

Maple Ridge Fire Department



**Master Plan
2003**

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Maple Ridge Fire Department Master Plan



Executive Summary

Executive Summary

In early 2003 the Municipal Council of the District of Maple Ridge directed a review of the existing fire service delivery model and asked for advice on what the Fire Department will need to look like in order to serve a growing community. Council direction was specifically to the Fire Chiefs and the GM: Corporate & Financial Services, who then enlisted the help of the Assistant Chiefs and paid-on-call fire-fighters in developing this plan.

The Master Planning Committee Was Tasked With;

- Quantifying the fire department's current standard of service.
- Researching and developing a recommended level of service
- Identifying the gaps between the current level of service and the recommended service level
- Providing recommendations to address the identified gaps in service.

In Response To These Assigned Tasks The Committee:

- Developed a list of core services the department should deliver.
- Identified the training requirements to deliver these Core Services.
- Researched and developed recommended emergency response standards.
- Prepared a recommended frequency of fire inspections.
- Proposed a list of proactive public education initiatives.
- Quantified the statutory requirements for fire hall and equipment maintenance.
- Identified specific initiatives aimed at reducing property damage and personal injury as a result of fires.

The Key recommendations of the report support the:

- Development of a composite model of Fire Department staffing.
- Implementation of a residential sprinkler bylaw.
- Development a community smoke alarm program.
- Implementation of alarm monitoring for apartments.
- Implementation of Urban, Protected Growth and Rural Response Standards.
- Construction of Fire Hall #4 in the Albion /Cottonwood area

In summary the Master Planning Committee recommends that Council:

A peer review has been completed, the executive summary of which is attached as Appendix 6. Overall, the review was very positive and where possible, the suggestions of the review have been incorporated into the plan. As such, we recommend that Council support the need for the Fire Department to evolve to a composite Fire Department and direct staff to:

1. Arrange for a public forum to present the plan and to allow for public input.
2. Prepare a residential sprinkler bylaw.

Introduction

The aim of the Maple Ridge Fire Department is to protect and preserve life, property and the environment for the citizens of Maple Ridge. Services are provided by a group of 95 dedicated paid-on-call fire-fighters, six full-time officers, and two administrative support staff.

In early 2003 the Municipal Council of the District of Maple Ridge directed a review of the existing fire service delivery model and asked for advice on what the Fire Department will need to look like in order to serve a growing community.

This Master Plan is consistent with council direction and the district's strategic plan.

Specifically, the financial management section of the strategic plan speaks to:

- Provision of high quality municipal services to our citizens and customers in a cost effective and efficient manner.
- Use of a formal business-planning framework as a means for structured decision-making and to guide resource allocation.

The Safe and Livable Community Section of the plan speaks to:

- Establish neighbourhood and community education programs.
- Develop preventative as opposed to re-mediation initiatives.

Methodology

The methodology for the development of this plan follows. This approach was discussed in advance with the fire chiefs of two nearby municipalities and both agreed with it. The participants in the process were management staff, fire-fighter representatives and selected Fire Chiefs as peer evaluators.

1. Agreement on Process

The process for developing the Master Plan was discussed with Municipal Council and the participants and received everyone's support. The process agreed to was:

- i. Draft report development
- ii. Peer review
- iii. Presentation to Council and fire-Fighters
- iv. Public input
- v. Adoption by Council

• Understand context of Master Plan

An appreciation of the environment in which we operate was deemed essential. The District's Director of Planning provided insight into past & future growth patterns for our community. The GM: Corporate & Financial Services provided information on the financial capacity of the District.

• Current Services & Standards

The services performed by the department, and the level at which they are performed was discussed in order to come up with a common understanding of our existing service levels.

• Proposed Services & Standards

Services were reviewed in order to determine the level at which we should be performing them. Such levels were established after considering the demands on the service, the legal requirements as well as by looking at standards in like departments.

• Gap Analysis

The gaps between the desired standard and our existing service levels were identified and prioritized.

- **Alternatives for Addressing Gaps**

The alternatives for addressing the gaps were identified and evaluated for their efficiency and effectiveness.

- **Recommendations**

The suggested recommendations, their sequencing & timing is identified.

- **Follow-up**

A process for evaluating the outcomes for the decisions that are made is suggested.

Comprehensive Fire Safety Effectiveness Model – (Ontario Fire Marshal)

Why Compile a Fire Department Master Plan (Ontario Fire Marshal)

Every fire department should be guided by a master or strategic plan. This Community Master Fire Protection Plan traditionally focused on the identification of fire hazards and planning an appropriate suppression force response. Today, hazard or risk assessment has expanded well beyond the fire problem in the community to include emergency medical incidents, hazardous materials incidents and many other emergency situations. Paradigms are being shifted to emphasise the concept of fire prevention and control systems as communities attempt to effectively reduce losses experienced. This document should include plans for human resources and program financial support as well as the many external influences that impact the fire service.

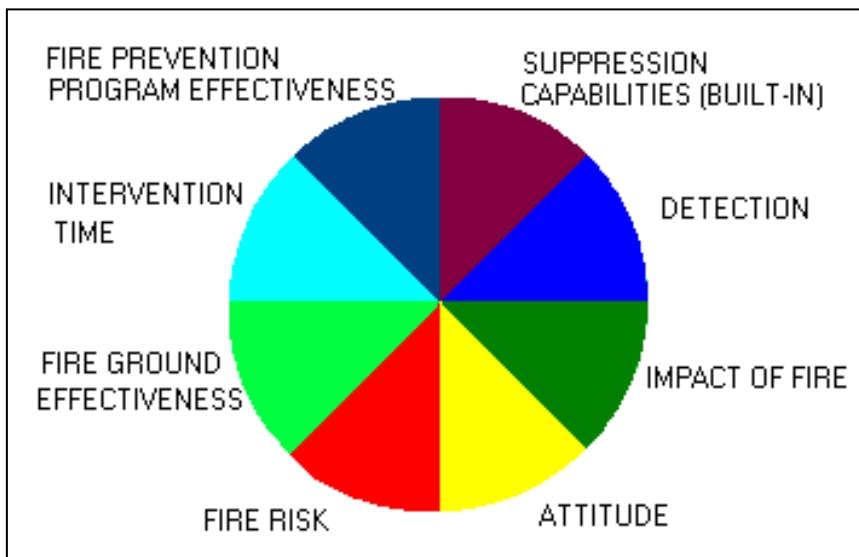


Chart 1:

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

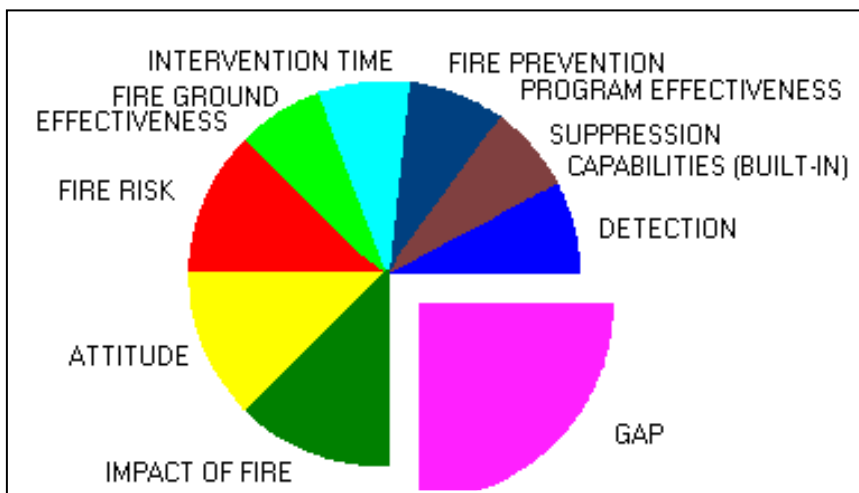
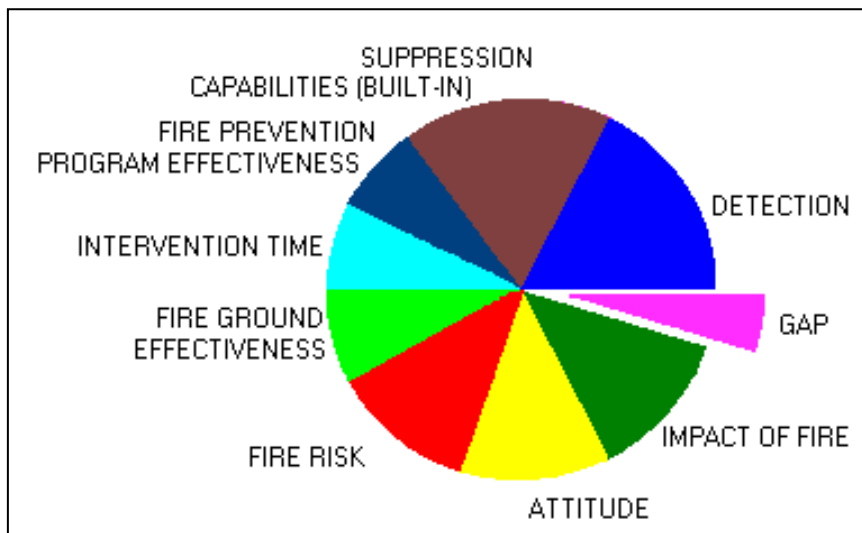


Chart 2:

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

Chart 3:

This chart shows how the “gap” can be reduced by strengthening a number of factors in order to increase the overall level of protection provided to the community.



Eight key factors have been identified which affect fire losses in Ontario. Together, these factors have been conceptualized into the Comprehensive Model. The completed model will serve as a basis for an objective evaluation of [fire protection services](#) in a municipality. Application of the model provides an opportunity to maximize the effectiveness of the fire protection services while ensuring an appropriate level of health and safety for the fire fighters. Each of the eight factors will in reality contribute differently to the total level of protection provided to a community.

1. Impact of Fire

Fires result in deaths, personal injuries and substantial property loss, including damage to the environment. Factors, such as the historical value of certain properties and the tax assessment value of property in the community, should also be taken into account. In many cases, the loss of a particular occupancy in a community has an adverse impact on the local economy. Examination of such factors will help to determine the potential impact of the fire on the community.

Fires may also have a negative psychological impact on victims, but that effect will not be evaluated within the scope of this study.

2. Fire Prevention Program Effectiveness

Legislation, regulations (codes) and standards pertaining to fire safety focus primarily on fire prevention. Enforcement of these codes is one of the most effective ways of reducing the loss of life and property due to fire. As such, the development, administration, and enforcement of fire safety legislation is an important component of the Comprehensive Model. In addition, more emphasis needs to be placed on educating the public about general fire safety principles. Public fire safety education has the potential to substantially reduce the loss of life and property due to fire.

Although it is difficult to quantify the results of fire prevention - one cannot count the number of fires that did not occur - effective prevention and public fire safety education are likely to have a direct and substantial impact on reducing the demand on emergency response services.

3. Public Attitude

It is generally believed that North Americans tend to be more complacent about fires and the resulting losses than in other parts of the industrialized world. North American society tends to accept the consequences of fire and offers community support and comprehensive insurance packages to mitigate damages.

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

4. Fire Risk

The characteristics of an individual community will affect the level of fire risk to be protected against. For example, older buildings pose a different set of problems than new buildings built to modern construction codes. High-rise, commercial and industrial occupancies, each pose additional factors to be considered. Construction, occupancy type, water supply, exposure between buildings, modern furniture and furnishings, and the risk which the combination of these factors pose to the occupants, constitute the fire risk component of the Comprehensive Model. Fire risk can be reduced by effective built-in suppression and/or protection measures.

Notably, response to single family, detached residential occupancies accounted for approximately 36% of all fire alarms and 46% of all fire related deaths in Ontario in 1988-1992.

5. Detection Capabilities

Fire detection notifies occupants and allows them sufficient time to escape. It may also allow for earlier notification of the fire department. Widespread use of early warning detection systems have the potential to significantly reduce [notification time](#), which, when coupled with effective fire department suppression, produces a corresponding reduction of loss of life, injuries and damage to property from fire.

6. Built-in Suppression Capabilities

Built-in suppression refers to the fixed fire protection systems in large buildings, normally associated with assembly (ie. theatres), commercial, industrial, and manufacturing complexes, and to a lesser extent residential occupancies. These systems, such as automatic sprinkler protection, play an important role in minimizing the effects of fire by controlling the spread and growth of the fire, thereby enabling the fire department to extinguish the fire more quickly and easily.

Although effective in newer buildings, it may be difficult, if not impossible, to design built-in suppression systems that can effectively control fires in wall cavities and concealed spaces associated with certain older construction or reconstruction. Therefore, the extent to which built-in suppression systems are in use, the effectiveness and reliability of these systems, and the age of the buildings in the community, will have an impact on the demand for fire fighting services. To be considered as an effective method of providing fire protection services the complete area under consideration must be equipped with built-in suppression capability. This will, therefore, be a long-term strategy for implementation. This long-term strategy must consider a fire department's involvement in medical aid response in relation to the associated response time considerations.

While built-in suppression systems may decrease the demand placed on fire department suppression services, they may increase the demand placed on in-service fire prevention inspections and associated activities.

7. Intervention Time

Intervention time, for the purposes of the Comprehensive Model, is defined as the time from ignition until effective fire fighting streams can be directed at the fire. Factors that affect intervention time include, but are not limited to:

- the time required to detect the fire
- notification time from the public
- notification time to the fire-fighters
- [preparation time](#) for the fire-fighters to leave the station
- the distance between the fire station and the response location

- the layout of the community
- impediments such as weather, construction, traffic jams, lack of roads
- set-up time
- type and size of the building involved

Fire department intervention time is crucial in determining the consequences of a fire in terms of deaths, injuries and loss of property and damage to the environment. Effective fire prevention and public education programs can reduce intervention time. In turn, reducing intervention time can significantly increase fire department effectiveness. Further information on response and intervention time is included in on page 30.

8. Fire Ground Effectiveness

A fire department's fire ground effectiveness affects the degree of damage to the environment, property loss, personal injury and death from fire. It is, therefore, an important component of the Comprehensive Model. The eleven factors that affect a fire department's fire ground effectiveness are outlined in Part III.

Existing and Future Growth Patterns

The population of the District of Maple Ridge has been growing at an average rate of approximately 2.5% for the past several years and this trend is expected to continue. Maple Ridge is one of the fastest growing communities in the province. The GVRD expects to see our community with a population of approximately 130,000 by the year 2021. The Fraser River Crossing (now scheduled for completion in 2007) will impact our municipality and it is anticipated that it may accelerate growth in the short term.

We are a young community – 30% are between the ages of 0-19 years (compared to 24% for the GVRD). The average median age of Maple Ridge residents is 36.7 years. The seniors' population has risen slightly as well; 11% of our population is 65+ years. Younger families and seniors are attracted to our municipality for its affordability, location, and public amenities.

Much of the construction in Maple Ridge has been in small, single-family residential housing and townhouses. The market for residential development remains strong. We have a very small commercial/industrial base, which limits our ability to provide local jobs. This is something that will be addressed in our review of the Official Community Plan during the next couple of years. We might also see some synergies resulting from the downtown core project.

In terms of the existing Official Community Plan, the Silver Valley area is designated as "Urban" area. There is a 10-15 year supply of lots in Silver Valley and at build-out it will be home to approximately 11,000 people. The east will remain relatively rural, and Albion is expected to be built out in about four or five years. Increasing density within the urban area may also be an option to provide variety in housing.

Financial Health of the District

The District has taken on significant financial commitments over the past few years, the financial obligations for which are included in the 5-year financial plan.

Proposed General Revenue Surplus

	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>	<u>2007</u>
Surplus	\$42,543	\$242,409	\$23,217	\$31,504	\$1,206,525

* This financial picture should not be considered a static document. It is based on current assumptions and projections.

Maple Ridge Fire Department Master Plan



Summary of Services Provided

Maple Ridge Fire Department Master Plan

Emergency & Routine Response:

(For detailed information, see Appendix 1 – Page 30)

Description

The Fire Department is currently staffed with six fulltime officers and 95 paid-on-call fire-fighters. Three Fire Halls are strategically located in the east, central and west sectors of Maple Ridge providing fire protection, rescue and extrication, and a range of other emergency responses to residents and visitors to our community.

Responses can be categorized into the following general areas:

- Structure Fires
- Other Fires
- Response to alarms
- Rescue
- Medical Assist
- Hazardous Material
- Electrical
- Burning Complaints

Standards of Service:

Two factors were identified as comprising the standards of service. The first was response time, and the second the range of services provided. In regard to the range of services provided the Committee compared the services that the department currently provides, to a list of recommended fire department services published by Ontario Fire Marshal's Office. Currently the British Columbia the Office of the Fire Commissioner does not provide recommendations in regards to core services and response criteria.

The current *response times of the three Fire Halls were analyzed. It was determined that 90% of the time the first truck would arrive on scene, in 16 minutes and under in Halls #1 and #3's area and in 22 minutes in Hall #2 area. Under the current system there is no guaranteed level of response however historical data indicated that there was a consistent response of at least one truck from Fire Hall #1. Fire Halls #2 and #3 cannot be relied upon to provide fire-fighters during the day and are therefore covered by Fire Hall #1. (see Appendix 1, Table 1 & 2 – page 40, 41)

* Response time refers to time from Dispatcher receiving the call until the first truck is on scene

Gaps between Services Provided and Standards

A comparison of the services that the fire department currently provides, to the Ontario Fire Marshal's list of recommended core services, identified gaps in service delivery (see Appendix 1, Table 3 – Page 42, 43). These gaps were primary in the area of technical rescue, hazardous materials and transportation incidents. Other services are being provided on a limited basis, in comparison to the core services list.

Models of response were obtained from the National Fire Protection Association (NFPA), Ontario Fire Marshal's Office, Workers Compensation Board (WCB) and the Surrey Fire Department.

Upon exploring these standards the committee developed three levels of response for different areas in the municipality. The three levels of response would be based on three factors. The first factor is the level of demand for service. The second is the risk of exposures and consequences if the fire was to spread beyond the building of origin. The third is the level of fire Suppression built into the structure. Using these three factors and in comparison to recognized standards three levels of response were proposed.

Maple Ridge Fire Department Master Plan

Urban Response Standard - Risk Analysis

- Based on an area of high frequency of emergency calls
- High probability of exposures and high possible spread of fire to adjacent structures
- Predominately not protected by built in suppression systems (sprinklers)

Growth Area Standard- Risk Analysis

- Based on an area of medium demands for service
- High probability of exposures and lower possible spread of fire to adjacent structures
- Recommendation to mandate protection by built in suppression systems (sprinklers)

Rural Response Standard- Risk Analysis

- Based on an area of low demands for service
- Low probability of exposures and possible spread of fire to adjacent structures
- Predominately not protected by built in suppression systems (sprinklers)
- Proposed regulations for sprinklers in new structures

Proposed Standards of Response for Maple Ridge Fire Department

Maple Ridge Fire Department Deployment Model - <u>Current</u>	<ul style="list-style-type: none">• No guaranteed level of response• No minimum response time requirements• Four members on scene before interior attack occurs• Must apply water to the fire within 2 minutes of arriving on scene
Maple Ridge Fire Department Deployment Model - <u>Proposed Urban</u>	<ul style="list-style-type: none">• Total of 12 personnel required to be on scene in 12 minutes or less (dispatch, turnout and travel time)• First four personnel required to be on scene in 7 minutes or less (dispatch, turnout and travel time)
Maple Ridge Fire Department Deployment Model - <u>Proposed Rural</u> (East of 248 street)	<ul style="list-style-type: none">• Total of 12 personnel required to be on scene in 22 minutes or less (dispatch, turnout and travel time)• First four personnel required to be on scene in 18 minutes or less (dispatch, turnout and travel time)
Maple Ridge Fire Department Deployment Model –* <u>Protected Growth Areas</u>	<ul style="list-style-type: none">• Total of 12 personnel required to be on scene in 16 minutes or less (dispatch, turnout and travel time)• First four personnel required to be on scene in 11 minutes or less (dispatch, turnout and travel time)

*Protected Growth Areas are areas, which would have a requirement for residential sprinklers and are in transition from a rural density to an urban density. Once these areas approach a density level comparable to the urban areas, the standard for response would revert to the Urban Response Standard. Currently these areas are identified as the Albion/Cottonwood Corridor and the Silver Valley Area but could extend if development commences in other areas of the municipality.

The options are designed to only meet the needs of a First Alarm assignment, which would be the typical single family structure fire. If more than one incident occurred at the same time or the incident was larger or more complex, it would require a second or third alarm assignment staffed by paid-on-call fire-fighters.

Maple Ridge Fire Department Master Plan

Identified Minimum Manpower Requirement For First Alarm Assignment As Follows:

- Incident Command – 1
- Pump Operator - 1
- Attack Line – 2
- Back up Line - 2
- Support Person for each attack and back up line, Hydrant Lay, Utility Control and Forcible Entry and Ventilation – 2
- Victim Rescue Team – 2
- RIT Team – 2
- **Total of 12 fire-fighters**

Additional Remedial Measures (see Appendix 1 - Page 34)

The Committee identified six methods to reduce property damage and personal injury.

2. Institute the installation of residential sprinkler systems
3. Adopt the three standards of response, Urban, Protected Growth, and Rural.
4. Hire fulltime career fire-fighters to match the response standards.
5. Construct Fire Hall #4 as soon as possible to match the response standards.
6. Require mandatory monitoring of alarm systems in apartment complexes.
7. Develop a community smoke alarm program

Alternative Options

The committee explored the option of only constructing additional fire halls and increasing the paid-on-call staffing. This option proved to be problematic and was not recommended by the committee. Additional paid-on-call staff would not enable the Fire Department to meet the proposed Urban Response Standard. It is also reasonable to expect that additional fire halls would experience difficulty attracting daytime available fire-fighters and not be able to meet the gap in services offered.

Recommended Option

The model recommended by the committee is a composite Fire Department. This model would consist of a core group of fulltime career fire-fighters backed up by paid-on-call fire-fighters. At the completion of the phasing there would be 16 fulltime fire-fighters on duty 24 hours a day supported by paid-on-call fire-fighters.

A significant contingent of paid-on-call fire-fighters would have to be retained to provide support to multiple and large incidents. The committee recommends a phasing in the hiring of 80 fulltime fire-fighters

Additional Benefits

The proposed infrastructure and manning is based on delivering the Urban, Protected Growth and Rural Response Standards. Once this infrastructure has been established additional value added services such as increased medical response and specialized rescue could be provided.

Fire Hall Construction and Paid-On-Call Staffing Triggers

Based on the history of Maple Ridge Fire Hall #2 and similar rural fire halls in the Township of Langley, construction of a fire hall manned by paid-on-call fire-fighters can be supported.

Maple Ridge Fire Department Master Plan

- When call volume is projected to exceed 100 calls/year in the area.
- When sufficient residential development has occurred to support a base of paid-on-call fire-fighters. Estimates are at least 1,500 residential units and a population of 4,000-5,000 people are required to support a staff of 25 paid-on-call fire-fighters.
- Fire Hall #5 (Silver Valley) would meet these criteria in 2008-2010.

Parameters Required to Establish Career Fire-Fighter in an Area.

- When there is a community desire to provide an Urban Response Level (first truck on scene in seven minutes.)
- When the existing paid-on-call fire-fighters can not provide a reliable response. Most often during the daytime.
- When the pressures on paid-on-call fire-fighters, of excessive call volume, cannot be relieved by a platoon system or reducing the hall's response area.
- Excessive call volume has been described by paid-on-call fire-fighters to be from 350 to 500 per year.
- All projections are based on current level of service provided.
- Estimated time frames would change if department increased attendance to medical calls or growth in the areas was faster than projected.

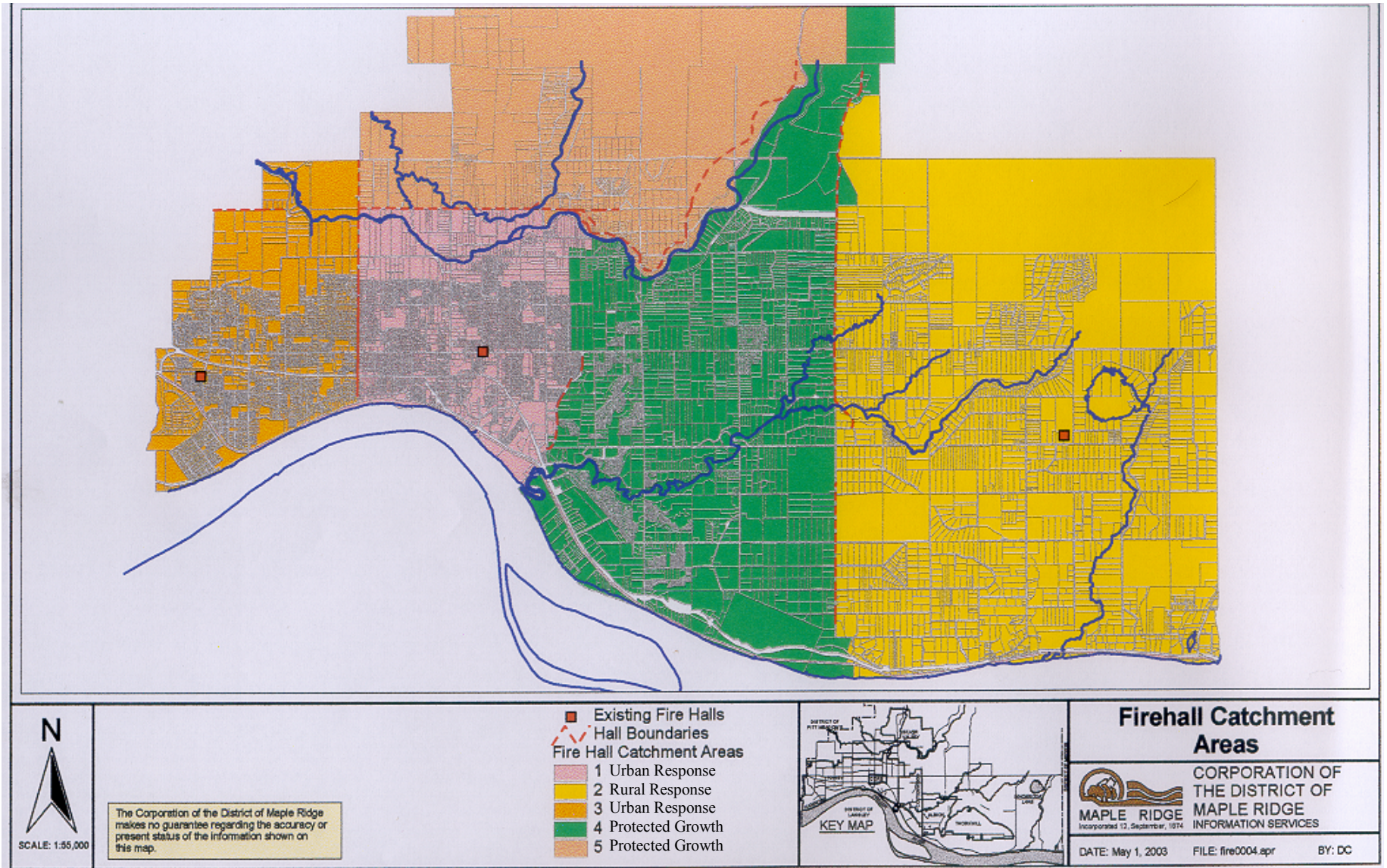
Cost of Bridging the Gaps:

The costs to hire full-time fire-fighters could be phased in. At the completion of the six years, the total cost to hire 80 fulltime fire-fighters would represent a 6.8 million-dollar increase to the fire department operational budget.

There would also be Capital costs involved in the construction of Fire Hall #4, new fire trucks for Fire Hall #4 and renovations and upgrades to Fire Hall #1 and #3. The cost of constructing Fire Hall #4 is included in the current long-term capital plan. Current funds have also been allocated for upgrades to Fire Hall #1 and #3 in the Capital Plan. However a review would have to be conducted to determine if sufficient funds have been allocated. In addition, as a result of increased capital infrastructure, the amount of operational transfer to the Fire Department Capital Acquisition Reserve fund would require review.

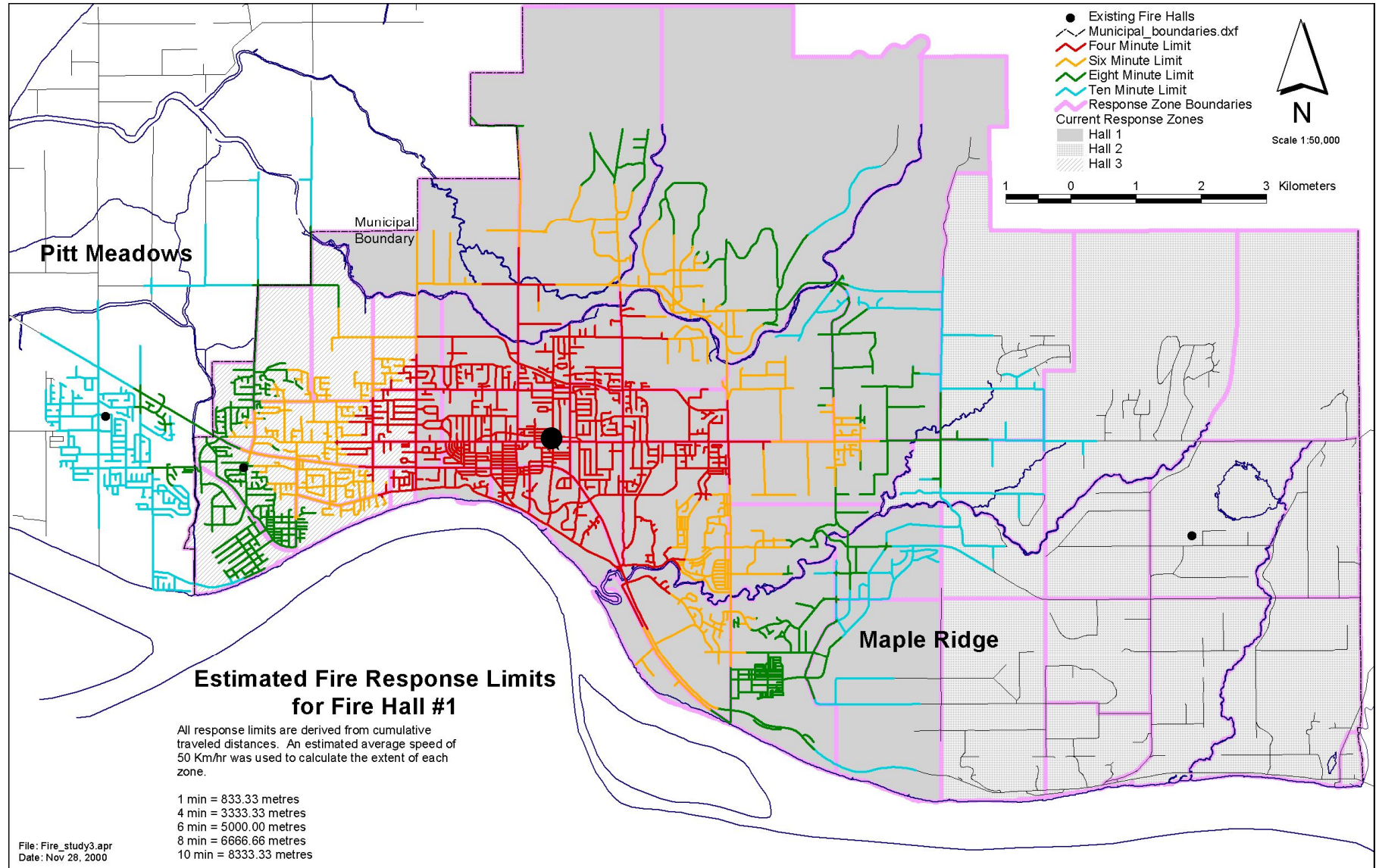
Maple Ridge Fire Department Master Plan Summary of Service Areas

Proposed Fire Department Response Zones

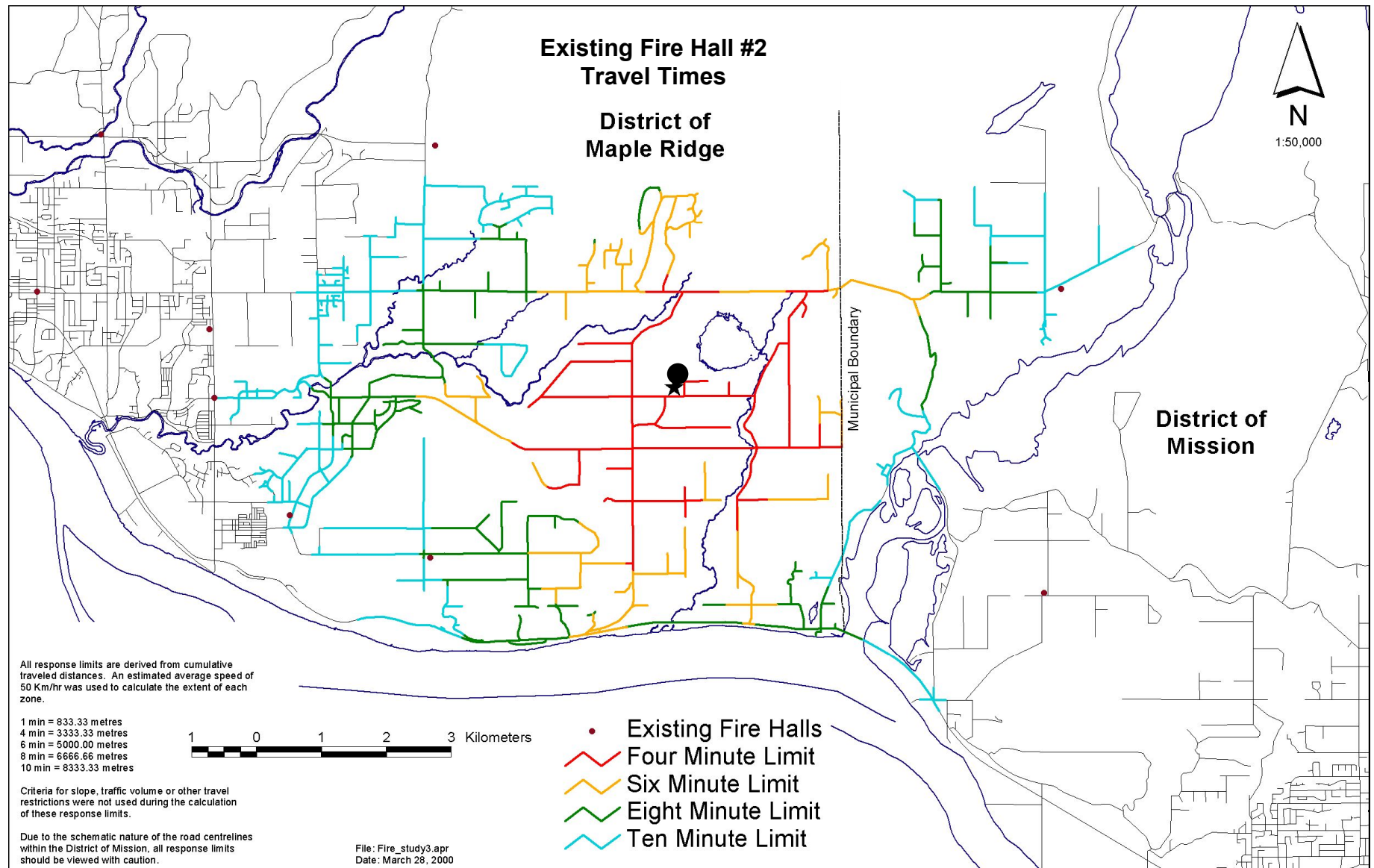


Maple Ridge Fire Department Master Plan Summary of Service Areas

Existing Fire Hall #1 Travel Times

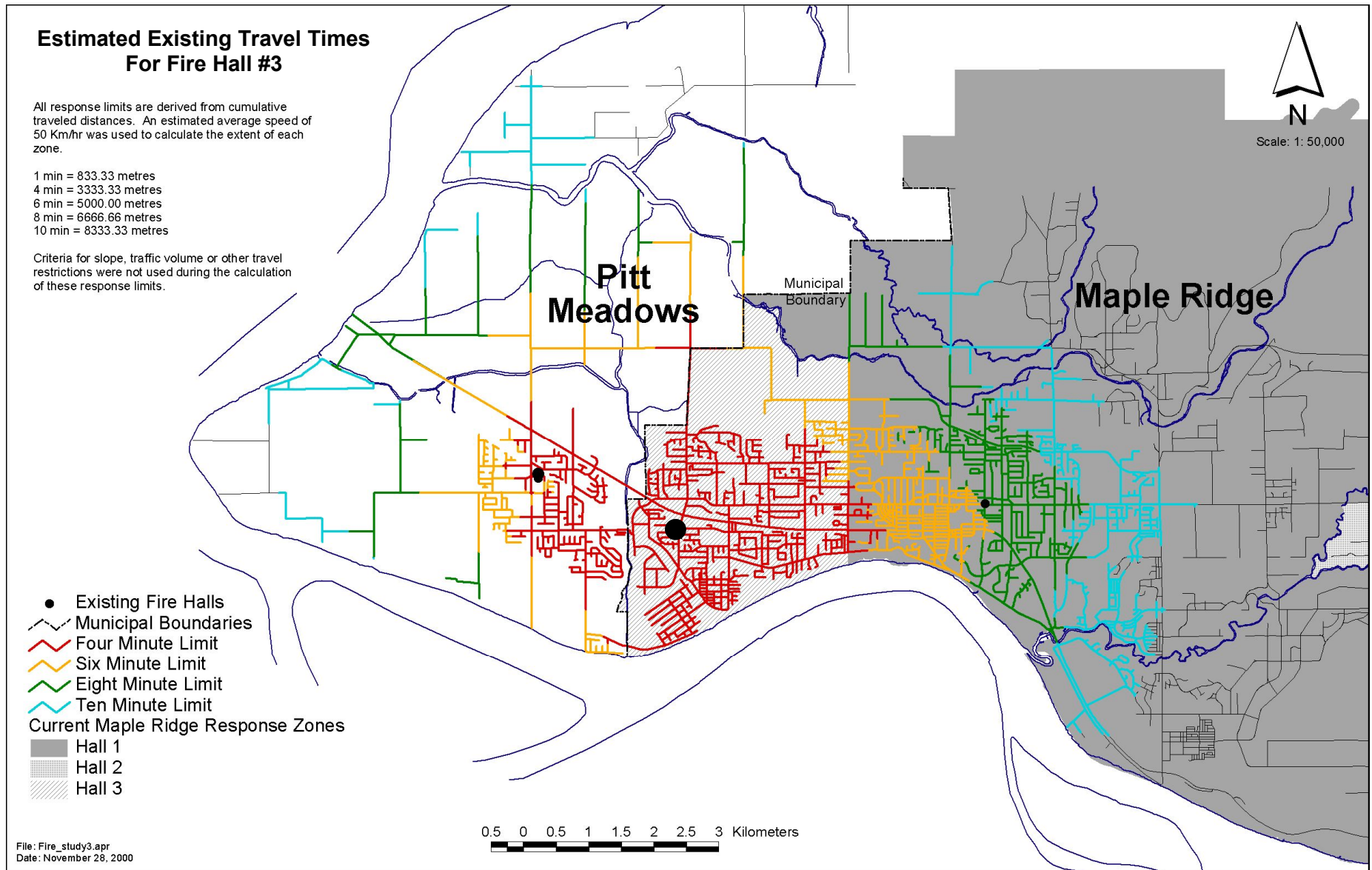


Maple Ridge Fire Department Master Plan Summary of Service Areas



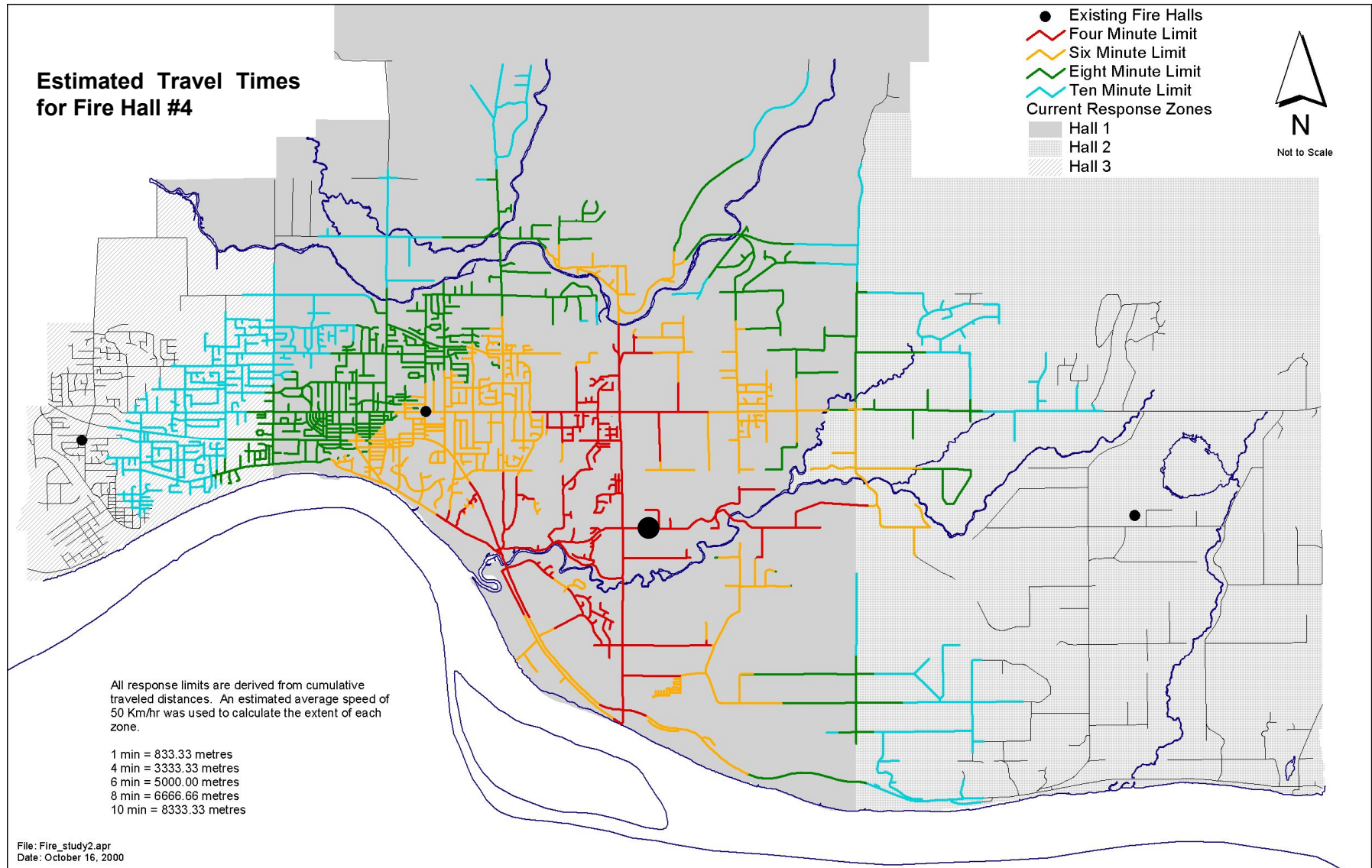
Maple Ridge Fire Department Master Plan

Summary of Service Areas



Maple Ridge Fire Department Master Plan Summary of Service Areas

Proposed Fire Hall



Maple Ridge Fire Department Master Plan

Summary of Service Areas

Fire Prevention/Inspections:

(For detailed information, see Appendix 2 – Page 52)

Description: The Fire Prevention Division focuses on a proactive rather than a reactive approach to the fire and life safety in our community.

Fire prevention activities include:

- Ensuring that building and life safety systems (fire alarm, and sprinklers, emergency lights etc.) are maintained as required and that people can safely exit the structure during an emergency.
- Collecting important information for our pre-fire planning program to assist our fire-fighters to safely and effectively respond to emergencies.
- Educating the building owners and managers on the importance of fire safety and code compliance.
- Identifying alterations and changes in use of existing buildings that may have been performed without benefit of the building permit process. These unauthorized changes often compromise the original fire & life safety design of the building.
- Reviewing plans for new buildings and subdivisions to ensure fire department concerns are addressed at the earliest design stage.
- Conducting fire cause and origin investigations, and reporting findings to the Provincial Fire Commissioner's Office.

While the goal of a fire and life safety inspection may seem obvious to some, it is important to realize that on-site inspections serve as the corner stone to the departments ability to respond to an emergency in a safe and efficient manner.

Standards of Service:

Fire Prevention activities are mandated by the Provincial Fire Services Act and our own Municipal Fire Prevention By-Law that references the National Fire Code of Canada.

Current legislation allows communities to adopt a regular system of inspection, and attached to this report is a recommended frequency of inspection for Council's consideration.

Gaps between Services Provided and Standards:

The Fire Department's "historic goal" of annual and semi-annual inspection of occupancies is no longer achievable due to the ever-increasing size of our community and current lack of staff. There are buildings in the District that have not been inspected in over 3 years, and this is a risk management issue for the District. Even under a revised frequency of inspection (contained within this report), the following has been identified as significant gaps in our fire prevention activities.

The District currently has approximately *2,200 occupancies subject to inspection on a regular basis. Increasing annually.

Presently there is approximately 2,800 person-hours dedicated to fire prevention activities. (Our Assistant Chiefs, Morris and Smitton are currently performing these inspections, and additional management duties are constantly competing for their time.)

To complete the fire prevention activities addressed in this report, there is a required time commitment of approximately 5,400 person-hours.

With the existing 2,800 person-hours that are available there is a service gap of approximately 2,600 person hours.

* Examples can be found in Table 3, Page 55.

Maple Ridge Fire Department Master Plan Summary of Service Areas

Options to consider:

- To hire additional fulltime inspector(s) to perform fire/life safety inspections.
- To train and schedule paid-on-call fire-fighters to perform fire/life safety inspections during their available time. (*Existing paid-on-call fire-fighters may not have any additional time.)
- To train full-time fire-fighters to perform fire/life safety inspections in addition to their response duties.

Cost of Bridging the Gaps:

The cost of bridging the gap of 2,600 man-hours would depend if there were dedicated inspectors assigned or performed by full-time fire-fighters.

Maple Ridge Fire Department Master Plan

Summary of Service Areas

Public Education:

(For detailed information, see Appendix 3 – Page 60)

Description: Public Education is a proactive service rather than a reactive one. It is the transferring of knowledge to the public, and translating it into simple actions for people to take to reduce injury or prevent loss of life and property.

Standards of Service:

The preferred model would allow a consistent and effective delivery of public education programs in the following areas:

- High Risk Groups
 - Children – pre-school, elementary grades, guides/scouts...
 - Seniors – independent, assisted living and care facilities
 - The Arson Prevention Program (TAPP-C)
 - Apartment/condominium dwellers – high occupancy structures
- Smoke Alarm Program
- Emergency Preparedness
- Extinguisher Training
- Safety Plans and Evacuation Training
- Youth Academy and Cadet Program

Gaps between Services Provided and Standards:

The current model does not guarantee availability of paid-on-call fire-fighters for delivery of programs. As such, all events are booked so that Assistant Chief Juurakko can cover the presentation should fire-fighters not be available or should they cancel. This limits new program development and delivery as well as more aggressive marketing of existing ones. School programs are often booked with several classes combined together for presentations in order to get all classes done. This is less than ideal, especially with primary grades.

Alternatives:

One alternative is to have career fire-fighters on staff that can be relied on to assist in the delivery of programs. Reliability comes about with more than one crew of fire-fighters on duty. A second alternative is to follow Langley Township's model and hire full-time educators to deliver programs. They currently have three educators on staff. A third alternative is to utilize paid-on-call fire-fighters that are freed up by career fire-fighters attending to emergency calls.

Cost of Bridging the Gaps:

To bridge the gaps, an additional 3,237 fire-fighter-hours are needed to complete all desired programs.

Maple Ridge Fire Department Master Plan

Summary of Service Areas

Training:

(For detailed information, see Appendix 4 – Page 69)

Description

Training refers to the level at which we train our members to enable them to respond to calls for service in a safe, effective and efficient manner.

Competency training is usually conducted in one of two formats depending on whether the skills in question have been previously mastered or if they are new skills.

- Initial training to “Master” new skills and
- Maintenance training to “Maintain” skill mastery.

Generally, courses like our recruit-training program provide our members with initial training to master new skills and our weekly training period provides maintenance training.

Standards of Service:

Several qualifications have been accepted by the Fire Commissioner’s Office as standards of training however they are not compulsory. The Workers’ Compensation Act of B.C. sets out general statutes requiring training by the employer, (to ensure that all employees are trained prior to starting) and driver qualifications are required by the Motor Vehicle Act.

The core competencies have been identified from those services that we are presently called for by our customers. Mastery and subsequent maintenance of skills is required to meet those core competencies.

Currently we provide training during the weekdays, (except long weekends), mostly maintenance training, in 2½ hour sessions. Longer courses are scheduled for the weekends and usually consist of initial training programs in 8 or 16-hour blocks.

Gaps between Services Provided and Standards:

With the widening disparity of call for service many new disciplines need to be examined and introduced. Deficiency in the fire-fighter skills is a mounting problem as practice time is limited. Different models of training delivery to meet the needs are required (see alternatives listed below).

Currently the demand for competency training far exceeds the time available for even the most basic of core competencies. As technology and the scope of calls widens more time shall be required for those skills and also to meet the needs of their maintenance.

Alternatives:

There are essentially three alternatives available at this time and each will be discussed in a sequential order

1. Increasing the training time available for the members to obtain competency training to meet the needs of the customers.
2. Train full-time career members. As a matter of employment the members would be required to maintain their core competencies to meet the needs of the customer.
3. Continue, as we currently are by not meeting the demands of the core competencies.

Maple Ridge Fire Department Master Plan

Summary of Service Areas

Cost of Bridging the Gap:

There are costs associated to each of the three alternatives listed in the previous section; each will be discussed in a sequential order.

1. Increase Paid-On-Call Training

The cost of bridging the gaps includes two resources financial and time, where finances refers to monetary issues and time refers to the time that fire-fighters have and are able to provide to training.

a. Financial and practice time are closely associated, therefore any increase applies not only to the fire-fighter wage budget but the time requirements as well. Practice time is restricted to 2.5 hours per week to a maximum of 42 weeks per year, commonly Monday nights or Friday mornings.

- In order to meet the basic core competencies: (those most basic skills that keep fire-fighters safe), an increase of nearly 150% is required over the amount of time the average fire-fighter already commits.
- To meet the required core competencies, (those skills that fire-fighters need for safety and to meet the present average call complexity), an increase of nearly 250% is required over the amount of time the average fire-fighter already commits.
- Finally, to meet those competencies required in the near future, an increase of over 475% is required over the amount of time the average fire-fighter already commits.

b. Additionally, it can be presently demonstrated that the department members cannot maintain the required 75% minimum time for training as stipulated in their job descriptions. Therefore, demanding increases in time is ineffectual as this indicates that the average member is giving all the time that they possibly can.

2. Train Career Members

Financial resources are required to staff the department with full-time equivalent positions, (a recap of these is available in operations section). However, the costs of training, (both financial and time), will not decrease for the average paid-on-call member until sufficient career members are in place to allow for a reduction in the required paid-on-call core competencies.

3. Continue Current Practices

This option does not meet the need to protect us from liability or the needs of our customers. As time required for training exceeds the time available, (both from the department and the member), a more proactive program would be more desirable.

Other Considerations

To strengthen the service delivery to the customers, several initiatives have been investigated and are in the planning stages for implementation. The demand for quality and accredited training had prompted the Department to seek Accreditation by Delegation for The International Fire Service Accreditation Congress (IFSAC), from the Justice Institute of B.C (JIBC), Fire Academy and Fire and Safety Training Centre (FSTC) for approved courses. Once obtained, accreditation by delegation will allow the Department the authority to formally recognize our in house training programs.

Further, the Department is investigating initiatives to supply the FSTC with resources to build their training prop and apparatus inventories. These initiatives will allow our relationship with the FSTC to continue whereby access to the Training Centre will continue to allow us to meet the needs of our training demands.

As training demands reflect those of our calls for service and as the complexity of those calls continues to become more difficult, additional resources may need to be considered in the way of full-time additional. Fire Training Officers.

Maple Ridge Fire Department Master Plan

Summary of Service Areas

Hall & Equipment Maintenance:

(For detailed information, see Appendix 5 – Page 84)

Description

Hall, equipment and grounds duties are those tasks that are related to the safety and preparedness of the department to answer calls for service. These duties ensure that: the apparatus are safe and operable, the equipment on board each apparatus is safe and operable, and that the halls are clean and safe to work in.

Standards of Service

Mandatory standards or regulations apply to many of the duties. The Motor Vehicle Act, WCB and NFPA regulation or standards govern those duties pertaining to the apparatus. When dealing with specific equipment: e.g. Self Contained Breathing Apparatus (SCBA), WCB and Canadian Standards Association (CSA) are the applicable regulation or standards. These regulation or standards dictate the how and when inspections and/or maintenance is required.

Gaps between Services Provided and Standards

The time required to ensure completion of these duties is extensive, in fact it is considerably more than what is presently committed. An additional 2,100 fire-fighter hours is required to complete the hall and equipment duties.

Alternatives

There are three alternatives to offer at this point:

8. Continue practice as it is done presently.
9. Routinely schedule paid-on-call members to complete the required work and affix requirements for all members to attend a set number during the year. (Current members may not have any additional time to devote.)
10. Include hall and apparatus maintenance duties into the duties of career members. As a matter of employment the members would be required to maintain equipment and apparatus to the applicable regulation or standards.

Cost of Bridging the Gaps:

The costs associated to the alternatives are reviewed sequentially:

11. As time required for these duties exceeds the time available, (both from the department and the member), a more proactive program would be more desirable.
12. There is no cap on the time the fire-fighters have to complete these inspections and duties, but yet we are in a continuous shortfall situation with not enough time to complete them. Again adding to the time burden that the fire-fighters currently have would seem to create negative results where the time would be taken from other areas that have been dedicated to the fire department.
13. Financial resources are required to staff the department with full-time equivalent positions (a summary of these is available in Estimated Cost of Staffing section).

Maple Ridge Fire Department Master Plan



**Estimated Cost of Staffing Options
and
Comparative Costs and Benefits of
Current Fire Department**

Maple Ridge Fire Department Master Plan

Estimated Cost of Staffing Options

Estimated Cost Of Staffing Options

Unit Staffing Costs

Current paid-on-call wages \$577,000 divided by 95 fire-fighters equals an
Average annual cost of \$6,075.00/paid-on-call fire-fighter.

Fourth year career fire-fighter salary is \$4,890.00/month or \$58,680.00 per annum.
Plus 21.5 % burden (E.I., CPP, Benefits, and Pension) equals \$12,616.00
Total annual cost for one fulltime fire-fighter \$71,296.00

Captain's salary is \$6,085.00/month or \$73,020.00 per annum
Plus 21.5 % burden (E.I., CPP, Benefits, and Pension) equals \$15,699.00
Total annual cost for one fulltime captain \$88,719.00

Additional cost of \$250.00/fire-fighter per year clothing allowance (initial uniform requirements \$500.00).

*** Based on 2003 rates**

Staffing Formulas

As a result of vacation coverage, sick time and WCB injuries it is expected that five fulltime fire-fighters are required to maintain a minimum manning level of four fire-fighters per shift. This extrapolates to the requirement to have 20 fulltime fire-fighters in order to maintain four fire-fighters on duty 24 hours a day seven days a week. (see Appendix 1 – Page 45 for WCB regulations pertaining to four person crews)

Costs Of Staffing Options

1. Cost of three fulltime fire-fighters and a captain daytime only Monday to Friday

*Four fire-fighters x \$71,300. = \$285,200. One captain x \$88,720. Five clothing allowance \$250. each

Total annual cost = \$375,170.00 *(See staffing formula above) (one truck weekday only)

2. Cost of three fulltime fire-fighters and a captain 24 hours per shift seven days a week.

16 fire-fighters x \$71,300. = \$1,140,800. Four captains x \$88,720. = \$354,880. Twenty clothing allowance \$250. each = \$5,000.

Total annual cost = \$1,500,680.00 (one truck 24/7)

3. Cost of six fulltime fire-fighters and two captains 24 hours per shift seven days a week

32 fire-fighters x \$71,300 = \$2,281,600. Eight captains x \$88,720 = \$709,760. Forty clothing allowance \$250. each = \$10,000.

Total annual cost = \$3,001,360.00 (two trucks 24/7)

*** Additional costs for acting pay may be incurred.**

Maple Ridge Fire Department Master Plan

Estimated Cost of Staffing Options

Current Paid-On-Call Fire-Fighter Wages - \$577,000. - 95 Paid-On-Call Members

Phase One

- One four-man crew of fire-fighters Monday to Friday daytime only at Fire Hall #1 and #3
- Increases to fire-fighter wage account - \$750,000. (Actual Phase 1 cost \$375,000. As a result of delayed hiring, 6 months)
- Total fire-fighter wage budget - \$952,000.
- Total Staff - *10 full-time members, 95 paid-on-call members
- (*See staffing formula above)

Additional Measures

- Construct Fire Hall #4 (Albion /Cottonwood Area).
- Implement mandatory residential sprinklers.
- Implement mandatory monitoring of apartment alarm systems.

Benefits

- Results in a guarantee of eight fire-fighters available in the District during the daytime on weekdays.
- Ensures that there is one guaranteed crew of fire-fighters available during the week daytime at Hall #1 and #3.
- Will reduce the week-day daytime call-outs and workload of paid-on-call fire-fighters at Fire Hall #1 and #3.
- Would increase the number of fire prevention inspections performed.
- Could increase the number of public education programs provided and reduce reliance on paid-on-call fire-fighters for this function.
- Could assist in the preparation of training materials and fire hall/apparatus and small tool maintenance.

Limitations

- Does not provide any guaranteed response of fire-fighters in the evening and on weekends.
- It would still require the callout of paid-on-call fire-fighters to assist the paid crew with multiple calls or structure fires and serious rescues.
- May incur a liability as a result of not complying with the Fire Department Act and Two Platoon regulations.
- Would not be able to meet the Urban Response Standards in the evenings or weekends or if they left their response areas for public education or fire prevention inspections.

Phase Two

- Full year impact of four-man crew of fire-fighters Monday to Friday daytime only at Fire Hall #1 & #3 - \$375,000.
- Staff Fire Hall #4 with 25 paid-on-call fire-fighters - \$150,000.
- Increases to fire-fighter wage account - \$525,000.
- Total fire-fighter wage budget \$1,477,000.
- Total Staff - 10 fulltime members, 120 paid-on-call members.

Benefits

- Results in a guarantee of eight fire-fighters available in the District during the daytime on weekdays.
- Ensures that there is one guaranteed crew of fire-fighters available during the daytime at Hall #1 and #3.
- Will reduce the daytime call outs and workload of paid-on-call fire-fighters at Fire Hall #1 and #3.
- Would increase the number of fire prevention inspections performed.
- Could increase the number of public education programs provided and reduce reliance on paid-on-call fire-fighters for this function.
- Could assist in the preparation of training materials and fire hall/small tool maintenance.

Maple Ridge Fire Department Master Plan

Estimated Cost of Staffing Options

Limitations

- Does not provide any guaranteed response of fire-fighters in the evening and on weekends
- It would still require the callout of paid-on-call fire-fighters to assist the paid crew with multiple calls or structure fires and serious rescues.
- May incur a liability as a result of not complying with the Fire Department Act and Two Platoon regulations.
- Would not be able to meet the Urban Response Standards in the evenings or weekends or if they left their response areas for public education or fire prevention inspections.

Phase Three

- Increase the one four-man crew of fire-fighters to 24/7 at Fire Hall #1
- Increases to fire-fighter wage account - \$1,125,000.
- Total fire-fighter wage budget \$2,602,000.
- Total Staff - 25 fulltime members, 120 paid-on-call members

Benefits

- Results in a guarantee of four fire-fighters available in the District 24 hours a day seven days a week.
- Maintains a guarantee of 8 fire-fighters available week-days daytime only.
- Will reduce the call outs and workload of paid-on-call fire-fighters at Fire Hall #1.
- Would increase the number of fire prevention inspections performed.
- Could increase the number of public education programs provided and reduce reliance on paid-on-call fire-fighters for this function.
- Could assist in the delivery of training materials and fire hall/small tool maintenance.

Limitations

- It would still require the callout of paid-on-call fire-fighters to assist the paid crew with multiple calls or structure fires and serious rescues.
- Would not be able to meet the Urban Response Standards in Fire Hall #3's area in the evenings or on weekends and if they left Hall #1 area for public education or fire prevention inspections.
- Would result in having to change the work shift pattern of previously daytime only fire-fighters.
- Could result in conflicts and scheduling difficulties by running two different shift patterns simultaneously (Daytime Monday to Friday at Fire Hall #3 and 24/7 at Hall #1).

Phase Four

- Increase the one four man crew of fire-fighters to 24/7 at Fire Hall #3.
- Increases to fire-fighter wage account - \$1,125,000.
- Total fire-fighter wage budget \$3,727,000.
- Total Staff - 40 fulltime members, 120 paid-on-call members.

Benefits

- Results in a guarantee of eight fire-fighters available in the District 24 hours a day seven days a week.
- Will reduce the call outs and workload of paid-on-call fire-fighters at Fire Hall #1 and #3.
- Would increase the number of fire prevention inspections performed.
- Could increase the number of public education programs provided and reduce reliance on paid-on-call fire-fighters for this function.
- Would ensure the Urban Response Standard is delivered 24/7 at Hall #3 and Hall #1 Areas.
- Could assist in the delivery of training materials and fire hall/small tool maintenance.

Maple Ridge Fire Department Master Plan

Estimated Cost of Staffing Options

Limitations

- It would still require the callout of paid-on-call fire-fighters to assist the paid crew with multiple calls or structure fires and serious rescues.
- Would not be able to meet the Urban Response Standards if they left their responses areas for public education or fire prevention inspections.
- Does not provide for an urban response to Hall #4 area.

Phase Five

- Increase to two four-man crews of fire-fighters 24/7 at Fire Hall #1.
- Increases to fire-fighter wage account - \$1,500,000.
- Total fire-fighter wage budget \$5,227,000.
- Total Staff - 60 fulltime members, 120 paid-on-call members.

Benefits

- Results in a guarantee of twelve fire-fighters available in the District 24 hours a day seven days a week.
- Will reduce the call outs and workload of paid-on-call fire-fighters at Fire Hall #1 and #3.
- Would increase the number of fire prevention inspections performed.
- Could increase the number of public education programs provided and reduce reliance on paid-on-call fire-fighters for this function.
- Would ensure the Urban Response Standard is delivered 24/7 at Hall #3 and Hall #1 areas.
- Could facilitate the development of specialised teams for hazmat or technical rescue.
- Could assist in the delivery of training materials and fire hall/small tool maintenance.

Limitations

- It would still require the callout of paid-on-call fire-fighters to assist the paid crew with multiple calls or structure fires and serious rescues.
- Does not provide for an urban response to Hall #4 area.

Phase Six

- Increase to one four-man crew of fire-fighters 24/7 at Fire Hall #4.
- Staff Fire Hall #5 (Silver Valley) with 25 paid-on-call fire-fighters.
- Increases to fire-fighter wage account - \$1,650,000.
- Total fire-fighter wage budget \$6,875,000.
- Total Staff - 80 fulltime members, 145 paid-on-call members

Benefits

- Results in a guarantee of sixteen fire-fighters available in the District 24 hours a day seven days a week
- Will reduce the call outs and workload of paid-on-call fire-fighters at Fire Hall #1, #3 and #4.
- Would increase the number of fire prevention inspections performed.
- Could increase the number of public education programs provided and reduce reliance on paid-on-call fire-fighters for this function.
- Would ensure the urban response standard is delivered 24/7 at Hall #1, #3 and #4 areas.
- Could facilitate the development of specialised teams for hazmat or technical rescue.
- Could assist in the delivery of training materials and fire hall/small tool maintenance.
- Would reduce the need to call out Hall #1 paid-on-call members or strip both paid crews out of Hall #1 area when a minor incident occurs in Hall #5.
- Would provide for fire resources north of the Alouette River in the event of a flood
- Would provide an additional resource of paid-on-call fire-fighters.

Maple Ridge Fire Department Master Plan Estimated Cost of Staffing Options

Limitations

- It would still require the callout of paid-on-call fire-fighters to assist the paid crew with multiple calls or structure fires and serious rescues.
- It would still require the callout of Hall #1 fulltime crews or paid-on-call to assist with multiple calls or structure fires and serious rescues.

Note:

These phases do not reflect a decrease in paid-on-call staffing in the Fire Halls when career staff is added.

Additional Fire Halls and fire-fighters may be required in the Webster's Corner and Thornhill area if development in these areas proceed quicker than currently projected.

This staffing model is based on delivery of the Urban, Protected Growth and Rural Response Standards and assumes the implementation of a residential sprinkler bylaw.

Maple Ridge Fire Department Master Plan Estimated Cost of Staffing Options

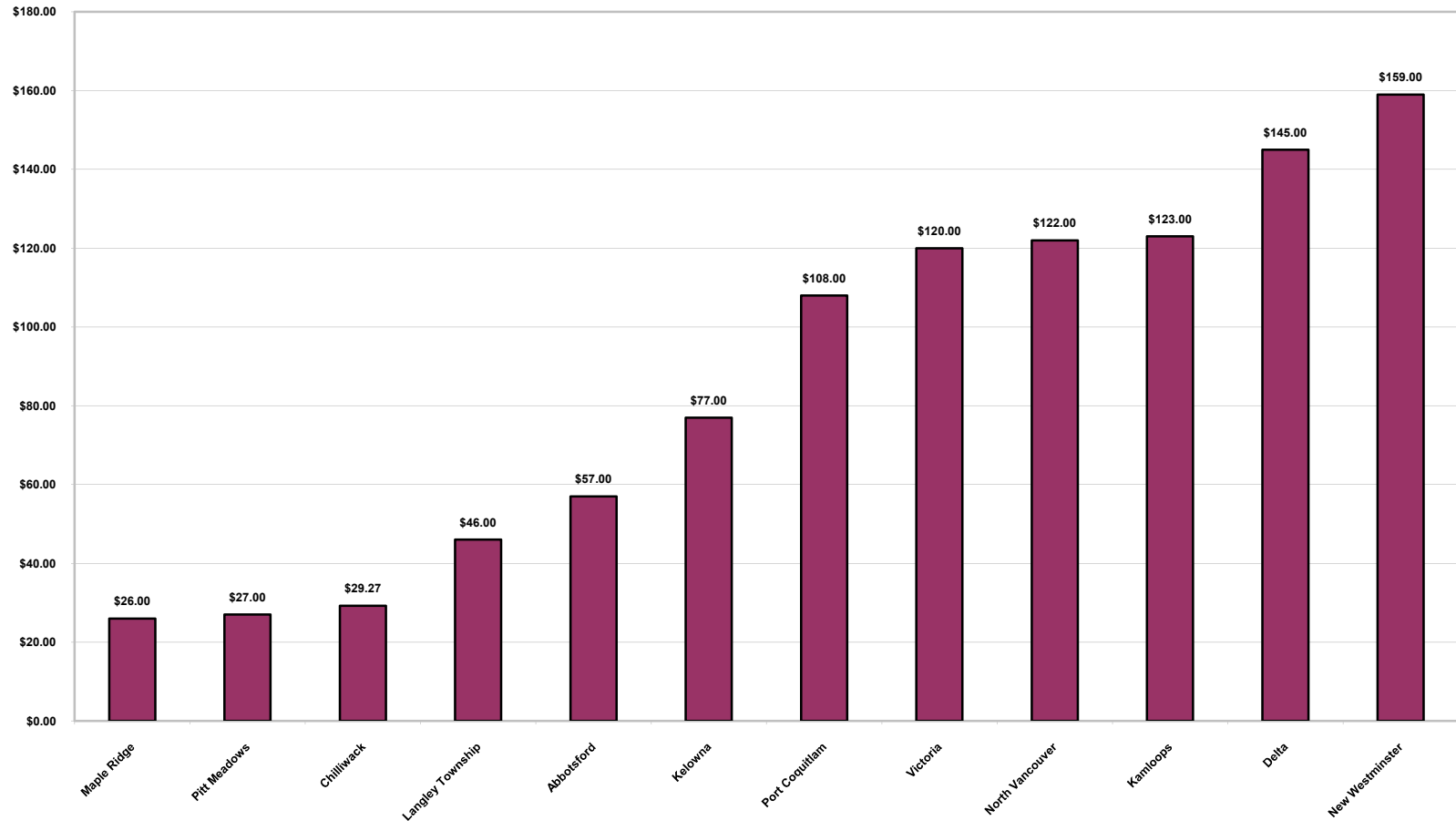
Date	Activity	Budget Increase In Fire-Fighter Salary Account	Total Annual Increase	Total Fire-Fighter Salary Account	Additional Full-Time Staff Required	Additional Paid-on-Call Required
2003						
December 2003	Implement a residential sprinkler bylaw					
Current 2003	Fire-fighter salary amount			\$575,000.00		
Phase One						
	Begin construction of Fire Hall #4 (Capital Expense)					
	Implement mandatory monitoring of multi family alarm systems					
* Delayed hiring 6 month impact of Phase 1	One full-time day crew - Monday to Friday at Hall #1 and Hall #3	\$375,000			10	
	Phase Total		\$375,000	\$950,000.00	10	
Phase Two						
	Paid-on-call crew - Hall #4	\$150,000				25
	Full year impact of day crews at Hall #1 and Hall #3	\$375,000				
	Phase Total		\$525,000	\$1,475,000.	0	25
Phase Three						
	Crew at Hall #1 goes 24/7	\$1,125,000			15	
	Phase Total		\$1,125,000	\$2,600,000.	15	
Phase Four						
	Crew at Hall #3 goes 24/7	\$1,125,000			15	
	Phase Total		\$1,125,000	\$3,725,000.	15	
Phase Five						
	Second crew added 24/7 at Hall #1	\$1,500,000			20	
	Construct Hall #5 (Capital Expense)					
	Phase Total		\$1,500,000	\$5,225,000	20	
Phase Six						
	Convert Hall #4 crew to 24/7	\$1,500,000			20	
	Staff Hall #5 with paid-on-call	\$150,000				25
	Phase Total		\$1,650,000	\$6,875,000.	20	25
Grand Total			\$6,300,000	\$6,875,000.	80	50

Maple Ridge Fire Department Master Plan

Estimated Cost of Staffing Options

Comparative Costs and Benefits of Current Fire Department

Cost per Capita



Maple Ridge Fire Department Master Plan Estimated Cost of Staffing Options

Comparative Costs and Benefits of Current Fire Department Monetary Value of a Municipal Fire Service

2001 Red Book Information

Assessed value of buildings in Maple Ridge	\$4,751,776,885.
Average Cost of Fire Insurance and Fire Department Budget combined	\$13,500,000.
Cost of Insurance alone without Fire Department	\$33,000,000.
Insurance Costs Avoided with the Fire Service	\$19,500,000.

Analysis Courtesy of the Surrey Fire Department

Maple Ridge Fire Department Master Plan



Appendix – 1 Emergency Response

Maple Ridge Fire Department Master Plan

Emergency Response

Emergency Response Current Service Level

Staffing

The Fire Department is currently staffed with six full-time career officers and 95 paid-on-call fire-fighters. The department responds from three Fire Halls, Fire Hall #1 located in the town core area, Fire Hall #2 in the eastern rural area and Fire Hall #3 located in the western portion of the municipality. Currently there is no guaranteed level of emergency response. Sufficient numbers of paid-on-call fire-fighters are maintained with varying work patterns to try and provide an available level of responders. The paid-on-call fire-fighters are not committed to an assigned schedule but rather respond when and if they are available. Under this system the department is normally able to provide an adequate number of fire-fighters in the evenings and on weekends. However, during the daytime, Monday to Friday, Fire Hall #2 and #3 are not able to provide a minimum of four fire-fighters 30% of the time. (see Table 1, Response to Calls). This results in increased response times as Fire Hall #1 has to travel greater distances to cover calls in Hall #2 and #3's areas. In addition, it is becoming more common to receive overlapping calls for assistance within a short span of time during the daytime. This severely taxes the department's ability to respond based on the limited numbers of fire-fighters available during the day. The summer vacation period and long weekends also deplete the pool of available fire-fighters.

Response Times

Maple Ridge Fire Department's emergency response times are a factor of the following components:

1. Dispatch time – starts when 911 operator transfers a call to Surrey Dispatch and includes the time required to obtain information from the caller and activate the Fire Hall paging (dispatch is provided under contract with Surrey Fire Department).
2. Turnout Time - time required for fire-fighters to respond to the Fire Hall, don protective clothing and get the fire truck moving out of the Fire Hall.
3. Travel Time - time required for emergency vehicles to drive from the Fire Hall to the scene of the emergency.
4. First Fire Truck on Scene - time elapsed from when the Dispatch received the notification of an emergency until the first fire truck arrives on scene.

*90 % of the time the Maple Ridge Fire Department is able to meet the response times listed below

	Fire Hall 1	Fire Hall 2	Fire Hall 3
Dispatch Time	1 minute	1 minute	1 minute
Turnout Time	8 minutes	14 minutes	7 minutes
Travel Time	7 minutes	7 minutes	8 minutes
First Fire Truck On Scene	16 minutes	22 minutes	16 minutes

*Based on a study of response to structure fires for a three-year period 2000 - 2002 (see Table 2, Response Time to Structure Fires)

Services Provided

The Master Planning Committee reviewed a list of suggested Fire Department core services, which was provided by the Office of the Ontario Fire Marshall. This list was used to compare the department's current services with a suggested standard for core services (see Table 3 – Core Services).

The most notable gaps in service were in the areas of response to hazardous materials, specialized rescues and complex incidents such as high rise structure fires.

Maple Ridge Fire Department Master Plan Emergency Response

Maple Ridge Fire Department's limited ability to deliver these types of services is primarily a result of two factors:

- One is the inability to determine exactly which fire-fighters will be responding at any given time. This negates the ability to select specific individuals or groups to perform specialised tasks.
- Secondly is the amount of specialized training required to initially learn these skills and subsequently maintain proficiency. Under the current paid-on-call model it is not possible for the fire-fighters to commit to this level of training.

Why is Response Time Important

Part I - Fire Propagation Curve (NFPA 1710)

A.5.2.1.2.1 An early aggressive and offensive primary interior attack on a working fire, where feasible, is usually the most effective strategy to reduce loss of lives and property damage. In Figure A.5.2.1.2.1 the line represents a rate of fire propagation, which combines temperature rise and time. It roughly corresponds to the percentage of property destruction. At approximately 10 minutes into the fire sequence, the hypothetical room of origin flashes over. Extension outside the room begins at this point.

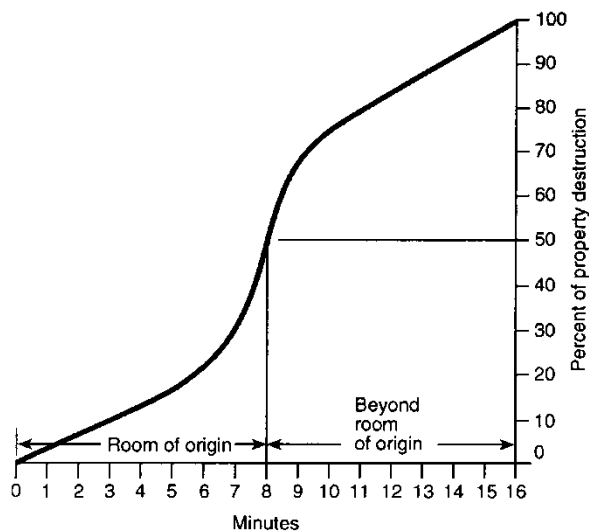


FIGURE A.5.2.1.2.1 Fire propagation curve.

Consequently, given that the progression of a structural fire to the point of flashover (i.e. the very rapid spreading of the fire due to superheating of room contents and other combustibles) generally occurs in less than 10 minutes. Two of the most important elements in limiting fire spread are the quick arrival of sufficient numbers of personnel and equipment to attack and extinguish the fire as close to the point of its origin as possible.

The ability of adequate fire suppression forces to greatly influence the outcome of a structural fire is undeniable and predictable. Data generated by NFPA provides empirical data that rapid and aggressive interior attack can substantially reduce the human and property losses associated with structural fires (*see Table A.5.2.1.2.1*).

Maple Ridge Fire Department Master Plan Emergency Response

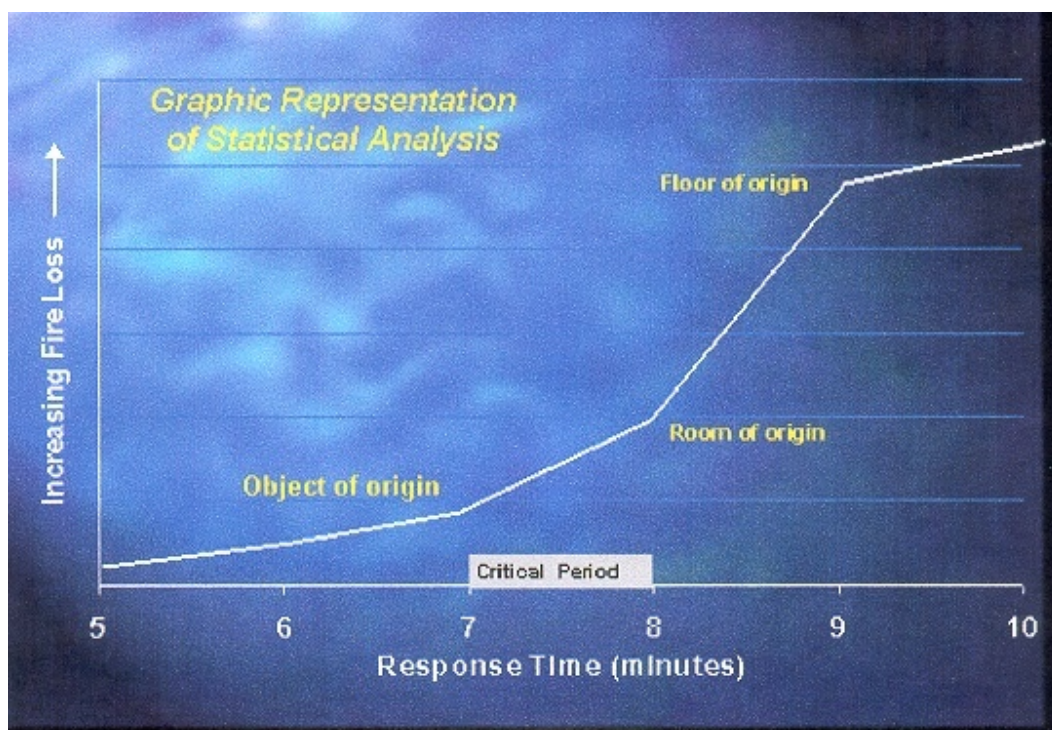
Table A.5.2.1.2.1 Fire Extension in Residential Structures 1994-1998

Extension	Rate per 1000 Fires		
	Civilian Deaths	Civilian Injuries	Dollar Loss per Fire
Confined to the room of origin	2.32	35.19	3,185
Beyond the room but confined To the floor of origin	19.68	96.86	22,729
Beyond the floor or origin	26.54	63.48	31,912

Note: Residential structures include dwellings, duplexes, manufactured homes (also called mobile homes), apartments, row houses, townhouses, hotels and motels, dormitories, and barracks.

Source: NFPA Annual Fire Experience Survey and National Fire Incident Reporting System.

Part 2 – Australian Fire Database



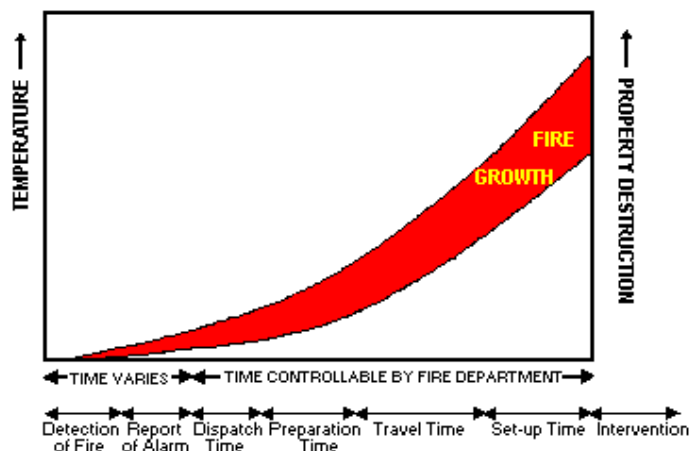
Australian Fire Database 1.3 million incidents (courtesy of Surrey Fire-Rescue)

Maple Ridge Fire Department Master Plan

Emergency Response

Part 3 – Components of Response

ILLUSTRATION OF TYPICAL TIME/FIRE GROWTH RELATIONSHIP



(source: Ontario Fire Marshal Web Site)

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

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

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

Preparation time for volunteer fire-fighters includes the time to respond to the station as well as to dress and depart the station.

Recognized Standards of Emergency Response

The committee identified several organizations, which publish standards for emergency response. These standards were then compared to the department's existing response levels (see Table 4 – Models of Emergency Response). The following table was compiled as an overview of currently recognized levels of fire department response.

Overview of Models of Emergency Response

Standard	Description
National Fire Protection Agency – 1720 – Standard for the Organization and Deployment of Volunteer Fire Department	<ul style="list-style-type: none"> No minimum response time requirements Four members on scene before interior attack occurs Must apply water to the fire within 2 minutes of arriving on scene
National Fire Protection Agency 1710 – Standard for the Organization and Deployment of Career Fire Departments	<ul style="list-style-type: none"> Total of 15 personnel required to be on scene in 10 minutes or less (dispatch, turnout and travel time) First four personnel required to be on scene in 6 minutes or less (dispatch, turnout and travel time)
Surrey Fire Department Model Targets	<ul style="list-style-type: none"> Total of 12 personnel required to be on scene in 12 minutes or less (dispatch, turnout and travel time) First four personnel required to be on scene in 7 minutes or less (dispatch, turnout and travel time)
Ontario Office of the Fire Marshall	<ul style="list-style-type: none"> Total of 10 personnel required to be on scene in 10 minutes or less (dispatch, turnout and travel time)
WCB – Occupational Health and Safety – Entry into Buildings 31.23	<ul style="list-style-type: none"> Total of 4 personnel required for an initial interior attack Minimum of 5 personnel required to be on scene in 10 minutes or less This is an enclosed space entry procedure not a fire ground deployment model

The Standards listed in the tables above were derived through a consultative committee process utilizing fire growth information and considering fire-fighter safety. (see Table 4 – Models of Emergency Response)

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Proposed Standards of Response for Maple Ridge Fire Department

Maple Ridge Fire Department Deployment Model - <u>Current</u>	<ul style="list-style-type: none"> • No guaranteed level of response • No minimum response time requirements • Four members on scene before interior attack occurs • Must apply water to the fire within 2 minutes of arriving on scene
Maple Ridge Fire Department Deployment Model - <u>Proposed Urban</u>	<ul style="list-style-type: none"> • Total of 12 personnel required to be on scene in 12 minutes or less (dispatch, turnout and travel time) • First four personnel required to be on scene in 7 minutes or less (dispatch, turnout and travel time)
Maple Ridge Fire Department Deployment Model - <u>Proposed Rural</u> (East of 248 street)	<ul style="list-style-type: none"> • Total of 12 personnel required to be on scene in 22 minutes or less (dispatch, turnout and travel time) • First four personnel required to be on scene in 18 minutes or less (dispatch, turnout and travel time)
Maple Ridge Fire Department Deployment Model –* <u>Protected Growth Areas</u>	<ul style="list-style-type: none"> • Total of 12 personnel required to be on scene in 16 minutes or less (dispatch, turnout and travel time) • First four personnel required to be on scene in 11 minutes or less (dispatch, turnout and travel time)

*Protected Growth Areas are areas, which would have a requirement for residential sprinklers and are in transition from a rural density to an urban density. Once these areas approach a density level comparable to the urban areas, the standard for response would revert to the Urban Response Standard. Currently these areas are identified as the Albion/Cottonwood Corridor and the Silver Valley Area but could extend if development commences in other areas of the municipality.

Methods to Reduce Response Intervals

The committee reviewed all the components of response to fires and identified several initiatives that could be implemented to reduce fires or lessen their impact. (see Table 5 – Components of Response) The results of the committee's review are summarized as follows.

14. Introduce residential sprinklers.
15. * Develop a community smoke alarm program.
16. Introduce mandatory monitoring of alarm systems in multi-family occupancies.
17. Insure one-minute dispatch timing is achieved.
18. Reduce fire-fighter turnout times by hiring full-time fire-fighters and selecting paid-on-call fire-fighters that live close to the Fire Halls.
19. Reduce the response zone for Hall #1 through the construction of Fire Hall #4 in Albion
20. Continue the installation of traffic pre-emption devices.
21. Monitor training to maintain two minutes for application of water after arrival at scene.
22. Maintain a minimum manning of 12 fire-fighters for a first alarm assignment to structure fires.

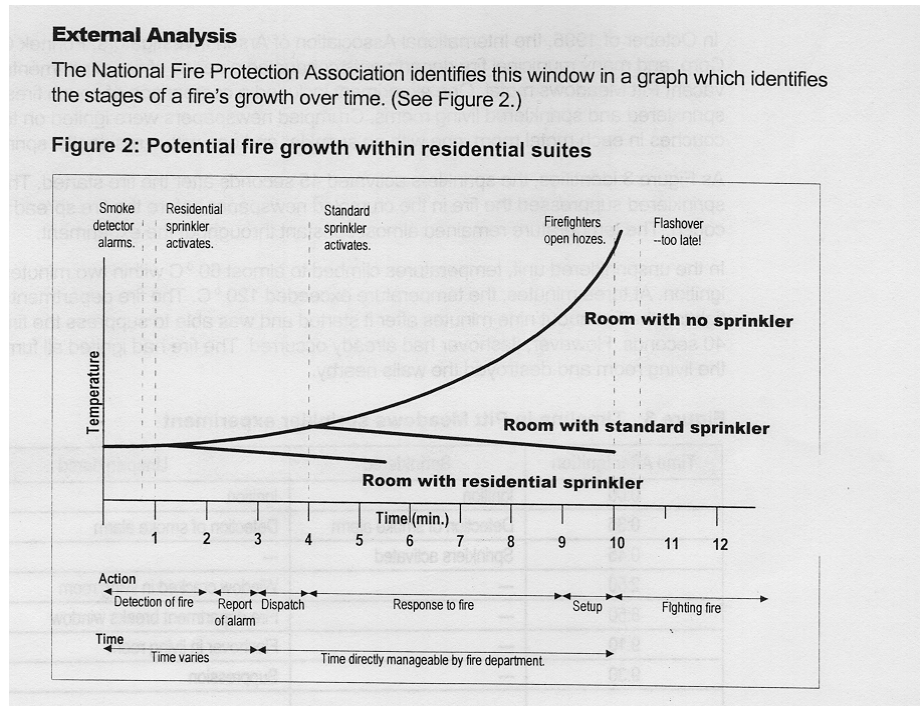
* The goal of a community smoke alarm program would be to have a working smoke alarm or smoke detector installed in every building in Maple Ridge containing a sleeping area. This goal could be accomplished in a variety of ways. Public education would be the primary thrust to encourage citizens to install smoke detectors. A smoke alarm give away program sponsored by smoke alarm manufacturers, local charities or businesses, could assist this. The installation of smoke alarms could be accomplished by volunteer home inspections done by fire-fighters or a summer student program. In addition to the public education portion some communities have passed legislation requiring smoke alarms in every dwelling unit. A Community smoke alarm policy would be developed in consultation with Council, Building Department, local business, charity groups, fire-fighters and any interested stakeholder.

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Residential Sprinklers

Source: National Fire Protection Association



The need for a sprinkler bylaw is an integral part of the Master Plan as it increases life safety, reduces the fire-fighters required on scene, reduces the length of time required on scene, and provides for a safer working environment. Almost all of the fires that originate in sprinklered buildings are controlled before the fire-fighters arrive on scene. Sprinklers offer a level of protection that is unmatched by conventional methods.

Response Times and Fire Behaviour

Almost without exception, big fires start small. The longer a fire is allowed to grow, the worse it gets exponentially. One minute at the beginning of the fire does not produce anywhere near the same damage that the same 60 seconds produces later in the fire's growth. Fires in residential structures are often out of control within 4 to 9 minutes after ignition. When the fire reaches a stage known as flashover (where the room, floor to ceiling, becomes fully involved in fire) the temperature inside the room will rise to over 1200 degrees fahrenheit, eliminating any chance of survival and extending the fire further into the structure. If sprinklers were installed in these buildings, in most cases the fire would have been extinguished before the fire department arrived, containing the minimal fire damage to one room and before the fire-fighters have left the station.

Recent studies by the National Research Council Canada have shown that fires started in rooms equipped with residential sprinkler systems were brought under control in less than 90 seconds; before the heat, smoke and other fire gases reached dangerous proportions. (NRC Kemano Fire Studies Part 2 page 12)

Fire sprinklers have a proven record of extinguishing fires using less water than large hose lines used by fire-fighters.

As our community continues to develop, the pressures on the fire service increase. While changes to the fire service delivery model and additional fire halls are being considered, there are other factors that also impact on

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service delivery. For instance, traffic congestion, physical and climatic events such as snow and steep grades, and the small lot, narrow road housing developments all pose challenges for emergency responders. Fire sprinklers on the other hand, are not affected by these conditions.

Options To Meet Proposed Standards For Response

The following options show the possible deployments of career fire-fighters with back up support from our existing paid-on-call members. The Fire Department Master Planning Committee recognizes that Maple Ridge Fire and Rescue Service cannot presently guarantee a response to any emergency incident without using fire-fighters that are actually on duty when a call is received. Further, initial response times (first 4 fire-fighters and truck) cannot be reduced to an acceptable standard with the use of paid-on-call members only. The options are designed to only meet the needs of a first alarm assignment, which would be the typical single family structure fire. If more than one incident occurred at the same time or the incident was larger or more complex, it would require a second or third alarm assignment staffed by paid-on-call fire-fighters.

Identified Minimum Manpower Requirement For First Alarm Assignment As Follows:

- Incident Command – 1
- Pump Operator - 1
- Attack Line – 2
- Back up Line - 2
- Support Person for each attack and back up line, Hydrant Lay, Utility Control and Forcible Entry and Ventilation – 2
- Victim Rescue Team – 2
- RIT Team – 2
- **Total of 12 fire-fighters**

Urban Response Standard

Area - Pitt Meadows border east to 234 Street, Fraser River north to the Alouette River

Proposed Standard

- The Hall response boundaries would be restricted to 4 minutes travel time
- The first unit would arrive in 7 minutes with a minimum of 4 fire-fighters
- The first alarm assignment would arrive in 12 minutes with a minimum of 12 fire-fighters

Option 1- shows response times if 4 career fire-fighters are on duty at Hall #1, 4 career fire-fighters are on duty at Hall #3 and 4 paid-on-call members respond from Fire Hall #1 or Hall #3.

Hall #1 Area	Dispatch	Turnout	Travel	Total Time	Man Power
Hall 1 Career	1 minute	2 minutes	4 minutes	7 minutes	4 minutes
Hall 3 Career	1 minute	2 minutes	8 minutes	11 minutes	4 minutes
*Hall 1 or 3 Paid-On-Call	1 minute	7 minutes	4 minutes	12 minutes	4 minutes
Total Manpower					12 minutes

**The location of the incident would dictate whether Hall #1 or #3 paid-on-call fire-fighters would respond*

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Option 2 - shows response times if 8 career fire-fighters are on duty at Hall #1 and 4 career fire-fighters are on duty at Hall #3.

Hall #1 Area	Dispatch	Turnout	Travel	Total Time	Man Power
Hall 1 Career	1	2 minutes	4 minutes	7 minutes	8 minutes
Hall 3 Career	1	2 minutes	8 minutes	11 minutes	4 minutes
Total Manpower					12
Hall #3 Area	Dispatch	Turnout	Travel	Total Time	Man Power
Hall 1 Career	1 minute	2 minutes	8 minutes	11 minutes	8 minutes
Hall 3 Career	1 minute	2 minutes	4 minutes	7 minutes	4 minutes
Total Manpower					12 minutes

Rural Response Standard

Area -248 Street east to Mission Border, Fraser River to the northern Municipal boundary

Proposed Standard

- The Hall response boundaries would be restricted to 9 minutes travel time
- The first unit would arrive in 18 minutes with a minimum of 4 fire-fighters
- The first alarm assignment would arrive in 22 minutes with a minimum of 12 fire-fighters

*Important note: (currently there is no guaranteed weekday daytime response of paid-on-call fire-fighters at Fire Hall #2.)

Option 1 shows response times if 4 career fire-fighters are on duty at Hall #1, 4 career fire-fighters are on duty at Hall #3 and 4 paid-on-call members at Hall #2. (1st truck arrives in 18 minutes. A full compliment of 12 fire-fighters is on scene by 22 minutes.)

Option 1	Dispatch	Turnout	Travel	Total Time	Man Power
Hall 1 Career	1 minute	2 minutes	15 minutes	18 minutes	4 minutes
Hall 3 Career	1 minute	2 minutes	19 minutes	22 minutes	4 minutes
*Hall 2 Paid-On-Call	1 minute	12 minutes	9 minutes	22 minutes	4 minutes
Total Manpower					12 minutes

**(No guaranteed weekday daytime response from Hall 2 with this option)*

Option 2 shows response times if 8 career fire-fighters are on duty at Hall #1, 4 career fire-fighters are on duty at Hall #3 (1st truck arrives in 18 minutes. A full compliment of 12 fire-fighters is on scene by 22 minutes.)

Option 2	Dispatch	Turnout	Travel	Total Time	Man Power
Hall 1 Career	1 minute	2 minutes	15 minutes	18 minutes	8 minutes
Hall 3 Career	1 minute	2 minutes	19 minutes	22 minutes	4 minutes
Total Manpower					12 minutes

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Options For Rural Response After The Construction Of Fire Hall #4

There will soon be a need for construction of a Fire Hall in the Albion development area. Should this Hall be built, the fire-fighters stationed there could provide support to the Hall #1 and Hall #2 areas.

Option 3 shows response times if 4 career fire-fighters are on duty at Hall #1, 4 paid-on-call fire-fighters respond from Hall #2 and Hall #4 exists to support with 4 more paid-on-call members. (1st truck arrives in 18 minutes, 2nd in 20 and a full compliment of 12 fire-fighters on scene by 22 minutes.)

Option 3	Dispatch	Turnout	Travel	Total Time	Man Power
*Hall 4 Paid-On-Call	1 minute	7 minutes	12 minutes	20 minutes	4 minutes
*Hall 2 Paid-On-Call	1 minute	12 minutes	9 minutes	22 minutes	4 minutes
Hall 1 Career	1 minute	2 minutes	15 minutes	18 minutes	4 minutes
Total Manpower					12 minutes

**(No guaranteed weekday daytime response from Hall #2 and Hall #4 with this option)*

Option 4 shows response times if 4 career fire-fighters are on duty at Hall #1 and 4 career fire-fighters are on duty at a new Hall #4. (1st truck arrives in 15 minutes, 2nd in 18 minutes. A full compliment of 12 fire-fighters is on scene by 22 minutes.)

Option 4	Dispatch	Turnout	Travel	Total Time	Man Power
Hall 4 Career	1 minute	2 minutes	12 minutes	15 minutes	4 minutes
Hall 2 Paid-On-Call	1 minute	12 minutes	9 minutes	22 minutes	4 minutes
Hall 1 Career	1 minute	2 minutes	15 minutes	18 minutes	4 minutes
Total Manpower					12 minutes

Note: Call volume does not make the use of Career Fire-Fighters stationed at Hall #2 viable.

Protected Growth Standard (Cottonwood/ Albion and Silver Valley)

Currently two suburban areas of the municipality are experiencing significant growth. The protected growth standard is intended to provide an interim standard of response until the areas meet the criteria for urban response. The standard also assumes that residential sprinklers would protect all new homes in this response zone.

Cottonwood/Albion Area -234 Street east to 248 Street, Fraser River north to Alouette River

Silver Valley Area- All properties north of the South Alouette river.

Proposed Standard

- The first unit would arrive in 11 minutes with a minimum of 4 fire-fighters
- The first alarm assignment would arrive in 16 minutes with a minimum of 12 fire-fighters

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Option 1 shows response times if 4 career fire-fighters are on duty at Hall #1 and 4 career fire-fighters are on duty at Hall #3, supported by 4 Paid-on-call fire-fighters at Hall#1 (1st truck arrives in 11 minutes, 2nd truck in 15 minutes and a full compliment of 12 fire-fighters is on scene by 16 minutes.)

Option 1	Dispatch	Turnout	Travel	Total Time	Man Power
Hall 1 Paid-On-Call	1 minute	7 minutes	8 minutes	16 minutes	4 minutes
Career Hall 1	1 minute	2 minutes	8 minutes	11 minutes	4 minutes
Career Hall 3	1 minute	2 minutes	12 minutes	15 minutes	4 minutes
Total Manpower					12 minutes

After the Construction of Fire Hall #4 or #5

Option 2 shows response times if 4 career fire-fighters are on duty at Hall #1 and 4 career fire-fighters are on duty at Hall #3 and 4 paid-on-call fire-fighters responded from Hall #4. (1st truck arrives in 11 minutes, 2nd in 14 minutes. A full compliment of 12 fire-fighters is on scene by 15 minutes.)

Option 2	Dispatch	Turnout	Travel	Total Time	Man Power
Hall 1 Career	1 minute	2 minutes	8 minutes	11 minutes	4 minutes
Hall 3 Career	1 minute	2 minutes	12 minutes	15 minutes	4 minutes
*Hall 4 or 5 Paid-On-Call	1 minute	7 minutes	6 minutes	14 minutes	4 minutes
Total Manpower					12

* (In comparison to Hall #2 and Hall #3 there would probably be no guaranteed daytime response of paid-on-call fire-fighters at Fire Hall #4)

Option 3 shows response times to Hall #4's area if 4 career fire-fighters are on duty at Hall #1 and 4 career fire-fighters are on duty at Hall #3 and 4 career fire-fighters responded from Hall #4. (1st truck arrives in 9 minutes, 2nd in 11 minutes. A full compliment of 12 fire-fighters is on scene by 15 minutes.)

Option 3	Dispatch	Turnout	Travel	Total Time	Man Power
Hall 1 Career	1 minute	2 minutes	8 minutes	11 minutes	4 minutes
Hall 3 Career	1 minute	2 minutes	12 minutes	15 minutes	4 minutes
Hall 4 or 5 Career	1 minute	2 minutes	6 minutes	9 minutes	4 minutes
Total Manpower					12 minutes

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Table 1 – Current Response time to All Weekday Calls

2000/2001/2002 - Response to All Calls

6:00 am to 6:00 pm - Monday to Friday

Hall #1	0%	no fire-fighter's available
	0%	less than one crew available
	33%	1-2 crews available
	53%	2-3 crews available
Hall #2	8%	no fire-fighter's available
	21%	less than one crew available
	39%	1-2 crews available
	23%	2-3 crews available
Hall #3	4%	no fire-fighter's available
	30%	less than one crew available
	44%	1-2 crews available
	16%	2-3 crews available

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Table 2 – Response Time to Structure Fires

2000/2001/2002 - Response Time to Structure Fires - From Page to Arrival on Scene

Hall #1	45% of the time first unit arrives in	8 minutes or less
	70%	10 minutes or less
	90%	15 minutes or less
Hall #2	45% of the time first unit arrives in	15 minutes or less
	70%	18minutes of less
	90%	21 minutes or less
Hall #3	45% of the time first unit arrives in	9 minutes or less
	70%	10minutes of less
	90%	15 minutes or less

2000/2001/2002 Turnout Time - From Page to Truck Leaving the Fire Hall

Hall #1	45% of the time first unit arrives in	5 minutes or less
	70%	6.5 minutes of less
	90%	8 minutes or less
Hall #2	45% of the time first unit arrives in	10 minutes or less
	70%	12 minutes of less
	90%	14 minutes or less
Hall #3	45% of the time first unit arrives in	5.5 minutes or less
	70%	6.5 minutes of less
	90%	7 minutes or less

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Table 3 - Core Services

Services	Currently Provided	Core Services (Proposed)	Provided by Others
Basic fire-fighting – no expected rescue component	Yes	Yes	
Structural fire-fighting including rescue	Yes	Yes	
Vehicle fire-fighting	Yes	Yes	
Grass, brush, forestry fire-fighting	Limited	Urban Interface – Yes Grass & Brush – Yes	Forest Fires – Forest Services Mutual Aid
Marine Fire-Fighting	Limited	Land based marine	Water based– Coast Guard / Fraser Port
Automatic Aid	No	Optional	Pitt Meadows/Mission
Mutual Aid	Yes	Yes	
Basic life support with defibrillation	Yes	Yes	
Advanced Medical Assistance with defibrillation	No	No	BC Ambulance Service
Awareness Level hazardous materials	Yes	Yes	
Operations Level hazardous materials	No	Yes	
Technician Level hazardous materials	No	No	Surrey/Vancouver hazmat teams
Vehicle accidents	Yes	Yes	
Vehicle extrication	Yes	Yes	
Transportation incidents involving transport vehicles and trains	Limited	Yes	
Transportation incidents involving aircraft	Limited	Yes	Possible expansion with Pitt Meadows Airport mutual aid
Transportation incidents involving watercraft	Limited	Yes – shoreline only	Provided by Maple Ridge Search and Rescue and Coast Guard, Fraser Port Authority
Water and ice rescue – shore base	Limited	Yes	
Water and ice rescue – boat	No	Limited to Municipal Lakes and Rivers	Fraser River Rescues – Maple Ridge Search and Rescue and Coast Guard
Police Assistance	Limited	Yes	
Public Utilities Assistance (Gas and Hydro)	Yes	Yes	

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Core Services, continued

Services	Currently Provided	Core Services (Proposed)	Provided by Others
Community Emergency Plan Participation	Yes	Yes	
Urban Search and Rescue light	No	Yes	
Urban Search and Rescue heavy	No	No	Vancouver Urban Search and Rescue Team
High Angle Rescue	No	Yes	
Confined Space Rescue	No	Yes	
Farm/Silo Rescue	No	No	Mutual Aid – Pitt Meadows Fire Department
Large Animal Rescue	Limited	Yes	
Role as Assistant to the Fire Commissioner	Yes	Yes	
Alarm resets and alarms residential	Yes – enforcement for false alarms	Yes – enforcement for false alarms	
Trench Rescue	No	Yes	With the assistance of Public Works
Carbon Monoxide Alarms	Yes	Yes	BC Gas to assist with appliance inspection
Burning Complaints	Yes	Yes	

Source: Ontario Fire Marshal's Web Site

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Table 4 - Models of Emergency Response

1. NFPA 1720 - Standard for the Organization and deployment of Volunteer Fire Departments

- Initiate an attack within 2 minutes of arrival – 90% of the time
- Four members on scene before an interior attack commences
- No minimum requirement for response times
- No identification of apparatus and manning requirements for a first alarm assignment

2. NFPA 1710 – Standard for the Organization and deployment of Career Fire Departments

- Dispatch time – less than 60 seconds
- Turnout time – 1 minute
- Travel time – 4 minutes or less arrival of first fire suppression unit and/or first responder medical unit
- Arrival of full first alarm assignment within 8 minutes or less
- 8 minute response of advanced life support unit
- Identified manpower requirement for first alarm assignment as follows:
 - Incident Command – 1
 - Pump Operator - 1
 - Attack Line – 2
 - Back up Line - 2
 - Support Person for each attack and back up line, Hydrant Lay Utility Control and Forcible Entry – 2
 - Victim Rescue Team – 2
 - Ventilation Team - 2
 - Aerial Apparatus – 1
 - RIT Team – 2

Total of 15 personnel required to be on scene in 10 minutes or less (dispatch, turnout and travel time)

First four personnel required to be on scene in 6 minutes or less (dispatch, turnout and travel time)

3. Surrey Fire Department Model Targets

- Dispatch time less than 60 seconds
- Career Turn out Time – 2 minutes
- Volunteers Turn out Time – 4 minutes
- Travel Time – 4 minutes or less
- Response Time (travel only)
- Fire incidents first unit – 4 minutes (4 personnel)
- Fire incidents second pump – 6 minutes (4 personnel)
- Fire incidents ladder – 6 minutes (2 personnel)
- Fire incidents initial attack force (two pumps, 1 ladder, 1 rescue – residential) – 9 minutes
- Fire incidents initial attack force (two pumps, 1 ladder – 75' plus, 1 rescue – commercial) – 9 minutes
- Rescue first unit – structure fires – 9 minutes (2 personnel)
- Rescue unit for rescue responses – 8 minutes

Total of 12 personnel required to be on scene in 12 minutes or less (dispatch, turnout and travel time)

First four personnel required to be on scene in 7 minutes or less (dispatch, turnout and travel time)

Maple Ridge Fire Department Master Plan Emergency Response

4. Ontario Office of the Fire Marshall

- Dispatch time - not specified
- Career Turn out Time - not specified
- Volunteers Turn out Time - not specified
- Travel Time - not specified
- Minimum of 4 fire-fighters initially responding
- Minimum of 10 fire-fighters within 10 minutes for fire attack or rescue operations for 90% of reported emergencies
- No minimum requirement for first responding unit
- Manpower required before commencing interior fire attack is:
 - Incident Command - 1
 - Pump Operator - 1
 - Search and Rescue or Fire Attack - 2
 - Back up protection - 2
 - RIT team - 2
 - Ventilation team - 2
 - Total of 10

Total of 10 personnel required to be on scene in 10 minutes or less (dispatch, turnout and travel time)

5. WCB – Occupational Health and Safety – Entry into Buildings 31.23

- a) When self contained breathing apparatus must be used to enter a building or similar or enclosed location, the entry must be made by a team of at least 2 fire-fighters
- b) Effective voice communication must be made by fire-fighters inside and outside the location
- c) During the initial attack stages of an incident at least one fire-fighter must remain outside
- d) A suitably equipped rescue team of at least 2 fire-fighters must be established on scene before sending a second entry team and not more than ten minutes after initial attack

Manpower required before commencing interior fire attack:

- Incident Command/Safety Observer - 1
 - Pump Operator - 1
 - Search and Rescue or Fire Attack - 2
- Total of 4 for initial 10 minutes or until a second team enters

Manpower required after ten minutes

- Pump Operator – 1
 - Search and Rescue or Fire Attack - 2
 - RIT team - 2
- Total of 5

Manpower required prior to second team entry

- Pump Operator - 1
 - Search and Rescue or Fire Attack - 2
 - Back up protection - 2
 - RIT team - 2
- Total of 7

Total of 4 personnel required for an initial interior attack

Minimum of 5 personnel required to be on scene in 10 minutes or less

This is an enclosed space entry procedure not a fire ground deployment model

Maple Ridge Fire Department Master Plan Emergency Response

6. Maple Ridge Fire Department

a. Maple Ridge Fire Department Deployment Model - Current

No guaranteed level of response

- Four members on scene before an interior attack commences
- No minimum requirement for response times
- No identification of apparatus and manning requirements for a first alarm assignment

Current First Unit Response Times to Structure Fires (dispatch, turnout and travel time)

Hall #1 - 15 minutes or less – 90 % of the time

Hall #2 – 21 minutes or less – 90% of the time

Hall #3 - 15 minutes or less – 90 % of the time

b. Maple Ridge Fire Department Deployment Model - Proposed Urban

Dispatch time less than 60 seconds

Career Turn out Time – 2 minutes

Volunteers Turn out Time – 7 minutes

Travel Time – 4 minutes or less for first arriving unit

- Identified manpower requirement for first alarm assignment as follows:
- Incident Command – 1
- Pump Operator - 1
- Attack Line – 2
- Back up Line - 2
- Support Person for each attack and back up line, Hydrant Lay Utility Control and Forcible Entry and Ventilation – 2
- Victim Rescue Team – 2
- RIT Team – 2

Response Time (Dispatch, Turnout and Travel)

Fire incidents first unit – 7 minutes (4 personnel)

Fire incidents second pump – 12 minutes (4 personnel)

Fire incidents Rescue – 12 minutes (4 personnel)

Fire incidents initial attack force – residential fires (two pumps, 1 rescue)–12 personnel in 12 minutes

Fire incidents initial attack force - commercial fires (two pumps, 1 ladder - 2 personnel, 1 rescue - 2 personnel) —12 personnel in 12 minutes

Rescue unit for rescue/medical responses – (4 personnel) 7 minutes

Total of 12 personnel required to be on scene in 12 minutes or less (dispatch, turnout and travel time)

First four personnel required to be on scene in 7 minutes or less (dispatch, turnout and travel time)

c. Maple Ridge Fire Department Deployment Model - Proposed Rural (east of 256 Street)

Dispatch time less than 60 seconds

Career Turn out Time – 2 minutes or less 90% of the time

Volunteer Turn out Time – 12 minutes or less 90% of the time

Travel Time – not specified

- Identified manpower requirement for first alarm assignment as follows:
- Incident Command – 1
- Pump Operator - 1
- Attack Line – 2
- Back up Line - 2

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- Support Person for each attack and back up line, Hydrant Lay Utility Control and Forcible Entry and Ventilation – 2
- Victim Rescue Team – 2
- RIT Team – 2

Response Time (dispatch ,turnout and travel)

Fire incidents first unit - 18 minutes or less 90% of the time (4 personnel)

Fire incidents second pump - 22 minutes or less 90% of the time (4 personnel)

Fire incidents Rescue - 22 minutes or less 90% of the time (4 personnel)

Fire incidents initial attack force - residential fires (two pumps, 1 rescue) - 21 minutes or less 90% of the time

Fire incidents initial attack force - commercial fires (two pumps, 1 ladder - 2 personnel, 1 rescue - 2 personnel) - 22 minutes or less 90% of the time

Rescue unit for rescue responses - 18 minutes or less 90% of the time

Total of 12 personnel required to be on scene in 22 minutes or less (dispatch, turnout and travel time)

First four personnel required to be on scene in 18 minutes or less (dispatch, turnout and travel time)

d. Maple Ridge Fire Department Deployment Model – Growth Areas with Residential Sprinklers

(When substantial growth is achieved additional services will have to be provided for non fire emergencies and fires outside of the sprinkler coverage)

Dispatch time less than 60 seconds

Career Turn out Time - 2 minutes

Volunteers Turn out Time - 7 minutes

Travel Time – 8 minutes or less for first arriving unit

- Identified manpower requirement for first alarm assignment as follows:
- Incident Command - 1
- Pump Operator - 1
- Attack Line - 2
- Back up Line - 2
- Support Person for each attack and back up line, Hydrant Lay, Utility Control and Forcible Entry and Ventilation - 2
- Victim Rescue Team - 2
- RIT Team - 2

Response Time (Dispatch ,turnout and travel)

Fire incidents first unit - 11 minutes or less 90% of the time (4 personnel)

Fire incidents second pump - 16 minutes or less 90% of the time (4 personnel)

Fire incidents Rescue - 16 minutes or less 90% of the time (4 personnel)

Fire incidents initial attack force - residential fires (two pumps, 1 rescue) - 15 minutes or less 90% of the time

Fire incidents initial attack force - commercial fires (two pumps, 1 ladder - 2 personnel, 1 rescue - 2 personnel) - 16 minutes or less 90% of the time

Rescue unit for rescue responses - 11 minutes or less 90% of the time

Total of 12 personnel required to be on scene in 16 minutes or less (dispatch, turnout and travel time)

First four personnel required to be on scene in 11 minutes or less (dispatch, turnout and travel time)

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Table 5 - Components of Response

Event	Can be influenced by	Fire Department has control over Time Interval
Ignition	Public Education and Fire Prevention Inspections	No
Preburn / Fire Spread	Building Codes, Fire Prevention Inspections, Public Education, Sprinklers	Yes with the introduction of Sprinklers
Recognition / Detection	Fire Alarm Systems, Smoke Alarms, Watchman Security	Yes with community smoke alarm program and installation and/or upgrading of alarm systems.
Transmission of Alarm	Monitoring alarm systems	Introduce mandatory monitoring of alarm systems
Dispatch	Computer Aided Dispatch Services	Ensuring Contract with Dispatch Centres meets our 60 second target
Turnout	<ul style="list-style-type: none"> • Career Fire-fighters • Reduce Home to Fire Hall Distance for Paid-On-Call Fire-Fighters • Having Paid-On-Call Fire-Fighters living in the Fire Hall 	<ul style="list-style-type: none"> • Set 2 minute target time for career fire-fighters and set 6 minute target time for Paid-On-Call Fire-Fighters
Travel	<ul style="list-style-type: none"> • Reduce Fire Hall response coverage area • Improved road connectivity • Reducing traffic impedance 	<ul style="list-style-type: none"> • Build more Fire Halls / secure land for future Fire Halls • Install pre-emption devices • Establish target travel times for response
Application of Extinguishing Agent	<ul style="list-style-type: none"> • Training • Installation of sprinklers • Pre-Fire Plans • Manning 	<ul style="list-style-type: none"> • Establish 2 minute target for application of agent upon arrival • Fire Prevention Inspections

Maple Ridge Fire Department Master Plan

Emergency Response

Projected Increases In Fire Department Emergency Call Volume

Historical Departmental Call Volume Increases

Based on the data collected from the past seven years (1997-2003) the Fire Department's call volume has increased at an average rate of 7% per year. **Graph #1** depicts the effects of a continuation of 7% growth in call volume to the year 2015. The continuation of this trend for increased call volume is contingent on the department continuing to offer the same level of service as it does today. If the department increases its level of service by attending all medical calls, there would be a corresponding increase in call volume beyond the predicted 7%. These projections do not include the possible impacts of a bridge crossing the Fraser River or the increase propensity for basement suites. Historical data from other larger Fire Departments has indicated a comparatively stagnant growth in fire calls when a community approaches build out.

Emergency Calls per 1000 population based on a 7% growth rate

2003	21 calls/1000 population	Current
2008	25 calls/1000 population	Five years
2013	31 calls/1000 population	Ten years
2018	39 calls/1000 population	Fifteen years

The Population increases by 2.5 % and the emergency call volume by 7 %, this results in a 4.5 % increase in the calls per one thousand population (see graph on page 51)

The increase in call volume per one thousand residents can be attributed to higher traffic flows, increased densities and socio-economic factors. If one compares a relatively rural area the emergency calls per thousand population are much lower than you would find in a densely populated Urban area.

Projected Increase in Call Volume as a result of the Silver Valley Development (data from Maple Ridge Planning Department)

*Currently 803 parcels generate 36 calls/year

*(Response area includes all parcels north of the South Alouette River)

Anticipated Development and Based on Projected Emergency Calls/1000 Population

2003-2008	1,000 New Units	2,975 Increased Population	75 Additional Calls	<u>Total 111</u>
2008-2013	2,000 New Units	5,950 Increased Population	186 Additional Calls	<u>Total 261</u>
2013-2018	700 New Units	2,075 Increased Population	80 Additional Calls	<u>Total 341</u>

Total increase of *3,700 units and 11,000 population

*(Does not include the impact of basement or in-law suites)

Projected Increase in Call Volume in the Cottonwood/Albion Corridor

*In 2002 2,900 residential units generated 300 calls/year

*(Response area includes 234 St. to 256 St and the Fraser River to Alouette River)

Anticipated Development

2003-2008	1,800 New Units	5,000 Increased population	125 Additional Calls	Total 325
2008-2013	1,200 New Units	3,500 Increased Population	110 Additional Calls	Total 435

Total increase of *3,000 units and 8,500 population

Within ten years this area will have in excess of 8,000 homes and 16,500 population

*(Does not include the impact of basement or in-law suites)

Construction of a Fire Hall and Staffing in Cottonwood /Albion Area

A desire to provide a protected growth response standard and the current call volume of approximately 900 emergency calls, indicates that Fire Hall #4 should be build as soon as possible. The construction of this Hall would help relieve the call volume pressures on Fire Hall #1 and provided additional fire-fighting resources. The

Maple Ridge Fire Department Master Plan Emergency Response

location of this new Hall would also reduce the travel time for the paid-on-call fire-fighters and result in an improved response time to this area.

- Career staffing would be required sooner if growth were faster than anticipated and once total build out is approached in this area the establishment of one full-time crew at Fire Hall #4 is recommended.

Construction of a Fire Hall and Staffing in Silver Valley

- Fire Hall construction would be required in 2008-2010 based on projections that:
- 100 calls/year would occur in 2008-2010.
- Approximately 1,800 residential units would exist to support a paid-on-call Fire Department.
- Based on average annual increase of 7% in call volume, and growth projections of 3,700 new units and 11,000 population, career fire-fighters would not be required in Silver Valley before 2018.
- A Fire Hall and career staffing would be required sooner if growth were faster than anticipated or residential sprinklers were not installed in this development.

*** Projection for Increase Call Volume in Fire Hall #3 Area (West of 216 Street)**

- 2002 call volume 304
- 2003 anticipated call volume 325
- 2004 anticipated call volume 348 (Urban Response Standard should be considered)
- 2008 anticipated call volume 456
- 2013 anticipated call Volume 640

Projected Call Volume for Fire Hall #2 (East of 256 Street)

- 2002 call volume 123
- 2008 anticipated call volume 184
- 2013 anticipated call volume 259
- Call volume projections do not indicate the need for career staff at Fire Hall #2 within the next ten years (Rural Response Standard)

Projected Call Volume for Fire Hall #4 (Albion /Cottonwood Corridor)

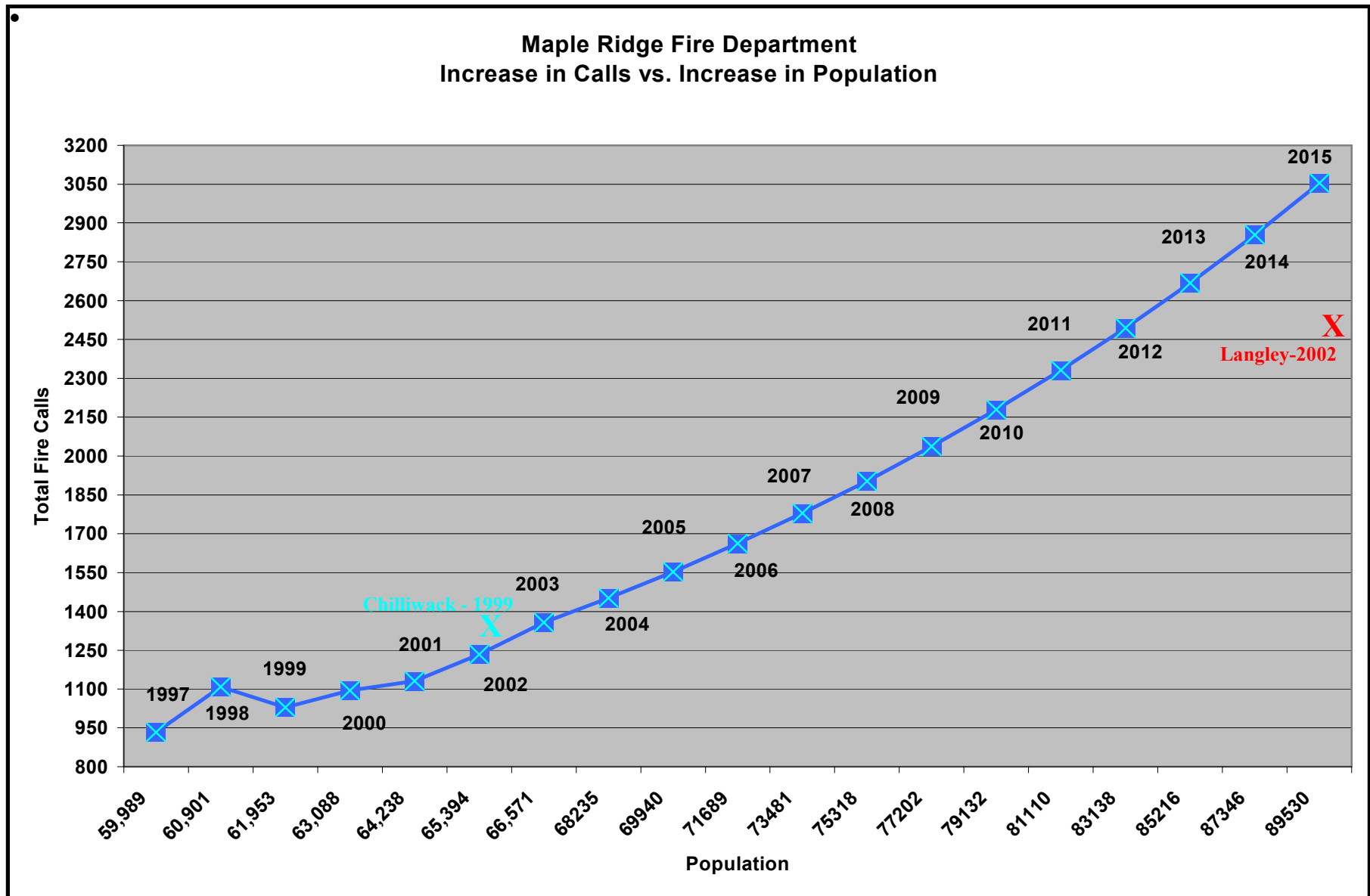
- 2002 call volume 300 (past trigger for paid-on-call Fire Hall)
- 2008 anticipated call volume 425
- 2013 anticipated call volume 535
- Projections indicate that this area requires construction of a Fire Hall as soon as possible and career staff should be contemplated around the year 2010 (Urban Response Standard at build out)

*** Projected Call Volume for Fire Hall #1**

- 2003 call volume 800 (Urban Response Standard should be considered)
- 2008 anticipated call volume 1,125
- 2013 anticipated call volume 1,575
- Current call volume indicates that Fire Hall #1 is past the point where career staff would be indicated and consideration should be given to staffing with more than one crew in the near future.

- * These projections do not include the possible impact of the new Fraser River Bridge at 200th Street. Initial studies indicate that urban growth could grow by 3,500 citizens as a result of the bridge crossing.

Maple Ridge Fire Department Master Plan Emergency Response



- Consistent with current comparisons to Township of Langley and Abbotsford
- Does not include a possible increase in response to medical calls.

Maple Ridge Fire Department Master Plan



Appendix – 2 Fire Prevention / Inspections

Maple Ridge Fire Department Master Plan

Fire Prevention/Inspections

Executive Summary

Of all the activities the fire department is involved in, *inspection of public buildings, fire cause determination and subsequent reporting*, are the only legislated duties a municipality must provide for its citizens.

The Provincial Fire Services Act outlines provincial and municipal responsibilities surrounding fire prevention issues, and Section 26 (1) states “*A municipal council must provide for a regular system of inspection of hotels and public buildings in the municipality.*” However the Fire Services Act does not refer to a recommended frequency, thereby leaving the scheduling of fire safety inspections to the individual municipalities. In this section of the master planning report, we will provide information as to a recommended frequency, and a comparison of neighbouring municipalities.

Maple Ridge Fire Department has always emphasized the importance of fire prevention and public safety education and this is in alignment with our Municipal Council’s goal of establishing “*a safe and liveable community*”. This is reinforced during a process of routine inspections that work to ensure the basic levels of life safety are adhered to and that important response information is collected and verified.

While the goal of a fire and life safety inspection may seem obvious to some, it is important to realize that on-site inspections serve as the corner stone to the departments ability to respond to an emergency in a safe and efficient manner.

A fire & life safety inspection of an existing building, allows the inspector to:

- Ensure the building and its life safety systems (fire alarm, sprinklers and emergency lights, etc) are maintained as required and that people can safely exit the structure during an emergency. A routine visit from an inspector prompts a building owner to complete the required testing and servicing.
- Collect important information for our pre-fire planning program. This information assists our fire-fighters to safely and effectively respond to an emergency in these buildings.
- Educate the building owners and managers on the importance of fire safety and the hazards their individual buildings/occupancies are faced with.
- Identify changes/alterations and use of existing buildings that are performed without benefit of a building permit. Such changes may severely effect the occupant’s ability to safely exit the structure in an emergency.
- A regular frequency of inspection reduces the likelihood of a building being used for illegal activities such a marijuana grow-op or an automotive chop shop.

In addition to performing on site inspections, fire prevention personnel work closely with other municipal departments involved in the planning and development of all aspects of the community relating to fire and life safety. Fire inspectors are often involved at the design stage of the larger more complex buildings, to provide input that enhances occupant safety and the fire departments ability to respond to an emergency.

In the preparation of the report, the fire department examined the existing hours spent on fire prevention activities, and has tried to give an accurate picture of what we are currently able to achieve, and where we feel the service is below an acceptable standard (hence the gap).

The current volume of inspections are performed by Assistant Chief’s Morris and Smitton, who complete these duties in addition to their management responsibilities. The chart below identifies the required hours necessary to perform the duties of the fire inspectors, and the service gap that currently exists within these areas.

Maple Ridge Fire Department Master Plan Fire Prevention/Inspections

Table 1

Core services of Fire Prevention Activities	Required Hours	*Current Hours	GAPS in service
Inspections - basic life safety	2,179	722	1,457
Re-inspections	450	50	400
Building safety upgrades and complaints	850	550	300
Inspections - new business licenses	162	162	0
Plan and development meetings and review	250	200	50
Pre-plans - new and revised	350	100	250
Customer comfort, by-law and private hydrant letters	350	250	100
Fire investigation	800	800	0
	5,391	2,834	2,557

Total hours of duties currently performed	2,834 Hrs
Total hours of duties required to be performed	5,391 Hrs
The Gap in Service	2,557 Hrs

* Based on 2002 statistics and these required hours are increasing as the community grows

The recommended frequency of inspection is detailed on Table 2, and provides a comparison involving neighboring municipalities.

The proposed Maple Ridge Fire Department inspection frequency detailed in Table #2 was developed in conjunction with the hazard risk classification listed in Table #4.

Maple Ridge Fire Department Master Plan Fire Prevention/Inspections

Table 2

Inspection Frequency Comparison of Other Departments

This chart indicates a comparison between other comparable districts relating to the inspection frequency performed.

		Maple Ridge	Langley Township	Mission	Abbotsford	Langley City	Surrey	Burnaby	Port Moody
Occupancy Class	Description	Frequency Objective	Frequency	Frequency	Frequency	Frequency	Frequency	Frequency	Frequency
A - 1	Assembly - Performing Arts	24 Months	6 Months	Yearly	Yearly	Yearly	6 Months	Yearly	6 Months
A - 2	Assembly – Churches	24 Months	6 Months	24 Months	Yearly	Yearly	6 Months	Yearly	6 Months
A - 2	Assembly - Community Halls	24 Months	6 Months	Yearly	Yearly	Yearly	6 Months	Yearly	6 Months
A - 2	Assembly - Licensed Beverage Est.	Yearly	6 Months	6 Months	Yearly	6 Months	6 Months	6 Months	6 Months
A - 2	Assembly – Restaurants	Yearly	6 Months	Yearly	Yearly	Yearly	6 Months	Yearly	6 Months
A - 2	Assembly – Schools	Yearly	6 Months	Yearly	Yearly	6 Months	6 Months	Yearly	6 Months
A - 2	Assembly - Day Cares	Yearly	6 Months	6 Months	Yearly	6 Months	6 Months	Yearly	6 Months
A - 3	Assembly - Arena, Swimming Pools	Yearly	Yearly	Yearly	Yearly	Yearly	6 Months	Yearly	6 Months
B - 1	Institutional - with detention or restricted facilities, Jails, etc.	24 Months	6 Months	6 Months	Yearly	4 Months	6 Months	Yearly	6 Months
B - 2	Institutional - requiring special treatment Hospitals, Rest Homes, Group homes	Yearly	6 Months	6 Months	Yearly	4 Months	6 Months	Yearly	6 Months
C	Residential – Apartments, Rooming Houses, Licensed Guest.	Yearly	Yearly	Yearly	Yearly	Yearly	6 Months	Yearly	6 Months
C	Residential -Hotels, Motels	18 Months	Yearly	Yearly		Yearly	6 Months		6 Months
D	Business and Professional Services, Banks, Offices	24 Months	18 Months	24 Months	24 Months	Yearly	Yearly	Yearly	6 Months
E	Mercantile – Retails	24 Months	Yearly	24 Months	24 Months	Yearly	Yearly	Yearly	Yearly
F - 1	High Hazard Industrial and Flammable Materials	24 Months	6 Months	6 Months	Yearly	Yearly	6 Months	Yearly	Yearly
F - 2	Medium Hazard Industrial	24 Months	18 Months	24 Months	24 Months	Yearly	Yearly	Yearly	Yearly
F - 3	Low Hazard Industrial	24 Months	18 Months	24 Months	24 Months	Yearly	Yearly	Yearly	Yearly

Maple Ridge Fire Department Master Plan Fire Prevention/Inspections

Minimum Man Hour to Perform Inspections

The following chart indicates the current number of regular inspections and occupancy type required to be completed within our community and the approximate time per unit that is required to complete a basic life safety inspection. The numbers reflected in this chart are based on inspection points required to be performed by Fire Prevention in the year 2002.

With the rapid development and growth within the district the number of inspection points are steadily increasing every year.

Table 3

Occupancy Class	Occupancy Type	Current Number of Inspection Hits	Man Hours to perform one inspection	Man Hours to complete all Inspections
Group A Div 1	Theatres	1	2	2
Group A Div 2	Churches	26	2	52
Group A Div 2	Community Halls, Libraries,	19	2	38
Group A Div 2	Pubs	15	2	30
Group A Div 2	Restaurants	130	2	130
Group A Div 2	Municipal Buildings	16	2	32
Group A Div 2	Schools – Municipal	30	2	60
Group A Div 2	Schools – Private	8	2	16
Group A Div 2	Preschools	22	1	22
Group A Div 2	Daycare Group	24	1	24
Group A Div 2	Daycare Residential	116	1	
Group A Div 3	Arenas and Swimming Pools	3	2	6
Group B Div 1	Correctional Facilities, Police Station	3	2	6
Group B Div 2	Care Homes: Group Intermediate Special	7 4 24	2	70
Group B Div 2	Hospitals	1	5	10
Group C	Apartments	84	2	168
Group C	Apartments above Retail	38	1	38
Group C	HOTELS, MOTELS	9	1	9
Group D	Commercial	372	1	372
Group D	Government Buildings	20	1	20
Group E	Retail (Mercantile)	464	1	464
Group F Div 1	Industrial Warehouses HIGH HAZARD	1	2	2
Group F Div 2	Industrial Warehouses MEDIUM HAZARD	290	1	290
Group F Div 2	AUTOMOTIVE	91	1	91
Group F Div 2	Gas Stations	26	1	26
Group F Div 3	Industrial Warehouses LOW HAZARD	See F-2 Above		
	New Business License Approvals	162 Last Year	1	162
Total				2,140

Maple Ridge Fire Department Master Plan Fire Prevention/Inspections

Building a Safe and Livable Community - Minimum Inspection Frequency Recommendation

Fire Prevention is mandated and driven by the Provincial Fire Services Act Chapter 144 and Municipal by-laws created to sustain a safe and livable community.

Fire and Life Safety inspections are structured around guidelines and standards recommended by the Fire Services Act that references to the National Fire Protection Association (NFPA), British Columbia Fire Codes, British Columbia Building Codes and other applicable standards.

Table 4

Occupancy Class	Occupancy Type	Current Number of Inspection Hits	Current Inspection Frequency	% Yearly Completed	Inspection Frequency Objective	Hazard Risk	Comments
Group A Div 1	Theatres	1	Yearly	New	24 Months	Low	High occupancy load of citizens with risk of life loss or injuries during and incident.
Group A Div 2	Churches	26	Yearly	11%	24 Months	Medium	High occupancy load of citizens with risk of life loss or injuries during and incident.
Group A Div 2	Community Halls, Libraries	19	Yearly	33%	24 Months	High	High occupancy load of children and adults with high risk of life loss or injuries during and incident.
Group A Div 2	Pubs	15	Yearly	40%	Yearly	High	HIGH OCCUPANCY LOAD OF CITIZENS WITH HIGH RISK OF LIFE LOSS OR INJURIES DURING AND INCIDENT.
Group A Div 2	Restaurants	130	Yearly	77%	Yearly	High	High occupancy load of citizens with risk of life loss or injuries during and incident.
Group A Div 2	Municipal Buildings	16	Yearly	18%	24 Months	Low	Occupancy load of citizens and staff with risk of life loss or injuries during and incident.
Group A Div 2	Schools – Municipal	30	Yearly	93%	Yearly	Medium	High occupancy load of children and young adults with high risk of life loss or injuries during and incident.
Group A Div 2	Schools – Private	8	Yearly	62%	Yearly	Medium	High occupancy load of children and young adults with high risk of life loss or injuries during and incident.
Group A Div 2	Preschools	22	Yearly	36%	Yearly	Medium	High occupancy load of children with risk of life loss or injuries during and incident.
Group A Div 2	Daycare Group	24	Yearly	17%	Yearly	Medium	High occupancy load of children and young adults with high risk of life loss or injuries during and incident.

Maple Ridge Fire Department Master Plan Fire Prevention/Inspections

Table 4 - con't.

Occupancy Class	Occupancy Type	Current Number of Inspection Hits	Current Inspection Frequency	% Yearly Completed	Inspection Frequency Objective	Hazard Risk	Comments
Group A Div 2	Daycare Residential	116	Start up Only	12 New	Start Up Only	Low	Low occupancy load of children with risk of life loss or injuries during and incident.
Group A Div 3	Arenas and Swimming Pools	3	Yearly	66%	Yearly	Medium	High occupancy load with multiple activities
Group B Div 1	Correctional Facilities, Police Station	3	Yearly	0%	24 Months	High	High occupancy load of possible bed and confined occupants.
Group B Div 2	Care Homes: Group Intermediate Special	7 4 24	Yearly	0% 50% 83%	YEARLY	Medium	High occupancy load of possible bed and wheelchair victims with high risk of life loss during and incident. Limited mobility
Group B Div 2	Hospitals	1	Yearly	0%	Yearly	Low	High occupancy load of possible bed and wheelchair victims with high risk of life loss during and incident. Limited mobility
Group C	Apartments	84	Yearly	82%	Yearly	Medium To High	High residential occupancy with high risk of life loss or injuries during and incident.
Group C	Apartments above Retail	38	Yearly	26%	Yearly	Medium To High	High residential occupancy with high risk of life loss or injuries during and incident.
Group C	Hotels, Motels	9	Yearly	22%	16 –18 Months	Medium to High	High occupancy load of citizens with high risk of life loss or injuries during and incident.
Group D	Commercial	372	As time permits	47%	24 Months	Low	Low Risk and low occupancy load allows us to increase the time duration between inspections but maintain safety for the workers and customers.
Group D	Government Buildings	20	As time permits	0%	24 Months	Low	Low risk and low occupancy load allows us to increase the time duration between inspections but maintain safety for the workers and customers.
Group E	Retail (Mercantile)	464	As time permits	59%	24 Months	Low	Medium to high risk and transient occupancy load allows us to increase the time duration between inspections but maintain safety for the workers and customers.

Maple Ridge Fire Department Master Plan Fire Prevention/Inspections

Table 4 – con't.

Occupancy Class	Occupancy Type	Current Number of Inspection Hits	Current Inspection Frequency	% Yearly Completed	Inspection Frequency Objective	Hazard Risk	Comments
Group F Div 1	Industrial Warehouses High Hazard	1	As time permits	100%	24 Months	Medium to High	Low occupancy with high risk of hazardous storage. Could be a hazard to the surrounding complexes and/or residential housing located in the neighborhood of the structure.
Group F Div 2	Industrial Warehouses Medium Hazard	290	As time permits	27%	24 Months	Medium to Low	Low occupancy with high risk of hazardous storage. Hazard with flammable liquids on site.
Group F Div 2	Automotive	91	As time permits	29%	24 Months	Low	Low occupancy with high risk of hazardous storage. Hazard with flammable liquids on site.
Group F Div 2	Gas Stations	26	Yearly	46%	Yearly	Medium to High	Low occupancy with high risk of hazardous storage. High Hazard with flammable liquids on site.
Group F Div 3	Industrial Warehouses Low Hazard	See F-2 Above	As time permits	N/A	24 Months	Low	Combined with F-2 occupancy
	New Business License Approvals	162 Last Year	As Required	100%	As Required		TO ASSURE THE COMPLEX IS SAFE FOR ALL THE STAFF AND CUSTOMERS PRIOR TO OPENING AND EDUCATE THE OWNERS OF THE FIRE SAFETY ISSUES THEY ARE LIABLE FOR.

Maple Ridge Fire Department Master Plan Fire Prevention/Inspections

Fire Prevention Required Duties by By-Laws

Another area Fire Prevention is involved in is maintaining Municipal by-laws and B.C. Fire Code enforcement.

Table 5

By-law and Code Enforcement	Current Frequency	Inspection Frequency Objective	Comments	Currently Completed
Oil Tank Removals and Installations		As required	Permits are required to install or remove each fuel tank and dispensing pump from properties.	2%
Fire Works Inspections	Yes	Annually	TO ASSURE THOSE VENDERS COMPLY WITH BC FIRE CODES AND MUNICIPAL BY-LAWS.	100%
Fire Lane Inspection and Letters	Yes	Upon Complaint or visual	Assisting Strata Councils in maintaining fire lanes within there complexes.	20%
Private Hydrant Location and Maintenance	Yes	Annual Letters and Visual Check	As Required	80%
Municipal Hydrant Location and Visibility	Yes	As required or Visual complaint	As Required	15%
Burning By-Law Permits				
New Building Plan Checks	As Required	All New Complexes	As Required	5%
Fire Safety Plan Review and Approvals	Yes	As Required		As Required

Table 6

Fire Department Operations and Customer Assistance	Current Frequency	Inspection Frequency Objective	Comments	Currently Completed
Pre-Fire Plans New and Updates	New Buildings or as identified	Not more than 18 months		N/A
Customer relations Code Issues	As complaints or as required			
Wood Stove Inspections and Inquiries	As Required	As Required		
B.B.Q. Inspections	As Required	As Required		
Home Safety Inspections	As Required	As Required		
Customer Service Front Desk	As Required	As Required		

Maple Ridge Fire Department Master Plan



Appendix – 3 Public Education

**Maple Ridge Fire Department Master Plan
Fire Prevention/Inspections**

Maple Ridge Fire Department Master Plan

Public Education

Executive Summary

This report outlines the current programs and campaigns that the Public Education Division delivers to the community. This report also outlines new programs expanded, existing programs that a future delivery model would be able to deliver.

There are so many potential customers for public education to pursue that the current model of service delivery does not allow us to reach everyone. To ensure a delivery of current programs, customers are always booked such that if paid-on-call fire-fighters are not able to do so, then the Fire & Life Safety Educator will make the presentation. This system has been successful in ensuring consistent and uninterrupted delivery but has capped the potential of expanding current programs and developing new programs.

If service gaps were filled, there would be an additional 3,237 fire-fighter-hours of work. This is based on current demand for service only. As the community grows there will be a further increase in demand for services and less time for administration and development of programs.

Service gaps can be filled in one of three ways:

1. Hiring individuals to act solely in a public education capacity;
2. Having career fire-fighters assist in the delivery of public education programs.
3. Utilizing paid-on-call fire-fighters that are freed up by having career fire-fighters attend to emergency calls. Langley Township Fire Department has chosen to hire three full time educators to deliver their programs with support from their paid-on-call fire-fighters. Abbotsford currently has two fulltime educators and the support of career and paid-on-call fire-fighters.

Background

The Maple Ridge Fire Department and Maple Ridge Council have proactively adopted public education as an important directive in line with Council's vision of a safe and livable community. This is similar to the mandate of Ontario's Fire and Prevention Act which states that "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". The Fire Services Act of British Columbia has no provision for mandatory municipal fire and life safety public education. Maple Ridge can be proud of its stance in fire and life safety education.

All programs have been well received by the public and partnerships with the business community have evolved. It is difficult to track the number of incidents that have not occurred because of fire and life safety programs but tracking retention of knowledge through student evaluations does show that such programs are effective in teaching safe behaviours. This will undoubtedly result in fewer incidents of injury and loss of property or life.

Provincially, the British Columbia Public Fire and Life Safety Education Advisory Committee makes recommendations regarding fire and life safety education to the Fire Commissioner. This committee is made up of representatives from the following groups:

Justice Institute of BC	Office of the Fire Commissioner
Fire Training Officers' Association	First Nations Emergency Services Society
Fire Chiefs' Association of BC	Greater Vancouver Fire Chiefs' Association Public Education Committee (GVFCA)
Volunteer Fire-fighters' Association of BC	Ministry of Education
Ministry of Forests	Fire Prevention Officers' Association of BC
Ministry of Health	BC Professional Fire-fighters' Association

Maple Ridge Fire Department Master Plan Public Education

The British Columbia Public Fire and Life Safety Education Advisory Committee has produced a strategic plan with specific goals for the period 2002-2007. Task groups are established to support these initiatives. Our programs are in line with the committee's initiatives and follow recommendations set out by the committee.

In the Lower Mainland the Greater Vancouver Fire Chiefs' Association (GVFCA) Public Education Committee is made up of public educators from numerous departments ranging from Vancouver Island to the Okanagan. This committee is largely responsible for completing initiatives of the provincial advisory committee and wholly responsible for delivery of public education to their own communities. The GVFCA Public Education Committee meets every two months and shares ideas and resources to ensure consistency and efficiency in the delivery of safety messages and initiatives. We are a strong player in this group of educators. Currently we have a seat on two subcommittees. The GVFCA Public Education Committee members are the leaders of the province in public education.

Within our department, delivery of public education is coordinated and primarily delivered by the Fire and Life Safety Educator. In years past, some fire-fighters have volunteered their time to assist in the delivery of programs. As of 2003, some programs will see fire-fighters receive compensation for their time. However the number of available and interested fire-fighters still remains low, especially for programs requiring daytime delivery. The active fire-fighters are a core group of less than ten – approximately 10% of the entire body. Large-scale events such as the Home Show, Fall Fair, Hot Summer Nights, and parade still remain volunteer and do seem to have stronger support as they are evening and weekend, high profile events. It is interesting to note that Abbotsford currently has two full-time educators while Langley Township has hired a third full-time educator. Both departments also employ their fire-fighters to support program delivery.

Fire and Life Safety Education Summary

The public education division provides a variety of fire and life safety programs to preschool and elementary and high school children, various citizen groups, apartment & strata groups, and businesses, designed to reduce injury or prevent loss of life and property through education.

Our programs receive very positive feedback from the public and are established as recurring programs. All bookings are currently done such that if paid-on-call fire-fighters are not able to deliver the program, then the Fire & Life Safety Educator will. Not having a guaranteed delivery by the fire-fighters reduces the amount of bookings that can be undertaken or pursued with a professional and quality delivery.

Programs currently delivered are summarized as follows:

1. Getting to KNOW Fire – Preschool Program

- Provincial curriculum developed by the Curriculum Development Task Group established under the British Columbia Public Fire and Life Safety Education Advisory Committee, and published by the Office of the Fire Commissioner.
- Teaches key fire safety behaviours.
- Delivered on demand to preschools at the Fire Hall or at preschool.

2. Getting to KNOW Fire – Elementary School Program

- Provincial curriculum developed by the Curriculum Development Task Group established under the British Columbia Public Fire and Life Safety Education Advisory Committee, and published by the Office of the Fire Commissioner.
- Offered to the primary grades (K-3) and intermediate grades (5 & 6). All 19 schools are reached each year with the program alternating between primary grades one year and intermediate grades the next.
- Often classes are doubled and tripled to accommodate visits to all schools.

Maple Ridge Fire Department Master Plan

Public Education

3. Community Service Groups

- Many Guide and Scout groups and youth organizations schedule hall tours and safety talks.
- The Fire Department assists with the fulfillment of badge requirements.

4. Juvenile Firesetter Intervention

- The Arson Prevention Program (TAPP-C) is an intervention program targeting children aged 2-17 who are involved with fire setting and fire play. Juvenile fire setting is a serious problem that can begin at an early age and requires intervention.
- Each intervention consists of four sessions of one to one-and a-half hours carried out by two fire-fighters.

5. Junior Fire-Fighter Youth Academy

- The Youth Academy is a career and work experience program for students aged 16 – 18 in grades 11 and 12. Students receive credits for school by completing the 120-hour program.
- Interested students apply for this program and participate in a selection process similar to the one that paid-on-call fire-fighters go through.
- The Maple Ridge Fire Department hired its first Youth Academy graduate this year as a paid-on-call fire-fighter for Hall #3.
- Students attend weekly for three and a half hours of instruction and training.

6. Apartment Floor Wardens

- Apartment/high rise buildings are required to have a fire safety plan under the BC Fire Code. The fire safety plan provides information on the fire alarm and protection systems within the building along with procedures for occupants to follow in the event of an alarm.
- Trained floor wardens provide direction and leadership to tenants of a building. They teach and rehearse evacuation procedures to facilitate accountability and reporting/confirmation of alarms.
- Regular fire drills are conducted.

7. Fire Drills/Planning, Consultations

- Supervised evacuation drills are conducted at all public and private schools during Fire Prevention Week.
- Upon request of businesses, health facilities, apartment complexes etc. we attend to assist in planning and to observe fire drill procedures providing feedback for improvement or change.

8. Fire Prevention Week

- Occurs each year during the week of October 9th.
- Open House takes place at Hall #1.
- Community spirit/awareness with “*Sign Up the Community*” campaign where businesses use their reader boards to promote Fire Prevention Week/Fire Safety.
- *Community Safety Stars* are recognized with awards at a regular Council meeting.

9. Summer Safety Smart Cards

- Began in summer of 2001 to reinforce safety messages and behaviours.
- Rewards are funded by McDonalds Restaurants (Paul Rose Ltd.).

10. Parades

- Fire-fighters volunteer their time to attend local parades: Mountain Festival, Christmas, Pitt Meadows Day.

11. Charities Committee

- Each year the committee undertakes four major, very successful fundraising efforts.
- Fire-fighters volunteer their time for all fundraising events.

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12. Hot Summer Nights

- During July and August of each year, fire-fighters volunteer their time to visit neighborhoods in the community to interact and educate children and adults plus giving them the opportunity to have some fun with fire hoses.

13. Trauma Pups

- All apparatus carry stuffed Dalmatian dogs, which bring comfort and reassurance to children in distress through injury or trauma to themselves or a parent/care giver.
- Inventory maintenance and paper work is required.

14. Extinguisher Training

- Currently extinguisher training has been at a seminar level only.
- A training prop has been purchased and delivery of hands-on training sessions will begin on a cost recovery basis.

15. Emergency Preparedness

- Delivered on demand with Emergency Social Services to various groups in the community to prepare themselves in the event of an earthquake or other major disaster.

New Programs and Modifications to Existing Programs for the FUTURE MODEL are summarized as follows:

1. Getting to KNOW Fire – Preschool Program

- Teaches key fire safety behaviors.
- Delivered annually to all 22 preschools at the Fire Hall or at preschool.
- Currently delivered on demand only.
- **Additional 47 annual man-hours.**

2. Getting to KNOW Fire – Elementary School Program

- Two fire-fighters will visit each elementary classroom every second year.
- **Additional 477 annual man-hours.**

3. Community Service Groups

- All Guide and Scout groups and youth organizations receive safety talks and/or hall tours.
- **Additional 153 annual man-hours.**

4. Apartment Floor Wardens

- All 84 apartments should have established floor warden programs with annual supervised fire drills conducted.
- **Additional 320 annual man-hours.**

5. Extinguisher Training

- Expand extinguisher training to include seminar with hands-on practical component.
- Sliding fee scale to allow small non-profit groups to participate.
- If one course per month were conducted.
- **92 additional annual man-hours**

6. Firecracker/Halloween Safety

- Annual visits to all grade seven classes at the elementary schools and grade eight classes at the secondary schools.
- **Additional 80 annual man-hours.**

7. Church Fire Safety/Evacuation

- To ensure that emergency procedures are in place and practiced.
- **Additional 108 annual man-hours.**

8. Hotel/Motel Fire Safety/Evacuation

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- To ensure that emergency procedures are in place and practiced.
 - **Additional 36 annual man-hours.**
- 9. Restaurant Fire Safety/Evacuation**
- To ensure that emergency procedures are in place and practiced.
 - **Additional 516 annual man-hours.**
- 10. Car Seat Promotion/Inspection**
- To promote awareness and inspect installation of child seats.
 - **Additional 32 annual man-hours**
- 11. Smoke Alarm Program**
- To promote the use of smoke alarms and escape planning in homes.
 - Seek corporate sponsorship to allow purchase and distribution of smoke alarms to those in need.
 - **Additional 493 annual man-hours.**
- 12. Parent Advisory Council (PAC)**
- Annual fire safety presentations to reinforce what is being taught to the their children in elementary school program.
 - **Additional 30 annual man-hours**
- 13. Group Home Fire Safety**
- Annual and/or semi-annual visits to all seven group homes.
 - **Additional 13 annual man-hours.**
- 14. Intermediate Care Facility Fire Safety**
- Annual training with staff at all four facilities.
 - Annual visit with residents at all four facilities.
 - **Additional 4 annual man-hours.**
- 15. Special Care Facility Fire Safety**
- Annual training with staff at all 24 facilities.
 - **Additional 40 annual man-hours.**
- 16. Seniors Fire Safety/Injury Prevention**
- High risk group.
 - Semi-annual or quarterly visits to all seniors' groups.
 - **Additional 40 annual man-hours.**
- 17. Emergency Preparedness**
- With E.S.S. presentations.
 - Big challenge to change public apathy.
 - **Additional 11 annual man-hours.**
- 18. Junior Fire-fighter Cadet Program**
- Program for Youth Academy graduates to remain active with the Maple Ridge Fire Department until they are old enough to apply as recruit fire-fighters.
 - Program for students aged 16 – 19 who are interested in fire-fighting but are unable to attend the Youth Academy program.
 - Programs would run weekly for two hours per night, September to June.
 - **Additional 170 annual man-hours.**

If service gaps are filled, there would be an increase of approximately 3,237 fire-fighter-hours of work.

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Conclusion

It is not feasible to introduce new and necessary programs with the current model of delivery.

It is not possible to expand upon existing programs with the current model of delivery.

The current model of delivery does not guarantee a delivery of programs by paid-on-call fire-fighters as it is dependent upon their availability and their ability to deliver educational programs. Not all fire-fighters are interested in or able to deliver educational programs.

To successfully and proudly deliver all of the programs as planned would require career fire-fighters or career educators.

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Public Education – Programs/Campaigns - Building a Safe and Livable Community

Table 1

Program/Campaign	Delivery Frequency	Number of Sessions 2002					Hours for One Session	Educators Required per Session	Total Hours 2002		Gap/Comment
HIGH RISK GROUP											
	Current	Future	Current		Future				Current	Future	
			Groups	Sessions	Groups	Sessions					
Children											
Preschool Program	On Demand	Annually	12	19	22	35	1.5	2	58	105	Each group in all 22 preschools should be reached annually.
Elementary School Program – Primary Grades	Biannually	Biannually	19	133	19	196	1.5+	2	307	784	Primary grades are visited every second year. Students will see FD twice in their primary career.
Elementary School Program – Intermediate Grades (5,6)	Biannually	Biannually	19	67	19	97	1.5+	2	188* 2003 hours	388	Intermediate grades are visited every second year. Students will see FD once in their intermediate career for fire safety and a second time if “fireworks safety is introduced for grade 7’s.
The Arson Prevention Program for Children – TAPP-C	On Demand		12	38	?	?	1.5	2	84	100+	12 interventions were begun in 2002 – some carried over to 2003
Community Groups – Sparks/Brownies/Guides	On Demand	Annually	3	3	10	30	1.5	2	9	90	Opportunity to complete necessary badge work.
Community Groups – Beavers/Cubs/Scouts	On Demand	Annually	6	6	10	30	1.5	2	18	90	Opportunity to complete necessary badge work.
Emergency Preparedness	On Demand with ESS	Quarterly	2	2	4	4	1 – 4	1	5.5	16	Little interest from public in proactive program. Numerous presentations cancelled due to lack of interest.
School Fire Drills – Elementary	Annually	Annually	19	19	19	19	1	5+	128	128	Annually during Fire Prevention Week
School Fire Drills – Secondary	Annually	Annually	4	4	5	5	1.5	5 +	32	38	Annually during Fire Prevention Week
School Fire Drills – Private	Annually	Annually	5	5	5	5	1	5 +	25	25	Annually during Fire Prevention Week
Baby Safety	On Demand	Quarterly	1	1	4	4	2	1	2	8	On demand from health unit. Additional “baby safe program can be delivered by maternity nurses when program is up and running – requires funding/sponsorship.
Firecracker/Halloween Safety	New	Annually	0	0	23	40	2	2	0	80	Should be annual grade 7/8 visits
Youth Academy Training	Annually	Annually	1	35	1	35	3.5	2	480	480	

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Table 1 – con’t.

Program/Campaign	Delivery Frequency		Number of Sessions 2002				Hours for One Session	Educators Required per Session	Total Hours 2002		Gap/Comment
HIGH RISK GROUP											
	Current	Future	Current		Future				Current	Future	
			Groups	Sessions	Group	Session					
Adult Education											
Hall Tours	On Demand	On Demand	2	2	4	4	1	1 +	2	8	Mostly “walk-in’s”
Seniors Fire Safety/Injury Prevention	On Demand	Quarterly	2	2	12	12	1 – 5	2	10	50	High-risk group in need of attention.
Extinguisher Training	On Demand	marketed	2	2	12	12	4	2	4	96	New equipment allows for more thorough program – need to market aggressively. Businesses, Group Care Home Staff, Floor Wardens, Municipal Staff, General Public.
Group Home Fire Safety	On Demand	Annually	1	1	7	7	2	1	1.5	14	Should be annual/semi-annual visits to all 7
Parent Advisory Council (PAC) Fire Safety	New	Annually	23	9	23	23	1.5	1	5	35	Begun spring 2003
Floor Warden Program Apartment Fire Safety	On Demand or by necessity from incidents	Annual visit for planning/ Fire drill	6	8	84	84	2	2	16	336	Need aggressive approach to reach all 84 apartment buildings annually. Those that have organized floor wardens have responded well to alarms.
Intermediate Care Facility Fire Safety	On Demand	Annually	2	2	4	4	2	1	4	8	Should be annual with staff at all 4
Special Care Facility Fire Safety	On Demand	Annually	1	1	21	21	2	1	2	42	Should be annual with staff at all 24
Church Fire Safety/Evacuation	New	Annually	0	0	27	27	2	2	0	108	Organization meeting is scheduled for fall of 2003
Hotel/Motel Fire Safety/Evacuation	New	Annually	0	0	9	9	2	2	0	36	Training for staff and supervisors required.
Restaurant Fire Safety/Evacuation	New	Annually	0	0	129	129	2	2	0	516	Training for staff and supervisors required. Patrons receive no direction nor preparation for emergency evacuation.
Car Seat – promotion/inspection	New	Semi-annually	0	0	2	4	4	2	0	32	Checking installation and standards of existing seats.
Community Programs											
Open House	Annually	Annually	1	1	1	1	8	20	104	160	Annually during Fire Prevention Week
Fire Prevention Week – “Sign Up the Community”	Annually	Annually	82	82	90	90	0.5	1	41	45	Community spirit and promotion of Fire Prevention Week messages.

Maple Ridge Fire Department Master Plan Public Education

Table 1, con't.

Program/Campaign	Delivery Frequency		Number of Sessions 2002				Hours for One Session	Educators Required per Session	Total Hours 2002		Gap/Comment
HIGH RISK GROUP											
	Current	Future	Current				Current	Future			
			Groups	Sessions	Group	Session					
Adult Education, con't											
Summer Safety Smart Cards	Annually: June-Sept.	Annually: June-Sept.									On going – delivery is opportunistic
Address Awareness	Annually	Annually	4	405	4	500	3	8			Youth Academy Project
Hot Summer Nights	Weekly: July & Aug	Weekly: July & Aug	13	13	24	24	3	4+	(135)	(150)	(Volunteer Hours)
Community Events-Home Show	Annually	Annually	1				25	2+	(88)	100	(Volunteer Hours)
Community Events-Int. Kids Day/Kid Safe 911	Annually	Annually	1				6	4	(12)	48	(Volunteer Hours)
Community Events-NAOSH Week	Annually	Annually	1				3	1 +	(8)	8	(Volunteer Hours)
Community Events-McHappy Day	Annually	Annually	1				4.5	2	(9)	(9)	(Volunteer Hours) -Crew should be at each of 3locations.
Community Events-Fall Fair	Annually	Annually	0				25	4 +	0	100	
Community Events-Hammond Days	Annually	Annually	1				6	4+	(36)	36	(Volunteer Hours)
Community Events-Parades	Annually	Annually	3				2	4+	(36)	(36)	(Volunteer Hours)
Fall Winter Safety	Annually	Annually									media PSA's – news releases
Junior Fire-fighter Cadet Program	New	Weekly	0	0	1	40	2	2	0	160	

Maple Ridge Fire Department Master Plan



Appendix – 4 Training

Maple Ridge Fire Department Master Plan Training

Executive Summary

The purpose of this report is to detail and furthermore, to present the challenges to training with regard to the core service provided by the Fire Department. Presently the core service training demand exceeds the ability of what the Training Division is able to arrange. We tend to schedule training in response to deficiencies that become apparent at incidents rather than meeting the full core service requirements. As it is, the training schedule is approximately 1½ times that which the average Maple Ridge fire-fighter is able to spend. Should all of the present core service training be met the average fire-fighter needs to spend approximately 2½ times as much time in training as they presently do.

This develops large gaps in what training the fire-fighter actually receives in a given year and thereby impacts his mastery of skill and perhaps ultimately his safety.

Applicable Training Standards

While there are few specific regulations or standards to meet in regard to fire department training issues, there is the “absolute” fire-fighter safety philosophy that all fire service members strive to meet. Fire-fighter life safety is paramount in comparison to all other issues present on the fire ground. This philosophy is also reflected in the District of Maple Ridge Council’s values regarding human resources – “To recognize that our people are our most valuable resource” and “in keeping with ensuring a “Safe and Liveable Community”.

Additionally, the Worker’s Compensation Act of BC, (W.C.A.), as with all industry in British Columbia, does have some impact on the Fire Department. It sets out general statutes requiring training by the employer for its employees as well as several regulations:

- W.C.A. 115, (1), (a), (i), and (ii),
- W.C.A. 115, (2), (e),

Paraphrased section 115, (1), (a), (i), and (ii) states that the employer shall ensure the health and safety of all workers working for that employer, and any other workers present at a workplace at which that employer’s work is being carried out.

While section 115, (2), (e) an employer must provide to the employer’s workers the information, instruction, training and supervision necessary to ensure the health and safety of those workers in carrying out their work and to ensure the health and safety of other workers at the workplace.

The WCB regulation also contains very specific regulations governing the actions of the fire service in the following sections:

- WCB Regulation 38 Fire-Fighting,
- WCB Regulation 39 Rescue.

It is from the previous philosophies and these pieces of legislation that causes the Training Division to identify training standards that ensure the previous are satisfied. The B.C. Office of the Fire Commissioner, (OFC), adopts standards of training and competency for the fire service.

The first standard adopted by the OFC was for the training of the fire-fighter. The original standard was the Volunteer Fire-Fighter Certification Program. In 1995, the OFC adopted the B.C. Fire-Fighter Standard which was based on the National Fire Protection Association, (NFPA), 1001, Fire-Fighter Qualifications Standard. In 2003 the OFC adopted the actual NFPA 1001 as the standard of training for the B.C. Fire Service.

Likewise, the OFC adopted the fire apparatus driver operator. A provincial standard of competencies was created in 1996 from the NFPA 1002 Driver Operator Standard. In 2003, the parent NFPA 1002 standard was adopted as the new provincial standard. The Motor Vehicle Act and Regulations and the National Safety Code/Councils also contributes to the standards of competencies in regards to the legal aspects of driving with lights and sirens.

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The OFC recognized a third standard for the fire/company officer. This standard of training was not available to the volunteer fire service and in 1994 the Maple Ridge Fire Department began a course that mirrored the Provincial Company Officers Program. In 1997 that standard changed to the B.C. Fire Officer Standard which in 2003 has, also, changed to the NFPA 1021 Fire Officer Standard, the same standard Maple Ridge has used since 1994.

Each of these standards refer to other relevant standards to meet their full intents; e.g. NFPA 1001 refers to NFPA 472 in regards to levels of response to a hazardous materials incident. Meanwhile, other standards as these listed below set performance requirements for the members of the fire service:

- NFPA 1710 Standard for Career Fire Departments
- NFPA 1720 Standard for Volunteer Fire Departments
- Ontario Fire Marshall for Response Criteria
- NFPA 1500 Standard for Fire Department Safety

Current Service Delivery Model

The “Current Service Delivery Model” is based on what services the fire department currently delivers and is identified in the Models of Emergency Response and Core Services.

Training for each of these core services have been identified in two methods, the first is the initial training required to master the skill and the second maintenance training to maintain the skill mastery. These skills are listed within the previously discussed and applicable standard; all of the skills required to meet the core services have been listed in Table 5 to 9. The Standards also allows for us to affix times to each core service for the initial and maintenance training. Data from this table has been used to generate the following reports, discourse and tables and are displayed from two aspects, first from that of the fire-fighter and second, from that of the department.

Fire-Fighter Aspect - Current Model, Opportunity And Standard

The training opportunities of a Maple Ridge fire-fighter are based on the following:

- One training opportunity per week.
- No practises during a week where a statutory holiday falls on the Monday or Friday
- Therefore $52 - 8$ (2002 statutory holidays) = 44 training opportunities

Maximum training hours are calculated as follows:

- $44 \text{ training opportunities per year} \times 2.5 \text{ hours} = 110 \text{ Training Hours}$

The 75% attendance requirement is an allowance for vacations and other leaves so that a fire-fighter is not penalized for non-attendance. Minimum training hours per Department Standard are calculated as follows:

- $110 \text{ Training Hours} \times 75\% = 82.5 \text{ hours}$

2002 Year Average Training Hours are calculated as follows:

- $7,698.25 \text{ total training hours (2002)} \div 95 \text{ fire-fighters} = 81.0 \text{ hours}$

The following report is established from **Table 1** and shows the impact of the training on the individual fire-fighter. In particular it indicates that the fire-fighter is not able to train to meet all of the requirements of the current core services in several ways. First, the accompanying data demonstrates that:

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- the current training schedule exceeds the maximum training hours by 111 %
- the current training schedule exceeds the minimum standard hours by 149 %
- the current training schedule exceeds the average Maple Ridge fire-fighter's training time by 151%

Currently, the training schedule does not meet all of the requirements in skill maintenance of our present core services. Therefore the following indicates:

- the required training schedule exceeds the maximum training hours by 193%
- the required training schedule exceeds the minimum standard hours by 258%
- the required training schedule exceeds the average Maple Ridge fire-fighter's training time by 262%

Fire Department Aspect- Current Model, Opportunity And Standard

Another point of view is the impact of all fire-fighter hours and Table 2, shows the impact of the training on the organization as a whole. Again, the data indicates that the department does not train to meet all of the requirements of the core services in several ways. Specifically the accompanying data demonstrates that:

- the current training schedule exceeds the maximum training hours by 1,235 fire-fighter hours
- the current training schedule exceeds the minimum standard hours by 3,847 fire-fighter hours
- the current training schedule exceeds the average Maple Ridge fire-fighter's training time by 3,986 fire-fighter hours

Currently, the training schedule does not meet all of the requirements in skill maintenance of our present core services. Therefore the following indicates:

- the required training schedule exceeds the maximum training hours by 9,785 fire-fighter hours
- the required training schedule exceeds the minimum standard hours by 12,397 fire-fighter hours
- the required training schedule exceeds the average Maple Ridge fire-fighter's training hours by 12,536 fire-fighter hours

Future Service Delivery Model – Current Core Services

The “Future Service Delivery Model” is based on what services the fire department perceives that it will deliver in the future. These future services have been identified in the Models of Emergency Response and Core Services.

Again, training for each of these future core services have been identified in two ways, the first is the initial training required to master the skill and the second maintenance training to maintain the skill mastery. All of the skills required to meet the core services have been listed in Tables 5 to 9. Training to applicable standards will continue in the future and therefore time has been associated to each core service for initial and maintenance training. Data from this appendix has been used to generate the following reports, discourse and tables and are displayed from two aspects, first from that of the fire-fighter and second, from that of the department.

Fire-Fighter Aspect

As the future service delivery model suggests a combination of career and paid-on-call fire-fighters would be required to meet those goals, training requirements in the future would require a combination of service for the remaining paid-on-call training requirements and the future career requirements.

This section, then apportions the training requirements of the career as well as the remaining paid-on-call segment. The previously discussed training attendance requirements would be unchanged for paid-on-call members as would the time overruns as indicated in Table 1.

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Note: Typically, fire-fighters full time equivalencies' are based on a 40 hour/week and this extrapolates to 2,080 hours in the standard work year. In this model no allowances have been made for the 25% margin as in the paid-on-call model for vacations.

The following report is established from Table 3 and shows the impact of the training on the individual fire-fighter. The accompanying data demonstrates that:

- the career fire-fighter full-time equivalent is 2,080 hours/year, (42 hours/week X 52 weeks/year)
- the current training schedule is 213 fire-fighter hours
- which represents 10.25% of an full-time equivalent

However, with the addition of the future core services to the existing core services, the training requirements increase significantly. The accompanying data demonstrates that:

- the future training schedule would be 386 fire-fighter hours
- which represents 18.56% of an full-time equivalent

The move to the future core services will require further initial. The accompanying data demonstrates that:

- the future initial training schedule would be 424 fire-fighter hours
- which represents 20.38% of an full time equivalent

Should the maintenance training for the present core services and the initial training for the future core services be realized in a single year, the data demonstrates that:

- the training schedule would be 637 fire-fighter hours
- which represents 30.63% of an full-time equivalent

Fire Department Aspect

The final point of view is the impact of all fire-fighter hours and Table 4, shows the impact of the training on the organization as a whole. The data indicates that the department will still be expending a large amount of resources to satisfy the training requirements of the core services in the future.

Specifically, the accompanying data demonstrates that the remaining paid-on-call fire-fighters will still be required to spend the maximum of 6,930 hours training. However the present standard of 75% will mute the maximum to 5,197 hours. This training time would be more appropriate for the paid-on-call fire-fighter as the career component would absorb more to the technical training.

Based on the Emergency Response Summary requirements to meet the "Urban" standard by using 32 career fire-fighters, Table 4 indicates that 12,352 fire-fighter hours would be dedicated to training.

Therefore, the total impact of the required training on the department would be approximately 17,549.5 hours.

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Options

In this section we will look at extending practice hours, adding practices to the schedule, specialization training, hiring staff as several options to meeting the service gaps.

Extending or Adding To The Training Schedule

The change to the “Paid-On-Call” Fire Department format from the previous service delivery came with alterations to the previous practice format. First, practices were three hours in length, typically 19:00 hrs. to 22:00 hrs. on Mondays and 09:00 hrs. to 12:00 hrs. on Fridays. Adding the extra ½ hour to a practice increases our total training time to 132 hours fire-fighter.

Another alteration was the cancellation of practice on long weekends when in the previous system training took place or was arranged on a Tuesday night meaning that training took place in 50 opportunities instead of 44. This would allow for 125 hours of practice and if compounded with the extra length there would be 150 hours.

While it would appear that both of these alternatives would bring the training hours to exceed the requirements, it is only so at the maximum end of the scale and then only to meet the present schedule. The present 75% attendance standard would only allow for a maximum of 112 hours instead of the present 82.5 hours*. However, if the actual 2002 training hour percentage of 73.6%* is applied the increase in training hours equals 110.4 hours. Both cases show that while there are increases in training hours they are small and would not meet the current schedule however they fall short of the “Core Service Training Required” 213 hours (* see Table 1).

Specialized Training

Specialized training is where tasks are assigned to halls or platoons within the halls. This in turn would reduce the amount of initial and maintenance training through out the department. For example, if Hall #3 was to be trained as the low angle rescue specialists and the rest of the department was trained to assist, it would reduce training hours in Hall #2 and Hall #1 fire-fighters and thus move closer to the training target of the “Core Service Training Required” - 213 hours from Table 1.

However, as discussed above this does not mitigate the concerns of the present training schedule and therefore would only assist in deferring the training in the other duties that we have not had time to work on, seen in Tables 5-9. As a result of paid-on-call fire-fighters not being consistently available during the weekday at Halls #2 and #3, it is impractical to create specialized teams to respond from these halls.

Career Staff

In the “Future Models” of Service Delivery, the plan of hiring a contingent of career first responders with paid-on-call back up is discussed. As this is a phased in program, the full impact on training will not be met until such time that first response is handled primarily by the career contingent: this would be at that point where the “Urban Response Standard” is met. At that point several of these options could be deployed, the career contingent would be trained in specialized teams there by reducing high level skills and its training expected from the paid-on-call fire-fighters.

In this model, extension to the existing training format and further specialization would further reduce what is required of the paid-on-call fire-fighter. Even general tasks could be specialized into tasks like driver/operators, tower operators and rescue-auto extrication/medical technicians.

Note Concerning Trained Individuals

The current turn over rate of fully trained fire-fighters creates great difficulty for the department because this loss is experienced from our fire-fighters with 3 to 8 years of experience. This loss affects our department so negatively as these fire-fighters are our drivers/operators, next in line officer candidates, most experienced and often most active members. With their basic training completed, they are the ones that could move on to more advanced levels of training. This situation leaves the department in a situation where the more senior members have reached their maximum potential while the junior members are struggling to meet their basic skill levels.

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Other Considerations

Other training considerations the department is exploring will increase our ability to obtain superior training, qualification and accreditation of department sponsored training. Firstly, Accreditation by Delegation is a process where by Department can apply to the JIBC to obtain authority to use JIBC certificates and their, International Fire Service Accreditation Congress (IFSAC) accreditation process to denote the successful completion of particular in-house training courses. Therefore, the Department is presently seeking Accreditation by Delegation to endorse those training activities and thereby ensure not only a training standard is met but one that is universally accepted.

The Maple Ridge Fire Department and the JIBC have enjoyed a long relationship of mutual support. Through this relationship the Fire Department has been able to deliver superior training to our fire-fighters utilizing the Fire and Safety Training Centre, (FSTC). In the interest of continuing the department's access to the FSTC, and support this relationship the Fire Department is exploring methods to financially support a capital expansion to the FSTC training site. Furthermore, the department will, in the future, explore opportunities to trade outdated apparatus to the FSTC for more training access to the centre's props.

As the demand for service increases, so does the requirement for training. In our current model of service delivery all members must be trained equally in all disciplines. This allows for the volunteer response aspect of the operation to ensure that trained members are available at the scene. As incident mitigation complexity increases, along with present service demand and that of the future, the requirement for training therefore to support these increases must also be recognized. This recognition may be considered as a service gap and to that end, more resources in the way of full-time equivalent fire training officers will be required to meet that gap.

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Table #1

Current Maximum Training Hours (44 X 2.5 hour/practice)	=110 hours
Current Minimum Training Hours per Department Standard (110 hours X 75%)	= 82.5 hours
2002 Year Average Training Hours	= 81.0 hours
Current “ Core Services Training Required ” for Competency	= 213 hours
Present hours of “ Current Training Schedule ” for Current Core Services	= 123 hours
Ratio of the “ Current Training Schedule (123 hours),” and the Maximum Training Hours	= 111.82%
Ratio of the “ Current Training Schedule (123 hours),” and the Minimum Standard Training Hours	= 149.09%
Ratio of the “ Current Training Schedule (123 hours),” and the 2002 Average Training Hours	= 151.85%
Ratio of “ Core Services Training Required (213 hours),” for Competency and Maximum Hours	= 193.64%
Ratio of “ Core Services Training Required (213 hours),” for Competency and Minimum Standard Hours	= 258.18%
Ratio of “ Core Services Training Required (213 hours),” for Competency and 2002 Average	= 262.96%

Table #2

2.5 hours/practice X 44 practices/year X 95 fire-fighters	= 10,450 fire-fighter/hours
Current Standard 75% of the time	= 7,837.5 fire-fighter/hours
Maintenance Training Total Hours	= 10, 320 fire-fighter/hours
Actual 2002 Training (73.5%)	= 7,698.25 fire-fighter/hours
Current Training Schedule (123 hours per Fire-Fighter)	= 11,685 fire-fighter/hours
Core Services Training Required (213 hours per FF Fire-	= 20,235 fire-fighter/hours
44 practices/year X 95 fire-fighters	= 4,180 fire-fighter-practices
Current Standard 75% of the time	= 3,135 fire-fighter-practices
Actual 2002 fire-fighters-practices (73.5%)	= 3,075 fire-fighter-practices

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Table #3

Career Fire-fighter Full-Time Equivalent	= 2080 hours
Current “ Core Services Training Required ” for competency	= 213 hours
Ratio of current “ Core Services Training Required (213 hours),” for competency and full-time equivalent	= 10.25%
Future “ Core Services <u>Initial</u> Training Required ” for competency	= 424 hours
Ratio of “ Core Services <u>Initial</u> Training Required (424 hours),” for competency and maximum hours	=20.38%
Future “ Core Services Training Required ” for competency	= 386 hours
Ratio of future “ Core Services Training Required (386 hours),” for competency and full-time equivalent	= 18.56%
<u>Total</u> Future “ Core Services Training Required ” for competency (213 + 424 = 637)	= 637 hours
Ratio of <u>Total</u> future “ Core Services Training Required (637 hours),” for competency and full-time equivalent	= 30.63%

Table #4

2.5 hours / practice X 44 practices / year X 63 paid-on-call fire-fighters	= 6,930 fire-fighter hours
Present Standard 75% of the time	= 5,197.5 fire-fighter hours
2,080 hours X 18.56% (training time) = 386 hours/fire-fighter X 32 fire-fighters	= 12,352 fire-fighter hours
“Core Services Training Required” Maintenance Training Total Hours	= 17,549.5 fire-fighter hours

Maple Ridge Fire Department Master Plan Training

Table 5 – Fire Ground Operations

Core Services	Current Initial Training			Current Maintenance Training			Future Initial Training			Future Maintenance Training			Standards		
	Current Training	Initial Training Time per Fire-Fighter in hours/year	Initial Training Time Man hours/year	Current Maintenance Training	Maintenance Training Time per Fire-Fighter in hours/year	Maintenance Training Man Hours/Year	Future Training	Initial Training Time per Fire-Fighter in hours/year	Initial Training Time Man hours/year	Future Maintenance Training	Maintenance Training Time per Fire-Fighter in hours/year	Maintenance Training Man hours/year	Maintenance Training Required by Standard	Standards	Supporting Standards
Fire-Fighter/Scene Safety	Yes	20	240	Yes	2.5	237.5	Yes	20	240	Yes	2.5	237.5	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Communications	Yes	2	24	No			Yes	2	24	Yes	2.5	237.5	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Vehicle Fires – Alternative Fuel Sources	Very Limited			No			Yes	8	760	Yes	5	475	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Small Vehicle Fires	Yes	8	96	Yes	5	475	Yes	8	96	Yes	5	475	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Large Vehicle Fires	No			No			Yes	4	380	Yes	5	475	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Single Family – Residential Structure Fires	Yes	16	192	Yes	10	950	Yes	16	192	Yes	10	950	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Commercial Structure Fires	Limited	8	96	Limited	5	475	Yes	8	96	Yes	5	475	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Multi Family – Residential Structure Fires	Limited	8	96	Limited	5	475	Yes	8	96	Yes	5	475	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
High Rise Structure Fires	Limited	8	96	Limited	2.5	237.5	Yes	8	96	Yes	2.5	237.5	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Container Fires	Yes	4	48	No			Yes	4	48	Yes	2.5	237.5	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Wildland Fires	Yes	2 theory only	24 - theory only	No			Yes	8	760	Yes	8	760	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM

Maple Ridge Fire Department Master Plan Training

Marine Fire-Fighting – Land Based Only	No			No			Yes	24	768	Yes	16	512	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Traffic Control	No			No			Yes	4	380	Yes	2	190	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Rapid Intervention Training	Yes	8	96	Yes	2.5	237.5	Yes	8	96	Yes	2.5	237.5	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Electrical Hazards Training	Yes	4	48	No			Yes	4	48	Yes	2	190	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Gas Hazards Training	Yes	4	48	No			Yes	4	48	Yes	2	190	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Basic Fire-Fighter Skills	Yes	80	960	Yes	30	2850	Yes	80	960	Yes	30	2850	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Alarms – CO & Fire		2	24	No			Yes	2	24	Yes	2	190	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Sprinklers and Alarms	Limited	2	24	No			Yes	2	24	Yes	2	190	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
New Core Service		No Initial Training to Existing Core Service		No Maintenance Training to Current Core Service			New Training for Core Service			New Maintenance Training to Meet Core Service					

Hours were assigned based on current practises and in conjunction with the NFPA 1001 pre-employment program instructed at the Justice Institute

WCA - Workers Compensation Act

NFPA - National Fire Protection Association

Maple Ridge Fire Department Master Plan Training

Table 6 – Rescue Ground Operations

Core Services	Current Training Initial			Current Maintenance Training			Future Training Initial			Future Maintenance Training			Standards		
	Current Training	Initial Training Time per Fire-Fighter in hours/year	Initial Training Time Man hours/year	Current Maintenance Training	Maintenance Training Time per Fire-Fighter in hours/year	Maintenance Training Man hours/year	Future Training	Initial Training Time per Fire-Fighter in hours/year	Initial Training Time Man hours/year	Future Maintenance Training	Maintenance Training Time per Fire-Fighter in hours/year	Maintenance Training Man hours/year	Maintenance Training Required by Training	Other Applicable Standards	Supporting Standard
Fire Rescue	Yes	8	96	Limited	5	475	Yes	8	96	Yes	5	475	N/R	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Ambulance Assistance	Limited			No			Yes	2	190	Yes	2	190	N/R	BCEHSA	NFPA 1710 NFPA 1720 OFM
CPR	Yes	4	48	Yes	4	384	Yes	4	48	Yes	4	384	WCA 115 BC EHSA	NFPA 1001	NFPA 1710 NFPA 1720 OFM
First Responders	Yes	32	276	Yes	16 hours/3yrs	506	Yes	32	276	Yes	16 hours/3yrs	506	WCA 115 BC EHSA	NFPA 1001	NFPA 1710 NFPA 1720 OFM
AED Training	Yes	4	48	Yes	2 hours/180 Days	380	Yes	4	48	Yes	2 hours/180 Days	380	WCA 115 BC EHSA	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Auto Extrication - Light Vehicles	Yes	16	192	Yes	10	950	Yes	16	192	Yes	10	950	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Auto Extrication - Heavy Vehicles	No			No			Yes	8	256	Yes	4	380	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Auto Extrication - Transport Vehicles	No			No			Yes	8	256	Yes	4	380	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Auto Extrication - Transport Trains Planes Boats	No			No			Yes	8	256	Yes	4	380	WCA 115	NFPA 1001	NFPA 1710 NFPA 1720 OFM
Elevator Rescue	No			No			Yes	8	760	Yes	4	380	WCA 115	ASME BC Elevating Lift Equipment	NFPA 1710 NFPA 1720 OFM
Large Animal Rescue	Yes			No			Yes	8	760	Yes	2	190	WCA 115	SPCA	NFPA 1710 NFPA 1720 OFM
New Core Service		No Initial Training to Existing Core Service		No Maintenance Training to Current Core Service			New Training for Core Service			New Maintenance Training to Meet Core Service					

Maple Ridge Fire Department Master Plan Training

Table 7– Special Operations

Core Services	Current Initial Training			Current Maintenance Training			Future Initial Training			Future Maintenance Training			Standards		
	Current Training	Initial Training Time per Fire-Fighter in hours/year	Initial Training Time Man hours/year	Current Maintenance Training	Maintenance Training Time per Fire-Fighter in hours/year	Maintenance Training Man hours/year	Future Training	Initial Training Time per Fire-Fighter in hours/year	Initial Training Time Man hours/year	Future Maintenance Training	Maintenance Training Time per Fire-Fighter in hours/year	Maintenance Training Man hours/year	Maintenance Training Required by Standard	Applicable Standards	Required by supporting Standard
Hazardous Materials – Awareness	Yes	8	760	No			Yes	8	760	Yes	4	252	WCA 115	NFPA 1001 NFPA 472	NFPA 1710 NFPA 1720 OFM
Hazardous Materials – Operations	No			No			Yes	40	1,280	Yes	16	512	WCA 115 NFPA	NFPA 1001 NFPA 472	NFPA 1710 NFPA 1720 OFM
Swift Water Rescue – Shore Based Rescue							Yes Municipal Water	24	768	Yes	16	512	WCA 115	NFPA Red Cross Lifesaving	NFPA 1710 NFPA 1720 OFM
Rescue Boat – Operations							Yes	16	512	Yes	16	512	WCA 115	NFPA Red Cross Lifesaving	NFPA 1710 NFPA 1720 OFM
Ice Rescue							Yes Municipal Water	8 hour component	256	Yes	4	128	WCA 115	NFPA Red Cross Lifesaving	NFPA 1710 NFPA 1720 OFM
Trench Rescue							Yes	8	256	Yes	4	128	WCA 115	NFPA	NFPA 1710 NFPA 1720 OFM
Low Angle Rescue							Yes	16	1,520	Yes	4	380	WCA 115	NFPA	NFPA 1710 NFPA 1720 OFM
High Angle Rescue – Awareness							Yes	24	2,280	Yes	4	252	WCA 115	NFPA	NFPA 1710 NFPA 1720 OFM
High Angle Rescue – Operations							Yes	32	1,024	Yes			WCA 115	NFPA	NFPA 1710 NFPA 1720 OFM
High Angle Rescue – Technicians							Yes	32	1,024	Yes	16	512	WCA 115	NFPA	NFPA 1710 NFPA 1720 OFM
Confined Space Rescue							Yes	32	1,024	Yes	16	512	WCA 115	NFPA	NFPA 1710 NFPA 1720 OFM
LUSA Rescue							Yes	40	1,280	Yes	8	256	WCA 115		NFPA 1710 NFPA 1720 OFM
New Core Service		No Initial Training to Existing Core Service		No Maintenance Training to Current Core Service			New Training for Core Service			New Maintenance Training to Meet Core Service					

Maple Ridge Fire Department Master Plan Training

Table 8 – Vehicle Operations

Core Services	Current Initial Training			Current Maintenance Training			Future Initial Training			Future Maintenance Training			Standards		
	Current Training	Initial Training Time per Fire-Fighter in hours/year	Initial Training Time Man hours/year	Current Maintenance Training	Maintenance Training Time per Fire-Fighter in hours/year	Maintenance Training Man hours/year	Future Training	Initial Training Time per Fire-Fighter in hours/year	Initial Training Time Man hours/year	Future Maintenance Training	Maintenance Training Time per Fire-Fighter in hours/year	Maintenance Training Man hours/year	Maintenance Training Required By Standard	Other Applicable Standards	Supporting Standards
Routine Driving	Yes	48	480	No			Yes	48	480	Yes	2	190	WCA 115	NFPA 1002	NFPA 1710 NFPA 1720 OFM
Emergency Driving	Yes, theory	8	80	No			Yes	16	160	Yes	2	190	WCA 115	NFPA 1002	NFPA 1710 NFPA 1720 OFM
Pump Operations	Yes	16	160	No			Yes	16	160	Yes	4	380	WCA 115	NFPA 1002	NFPA 1710 NFPA 1720 OFM
Tower Operations	Yes	16	160	Yes	20	500	Yes	16	160	Yes	20	500	WCA 115	NFPA 1002	NFPA 1710 NFPA 1720 OFM
Thermal Imaging Orientation	Yes	8	760	Yes	5	475	Yes	8	760	Yes	5	475	WCA 115	NFPA 1002	NFPA 1710 NFPA 1720 OFM
New Core Service		No Initial Training to Existing Core Service		No Maintenance Training to Current Core Service			New Training for Core Service			New Maintenance Training to Meet Core Service					

Table 9 – General Operations

** Currently Training is only provided for Career Staff, hours are not included in total Man Hours

Maple Ridge Fire Department Master Plan Training

Core Services	Current Initial Training			Current Maintenance Training			Future Initial Training			Future Maintenance Training			Standards		
	Current Training	Initial Training Time per Fire-Fighter in hours/year	Initial Training Time Man hours/year	Current Maintenance Training	Maintenance Training Time per Fire-Fighter in hours/year	Maintenance Training Man hours/year	Future Training	Initial Training Time per Fire-Fighter in hours/year	Initial Training Time Man hours/year	Future Maintenance Training	Maintenance Training Time per Fire-Fighter in hours/year	Maintenance Training Man hours/year	Maintenance Training Required by Standard	Other Applicable Standards	Supporting Standards
Fire Officer I	Yes	88	528	No			Yes	88	528	Yes	8	96	N/R	NFPA 1021 WCA 115	NFPA 1710 NFPA 1720 OFM
Fire Officer II							Yes	88	528	Yes	8	64	N/R	NFPA 1021 WCA 115	NFPA 1710 NFPA 1720 OFM
Fire Service Instructor	Yes	16	96	No			Yes	16	96	Yes	8	320	N/R	NFPA 1002 WCA 115	NFPA 1710 NFPA 1720 OFM
LAFC	Limited	16	96	No			Yes	16	96	No			N/R		NFPA 1710 NFPA 1720 BC OFC
Fire Investigations	Limited	88	528	No			Yes	88	528	Yes	4	160		NFPA 912 FSA	NFPA 1710 NFPA 1720 BC OFC
Police Assistance	Limited			No			Yes	2	190	Yes	2	190	N/R		NFPA 1710 NFPA 1720 OFM
Burning Complaints	No			No			Yes	2	190	Yes	2	190	N/R		NFPA 1710 NFPA 1720 OFM
Public Assistance	Limited			No			Yes	2	190	Yes	2	190	N/R		NFPA 1710 NFPA 1720 OFM
Pre Incident Planning	Yes	2.5	237.5	Yes	2.5	237.5	Yes	2.5	237.5	Yes	2.5	237.5	N/R		NFPA 1710 NFPA 1720 OFM
Reports and Records	Yes	2.5	237.5	Yes	2.5	237.5	Yes	2.5	237.5	Yes	2.5	237.5	N/R	NFPA 1001 NFPA 1021 WCA 115	NFPA 1710 NFPA 1720 OFM
FDM System Computer	Yes	227.5	525.5	Yes	2.5	237.5	Yes	5.0	475	Yes	2.5	237.5	N/R	WCA 115	NFPA 1710 NFPA 1720 OFM
Basic Computer	No			No			Yes	8	760	No			N/R	None	NFPA 1710 NFPA 1720 OFM
EOC – Disaster	Yes	40	160	Yes	44	** 88	Yes	40	160	Yes	44	88	N/R		NFPA 1710 NFPA 1720 OFM
New Core Service		No Initial Training to Existing Core Service		No Maintenance Training to Current Core Service	123 hours		New Training for Core Service			New Maintenance Training to Meet Core Service	213 hours - Current core services requirements 386 hours - Future Core services				

Maple Ridge Fire Department Master Plan Training

Current	Future
<p>2.5 hours/practice X 44 practices/year X 95 Fire-Fighters = 10,450 man hours</p> <p>90% of the time = 9,450 man hours</p> <p>Current Standard 75% of the time = 7,837.5 man hours</p> <p>Maintenance Training Total Hours - 10,320 man hours</p> <p>Actual 2002 Training (73.5%) = 7,698.25 man hours</p>	<p>2.5 hours / practice X 44 practices / year X 63 paid-on-call fire-fighters = 6,930 man hours</p> <p>90% of the time = 6,237 man hours</p> <p>Present Standard 75% of the time = 5,197.5 man hours</p>
<p>44 practices/year X 95 fire-fighters = 4,180 man-practices</p> <p>90% of the time = 3,762 man-practices</p> <p>Current Standard 75% of the time = 3,135</p> <p>Actual 2002 man-practices (73.5%) - 3,075</p>	<p>2,000 hours x 33.3% (training time) = 660 hours/fire-fighter x 32 fire-fighters = 21,120 man hours</p> <p>90% of the time = 19,008 man hours</p> <p>Present Standard 75% of the time = 15,840 man hours</p>
	<p>Maintenance Training Total Hours - 21,881 man hours</p> <p>Present Standard 75% the time = 16,410.75 man hours</p>

Maple Ridge Fire Department Master Plan



Appendix – 5 Hall & Equipment Maintenance

Maple Ridge Fire Department Master Plan

Hall & Equipment Maintenance

Executive Summary

Hall, equipment and grounds duties are those tasks that are related to the safety and preparedness of the department and many duties are required by standards or regulation. The time required ensuring completion of these duties is extensive; in fact it considerably more than what is presently committed. In this area there is a service gap where some of the mandated duties are performed.

Hall & Equipment Maintenance Summary

Introduction

Hall, equipment and grounds tasks are those responsibilities that are performed by the Fire-fighters to support or prepare the apparatus and equipment for subsequent emergency responses. These tasks are required in accordance with several applicable standards or regulations. Certain tasks required by:

- The Motor Vehicle Act in regards to every operation of the apparatus in both emergency and routine manners.
- The Workers Compensation Board (WCB) outlines certain required duties as well as the frequencies in which they must be completed.
- Other duties may not have any exact standard but will fall into general regulations as in the WCB requirements for housekeeping and safety.
- Others duties are those that prepare equipment and apparatus for the next call according to the departments standard operating guidelines.

In some cases, the applicable standards or regulations includes several levels of compliance, for example, a paid-on-call department is required to perform an SCBA check once per week where a career department is required to perform the check every day.

Data

Table 2 contains a list of the tasks that the fire-fighters are or should be completing and their applicable standards or regulation. The tasks are then categorized into the following:

- Tasks presently done
- Tasks required but not presently done

Table 2 lists the duties that are required by standards or regulation and are not presently completed as per that standards or regulation, have been greyed out: e.g. the fifth and sixth item refer to SCBA checks and SCBA cylinder air change out. Canadian Standards Association via WCB regulation 31.26 (2) requires both of these tasks to be completed. In fact four of the six greyed out items are required by standards or regulation are ones that have a great impact on fire-fighter safety.

Findings

The data from Table 2 has been correlated into Table 1 and the following information is extrapolated:

1. Presently there is a gap of approximately 2,100 fire-fighter hours.
2. Many of these hours are required by a standard or regulation

Presently we do not meet the requirements from standards and regulation.

Table 1

Maple Ridge Fire Department Master Plan

Hall & Equipment Maintenance

Total hours of duties “Currently” performed	5,810 fire-fighter hours
Total hours of duties that “Must” be performed	7,918 fire-fighter hours
The Gap in service	2,108 fire-fighter hours
FUTURE – Total hours of duties performed	13,216. fire-fighter hours **

*** Includes the change in compliance weekly to daily*

Future

In the future model, there is an assumption of career fire-fighters and this changes some of the regulated frequency requirements from weekly to daily and therefore increases the amount of task hours compared to the present day. However, this also may represent an increase in service that is presently contracted out. Areas like janitorial, grounds and hose and ladder testing could be absorbed into that future model of service delivery. This could offer back a small cost recovery, as contractors would in all inevitability no longer be used when career members are available to complete those tasks.

Options

The options listed in this section are to address the service gaps that were identified in the finding section. There are several different options available, however each will have advantages, disadvantages and varying attributes to meet the service gap.

Continuing present practice is an option, however it comes with the liability of not completing the required or legislated tasks with any degree of certainty. Also as these tasks are most often completed during call-outs rather than scheduled times, it causes the members to be doing the tasks at odd or late hours which can adversely affect our neighbours.

Scheduling time or other maintenance periods to complete these tasks can make some difference and could move to meet the service gap, several periods would have to be scheduled. This brings to light further problems, as in creating more time that the paid-on-call member is expected to be away from their family, the usual result of late is that nobody signs up and therefore nothing is accomplished. These scheduled maintenance periods would not be reactive to The Fire Department's emergency response potential: meaning that you could have a major event or a series of events prior to a scheduled maintenance period. This situation is not satisfactory as at the time of the event, the equipment may not have been checked for a long interval and therefore as experience shows it may be missing or inoperable. The opposite is also not acceptable as although the check would be fresh and complete prior to the event(s), it may be sometime before a scheduled maintenance period finds that equipment is inoperable or missing. Again, in the latter situation experience shows that the equipment problem will show up during the emergency.

Effective reprieve for this situation is not seen until the full-time career fire-fighters are realized. In this situation the members could be put to the task at anytime and be respondent to the needs of the department.

Maple Ridge Fire Department Master Plan

Hall & Equipment Maintenance

Table 2 – Hall & Equipment Maintenance Schedule

Core Service (Hall Duty)	Standard	Current Model				Future Model			
		Current Service	Time required	Occurrence	Fire-Fighter Hours/Year	Future Service	Time required	Occurrence	Fire-Fighter Hours/Year
Pre Trip	Motor Vehicle Act	Yes	.5 Hours/truck	At least once per week	286 hours	Yes	.5 hours/truck	Daily Weekly	912 hours 156 hours
Post Trip	Motor Vehicle Act	Yes	.5 Hours/truck	After every emergency run	1,625 hours	Yes	.5 hours/truck	After every emergency run	1,625 hours
Truck Equipment Checks	WCB NFPA Department requirement	Yes	1.0 Hour/truck	Weekly	572 hours	Yes	1.0 hour/truck	Daily Weekly	1,825 hours 312 hours
SCBA Checks	WCB NFPA 1981	No	.25 Hours/SCBA 64 SCBA	Weekly	832 hours	Yes	.25 hours/SCBA 64 SCBA	Daily Weekly	2,281.25 hours 507 hours
SCBA Air change out	WCB CSA	No	.5 hours/cylinder 168 SCBA Cylinders 1.0 hours/cylinder 23 6000 PSI Cylinders	Every three months	336 hours 92 hours	Yes	.5 hours/cylinder 168 SCBA Cylinders 1.0 hours/cylinder 23 6000 PSI Cylinders	Every three months	336 hours 92 hours
Vehicle Washing	Department Standard	Yes	.5 Hour/truck	After every use	1,877 hours	Yes	.5 Hour/truck	Daily after every use	1,068.5 hours 252 hours
Small tools maintenance	WCB Department Requirement	No	1 Hour/truck	During weekly truck checks / after every use Presently Contracted out	624 hours	Yes	1 hour/truck	During daily/weekly truck checks and after every use	624 hours
Mechanical Repairs	MVA Department Requirement	No		Weekly check and as required	0 hours	Limited	1 hour/day	Daily check and as required	365 hours

Maple Ridge Fire Department Master Plan

Hall & Equipment Maintenance

Table 2 – Hall & Equipment Maintenance Schedule, con't.

Core Service (Hall Duty)	Standard	Current Model				Future Model			
		Current Service	Time required	Occurrence	Fire-Fighter Hours/Year	Future Service	Time required	Occurrence	Fire-Fighter Hours/Year
Map updates	Department Requirement	Yes	.5 hour	1/month	150 hours	Yes	.5 hour	1/month	150 hours
Hose Testing	WCB NFPA 1962	No	1.0 hour/hose 600 lengths	Yearly	96 hours stripping and reloading 96 hours 6 month turnover	Yes	1.0 hour/hose 600 lengths	Yearly	1,200 hours stripping and reloading testing 96 hours - 6 month turnover
Ladder Testing	WCB NFPA 1932	No	2.0 hours/ladder 40 ladders	Yearly	32 hours assist contractor	Yes	2.0 hours/ladder 40 ladders	Yearly	320 hours
Hall/Grounds Maintenance	WCB Department Requirement	Yes	1.0 Hours/Hall	Fire-fighters clean during call-outs	1,300 hours	Yes	.5 hours/day/ hall – 2 fire- fighters 3 halls	Daily	1,095 hours
CURRENT – Total hours of duties performed					5,810 fire-fighter hours				
CURRENT – Total hours of all duties that should be performed					7,918 fire-fighter hours				
Difference of what is currently not done, however is required					2,108 fire-fighter hours	FUTURE – Total hours of duties performed			13,216.75 fire-fighter hours

Maple Ridge Fire Department Master Plan



Appendix – 6 Peer Assessment Summary

Maple Ridge Fire Department Master Plan

Peer Assessment Summary

Peer Assessment Summary

On Thursday, November 28 a group of Fraser Valley Fire Chiefs met to conduct a peer assessment of the Maple Ridge Fire Department Master Plan.

The Chiefs present were:

Jim Hancock, Fire Chief, Richmond Fire-Rescue

Len Garis, Fire Chief, Surrey Fire Service

Rick Ryall, Fire Chief, Chilliwack Fire Department

Len Foss, Assistant Fire Chief, Langley Township Fire Department

Bill Park, Fire Chief, Pitt Meadows Fire Department

In summary the Chiefs agreed that:

- The methodology used to produce the Master Plan was sound. Chief Hancock made reference to a similar gap analysis modality produced by the Ontario Fire Marshal's Office called "A Comprehensive Fire Safety Effectiveness Model".
- The standards referenced in the document are legitimate and are current standards in use in the fire service today. Chief Hancock explained that the Ontario Fire Marshal's Office is exploring changing their standards to match the NFPA Standards.
- The Master Plan addressed all the major Fire Department service areas.

*In addition the Chiefs provided comments and suggestions to assist in supporting the document and recommendations for implementation strategies.

Bruce Hall, Fire Chief, Whistler Fire Department and Richard Lawrie, Fire Chief, City of Abbotsford Fire Rescue Service were not available to attend the meeting. They were sent copies of the document and responded by e-mail with their comments, which follow.

"The report overall is extremely well laid out and the Methodology was indeed sound.

Your extrapolation of call volumes based on known and anticipated development/population increases and historical response data is reasonable. Add to that you plan to review the logic and results every 5 years and more often in harmony with your Business Planning Cycle, and you have created a tool, which will aid your management team and the City for years to come."

Fire Chief Richard Lawrie , Abbotsford Fire and Rescue

Chief Bruce Hall provided an extensive list of suggestions regarding the formatting and presentation of the document. Additional comments were provided pertaining technical details. These comments and suggestions were incorporated into the revised document.

"Thanks for the opportunity to review your Master Plan. Certainly a lot of effort and time went into the document. I congratulate all those involved. It certainly is comprehensive and provides excellent background information."

Fire Chief Bruce Hall, Whistler Fire Department

Maple Ridge Fire Department Master Plan



Conclusion

Other Considerations for 2004

- Burning Bylaw review
- Fire Works Advisory task force
- Fire Prevention Bylaw Review - (Charter Implications)
- Traffic Calming Measures
- Monitoring alarm system in apartment complexes
- Community Smoke Alarm Program

Monitoring and Evaluating Performance

- The Master Plan should not be considered static and should be reviewed in conjunction with the Business Planning Cycles to ensure that the assumptions of growth and development remain consistent with the report
- Performance Measurement should be developed in conjunction with the goals and objectives of the Master Plan. These Performance Measurements will be included in the Annual Business Planning process to keep council informed.
- A comprehensive review of the Master Plan should be undertaken a minimum of every 5 years.

Conclusion

Gaps have been identified in all the core functions; Emergency Response, Public Education, Fire Prevention, Training, and Hall & Equipment Maintenance. The long-term solution to meeting these gaps can be achieved by evolving to a balanced Composite Department. Not all service gaps will be met until the full compliment of fire-fighters are hired. Alternative solutions may be required to bridge the gaps in the short term.

