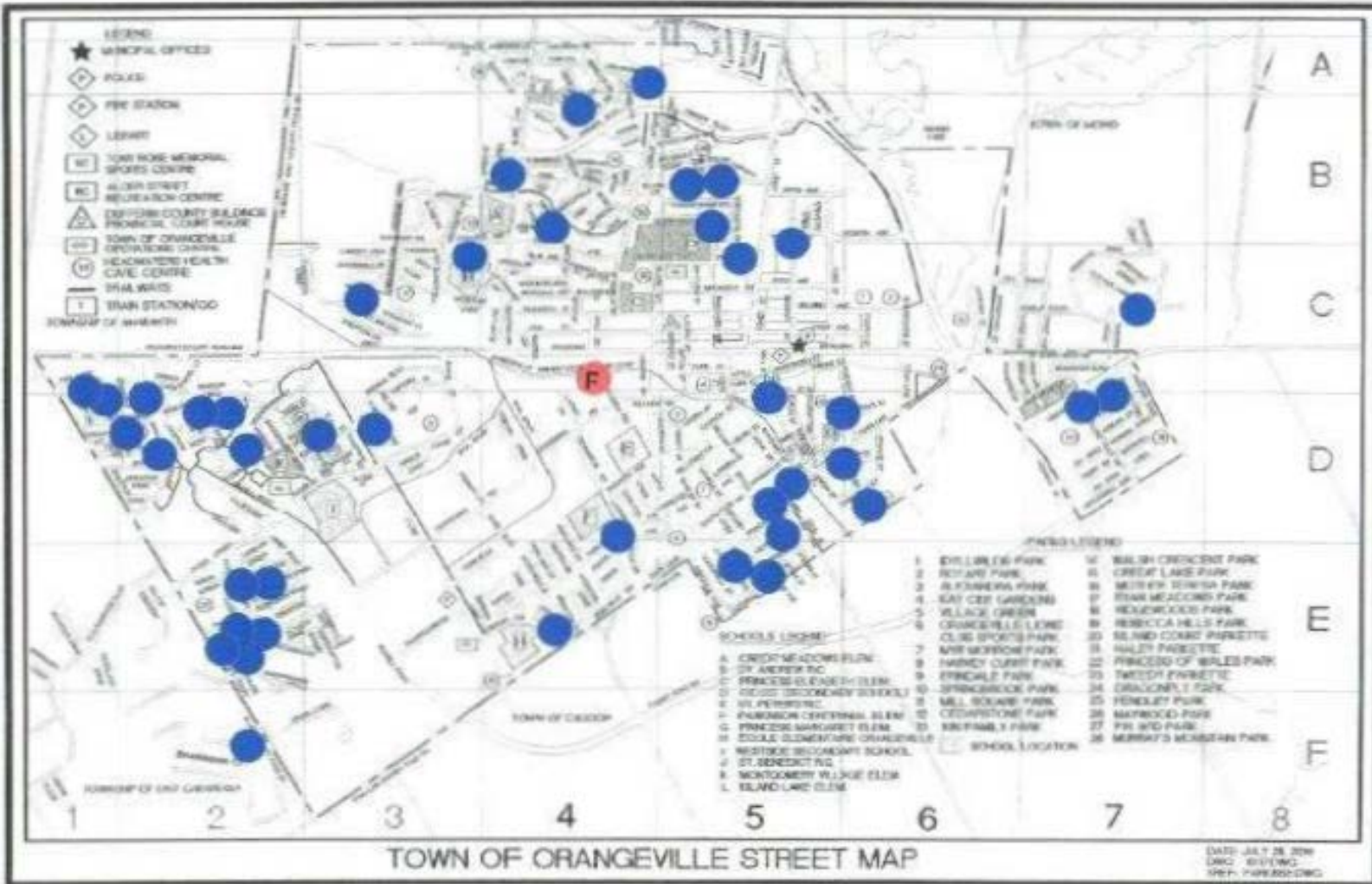
Several stakeholders have provided comments on the building with a general consensus that the fire department has out grown the building and needs to relocate to a suitable site that provides access to the entire town in a timely fashion.

The design and location of a fire station requires considerable research and planning. There are a number of criteria that must be considered including, but not limited to, the following:

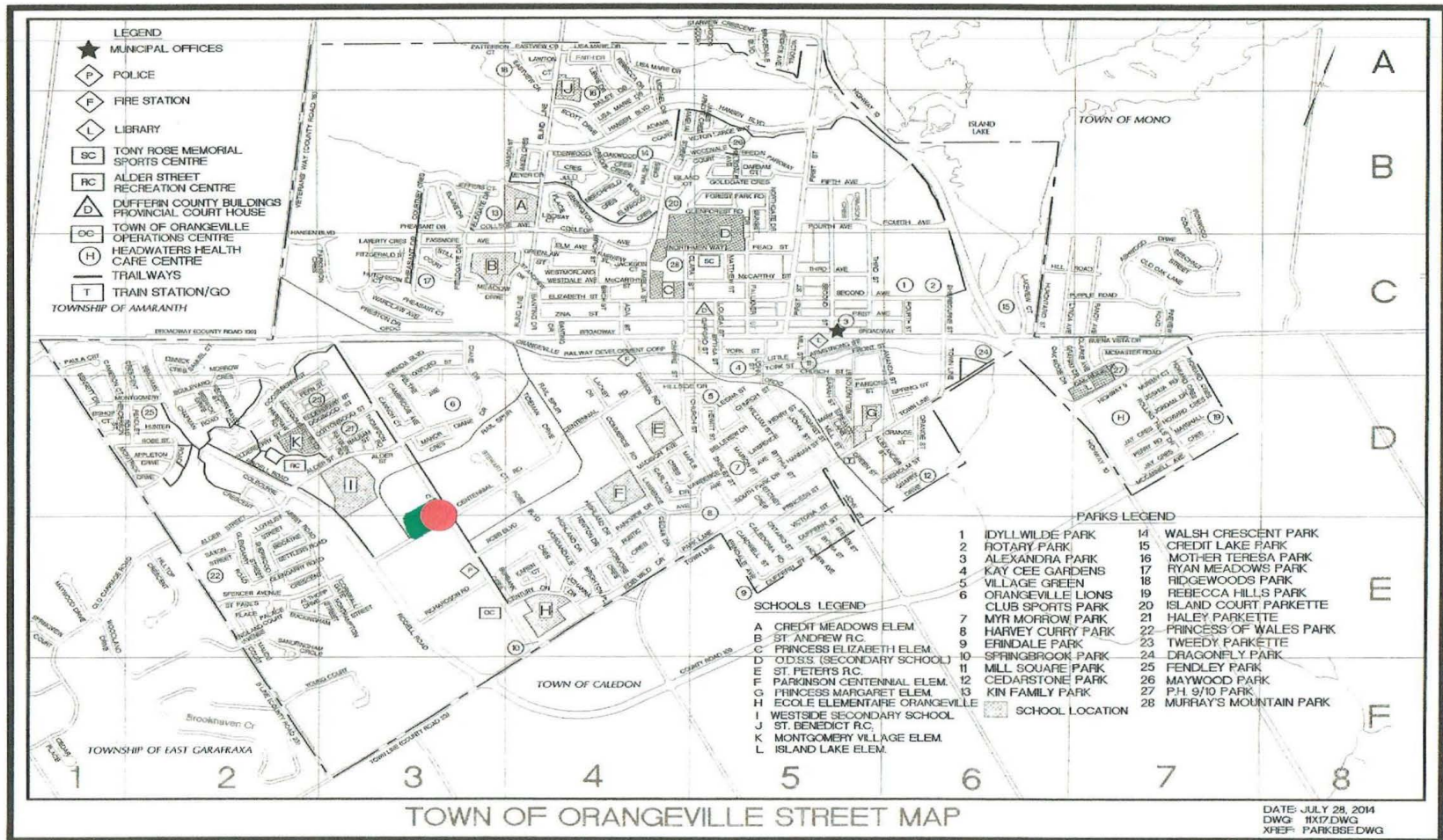
- A minimum of two acres with ample parking for full time firefighters, volunteers and visitors.

- Sufficient office space, storage and work areas and vehicle storage areas to allow for future growth.
- Located in an area with easy access to roads.
- Located in an area that has easy access from the volunteers' residences.
- A location that maintains the level of service required for the municipality.
- Suitable location for the firefighter's practical training area.

The location of the VFFs in relation to the station is very important when selecting a station location. Locating a station in an area where few or none of the firefighters reside increases their travel time to the station for emergency responses. The map below indicates that the largest number of firefighters (17) live west of the C Line with a group to the north of the town, and another group to the south and east of the town. There are no volunteers shown to live adjacent to the station partly because it is in an industrial and commercial site.



Volunteer Fire Fighters Approximate Residencies in relation to the Fire Station



Potential Fire Station Location

The Consultants have liaised with the Planning Department to review all of the sites owned by the municipality that could provide a location for the new fire station. A site located at C Line and Centennial Road that is owned by the town appears to be the most suitable location which matches many of the criteria required for a station location.

Conclusions:

The current station is overcrowded and located in a flood zone preventing any expansion of the current footplate of the station. Re locating the station is the only option to provide the necessary facilities for the emergency response vehicles, training and administration space.

When choosing a suitable site the criteria includes a number of important considerations including but not limited to access to a road system that permits the fire trucks to reach the risks to be protected, the location of the residences of the volunteers who will respond to the emergency and a site large enough to provide all of the services needed to deliver the fire protection.

The town is fortunate to own a suitable pieces of land located at C line and Centennial Road that can provide the location and sufficient space for a training grounds.

A space needs study could define the needs of the department in the proposed new building.

Fire Prevention and Public Education

Fire prevention and public education include a number of functions.

Fire Protection and Prevention Act

Section 2. (1) of the Fire Protection and Prevention Act, 1997 (FPPA) requires that:

“2.(1) Every Municipality shall,

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

The provision of fire prevention and public education is mandatory under the FPPA. The provision of an inspection program is dependent on the needs of the community. Owners are responsible for ensuring that their properties are in compliance with the Ontario Fire Code (OFC); however, the fire department has authority and responsibility to ensure that the owner complies with the OFC.

Liability

Failure to provide adequate enforcement of the OFC has led to civil actions against some municipalities in Ontario. The best protection against these actions is the proper enforcement of the OFC by qualified Fire Prevention Officers (FPO).

Fire Prevention and Public Education Duties

Fire departments are expected to perform a number of fire prevention functions, including:

1. Enforcement of the FPPA and related regulations
2. Fire inspections
3. Retrofit inspections
4. Fire investigations
5. Complaints
6. Site plan and Building Code reviews
7. Acceptance of equivalencies under the OFC
8. Special projects
9. Public education
10. Data and records maintenance

The Fire Chief, Deputy Fire Chief, Fire Prevention Officers and Captains are appointed as Assistants to the Fire Marshal under the FPPA for Orangeville, Mono, East Garafraxa

Township and Amaranth Township. These appointments provide them with the authority to enter and inspect properties in these Municipalities and to issue compliance orders.

The Office of the Fire Marshal (OFM) requires that the minimum fire prevention program consist of:

1. A recognized smoke alarm and home evacuation program.
2. Fire inspections and evacuation for vulnerable occupancies.
3. Fire inspections on complaint or request.
4. A public education program.
5. Completion and maintenance of a Simplified Risk Assessment to determine the risks in the community and the level of fire prevention and emergency response required for the community.

Fire prevention is carried out by the Chief Fire Prevention Officer (CFPO) and a Fire Prevention Officer. The Fire Prevention staff have under taken specialized training in the application and enforcement of the OFC and other fire safety standards. The fire department is also involved in the enforcement of the Ontario Building Code (OBC).

Smoke Alarm and Home Evacuation Program

Firefighters participate in a public education and residential smoke alarm awareness program. Temporary smoke alarms and replacement batteries are distributed by the Firefighters during the emergency responses when it is found that there are no working smoke alarms.

Fire Inspections

At present there is no prescribed frequency of fire inspections for most occupancies. On January 1, 2014, Ontario Regulation 365/13 came into effect. This regulation requires the fire department to conduct fire inspections, fire drills and fire safety plan reviews annually in all care and treatment occupancies. The regulation also contains requirements that the fire department inspect buildings whenever there is a complaint regarding fire safety or where there is a requirement that the Chief Fire Official must approve or permit an activity or precaution under a fire safety regulation. There is some discussion that the frequency of inspections for other classes of buildings may also be mandated. The fire department has developed an operating guideline for the frequency of fire inspections; however, the objectives set out in the guideline are not being met.

Fire Inspection Statistics 2009 to 2013

INSPECTIONS	2009	2010	2011	2012	2013
Complaint	35	48	27	28	34
Request	22	61	15	13	19
Licensing	29	36	33	43	28
Routine / Regular	8	1	0	0	7
Information	3	4	3	2	10
New Construction	19	7	10	5	10
Re-inspections	93	101	23	33	147
In Service Inspections (Suppression)		415	410		438
Fireworks Perm.	5			10	7
Fire Investigation	3		8	13	14
TOTAL	217	673	529	147	714
OTHER ACTIVITIES					
Plan Review (New Construction)	31	16	43	35	24
Review of Annual Fire Protection System Inspection Reports (From Outside Agencies)	14	28	4	12	2
FSP Review				15	11
File Search Requests	6	9	9	5	10
Miscellaneous (water supply, lock boxes, etc.)	121				
Training Courses / Examinations / Symposiums		5	5		4
Joint Health and Safety Committee Meetings and Inspections		10			
Propane Risk Plan Review			4	1	5
Smoke Alarm Program	511	4	7	2	7
Tapp C Program	1	2	2	1	1
Prosecutions for Fire Code Violations	2	2	4	3	1
TOTAL	686	76	78	74	65

The OFD Operating Guideline (OG) #1304 sets out the following schedule for routine fire inspections:

Schools and Churches	Annually
Nursery/Day Care Facilities	Annually
Restaurants	Annually
Nursing Homes	Annually
All homes for special care	Annually
In service mercantile (i.e. exit lights, extinguishers)	Annually
Comprehensive mercantile (i.e. complete building)	Every 3rd year
Business/personal service	Upon request or complaint
Factories or Warehousing	Annually
Cold Storage/Processing Plants	Annually
Gas Stations/Repair Garages	Annually
Apartments 8 units or more	Annually
Single family dwellings, 2 units residential and apartments up to 8 units	Upon request or complaint
Boarding/lodging houses	Annually
Hotels/motels	Annually

NFPA 1730 “Standard on Organization and Deployment of Fire Prevention Inspection and Code Enforcement, Plan Review, Investigation, and Public Education Operations to the Public” is a new standard that is being developed by the National Fire Protection Association. NFPA standards are used across Canada and the OFM has been moving to implement a number of NFPA standards. This standard will provide guidance for the frequency of fire inspections. The OFM has previously recommended periods of inspection for certain classes of buildings. The following tables summarize the benchmark criteria applied, based on the proposed NFPA standard and prior OFM guidelines:

NFPA 1730 – Table 6.7 Minimum Inspection Frequency

Occupancy Risk Classification	Frequency
High	Annually
Medium	Biennially
Low	Triennially
Critical Infrastructure	Prescribed by Authority Having Jurisdiction

OFM Building Inspection Period Guidelines

Occupancy Classification	Description	Frequency
Group A	Public Assembly (Schools, Restaurant, Stations, Arenas)	Annual
Group B	Institutional (Nursing & Retirement Homes, Hospitals)	Annual
Group C	Residential (Multi-unit Residential/Hotels/Motels)	Annual
Group D	Business & Personal Service (Offices, Banks)	Bi-annual
Group E	Mercantile (Stores, Malls)	Bi-annual
Group F	Industrial (Warehouses, Manufacturing, Processing)	Bi-annual

Building stock summaries from the Simplified Risk Assessment (SRA) for Orangeville were not available. The summaries for the SRAs for rural municipalities are not up to date.

Inspections are carried out for complaints and inspection requests. Routine fire inspections are carried out as time permits. The new mandatory inspection requirements are adding to the Fire Prevention staff's workload. The fire department also provides fire inspection services to rural communities who purchase emergency response services. These inspections are on a "fee for service" basis and are by request or complaint only. There is limited provision of fire prevention services in contract areas.

There are a number of facilities that have been identified as vulnerable occupancies requiring annual fire inspections and witnessed fire drills. It is mandatory that these facilities be in compliance before January 1, 2015. Failure to comply will leave the fire department with no choice but to initiate prosecution. At this time not all facilities have achieved compliance. This compliance must be reviewed annually by the fire department.

A Fire Prevention Officer (FPO) requires specialized training in the OFC, OBC, fire protection systems design, special risk protection and public education. Regulation 365/13 has introduced mandatory training requirements for persons conducting certain types of inspections. There are recognized standards of qualification published by the NFPA and also recognized by the OFM that are often used to develop the criteria for hiring and training a FPO.

Every new building adds to the inspection load of the fire department. As the municipalities continue to grow the inspection load will increase. Single family dwellings are not normally inspected by fire prevention staff; however, as the number of residences increase, the public education will also increase. Although the building department is no longer involved in a building once occupancy has been granted, FPOs should conduct regular inspections during the life of these buildings, until they are demolished. There are an increasing number of accessory apartments being discovered in the town. The fire code contains mandatory requirements for these types of occupancies that are enforced by the fire department.

The number of routine inspections being conducted does not meet the minimum number recommended by OG 1304, NFPA or the OFM. The inspection statistics for the fire department are not broken down by occupancy class. The statistics include re-inspections. Almost all initial inspections will require a minimum of one follow up inspection.

Ontario Fire Code - Retrofit

The Ontario Fire Code is a regulation made under the FPPA. The current regulation is the 2007 Ontario Fire Code O. Reg. 213/07 (OFC). This edition of the regulation came into force on November 21, 2007. The regulation has had a number of amendments updating a number of fire safety requirements.

OFC Division B, Part 9 “Retrofit” contains a number of retroactive requirements for various classes of buildings in Ontario. Retrofit requirements have been introduced both in the current 2007 OFC (i.e. for hotels) and in prior versions of the regulation (i.e. residential buildings, assembly occupancies, and health care facilities). OFC Part 9 has established compliance dates that apply to a number of buildings in municipalities.

The following table outlines a summary of sections of OFC Part 9 and the building classifications that are required to comply with the retrofit requirements of the OFC. Many of the properties covered by these regulations were required to be in compliance in 1996. The most recent amendments to the regulations have compliance dates that extend to 2025.

1997 Ontario Fire Code (O. Reg. 213/07)

Division B, Part 9 “Retrofit” Applicable Building Form Section Summary

SECTION NUMBER	TITLE
9.2	Assembly Occupancies
9.3	Boarding, Lodging and Rooming Houses
9.4	Health Care Facilities
9.5	Buildings up to and Including 6 Storeys in Building Height with Residential Occupancies
9.6	Buildings Higher than 6 Storeys in Building Height with Residential Occupancies
9.7	In Care Occupancies & Licensed Retirement Homes
9.8	Two Unit Residential Occupancies
9.9	Hotels

Fire departments have a responsibility under these regulations to ensure that the owners are in compliance and to review and approve certain existing conditions that are allowed under the regulation with the Chief Fire Official’s approval.

The CFPO has indicated that retrofit has been completed in the facilities that the fire department has been able to identify as requiring retrofit. There are new requirements under Regulation 365/13 that will affect a number of facilities in the municipality.

Fire Safety Planning

OFC Division B, Section 2.8 “Emergency Planning” sets out requirements for Fire Safety Planning, which are applicable to building types as specified in OFC Division B, Article 2.8.1.1. Many of these subject-building types (i.e. buildings containing Group A (Assembly) occupancies, Group C (Residential) buildings containing an occupant load of more than 10 people) are present throughout the municipality.

Fire Safety Plans (FSPs) are submitted to the fire department for review and approval. Upon completion of the review the fire department returns a copy of the approved FSP to the property owner. The owner is required to keep a copy of the approved FSP on site and available for the fire department. Additionally, the owner is responsible for enacting the provisions of the FSP, such as the designation of supervisory staff (those persons appointed to carry out fire safety duties), the training of staff, the maintenance and testing of fire protections systems, the control of fire hazards in the building and conducting fire drills.

The OFC requires that all fire safety plans be reviewed and revised annually. The recent amendments to the OFC in regulation 256/14 will result in every property owner having to review and perhaps update their FSP. Every FSP that requires revision will have to be submitted to the fire department for review and approval.

In addition to FSPs, the Workplace Hazardous Materials Information System (WHMIS) regulations of the Occupational Health and Safety Act require that property owners and persons who handle hazardous goods provide the Material Safety Data Sheets (MSDS) to the Fire Department.

Many municipalities have enacted by-laws requiring the property owners to maintain copies of the FSP and WHMIS information in a specially marked locked box at the entrance to the site or building. This ensures that the approved FSP and hazardous materials information is available to any fire crew that may respond and relieves the fire department of the responsibility of bringing the FSP or hazmat information to the building. FSPs can also be used as a basis for Pre-fire Plans.



Fire Safety Plan Box

Approval of the FSP requires that the fire department has the ability to evaluate the capacity of the property owner to meet the evacuation objectives set out in the FSP. This is a particular concern with care facilities. The OFM has established mandatory qualifications for persons reviewing FSPs and evaluating fire drills. The fire prevention staff have taken the appropriate courses.

Public Education

PUBLIC EDUCATION	2009	2010	2011	2012	2013
Public Education Events	37	8	23	20	25

Section 2 of the FPPA requires that, “Every municipality shall establish a program in the municipality which must include public education with respect to fire safety and certain components of fire prevention.”

Public education is one of the most effective tools in reducing the incidents of fires and injuries.

There is no formal in-school program such as “Learn not to Burn”. Schools are visited on request. A classroom fire safety program is not being delivered by the teachers and is not included in the school curriculum.

Fire safety programs are normally delivered to primary schools. In order to develop a culture of safety, it is important to start early in teaching these habits. Since these programs should be delivered through the elementary school curriculum, these programs must be implemented in cooperation with the School Boards. Since the School Boards are responsible for multiple municipalities, any initiative should be through the Ontario Association of Fire Chiefs Zone 4 Committee.

According to the Fire Marshal's statistics, seniors and children under 10 years of age have a greater risk of death and injury due to fire than the rest of the population. These demographic groups require a specialized public education program. There are programs for seniors such as "Older and Wiser" and "Remembering When" that would be helpful in educating seniors. There are a number of programs available through NFPA for children.

All firefighters should have some knowledge of fire prevention since the public looks to them for advice and it is important that they can identify fire safety deficiencies when they respond to buildings.

With coordinated public education programs the fire department can develop positive partnerships with service clubs and community organizations to financially support the public awareness program capital costs of purchasing demonstration equipment and training materials.

Standard Operating Guidelines – Fire Prevention, Public Education

The fire department has a set of Standard Operating Guidelines (SOGs). These procedures provide operating guidelines to ensure that all personnel operate in a consistent manner. The SOGs cover fire prevention and public education activities. Many of the SOGs are over 5 years old and may not cover current requirements and procedures.

Open Fire By-law

The municipality has a Burning By-law (By-law 48-98). The by-law sets out the conditions that must be met to have an open fire.

Fire Works By-law

The municipality has a Fireworks By-law (By-law 119-2009) that regulates the sale and setting off of fireworks.

Fire Investigations

The fire prevention staff are responsible for fire investigations. This function requires special training in order to be designated as a Fire Investigator. NFPA 921 "Guide to Fire and Explosion Investigations" sets out methods to be employed in fire investigations. Specialized courses are available through a number of agencies. There are recognized standards of qualifications published by NFPA that set out the qualifications of a Fire Investigator. Both personnel are certified through the Canadian Association of Fire Investigators.

Simplified Risk Assessments

The fire department has completed a Simplified Risk Assessments (SRA); however, it has not been updated for some time. Based on the data provided and the Municipal Fire Protection Information Survey conducted in 2003, it appears that 2003 was the last time that the SRA was updated. The rural municipality SRAs were last updated in 2007. There have been changes in the community profiles since the SRAs were last updated. The SRAs are

required to be updated annually or when there is a change in the risk profile of the community.

Plans Review for New Construction, Renovations, Extensions

The CFPO is certified for building inspection under the OBC and is named as a Building Inspector under the Building By-law. The review of plans for new construction, renovations and extension of existing buildings and changes in occupancy classification of buildings is the responsibility of the building department. The fire department participates in the review of plans for large buildings for fire department access and the life safety systems. The Fire department is not always consulted for construction projects in the municipalities that contract fire protection services.

Building Records

The Fire Prevention and Public Education Programs are tracked in FirePro Software. FirePro has a tablet interface that can be used by a Fire Prevention Officer and Fire Fighters when conducting fire inspections. A tablet can be used to gather information that can be uploaded into a data base without the need to re-type information. The fire department does not have a tablet for inspections. There is no shared data base with the building department regarding building information and compliance issues. There is no shared database on municipal properties.

Conclusions:

The CFPO and Fire Inspector conduct routine fire inspections as time permits. Fire inspections are conducted when the Fire Department receives a complaint or request. Firefighters conduct some in-company inspections, however they are not trained as fire prevention officers. Regular fire inspections are not being conducted in institutional, multi-residential, industrial and commercial properties as outlined in the department's operating guidelines. There is not sufficient staff to conduct a regular inspection program in the major life and fire risks in the municipality and the contract areas.

There are a number of facilities that have been identified as vulnerable occupancies requiring annual fire inspections and witnessed fire drills. It is mandatory that these facilities be in compliance before January 1, 2015. Failure to comply will leave the fire department with no choice but to initiate prosecution. At this time **not all facilities** have achieved compliance, The Office of the Fire Marshal has written and indicated to the Town that these properties must be in compliance. This compliance must be reviewed annually by the fire department.

Ontario Regulation 365/13 came into effect on January 1, 2014. This regulation contains mandatory inspection and training requirements that the fire department must enforce. It includes annual fire inspections, FSP review and evacuation drill approvals.

The OFC requires that every fire safety plan be reviewed annually. The fire department reviews the plans if they are submitted. Without a regular inspection program, there is no pro-active program to ensure that owners are updating their fire safety plans.

Public education is the responsibility of the fire prevention staff. There is a need for public education for students and urban and rural residents to inform them of fire safe practices and home fire safety planning.

The school boards are not supporting the Learn Not to Burn program.

Fire Safety Plans are not always available for use by firefighters at an emergency. The municipality does not have a Fire Safety Plan/WHMIS box bylaw.

The fire department maintains a building information database however there is no shared data-base for building information that is shared with the fire department and other municipal departments.

The fire department does not use tablets or portable computing devices for fire inspections or pre-fire planning.

The fire prevention staff participate in plans review for projects in Orangeville, however they are not always consulted regarding projects in the rural communities. There may be legal liability for those municipalities, if the fire safety provisions of the building code and fire code are not incorporated in new facilities.

Fire inspections are provided on a fee for service basis in the rural communities, when request or complaints are received. There is no routine inspection program in the rural areas. The current fees may not represent the complete cost of inspection. There is an opportunity to provide a more comprehensive service in the rural areas, however it would require an increase in staff.

Fire Fighter Training

In Ontario a Section 21 Advisory Committee exists to provide guidance papers to management and labour on the intent and provisions outlined in the Occupational Health and Safety Act.

The Committee is supported by:

- The Ontario Association of Fire Chiefs.
- The Association of Municipalities of Ontario.
- The Ontario Professional Fire Fighters Association.
- Fire Fighters Association of Ontario
- Ministry of Labour
- Ministry of Public Safety and Security
- The committee is provided with a secretariat by the Minister of Labour

The section 21 Advisory Committee has produced a guidance manual containing notes and information that is supported by the Ministry of Labour. The purpose of the Guidance Manual is to outline recommended equipment, work practices and procedures applicable to the prevention of injury or illness to workers in the fire services.

Section #7 of the Guidance Manual is dedicated to Training. Guidance note #7-2 (27) Training Requirements states as follows:

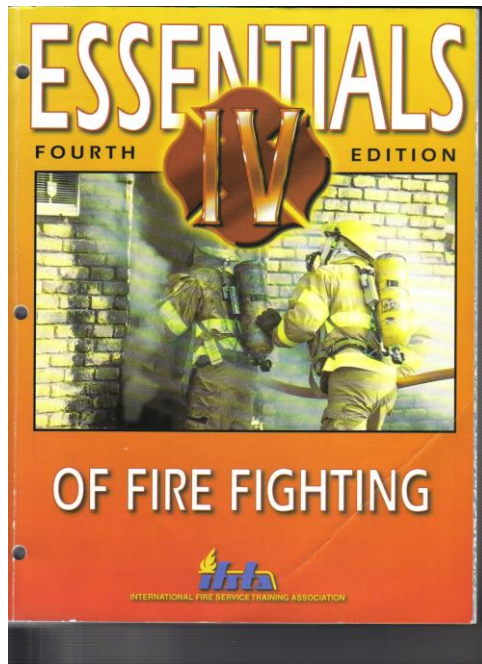
"The Employer is responsible to provide information, instruction and supervision to a worker to protect the health and safety of the worker.

In order to meet the requirements of this section, it is incumbent upon employers to ensure that Fire Fighters are trained to safely perform to a defined level of response as determined by the employer. Safety proficiency is a function of training, experience, internal review of performance and ongoing training based on deficiencies identified by internal review."

It is clear from this description that "internal review" plays a major part of the training requirement. Documenting the review and testing process is also an essential portion of the training obligations under the Act. It is also clear that training is mandatory for the safety and proficiency of the services being provided.

During the stakeholder meetings aspect of this study several issues were raised and presented to the consultants. The lack of an officer-training program was identified by the stakeholders as a program that needs more resources.

The training standards and training curriculum was the subject of some discussion with the stakeholders. In Ontario the Fire Service is governed by the Fire Prevention and Protection Act. Under the Act the Ontario Fire Marshal's office is empowered to monitor the levels of service and the quality of services provided by the Ontario Fire Services.



The fire departments in Ontario have for many years used the Ontario Fire Marshal's curriculum for their training programs. The curriculum utilizes the IFSTA Essentials manual, as the base document for the training. The Ontario Fire Marshal has indicated a change in that area now recognizing the NFPA 1001 firefighter level standards for the Province of Ontario. Many departments have been moving towards the NFPA 1001 standard over the years by implementing additional training over and above the previous Provincial Guidelines.

An ongoing testing or examination process in the OFD demonstrates the "internal review" process as outlined in the section 21 Guidance note. In order to demonstrate these facts the records of the testing, evaluation and/or examination of all of the training courses and sessions are being maintained by the OFD in the training records.

The Chief Training Officer position has the potential for additional responsibilities to assist with other areas of the department's administration. A reorganization of the upper management could provide an improved overall support for the Fire Chief and the Deputy Fire Chief in the day to day running of the fire department.

The Chief Training Officer is responsible for the training program but has limited training as an instructor. Several of the stakeholders have made comments on how the training program is well served by the captains who carry out the instructional needs supported by specialist instructors who may provide training in special areas such as First Aid and CPR as well as several experienced rescue specialists who are members of the department.

Training Facilities

The OFD has developed a temporary training facility in a trailer located behind the fire station. No permanent facilities can be erected in that location due to the area being within the flood risk area. The OFD rents the Mississauga fire training grounds for live fire training. This requires the firefighters to travel to Mississauga on weekends to receive training.

The need for a practical firefighter training facility in a suitable location is very evident, and considered very important to ensure the firefighters are trained in accordance with the Section 21 Committee Guidelines and the Health and Safety Act. Facilities and buildings used on training grounds provide the firefighters with actual locations to practice rescue and firefighting skills essential for the tasks they must perform under emergency conditions.

Other training equipment and facilities including vehicle extrication and tanker fires with flammable liquids are also important aspects for firefighter's practical training to develop the skills to use on the fire ground. The training for the application of foam products for extinguishing fuel fires requires space and isolation from residential areas.

The operation of the ladder truck and other rescue exercises using a training tower provides an open concept and visual contact to ensure safe operations. During the winter months many of the practical aspects of firefighter training revert to the classroom and apparatus bays in the station.

The training/meeting room located in the station is poorly located in the center of the administrative area with no natural light. It is however, equipped to deliver the theoretical aspect of training. This manner of training includes lectures, videos and some potential practical training with small equipment and SCBA. The training room is equipped with several training aids, a projector, DVD player and TV.

Conclusions

The theoretical classroom training is located in the center of the administration area and has no natural light in the area.

There is limited practical training facilities that are considered inadequate for the level of training required to be a fully certified firefighter. It is noted that the firefighters in Orangeville have achieved a high level of qualifications partially by experience and travel to outside training facilities.

The municipality and firefighter training would benefit from a training facility located within the town.

Maintenance of Apparatus and Equipment

The Fire Chief and Deputy Fire Chief prepares the specifications for the tendering and purchasing of vehicles. The annual vehicle inspections and general maintenance and repair of vehicles are carried out by external contractors. All major repairs of the pumps and specialized fire equipment are carried out by specialized fire service vehicle contractors. All vehicles are inspected daily by the firefighters, and monthly by a fire equipment mechanic. Appendix 'A' contains a listing of the major apparatus.

There are Underwriters Laboratories of Canada (ULC) standards that apply to the construction and acceptance of fire apparatus. The National Fire Protection Association (NFPA) standards are also used as the minimum standard for the design and construction of emergency vehicles and should be used where there is no comparable Canadian standard. NFPA 1901 "Standard for Automotive Fire Apparatus" and ULC S-515 "Standard on Automobile Firefighting Apparatus" are the common standards used by manufacturers for the specification of fire apparatus. Although NFPA standards do not apply in Canada, they are often used as guidelines and referenced in litigation issues that may arise from time to time in Canadian jurisdictions. The new vehicles have been designed to meet these standards. Both ULC and NFPA standards should be referenced in the specifications for fire apparatus.

The department has three apparatus that are equipped with ULC listed pumps. The typical fire flow for an old combustible construction downtown area or large church would be approximately 14000 lpm (3000 gpm). Some industrial risks may require larger flows. All three of the units may be required to pump the required fire flow. If one unit is out of service, the department may not be able to meet the minimum required fire flow.

Vehicles with ULC Listed Pumps

Squad 11	7000 lpm (1500 gpm)
Engine 17	6000 lpm (1250 gpm)
Ladder 15	7000 lpm (1500 gpm)

The pumping vehicles are equipped with Hi-vol 100 mm (4 in) supply hose. The hi-vol supply hose load on Engine 17 and Ladder 15 is 215 m (650 ft). Squad 11 carries a supply hose load of 400 m (1200 ft.). The pre-connect hoses on the large pumping vehicles are 45 mm (1-3/4 in).

Squad 11 has a Class A/B foam system with Class A and Class B foam tanks. Engine 17 has a Class A foam system. Ladder 15 has a Class A/B foam system using 1 foam tank with a universal foam (Angus Niagara). The foam systems are designed to supply the pre-connected hose lines. Class A foam systems provide a more effective use of water in extinguishing fires and providing exposure protection to buildings. It is also effective in fighting wild land fires (brush and field). Class B foam systems are used for flammable/combustible liquid fires.

Pumper 19 is equipped with a "Snuffer" compressed air foam system (CAFS). This unit has limited pumping capacity for large structure fires. The unit has a number of applications for smaller fires and is very effective on wild land fires.

At present the fire department has a number of different foams. The multipurpose/universal foams such as Angus Niagara which is used on Ladder 15 can be used for Class A and Class B fires. These foams allow firefighting for all types of fires without the need for different foams, separate foam tanks and the problems that arise from maintaining an adequate inventory. The multi-purpose/universal foams are more expensive than Class A foams.

The department has one aerial device, a 2002 Pierce equipped with a 32 m (105 ft) aerial ladder. The vehicle is equipped with a 7000 lpm (1500 gpm) pump and an 1818 L (400 gal) tank. Vehicles equipped with an aerial device and having the ability to pump water, carry water, hose and ground ladders are called Quints. Quints can operate as independent units and do not require a pumper to supply the elevated stream on the ladder and are recommended due to their versatility.

The department operates a heavy rescue apparatus (Rescue 10). This vehicle is equipped for vehicle rescues or technical and/or heavy rescues. It is designed to be used as a command post and also acts as a utility, carrying extra tools and equipment.

Squad 11 and Engine 17 carry hydraulic tools designed for auto extrication.

A major risk to firefighters when operating at road accidents is the possibility of being struck by a vehicle during emergency operations. All of the pumping vehicles are equipped with front mounted pre-connect hose lines that can be deployed without having to step into the oncoming traffic.

Rescue 10 is equipped with an electric generator and a light tower. Light towers mounted on top of pumpers or rescues can enhance fire scene safety.

Much of Orangeville is protected with a water main and fire hydrant system; however, there are a large number of structures in the rural municipalities without a water supply. The unserved areas must rely on impounded or natural water sources or tanker shuttles. The two lane rural roads make coordinating a tanker shuttle difficult. Tanker 18 is used for rural responses. The fire department must rely on mutual aid in order to provide a tanker shuttle for firefighting.



This Tanker is equipped with a rear dump valve and does not have the ability to discharge to the side of the truck. Side dump valves add versatility to tanker operations. Side dump valves allow for a faster offloading of the tanker’s water and eliminate the need to back up to the porta-tank. Backing up vehicles at a crowded emergency scene is a dangerous activity. Tanker 18 is not equipped with a pump and cannot be used as a pumper in the hydrant protected areas. The tanker is scheduled for replacement.

Tanker Equipped for Left, Rear & Right Side Dump

The pumping vehicles are equipped with side suction. Front and rear mounted suction are not provided on the pumping vehicles. Front and rear suction allow the fire department to set up the porta-tanks and draft pumper in one lane of the road, leaving the other lane open to tanker movement. Front mounted pump suction shown here have the advantage of not obstructing access to the hose beds and also allowing easier access to dry hydrants and static water supplies.



Pumper with Front Suction

In general the equipment on each type of vehicle is standardized. The standardization of the vehicles and the equipment improves emergency scene efficiency because it allows firefighters to know where equipment is located on every apparatus. Standardizing hose, nozzles and equipment on vehicles makes it easier for firefighters to operate from different vehicles at emergencies. In addition, it is easier to maintain an inventory of repair materials if all vehicles have the same equipment. It is important to consider staff feedback when developing the equipment and vehicle specifications.

The apparatus are equipped with traffic light pre-emption. This system changes the traffic signal to green as the fire apparatus proceeds along the road. The system provides for faster responses and safety at intersections since the apparatus always has a “green light”. In rural areas traffic light pre-emption is not necessary. Traffic light pre-emption is of benefit in the urban areas.

Wild land fires present a serious challenge to a fire department. All of the rural municipalities have forests and open fields that present annual grass and brush fire challenges to the fire department. Engine 19 has a CAFS system that is very effective in fighting brush/grass fires. The vehicle is equipped with skid unit tank, pump and air compressor. The vehicle can be taken off road for grass or brush fires. Also the tanker is equipped with a pre-piped portable

pump and has pump and roll capability. The tanker can be used off road for brush/grass fires.

NFPA 1911 “Standard for the Inspection, Maintenance, Testing and Retirement of In-Service Fire Apparatus” is the standard for maintenance of fire apparatus. The scope of the standard states:

"This standard defines the minimum requirements for establishing an inspection, maintenance, and testing program for in-service fire apparatus. These requirements apply to public or private organizations utilizing fire apparatus".

The complete maintenance schedules and routines were not reviewed. Regular inspections and maintenance are carried out by firefighters and qualified external contractors. The external contractors are contracted to carry out all major repairs, safety checks, pump maintenance and annual testing. The aerial device is tested every 5 years by a qualified contractor. The current maintenance programs should be reviewed for compliance with the NFPA 1911 standard.

Emergency vehicles should have a life expectancy of not more than 20 years in front line service, with the vehicles being retained as reserve or auxiliary units for up to 5 years. In busy stations, vehicle replacement should be considered at 10 to 15 years. When vehicles reach this age it is often difficult, or impossible, to source specialty replacement parts. In addition, regardless of the number of miles on the vehicle, the reliability of the vehicle becomes questionable. Many fire trucks have limited mileage, but have considerable hours on the pump. The FUS Guidelines establish 20 years as the maximum life for a front line fire apparatus. Vehicles that are required for front line service that exceed 20 years will result in a lower insurance grading. Other than Tanker 18, the fleet is relatively new.

There are some capital reserve funds from Development Charges for the fire department. In general, large capital purchases are made using current tax dollars or borrowed funds. Tanker 18 is scheduled to be replaced in the near future.

Firefighter ‘line of duty’ death statistics kept by NFPA show that over 25% of all ‘line of duty’ deaths are a result of vehicle accidents. Driver error and vehicle maintenance are often cited as the cause of accidents. It is critical that all vehicles be properly maintained and that they pass a vehicle safety inspection. The current maintenance programs are serving the fire department’s needs.

Firefighting Equipment and Self Contained Breathing Apparatus (SCBA)

The Firefighters are responsible for the maintenance and testing of SCBA, hose, nozzles and small tools.

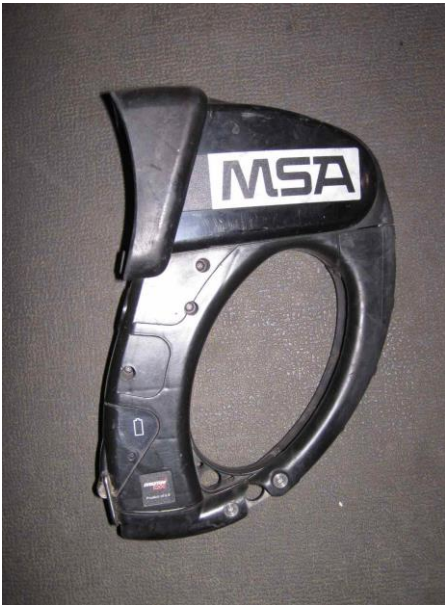
The county fire departments share the use of a hose testing machine. At present hose is not tested annually. Hose testing is required to be conducted annually and test records kept for each length of hose.

The department uses Scott breathing apparatus. PASS alarms are provided on each SCBA. Two RIT (Rapid Intervention Team) kits are provided for firefighter rescue. The Section 21 Committee Guidelines have a number of requirements for the maintenance of SCBA. The Deputy Chief and a Captain are responsible for overseeing the SCBA program. Equipment

maintenance is tracked using paper files. NFPA has recently published a new standard for firefighter respiratory protection. All new and replacement SCBA will be in compliance with the new standard. New SCBA have recently been purchased and put into service.

All SCBA and cylinders are tracked for maintenance and testing. Records for small tools, hose, nozzles and ladders were not reviewed. All hose and ladders should also be tested in compliance with the applicable NFPA standards.

The fire department has a SCBA air compressor and fill station at the rear of the fire station in the truck bay. The air quality records were not reviewed. A supply of spare SCBA cylinders is carried on Rescue 10. When there is a major incident that requires a large number of SCBA cylinders, the cylinders must be shuttled to and from the fire station. A fill station and cascade on the rescue would reduce the need for such a shuttle.



The department has five thermal imaging cameras (TIC). These devices allow firefighters to see through smoke using infrared imaging technology. Utilizing a TIC, firefighters can easily find victims who have collapsed in smoke. The technology also allows firefighters to see the fire through the smoke, thereby gaining quick access to the seat of the fire and effecting its extinguishment.

A TIC allows the firefighters to safely find their way through a burning building. It aids the firefighters' ability to see the heat signatures of holes in floors and weakened roofs, to ensure that they avoid being trapped in the event of a structural collapse. TIC's enhance firefighter and public safety.

The value of this piece of equipment has proved to be exceptional during initial fire attack and overhaul of buildings after the main fire has been extinguished. A TIC is a useful tool for the Rapid Intervention Team. A good practice is to have a minimum of two TICs on at an emergency where firefighters enter a building for firefighting.

There is a regular inspection program for a bunker gear to ensure that it meets the required protection standards.

The maintenance of vehicles and equipment is documented in paper files.

Conclusions

The Deputy Fire Chief is responsible for overseeing the vehicle and equipment maintenance and inspection program. The firefighters on duty carry out the day-to-day inspection, testing and maintenance of equipment. Major repairs and equipment testing is conducted by outside contractors. Annual testing of pumps and SCBA is carried out by outside contractors. The current system appears to be working. It is important to ensure that all maintenance and repairs are documented.

The majority of the fleet is less than 15 years old. Tanker 18 is scheduled for replacement in the next budget year.

OFD has three pumping apparatus. All three of the units may be required to achieve a fire flow of 14000 lpm (3000 gpm). If a unit is out of service, the department cannot meet the minimum required fire flow.

Pumper 19 and Tanker 18 have pump and roll capability and can be used to deal with wild land/grass fires.

Small tools, nozzles, and appliances are standardized. SCBA, hose, nozzles and small tools are repaired and tested by the fire fighters. Fire hose is not tested annually.

The hose loads on the vehicles are limited. Some of the pumping apparatus do not carry 300 m (1000 ft) of 100 mm (4 in) supply hose. The insurance industry considers a building with in 300 m (1000 ft) of a fire hydrant to be hydrant protected. At present depending on the response, at least two vehicles may have to be on the scene to provide sufficient supply hose to reach 300 m.

The small hand lines and pre-connect are 45 mm (1 ¾ in) hose. 45 mm hose is preferred for small hand lines due to its lower friction loss.

OFD has a SCBA fill station in the truck bay of the fire station. All of the SCBA have been replaced as part of a complete SCBA upgrade to meet the current NFPA standards. The Deputy Chief and a Captain are responsible for the SCBA maintenance program. A mobile SCBA fill station is not provided on the rescue vehicle. SCBA cylinders must be shuttled to and from the fire station in the event of an emergency requiring a large number of cylinders.

Rescue 10 is designed to be used as a command post and is equipped with a generator and scene lighting mast.

Traffic light pre-emption is provided on intersections in the urban areas of Orangeville.

The department has five thermal imaging cameras (TIC). Inspection and maintenance files for vehicles and equipment should be stored in a digital format.

Pre Fire Planning

The fire department utilizes a paper based pre-plan system for some target risks. The OFD pre-plans are limited to a simple fact sheet/floor plans. The pre-plans are maintained in a binder available to the responding officers. The pre-plans are prepared by firefighters on an ad hoc basis. The pre-fire plans do not contain much of the information that is recommended in NFPA 1620 “Recommended Practice for Pre-Incident Planning”. Pre-plans including drawings with fire protection and hazard information have not been prepared for all high life risk facilities, industrial/commercial facilities and high-rises. They do not contain all of the information that may be necessary for emergency operations.

The Fire Code also requires that large buildings and high life risk facilities have a Fire Safety Plan. Where the Fire Safety Plan is available it can also be used for firefighting information at fire emergencies. Some municipalities have required the property owner to provide comprehensive pre-fire plans as part of their fire safety and emergency plans.

The pre-plans should include water supply information regarding required and available fire flows and the steps required to support any built in fire protection systems such as standpipes and sprinkler systems. In the rural areas the pre-plans should include maps showing the location of all dry hydrants, impounded and natural water sources and the resources required for pumper relays or tanker shuttles.

Fire safety plans and WHMIS (workplace hazardous materials information system) information should be available to the fire department when they arrive at an emergency. This is not the case in many locations.

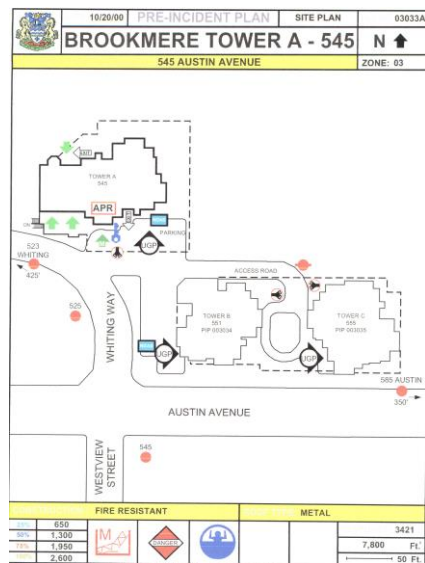
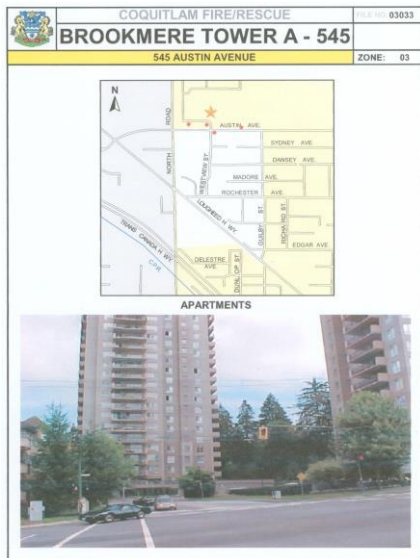
Pre-plans provide the fire ground commander with accurate information that he can use to decide on the strategy and tactics for an emergency in a facility. NFPA 1620 “Recommended Practice for Pre-Incident Planning” provides guidance on the preparation of pre-plans. This standard contains information that could be utilized in the development of pre-fire plans.

As a municipality grows, pre-fire plans cannot be maintained as paper files in emergency vehicles. A number of fire departments have developed computer based storage systems for their pre-plans utilizing vehicle mounted tough books laptop computers. The pre-fire plans are loaded into a laptop computer in each fire truck. The officer can access these plans and can print them out from a printer in the cab, ready for use when they arrive at the emergency.

Water distribution system map books containing maps of all water mains and fire hydrants in the town are not available to the emergency responders. Maps detailing the sanitary and storm water systems are not provided to the emergency responders. These maps can be used for Haz Mat emergencies where hazardous goods enter the drainage systems.



Truck Mounted Computer for Pre-fire Plans



Examples of Pre-plan Data

In municipalities where a computer based pre-plan program is not achievable, the property owners are often required to provide the pre-plans, WHMIS information and fire safety plan information in a locked box at the main entrance to the property.

Conclusions:

The OFD has a limited pre-fire planning program. There are a limited number of facilities that have been preplanned. There are a number of high life and fire risk facilities that require pre-plans.

There is additional information that could be added to the pre-plans that would enhance their use at an emergency. NFPA 1620 provides guidance on the information that should be contained in a pre-plan.

Fire Safety Plans and WHMIS information may not be available to the firefighters when they arrive at an emergency at facilities that require fire safety plans or have hazardous materials.

Information regarding water mains, sanitary sewers and storm sewers is not available to the firefighters at emergency scenes.

Eventually it will not be feasible to keep pre-plans or fire safety plans in paper form in binders in the vehicles. There are electronic means of storing pre-fire plans that may be more useful to the firefighting personnel. Also pre-plans and other emergency information can be stored in locked boxes at the entrance to properties to ensure that a copy is available to fire fighters when they arrive.

Communications and Radio System

The Communications Division provided by the police department is responsible for receiving emergency telephone calls and alarm signals and dispatching the appropriate emergency vehicles. They provide a communications link for emergency operations and support the emergency teams in the field.



There are a total of 8 full time dispatch operators the dispatchers who work a shift rotation. A minimum of 2 operators are on duty at all times. The 2 dispatchers are supervised by a Sargent in the field. As the municipality continues to grow the communications load will increase in proportion to the population.

Dispatching is carried out using a computer aided dispatch (CAD) system

called Intergraph Optic. We were informed that the software has a fire application within the system. The system generates statistics and reports for the OFD management and for the provincial reporting system. The system is backed up with a UPS and a generator to provide power in the event of a power interruption.

Mobile Data Terminals (MDT) are not provided in the emergency vehicles. MDT's can provide emergency response information to the responders which can prove to be invaluable when dealing with an emergency. Pre-incident plans can be provided through these devices.

Orangeville Fire Department operates on a shared 800 MHz radio system with the Police Department. It provides 90% coverage above grade throughout the Town. Where the emergency crews respond to buildings with limited radio penetration they are directed to switch from the trunk system to simplex operation. Simplex is a unit-to-unit operation versus the trunked repeater system. The simplex communications are not recorded. All radio communications should be recorded for post emergency analysis and the protection of the department in the case of a liability claim.

There is a project underway to replace the radio system and to investigate future modifications and improvements. The system should be designed to provide 95% talk back communications within building coverage for the safety of the fire and police officers on the system.

The consultants have been informed of discussions at the political level during the recent elections on the subject of the police services in the town being provided by an outside police agency such as the Ontario Provincial Police.

Should this option be pursued, it will have an impact on the communication needs of the OFD and the surrounding fire departments who use the services of the Orangeville Police Dispatch Center.

There are options to provide communications both in-house and sourced out, which would require a full evaluation should the discussions on the subject of the Police Services delivery system become a reality in the near future. Including, but not limited to, the following:

- Fire department taking over the dispatch requirements of the town and surrounding fire departments, which are presently being serviced by the police department
- Out-sourcing dispatch to another dispatch center, presently servicing other fire departments in the area.

Conclusions:

The new radio system should be capable of delivering in building coverage to the town in at least 90% of the structures, sufficient portable radios should be provided so that every officer in the fire department has access to a radio on the fire ground. Every vehicle should carry a minimum of 4 portables and a charging bank of batteries for the radios. The senior officers should have one radio and battery charger in their vehicles.

During the recent municipal elections the subject of police services was apparently a raised in relation to the delivery of police services. The question of the fire dispatch would be impacted by any changes to the police delivery system as the fire dispatch is currently being done by the Orangeville Police.

In the event of any changes to the police services delivery system there are options open for discussion to continue to provide fire dispatch in the county.

Water Supplies

Water supply constitutes 30% of the evaluation criteria used by the Fire Underwriters Survey (FUS) for insurance ratings of municipal fire services. Water supplies can be provided by water mains and fire hydrants, water courses, impounded water supplies (ponds and reservoirs), and Fire Department tanker shuttles.

The Ontario Building Code (OBC) is the standard for new building construction. Article 3.2.5.7. “Water Supply” states “An adequate water supply for firefighting shall be provided for every building.” This provision applies to all public assembly, institutional and large buildings that are regulated by Part 3 of the OBC. Where there is not an adequate water supply from water mains and fire hydrants, the owner must provide an onsite water supply.

The building department is responsible for enforcement of the requirements for the provision of an adequate water supply under the OBC. The fire department participates in the site plan review process to ensure that an adequate water supply for firefighting is available. In large measure the municipality relies on the system designers to determine the required water supply. Where a site that requires a water supply is not served by water mains with adequate fire flow, a private water supply must be provided.

Where the fire department provides fire protection in rural municipalities, building permits are issued without regard to the supply of water. It is possible that some rural properties do not have the required water supply.

Appendix A of the OBC contains guidance on what constitutes an adequate water supply. Guidance can also be found in various NFPA standards and Insurance Industry Guides such as the FUS Guide “Water Supply for Public Fire Protection”.

The fire department must rely on various water sources to fight fires in both rural and urban settings. The town has a water main and fire hydrant system for firefighting. Mono Township has a water main and fire hydrant system for the area east of the town. All of the other rural areas must rely on impounded water supplies or tanker shuttles for firefighting.

A water system with fire hydrants is provided in the urbanized area of Orangeville. The system is fed by 9 wells located throughout the town. Elevated storage tanks are provided at Commerce Road, at B Line and Montgomery Boulevard. Ground level reservoirs and pumps are provided at Dudgeon Reservoir and the South Sector Reservoir.

Water System Storage Capacity

West Sector Elevated Tank	5682.5 m ³	1220000 gal.
Commerce Rd. Elevated Tank	1136.5 m ³	250000 gal.
South Sector Reservoir	4546 m ³	1000000 gal.
Dudgeon Reservoir	4546 m ³	1000000 gal.



The water system is divided into 7 pressure zones based upon elevation. The zones are interconnected and pressures are controlled by pressure reduction valves.

Fire hydrants are provided throughout the urban areas. Some of the mains are old cast iron or ductile iron pipes and will eventually have to be replaced. There are also some old 100 mm (4 in.) water mains that do not deliver adequate water flow for firefighting. Water mains are replaced as roads are reconstructed. There is no scheduled water main replacement program.

Emergency power is provided for the booster stations and all fire hydrants are maintained by the Public Works Department. All hydrants are inspected and flushed annually by municipal staff.

Water flow tests are conducted upon request. Water flow tests should normally be conducted when any new development takes place to ensure that an adequate water supply for firefighting is available. The recommended water flow for a typical 200 m² (2150 ft²) combustible construction house is 4667 lpm (1027 gpm). When exposure protection is added, this requirement could increase to 7000 lpm (1540 gpm).

The water supply requirements for industrial and commercial structures are determined by the type of occupancy, building construction, contents and processes. Large industrial facilities or old downtown areas can have water supply demands in excess of 23000 lpm (5000 gpm). Each existing facility should be assessed as part of a fire department Pre-Fire Planning Program. New facilities are required to be assessed in compliance with the OBC.

Subsection 6.6.6. of the Fire Code requires that fire hydrants be colour coded in compliance with NFPA 291 “Recommended Practice for Fire Flow Testing and Marking of Hydrants”. All fire hydrants are required to be identified with painted caps for the available flow with a residual pressure of 140 kPa (20 psi). Some municipalities have opted for colour-coded escutcheons on the caps which identify the available water supply. The fire hydrants have not been colour coded as part of the hydrant maintenance program. The following chart lists the ratings assigned to a fire hydrant based upon a residual pressure of 140 kPa.

Hydrant Colour Code Chart			
Colour		Class	Flow
Blue		AA	Over 5,700 lpm (1,250 gpm)
Green		AA	3,780 lpm (840 gpm) to 5,700 lpm (1,250 gpm)
Orange		B	1,920 lpm (420 gpm) to 3,780 lpm (840 gpm)
Red		C	Below 1,920 lpm (420 gpm)

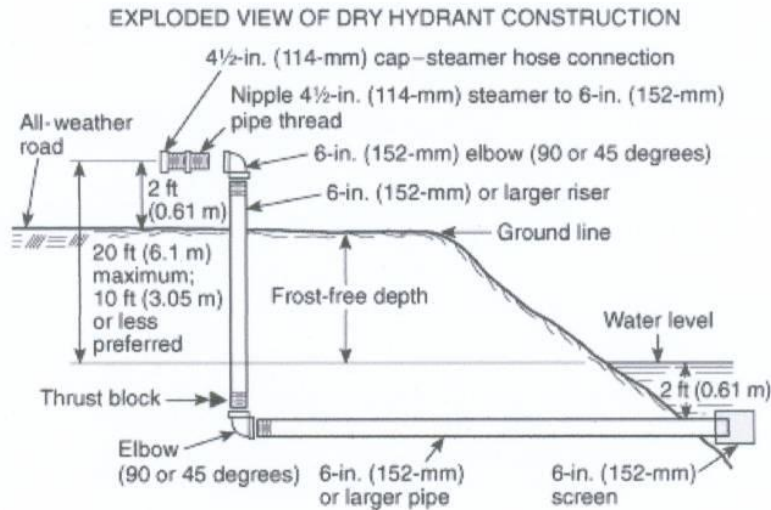
The rural communities that receive contract fire protection, and do not have a water main and hydrant system, must rely on static sources or tanked water for firefighting.

There are a number of ponds, creeks, and rivers that can be used for water sources for firefighting. Easy fire vehicle access is not available in many areas. In some cases it may be necessary to clean an area of the waterway to allow for a reservoir of water for the fire department to use. Dry hydrants can be used to provide quick drafting access for fire department vehicles. There are locations throughout the rural municipalities where dry hydrants could be installed to enhance the protection of rural properties.

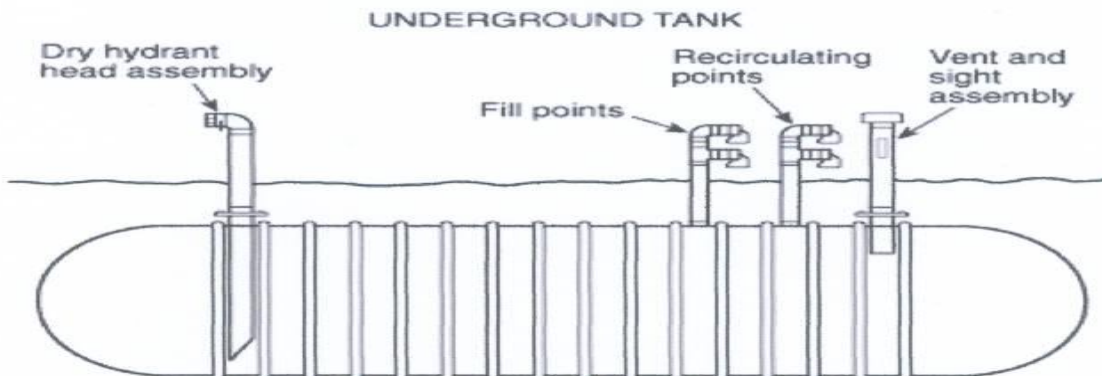
Ponds and cisterns can be used for fire protection. Farms, commercial and residential properties are located in the rural municipalities that do not have a municipal water supply. Storage tanks or cisterns can be used to provide a water supply to fight a fire.



Dry Hydrant on a pond



Properties that can be protected from these static and impounded sources can receive a reduction in fire insurance rates. NFPA 1142 “Standard on Water Supplies for Rural and Suburban Firefighting”, FUS Standard Water Supply for Fire Protection and Appendix ‘A’ of the OBC can be used for guidance in designing these types of water supplies. The minimum storage capacity that is accepted for insurance purposes is 110000 L (24000 gal.). Properties within 300 m (1000 ft.) of an acceptable fire water reservoir or dry hydrant will be credited as having a water supply for fire insurance purposes. The insurers will allow greater distances than 300 m (1000 ft.), where the fire department can demonstrate that they have the equipment and can pump water over a greater distance.



Firefighting Water Cistern

There are a number of dry hydrants installed at various locations in the rural municipalities. In the past some installations have used 65 mm (2 ½ in.) and 100 mm (4 in.) suction pipes. These small pipes restrict the amount of water that can be drafted by a standard pumper. All new installations have 150 mm (6 in.) suction pipes allowing the trucks to pump to their capacity. All dry hydrants are tested annually.



Tanker shuttles present several logistical challenges. The narrow rural roads without shoulders make coordinating a tanker shuttle difficult. These issues are discussed in the Apparatus and Equipment Section.

Water supply locations have not been preplanned for the rural areas. The fire department vehicles do not carry water main and hydrant maps which would assist them

to locate hydrants in the hydrant protected areas. The fire department has a limited Pre-incident Plan program. Pre-plans should identify the locations of all fire hydrants and other water sources that may be used for firefighting at a facility.

There are areas adjacent to ponds, rivers, and streams that could be used for water supply using portable pumps. The tanker carries two portable pumps rated at 1250 lpm (275 gpm) and also carries a pump which is plumbed into the tank and can be removed for portable use. The pump is rated at approximately 1900 lpm (500 gpm).

Failure to provide an adequate supply of water for firefighting can lead to civil litigation if it could be proved that the municipality had not provided the required water supply. There have been claims against a number of Canadian municipalities for failure to provide an adequate water supply for firefighting as stated in the Building Code. One such case is that of *Laurentide Motels v. Beaufort*. The best defense in these cases is to show that due diligence had been exercised in the design, operation and maintenance of the water system or other water supplies.

Conclusions:

Water supplies are an important component of any fire department response. A water system with fire hydrants is provided in the urbanized areas of Orangeville and a portion of Mono. The rural municipalities do not have fire hydrants and must rely on tanker shuttles or impounded water supplies for fire protection.

The water supply system has a number of water sources and storage/pressure facilities. The fire hydrants and water main system is fed by nine wells. The water system is divided into seven pressure zones based upon elevation. There are areas supplied by fire hydrants that may not supply adequate fire flow for a worst-case fire. The Public Works Department has a program in place to identify the existing cast iron water mains and four inch water mains that should be replaced.

Municipalities have a responsibility under the OBC to ensure that an adequate water supply for firefighting is provided for large buildings and new developments.

In those areas with residential developments that do not have water mains and fire hydrants, buried cisterns or reservoirs could be provided as static water supplies for firefighting. There are static and impounded water supplies that could be used for firefighting in many parts of the rural municipalities. Dry hydrants could be used to improve access to firefighting water in many areas of the rural municipalities. There are a number of different size pipes and fittings on the various dry hydrants located in the rural communities.

The portable pumps on the tanker are small and will not supply adequate volume or pressure to supply a pumper for structural firefighting purposes.

Two of the fire department pumping vehicles do not carry 300 m (1000 ft) of hose and therefore cannot establish an immediate water supply for all properties within 300 m of a fire hydrant, dry hydrant or static source of water.

Where adequate impounded water supplies are provided or a recognized superior tanker shuttle program is implemented, the property owners should receive lower insurance rates. Additional tankers are required to deliver a superior tanker shuttle program.

Fire hydrants are not colour coded to identify the available water flow. There is a regular fire hydrant maintenance program.

Municipalities may have a civil liability if an adequate supply for firefighting is not provided for those buildings identified in the OBC as requiring a water supply for firefighting.

Emergency Management

The Town of Orangeville Emergency Management Program has complied with the Emergency Management Ontario deadline for Essential Program.

	Municipality: Town of Orangeville	Confirmed
1	Does the municipality have a Community Emergency Management Coordinator	Yes
2	Has the CEMC completed the required training? (O.Reg.380/04,s.10(2))	Yes
3	Does your municipality have a community emergency management program committee? (O.Reg. 380/04, s.1 1)	Yes
4	Does your municipality have a current By-law adopting its emergency management	Yes
5	Is the municipality's Community Risk Profile current? (EMA s. 2)	Yes,
6	Has the municipality's Emergency Response Plan been reviewed and has a copy been submitted to EMO? (EMA s.3.1 (1), s.3.1(6) s. 6.2 (1))	Plan adopted by Council
7	Is the municipality's By-law adopting its emergency response plan current? (EMA s. 3 (1))	Yes
8	Does the municipality have a designated Emergency Operations Centre? (O.Reg.380/04,s.13 (1))	Yes
9	Does the Municipality's EOC have appropriate communications systems? (O.Reg. 380/04,5.13 (2))	Yes
10	Is the municipality's Critical Infrastructure Identification current? (EMA s.2.1(3))	Yes
11	Has the municipality conducted its required annual training session for the Community Control Group and supporting staff? (EMA s.2.1(2), O.Reg. 380/04,s.12(3))	Yes
12	Has the municipality conducted its required annual exercise for the Community Control Group and supporting staff? (EMA s.2.1(2), O.Reg.380/04 s. 12(6))	Yes
13	Has the municipality designated an employee to act as its Emergency Information Officer? (O.Reg.380/04, s. 14 (1))	Yes
14	Has the municipality completed a Public Education and Awareness program? (EMA s. 2.1 (2c))	On going
15	Has the municipality's Emergency Management Program Committee conducted an Annual Review of the Program? (O.Reg.380/04,s.1 1 (6))	On Going

The Town of Orangeville Emergency Management Program complies with the requirements of the Act. Because each community has different and distinct hazards and risks, a hazard

identification and risk assessment are completed for the community. Hazards (what can occur) include natural, technological and human-caused events. The risk assessment determines how often and how severe the effects could be on public safety. This is generally understood as probability and consequences (impact and vulnerability). The results of these steps will indicate both the priorities and how the emergency management program should be developed for the community.

The Essential Program must be complied with by all municipalities in Ontario, The Enhanced Program and the Comprehensive programs will be the next levels of expectations by the Provincial Emergency Management Ontario group.

ESSENTIAL PROGRAM
Designation of Community Emergency Management Coordinator
Formation of Emergency Management Program
Publication of approved Emergency Response Plan
Development of an appropriate Community Emergency Operations Centre
Identification of critical infrastructure
Conduct of annual training for the community control group and emergency operations centre staff
Conduct of an annual exercise to evaluate the emergency response plan
Identification of individuals to act as emergency information staff
Development and implementation of a emergency management public awareness program
Conduct of an annual review of the emergency management program

The Town of Orangeville Emergency Management Program is currently being carried out by the Community Emergency Management Coordinator who is also the Fire Chief of Orangeville.

Annual updates of the plan and exercising the plan are essential elements of the emergency plan. Training of staff and conducting different exercises to ensure the members of the EOC can perform confident of their roles and responsibilities.

Annual exercises should be increased with intensity and depth leading up to a full field exercise every two or three years to test all of the aspects of the plan. It is also important that the alternate EOC be incorporated into the annual exercises to familiarize staff with the location and the communications abilities of the alternate location.

Conclusions

The emergency management program is meeting all of the requirements of the Emergency Management Act. The completion of a relocated fire hall would be a good opportunity to build in to the training facility an emergency operations center.

Recommendations

T L. Powell & Associates Ltd in conjunction with *Cyril Hare and Associates Inc* conducted a full review of the current status of the fire protection services in the town provided by the Orangeville Fire Department. We have come to some conclusions on the service and have the following recommendations to maintain and enhance the fire protection services to the public.

All Recommendations

Fire Administration

1. It is recommended that the proposed organization chart in this plan be approved and included in the fire department establishing by law.
2. It is recommended that the implementation of the new organization chart be implemented as and when the changes to the staffing and organization occur through the annual budget process.
3. It is recommended that an additional input clerk position be considered for the daily input of information and data required for the records of the department.
4. It is recommended that when the second Deputy Chief position is filled that the position be excluded from the IAFF local membership.

Fire Operations

5. It is recommended that the town hire ten (10) full time firefighters.
6. It is recommended that the volunteer force be increased with an additional 5 volunteers who must reside and work in the town
7. It is recommended that the volunteer firefighter supervisory ratio be maintained at no more than 3 VFF to an officer on the fire ground.
8. It is recommended that the number of volunteer Captains be increased to 5 with an appropriate number of Acting Captains/Lieutenants.

Fire Stations, Facilities and Head Quarters

9. It is recommended that the property located at C line and Centennial Road be assigned to the fire department for a new fire station, HQ administrative space and a training center.
10. It is recommended that funds be allocated in the 2016 budget for a station design and site preparation tender.

11. It is recommended that funding be assigned to build the new facilities to commence in the fall of 2017 for completion in 2018.

Fire Prevention and Public Education

12. It is recommended that an additional Fire Prevention Officer/Public Educator be hired and that the person have training based upon NFPA 1031 “Qualifications for Fire Inspector and Plans Examiner” and NFPA 1033 “Professional Qualifications for Fire Investigator”.
13. It is recommended that the current fee for service for fire prevention services in the rural municipalities be reviewed and revised to reflect the actual costs.
14. It is recommended that the Town of Orangeville investigate the opportunity to provide fire prevention services to all of the municipalities in Dufferin County.
15. It is recommended that the Fire Prevention staff ensure that the provisions of Ontario Regulation 365/13 are carried out annually.
16. It is recommended that the number of inspections be increased with the goal of meeting the recommended frequency set out in the guidelines established in the fire department’s operational guidelines #1304.
17. It is recommended that the current operational guideline for fire prevention be reviewed and updated as required.
18. It is recommended that all Fire Prevention staff be certified to review fire safety systems under the requirements of the OBC.
19. It is recommended that the fire department be involvement in the review of site plans and fire safety systems as part of the building permit process for the rural municipalities.
20. It is recommended that the Simplified Risk Assessment be updated to reflect the current state of the fire safety risks in the community and that the SRA be reviewed annually. This recommendation applies to all municipalities served by the OFD.
21. It is recommended that the full time and volunteer firefighters participate in public education events and that the firefighters receive training in the delivery of fire safety programs.
22. It is recommended that the full time firefighters conduct fire inspections and that the firefighters receive training in the fire code and fire inspection procedures.
23. It is recommended that OFD in cooperation with the Ontario Association of Fire Chiefs District 4, approach the Boards of Education to implement a fire safety program in the area schools.

24. It is recommended that a senior's fire safety education program be delivered to the seniors groups in the community.
25. It is recommended that a Fire Safety Plans Box Bylaw be drafted and presented to Council.
26. It is recommended that hand held tablets and the appropriate software be purchase to be used for conducting fire inspections, generating reports and tracking the fire inspection program.
27. It is recommended that a shared data-base be developed that links the building department and fire prevention files.

Fire Fighter Training

28. It is recommended that the proposed site for the relocated fire station include a training facility and training props for the firefighters to practice their skills and complete their training.

Maintenance of Apparatus and Equipment

29. It is recommended that new tanker specifications meet NFPA and ULC standards. The tank should have a capacity of 11400 L (2500 gal.) and be equipped with rear and side quick dumps. The vehicle should be equipped with a PTO pump with a minimum capacity of 4000 lpm (840 gpm), Class A/B foam system, 45 mm (1 ¾ in.) pre-connects, hose bed, ground ladders, and storage compartments. The vehicle should have a porta-tank that has a capacity equal to the tank size. It should carry a portable pump (minimum size 2300 lpm (500 gpm)) and 10 m (30 ft.) of hard or soft suction for the pump and the portable.
30. It is recommended that when the pumping vehicles are replaced, that they be equipped with front mounted suction connections.
31. It is recommended that the supply hose load on all pumping vehicles be increased to a minimum of 300 m (1000 ft).
32. It is recommended that the fire department select a universal foam for use in the foam systems that is suitable for Class A and Class B fires.
33. It is recommended that all fire hose be tested annually.
34. It is recommended that the current inspection and testing program for tools and equipment be reviewed to ensure compliance with the applicable NFPA standards and Section 21 Committee Guidelines.

Pre-Fire Planning

35. It is recommended that the property owners of target properties and properties that require Fire Safety Plans be required to incorporate the information for pre-fire plans in the Fire Safety Plans. These Fire Safety Plans should be maintained by the property owner and stored in a fire department accessible locked box at the main entrance to each designated property.
36. It is recommended that the firefighters develop pre-fire plans for all high life and high fire risks using NFPA 1620 “Recommended Practice for Pre-Incident Planning” as guidance.
37. It is recommended that the OFD develop water supply pre-fire plans for properties that are identified as having high fire flow requirements.
38. It is recommended that the pre-plans be stored electronically using a “Tough Books” laptop in the emergency vehicles and that printers be provided to print hard copies.
39. It is recommended that a training program be implemented to teach the firefighters how to prepare pre-fire plans using NFPA 1620 and how to best use pre-fire plans at an emergency.
40. It is recommended that water main, sanitary and storm sewer maps be carried in the emergency vehicles to assist the firefighters in planning water supplies and determining where materials may have flowed in a hazardous materials spill incident.
41. It is recommended that the fire department develop a rural water supply map identifying all static water sources and pumper relay or tanker shuttle scenarios to deliver water to the risks that are not protected with fire hydrants and water mains.

Communications and Radio System

42. It is recommended that in the in the event of a police services change being contemplated the subject of options for fire dispatch become part of that discussion.
43. It is recommended that when the new radio system is being specified sufficient numbers of portables and mobiles be purchase to provide a minimum of four (4) portable radios with battery chargers on each fire truck

Water Supplies

44. It is recommended that the water supply requirements for all properties be reviewed as part of the building permit process. This should include all structures in the rural municipalities.
45. It is recommended that a survey be conducted of the rural municipalities to identify all static and impounded water sources in the areas not serviced by water mains. A program should be instituted to install dry hydrants at strategic locations to facilitate water drafting by the fire department.

46. It is recommended that impounded water supplies (ponds, cisterns or reservoirs) be provided in areas such as schools, commercial properties, industrial properties and residential subdivisions that are not protected with water mains and fire hydrants.
47. It is recommended that a 1900 lpm (420 gpm) portable pump be included in the equipment for the new tanker.
48. It is recommended that fire hydrant and water main maps be provided in each fire department vehicle.
49. It is recommended that rural water supply maps be provided in each fire department vehicle to identify the location of static sources of firefighting water.
50. It is recommended that a water supply training program and SOG be provided to the firefighters including the operation of the municipal water system and the use of alternate water supplies.
51. It is recommended that all fire hydrants be colour coded in compliance with the requirements of the Fire Code.
52. It is recommended that a maintenance program be developed for the inspection and maintenance of dry hydrants.
53. It is recommended that as existing dry hydrants are replaced that the piping be a minimum of 150 mm (6 in) in diameter and that the dry hydrant be equipped with a 150 mm (6 in) male fitting.
54. It is recommended that the water main replacement program continue subject to available funding.

Emergency Management

55. It is recommended that a new Emergency Operations Center (EOC) be included in the plans for the relocated fire station training facility.

Financial Considerations

The new fire station is the largest impact to the capital budget and should be financed over five budget cycles.

- 2016 Design and site preparation
- 2017 Commence construction of the fire hall and HQ office
- 2018 Complete construction of the fire hall and HQ office
- 2019 Commence construction of training facility and EOC
- 2020 landscaping and training/EOC structures completion

Staffing costs are the largest Operational budget cost and should be financed over four budget cycles.

- 2015 Public Education/fire Inspector
- 2016 4 full time Firefighters
- 2017 4 full time Firefighters
- 2018 2 full time Firefighters

Any increase in the tax rates to accommodate the costs of providing a full time fire crew at all times, should be offset to the residents of the Town by a decrease in the fire insurance rate impacted by the improved insurance rating of the Town by the FUS.

Implementation Considerations

The financial impact is considerable however the emergency operations and fire protection are a public safety issue. The implementation dates above are recommended to ensure steps are taken to improve the response capabilities of the fire department.

The fire inspection workload given the mandatory inspection requirements will need support to ensure all of the demands for fire inspections are completed in the required time periods.

The assignment of the property located on C Line and Centenary Road to the fire services program should be completed in 2015 to allow for the proposed construction and relocation of the fire hall to proceed.

Appendix 'A'

VEHICLE INVENTORY

Vehicle Inventory



Squad 11

Year: 2005
Make: Pierce
Chassis: Enforcer
Pump Size: 7000 lpm
Tank: 3410 L
Features: Class A/B Foam System,
Auto extrication tools



Engine 17

Year: 2009
Make: Pierce
Chassis: Contender
Pump Size: 6000 lpm
Tank: 3864 L
Features: Class A Foam System,
Auto extrication tools



Rescue 10

Year: 2012
Make: Dependable
Chassis: Spartan Metrostar
Pump Size: 0
Tank: 0
Features: 10 KW Generator, Roof mounted
light mast, Auto extrication tools



Ladder 15

Year: 2002
Make: Pierce
Chassis: Dash
Pump Size: 7000 lpm
Tank: 1818 L
Features: 32 m aerial ladder, Class
A/B foam system
(Universal Foam)



Tanker 18

Year: 1997
Make: Dependable
Chassis: Freightliner
Pump Size: Pre-piped portable pump
Tank: 8183 L
Features: Plumbed in portable pump supplying rear discharge, Rear dump valve



Pumper 19

Year: 2004
Make: Summit (Snuffer)
Chassis: Ford F350
Tank: 1136 L
Features: Skid Mounted Compressed Air Foam System