

**T L. Powell & Associates Ltd
Emergency Services Consultant**

**MUNICIPALITY
OF
CHATHAM-KENT
FIRE MASTER PLAN
June 2007**



CYRIL HARE & ASSOCIATES INC.
Fire and Life Safety Consultants

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Acronyms and Abbreviations

CAD	Computer Aided Dispatch
CAO	Chief Administrative Officer
CAFS	Compressed Air Foam System
CBRNE	Chemical Biological Radiation Nuclear Explosive
CKFD	Chatham-Kent Fire Department
CKPFFA	Chatham-Kent Professional Fire Fighters Association
CSA	Canadian Standards Association
EMS	Emergency Medical Service
FPO	Fire Prevention Officer
FPPA	Fire Protection and Prevention Act
FUS	Fire Underwriters Survey
GIS	Geographic Information System
GPM	Gallons (Imperial) Per Minute
IFSTA	International Fire Service Training Association
LAN	Local Area Network
LPM	Liters Per Minute
OBC	Ontario Building Code

OFC	Ontario Fire Code
OFM	Office of the Fire Marshal
OHSA	Occupational Health and Safety Act
NFPA	National Fire Protection Association
OHSA	Occupational Health & Safety Act
PPV	Positive Pressure Ventilation
PUC	Public Utilities Commission
RPD	Response Protocol Document
RIT	Rapid Intervention Team
SCBA	Self Contained Breathing Apparatus
SOG	Standard Operating Guideline
TIC	Thermal Imaging Camera
TLP	T L Powell & Associates Ltd
WHMIS	Workplace Hazardous Materials Information System
ULC	Underwriters Laboratory of Canada

Introduction

T L. Powell & Associates Ltd (TLP) in partnership with Cyril Hare & Associates Inc and Marshall Macklin Monaghan are pleased to deliver the Master Fire Plan and Station Location Study for the Municipality of Chatham-Kent. The plan includes a comprehensive review of the Fire Department operations and the inputs from all of the stakeholders.

In 1998, 23 municipalities in the County of Kent amalgamated into the Municipality of Chatham-Kent. Among the challenges involved in this process were bringing together several full-time and volunteer fire services. The Chatham-Kent Fire Department works from 19 fire Stations, with approximately 60 pieces of fire apparatus, staffed by 67 full-time career firefighters and 350 paid part-time volunteer Fire Fighters.

The consultants wish to thank the Steering Committee for their assistance and guidance through the process of developing the Fire Master Plan and Station Location Study.

Fire Master Plan, Steering Committee

- Robert Crawford, Fire Chief
- Rick Arnel, Assistant Chief
- Brian King, Councilor
- Gerry Wolting, Acting Chief Administrative Officer
- Shawn Mifflin, President Local CKPFFA
- Janet Berry, Administrative Assistant 1
- Al Devillaer, Emergency/EMS Manager
- Scott Campbell, Station Chief Harwich
- Jim McNamara, Budget Analyst

Executive Summary

The consultant has conducted an evaluation and analysis of the performance of the fire protection services, using the generally accepted standards and benchmarking of the Canadian Fire Services. Consultation has played an integral part of the process, including meetings with all recognized stakeholders, and coordination of the final report with the Steering Committee.

Meetings have taken place with the stakeholders, including, all of the elected members of Council, the former Mayor of the Municipality, senior staff and other members of the staff of the municipality, all of the excluded senior members of the fire service, the Chatham-Kent Professional Fire Fighters Association (CKPFFA) executive, full time members of the Fire Department, all of the volunteer Station Chiefs and Deputies, Volunteer members attended two open meetings with the consultants, The supervisor of the Police Department Communications Division and several other stakeholders.

The consultants have reviewed and analyzed current Fire Department levels relative to existing financial and human resource allocations and reviewed and analyzed relevant documents, statistical data and reports and the Canada census regarding population growth in the Municipality of Chatham-Kent for the next ten years.

The project included an analysis of the Fire Department activities in the following areas:

- Fire prevention and public education
- Station locations and response polygon areas
- Staffing requirements, in both volunteer and full-time sectors
- Water supplies
- Administration
- Training and professional development
- Fire operations and response, including level of service provided
- Communications
- Apparatus and equipment
- Maintenance program

We have developed recommendations on all aspects of the fire protection program that we believe will provide a viable plan for the municipality to implement over the next ten years. The Fire Master Plan recommendations found following each subject matter are reproduced here for the convenience of staff.

Complete List of Recommendations

Stations

1. It is recommended that the following volunteer fire Stations be considered for reconstruction:
 - a) 2008 Station 17 (Merlin) (Volunteer)
 - b) 2009 Station 5 (Chatham North) (Volunteer)
 - c) 2010 Station 19 (Tilbury) (Volunteer)
 - d) 2011 Station 14 (Erieau) (Volunteer)
2. It is recommended that Station #2 be relocated south of the railway tracks in proximity to Lacroix Street and Indian Creek Road West.
 - a) It is further recommended that the new Station be a minimum of two double bays drive through configuration and contain office and accommodations for two crews the Fire Prevention Office and a Platoon Chief.
3. It is recommended that the Station response polygons/zones be realigned in accordance with new emergency response zone map shown in this plan.
4. It is recommended that a response protocol be developed by the Fire Department for the use of the communications dispatch that indicates the first, second and third alarm response to every location within the municipality based on the concept of closest and quickest Station response.
 - a) It is further recommended that the protocol include the response of the two closest Stations either or both full time and volunteer for all rural areas requiring a Tanker shuttle and for all special fire or life risks such as, chemical or flammable liquid facilities, large manufacturing facilities and nursing homes.

5. It is recommended that a fire Station building audit and space needs study be conducted to establish the state of repair and space needs of each fire Station with consideration that Stations #2, #3, #5, #14, #17 and #19 that should all be replaced before the end of the next decade.

Operational Review, Volunteer and Full-Time Sectors

6. It is recommended that the municipality introduce a false alarm by-law that provides for fines after three responses to any one location within a year. The by-law should also provide for the Fire Chief to refund a portion of the fine if the building owner takes actions to reduce the number of false alarms. Such as providing proof of performing maintenance or providing some form of security to prevent abuse of the alarm system.
 - a) It is further recommended that the false alarm statistics be analysed to determine the most frequent locations of these types of calls and appropriate action be taken to reduce the numbers of calls to that address.
7. It is recommended that the negotiating team of the Municipality and the Fire Fighters executive meet to discuss the changes needed to the collective agreement and the Letter of Understanding to give priority to public safety in the municipality. In particular remove any perceived or actual restrictions of the volunteers that may be in or attached to the collective agreement that prevents them from responding into the Station #1, #2 and #3 areas on the first, second or third alarm and remove the restrictions on the volunteers to drive and/or operate equipment to the scene and during emergency incidents.
 - a) It is further recommended that in the event of a stalemate in the discussions the matter should be processed through the grievance/arbitration procedures to a third party.
 - b) It is further recommended that a Fire Department policy be established immediately in Station #3 to respond the Wallaceburg volunteer Fire Fighters on all first alarms excluding EMS calls.
8. It is recommended that the full time compliment of Fire Fighters in the Station #1 and Station #2 response zones be increased to provide a minimum of a combined Station total of 10 Fire Fighters including officers 24/7 to respond to all first alarms excluding EMS and vehicle fires.

9. It is recommended that for all areas of the municipality that are not serviced with hydrants, the first alarm to reported fires other than vehicle accidents/fires, should include the primary Station plus a Tanker with a minimum of two Fire Fighters from the adjacent Station for a back up water supply.
10. It is recommended that the Fire Department establish a task force to survey the Municipality and establish a list of special life and property risks that require the response of more than one Station. Upon completing the list the task force will develop a response protocol outlining the number and types of vehicles and Fire Fighters to be responded for the communications to use when an alarm or emergency is announced for that building or property.
11. It is recommended that the Fire Department establish a task force of volunteer members to evaluate the platooning of Fire Fighters for Rural and Urban responses, EMS responses, and any other forms of platooning that may be used by the volunteers across the Municipality. The task force should make a recommendation to the Fire Chief on the task force findings.
12. It is recommended that the Municipality establish a task force of stakeholders to evaluate the specialty rescue teams and meet with representatives of the Canadian Coast Guard and other stakeholders to determine the level of rescue services the municipality should be delivering to the residents.
 - a) The task force should evaluate the High Angle Rescue team value to the Municipality, and
 - b) Evaluate the Dive Team and it's necessity for rescue purposes in the municipality, and
 - c) Shore based and off shore water and ice rescue and determine the level of service in the Municipality, and
 - d) The task force should consider the value of establishing a Haz-Mat team in the Fire Department to be trained and equipped to the operations level of NFPA 472.
 - e) The task force will make recommendation to the Council for their consideration in establishing the level of rescue services for the Municipality.

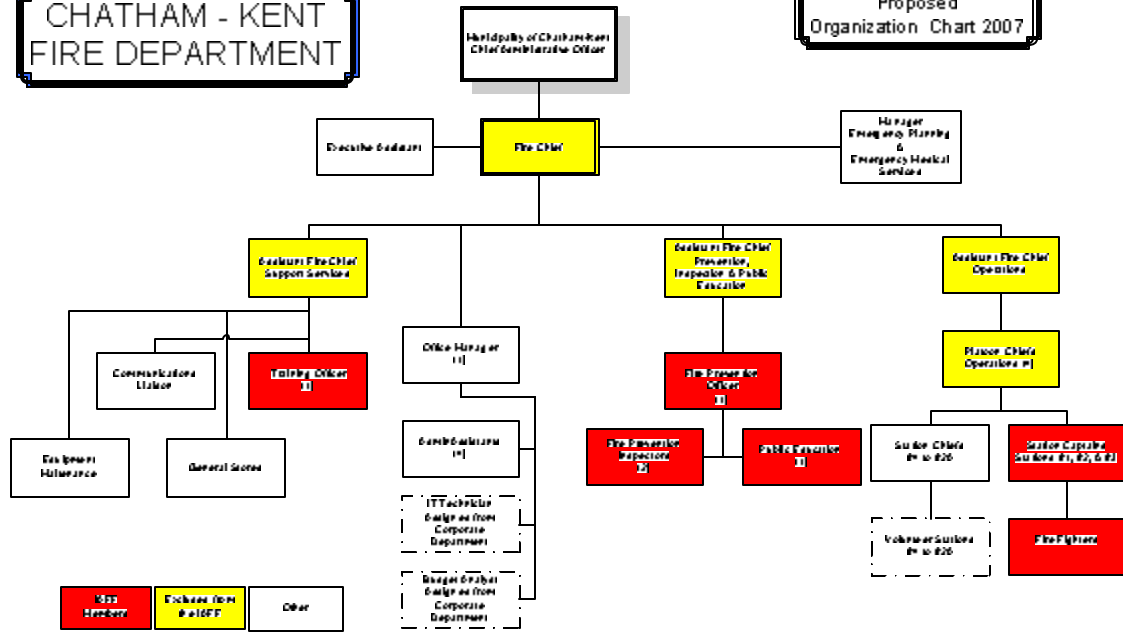
13. It is recommended that the Tiered response program be revisited to include the concept of response of the Fire Department when it is known that the Ambulance can arrive on scene before the full time Stations (within 8 minutes) and the volunteer Stations (within 12 minutes) of the call for emergency Medical Assistance.

Administration and Organization

14. It is recommended that four Platoon Chiefs be added to the Station #1 and that the position of Senior Captain be reclassified to Captain effective January 2008.
15. It is recommended that four Fire Fighters be added to the Station #2 compliment effective January 2009.
16. It is recommended that four Fire Fighters be added to the Station #2 compliment effective January 2010.
17. It is recommended the Emergency Management Program be assigned to the Fire Department
18. It is recommended that the EMS Manager and program be assigned to the Fire Chief
19. It is recommended that a position of Office Manager be established in the Fire Department effective January 2008
20. It is recommended that two (2) new clerical administrative positions be approved for the Fire Department, one to be assigned to the Training Division duties and the second one to be assigned to the Fire Prevention Division duties.
21. It is recommended that in accordance with the Fire Prevention and Protection Act the Fire Chief report to the Chief Administrative Officer (CAO) for all administrative matters and directly to Council for all matters of public safety.
22. It is recommended that the following organization chart be adopted by Council for the Fire Department

CHATHAM - KENT FIRE DEPARTMENT

Proposed Organization Chart 2007



23. It is recommended that the following rank markings be adopted by the Fire Department:

RANK	CREST	STRIPING	BUTTONS	CAP	EXPANSION BAND	EPAULETTES
Fire Chief	Gold	Gold – 5 stripes	Gold	Officer – double row stars	Gold	Gold – 5 stripes
Assistant Fire Chief	Gold	Gold – 4 stripes	Gold	Officer – single row stars	Gold	Gold – 4 stripes
Platoon Chief	Gold	Gold – 3 stripes	Gold	Officer	Gold	Gold – 3 stripes
Station Chief	Gold	Gold – 2 stripes	Gold	Officer	Gold	Gold – 2 stripes
Captain	Gold	Gold – 1 stripe	Gold	Officer	Gold	Gold – 1 stripe
Acting Captain	Silver	Silver – 1 stripe <i>(CAFC style)</i>	Silver	Firefighter	Black Band	Silver – 1 stripe <i>(CAFC style)</i>
Firefighter	Silver		Silver	Firefighter	Black Band	
Fire Prevention Officer	Gold	Gold – 1 stripe	Gold	Officer	Gold	Gold – 1 stripe
Fire Inspector	Gold		Gold	Officer	Gold	
Public Education Officer	Gold		Gold	Officer	Gold	

Fire Prevention and Public Education

24. It is recommended that an additional Fire Prevention Inspector be added to the Chatham Kent Fire Department in the 2008 budget.
 - a). It is further recommended that the minimum qualifications based upon the Ontario Fire Service Standards for Fire Prevention Officers be required of all applicants for the position.
 - b). It is further recommended that a Certified Building Official under the requirements of the Building Code be considered as a positive asset for the position.
25. It is recommended that a Fire Fighter inspection program be developed and implemented. It is further recommended that the Station 1, 2 and 3 Fire Fighters be trained and certified to conduct basic Fire Code inspections.
26. It is recommended that the interested volunteer Fire Fighters receive training and certification to enable them to conduct Fire Code inspections of light industry, commercial and multi-residential properties in their response district.
27. It is recommended that the involvement of the Fire Department in the Building Permit process continue.
28. It is recommended that the department's fire prevention SOG's be updated.
29. It is recommended that the volunteer Fire Fighters continue to receive training in the delivery of fire safety programs and participate in public education events.
30. It is recommended that A Fire Safety Plans Box Bylaw be drafted and presented to Council.
31. It is recommended that Opportunities for fund raising be investigated with public service clubs and community organizations.

32. It is recommended that a Home Fire Safety Program be developed and delivered by the full time and volunteer fire fighting crews.

Pre-Fire Planning

33. It is recommended that a pre-incident planning program be developed using NFPA 1620 “Recommended Practice for Pre-Incident Planning” as a template. All high life risk, institutional properties, large commercial properties, public assembly properties and industrial properties should be pre-planned.
 - a) It is recommended that the pre-fire plans be prepared by the fire fighters (fulltime and volunteer).
 - b) It is recommended that training program be implemented to teach the fire fighters how to prepare pre-fire plans.
 - c) 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.

Fire Fighter Training and Education

34. It is recommended that a qualified Master Training Facilitator be hired and appointed as the Fire Department Training Officer.
35. It is recommended that all training lessons, sessions or practical training be followed by an evaluation or testing of the participants and the results documented and retained in an appropriate retrievable format.
36. It is recommended that all training records be recorded in digital form to enable easier production of statistical data.
37. It is recommended that a training facility be constructed for practical and theoretical training in a central location to allow all members of the Fire Department to use the facility days, evenings and weekends.
 - a. It is further recommended that the facility be constructed in a location that will allow for open burning and smoke generation that will not impact residential, commercial or Industrial buildings.

- b. It is further recommended that the facility consist of a 4 floor training tower, a fire building with pitched roof, open pit burning area, underground water tank suitable for training on pump operations including drafting and an area for extrication training from crashed vehicles. The main building should have a minimum of theoretical training classrooms, lockers and washrooms Male and female and office space for the training officer.

Communications and Equipment

38. It is recommended that the municipality develop an RFP to attract a qualified company to undertake a comprehensive radio signal coverage study and feasibility study to evaluate the current radio coverage and identify any dead spots.
39. It is recommended that the Fire Department consider providing additional portable radios where they can be justified.
40. It is recommended that the Fire Department investigate the financial implication and operational advantages of having a second mobile repeater available on the Rescue Truck.

Vehicles and Equipment Maintenance

41. It is recommended that Pumper Rescues be provided in the volunteer stations in lieu of providing a Pumper and Heavy Rescue in each of these stations.
42. It is further recommended that a personnel carrier (van 12 seat) be provided to transport additional fire fighters in volunteer stations where Pumper Rescues are provided.
43. It is recommended that an appropriate number of additional spare Pumpers and Tankers be retained in the fleet. These vehicles should be taken from the existing fleet as vehicles are replaced. The best vehicles should be retained and the oldest vehicles retired. A minimum of 3 spare Pumpers and Tankers should be retained.

44. It is recommended that the Vehicle Purchasing Committee develop a standard specification for all types of emergency vehicles.
- a) It is further recommended that Tanker specifications should meet NFPA and ULC standards and be based upon a conventional 2 door chassis with a 11350 litre (2500 gal.) tank with rear and side quick dumps. The vehicle should be equipped with a pump, Class A 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 2250 lpm (500 gpm) and 9 meters (30 ft) of hard suction for the pump and the portable.
 - b) It is further recommended that Rescue Pumper specifications should meet NFPA and ULC standards and be based upon a conventional 4 door chassis with a pump/rescue style body with a minimum 2250 litre (500 gal.) tank and a minimum 5000 Lpm (1050 gpm) pump with a front suction. The vehicle should be equipped with a CAFS or Class A foam system, pre-piped removable deluge, 45 mm (1 ¾ in.) and 65 mm (2 ½ in.) pre-connects, hose bed, front bumper mounted 45 mm (1 ¾ in.) pre-connect, storage compartments, ground ladders, and 9 meters 9 (30 ft) of hard suction.
 - c) It is further recommended that Aerial/Quint specifications should meet NFPA and ULC standards and be based upon a custom or conventional 4 door chassis with a minimum 2250 litre (500 gal.) tank and a minimum 1050 gpm (5000 Lpm) pump with a front suction. The vehicle should be equipped with a CAFS or Class A foam system, pre-piped ladder deluge, ground ladders, 45 mm (1 ¾ in.) and 65 mm (2 ½ in.) pre-connects, hose bed, storage compartments, and 9 meters 9 (30 ft) of hard suction. When new Aerials are purchased the height of the Aerials should be based upon the height of the buildings that are to be protected.
 - d) It is further recommended that personnel carriers be designed with a weight carrying capacity capable of seating 12 personnel with personal protective clothing. The vehicles should be equipped with a tow hitch for pulling specialty equipment trailers.
45. It is recommended that the fleet maintenance review that is currently underway, consider having Fire Department vehicle maintenance conducted in-house by qualified technicians.
- a) It is further recommended that all vehicles be maintained in compliance with NFPA 1915 or its replacement standard.

- b) It is further recommended that all pumps and Aerials be tested annually by a qualified technician.
 - c) It is further recommended that all vehicles be subjected to an annual safety inspection.
46. It is recommended that the equipment compliment for each class of fire truck in the fleet be standardized. Equipment such as SCBA, hose, nozzles, appliances, tools, etc. should be standardized and specified for each new vehicle.
47. It is recommended that a small tools and equipment maintenance and repair program be established that it can be carried out by on duty fire fighters.
- a) It is further recommended that a tracking and accountability program be put in place for the maintenance of this equipment.
48. It is recommended that a central stores be established to maintain a stock of consumables and critical equipment to ensure that emergency operations are not negatively impacted.
49. Thermal imaging cameras should be provided for every station and all personnel should be trained in their use.
50. Traffic light pre-emption system should be installed on the traffic lights in the Chatham and Wallaceburg urban areas.

Water Supplies for Fire Fighting

51. It is recommended that a survey be conducted of the municipality by the Fire Department to identify all static and impounded water sources. A program should be instituted to install dry hydrants at strategic locations to facilitate water drafting by the fire department.
52. It is recommended that the ongoing life cycle review of the water system continue and that the program for water main replacement include minimum fire protection water supplies in the overall evaluation.

53. It is recommended that the fire hydrants on municipal and private water systems be colour coded to indicate fire flow with a minimum residual pressure of 150 kPa. If the water main size is required to be shown, it should be stenciled on the hydrant.
54. It is recommended that the municipality consider the installation of impounded water supplies (ponds, cisterns or reservoirs) be provided in urban areas that are not protected with water mains and fire hydrants.
55. It is recommended that a maintenance program be developed for the inspection and maintenance of dry hydrants and underground water tanks.

Stations

Analysis of Existing Fire Station Response Times and Gap Areas

The Municipality of Chatham-Kent has 19 existing fire Stations. These comprise two full-time, one composite and sixteen volunteer fire Stations, as follows:

- a. Station 1 (Chatham City South) (Full-Time)
- b. Station 2 (Chatham City North) (Full-Time)
- c. Station 3 (Wallaceburg) (Composite)
- d. Station 4 (Dover) (Volunteer)
- e. Station 5 (Chatham North) (Volunteer)
- f. Station 6 (Dresden) (Volunteer)
- g. Station 7 (Chatham South) (Volunteer)
- h. Station 8 (Thamesville) (Volunteer)
- i. Station 9 (Bothwell) (Volunteer)
- j. Station 10 (Orford) (Volunteer)
- k. Station 11 (Ridgetown) (Volunteer)
- l. Station 12 (Harwich South) (Volunteer)
- m. Station 14 (Erieau) (Volunteer)
- n. Station 15 (Raleigh North) (Volunteer)
- o. Station 16 (Raleigh South) (Volunteer)
- p. Station 17 (Merlin) (Volunteer)
- q. Station 18 (Blenheim) (Volunteer)
- r. Station 19 (Tilbury) (Volunteer)
- s. Station 20 (Wheatley) (Volunteer)

One of the most critical factors in the provision of fire suppression services is the geographic area that can be covered by fire vehicles within acceptable response times. This is one of the primary criteria in determining whether additional Stations are required and whether any existing Stations are redundant or should be relocated. If there are a substantial number of well-populated or high-risk areas which are not covered within these acceptable response times, additional Stations may be required. Secondly, if there are areas which are covered by more than one fire Station (and where the demand and land use activity does not warrant the overlap in coverage), it may be possible to close a Station, allowing those resources to be re-allocated elsewhere in the system.

The number of Stations is important not just for first response, but also for provision of back-up when the vehicles of another Station are responding to an incident, and for second response to multiple-alarm incidents. This type of coverage back-up is important in ensuring that sufficient resources are available across the Municipality at all times.

Station #1 (Chatham (City) South), Station #2 (Chatham (City) North) are the two full-time fire Stations. Station #1 and Station #2 are located in the former City of Chatham and Station #3 (Wallaceburg) is the composite (full time and volunteer) Station 3 it is located in the former Town of Wallaceburg.

A Geographic Information Systems (GIS) based simulation model was created using Arc MAP 9.2 and its Network Analyst extension to plot and analyze the travel time contours for the existing Stations. The analysis process used to model coverage from existing Stations can be summarized as follows:

- GIS-based network analysis, to simulate travel time on all roads in the Municipality;
- Network speeds, wherever applicable were adjusted to reflect travel time delays due to traffic calming measures;
- A turn delay of 6 seconds was assigned to both left and right turns at intersections to account for time lost due to traffic, geometry of intersection, etc.;
- The network was coded to reflect one-way travel. For example, Highway 401 is represented with two links in the network, one for each direction. Thus the links have to be coded for one-way traffic flow to avoid the fire trucks from traveling in the opposite direction and providing coverage to areas that would otherwise not be possible; and
- Coverage provided to community facilities such as nursing homes and other critical facilities has been taken into account.

Existing Geographic Coverage

The coverage from the existing Stations has been analyzed in relation to travel time. The area covered by the existing Stations is shown in the 8-minute travel time contour. The 8 minute travel time objective was used for the analysis of the coverage provided by the existing Stations because this the generally accepted response times in Ontario for urban risk areas. Additionally, the coverage was also analyzed at an intermediate time-interval of 12 minutes. The results are shown following the 8 minute contour map. The analysis of the response from the existing Stations is summarized as follows:

8 Minute Response Contour (Existing Stations)

- t. The 8 minute response contours provide approximately 66 percent coverage to the Municipality of Chatham-Kent;
- u. All the major industrial areas close to the Station #1 area, are provided coverage;
- v. The Stations provide 100 percent coverage to the 42 critical facilities analyzed for protection by the fire department. The critical facilities included amenities for fuel supplies, emergency services, government and food storage;
- w. The Stations provide 100 percent coverage to the 18 health care facilities in the Municipality;
- x. A majority of the gap areas in the Municipality are rural in nature;

The downtown core of the former municipality of Chatham has significant overlap in coverage by the two full time fire Stations (Station #1 and Station #2) and two volunteer fire Stations (Station #15 and Station #12). The two full time fire Stations are strategically located the south and north of the Thames River, respectively. This location pattern was established when few fixed bridges provided the coverage to the residential part of the community, which is to the north of the River by Station # 2 and to the heavy industrial areas in the south by Station #1. In addition, Station #1 can be assisted by the two volunteer fire Stations, Station #15 and Station #12 in case of a serious emergency at the industrial plants or along Highway # 401. Station #2 can be assisted by Station #4 and Station #7.

12 Minute Response Contour (Existing Stations)

- Under the 12 minute response contour, virtually the entire Municipality is covered, except for a couple of gaps along the western part of the Municipality; and
- The 12 minute response contour provides approximately 96 percent spatial coverage to the Municipality.

The rail lines are a major impediment to combining of Stations #1 and #2. The river was the original reason for having two Stations in Chatham as it constituted an impediment to the response as there was the possibility of having the bridges lifted removing road access across the river. This is no longer an issue and instead the railway lines have now created the impediment and are the only reason why two Stations are still necessary in the urban area of Chatham one station north and one station south of the railway lines.

The following contour maps are first the 8 minute then the current response areas followed by the 10.5 minute response contours that were used to develop the fourth map of proposed emergency response zones for the Municipality and the fifth contour map is the Station #1 and #2 proposed response zones. The current border between Station #1 and #2 for single response emergencies will remain in place until such time as Station #2 is moved to the new proposed location.

SEE DOCUMENT TITLED

“PAGE 24 – EXISTING STNS 8 MINUTE TRAVEL TIME”

SEE DOCUMENT TITLED

“PAGE 25 – EXISTING STNS 10.5 MINUTE TRAVEL TIME”

SEE DOCUMENT TITLED

**“PAGE 26 – CURRENT SERVICE LEVEL CLOSEST
STATION RESPONSE”**

SEE DOCUMENT TITLED

**“PAGE 27 – EXISTING STNS 10.5 MINUTE RESPONSE
TIME”**

SEE DOCUMENT TITLED

“PAGE 28 – STNS 1 & 2 – 10.5 MINUTE TRAVEL TIME”

The contour maps shown above indicate the travel time distances using the criteria described earlier. The muster time or gathering time at the Fire Trucks was determined as being 90 seconds for the full time crews who are in the station and 4 minutes for the volunteers who travel from their homes or place of business to the station. When determining the emergency response zones the closest Station in terms of muster time and road travel time was used.

The volunteer boundaries have some marginal changes to the boundaries in the rural areas of the response zones, the major changes will occur around the full time stations that will include a larger area of the semi rural and rural properties around the built up communities of Chatham and Wallaceburg. Given the different tax rates of the full time and volunteer response zones there would be a impact on the property owners who will be protected by the full time crews. The Municipality will want to consider all of the options for the tax rate for rural properties that will now be protected by a full time emergency response crew.

Maintenance and Design of Fire Stations

There are two full time Stations, one composite Station and 16 volunteer Stations.

Appendix 'A' provides a brief description of each Station along with the major apparatus in each Station. There are a number of common concerns with the fire Stations.

The department has a number of female Fire Fighters, both full time and volunteer. There are no female washrooms, change rooms, or showers in the Stations. Common washrooms can often serve the purpose provided they have a lock on the door. It is not practical to reconstruct the fire Stations to accommodate female members however modifications could be made to ensure their privacy.

With the exception of Station #3, none of the fire Stations is equipped with a vehicle exhaust system. Diesel and gasoline engine exhaust fill the Stations every time a vehicle is started. Exhaust particulate can migrate throughout the buildings. This is a particular concern in Stations #1 and #2, since these Stations contain dormitories. Budget funds have been allocated in the 2007 budget to install a vehicle exhaust system in Station #1.

Station equipment maintenance is carried out by the Building Maintenance Division. Prior to amalgamation the regular maintenance of the volunteer fire Stations was done by the volunteers. Under the present organization, the fire fighters do no maintenance. It is reported by the stakeholders that it takes considerable time to have basic repairs completed. A number of the volunteer members indicated that they would be happy to carryout some of the basic maintenance if they were provided with the proper materials and permits.

There are several Stations that are old and in need of repair or replacement. A number of the Stations are too small to accommodate the apparatus. At Station #5 vehicles are stored in rented facilities. At Stations #14 and #17, the vehicles are jammed into the Station so tightly that they have to be pulled out of the Station in order to carryout the routine checks. Custom trucks have to be specified in order for them to fit into some of the Stations. Some of the older Stations have outlived their usefulness and are in need of replacement.

Station #1

The two main line freight railway lines (CN and CP) cross the Station #1 response area, the frequency of the trains blocking all of the north-south roads presents unpredictable delays in emergency response south of the tracks. The number and frequency of the delays varies from day to day the main lines are linked through the Cities of Windsor and Sarnia to the USA and through Southern Ontario to the two major shunting yards in Toronto and Mississauga for the east and west of Canada.

There are also passenger trains on the lines connecting to Windsor, Sarnia and Toronto for all points of the compass travel across Canada and the USA. The data collection on the delays to emergency traffic was not available. It is clear however that the tracks do constitute a serious potential for delays in emergency response to the south of the Station #1 area.

During the Stations visits it was observed that there is no space provided for training in Station #1 and the Fire Prevention office is located in a cramped converted office space that was originally designed as a communications room above the Captains office. The Station is at capacity for full time staffing there is no space to accommodate any additional staff that will be needed in the future on this Station. Workrooms to maintain fire equipment and SCBA test bench and repair facility are located on the ground floor area.

None of the full time Stations #1, #2 and #3 are large enough to accommodate additional personnel. The Captain's office in Station #2 is in the main entrance and there is no adequate training area. Station #3 has no front apron and the apparatus cannot be parked outside and there is limited room for the apparatus in the Station.

Many of the older volunteer Stations are not insulated and have poor weather stripping around the doors and windows. These facilities are expensive to heat. Station #4 (Dover) does not have a training area and must conduct training in the vehicle storage area. Station #17 (Merlin) does not have a training area and uses an adjacent municipal building for training and equipment repair. Access to the offices and weight room in Station #19 (Tilbury) is through the furnace room.

The consultants were advised by the stakeholders that in some cases the volunteers have become so frustrated with the delay in building repairs that they have asked to be given the required materials so that they can do the repairs or construction themselves. Where there is a qualified volunteer who can do the repairs, this would speed up the repairs and allow municipal staff to do work in other facilities. Where new construction must be carried out, building permits are required. If qualified volunteers were allowed to do the work, the building permit process must still be followed.

Two of the Stations have experienced vandalism or burglaries. Station #11 is equipped with an intrusion alarm. Stations #1 and #3 have fire alarms systems connected to the larger buildings that they are attached to. None of the other Stations have intrusion alarms or fire alarms. The volunteer fire Stations are unattended buildings and a fire or burglary will not be discovered until it is too late. Every year there are a number of fire Stations in Canada that burn down or are burglarized. A fire/intrusion alarm connected to the communications centre would ensure that any emergency was reported and investigated immediately.

Conclusions

The volunteer fire Station locations became established in the local communities before the amalgamation to provide fire protection to the developing hamlets and villages. In doing so the original response boundaries were established by the political boundaries served by the elected officials of those various communities. Over the years some changes have evolved due to geographical impacts on the ability of the local Fire Department to respond. Amalgamation has seen some more changes to boundaries in recent years but the original political boundaries are in general terms currently used as the response area for the local Stations.

The amalgamation of the 19 Stations in 1998 into the Chatham-Kent Fire Department now provides the opportunity to impact the emergency response zones in a positive manner to provide for the closest and quickest response to the emergency. In order to determine the closest and quickest responding vehicle a Geographic Information System (GIS) program was utilized together with a criteria to ensure that all of the impediments that can be met by responding vehicles could be evaluated.

A very important aspect of the criteria is the time it takes for the Fire Fighters to assemble and respond from the Stations, full time staffed Stations have a different assembly time than the volunteer Fire Fighters who respond from their homes or places of business.

The full time Stations were given 90 seconds to assemble in the Station bay, dress start the Engines and leave the Stations. Volunteer Fire Fighters have been allowed 4 minutes to assemble at the Station, dress, start the Engine and exit the Station. The road travel time for both is calculated with identical criteria.

Using this method has provided the consultants with an understanding of the points in all of the Stations full time and volunteer that the Engines will arrive at together or areas that are provided with overlap protection. This is the point that the response zone boundary should be established.

The GIS program has clearly identified that both Station #1 and Station #2 overlap each others response zone almost identically. Given that the location of Station #2 was driven by the lack of suitable fixed bridges across the river this is no longer a concern, what is now a concern is the railway tracks that cross the city within a block or two of each other. The response of both Station #1 and #2 is impaired when the freight trains pass through the municipality and particularly when shunting takes place on either track.

Station #2 has space needs for a training room and Captains office as well the Fire Prevention Officers are in need of suitable office space from their cramped quarters at Station #1. It appears that moving Station #2 to a new location on the south side of both of the tracks could answer a number of operational and space needs of the Fire Department.

The current response polygons or emergency response districts are not designed to allow the closest and quickest Station to respond to the emergency, as stated earlier the response district was originally designed by the local municipality or political boundaries. With the amalgamation of all of the Stations within Chatham-Kent into one service delivery system or Fire Department it is important that the delivery of emergency services be rationalized and delivered in a consistent manner across the municipality.

The consultants are aware of the use of the terminology “Mutual Aid” that is still being used by many of the Station Chiefs. In fact the amalgamation of the Stations has eliminated all of the Mutual Aid Agreements and calling for support or back up or a second alarm is more appropriate terminology to be used. The Fire Department does not have a response protocol for second alarms or fill in of Stations for use by the communications operators.

The quality and conditions of the volunteer fire Stations was the subject of the consultants assessment. Many issues were discovered during the visits to the Stations including the lack of female facilities, lack of vehicles exhaust system installations and in many of the Stations lack of suitable insulation and defective windows. The most obvious issue found was the lack of suitable space for the storage of the vehicles, as well as the lack of training rooms, offices and work areas.

There is a need for a comprehensive building audit of all of the fire Stations and an aggressive program to bring all of the Stations up to a reasonable standard. Several of the volunteer Stations should be replaced with new facilities as soon as is reasonably possible.

Recommendations

1. It is recommended that the following volunteer fire Stations be considered for reconstruction:
 - 2008 Station 17 (Merlin) (Volunteer)
 - 2009 Station 5 (Chatham North) (Volunteer)
 - 2010 Station 19 (Tilbury) (Volunteer)
 - 2011 Station 14 (Erieau) (Volunteer)

2. It is recommended that Station #2 be relocated south of the railway tracks in proximity to Lecroix Street and Indian Creek Road West.
 - a. It is further recommended that the new Station be a minimum of two double bays drive through configuration and contain office and accommodations for two crews the Fire Prevention Office and a Platoon Chief.

3. It is recommended that the Station response polygons/zones be realigned in accordance with new emergency response zone map shown in this plan.

4. It is recommended that a response protocol be developed by the Fire Department for the use of the communications dispatch that indicates the first, second and third alarm response to every location within the municipality based on the concept of closest and quickest Station response.
 - a) It is further recommended that the protocol include the response of the two closest Stations either or both full time and volunteer for all rural areas requiring a Tanker shuttle and for all special fire or life risks such as, chemical or flammable liquid facilities, large manufacturing facilities and nursing homes.

5. It is recommended that a fire Station building audit and space needs study be conducted to establish the state of repair and space needs of each fire Station with consideration that Stations #2, #3, #5, #14, #17 and #19 that should all be replaced before the end of the next decade.

Operational Review, Volunteer and Full-Time Sectors

The Chatham-Kent Fire Department operates a composite Fire Department of 67 full time and approximately 350 part time volunteer Fire Fighters (FF). The Fire Stations could be described as Urban (full time & composite) and Rural (Volunteer). There are 3 Urban Stations and 16 Volunteer Stations.

The staffing review takes into consideration The Fire Protection and Prevention Act (FPPA), the National Fire Protection Association (NFPA) 1710 and 1720, Ontario Fire Marshal's (OFM) Provincial guidelines and any other standards, guidelines or policies that are appropriate to the Municipality of Chatham - Kent and within the fiscal capabilities of the municipality.

The following Standards and Guidelines for Operational Staffing were reviewed to evaluate the current level of staffing and if appropriate be discussed further in both the Administrative Review and the Fire Master Plan.

<ul style="list-style-type: none"> • OFM 10 in 10 	OFM Comprehensive Fire Safety Effectiveness Model
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • 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
<ul style="list-style-type: none"> • IAFC NFPA 1710 - A Decision Guide 	International Association of Fire Chiefs
<ul style="list-style-type: none"> • IAFF International Association of Fire Fighters 	Safe Fire fighting Staffing, Critical Decisions

Statistical Analysis

The statistical analysis indicates the demand for fire emergency services in the municipality. The total number of calls from 2002 to 2006, indicate that there is a considerable increase in the numbers of calls from 2027 to 2714. It is not just the number of calls but the type of calls and time of day of the calls that can also give one a clear picture of the direction of the demand for services.

CHATHAM-KENT EMERGENCY RESPONSES 2002 TO 2006							
Station		2002	2003	2004	2005	2006	
	-						
Chatham #1	-	403	463	576	589	744	
	-						
Chatham #2	-	358	440	485	537	501	
	-						
Chatham south	-	41	53	74	53	67	
	-						
Chatham North	-	24	41	28	39	31	
	-						
Wheatley	-	57	87	79	85	77	
	-						
Raleigh North	-	37	55	71	69	65	
	-						
Raleigh South	-	36	41	55	48	44	
	-						
Eireau	-	22	34	32	33	30	
	-						
Wallaceburg	-	319	364	297	352	327	
	-						
Dresden	-	66	61	81	54	75	
	-						
Tilbury	-	144	128	145	218	168	
	-						

<u>Orford</u>	-	50	47	37	52	35
-	-					
<u>Dover</u>	-	49	55	56	91	82
-	-					
<u>Bothwell</u>	-	43	51	40	44	46
-	-					
<u>Thamesville</u>	-	36	61	56	63	58
-	-					
<u>Merlin</u>	-	26	25	32	36	32
-	-					
<u>Blenheim</u>	-	167	121	134	189	163
-	-					
<u>Ridgetown</u>	-	105	125	196	163	116
-	-					
<u>Harwich North</u>	-	44	47	50	59	53
-	-					
TOTAL		2027	2299	2524	2774	2714

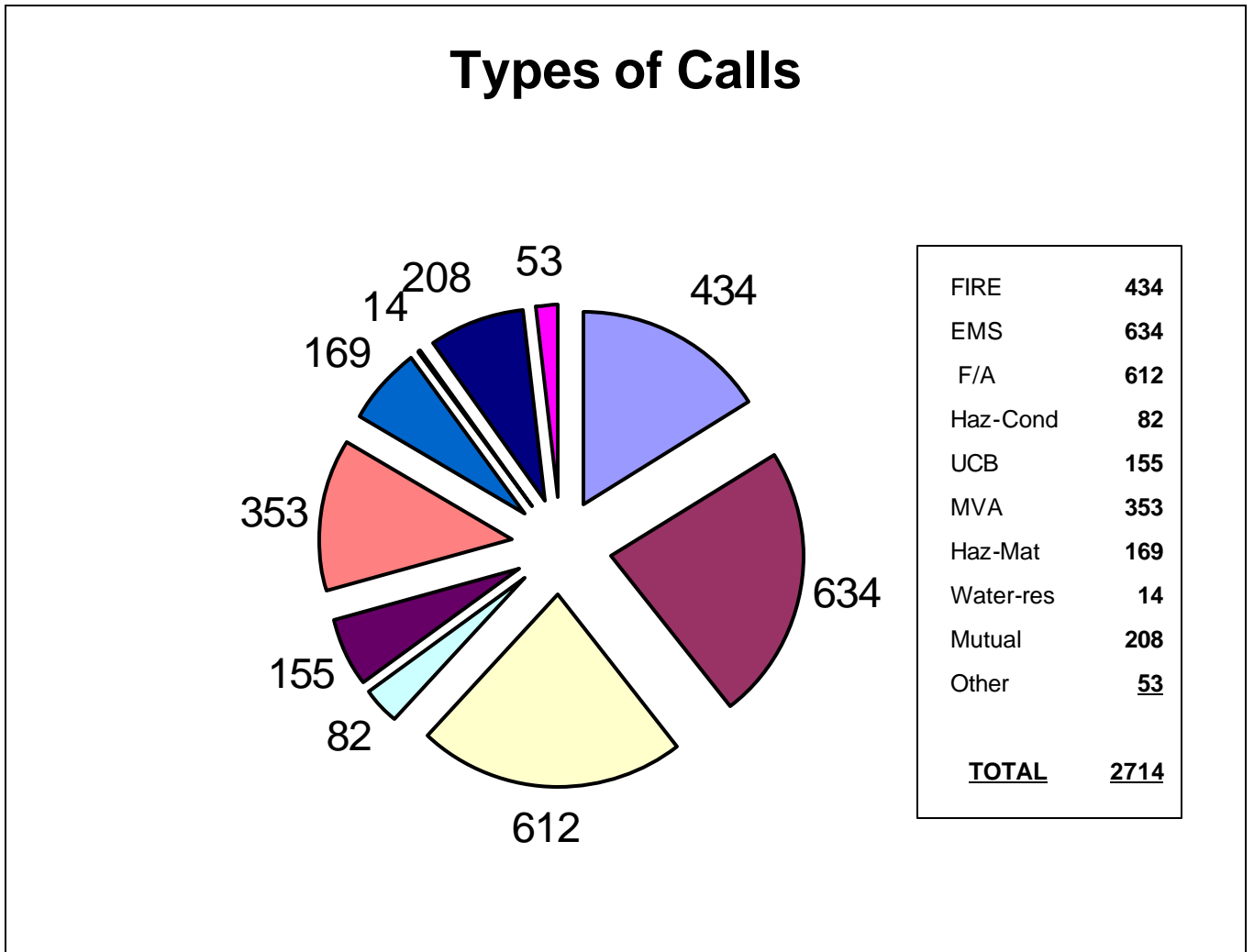
The following chart indicates the types of emergencies that each Station in the Fire Department responded to in 2006. The most number of calls are for emergency medical responses, the second most often response it to false alarms and the third being to fire calls.

- EMS 634
- False Alarms 612
- Fires 434

Together they account for 1,680 of the calls or 62% of all of the emergency responses.

Chatham-Kent Fire Master Plan and Station Location Study

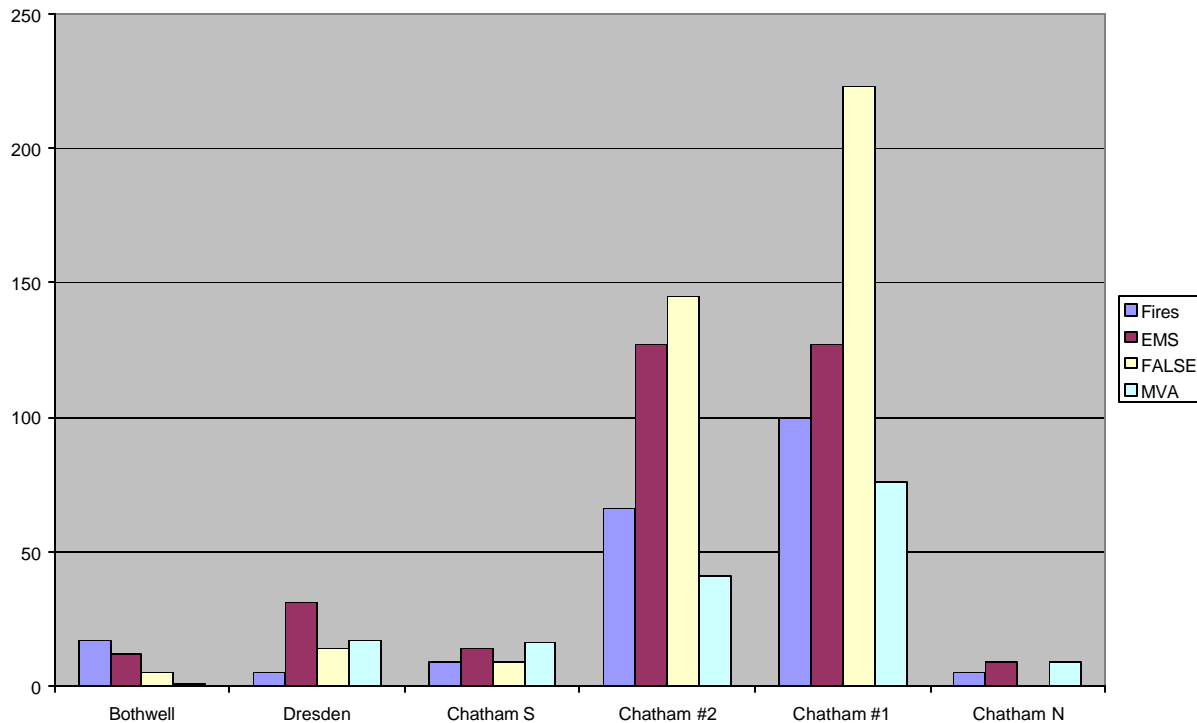
CHATHAM-KENT EMERGENCY RESPONSE STATISTICS BY TYPE AND STATION																				
2006																				
	#1	#2	#3	#4	#5	#6	#7	#8	#9	#10	#11	#12	#14	#15	#16	#17	#18	#19	#20	Total
Fires	100	66	52	12	5	5	9	13	17	13	23	10	3	14	6	6	29	40	11	434
EMS	127	127	70	22	9	31	14	16	15	4	41	6	7	10	13	8	56	21	37	634
False Alarm	223	145	71	11		14	9	7	5	6	18	7	7	6	12	3	26	36	6	612
Hazardous Condition	18	4	13	3	3	1	5		3	1	2	2	4	1	4		3	7	8	82
Unauthorised Controlled Burning	43	22	31	2	1	6	6	3	1		7	1	2	5	1	3	9	6	6	155
Motor Vehicle Accident	76	41	20	24	9	17	16	12	1	7	19	25	1	25	4	9	21	23	3	353
Hazardous Materials Incident	50	38	20	2	3			5	2	1	6	1		1	2	3	12	20	3	169
Water Rescue		2	1	3	0							1	4					2	1	14
Mutual Aid	91	45	45	2	1			1	2	2			1	2	1		5	10		208
Other	16	11	4	1		1	8	1		1			1	1	1		2	3	2	53
																				0
TOTAL	744	501	327	82	31	75	67	58	46	35	116	53	30	65	44	32	163	168	77	2714



The statistics indicate two areas were that can be targeted by the Fire Department to reduce the frequency of calls through a public awareness program. False Alarms and Fire data can be influenced by a comprehensive and focused program aimed at the root cause of both of the types of call. For example by identifying the frequency of false alarm to specific locations can benefit with making the building owner and/or the occupant aware of the problem and providing them with ways to reduce the frequency of calls, such as a maintenance program or relocation of a particular sensor.

The types and frequency of any particular type of fire can be monitored and featured as a public awareness program to address a targeted fire type.

Most prevalent type of calls



Reflection of the data in different forms of presentation such as shown above in column format clearly identifies visually the problem areas in the community. The four most common areas of response are demonstrated in the communities and differ considerably in each area. This provides the Fire Department with the areas that should be targeted to reduce or provide additional services for certain types of responses.

Ontario Fire Marshal's Comprehensive Fire Model

The Ontario Fire Marshal's (OFM) office addressed this issue through the comprehensive fire model and produced a table of tasks that must be undertaken in the initial fire attack scenario. The tasks are as follows:

- The fire department must define, in advance, how both the initial group and total complement will be assembled and managed according to local conditions, resources and circumstances.
- The department must develop operational guidelines necessary to achieve this objective and train firefighters in their execution.
- To provide effective, efficient and safe fire protection services, the delivery system chosen must ensure a virtually simultaneous arrival of a minimum of four firefighters.
- The OFM recommends, where practical, a minimum of four persons be dispatched on the initial apparatus.
- Where it is not practical for four firefighters to respond as a team on the initial apparatus, options must be considered which will ensure the four firefighters are assembled on the fire ground in a coordinated, rapid and consistent manner prior to flashover.
- A total complement of no less than ten firefighters, including supervisor(s) and if possible, a minimum of two vehicles one of which is a triple combination Pumper, must assemble at the fire ground.
- Time is crucial. Rescue becomes a virtual impossibility in the room of origin after flashover occurs. After flashover, the opportunity for successful rescue from other areas in the structure rapidly diminishes. In addition, there is an increased fire fighting demand if intervention does not take place prior to flashover.
- Preliminary analysis of existing literature indicates that it may be preferable to dispatch fewer vehicles with more firefighters rather than vice versa. In addition, although a limited number of key tasks can begin at the site with an initial crew comprising as few as three firefighters, a fire in a single family dwelling requires a simultaneous assembly of a single crew of at least four firefighters and a total fire ground complement reaching a minimum of 10 fire suppression personnel including supervisor(s). The total fire ground staffing must be assembled within a time frame that ensures the safe carrying out of all fire ground operations. Where possible, a minimum of two vehicles including at least one of which is a triple combination Pumper are to be dispatched to provide for a complete list of fire ground activities performed by the complement including incident command and supervision as required.

The following table is produced by the Ontario Fire Marshal's office and is designed to demonstrate the tasks that may be attempted when 10 Fire Fighters arrive at the scene almost simultaneously at a location where hydrants are present.

Fire Ground Fire Suppression Staffing

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, 60m of pre-connect 38mm hose	2*
EXPOSURES	60m of Pre -connect 38 mm hose. Water supply person assists when water supply is secured	1 (2)**
VENTILATION	Raise 7m 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***

- * Interior operations will require supervision
- ** Shared staff; the Fire Fighter making the hydrant hook-up joins up with the Fire Fighter assigned to exposure protection to form a team of two
- *** Applies to hydrant hook-up operation

When Tanker shuttle is required additional numbers of vehicles and Fire Fighters is necessary depending upon the severity of the incident.

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 a mandatory standard in Canada; it is however the standard that Fire Departments are generally using as a guideline for the delivery system. The NFPA codes are used on occasions by Lawyers who represent the Plaintiffs against municipalities when claiming negligence actions or lack of actions by the Fire Department.

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 and Engine company within a 4 minute 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.

NFPA 1710, speaks to full time operations obviously the implementation of a minimum four person crew 24/7 in Station #2 is not realistic from a financial point of view. The Chatham-Kent Fire Department is categorized as a composite Fire Department which means it is a combination full time, volunteer and/or part time Fire Fighters.

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

Origin and Development of NFPA 1720

The development of this technical standard is a result of a considerable amount of hard work by the Technical Committee members and the organizations they represent. In the case of this standard, their work is the first organized approach to defining deployment capabilities for those “substantially” Volunteer Fire Departments.

The uniqueness of the volunteer fire service, the different services they provide, and how they deploy and respond are left to the authority having jurisdiction (AHJ) (in this case the Municipality of Chatham-Kent) to determine.

The work done by the committee will provide the user a template for developing an implementation plan on the standard. Most importantly, it will provide the body politic and the citizens a true picture of what the risks are in their community, and the Fire Department's capabilities to respond to and manage those risks.

Extract from Chapter Four of NFPA 1720

This is to demonstrate that the standard recommends four members be present before initiating any interior attack or rescue at the scene of a fire.

4.2.2.2 Initial attack operations shall be organized to ensure that at least four members shall be assembled before initiating interior fire suppression operations at a working structural fire.

4.2.2.3 Initial attack operations shall be organized to ensure that if, upon arrival at the emergency scene, initial attack personnel find an imminent life-threatening situation where immediate action could prevent the loss of life or serious injury, such action shall be permitted with less than four personnel when conducted in accordance with NFPA 1500, Standard on Fire Department Occupational Safety and Health Program.

The International Association of Fire Chiefs (IAFC) believes that NFPA 1710 does not require four people on every piece of apparatus. This statement is supported with a report containing facts and interpretations of the intent of the standard supporting the concept that several pieces of apparatus could be 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.

On the other hand the IAFF produced a comprehensive report on the subject matter complete with statistical analysis, photographs and the position that there should be 5 Fire

Fighters on every Engine and Truck Company.

The conclusions that can be drawn from these reports is that the fire ground staffing must be assembled within 4 minutes for the initial response and 8 minutes for a full first alarm response assignment. The NFPA and the IAFC believe that number to be 14 to 15 personnel.

There are different levels of staffing in the municipality that came out of the amalgamation of the municipalities in 1998. Stations #1, #2 and #3 have full time Fire Fighters on duty. The rationale for full time staffing fire Stations usually includes but is not limited to four factors;

1. Demand for service being in excess of 350 calls annually.
2. Difficulty in retaining and responding volunteers particularly during day time hours.
3. Lack of volunteers to staff the Station.
4. Special fire and life risks to be protected in the response area.

The 24/7 minimum full time staffing of the three full time Chatham-Kent Fire Stations is as follows:

Station #1	Engine (Unit 1-11)	1 Senior Captain 2 Fire Fighters
	Aerial Platform (Unit 1-14)	2 Fire Fighters
Station #2	Engine (Unit 2-11)	1 Captain 2 Fire Fighters
Station #3	Engine (Unit 3-11)	1 Captain 3 Fire Fighters

In Chatham-Kent the Ontario Fire Marshal's Comprehensive Fire Model is most often quoted guideline related to staffing when meeting with the stakeholders. In particular the aspect of the model that speaks to the ten in ten (10 in 10) related to ten Fire Fighters on the scene in ten minutes.

The OFM model is much more complex than this single issue, notwithstanding this fact we

will endeavour to speak directly to the 10 in 10 guideline in this chapter.

The numbers that should be assembled on the scene of a fire before inside operations and rescue can take place is suggested by Ontario Fire Marshal as ten (10) Fire Fighters. The Chatham-Kent Fire Department responds two fire trucks and a minimum of eight (8) Fire Fighters to all emergency calls in Station #1 and #2 area that is reported as a structure fire.

The statistical analysis indicates that the response is achieved within the ten minute guideline 90% of the time, however the Fire Department is not in compliance with the Fire Marshal's guideline for the urban portion of the former municipality due to there being only 8 FF responding.

In the case of Station #3 (Wallaceburg) the first alarm is 1 fire truck with a crew of 4 Fire Fighters, which falls far below the guideline. The consultant was informed that upon arrival on the scene of the incident the Captain will then determine if additional support is required to complete the first alarm assignment. The stakeholders were inconsistent with what actions take place next once the Captain determines additional support is needed. Three scenarios were offered to the consultants from different groups of Fire Department staff.

- The first scenario being that 8 off duty full time Fire Fighters are paged to respond to the Station and pick up the Aerial Platform and/or the Tanker and respond to the scene. Depending upon how many off duty members respond this would provide up to an additional 8 Fire Fighters on the scene.
- The second scenario being that upon arrival at the scene the Captain will page out the volunteers and the full time off duty members, the full time members respond to the Station to pick up the Aerial Platform and or the Tanker and the volunteers respond directly to the scene in their own vehicles. This scenario would provide for up to 8 full time Fire Fighters and 11 or 12 volunteers depending upon the establishment of strength and the availability of the volunteers at that time.
- The third scenario offered up is that the Captain pages out the volunteers as soon as the first alarm is received. This scenario was not supported by several others in the group of Fire Fighters that we were meeting with at that time. But it did appear to be a logical scenario consistent with the department policy on all of the volunteer Fire Stations.

Obviously there is some disagreement as to how the emergency responses are carried out at Station #3 Wallaceburg. The Fire Fighters collective agreement contains a written staffing guideline that was identified to the consultants (Attached as Appendix "A"). This is a Letter

of Understanding attached to the Collective Agreement and speaks to “Use of Volunteer Fire Fighters”.

Article 4 in the letter of understanding states as follows:

4. The Incident Commander will make all requests for additional help through central dispatch as follows:

- a) A second alarm if requested will comprise of one officer (A/C) and three firefighters from the full time compliment.*
- b) A Third alarm if requested at Station #3 will be comprised of up to ten (10) volunteer firefighters.*
- c) General alarm occurs when all additional full time captains and firefighters are required.*
- d) Once all full time staff has been called then additional help may be called in from other Stations within Chatham-Kent.*
- e) All additional personnel will report to the Incident Commander upon arrival.*

The letter of Understanding goes on to describe how the apparatus will be dispatched as follows:

5. The Incident Commander will make all requests for the additional apparatus through the central dispatch and will be staffed as follows.

Once all equipment resources from the full time Stations have been exhausted, then additional equipment from outside of the full time sector may be called into service. The Incident Commander will have the responsibility of overseeing the additional personnel for this equipment. He will be in charge of these units to oversee their responses to the full time area. If a Captain is not available an Acting Captain will be in charge of these units and oversees the responsibilities within the full time area.

Every attempt will be made to have reserve apparatus available at the full time area.

This document is very clear as to how the full time staffing is carried out at Station #3

(Wallaceburg). The first alarm is 1 Captain and 3 Fire Fighters who respond upon being given the call at the Station. The second call is to the off duty full time Fire Fighters for 1 Captain and 3 Fire Fighters. The third alarm is for ten (10) volunteer Fire Fighters who are assigned to the Station.

It is of interest to note that this procedure will not meet any of the response guidelines or standards due to the length of time it takes to go through this process. It is in line with NFPA staffing model for a first truck but the delay in calling for a second Truck in this procedure will in most cases increase the response time of the full time off duty Fire Fighters.

The letter of understanding also eliminates all of the volunteer Fire Fighters of the Chatham-Kent Fire Department from entering full time Station response areas until after a General Alarm has been called which will be late into the fire operations. The adjacent Station #5 of old Chatham North (Tupperville), Station #4 (Dover), and Station # 6 (Dresden) are all located closer to Wallaceburg than either of the full time Stations #1 or #2.

The table shown below indicates that the Station #5 Tupperville is clearly the closest and the fastest Station even with the increased assembly time for the volunteers in relation to the full time Station. The road distance and travel time from the full time Stations #1 and #2 are far in excess of any of the standards and guidelines for a first or second alarm assignment.

WALLACEBURG RESPONSE TRAVEL TIME AND DISTANCE								
STN #	LOCATION	ADDRESS	TO	STN #	LOCATION	ADDRESS	km	Road Travel Time
1	Station #1 CHATHAM	5 Second Street, Chatham		3	WALLACEBURG	786 Dufferin Ave, Wallaceburg	27.4	27MIN
2	Station #2 CHATHAM	270 Sandys Street, Chatham		3	WALLACEBURG	786 Dufferin Ave, Wallaceburg	26.4	25MIN
4	Station #4 DOVER	7112 St. Philippe Line, Grande Point		3	WALLACEBURG	786 Dufferin Ave, Wallaceburg	22.8	20min
5	Station #5 CHATHAM NORTH	3 John Park Line, Tupperville		3	WALLACEBURG	786 Dufferin Ave, Wallaceburg	11.7	11MIN
6	Station #6 DRESDEN	175 Lindsley Street E, Dresden		3	WALLACEBURG	786 Dufferin Ave, Wallaceburg	18.7	25MIN
7	Station #7 CHATHAM SOUTH	10133 Longwoods Rd		3	WALLACEBURG	786 Dufferin Ave, Wallaceburg	27.8	26MIN

The response policy to fulfill this procedure requires the Pumper from Station #1 with the Senior Captain and 3 Fire Fighters on board to respond to Wallaceburg. At the same time the Pumper from Station #2 which is 1km closer to Wallaceburg is required to respond to Station #1 to provide cover for the Chatham urban area. In effect these two Pumpers pass each other with this policy.

The consultants have also been made aware of the practice of the rural Stations around Stations #1, #2 and #3 when fires occur in the volunteer response zones. It is reported that they request other volunteer Stations to respond to incidents within their areas rather than a faster and closer Station that is a full time staffed Station.

We are of the opinion that all of these types of incidents are not being dealt with in the best interests of public safety, but rather appear to be in the interests of either the full time staff or the volunteer force and must be addressed in this plan with the objective of what is in the best interest of public safety.

On the subject of staffing of the full time vehicles all of the standards and guidelines recommend a minimum of four (4) Fire Fighters with one of them being either a Captain or Acting Captain when responding to a single family household.

The Ontario Fire Marshal's Comprehensive Fire Model speaks to the staffing needs on a first response stating that " The OFM recommends, where practical, a minimum of four persons be dispatched on the initial apparatus" as follows:

Delivery Systems/Time Considerations:

“The fire department must define, in advance, how both the initial group and total complement will be assembled and managed according to local conditions, resources and circumstances.

The department must develop operational guidelines necessary to achieve this objective and train fire fighters in their execution.

To provide effective, efficient and safe fire protection services the delivery system chosen must ensure a virtually simultaneous arrival of a minimum of four fire fighters.”

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

“Where it is not practical for four fire fighters to respond as a team on the initial apparatus, options must be considered which will ensure the four fire fighters are assembled on the fire ground in a coordinated, rapid and consistent manner prior to flashover.

A total complement of no less than ten fire fighters, including supervisor(s), and, if possible, a minimum of two vehicles one of which is a triple combination Pumper, must assemble at the fire ground.

Time is crucial. Rescue becomes a virtual impossibility in the room of origin after flashover occurs. After flashover, the opportunity for successful rescue from other areas in the structure rapidly diminishes. In addition, there is an increased fire fighting demand if intervention does not take place prior to flashover.

Preliminary analysis of existing literature indicates that it may be preferable to dispatch fewer vehicles with more fire fighters rather than the vice versa. In addition, although a limited number of key tasks can begin at the site with an initial crew of as few as three fire fighters, a fire in a single family dwelling requires the virtually simultaneous assembly of a single crew of at least four fire fighters and a total fire ground complement reaching a minimum of 10 fire suppression personnel including supervisor(s). The total fire ground staffing must be assembled within a time frame that ensures the safe carrying out of all fire ground operations and where possible, a minimum of two vehicles at least one of which is a triple combination Pumper are to be dispatched.”

“Escalating fires in single family dwellings, as well as fires in larger structures such as industrial or institutional occupancies, high rise, etc. may require additional resources.”

Station #1 & #2, Chatham

The Chatham-Kent Fire Department does not meet the recommendations in two important areas. The first response vehicle in Station #1 is staffed with a minimum of 1 Senior Captain and 2 Fire Fighters and the first response vehicle at Station #2 is also staffed with a minimum of 1 Captain or Acting Captain and 2 Fire Fighters.

Secondly even with all of the Fire Fighters who staff the vehicles during minimum staffing occasions can not meet the OFM guideline of 10 Fire Fighters on the scene for the first response team.

The options that could be considered to meet the minimum staffing of 10 in 10 in Station #1 and #2 has advantages and disadvantages. We have outline some of the more obvious advantages and disadvantages in the following options.

Option one. The municipality hire 10 full time Fire Fighters and assign 5 to Station #1 to ensure that the minimum staffing of the Engine is 1 Captain and 3 Fire Fighters and 2 Fire fighters on the Aerial. Assign the other 5 Fire Fighters to Station #2 to maintain a minimum of 1 Captain and 3 Fire Fighters.

Option one has a financial impact to the tax payers in the urban area that now pays the premium tax rate for full time Fire Fighters. This appears to be the obvious disadvantage to this option. The advantages include immediate response of 10 Fire Fighters to all alarms within the area. This will meet the Ontario Fire Marshal’s guideline and the NFPA 1710 standard of 4 Fire Fighters on a truck.

Option two. The municipality transfer 10 of the full time Fire Fighters from Wallaceburg as follows, 5 Fire Fighters to Station #1 and 5 Fire Fighters to Station #2. Increase the number of volunteer Fire Fighters in Wallaceburg as there is no requirement for off duty Fire Fighters to carry a pager and remain available for a first alarm response. The volunteer Fire Fighters would be paged for all emergency responses in Station #3 response zone.

Option two will be subject to negotiations with the Chatham Kent Professional Fire Fighters Association (CKPFFA) possibly under the contracting out clause as it applies to Wallaceburg. This option could be seen by the general public as a reduction in services and may cause concerns to the tax payers and in the business sector.

The tax payers will see a reduction in staff and will expect a corresponding reduction in the tax rate for the Wallaceburg district. It is possible that the public would rather pay the extra rate to retain the full time crew on the Wallaceburg Station.

Option three. The municipality provides pagers for 5 of the off duty full time Fire Fighters at Stations #1 and #2 to respond directly to the scene on the first alarm in either of the Station response areas. The Fire Fighters would have to live in the immediate area of the fire Stations and be available 24/7 for emergency response.

Option three will be subject to negotiations with the Chatham Kent Professional Fire Fighters Association (CKPFFA) as there is no requirement for off duty Fire Fighters to carry a pager and remain available for a first alarm response.

The number of calls responded to by Stations #1 and #2 in 2006 is recorded as 1,244. This will mean that on approximately 1,244 occasions in 2007, 5 Fire Fighters will be paid a minimum of four hours overtime pay per call or a total of 24,880 hours overtime annually. A Fire Fighter assigned to a 42 hour work week schedule equates to 2,184 hours per year for one full time equivalent. The corporation needs to consider the cost of overtime versus the cost of employing full time equivalents.

Option four. Introduce volunteer Fire Fighters to both Station one and Station two.

This option was suggested by several stakeholders is not a very practical option. The fact is that the collective agreement will prevent this option from being successful due to the no contracting out clause in the agreement. The possibility of successfully arguing a change to this provision of the collective agreement before an arbitrator is unlikely. The fact that the purpose would be to reduce the job security of the full time members is the sole reason the clause is in the agreement.

Secondly, the number of calls in the urban area is far in excess of successfully operating a volunteer Fire Fighting force. Volunteers would have to dedicate a tremendous amount of their time to attending and being on call for emergencies in the response zone, so much so that recruiting and retaining qualified volunteers under these conditions would be virtually impossible.

We do not believe that there would be any value in spending any time studying this option.

Station #3, Wallaceburg

The options that could be considered to meet the minimum staffing of 10 in 10 in Station #3 (Wallaceburg) has advantages and disadvantages.

Option one. The municipality hire an additional number of staff to provide an additional 5 FF and a Captain for each Shift, which we know translates into 7 Fire Fighters and one Captain for each shift because of the approved leaves of absence for Fire Fighters through out the year, (Vacation, sick days, etc.). The total number of new Fire Fighters that would be needed to provide 10 and 10 is 32 full time positions for Wallaceburg.

The primary disadvantage with this option is the financial impact this would have in the municipality and specifically to the residents of the urban areas that pay for the full time Fire Fighters. The advantage is of course the increase in the level of service to meet the OFM guideline and the NFPA standards for full time Stations.

Option Two. Retain the full time four person crew at the Station and supplement the crew with off duty full time Fire Fighters for a first alarm. The municipality would provide pagers for the off duty full time Fire Fighters at Station #3. The Fire Fighters would be paged and respond directly to the scene on the first alarm.

The location of the residences of the full time members and the effect this will have on the travel time has not been investigated in any depth. Some of the full time Fire Fighters do reside within the current response boundaries , however many do not.

The overtime cost factor will need to be evaluated and monitored to establish the additional cost of calling a minimum of six full time Fire Fighters. Given that the collective agreement stipulates that a minimum of four hours will be paid for every call.

Option Three. Upon receipt of an emergency call for Wallaceburg respond the 4 full time Fire Fighters and supplement the alarm with the volunteer Fire Fighters.

Station #3 (Wallaceburg) is a composite Station, meaning that there are full time and volunteer Fire Fighters assigned to the Station. The current numbers of volunteers may need to be increased to a minimum of 15 or 20 to ensure that at least 6 respond to fill the first alarm assignment. The statistics indicate that in most cases the number of volunteers who respond to the volunteer Stations for emergencies differs with the time of day and the time of year.

This option will need to be the subject of negotiations and/or arbitration to resolve the issue. It will be necessary to change the letter of understanding to allow the volunteer Fire Fighters to respond with a vehicle from the Station and operate the pumps on the vehicles.

The concept of closest and/or fastest truck **has not** been practiced in Chatham-Kent in either of the full time or volunteer response areas. Neither has the concept of two or more Stations response to high life, property or hazardous materials incidents. In the Station #1 & #2 areas this is the practice and has proved to be very successful. In all of the volunteer Stations this single Station response has resulted in the old political boundaries being retained for emergency response. This clearly does not provide the best level of fire protection for the public.

There is an anomaly that is practiced in one of the volunteer Station (former Fire Department) areas referred to as platooning of the Fire Fighters to respond to different areas within the boundaries of the Station. The rationale for this practice has evolved from the former County and urban areas and the consultant has been advised this concept appeared to work well prior to amalgamation. However the level of service in Chatham-Kent must be delivered to all of the residents of the municipality in a consistent and efficient manner, having several methods of response and delivery systems is not compatible with that concept.

In the rural Station areas the consultants have been advised and the annual statistics support the comments that often during the working week day there are not always ten volunteer Fire Fighters responding to every call. This presents a potentially serious problem that needs to be addressed.

Recruitment and Retention of Volunteers

Many of the Station Chiefs indicated that they were having problems maintaining the authorized staffing levels in their Stations. They raised a number of concerns regarding the difficulties of recruiting qualified members and retaining members.

Common concerns were:

- Time demands for training and emergency response
- Members who work away from the Station and are not available during the day
- Employers who will not let them leave work to attend fires
- Fewer blue collar workers in the area
- Personal/family commitments
- Difficulty in attracting younger members
- Training standards and mandatory training
- There are fewer fires
- The membership is ageing

In order to deal with the problems of recruiting and retention each of the above concerns must be addressed.

The time commitment required should be reviewed. Recruiting should be directed towards persons who will be available at most times in the day and who may have an interest in emergency response. Shift workers or self employed individuals are often able to attend calls during the day and at night. Trades persons, truck drivers, agricultural workers or production workers often make good Fire Fighters as they are usually persons who have practical skills. Employees of the municipality who have these skills should be encouraged to become volunteers. The Fire Department may want to consider a recruitment drive within the Works and Parks Divisions of the municipality. When recruiting for positions the members of the Works or Parks Divisions should be canvassed. At all times, our workforce should be more representative of our demographics.

A Junior Fire Fighter program is often a way to raise the profile in the community. This type of program is an opportunity to develop interest in teenagers who may become the next generation of Fire Fighters.

In the current economic climate it should be recognized that there is a cost of being a volunteer Fire Fighter. Ruined clothing, missed appointments, travel expenses, personal equipment and in some cases loss of income impact on the pocket book of many volunteers. Chatham-Kent provides compensation. It is not appropriate to turn volunteering into a part time job, however all member do get some compensation for out of pocket expenses.

Since there are fewer fires it is important that Fire Fighters receive adequate training. Pride in belonging to the organization comes from a job well done. It should be considered a mark of accomplishment to receive certification as a Fire Fighter. Adequate hands on training makes the work more interesting and prepares the Fire Fighters for the time when they will need to react instinctively to save a life or property. A major factor in recruiting and retention of Fire Fighters is pride and recognition in the community and amongst their peers.

The Ontario Fire Marshal's web site has several documents and suggestions that will help in developing a comprehensive recruitment and retention plan.

Special Services and Specialty Teams

Fire Departments in Ontario including the Chatham-Kent Fire Department provide services to the public that are not mandatory services. The only mandatory services that a Municipality must provide are fire prevention and public education programs. However the FPPA states that a municipality that has a Fire Department must continue to deliver the services it was delivering prior to the establishment of the FPPA. In other words fire and rescue services.

The Chatham-Kent Fire Department trains and equips a professional Dive Team, the team members all come from the full time staff and are dedicated to the program training and equipment maintenance tasks that must be undertaken. However dive teams take time to organize and get into the water usually resulting in the task being not of a rescue scenario but more of searching for victims who may have drowned.

Water rescue and in particular off shore rescue in the lakes is the responsibility of the Canadian Coast Guard. Fire Departments across Ontario have become involved in water rescue because of the strategic location of Fire Stations and the local population's reliance on the Fire Fighters to be available and willing to assist when some one is in danger and in need of rescue.

There are Zodiac boats at Station #3 (Wallaceburg) and Station # 14 (Erieau) for water rescue.



The Station # 14 boat is docked at the local marina. The Station # 3 boat is towed on a trailer to the location where it is needed. The dive team responds from Station #3 in a van. The other Stations conduct shore based rescue only. The area protected by Station #4 (Dover) includes Lake St. Clair and the adjacent islands.

The question of where and how water and Ice Rescue is to be performed in Chatham-Kent needs to be discussed in conjunction with the Canadian Coast Guard and determined as to the level of service to be provided and the type of service to be provided by the municipality. At this time services are being provided from shore based in some areas and rescue boat in others and the Dive Team service delivery needs to be evaluated. The question of how the financial resources for water rescue should be deployed for the

benefit of all of the residents of Chatham-Kent should be the subject of further consideration.

There are a number of industrial and agricultural sites that handle hazardous materials. The City of Windsor operates a Provincial Chemical, Biological, Radiation, Nuclear, Explosives (CBRNE) team. This team will respond to chemical emergencies in Chatham-Kent under the Provincial Emergency Response Plans. There is a Hazardous Materials Squad vehicle located at Station #1 but there are no qualified Haz-Mat operators trained by the CKFD. The level of training given in the municipality to the Fire Fighters is what is known as “Awareness Level” the most basic level of training under NFPA 472, (the standard used for Hazardous Materials across North America).

The new NFPA 472 standard has been revised and will now require all members of Fire Departments to be trained to the Operations level the revised standard is currently going through the approval process and will be in place in the very near future. Under the Occupational Health and Safety Act employers are responsible for training and equipping employees, the section 21 committee is responsible for developing guidance notes for the Fire Service. The following extract is from the current guidance notes. It is anticipated that the section 21 committee will adopt the revised NFPA 472 once it is approved.

Section 21 Committee

The Section 21 Committee consists of members from the following organizations

AMO.	Association of Municipalities of Ontario
O AFC.	Ontario Association of Fire Chief
OPFFA.	Ontario Professional Fire Fighters Association
FFAO.	Fire Fighters Association of Ontario

The committee has produced a Guidance Manual containing guidance notes that comply with the intent and provisions outlined in the Occupational Health and Safety Act. The employer, under the OHSA, shall instruct and acquaint a worker with any hazards, and maintain equipment in good condition. (ref to S25 (1) & (2))

Fire Fighters Guidance Note #6-9 (26)

Issue: Hazardous Materials Response

Fire departments providing hazardous materials (Haz-Mat) response should meet the requirements of NFPA 472 2002 edition.

Extract:

Fire Fighters required to perform at either operations or Technician level of Haz-Mat should be trained and equipped to these levels as per NFPA 472 2002.

Fire departments should provide appropriate supervision, resources, and the required equipment that corresponds to the required level of response, as determined by the municipality's establishing and Regulating By-Law, and in accordance with NFPA 472 2002.

The 472 "Awareness" level qualification only allows the Fire Department to recognize that the substance is a hazardous product it does not allow the Fire Fighters to take any other actions to mitigate the situation other than to establish a hot zone that can not be entered by the public. Fire Fighters are most often the first emergency service to arrive on the scene of hazardous materials incidents with training to the 472 "Operations" level they could take action to reduce the spread of the incident and risk to the community.

CKFD has a qualified High Angle Rescue Team in the volunteer sector the team was trained and equipped prior to amalgamation. The team is underutilized by the Fire Department partly for the reasons that there are not a lot of emergency calls requiring the service and secondly it has not been a practice of the other Stations to call upon the team. The question to be asked is what service level is needed in the municipality for a High Angle Rescue Team. Once this question is answered then the best method of delivering the service can be determined.

Tiered Emergency Medical Response

Until the beginning of 1998 the Ministry of Health and Long-Term Care fully funded and directed the operations of all land ambulance services in Ontario.

Beginning January 1, 1998, the province commenced the process of transferring the responsibility for the proper provision of land ambulance services to upper tier municipalities and designated delivery agents. By January 1, 2001, the transition was completed to the upper-tier municipalities and delivery agents. The ministry also provides financial assistance to the municipalities and delivery agents by providing a cost-sharing grant to fund one-half of the approved cost of land ambulance service. Additionally, the ministry sets standards for the delivery of land ambulance services and monitors and ensures compliance with those standards.

In 2004, the current government began to change the ratio of provincial and municipal cost sharing for public health from 50:50 to 75:25. In February 2006, the Premier announced the Province would pay its entire 50% share of ambulance services, resulting in an additional \$150 million a year for municipalities by 2008.

Ambulance service in Ontario is a seamless program that responds to requests for service and transports patients cross municipal boundaries without reference to residence or other demographic factors. Central Ambulance Communications Centers, (CACCs) facilitate this seamless approach by coordinating, directing and deploying the movement of all ambulances and emergency response vehicles within large geographic areas. Computer-assisted wide area central dispatching helps the dispatcher in assigning the closest available and most appropriate ambulance to each emergency. Emerging technologies such as Automatic Vehicle Location (AVL) and Global Positioning Systems (GPS) also assists CACC communications staff by identifying the location of the closest vehicle for response and helping the dispatcher direct the ambulance to the call scene.

A request for Chatham Kent Fire Department assistance at a medical incident, or a motor vehicle accident, normally originates through 911 to the CACC located in Wallaceburg. Under a policy or protocol agreed to with the municipality the CACC responds the Fire Fighters to the Medical Emergency.

Medical research promoted the concept of fire fighter response to sudden cardiac arrests because of the strategic location of fire Stations and the fact that when the Stations are staffed with full time Fire Fighters they can respond in their response zones considerably faster than the Ambulance services. This fact was the catalyst for tiered response agreements in the late 1980s and lead to an increased incidence of fire fighter response to all types of medical calls.

The initial response protocols usually included;

- Victim unconscious
- Uncontrolled bleeding
- Breathing difficulties
- Chest pains
- Pains or numbness in the arms

Research indicates that the expected save rate for cardiac arrest patients is approximately 12% if defibrillation takes place within 5 minutes of a call for assistance being received and probably less than 4% after 10 minutes.

The Benefits of Fire Fighter Response to Medical Emergencies is not only in the potential for saving lives it also serves to provide some confidence in the family and friends of the victims. The presence of emergency workers who are trained in first response and can use oxygen equipment and perform CPR is comforting to those who do not have the equipment or skills to assist the victim.

Travel time to incidents is the determining factor when a tired response emergency occurs. The Fire Stations are located in strategic locations within the local communities and when they are fully staffed the Fire Fighters are able to respond within one minute of the call from the Station and generally arrive within 8 minutes 90% of the time from receiving the call. Volunteer Stations have a muster time for the volunteers to respond to the Station of approximately 3.5 to 4 minutes, the road response time would be the same as full time Station but with the extended time to respond to the Station means that the volunteer Stations respond within 11.5 to 12 minutes 90% of the time.

The consultants have been advised that the Chatham Kent EMS have an average response time of 14 minutes 90% of the time which means that in many instances in Chatham Kent the volunteers and full time Fire Fighters can arrive at an medical emergency before the EMS. Other than when the EMS is in their assigned Stations as the consultants have been advised that the EMS and Fire often travel to a call within Chatham in site of each other on the road. The response protocol is currently being revisited it would be a convenient time to consider the need for tiered response when the EMS can respond within the 8 minute response time of the full time Stations and 12 minutes of the volunteer Stations.

Conclusions

The statistical analysis indicates that EMS and False Alarms are the most frequent causes of emergency alarms in the municipality. Both of these statistics can be impacted in a positive way with progressive actions by the Fire Department and the municipality. A false alarm by-law has proved to be successful in other municipalities the by-law concept should be to reduce the number of false alarms not to be just a punitive method of dealing with the troublesome alarms.

The statistical analysis indicates that the response is achieved within the ten minute guideline across the municipality 90% of the time, however the Fire Department is not in compliance with the Fire Marshal's guideline for the urban portion of the former municipality due to there being only 8 FF responding on the first alarm in the Station #1 & #2 response zones.

In the case of Station #3 (Wallaceburg) the first alarm is 1 fire truck with a crew of 4 Fire Fighters, which falls far below the 10 & 10 guideline. The stakeholders were inconsistent with what actions take place next once the full time Captain arrives on the scene and determines additional support is needed. In the volunteer Stations there are occasions when the number of responding Fire Fighters falls far below the OFM guideline particularly during the working week day time hours.

The concept of closest and/or fastest truck **has not** been practiced in Chatham-Kent in all of the response areas. Neither has the concept of two or more Stations response to high life, property or hazardous materials incidents. It was noted that a two Station response does occur in the Station #1 & #2 areas however only a maximum of 8 Fire Fighters respond. In all of the volunteer Stations this single Station response has resulted in the old political boundaries being retained for emergency response. This clearly does not provide the best level of fire protection for the public.

A collective agreement between the municipality and the Fire Fighters has a direct impact on public safety by limiting the delivery of emergency services in the full time Station response zones. The articles or letters of understanding that direct, restrict or impact the methods or procedures used by the Fire Department to provide the first response to an emergency must be revisited by both parties to the agreement to remove the restrictions on using all of the resources of the Fire Department before during and after an emergency incident.

The volunteer Station response zones are reported to be restricted to the volunteer Stations

only restricting the involvement of the full time Stations outside of their Station areas. Any form of protectionism practiced by either the full time or volunteer staff that has a negative impact on public safety must be eliminated. Chatham-Kent fire trucks must be able to respond to any part of the municipality on first response if required or to support the next closest Station regardless of the full time or volunteer nature of the Fire Fighters or the former political boundaries of that Station.

There is a response protocol that is practiced in a volunteer Station (former Fire Department) area referred to as platooning of the Fire Fighters to respond to different areas within the boundaries of the Station. The rationale for this practice has evolved from the former County and urban areas and the consultant has been advised this concept appeared to work well prior to amalgamation.

The Platooning is the separation of the Fire Fighters on the Station to either County response or Urban response, in the event of an emergency half of the Fire Fighters would be called for County and the other half called when an incident occurs in the urban area of the former Town. However the level of service in Chatham-Kent must be delivered to all of the residents of the municipality in a consistent and efficient manner, having several methods of response and delivery systems is not compatible with that concept.

Water rescue and the delivery of the service is not consistent across the municipality. The delivery of rescue services should be the same in all areas of the municipality there should be no area that receives a different level of service than another part of the municipality, either it's provided municipal wide or it should not be provided at all. The question of where and how water and Ice Rescue is to be performed in Chatham-Kent needs to be discussed in conjunction with the Canadian Coast Guard and determined as to the level of service to be provided and the type of service to be provided by the municipality.

There are a number of industrial and agricultural sites that handle hazardous materials across the municipality. The practice of the Fire Department is to respond to the incidents and isolate the public from the product or problem. The Fire Fighters are not trained to deal with Hazardous materials. The City of Windsor operates a Provincial Chemical, Biological, Radiation, Nuclear, Explosives (CBRNE) team. This team will respond to chemical emergencies in Chatham-Kent under the Provincial Emergency Response Plans.

There is a Hazardous Materials Squad vehicle located at Station #1 but there are no qualified Haz-Mat operators trained by the CKFD. The level of training given in the municipality to the Fire Fighters is what is known as "Awareness Level" the most basic level of training under NFPA 472, (the standard used for Hazardous Materials across North

America).

CKFD has a qualified High Angle Rescue Team in the volunteer sector the team was trained and equipped prior to amalgamation. The team is underutilized by the Fire Department partly for the reasons that there are not a lot of emergency calls requiring the service and secondly it has not been a practice of the other Stations to call upon the team. The question to be asked is, is there a need in the municipality for a High Angle Rescue Team. Once this question is answered then the best method of delivering the service can be determined.

Tiered response to EMS calls is a service level that receives many comments during the gathering of facts and issues from the stakeholders. The question of when should the Fire Department be called to respond to EMS calls is the most often raised question. The response protocol is currently being revisited it would be a convenient time to consider the need for tiered response when the EMS can respond within the 8 minute response time of the full time Stations and 12 minutes of the volunteer Stations.

Recommendations

6. It is recommended that the municipality introduce a false alarm by-law that provides for fines after three responses to any one location within a year. The by-law should also provide for the Fire Chief to refund a portion of the fine if the building owner takes actions to reduce the number of false alarms. Such as providing proof of performing maintenance or providing some form of security to prevent abuse of the alarm system.
 - a. It is further recommended that the false alarm statistics be analysed to determine the most frequent locations of these types of calls and appropriate action be taken to reduce the numbers of calls to that address.

7. It is recommended that the negotiating team of the Municipality and the Fire Fighters executive meet to discuss the changes needed to the collective agreement and the Letter of Understanding to give priority to public safety in the municipality. In particular remove any perceived or actual restrictions of the volunteers that may be in or attached to the collective agreement that prevents them from responding into the Station #1, #2 and #3 areas on the first, second or third alarm and remove the restrictions on the volunteers to drive and/or operate equipment to the scene and during emergency incidents.
 - a. It is further recommended that in the event of a stalemate in the discussions the matter should be processed through the grievance/arbitration procedures to a third party.
 - b. It is further recommended that a Fire Department policy be established immediately in Station #3 to respond the Wallaceburg volunteer Fire Fighters on all first alarms excluding EMS calls.

8. It is recommended that the full time compliment of Fire Fighters in the Station #1 and Station #2 response zones be increased to provide a minimum of a combined Station total of 10 Fire Fighters including officers 24/7 to respond to all first alarms excluding EMS and vehicle fires.

9. It is recommended that for all areas of the municipality that are not serviced with hydrants, the first alarm to reported fires other than vehicle accidents/fires, should include the primary Station plus a Tanker with a minimum of two Fire Fighters from the adjacent Station for a back up water supply.

10. It is recommended that the Fire Department establish a task force to survey the Municipality and establish a list of special life and property risks that require the response of more than one Station. Upon completing the list the task force will develop a response protocol outlining the number and types of vehicles and Fire Fighters to be responded for the communications to use when an alarm or emergency is announced for that building or property.
11. It is recommended that the Fire Department establish a task force of volunteer members to evaluate the platooning of Fire Fighters for Rural and Urban responses, EMS responses, and any other forms of platooning that may be used by the volunteers across the Municipality. The task force should make a recommendation to the Fire Chief on the task force findings.
12. It is recommended that the Municipality establish a task force of stakeholders to evaluate the specialty rescue teams and meet with representatives of the Canadian Coast Guard and other stakeholders to determine the level of rescue services the municipality should be delivering to the residents.
 - a. The task force should evaluate the High Angle Rescue team value to the Municipality, and
 - b. Evaluate the Dive Team and it's necessity for rescue purposes in the municipality, and
 - c. Shore based and off shore water and ice rescue and determine the level of service in the Municipality, and
 - d. The task force should consider the value of establishing a Haz-Mat team in the Fire Department to be trained and equipped to the operations level of NFPA 472.
 - e. The task force will make recommendation to the Council for their consideration in establishing the level of rescue services for the Municipality.
13. It is recommended that the Tiered response program be revisited to include the concept of response of the Fire Department when it is known that the Ambulance can arrive on scene before the full time Stations (within 8 minutes) and the volunteer Stations (within 12 minutes) of the call for emergency Medical Assistance.

Administration and Organization

Management Team

The Supervisory requirements of the Chatham Kent Fire Department (CKFD), particularly the health and safety issues, are suitably covered by the unionized and volunteer Captains and volunteer Station Chiefs. The roles and responsibilities of all Officers appears to be focused on handling day to day fire and rescue services operational matters, scheduling of staff and staff safety and providing support to the staff reporting to them.

With the day to day operations and management functions there appears to be little time for the management team of four full time executive Officers to be able to focus on other aspects of management responsibilities such as coaching, managing performance, succession planning, discipline, managing finances and/or resources, policy and planning, program and service development, information and data management, evaluation or measurement of results of services and programs.

The four uniformed positions excluded from the International Association of Fire Fighters are, the Fire Chief and three Assistant Chiefs. The duties and responsibilities of managing a large municipal department is the priority of the Fire Department senior management team, their ability to become involved in corporate committees or programs outside of the emergency delivery system is limited..

The CKFD Executive duties and responsibilities include amongst others, a comprehensive budget process and high level financial management. They prepare detailed financial reports through out the process. In addition they must prepare and present all reports and fulfill requests of Council and the executive staff of the City when called to do so.

When the CKFD administration support group is directly compared with other corporate departments, it is clear that there is a shortfall in the assigned excluded staff to achieve all of the requirements of administering a more than 413 full time and part time employee department.

Organizational Best Practices

The following is a list of 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 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 to putting sufficient resources into areas yielding high paybacks.

Responsiveness & Adaptiveness

- An ability to problem-solve and respond to events which do not fit the mold.
- Feedback that 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 & 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, but care about and have pride in the success of their team.
- Cooperation exists both horizontally and vertically

Making organizations more effective also lies in 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.

In the Administration area of the CKFD there is a need to address the administrative workload and the number of administrative Assistants or clerical support assigned to the Fire Department. Currently the department has three Administrative assistants for a staff of 410 full time and part time staff.

The administrative support staff is not sufficient to deal with the day to day routine administration and the Fire Prevention administrative responsibilities. Currently the senior officers and Fire Prevention Inspectors carry out routine data input that should be undertaken by a lower paid clerical position. Freeing the senior officers to concentrate more on the management needs of the department and allowing the Fire Inspectors more time to carry out inspections instead of doing these routine clerical duties will improve the inspection service level and quality of the delivery service through improved supervision.

The workload of the administration includes considerable amounts of data entry and maintenance of records and reports required by the Ontario Fire Marshal (OFM). Every emergency incident requires a report to be completed and submitted to the OFM in addition depending upon the type of call or incident investigations reports and supplementary statements may be required. Each call involves overtime for the full time and the necessary documents and records, for the volunteers every call means that each

volunteer must be registered and the individual time recorded for the call for the points system.

In addition there are the training records and documentation required under the Occupational Health and Safety Act and the Section 21 Committee guidelines. These documents often become the basis for determining the workers compensation obligations and payments. They also serve to provide protection for the municipality in the event of a claim or charge being filed against the city for negligence of the Fire Department employees.

The increased data entry needs of the training program will increase the workload of the administration group the addition of a clerical entry clerk assigned to the Training Division will relieve the other clerks of the additional work.

Purchasing and maintaining the equipment all requires the appropriate correspondence and records management. Maintaining the daily consumables for the 19 Stations and the HQ requires ordering materials and equipment and organizing deliveries and requests from the Stations.

The Fire Prevention Inspection program is responsible for maintaining records of every inspection and complaint acted upon by the Fire Inspectors. The clerical duties in Fire Prevention and Inspection are achieved through a combination of the administrative assistants and the Fire Inspectors, the Inspectors would be more appropriately occupied carrying out the inspections than carrying out basic administrative duties and maintaining administrative records. A new clerical position assigned to the Fire Prevention Division will resolve the shortfall and allow more time for the Inspectors to carry out inspections.

Advisory, legal, operational or explanatory corporate reports and the annual budget process also fall on the administrative group of the Fire Department. Similar reports that are some times required or requested by the Council, and responses to enquires from the politicians, corporate staff and the public increases the workload. Dealing with the Fire Fighters Association is an added administrative load for dealing with employee issues, grievance procedures and negotiations. The local executive of the CKPFFA is very active and impacts the administrative workload of the Fire Department.

The management and coordination of the office and the administration of the Fire Department falls directly under the Fire Chief. The day to day supervision has generally been delegated to the Administrative Assistant 1 position, reporting directly to the Fire Chief. There is a need to separate the position of Office Supervisor from the Executive Assistant role of the Administrative Assistant 1 position, particularly in light of the apparent need for additional clerical staff and/or assigned staff from other corporate departments.

In some Ontario municipalities the concept of assigning staff from other corporate departments has provided the necessary support and maintained an excellent liaison with the corporate department. For

example the assignment of a Budget Analyst Person to the Fire Department from the Finance Department can assist both departments in ensuring the budget is monitored and the financial accounting and records are maintained accordingly.

The Budget Analyst would continue to report to the Finance Department for policy direction yet reside within the Fire HQ office area and accept day to day direction from the Office Manager of the Fire Department. This assignment will also assist both departments during the annual budget process as the Analyst would take an active role in the preparation of the annual FD budget.

Another area of support that can be provided from corporate departments is in the area of Information Technology (I.T.). The Fire Department is in need of considerable support in this area in the form of training and establishing or joining the municipal local area network (LAN). As well as providing technical support for the hardware currently assigned to the Fire Department.

In the technical area of administration it has been identified by the stakeholders that corporate training in the area of computer skills need to be applied to CKFD. The clerical staff is reasonably competent in the areas that they work in while it is reported that the operational Officers and Firefighters are not provided with sufficient training or hardware to make them proficient.

The solution to this issue is as simple as a corporate training program designed for shift workers that can upgrade the Station Chiefs and Assistant Station Chiefs as well as the full time Captains. The longer term solution is that a program be designed to train future Captains and Acting Captains in the skills needed.

1	Fire Chief (Ft)	47	Captains (Pt)
2	Assistant Fire Chiefs (Ft)	48	Fire Fighters (Ft)
1	Assistant Chief FPO (Ft)	263	Fire Fighters (Pt)
16	Station Chiefs (Pt)	2	Fire Inspectors
16	Assistant Station Chiefs (Pt)	1	Public Education Officer
1	Fire Prevention Officer (Ft)	1	Administrative Assistant 1
4	Senior Captains (Ft)	1	Administrative Assistant 11
8	Captains (Ft)	1	Administrative Assistant 111
Note: Ft= Full time Pt= Part time (volunteer) TOTAL = 413			

In a union environment the CKFD requires sufficient excluded members from the Chatham-Kent Professional Fire Fighters Association (CKPFFA) to allow for meaningful management and representation of the City on a 24 hour basis. Currently the most senior officer on duty at all times is a member of the CKPFFA (Senior Captain). The question is who represents the City when issues arise that require a corporate decision that may be contrary to the CKPFFA position or philosophy?

A middle Management position that is used in the Fire Service across Ontario is the Platoon Chief. This position is assigned to a shift and is the on duty commander and corporate representative for all employees and public enquiries or issues. The position holds the rank directly below the Deputy Chief and reports to the Deputy. This being a shift position and there being four shifts four new positions must be created to provide twenty four hour seven days a week representation. In addition to representing management the position becomes the liaison and command position on duty between the full time and volunteer members.

This being an excluded position from the IAFF also takes command of all major incidents that occur within the municipality in the Urban or Rural areas. A position of this kind will also serve to provide a valuable communications contact for all of the various levels of management, full time members and volunteer members. This is one of the areas that was identified by many of the stakeholders as being in need of improved communications between the volunteers and senior management.

The Fire Protection and Prevention Act (1997) provides for the exclusion of management positions from the union. Several other cities have taken the initiative and either achieved the exclusions in arbitration or negotiated the exclusions with the association during collective agreement bargaining.

The rank structure of a Fire Department is a very important organization structural requirement, similar to the armed forces and the Police Departments the ranks of the officers determine the responsibilities and are instant recognition factors for Fire Fighters and other emergency workers on the Stations and on the site of an emergency incident.

There are two basic standards used in Ontario, the Canadian Association of Fire Chiefs and the Ontario Association of Fire Chiefs have similar standards the difference being in the width of the braid used on the dress uniforms. The ranks and rank markings for the Chatham-Kent Fire Department need to be restructured to include the rank of Platoon Chief and recognize the level of responsibility for the ranks.

Concerns have been expressed by the stakeholders that the full time and volunteer ranks have different rank markings that are not consistent with the Canadian and Ontario rank structures. For example the rank of Captain should be the same in both full time and volunteer sectors and Station Chiefs should be a higher rank than a crew Captain.

Currently the rank structure is as follows.

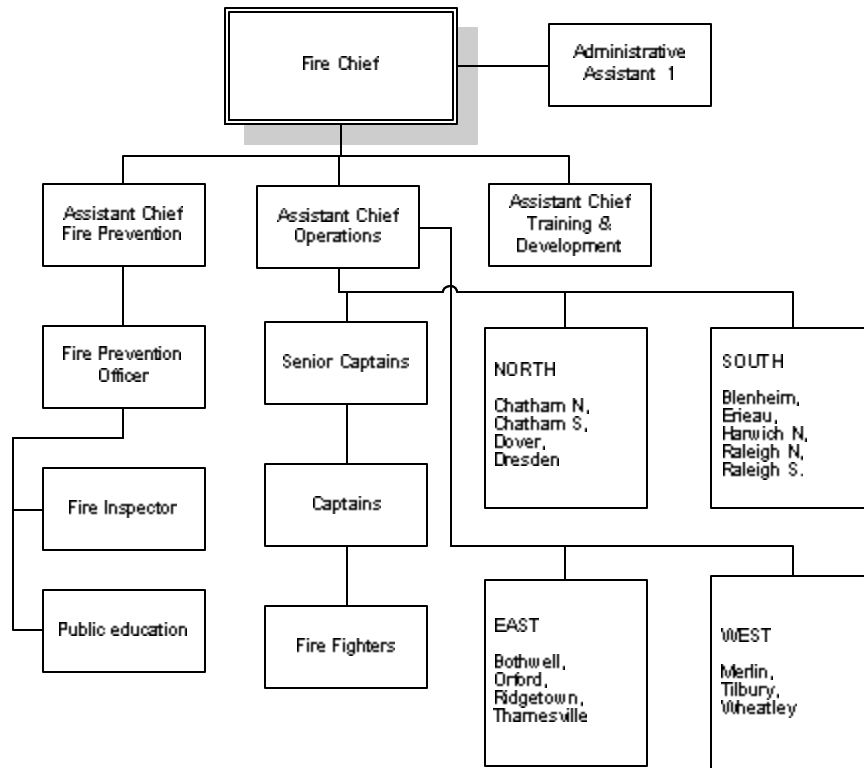
Full Time Sector

RANK	CREST	STRIPING	BUTTONS	CAP	EXPANSION BAND	EPAULETTES
Fire Chief	Gold	Gold – 5 stripes	Gold	Officer – double row stars	Gold	Gold – 5 stripes
Assistant Fire Chief	Gold	Gold – 4 stripes	Gold	Officer – single row stars	Gold	Gold – 4 stripes
Senior Captain	Gold	Gold – 3 stripes	Gold	Officer	Gold	Gold – 3 stripes
Captain	Gold	Gold – 2 stripes	Gold	Officer	Gold	Gold – 2 stripes
Acting Captain	Silver	Silver – 1 stripe <i>(CAFC style)</i>	Silver	Firefighter	Black Band	Silver – 1 stripe <i>(CAFC style)</i>
Firefighter	Silver		Silver	Firefighter	Black Band	
Fire Prevention Officer	Gold	Gold – 2 stripes	Gold	Officer	Gold	Gold – 2 stripes
Fire Inspector	Gold		Gold	Officer	Gold	
Public Education Officer	Gold		Gold	Officer	Gold	

Volunteer Sector

RANK	CREST	STRIPING	BUTTONS	CAP	EXPANSION BAND	EPAULETTES
Station Chief	Gold	Gold – 2 stripes	Gold	Officer	Gold	Gold – 2 stripes
Deputy Station Chief	Gold	Gold – 1 stripe	Gold	Officer	Gold	Gold – 1 stripe
Captain	Silver	Silver – 2 stripes <i>(CAFC style)</i>	Silver	Firefighter	Silver	Silver – 2 stripes <i>(CAFC style)</i>
Firefighter	Silver		Silver	Firefighter	Black Band	

The current organization chart is indicated below.



in a confidential capacity in matters relating to labour relations, and its decision is final and conclusive for all purposes.

Same

(3) Subject to subsection (4), a person shall remain in the bargaining unit until the Board makes a determination under subsection (2), unless the parties otherwise agree.

Designation

(4) Subject to subsections (5) and (8), an employer may, in its sole discretion, designate a person described in subsection (1) as a person who shall for purposes of this Act be conclusively deemed to be exercising managerial functions or acting in a confidential capacity in matters relating to labour relations.

Consent required

(5) An employer shall not designate a person under subsection (4) unless the person consents to the designation.

If no consent

(6) If a person does not consent to a designation under subsection (4), the employer shall assign the person to a position in the bargaining unit. If the position to which a person is assigned has a lower salary than the position held by the person before the assignment, he or she is entitled to be paid the same salary and to receive the same benefits after the assignment as he or she was paid and received before the assignment.

Revocation

(7) A designation under subsection (4) may be revoked by the employer at any time.

Restriction

(8) An employer shall not designate under subsection (4) more than,

(a) two persons, if the employer employs fewer than 25 persons;

(b) three persons, if the employer employs 25 or more but fewer than 150 persons;

(c) four persons, if the employer employs 150 or more but fewer than 300 persons;

(d) five persons, if the employer employs 300 or more persons. 1997, c. 4, s. 54 (1-8).

This provides the various processes by which Managers may be excluded from belonging to unions. Currently there are four uniformed positions excluded from the CKPFFA as stated earlier they are the Fire Chief and three Assistants Fire Chief Positions.

There are several options to be considered for a new organization to provide additional support for the Administration and provide additional excluded positions. Excluded positions will require negotiations with the Fire Fighters Association.

One of the options would be to do nothing and retain the current organization and remain status quo. Another would be to reorganize the Fire Department and introduce new duties and responsibilities to the Chief Officers. Provide an on duty excluded senior officer who can represent the municipality and provide a larger degree of management 24/7 to the full time and part time (volunteer) force. There is always an option of providing the financial and administration support from corporate departments assigning the staff to the CKFD.

While the options of status quo will provide financial advantages and administrative challenges it appears that the status quo is the least likely option for the future of the CKFD.

The consultants received opinions and concerns from stakeholders on the reporting mechanism for the Fire Chief. The Fire Chief commands and administers a large department in the municipality with a high budget and number of full time and part time employees. The department reaches into every urban community in the Municipality and occupies a large inventory of buildings and operates a large fleet of vehicles.

The Emergency Management Program and the Emergency Medical Service (EMS) contracts once formed a portion of the Fire Chief's responsibilities as they both fit well with the Fire Department. These responsibilities were moved out of the Fire Chiefs budget and we have been advised that the rationale for that change was to ensure the Fire Chiefs salary level was held at a predetermined level by the person responsible for that aspect of the employees salaries and benefits. The consultants were advised that the change was made during a time of job evaluation and was carried out at that time.

This decision appears to have been made from a fiscal point and not from consideration of the services being delivered to the public, no attempt appears to have been made to assess what impact this move would make to the delivery of the emergency management program in particular as the current Fire Chiefs background is very strong in the emergency management field from his former position with the Toronto Fire Services as the emergency management coordinator. A fact that can only bring a level of expertise to the Emergency Management Program that appears to have been overlooked or caused some salary concern at the time of the job evaluation process.

The EMS program is a contractual agreement between the municipality and the company delivering the service the Fire Chief was and is well qualified to monitor this program particularly as the Thamesville fire Station is currently housing an Ambulance. There are also opportunities being considered for co-

habiting the Fire and EMS in additional Stations a fact that can be coordinated by the Fire Administration in the future.

The assignment of the fire protection and fire prevention services in the Municipality are delegated to the Fire Chief from the Municipal Council by way of a By-Law. The Fire Chief carries out these responsibilities through the authority of the Fire Protection and Prevention Act, The Ontario Fire Code, Ontario Fire Marshal's guidelines, Occupation Health and Safety Act, other applicable legislation and local By-Laws as well as any policy directives provided by the Municipal Council. Deployment of resources is the responsibility of the Fire Chief or his designate.

The Fire Chief is appointed under the authority of the Fire Protection and Prevention Act,

PART II

RESPONSIBILITY FOR FIRE PROTECTION SERVICES

6. *(1) If a fire department is established for the whole or a part of a municipality or for more than one municipality, the council of the municipality or the councils of the municipalities, as the case may be, shall appoint a fire chief for the fire department.*
- (2) The council of a municipality or the councils of two or more municipalities may appoint one fire chief for two or more fire departments.*

Responsibility to council

- (3) A fire chief is the person who is ultimately responsible to the council of a municipality that appointed him or her for the delivery of fire protection services.*

In practice, the application of this Act has seen Fire Chiefs reporting through various management organizations. In fact many of the Fire Chiefs across Ontario report through a Chief Administrative Officer (CAO) for all administrative matters and directly to municipal council for public safety issues and budget issues effecting public safety.

Fire Advisory Committee

The Fire Advisory Committee is appointed by Council and provides information and advice to the Fire Chief in regards to community fire safety, including public education, fire prevention, and feedback and input on local issues relevant to Fire Service. This committee is intended to improve communication between the public and the Municipality.

Fire Advisory Committee	
Council Recommended Committee Structure:	6 Council Representatives Fire Chief
Term:	3 Years
Current Appointees	
Representatives of Council (6)	Councilor Frank Vercooteren Councilor Joe Faas Councilor Sheldon Parsons Councilor Jim Brown Councilor Steve Pickard Councilor Brian King
Fire Chief	Chief Bob Crawford

The Advisory committee appears to be a satisfactory mechanism for the Fire Chief to provide and receive information from the elected officials. In recent months due to the absence of the CAO the Fire Chief has been reporting directly to the Acting CAO for all of his day to day operations this appeared to work well and it is the appropriate level for the Fire Chief to report to for administration purposes.

Conclusions

The four positions excluded from the International Association of Fire Fighters are, the Fire Chief and three Assistant Chiefs. There are only four excluded managers of the CKFD staff all other full time staff are members of the Fire Fighters Union. The FPPA provides for additional exclusions from the Union to enable a management team to be formed.

The administrative support staff of the Fire Department is not sufficient to deal with the day to day routine general administration and in particular the additional training data entry and the Fire Prevention administrative responsibilities this plan envisions. Currently the senior officers and Fire Prevention Inspectors carry out routine data input that should be undertaken by a lower paid clerical position. Freeing the senior officers to concentrate more on the management needs of the department and allowing the Fire Inspectors more time to carry out inspections instead of doing these routine clerical duties will improve the inspection service level and quality of the delivery service through improved supervision.

When the CKFD administration support group is directly compared with other corporate departments, it is clear that there is a shortfall in the assigned excluded staff to achieve all of the requirements of administering a more than 413 full time and part time employee department.

In some Ontario municipalities the concept of assigning staff from other corporate departments has provided the necessary support and maintained an excellent liaison with the corporate department. For example the assignment of a Budget Analyst Person to the Fire Department from the Finance Department can assist both departments in ensuring the budget is prepared along corporate guidelines and is monitored accordingly, the assigned person would also ensure that the financial accounting and records are maintained accordingly.

In a union environment the CKFD requires sufficient excluded members from the Chatham-Kent Professional Fire Fighters Association (CKPFFA) to allow for meaningful management and representation of the City on a 24 hour basis. Currently the most senior officer on duty at all times is a member of the CKPFFA (Senior Captain). The question is who represents the City when issues arise that require budget implications such as overtime or discipline action must be taken or a corporate decision that may be contrary to the CKPFFA position or philosophy must be made?

An on duty excluded manager will provide a valuable communications contact for all of the various levels of officers, full time Captains and volunteer Station Chiefs. The volunteer Station Chiefs report through the Assistant Chiefs to the Fire Chief, they must continue to report to an excluded officer position.

The Assistant Chiefs work a five day week and respond to emergencies when needed, an on duty excluded Platoon Chief would provide the volunteer Chiefs access to the senior management 24/7 and it is one of the areas that was identified by many of the stakeholders as being in need of improved communications between the volunteers and senior management.

The FPPA provides the various processes by which managers may be excluded from belonging to unions. Currently there are four uniformed positions excluded from the CKPFFA as stated earlier they are the Fire Chief and three Assistants Fire Chief Positions.

Concerns have been expressed by the stakeholders that the full time and volunteer ranks have different rank markings that are not consistent with the Canadian and Ontario rank structures. For example the rank of Captain should be the same in both full time and volunteer sectors and Station Chiefs have crew Captains reporting to them the Station Chiefs should not be at the rank of Captain.

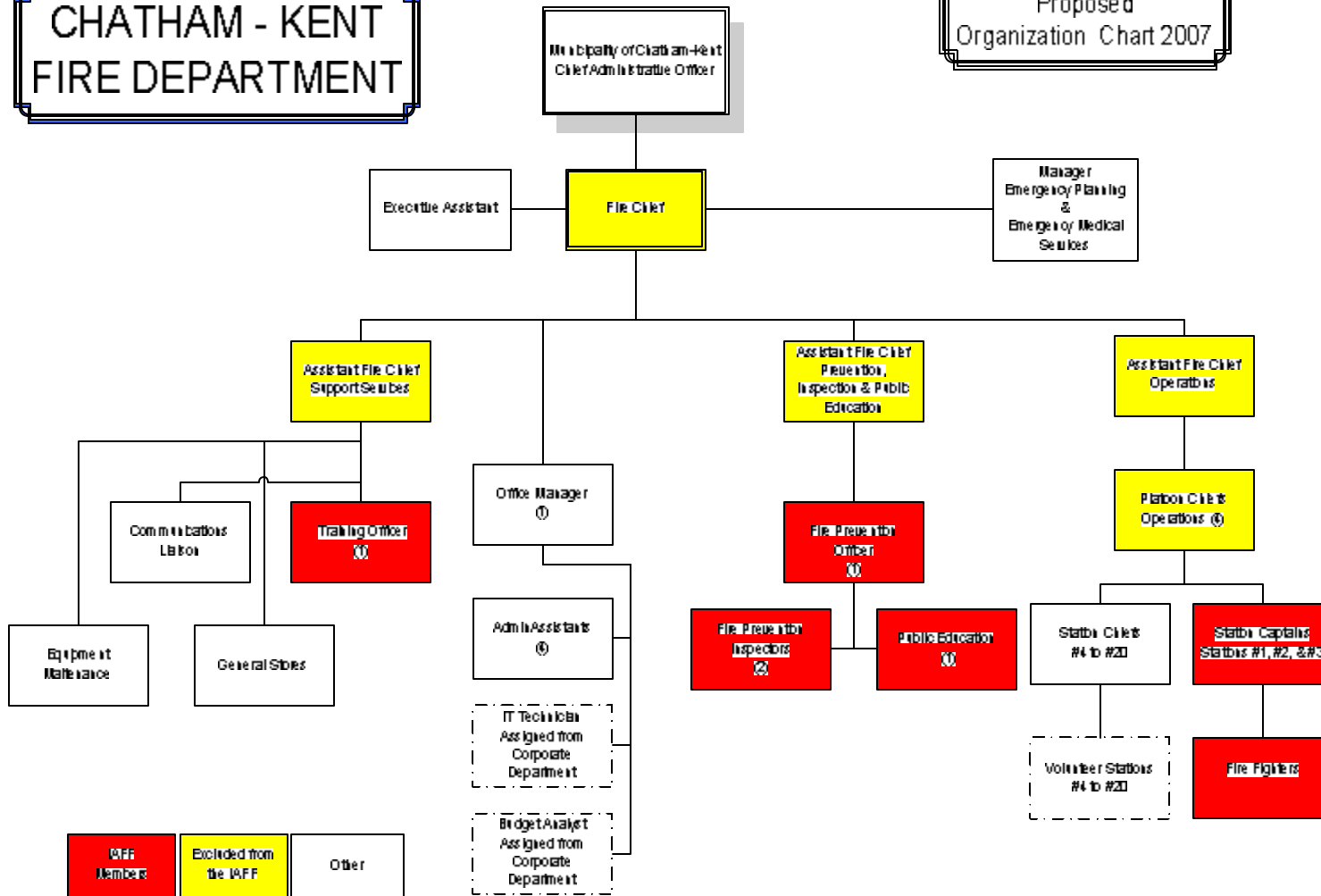
Recommendations

14. It is recommended that four Platoon Chiefs be added to the Station #1 compliment and that the position of Senior Captain be reclassified to Captain effective January 2008.
15. It is recommended that four Fire Fighters be added to the Station #2 compliment effective January 2009.
16. It is recommended that four Fire Fighters be added to the Station #2 compliment effective January 2010.
17. It is recommended the Emergency Management Program be assigned to the Fire Department
18. It is recommended that the EMS Manager and program be assigned to the Fire Chief
19. It is recommended that a position of Office Manager be established in the Fire Department effective January 2008
20. It is recommended that two (2) new clerical administrative positions be approved for the Fire Department, one to be assigned to the Training Division duties and the second one to be assigned to the Fire Prevention Division duties.
21. It is recommended that in accordance with the Fire Prevention and Protection Act the Fire Chief report to the Chief Administrative Officer (CAO) for all administrative matters and directly to Council for all matters of public safety.
22. It is recommended that the following organization chart be adopted by Council for the Fire Department

Chatham-Kent Fire Master Plan and Station Location Study

**CHATHAM - KENT
FIRE DEPARTMENT**

**Proposed
Organization Chart 2007**



23. It is recommended that the following rank markings be adopted by the Fire Department:

RANK	CREST	STRIPING	BUTTONS	CAP	EXPANSION BAND	EPAULETTES
Fire Chief	Gold	Gold – 5 stripes	Gold	Officer – double row stars	Gold	Gold – 5 stripes
Assistant Fire Chief	Gold	Gold – 4 stripes	Gold	Officer – single row stars	Gold	Gold – 4 stripes
Platoon Chief	Gold	Gold – 3 stripes	Gold	Officer	Gold	Gold – 3 stripes
Station Chief	Gold	Gold – 2 stripes	Gold	Officer	Gold	Gold – 2 stripes
Captain	Gold	Gold – 1 stripe	Gold	Officer	Gold	Gold – 1 stripe
Acting Captain	Silver	Silver – 1 stripe <i>(CAFC style)</i>	Silver	Firefighter	Black Band	Silver – 1 stripe <i>(CAFC style)</i>
Firefighter	Silver		Silver	Firefighter	Black Band	
Fire Prevention Officer	Gold	Gold – 1 stripe	Gold	Officer	Gold	Gold – 1 stripe
Fire Inspector	Gold		Gold	Officer	Gold	
Public Education Officer	Gold		Gold	Officer	Gold	

Note: the full time and volunteer sector differences are merged into one rank structure. The Deputy Station Chief wears the rank of Captain.

Fire Prevention and Public Education

The Fire Department is expected to perform a number of fire prevention functions.

The duties include:

- Participation in plans review and site inspections for compliance with the Building code
- Enforcement of the Fire Protection and Prevention Act (FPPA) and related regulations
- Fire inspections
- Retrofit inspections
- Fire investigations
- Business licensing inspections
- Complaints
- Plans review and acceptance of equivalencies under the Fire Code
- Special projects
- Public education
- Data and records maintenance

The Assistant Fire Chief, Fire Prevention Officer and Fire Inspectors are appointed as Assistants to the Fire Marshal under the Fire Protection and Prevention Act. Prior to the creation of the municipality of Chatham-Kent, each of the individual fire departments had a member who was responsible for fire prevention and was appointed as an Assistant to the Fire Marshal. These appointments were not continued after amalgamation.

Section 2. (1) of the Fire Protection and Prevention Act 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 dependant on the needs of the community. The property owner is responsible for ensuring that the property is in compliance with the Fire Code, however the Fire Department has authority and responsibility to ensure that the owner complies with the Fire Code.

The Office of the Fire Marshal recommends that the minimum fire prevention program consist of:

- A recognized smoke alarms and home evacuation program.
- Fire inspections on complaint or request.
- A public education program.
- Completion 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.

The Fire Department has not completed the Simplified Risk Assessment. A Fire Prevention Effectiveness Model was completed in 2003. The recommendations that were contained in that report were not implemented.

The Fire Code is a regulation under the FPPA and has a number of retroactive requirements for various classes of buildings in Ontario. Part 9 “Retrofit” has established compliance dates that apply to a number of buildings in Chatham-Kent.

The following is a summary of Sections of the Fire Code and the building classifications that are required to comply with the retrofit requirements of the Fire Code. The properties covered by these regulations were required to be in compliance in 1996.

Section	Property Class
9.2	Public Assembly Buildings
9.3	Boarding, Lodging and Rooming Houses
9.4	Health Care Facilities
9.5	Residential Buildings Up To Six Storey
9.6	Residential Buildings Over Six Storey
9.8	Two Unit Residential Occupancies

The fire department has 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 Office of the Fire Marshal has published recommended periods of inspection for certain classes of buildings. Chatham Kent is not meeting the recommended inspection periods.

Building Group		Inspection Frequency
Group A	Public Assembly (Schools, Restaurants, Halls, Arenas)	Annual
Group B	Institutional	Annual

Group C	(Nursing & Retirement Homes, Hospitals) Residential (Multi-unit Residential/Hotels/Motels)	Annual
Group D	Business & Personal Service (Banks, Offices)	Bi-annual
Group E	Mercantile (Stores, Malls)	Bi-annual
Group F	Industrial (Warehouses, Manufacturing, Processing)	Bi-annual

Chatham-Kent Building Stock (2003)		
Group A	Public Assembly (Schools, Restaurants, Halls, Arenas)	553
Group B	Institutional (Nursing & Retirement Homes, Hospitals)	28
Group C	Residential	
	Single & Semi-detached Houses	32924
	Rooming, Boarding & Lodging	19
	Multi-unit 2-6 units	1040
	Multi-unit Over 7 units	718
	Dual Purpose Dwelling /Business	305
	Mobile Homes	685
	Hotels/Motels	19
	Campground	19
	Institutional Residence	2
	Seasonal	753
Group D	Business & Personal Service (Banks, Offices)	518
Group E	Mercantile (Stores, Malls)	920
Group F	Industrial (Warehouses, Manufacturing, Processing)	1137

The Assistant Chief, Fire Prevention Officer and 2 Fire Inspectors conduct fire inspections as well as the other duties assigned to the division. Some personnel performing fire prevention duties have not attended or passed the fire prevention courses at the Ontario Fire College. They do not have the specialized training in the Building Code that would allow them to qualify with the provincial standards for Building Officials. The number of staff and the number of inspections makes it impossible to complete fire inspections in compliance with the Fire Marshal's recommended schedule.

The common ratio of Fire Inspector to population is one inspector per 15,000 to 20,000 people. Where there are long distances to travel to inspections the ratio tends to the lower number. The Assistant Chief is responsible for the administration of the Fire Prevention and Public Education Division.

Every new building adds to the inspection load of the department. Although the Building Department is no longer involved in a building once it is completed, The Fire Department will conduct regular inspections of these buildings until they are demolished. As the municipality continues to grow the inspection load will increase.

Prior to the amalgamation of Chatham-Kent the City of Chatham had 3 fire prevention staff. The Town of Wallaceburg utilized an operations officer to conduct fire prevention. Each volunteer fire department had the responsibility for fire prevention and public education in its response district. At the time of amalgamation the fire prevention duties were transferred to the full time fire prevention staff. There was no increase in the number of full time fire prevention staff although the work load was doubled. There are a number of volunteers who are prepared to participate in an inspection program. They could be utilized to reduce the work load for the full time staff by conducting inspections of light industry, commercial properties and multi-residential properties in their response district. They would require training since the volunteers have not had any fire prevention training since amalgamation.

There are full time Fire Fighters assigned to Stations 1, 2 and 3. The Fire Fighters have not been trained to conduct fire inspections. The Fire Fighters do not conduct fire inspections. Many fire departments have an in-company inspection program that utilizes on duty fire fighters to conduct inspections of light industry, commercial properties and small multi-residential properties. The full time fire fighters participate in a residential smoke alarm awareness program. There is no home fire safety inspection program.

The current inspection practice is to conduct inspections on a complaint or request basis. There is no regular fire inspection program. The number of inspections that are being conducted do not approach the minimum recommended by the Office of the Fire Marshal. The minimum number of annual inspections required to meet the OFM guidelines is 3971. This does not include re-inspections, follow ups, complaints, requested inspections or prosecutions. The following chart shows the number of inspections that have been conducted during the period January 1, 2002 to November 22, 2006.

Occupancy Classification	Number of Inspections
Not Identified	28
Assembly	683
Business & Personal Service	41
Industrial	54
Mercantile	273
Miscellaneous	1126
Vehicles	3
Total	2275

The annual average number of inspections during this period was 465. At the current rate of inspection, it will take 11.3 years to inspect each building regulated by the Fire Code. It should be noted that there have been very few inspections of industrial properties and that institutional properties (hospitals and nursing homes) are not listed in the statistics. There is a need to add resources to the delivery of the fire inspection program.

The Assistant Chief participates in the new construction projects and conducts reviews for the requirements for fire protection for new construction projects. The Assistant Chief is the only member of the Fire Department who has passed the required qualification examinations for Fire Protection Reviews under the Building Code Act. The Building Code has specific requirements for the provision of fire protection systems including fire department access and an adequate water supply for fire fighting. The Fire Prevention Officer and Fire Inspectors should be trained to carry out the plans review and construction inspections that are the responsibility of the Fire Department.

The current hiring practice to recruit Fire Inspectors from the fulltime Fire Fighter ranks is dictated by the collective agreement. In order to qualify for the position the applicant must be a First Class Fire Fighter. These applicants do not have any specialized training in fire prevention and building inspection. Fire Prevention is a separate discipline from fire fighting. The technical skills required for fire prevention are not learned from being a Fire Fighter. There are specialized college and university courses that an applicant should have passed before being considered for the position of Fire Inspector.

The collective agreement has restrictions on tenure in the Fire Prevention Division. Personnel who transfer into the division have restricted seniority and are locked into the division if they stay longer than 6 months. This situation has created a revolving door transfer system and the department is not able to develop and maintain a competent group of trained staff.

Failure to provide adequate enforcement of the Fire Code and the Building Code has led to civil actions against many municipalities in Ontario. The best protection against these actions is the proper enforcement of the Fire Code by qualified Fire Prevention Officers and Inspectors.



Fire Safety Plans are submitted to the Fire Department for review and approval. Upon completion of the review the Fire Department must return the plan to the property owner. The owner is required to keep a copy of the Fire Safety Plan on site and available for the Fire Department. In addition to Fire Safety Plans 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. The Fire Department does not have the ability to maintain current files on the hazardous goods in every occupancy. Often the responding Fire Fighters cannot find the Fire Safety Plan or WHMIS information.

Many municipalities now require property owners to maintain copies of the Fire Safety Plan and WHMIS information in a locked box at the entrance to the building. This ensures that the plan and hazardous materials information is available to any crew that may respond and relieves the department of the responsibility of bringing the Fire Safety Plan or WHMIS information to the building.

NFPA 1620 “Recommended Practice for Pre-Incident Planning” provides guidance in the development of preplanning programs. It is not possible to store paper files on each vehicle for pre-incident plans for every building in the municipality. Preplans can also be stored in a Fire Safety Plan lock box at the building or site main entrance. Some departments have developed computer based preplan files that are kept on “Tough Books” lap top computers in each vehicle. This should be a long term goal of the CKFD.

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”. The department has recently hired a person dedicated to public education. Previously these duties were carried out by other personnel.

The Public Educator is currently developing the fire safety program for the Children’s Safety Village. The Educator’s responsibilities include, but are not limited to:

- Develop, coordinate and implement the delivery of a variety of public education programs, including the Chatham-Kent Safety Village, Schools, Seniors’ residences, Businesses and Industries.
- Develop schedules and maintain records in all aspects of public education service delivery.
- Conduct research, collect and analyze data, and produce fire safety statistical reports.
- Assist in maintaining and enhancing the Fire Department’s website as a dynamic source of fire safety information.
- Liaise with department staff, corporate departments, and a wide array of external public safety agencies in order to gather and disseminate information.
- Develop Standard Operating Guidelines (SOG) associated with public education activities.

Public Education Statistics (January 2002 to November 2006)

Number of Events:		255
	Full-Time Stations	24
	Volunteer Stations	231
Event Number by Age group:		255
	Age 0 -20	127
	Age 20-35	26
	Age 36-55	7
	Age 56 and over	3
	Various Age Groups	89
	Age not given	3
Number of Participants by Age Group:		17382
	Age 0-20	7721
	Age 20-35	458
	Age 36-55	79
	Age 56 and over	630
	Various Age Groups	8494

Records for October 2006:

Number of Events:		66
	Full-Time Stations	31
	Volunteer Stations	21
	Prevention & Pub Ed	14
Event Number by Age group:		66
	Age 0 -5	2
	Age 6-8 (gr.1-3)	35
	Age 9-10 (gr.4-6)	5
	Age 12-13 (gr.7-8)	0
	Age 14-17 (gr.9-12)	9
	Age 18-35	0
	Age 36-55	1
	Age 56 and over	0
	Various Age Groups	14
Number of Participants by Age Group:		5181
	Age 0 -5	38

	Age 6-8 (gr.1-3)	1178
	Age 9-10 (gr.4-6)	170
	Age 12-13 (gr.7-8)	0
	Age 14-17 (gr.9-12)	1013
	Age 18-35	0
	Age 36-55	85
	Age 56 and over	0
	Various Age Groups	2697

The full time Fire Fighters participate in public education through Station tours and public events. Public education programs in Chatham-Kent are provided by the volunteer Fire Fighters to children visiting the fire Stations and during Fire Prevention Week every October. There does not appear to be any coordinated program between the full time staff and volunteers. The volunteers are not participating in the visits to the Children’s Safety Village. The Fire Fighters, whether full time or volunteer should have an opportunity to attend these presentations. The volunteer participation in public education has been greatly reduced since the introduction of the Public Educator. This may be due to interpretations of provisions in the collective agreement with the full time Fire Fighters. The no contracting out clause of the collective agreement, does not prohibit volunteers from doing any public education programs that they have done in the past. Public education is one of the most effective tools in reducing the incidents of fires and injuries. The introduction of the Public Educator provides the opportunity to develop a coordinated public education program for the municipality.

There is no complete in school program such as “Learn Not To Burn” or “Risk Watch”. These fire safety programs are normally delivered to primary schools. The Children’s Safety Village program is intended to address elementary school students. The Public Educator is developing programs for the students attending the Safety Village. In order to develop a culture of safety it is important to start early in teaching these habits. Another group who would benefit from a fire safety education program is senior citizens. Statistics show us that 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.

Volunteer Fire Fighters attend public events to promote fire safety. The Fire Fighters have not received any training in public education and have limited resources for public displays. The department has a fire safety trailer. The trailer was constructed in house. The unit is a semi-trailer and tractor. The vehicle driver must have a class AZ driver’s license. Most Fire Fighters have a Class DZ driver’s license. The trailer was sponsored by a number of groups within the community.

With a coordinated public education program, the 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. The fire safety trailer is an example of this type of cooperation.

The department has a set of Standard Operating Guidelines (SOG). These procedures provide operating rules to ensure that all personnel operate in a consistent manner. The SOG's do not cover all fire prevention and public education activities.

There are opportunities to generate revenues for Fire Prevention. Fees may be charged for special requested inspections, fire works permits, fire investigations, file review letters, and the plans review and inspections for new construction under the Building Code.

Conclusions

There are a number of deficiencies in the current fire inspection and public education programs provided by the Fire Department. There is not sufficient qualified staff to conduct all of the fire inspection and public education duties.

The existing Fire Prevention staff have not been trained. They have not completed the courses at the Ontario Fire College and have not had training in the enforcement of the Building Code. They have not received any specialized training in hazardous process protection or special extinguishing systems.

A fire inspection program utilizing the on duty Fire Fighters would be a benefit to the department and the public. This would require that the Fire Fighters attend fire prevention training courses. Since these personnel are restricted to operating in the Stations 1, 2 and 3 response areas, their inspections would have to be limited to those area. Prior to amalgamation fire inspections were conducted by members of the volunteer fire departments in their areas. This practice was discontinued. The inclusion of volunteer Fire Fighters in the fire inspection program would pick up some of the work load that the full time staff cannot complete.

The collective agreement restricts the hiring of qualified persons for the position of Fire Inspector, the municipal negotiations team should meet with and discuss methods of ensuring that persons who apply for the position from within the Fire Fighters compliment must have the FPO training and qualification for the position. Once the position has been posted for a set period of time the Fire Chief can then advertise outside of the Fire Department for qualified applicants.

A continued relationship with the Building Department in enforcement of the Building Code has positive benefits. The Fire Department should have input into the construction of new buildings since they will be responsible for responding to fires and other emergencies in these buildings.

Fire Safety Plans, WHMIS information and Pre-Incident Plans may not be available to all crews who may respond to an emergency in a building. A Fire Safety Plan/WHMIS box at each property could fulfill this requirement.

The department does not have complete SOG's for fire prevention and public education. A complete review of the SOG's will enhance the ability of the department to be consistent in the delivery the service to the public.

The hiring of a Public Educator has enhanced the delivery of fire safety education. However a single person cannot deliver all of the required programs. Other members of the department must continue to participate in public education.

The delivery of public education is not using the volunteer Fire Fighters to best advantage. The volunteer Fire Fighters are enthusiastic in providing a public education program, however they do not have public education training and they have limited time since they have personal and employment commitments.

Recommendations

24. It is recommended that an additional Fire Prevention Inspector be added to the Chatham Kent Fire Department in the 2008 budget.
 - a). It is further recommended that the minimum qualifications based upon the Ontario Fire Service Standards for Fire Prevention Officers be required of all applicants for the position.
 - b). It is further recommended that a Certified Building Official under the requirements of the Building Code be considered as a positive asset for the position.
25. It is recommended that a Fire Fighter inspection program be developed and implemented.
 - a). It is further recommended that the Station 1, 2 and 3 Fire Fighters be trained and certified to conduct basic Fire Code inspections.
26. It is recommended that the interested volunteer Fire Fighters receive training and certification to enable them to conduct Fire Code inspections of light industry, commercial and multi-residential properties in their response district.
27. It is recommended that the involvement of the Fire Department in the Building Permit process continue.
28. It is recommended that the department's fire prevention SOG's be updated.
29. It is recommended that the volunteer Fire Fighters continue to receive training in the delivery of fire safety programs and participate in public education events.
30. It is recommended that A Fire Safety Plans Box Bylaw be drafted and presented to Council.
31. It is recommended that Opportunities for fund raising be investigated with public service clubs and community organizations.
32. It is recommended that a Home Fire Safety Program be developed and delivered by the full time and volunteer fire fighting crews.

Pre-Fire Planning

The Fire Department does not have a department wide Pre-incident Plan program. Some plans have been prepared by on duty fire crews. The plans include drawings with fire protection and hazard information and are prepared for high life risk facilities, industrial/commercial facilities and high-rises. The Fire Department does not have a Pre-incident Planning policy. Pre-plans have not been prepared for all high life risks or high hazard industrial occupancies.

The plans that have been prepared are kept in paper form on the vehicles. There is no formal pre-planning program for the volunteer areas.

There is extensive information available from the Public Utilities Commission (PUC) through a Geographic Information System (GIS), regarding the water mains and fire hydrants. The GIS data base also contains information on all municipal and private services on the municipal roads. The information is available to the Fire Department, however they have not taken advantage of this opportunity.

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.

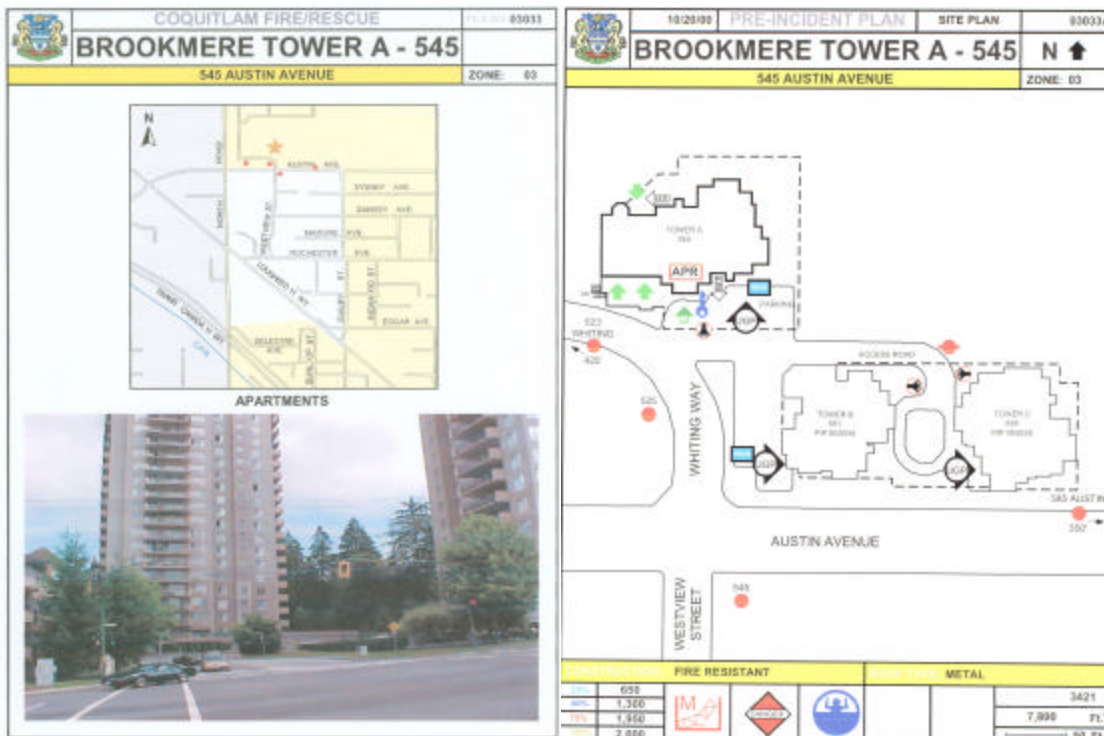


Truck Mounted Computer for Pre-fire Plans

In a large municipality, pre-fire plans cannot be maintained as paper files in binders in each vehicle. 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 Captain can access these plans and can print them out in a printer in the cab ready for use when they arrive at the emergency. The PUC will make all of its data available to the Fire Department however the department must have lap tops in the vehicles to access the information.

The following are examples of pages from a pre-plan for a high-rise apartment complex. The actual plan is 10 pages. This plan is stored on the lap top computer in the cab shown above. These plans can contain diagrams and photographs of key locations in the facility and information regarding fire hazards, life safety risks, fire alarms, sprinkler systems, standpipe and hose systems, fire department connections, fire

hydrants, fire protection systems, fire department access, hazardous goods, special precautions, structural weakness, concealed risks, and fire fighter safety concerns.



Examples of Pre-Plan Data

Conclusions

The Chatham-Kent Fire Department does not have a formal department wide pre-fire planning program. There are a number of high risk facilities that require pre-plans.

There is extensive information available to the Fire Department for pre-fire plans and water supply systems that is not being utilized.

Due to the size of the municipality it would not be feasible to keep pre-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 fire fighting personnel. In the interim, pre-plans could be kept at each property in a Fire Safety Plan/WHMIS Box.

Recommendations

33. It is recommended that a pre-incident planning program be developed using NFPA 1620 “Recommended Practice for Pre-Incident Planning” as a template. All high life risk, institutional properties, large commercial properties, public assembly properties and industrial properties should be pre-planned.
34. It is recommended that the pre-fire plans be prepared by the fire fighters (fulltime and volunteer).
35. It is recommended that training program be implemented to teach the fire fighters how to prepare pre-fire plans.
36. 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.

Fire Fighter Training and Education

Chatham Kent Fire Department training program was the subject of much discussion during the various Fire Fighter meetings. The many comments made indicate the need for a new approach and direction for the training program

Training is a very important aspect in maintaining the health and safety of the firefighters. In Ontario, a Section 21 committee exists to provide guidance papers to management and labour on the intent and provisions outlined in the Occupational Health and Safety Act (OHSA).

The committee is supported by:

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

The Section 21 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 profession.

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

"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" is a major part of the training requirement.

Documenting the review and testing process is also an essential portion of the training obligations expressed under the OHSA. It is also clear that training is mandatory for the safety and proficiency of the services being provided.

Firefighters Guidance note 7-3 (28) speaks to the mandatory requirement of keeping accurate and complete documentation of the training that has been delivered. In many instances, in the CKFD, the method documentation of training is via hard copy format. A modern day fire service typically maintains the training records on a suitable software package and is archived accordingly to meet the intent of the OHSA.



During the discussion with the stakeholders the consultants were advised that the CKFD uses the Ontario Fire Marshal's curriculum for training programs; the OFM curriculum utilizes the IFSTA Essentials manual as the base manual for the training. The Ontario Fire Service Standards shown on the left are the base standards used in Ontario.

The full time Fire Fighters indicated that the training program is **not** meeting their needs, they requested a more structured and formal training program that can be delivered on shift. Currently the Senior Captains are charged with delivering the training program to the Fire Fighters.

The Senior Officer responsible for the program provided the consultants with the following information. On the question of what training standard is in use in the CKFD the Assistant Chief indicated that training is conducted at the volunteer Stations and the one composite Station twice monthly. Training is delivered in the Stations and is based on the Ontario Firefighter Curriculum. Administration provides training videos and photocopied curriculum materials for these Stations.

It was further explained that the volunteer Stations have additional training for Defibrillator and CPR/First Aid when required and if available, the CKFD sends firefighters to Lambton College for live fire training. Training records are only available in hard copy with 408 pages for each year of records.

It was further indicated that the full time training program is the Company Officer Program, and the

Prevention Officer Program of the Ontario Fire Marshal. It was further indicated that the curriculum based training of the remaining full time Fire Fighters was delivered through the Senior Captains.

The CKFD currently has an Assistant Chief responsible for the Training and Professional Development program. The delivery of the training program for the department is carried out by the Senior Captains for the full time Fire Fighters and the volunteer Station Chiefs, Assistant Station Chief or appointed Training Officers in the volunteer Stations.

Training Facilities

The value of live fire training is difficult to calculate because it is impossible to put a value on human life. Saving lives and avoiding injury are the primary reasons why fire departments invest in fire training towers and facilities. There is simply no substitute for live firefighting experience under safe, controlled conditions. Firefighting professionals agree that live fire training can: Reduce the number of injuries and deaths of firefighters and civilians; Reduce property damage; Increase fire department efficiency and morale; Improve training capability of fire department; Reduce lost time injuries and compensation claims; and, Reduce property loss and business interruption resulting from fire.



Extrication training, a term used to describe the practice of rescuing trapped victims from vehicles, is often overlooked and is sometimes not even recognized due to the amount of damage that vehicles often receive in a crash. This type of training is essential for Fire Fighters. They must master the use of hydraulic equipment and techniques in order to be able to safely enter a crashed vehicle and successfully extricate the victim.



Open liquid burning is often associated with training facilities for firefighters in the event that they are called to incidents involving major flowing burning liquid fires. The Fire Fighters must be able to master the control of these situations using foam and in some instances using fog water curtains.

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Fire Master Plan June 2007

The fire training tower is the most recognizable facility that can be seen at training facilities. These buildings are used for creating smoke environments for the firefighters to practice rescue techniques, and for ladder training and hose drills to deliver water streams inside and out of the buildings. The photograph on the left indicates one type of training tower that is multipurpose. The consultants visited all of the Stations there is no dedicated training space at Stations #1 and Station #2. Station #3 does have a designated training room with a library of technical manuals, books and magazines. Also, most of the volunteer Stations had limited space for training and use the general purpose meeting rooms some of which have limited training aids and the ability to provide suitable learning environments. One Station does not have a training/meeting room and trains in the vehicle storage garage.

During the course of the study the consultants were advised that many of the volunteer Stations use local water sources to practice pump operation and drafting exercises. There are no dedicated training facilities for use by all of the Fire Fighters in the municipality.

There is a need for a training facility to be constructed in Chatham Kent with the appropriate training classrooms, washrooms, open burning and vehicle extrication area, fire training tower and pump drafting pit. The facility would be suited to an area away from residential properties and possibly constructed alongside a fire Station in a reasonably centrally located area in order that all of the Stations full time and volunteer may take advantage of the location.

Conclusions

The restructuring of the Fire Department Senior Management Team will impact the current duties and responsibilities of the Assistant Chief and the Senior Captain position. Given that there are some serious concerns being raised around the current training delivery system by the full time Fire Fighters, consideration should be given to a restructured training program delivery system for the CKFD and establishing a qualified Training Officer dedicated to training the full time and volunteer Fire Fighters.

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

The CKFD currently has an Assistant Chief responsible for the Training and Professional Development program. The delivery of the training program for the department is reported to be carried out by the Senior Captains for the full time Fire Fighters and the volunteer Station Chiefs, Assistant Station Chief or appointed Training Officers in the volunteer Stations.

The CKFD has sent firefighters to Lambton College for live fire training this has proved to be very expensive and therefore it was stated by the Assistant Chief in charge of training that this practice will be discontinued.

Training records are essential for ensuring each Fire Fighter receives all of the training necessary for them to perform to the highest level required and a record is maintained of the evaluation or testing following each lesson. The record system in Chatham-Kent is paper based and only records the names of the Fire Fighters who attend the various training sessions there are no records that indicate the teaching and subsequent learning had occurred as no evaluation or testing records are kept.

There are no training facilities in Chatham-Kent for the Fire Fighters to practice the drills and skills necessary for the Fire Fighters. Firefighting professionals agree that live fire training can: Reduce the number of injuries and deaths of firefighters and civilians; Reduce property damage; Increase fire department efficiency and morale; Improve training capability of fire department; Reduce lost time injuries and compensation claims; and, Reduce property loss and business interruption resulting from fire.

A training facility in Chatham-Kent could be used by all of the Fire Fighters particularly during the evening and at the weekends for the volunteers These buildings are used for creating smoke environments

for the firefighters to practice rescue techniques, and for ladder training and hose drills to deliver water streams inside and out of the buildings.

The consultants visited all of the Stations there is no dedicated training space at Stations #1 and Station #2. Station #3 does have a designated training room with a library of technical manuals, books and magazines. Also, most of the volunteer Stations had limited space for training and use the general purpose meeting rooms some of which have limited training aids and the ability to provide suitable learning environments. One Station does not have a training/meeting room and trains in the vehicle storage garage.

There is a need for a training facility to be constructed in Chatham Kent with the appropriate training classrooms, washrooms, open burning and vehicle extrication area, fire training tower and pump drafting pit. The facility would be suited to an area away from residential properties, commercial and manufacturing business and possibly constructed alongside a fire Station in a reasonably centrally located area in order that all of the Stations full time and volunteer may take advantage of the location. The future construction of a new Station #2 should be on a lot that could also be considered for the training facility.

Recommendations

- 37 It is recommended that a qualified Master Training Facilitator be hired and appointed as the Fire Department Training Officer.
- 38 It is recommended that all training lessons, sessions or practical training be followed by an evaluation or testing of the participants and the results documented and retained in an appropriate retrievable format.
39. It is recommended that all training records be recorded in digital form to enable easier production of statistical data.
40. It is recommended that a training facility be constructed for practical and theoretical training in a central location to allow all members of the Fire Department to use the facility days, evenings and weekends.
 - c. It is further recommended that the facility be constructed in a location that will allow for open burning and smoke generation that will not impact residential, commercial or Industrial buildings.
 - d. It is further recommended that the practical training facility consist of a 4 floor training tower, a fire building with pitched roof, open pit burning area, underground water tank suitable for training on pump operations including drafting and an area for extrication training from crashed vehicles. The main training building should have a minimum of theoretical training classrooms, lockers and washrooms Male and female and office space for the training officer.

Communications and Equipment

The following is taken from the Chatham-Kent Fire Department SOG manual and describes the system and hardware used by the Chatham-Kent Fire Department.

The Chatham-Kent Fire Department dual band radio system will operate via a municipal wide 800MHz digitally trunk EDACS radio system. VHF portable handheld radio communications will be enhanced on the fire ground by a vehicular repeater (VR) which rebroadcasts to and from an Orion EDACS mobile radio throughout the EDACS network as well as to the other portables on the same fire ground. 500M EDACS radios are used in all vehicles not requiring a VR.

All in service Pumpers and other selected vehicles carry an on-board mobile vehicular repeater, connected to an Orion model, cab mounted, mobile radio control head. This is the primary vehicle radio. The microphone of this radio will be in a conspicuous location, accessible to both the front seat passenger and driver.

All other in service vehicles, not mobile repeater equipped, carry a cab mounted M500 model mobile radio. This is the primary radio. The microphone of this radio will be installed in a conspicuous location, accessible to both the front seat passenger and the driver.

All in service vehicles will continue to carry the existing VHF radio equipment, presently installed in each vehicle. This is designated as the backup vehicle radio. The microphone of this radio will be installed in a less conspicuous, but available location in the cab of the vehicle. The microphone should be tagged as VHF ONLY on the face, if possible. The "Fire Simplex" channel is the default for all mobile VHF radios in both Divisions. At the same time, all VHF portable/handheld radios should be changed to the "Fire Simplex" channel.

Should there be a catastrophic failure of the 800MHZ / EDACS system, the backup VHF mobile vehicle radio should be powered up and verified that the "Fire Simplex" channel is selected. VHF radios set to Fire Simplex will allow fire ground simplex communications unit-to-unit as well as to and from Dispatch.

Stakeholder Issues

The most often raised issue on communications is that the dispatch and communications is delivered by the Police Department and that there is, in many of the stakeholders opinion, often a delay in getting a response from the communications operators when they are busy with Police radio traffic. The consultants visited the communications centre and discussed the Fire dispatch with the Police Supervisor.

The consultant was advised that when a fire call occurs a designated communications operator is assigned to the incident. The Computer Aided Dispatch system is provided by Intergraph Systems, the software is both Police and Fire compatible.

During the meetings with the Fire Fighters the radio system was discussed. One of the issues raised was the coverage of the radio system and the occurrences of what was termed dead spots by the Fire Fighters. The current radio system could benefit from a comprehensive review to ensure that the most suitable locations are being used for all of the repeaters on the system and the signal strength meets the 95% coverage required in a fire radio system.

The general consensus appears to be that the mobile repeaters are a positive asset. The location of the repeaters being on the Pumper was raised as an issue as the practice in cold weather is to return the Pumper to the Station at the earliest opportunity to prevent freeze up. The Rescue Truck is normally maintained on the scene mainly for rehabilitation of the Fire Fighters.

The consultants understand the concerns of the Fire Fighters in this regard however the first vehicle on the scene of fires is normally the Pumper in addition with the Rescue being left at the scene the next call may come with it being tied up and the Pumper will respond from the Station.

Several requests were received for more portable handsets on the Trucks for the use of the crews during emergencies.

CHANNELS – ALL VHF PORTABLE RADIOS

ALPHA NUMERIC	NUMERIC EQUILIVENT	DESCRIPTION
FIRE 1	1	Full-Time Division Operational Default
FIRE 2	2	Full-Time Division Tactical Default
FIRE 3	3	Volunteer Division Operational Default
FIRE 4	4	Volunteer Division Tactical Default
FIRE 5	5	Alternate Tactical Channel Both Divisions
OFM	6	Province-Wide OFM Common Channel
ADMIN	7	Station #1 and 2 Business Channel not for emergency use
SIMPLEX	8	Default For VHF Back Up Operations Both Divisions

		May Be Used As Talk Around Non Emergency Channel May Be Used To Monitor The Common Paging Channel
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Conclusions

The Fire Dispatching from the Police Department is carried out in a professional manner there was no evidence provided to the consultants to support some of the stakeholders concerns that there are delays in dispatching fire vehicles to emergency incidents.

The radio system is operating well with a VHF back up system, the concerns about dead spots where the radios do not transmit can be verified or dispelled with an evaluation the signal strength of the radio system in all areas of the municipality a comprehensive design signal strength study will need to be conducted by a qualified company. The study would determine the strengths and weaknesses of the current system and the accuracy of the current locations of the repeaters to provide the maximum coverage.

The Mobile repeaters are working well the only concern raised was that during cold weather the Pumper is normally returned to the station first to prevent freeze up. This results in the loss of the repeater to the crews left on the scene doing overhaul, investigation or fire watch.

The advantages of a voting repeater system can only be taken when the repeaters are sited correctly. A design signal strength study will identify the optimum locations for repeaters in a similar fashion to the location of Fire Stations.

Recommendations

41. It is recommended that the municipality develop an RFP to attract a qualified company to undertake a comprehensive radio signal coverage study and feasibility study to evaluate the current radio coverage and identify any dead spots.
42. It is recommended that the Fire Department consider providing additional portable radios where they can be justified.
43. It is recommended that the Fire Department investigate the financial implication and operational advantages of having a second mobile repeater available on the Rescue Truck.

Vehicles and Equipment Maintenance

The Fire Department is involved in the specification and purchasing of vehicles in conjunction with the Fleet Maintenance Department. The general maintenance and repair of the vehicles is the responsibility of Fleet Maintenance. Major maintenance and repairs are carried out by outside contractors. Appendix 'B' contains a listing of the major apparatus in the Fire Department fleet.

Some vehicles are equipped with Class A foam systems. There is no supply of Class B foam. The Class A foam systems on some vehicles were not working at the time of the Station visits. The staff indicated that there have been problems with some of the foam systems and that they have not been repaired. There are a number of universal foams available that can be used for Class A and Class B fires. These foams allow fire fighting for all types of fires without the need for different foams and the problems that arise from maintaining an adequate inventory.

There is a small portable Snuffer Compressed Air Foam System (CAFS) on Pumper 15-11. None of the other vehicles is equipped with CAFS. CAFS is at the leading edge of current fire fighting technology. CAFS provides a more effective use of water and foam in extinguishing fires and providing exposure protection to buildings. It is also very effective in fighting wildland fires (brush and field). As pumping vehicles are replaced, CAFS should be considered as part of the new vehicle specification.

The vehicle replacement program is behind schedule. Appendix 'C' contains the current vehicle replacement schedule. Volunteer vehicles should have a life expectancy of 20 years in front line service with the best replaced vehicles being retained as reserve or auxiliary units for up to 5 years. In busy Stations such as the fulltime Stations, vehicle replacement should be considered at 15 years. There are a number of vehicles that exceed the 20 year age limit. 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 engine. The vehicle replacement program has identified the need to replace a number of these vehicles. The cost of replacing all of the old vehicles prohibits the immediate replacement of all of the vehicles in one year. There is a long term replacement plan to catch up to the proposed schedule of 20 years.

The fire department has 7 Aerial devices. Stations #1 and #3 have Aerial platforms. Station #2 and #18 have 23 m (75 ft) Aerials. Stations #6 and #11 have 17 m (55 ft) Telesquirt. Station # 19 has a 23 m (75 ft) Telesquirt. All of the vehicles are equipped with a pump. Vehicles equipped with an Aerial device and having the ability to pump water are called Quints. Quints can operate as independent units and do not require a Pumper to supply the elevated stream on the ladder or platform.

The current deployment of Aerial devices is adequate. Where Telesquirts/Aerials/Quints are replaced, it may not be necessary to have a 30 m (100 ft) ladder. Aerials are more useful for roof access and rescue than a Telesquirt. Aerials should be purchased when the Telesquirts are replaced. The selection of the size



and type of Aerial device should be based upon the risks in the Station's first response area. An Aerial/Quint could be equipped with a ladder from 17 m (55 ft) to 30 m (100 ft) depending on the height of the buildings and the availability of access.

The short Aerials are smaller and more maneuverable and can be used for quick access to the roof of agricultural/industrial/commercial buildings and low rise residential structures. It also provides a quick deployment of an elevated master stream to control fires that have broken through the roof of a building and begin to threaten the surrounding structures.

The department operates 16 Rescue apparatus from the volunteer Stations. These vehicles are designed to carry specialty equipment for technical and heavy Rescues. New heavy rescues have been provide in Stations 10 and 20. The other stations have converted cube vans for rescue vehicles. Hydraulic tools designed for auto extrication are carried on the Pumpers in the fulltime Stations. The majority of rescues involve vehicle accidents.

In the event of a vehicle rescue the first responding fire fighters must decide which vehicle should respond first. When there is a limited response by volunteers or in the limited staffed fulltime Stations, the fire fighters have to choose which vehicle should respond based upon the information provided by the dispatcher. A Rescue Pumper can perform the same operations as a Pumper as well as basic auto extrication and technical rescues. Where there are limited vehicles it is often advantageous to combine functions where ever possible.

With the current vehicle deployment a Rescue and a Pumper must respond to every vehicle accident. The first crew leaving the Fire Station must decide if a Rescue or Pumper should be the first to respond. This is a particular problem if responding personnel are delayed and the second vehicle may be several minutes behind the first vehicle. This may result in a delay in rescue until the scene can be secured from a fire.

The introduction of rescue Pumpers would reduce the number of large vehicles in the fleet. A rescue Pumper takes the place of a Pumper and heavy rescue. By going to a rescue Pumper concept the fleet replacement program should be accelerated since there will be fewer large vehicles. In stations where the rescue Pumper is provided there will continue to be a need for transportation of personnel. A 12 passenger van can service this purpose and will eliminate the current practice of transporting personnel standing in the light rescues/cube vans. In addition a smaller fleet of large vehicles would reduce the vehicle maintenance requirements for the Fire Department.

The department responds to numerous vehicle fires and accidents on the municipal roads and provincial highways including Highway 401. A major risk to fire fighters in operating at these accidents is the possibility of being struck by a vehicle during emergency operations. The pre-connected hose lines on the volunteer Pumpers are mid-ship mounted and often must be pulled off with vehicles passing the Pumper. Front mounted pre-connect hose lines can be deployed without having to step into the oncoming traffic.

Fires in areas not served by hydrants will require a Tanker shuttle. The narrow rural roads with no shoulders make coordinating a Tanker shuttle difficult. The current configuration of the Pumpers and Tankers affects the efficiency of Tanker shuttle operations. The Fire Department has 17 Tankers. The ta

Rescue Pumper

 (3000 gal.) The smaller Tankers are faster and more maneuverable, whereas the larger Tankers provide a larger quantity of water on arrival. The maximum size of Tanker on a single rear axle must be limited to approximately 8200 L (1800 gal.).

Tankers with greater water loads require tandem rear axles. The optimum tank size would be approximately 11400 L (2500 gal). The current method of unloading is limited to rear dump valves. Side dump valves add versatility to a Tanker operation. The NFPA standard for Tankers requires that the Tanker be able to dump its water on both sides and at the rear. The Tankers carry porta-tanks to hold dumped water at the emergency site.



Tanker with Side and Rear Dump Valves

Side dump valves allow for a faster off loading 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.



Front Mounted Suction

The Pumpers are not equipped with rear or front mounted suctions. Front or rear mounted suctions 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 suctions also allow easier access to dry hydrants and static water supplies.

The standardization of the vehicles and the equipment allows for fire fighters who respond to multiple

Station calls to know the capabilities of various apparatus from other Stations. Standardized equipment also improves emergency scene efficiency because it allows fire fighters to know where equipment is located on every apparatus. Standardizing hose, nozzles and equipment on vehicles will make it easier for Stations to work together when they are called to multiple alarm fires. In addition, it will be easier to maintain an inventory of repair materials if all Stations use the same equipment. The department participates with the Fleet Management Division in the development of standardized vehicle specifications. It is important that the personnel who will be using the equipment, have some input into the vehicle design.

The number of vehicles and their deployment has some deficiencies. There are not enough spare vehicles for the volunteer service. There is one spare Pumper, one spare Rescue and one spare Tanker. These vehicles are old and should be replaced by newer vehicles that are being retired from regular service. There is a need for more spare units. Comments were made by a number of Fire Fighters that vehicles were out of service and there was no spare unit on a number of occasions. Complete statistics were not available since this data is not tracked.

Station # 1 apparatus is equipped with traffic light pre-emption (Opticom). Selected intersections are equipped with pre-emption controls. 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 the rural areas traffic light pre-emption is not necessary. Traffic light pre-emption should continue to be added in the Chatham and Wallaceburg areas of the municipality. All new traffic lights that are installed should be equipped with the Opticom system.

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 Fire Fighting 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. Both ULC and NFPA standards should be reference in the specifications for fire apparatus.

NFPA 1915 “Standard for Fire Apparatus Preventative Maintenance Program” is the standard for maintenance of fire apparatus, which states:

"This standard defines the minimum requirements for establishing a preventive maintenance program for fire apparatus. These requirements shall apply to public or private organizations utilizing fire apparatus. The standard identifies the systems and items to be inspected, frequency of servicing and maintenance, and requirements for testing. This standard is not intended to supersede any instructions, specifications, or practices defined or required by the fire apparatus manufacturer, component manufacturer, equipment manufacturer, or the authority having jurisdiction".

The vehicle maintenance programs should comply with the requirements of this NFPA standard. The standard

will be replaced in 2007 with NFPA 1911 “In-Service Apparatus Inspection, Maintenance and Testing”. This new standard will replace NFPA 1915 along with the current NFPA 1911 and NFPA 1914. When this standard is published the current maintenance program should be reviewed for compliance.

The Fire Department has a fleet of over 60 vehicles. Each Station carries out a regular vehicle check program. Fleet Maintenance is responsible for the maintenance and repair of all vehicles. Private contractors are contracted to carry out all major repairs, safety checks, pump maintenance and annual testing. All Aerial devices are tested annually by a contractor. There were numerous complaints regarding the delays in having vehicles repaired. Foam systems were observed that have not operated for some time. Many of the vehicles are aging and require repairs. Corroded vehicles that require body work and/or painting were observed in a number of Stations. There is no spare parts stock for specialty equipment on the vehicles. One Pumper was found that could not hold air for the air brakes and does not have an air pressure maintenance system. The vehicle had to be run in the fire Station until the compressor built up sufficient air for the truck to move. In general the fleet maintenance and repair program requires review. The municipality is currently conducting a fleet maintenance program review. The maintenance of the Fire Department fleet is part of the review. There are a number of municipal facilities that could be used for fire apparatus repair. If the municipality moves the maintenance and repair of the fire apparatus in house, it will be necessary to have mechanics trained in the maintenance and repair of the specialized systems such as aerials and pumps on fire apparatus. There are manufacturer’s training programs available to train the mechanics. In municipalities where fire apparatus maintenance is carried out in a central municipal garage, scheduling is often an issue. Fire apparatus must take priority over the lawn tractors and other non-essential equipment. This is particularly an issue where there are no replacement vehicles.

Fire fighter 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 causes of the accidents. It is critical that all vehicles be properly maintained and that they pass a vehicle safety inspection. The current maintenance program is not serving the Fire Department’s needs. There is a need to have reliable spare vehicles to replace front line vehicles when they are out of service for maintenance or repair.

SCBA, hose, nozzles and small tools are sent to Station #1 for repair and testing by the full time fire fighters. The SCBA were not reviewed for compliance with CSA Standard Z94.4-93 “Selection Use and Care of Respirators”. The maintenance records for SCBA were not reviewed. It is important that all SCBA’s and cylinders be tracked for maintenance and testing.

SCBA air compressors are located at Stations 1, 2, 3, 6, 8, 11, 18, and 19. None of these compressor systems is connected to emergency power. The air quality records were not reviewed for all of the air compressors for SCBA. Test certificates were posted in some Stations. All breathing air is required to be checked and tested in compliance with CSA standards. Cascades and fill Stations are not provided on the Rescues. A new Rescue/command post is being specified that will have an air fill Station.

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.

Thermal imaging cameras (TIC) have not been provided in every fire Station. TIC cameras are provided

in Stations 1, 2, 3, 6, 8, 11, 18, and 19. The Fire Fighters in Station #8 (Thamesville) have purchased their own TIC and pay to insure and maintain it. These devices allow fire fighters to see through smoke using infrared imaging technology. Utilizing a TIC, fire fighters can easily find victims who have collapsed in smoke. The technology also allows fire fighters to see the fire through the smoke, thereby gaining quick access to the seat of the fire and effecting its extinguishment.

The imaging cameras allow the fire fighters to safely find their way through a burning building. It aids the fire fighters' 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. TICs enhance fire fighter and public safety.

A thermal imaging camera should be carried on every first line Pumper. 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.

The department does not have an assigned Quarter Master. Numerous comments were made by members of the volunteer Stations that they could not get basic equipment repaired or replaced in a timely manner. Protective clothing and small tools must be ordered from the suppliers each time a replacement is required. There is no central stores where they can access consumables for the Stations and get replacement equipment. The full time Fire Fighters are responsible for some of the coordination of repairs, however there is little supervision and accountability. There is not adequate storage space at Station #1 to store materials and equipment. Old equipment was found piled in a spare bay in Station #4. Complaints were made that the volunteers' equipment was not getting immediate attention when it was sent in for repair or maintenance. Damaged equipment was observed that had not been repaired after repairs were requested. The consultants were informed that there is no central stores that could provide this service for all of the municipal departments. Maximum/minimum inventories of consumable materials and spare equipment cannot be established since there is no person assigned to ensure that the equipment is repaired or replaced in a timely manner.

Conclusions

The safety of the Fire Fighter and the public is dependent on the emergency equipment including vehicles being kept in working order. The Fire Department members were not supportive of the current fleet maintenance program. Much of the major repair work is contracted out to businesses in Chatham-Kent. We have been advised that there are suitable municipal facilities that could be used for Fire Department vehicle maintenance. There is a need to review the Fire Department vehicle maintenance within the corporate fleet maintenance review that is currently underway.

There is a limited number of spare vehicles in the Fire Department and we are informed by the stakeholders that when vehicles are out of service there may not always be a replacement. This will result in a reduction of service.

Traffic light pre-emption is provided for some intersections in the municipality. The pre-emption system facilitates a faster response and fire fighter safety in the congested urban areas. Extending the program to other traffic lights in the community will have a positive impact on the response times of the Fire Department.

The existing aerial/Telesquirt coverage is adequate for the current risks in the municipality. In order to provide more flexibility to the Fire Commanders as Telesquirts are replaced the new vehicles should be aerial/quints. When purchasing new aerial devices the height of the ladder should be determined based upon the height of buildings in the response district.

The Fire Departments would benefit from using standard vehicle specifications for all purchases. With standardized specifications inter-operability with multiple stations will be improved.. A purchasing committee is used to establish the specifications for the fleet.

Thermal imaging (TI) cameras are not provided for all stations. TI cameras are one of the most important devices available to Fire Fighters for safe operation in fires. They allow the Fire Fighter to see through the smoke to find victims and to see where the fire is located;

There is an opportunity for the Fire Department in developing standard specifications and rationalizing the deployment of vehicles and equipment. The use of Rescue Pumpers would reduce the number of large vehicles and reduce the fleet maintenance load.

The maintenance of small tools, specialty equipment and SCBA is not well organized or tracked. In addition there is no central stores of commonly used equipment such as protective clothing, gloves, boots, spare tools, etc.

Recommendations

44. It is recommended that Pumper Rescues be provided in the volunteer stations in lieu of providing a Pumper and Heavy Rescue in each of these stations.
 - a.) It is further recommended that a personnel carrier (van 12 seat) be provided to transport additional fire fighters in volunteer stations where Pumper Rescues are provided.
45. It is recommended that an appropriate number of additional spare Pumpers and Tankers be retained in the fleet. These vehicles should be taken from the existing fleet as vehicles are replaced. The best vehicles should be retained and the oldest vehicles retired. A minimum of 3 spare Pumpers and Tankers should be retained.
46. (A) It is recommended that the Vehicle Purchasing Committee develop a standard specification for all types of emergency vehicles.
 - a.) It is further recommended that Tanker specifications should meet NFPA and ULC standards and be based upon a conventional 2 door chassis with a 11350 litre (2500 gal.) tank with rear and side quick dumps. The vehicle should be equipped with a pump, Class A 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 2250 lpm (500 gpm) and 9 metres (30 ft) of hard suction for the pump and the portable.
 - b.) It is further recommended that Rescue Pumper specifications should meet NFPA and ULC standards and be based upon a conventional 4 door chassis with a pump/rescue style body with a minimum 2250 litre (500 gal.) tank and a minimum 5000 Lpm (1050 gpm) pump with a front suction. The vehicle should be equipped with a CAFS or Class A foam system, pre-piped removable deluge, 45 mm (1 ¾ in.) and 65 mm (2 ½ in.) pre-connects, hose bed, front bumper mounted 45 mm (1 ¾ in.) pre-connect, storage compartments, ground ladders, and 9 metres 9 (30 ft) of hard suction.
 - c.) It is further recommended that Aerial/Quint specifications should meet NFPA and ULC standards and be based upon a custom or conventional 4 door chassis with a minimum 2250 litre (500 gal.) tank and a minimum 1050 gpm (5000 Lpm) pump with a front suction. The vehicle should be equipped with a CAFS or Class A foam system, pre-piped ladder deluge, ground ladders, 45 mm (1 ¾ in.) and 65 mm (2 ½ in.) pre-connects, hose bed, storage compartments, and 9 metres 9 (30 ft) of hard suction. When new Aerials are purchased the height of the Aerials should be based upon the height of the buildings that are to be protected.
 - d.) It is further recommended that personnel carriers be designed with a weight carrying capacity capable of seating 12 personnel with personal protective clothing. The vehicles should be equipped with a tow hitch for pulling specialty equipment trailers.

46. (B) It is recommended that the fleet maintenance review that is currently underway, consider having Fire Department vehicle maintenance conducted in-house by qualified technicians.
 - a.) It is further recommended that all vehicles be maintained in compliance with NFPA 1915 or its replacement standard.
 - b.) It is further recommended that all pumps and Aerials be tested annually by a qualified technician.
 - c.) It is further recommended that all vehicles be subjected to an annual safety inspection.
47. It is recommended that the equipment compliment for each class of fire truck in the fleet be standardized. Equipment such as SCBA, hose, nozzles, appliances, tools, etc. should be standardized and specified for each new vehicle.
48. It is recommended that a small tools and equipment maintenance and repair program be established that it can be carried out by on duty fire fighters.
 - a.) It is further recommended that a tracking and accountability program be put in place for the maintenance of this equipment.
49. It is recommended that a central stores be established to maintain a stock of consumables and critical equipment to ensure that emergency operations are not negatively impacted.
50. It is recommended that a traffic light pre-emption system should be installed on the traffic lights in the Chatham and Wallaceburg urban areas.

Water Supplies for Fire Fighting

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 fire fighting shall be provided for every building.*” This provision applies to all public assembly, institutional and large buildings. Where there is not an adequate water supply from water mains and fire hydrants; the owner must provide an on site water supply.

The requirements for the provision of an adequate water supply are enforced by the Building Inspection Services in each municipality. 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 Fire Underwriters Survey (FUS) Guide “Water Supply for Public Fire Protection”.

The Fire Departments must rely on various water sources to fight fires in both rural and urban settings. There are a variety of water sources in the municipality that are available to the Fire Department.

Water systems with fire hydrants are provided in the urbanized centres such as Tilbury, Wheatley, Ridgetown, Blenheim, Chatham, Wallaceburg, Thamesville, Dresden, Tupperville, Merlin and Bothwell. Highgate has a water system without hydrants that supplies potable water to the residents. The water systems in Ridgetown and Highgate are supplied by wells. Bothwell shares its water system with adjacent municipalities in Elgin County. The other water systems are supplied from water purification systems that take their water from Lake Erie and Lake St. Clair. These systems are fed from pumped reservoirs and elevated reservoirs. Most of the systems are interconnected by an extensive system of trunk mains that are run between the populated areas through the rural areas. (See Appendix ‘D’) Fire hydrants are provided on these trunk mains at intersections with concession roads. Hydrants are spaced approximately 1600 m (1 mile) apart on these trunk mains. At present these fire hydrants are to be used for direct filling of fire department Tankers and are not used for pumping. A training program has been delivered to

Senior members of each volunteer Station on the use of the trunk main hydrants. There is concern regarding the possibility of an accident causing water hammer or cavitations when these hydrants are used.

Although the hydrants on the trunk mains are used for tank filling only, this may be an inefficient method of providing water for fire fighting. Pumper relays could be used for distances up to 800 m (2600 ft.). Where the fire hydrant is more than 90 m (300 ft.) from the property, a Pumper relay is required in order to deliver the capacity of the fire pump to the fire. The new Pumpers in the fleet have a pumping capacity of 5000 liters per minute (1050 gpm). The standard supply hose used by the fire department is 100 mm (4 in.). A relay pumping set up with Pumpers every 170 m (550 ft.) can deliver 5000 lpm (1050 gpm) to the fire. Where the required fire flow is 4000 lpm (840 gpm), the distance between Pumpers can be increased to 210 m (700 ft.). Since the hydrants are approximately 1.6 Km (1 mile) apart, up to five pumping vehicles could be required at a rural fire where large volumes of water are required and a fire hydrant is available. If fire hydrants were located 300 m (1000 ft.) apart or strategic fire hydrants were installed where buildings are a long distance from a fire hydrant, the number of pumping vehicles could be reduced to two or three. The capital cost of installing a fire hydrant is approximately \$4,000.00. The capital costs could be paid through a levy for those properties that would receive a benefit by having fire hydrant coverage.

Fire hydrants are maintained by the PUC and all hydrants are flushed twice per year.

The PUC has developed a life cycle program for the replacement of the older water mains. A system study is underway to review the existing water system and the water quality, quantity and pressure available throughout the water system. This program will identify areas that require upgrading and the available water supplies for new development. The water system review should include compliance with the FUS guide “Water Supply for Public Fire Protection”. Water flow tests are normally conducted when any new development takes place to ensure that an adequate water supply for fire fighting is available. The size of elevated tanks and reservoirs are based upon the expected domestic demand plus a minimum fire protection demand for one to 9.5 hours depending on the risk. The minimum fire flow from fire hydrants that is recognized by FUS is 1000 liters per minute (lpm) (220 gpm) for a duration of two hours or 2000 lpm (440 gpm) for a duration of one hour.

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). Chatham Kent has a number of large residential properties that are 500 m² (5382 ft²) or more. The required fire flow for a 500 m² combustible construction house is 7379 lpm (1620 gpm) plus exposure protection. Water for exposures could increase the required flow to 11000 lpm (2420 gpm). Where there are areas containing these large properties, water supply calculations and water flow tests should be conducted to ensure that there is adequate protection.

The water supply requirements for industrial and commercial structures are determined by the type of occupancy, building construction, contents and processes. Large industrial facilities 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.

Emergency power for pumps is provided at all pumping Stations and treatment plants. In addition the PUC has a number of portable generators that can be used to operate facilities if the standby power systems are not operating.

The fire hydrants in most areas are not identified for the available flow with a residual pressure of 150 kPa (20 psi). 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”. The following lists the ratings assigned to fire hydrant based upon a residual pressure of 150 kPa:

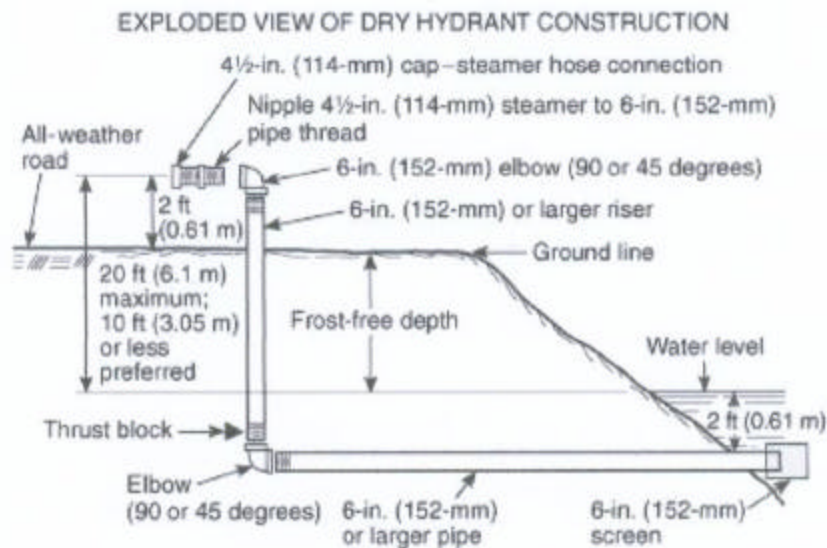
NFPA 291 “Recommended Practice for Fire Flow Testing and Marking of Hydrants”.		
Colour	Class	
Blue	AA	Over 5700 lpm (1,250 gpm)
Green	A	3780 lpm (840 gpm) to 5 700 lpm (1250 gpm)
Orange	B	1920 lpm (420 gpm) to 3780 lpm (840 gpm)
Red	C	Below 1920 lpm (420 gpm)
(lpm = liters per minute; gpm = gallons per minute)		

The other areas of the municipality do not have a water main and hydrant system and must rely on static sources or tanked water for fire fighting.

There are a number of lakes, ponds, rivers and public drains throughout the municipality that can be used for water sources for fire fighting. 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 fire department use. Dry hydrants can be used to provide quick drafting access for fire department vehicles.



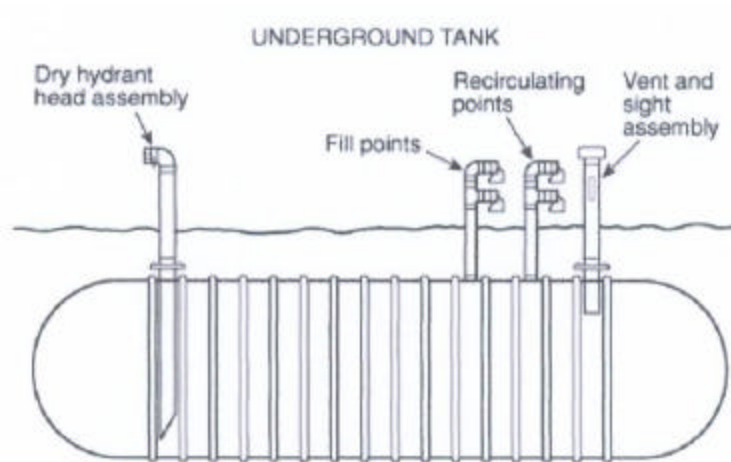
Dry Hydrant



Ponds and cisterns can also be used for fire protection. Underground storage tanks are provided in various locations in the hamlet of Highgate. Each storage tank has a 50 mm (2 in.) connection from the municipal water system for refilling. The fill rate is less than 600 lpm (130 gpm). The capacity and maintenance of these reservoirs was not reviewed as part of this study. Properties that can be protected from these static and impounded sources can receive a reduction in fire insurance. Suburban areas with limited static water supplies could benefit from the installation of reservoirs with dry hydrants. NFPA 1142 “Standard on Water Supplies for Rural and Suburban Fire Fighting” can be used for guidance in designing these types of water supplies. The maximum travel distance to a fire water reservoir should not exceed 300 m (1000 ft.).



Highgate Cistern Storage Tank



Fire Fighting Water Cistern

In those locations where there are no fire hydrants or static water sources, Fire Department Tanker shuttles must be used. The FUS has recognized Tanker shuttle programs that can maintain 2,000 lpm (440 gpm) for a duration of one hour. This is equivalent to the minimum acceptable flow for a water main and fire hydrant system. There are a number of areas in the municipality where the Fire Department could operate a Tanker shuttle to maintain this minimum flow. Those properties that are within the maximum distances allowed in a Tanker shuttle evaluation could receive a reduction in their fire insurance costs. In order to qualify for this insurance savings the FUS must conduct a study in which the Fire Departments demonstrate that they can achieve the minimum flows and duration within a specified distance to a reliable water source. A FUS Tanker shuttle study has been conducted for Chatham Kent.

Tanker shuttles present several logistical challenges. The narrow rural roads with no shoulders make coordinating a Tanker shuttle difficult. The current configuration on some of the Fire Department's Pumpers and Tankers affects the efficiency of Tanker shuttle operations. These issues are discussed in the Equipment and Apparatus Section.

The Fire Department does not have a Pre-incident Plan program for all areas of the municipality. Pre-plans should identify the locations of all fire hydrants that may be used for fire fighting at a facility. Information regarding fire hydrant locations and flows are not immediately available to Fire Fighters when responding in the residential areas. The P.U.C. has a Geographic Information System (GIS) that identifies the location of all of the municipal services including water mains and fire hydrants. Each PUC vehicle carries a lap top computer that contains all of the utilities information. This information can be made available to the Fire Department. The Fire Department would need to install lap tops in the Pumpers and implement a training program for the Fire Fighters.

Failure to provide an adequate supply for fire fighting can lead to civil litigation if there is a fire and it can be proven that the municipality did not ensure that a required water supply was provided. There have been claims against a number of Canadian municipalities for failure to provide an adequate water supply for fire fighting. 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 number of the population centers in Chatham-Kent have water mains and fire hydrants for fire protection. Fire water storage cisterns are used in Highgate to provide a water supply for fire fighting. There are a number of areas that do not have fire hydrants and must rely on Tanker shuttles or impounded water supplies for fire protection.

The P.U.C. is conducting a water supply study to determine the current status of all of the water supply systems. A life cycle program has been developed and water main replacement program is in place. Fire hydrants are operated twice per year.

Fire hydrants are installed at the concession intersections on the trunk mains that interconnect the individual water systems. These hydrants are used to fill Tankers. With proper training the fire fighters could use these hydrants for pumped water supplies.

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

There are static and impounded water supplies that could be used for fire fighting in many parts of the municipality. Dry hydrants could be used to improve access to fire fighting water in many areas of the municipality. A Tanker shuttle study has been approved by FUS for Chatham-Kent.

Fire hydrants are not colour coded to identify the available water flow.

Municipalities may have a civil liability if an adequate supply for fire fighting is not provided for those buildings identified in the Building Code as requiring a water supply for fire fighting.

Recommendations

51. It is recommended that a survey be conducted of the municipality by the Fire Department to identify all static and impounded water sources. A program should be instituted to install dry hydrants at strategic locations to facilitate water drafting by the fire department.
52. It is recommended that the ongoing life cycle review of the water system continue and that the program for water main replacement include minimum fire protection water supplies in the overall evaluation.
53. It is recommended that the fire hydrants on municipal and private water systems be colour coded to indicate fire flow with a minimum residual pressure of 150 kPa. If the water main size is required to be shown, it should be stenciled on the hydrant.
54. It is recommended that the municipality consider the installation of impounded water supplies (ponds, cisterns or reservoirs) be provided in urban areas that are not protected with water mains and fire hydrants.
55. It is recommended that a maintenance program be developed for the inspection and maintenance of dry hydrants and underground water tanks.