



# CITY OF ABBOTSFORD FIRE RESCUE SERVICE



## Master Plan 2011 - 2020

*September 2010*

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*The Abbotsford Fire Rescue Service is "making a difference in our community" through prevention, response and safety.*

# TABLE OF CONTENTS

- EXECUTIVE SUMMARY ..... I**
  - Operational Recommendations ..... II*
  - Enabling Resource Recommendations..... III*
  - Status & Recommendations..... III*
  - Recommendations Cost Summary: Facilities, Vehicles & Staff Cost Projections (2010 CDN Dollars)..... V*
  
- STRATEGIC DIRECTIONS: THE MASTER PLAN FOUNDATION..... 1**
  - City of Abbotsford Strategic Directions ..... 1*
  - Abbotsford Fire Rescue Service ..... 2*
  - Integration: AFRS Master Plan & City of Abbotsford Strategic Directions..... 3*
  
- INTRODUCTION..... 4**
  
- BACKGROUND: ABBOTSFORD FIRE RESCUE SERVICE..... 5**
  - Objectives of the Master Plan ..... 5*
  - Methodology for Master Plan Development..... 6*
  - History ..... 7*
  - Core Services: Fire Rescue Service ..... 7*
  - Service Delivery Data..... 8*
  
- FUTURE REQUIREMENTS & RECOMMENDATIONS ..... 9**
  - Operations..... 10*
  - Fire Prevention..... 23*
  - Pre-Incident Planning..... 27*
  - Regulations & Bylaws ..... 28*
  - Partnerships & Agreements ..... 29*
  - Training ..... 30*
  - Emergency Program ..... 34*
  - Administrative & Support Services..... 35*
  - Retaining Currency ..... 36*
  
- APPENDICES ..... 37**
  - Appendix A: Maps ..... 38*
  - Appendix B: Training Requirements - WorkSafe Regulations & NFPA Standards ..... 41*
  - Appendix C: 2010 Fire Underwriters Survey Recommendations ..... 43*
  - Appendix D: Vehicles & Staff By Fire Hall ..... 48*
  - Appendix E: Participants - Abbotsford Fire Rescue Service Master Plan 2011–2020..... 51*
  - Appendix F: Consultant & Client Roles..... 52*

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## EXECUTIVE SUMMARY

The purpose of the Abbotsford Fire Rescue Service Master Plan 2011–2020 is to provide an updated, Council supported long range guide for the cost-effective provision of fire and rescue services to the City of Abbotsford and contracted service areas. The Master Plan 2011-2020 confirms Council's strategic direction in the previous Master Plan as a scheduled 2010 review to ensure sufficient service delivery capability during the next 10 year period.

The Master Plan largely reschedules outstanding fire hall replacement, new construction, and staffing to ensure Council supported response time targets can be met in our growing community. There are few resource requirements beyond the previous Master Plan.

The Master Plan builds on existing strengths, such as, highly committed and well trained staff, appropriate equipment and technology, excellent relationships with other agencies, an improved union/management relationship, and a culture of continuous improvement. Abbotsford Fire Rescue Service enjoys a high level of community support.

The Official Community Plan (OCP) anticipates an additional 27,800 residents and 11,500 dwelling units by 2020. The projected annual growth rate of 2.0% translates into a 10 year population growth of 20%. The Master Plan strives to match service capacity to projected community growth, rate of growth, and evolving growth patterns.

The Master Plan strives to ensure regulatory requirements are met, and meets or builds towards standards and best practices of professional bodies such as the National Fire Protection Association (NFPA) remaining mindful of fiscal realities. Service delivery protocols and best practices are adapted where appropriate, to meet specific requirements.

The Master Plan is built on performance indicators, notably response time targets for emergency calls, fire inspection frequencies, fire investigation, public education, emergency planning, and training. Performance indicators provide a measurement-based commitment to achieve supported targets. Council and Community Charter reporting is included.

The Master Plan responds to strategic recommendations in the 2010 Fire Underwriter's Survey (FUS). Fire Underwriters insurance grading tables are used by 90-95% of insurance companies to set residential and commercial insurance rates. Appendix C provides a summary of the FUS recommendations. Fulfilling FUS recommendations maintains Abbotsford's insurance grading.

The Master Plan is congruent with the City's Strategic Directions and references capital and operating budget implications of facility, vehicle, and staffing recommendations. Other recommendations will be included in Fire Rescue Service Annual Work Plans.

The Master Plan builds on the ongoing valuable contribution of Auxiliary fire fighters who work with Career fire fighters in a support role. As a composite fire and rescue service, the community benefits from a mix of Career and Auxiliary fire fighters that will carry this service into the future.

## OPERATIONAL RECOMMENDATIONS

Recommendations include confirmation of emergency response zones and response time targets for each zone. Response time targets approach the recommended response time targets of the National Fire Protection Association (NFPA). Core operational recommendations follow.

### Response Time Zones

The Master Plan continues separating response times into two response zones based on the Abbotsford Official Community Plan with defined response time targets

- Urban Zone: Higher density residential and commercial areas
- Rural Zone: More sparsely populated and distant areas

### Confirm Response Time Targets by Zone

Travel time response time targets are identical to those in the previous Master Plan. The Turnout time target was adjusted to be consistent with the updated NFPA standard of 80 seconds, to be achieved 90% of the time.

Travel Time Response Targets by Response Zone

| Zone  | Response                            | AFRS Travel Time Standard                  | NFPA Travel Time Standard                 |
|-------|-------------------------------------|--------------------------------------------|-------------------------------------------|
| Urban | 1 <sup>st</sup> Engine              | 4 minutes - 4 persons<br>90% of the time   | 4 minutes - 4 persons<br>90% of the time  |
|       | 1 <sup>st</sup> Alarm<br>Assignment | 9 minutes - 12 persons<br>90% of the time  | 8 minutes - 15 persons<br>90% of the time |
| Rural | 1 <sup>st</sup> Engine              | 11 minutes – 4 persons<br>80% of the time  | 14 minutes - 6 persons<br>80% of the time |
|       | 1 <sup>st</sup> Alarm<br>Assignment | 15 minutes – 12 persons<br>80% of the time | Not Defined                               |

### Fire Prevention Inspection

It is recommended that inspection frequencies be confirmed and that high hazard occupancies be inspected on an annual basis and lower hazard occupancies be inspected every two years. High and low occupancy descriptions are contained in the body of the Master Plan.

### Pre-Incident Planning

It is recommended that pre-incident plans be developed for complex, high use, and hazardous buildings. The 2010 Fire Underwriter's Survey also recommended completion of the long outstanding requirement for pre-incident plans.

### Emergency Program

It is recommended that a comprehensive Emergency Program Plan (EPP) be developed with input and endorsement from partner departments and agencies. The EPP should contain a comprehensive inventory of services, short and long range goals, an implementation plan, and a communication plan for presentation to City Council.

## **ENABLING RESOURCE RECOMMENDATIONS**

Facility, vehicle, and staffing recommendations support response time target attainment. Other recommendations support direct and indirect provision of services (e.g. Training, Clerical).

## **STATUS & RECOMMENDATIONS**

### **Facilities**

The facility plan contained in the previous Master Plan anticipated growth in the northeast Clayburn, Sandy Hill and Sumas Mountain areas, and staffing requirements at Fire Hall 7. Council approved 20 Career fire fighters and an Engine to transition Fire Hall 7 (Clayburn) from an Auxiliary to Career staffed fire hall to serve the growing northeast areas.

The emergency operational workload in the Fire Hall 8 zone precipitated the requirement to provide staff for the Townline area. This necessitated alteration of the facility plan. Instead of transitioning Fire Hall 7 to a Career staffed fire hall, the 20 Career fire fighters and Engine were stationed at Fire Hall 1 to improve operational workload balance and response times to the Townline area. This action did not eliminate the Fire Hall 7 Career staffing requirement; it responded to the highest need first.

The Master Plan seeks to re-establish a facilities plan that matches emergency response to community growth and response time targets. The facilities plan in the Master Plan provides timely emergency response to the Townline area and Clayburn, Vicarro Ranch, and northeast area, in that order of priority.

The previous Master Plan recommended upgrading seismically deficient fire halls. Some fire halls have vehicle bays that cannot accommodate larger modern vehicles and/or have exhaust handling issues. With the exception of Fire Hall 2, 3, and 7 facility deficiency issues remain outstanding.

It is recommended Fire Hall 8 (Townline) be constructed and that the existing 20 Career fire fighters for Engine 8 located at Fire Hall 1 relocate to Fire Hall 8.

It is recommended that seismic, size, and/or WorkSafe building issues be addressed at Fire Halls 4, 5, 6, and 1. Fire Halls 4, 5 and 6 require replacement; Fire Hall 1 requires seismic upgrade. A Private Public Partnership will be pursued for Fire Hall 5.

It is recommended that Fire Hall 9 (Auguston) be constructed to serve northeast area communities. An Auguston/Area H boundary extension reserve fund with \$1.15 million and a well positioned parcel of land are in place.

It is recommended that the remaining elements of the Training Centre (i.e. sufficient hydrants, burn building) be completed over three years to enhance training, practice features, and increase revenue generation potential.

It is recommended that the contaminated soil portion of the Training Centre site be remediated.

New and replacement facility descriptions are contained in the body of the Master Plan.

## **Vehicles**

It is recommended that the Corporate Fleet Study include Fire Rescue Service vehicles to ensure annual contributions to the Vehicle Replacement Reserve are sufficient to fund scheduled vehicle replacements.

It is recommended that replacement lifecycles for Fire Rescue Service response vehicles be consistent with Fire Underwriter's Survey (FUS) standards of 15 years front line plus 5 years in reserve. The replacement lifecycle maintains the municipal insurance rating.

It is recommended that consistent with the vehicle replacement schedule, a number of fully outfitted vehicles be replaced. During the 10 year period, only one vehicle will be purchased as an addition to the fleet.

Cost saving innovation is included. Replacing four tender chassis, while retaining their existing vehicle body/tank reduces vehicle cost by an estimated \$600,000. Combining replacement of two engines with one quint reduces replacement cost by an estimated \$210,000. Operating and maintenance costs are also reduced.

New and replacement vehicle descriptions are contained in the body of the Master Plan.

## **Staff Resources**

Staffing recommendations address provision of services to current and growing areas.

It is recommended that, at no additional cost, 20 Career fire fighters relocate from Fire Hall 1 to Fire Hall 8, an existing full time (2 years) temporary funded Auxiliary clerical position is converted to a regular full time clerical position, and the Auxiliary fire fighters at Fire Hall 7 (Clayburn) relocate to Fire Hall 9 (Auguston).

It is recommended that one clerical position, one Training Officer, and 20 Career fire fighters be hired over a four year period. The fire fighters will staff Fire Hall 7 on a full time basis in order to achieve and support the response time targets of the northeast area.

It is recommended that ten Career fire fighters be hired to staff a ladder vehicle from Fire Hall 1 to support the increasing urban, commercial, and industrial density.

New staffing and relocation descriptions are contained in the body of the Master Plan.

## **RETAINING CURRENCY**

It is recommended that a Master Plan review and update be completed in 2015 to ensure service delivery remains matched to community growth and service delivery requirements.

**RECOMMENDATIONS COST SUMMARY: FACILITIES, VEHICLES & STAFF COST PROJECTIONS (2010 CDN DOLLARS)**

| <b>Initiative</b>                                                         | <b>2011</b>                                                                       | <b>2012</b>                                                                                            | <b>2013</b>                                          | <b>2014</b>                                       | <b>2015</b>                                                                               | <b>2016</b>                                  | <b>2017</b>                                                             | <b>2018</b>                                         | <b>2019</b>                                            | <b>2020</b>                                             |
|---------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|------------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------|-------------------------------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------|
| <b>Facilities</b><br>Training Centre (TC)                                 | Construct Fire Hall 8<br>Net \$1.7M<br><br>TC<br>\$190,000                        | Design, Off-site<br>Fire Hall 6<br>\$300,000<br><br>TC<br>\$190,000<br><br>Remediate TC Soil<br>\$1.5M | Replace Fire Hall 6<br>\$3.5M<br><br>TC<br>\$187,000 | Design, Off-site<br>Fire Halls 5 & 4<br>\$500,000 | Replace Fire Hall 5 (P3)<br>\$1.0M<br><br>Replace Fire Hall 4<br>\$2.5M                   | Design, Off-site<br>Fire Hall 9<br>\$300,000 | Construct Fire Hall 9<br>\$2.5m<br>(1.15m is in reserve)<br>Net \$1.35m | \$0                                                 | Upgrade Fire Hall 1<br>\$2.0M                          | \$0                                                     |
| <b>Vehicles:</b><br>Replacement (R)<br>New (N)                            | Engine (R)<br>\$315,000                                                           | Engine (R)<br>\$315,000<br><br>Tender (R)<br>\$175,000                                                 | Quint (R)<br>\$1.05M                                 | Engine (N)<br>\$630,000                           | Engine (R)<br>\$630,000<br><br>Engine (R)<br>\$630,000                                    | Engine (R)<br>\$630,000                      | Engine (R)<br>\$630,000<br><br>Engine (R)<br>\$630,000                  | Aerial (R)<br>\$1.05M<br><br>Squad (R)<br>\$500,000 | Tender (R)<br>\$175,000<br><br>Tender (R)<br>\$175,000 | Tender (R)<br>\$175,000<br><br>Spec Op (R)<br>\$500,000 |
| <b>Capital Budget</b>                                                     | \$2.205M                                                                          | \$2.48M                                                                                                | \$4.737M                                             | \$1.317M                                          | \$4.76M                                                                                   | \$930,000                                    | \$2.61M                                                                 | \$1.55M                                             | \$2.35M                                                | \$675,000                                               |
| <b>Staff</b><br>Career Fire Fighter (CFF)<br>Auxiliary Fire Fighter (AFF) | Clerk<br>\$0<br><br>1 Clerk<br>\$46,000<br><br>Relocate CFF<br>Fire Hall 8<br>\$0 | 5 CFF<br>\$500,000<br><br>Training Officer<br>\$120,000                                                | 5 CFF<br>\$500,000                                   | 5 CFF<br>\$500,000                                | 5 CFF<br>\$500,000<br><br>0.5 Clerk<br>\$23,000<br><br>Relocate CFF<br>Fire Hall 7<br>\$0 | \$0                                          | \$0<br><br>Relocate AFF<br>Fire Hall 9<br>\$0                           | \$0                                                 | 5 CFF<br>\$500,000                                     | 5 CFF<br>\$500,000                                      |
| <b>Operating Budget Increase</b>                                          | \$46,000                                                                          | \$620,000                                                                                              | \$500,000                                            | \$500,000                                         | \$523,000                                                                                 | \$0                                          | \$0                                                                     | \$0                                                 | \$500,000                                              | \$500,000                                               |
| Tax Levy Increase                                                         | 0.05%                                                                             | 0.62%                                                                                                  | 0.50%                                                | 0.50%                                             | 0.52%                                                                                     | 0.0%                                         | 0.0%                                                                    | 0.0%                                                | 0.50%                                                  | 0.50%                                                   |
| YOY Budget Increase                                                       | 0.32%                                                                             | 4.34%                                                                                                  | 3.36%                                                | 3.25%                                             | 3.29%                                                                                     | 0.0%                                         | 0.0%                                                                    | 0.0%                                                | 3.04%                                                  | 2.95%                                                   |
| Population Increase <sup>1</sup>                                          | 2.0%                                                                              | 2.0%                                                                                                   | 2.0%                                                 | 2.0%                                              | 2.0%                                                                                      | 2.0%                                         | 2.0%                                                                    | 2.0%                                                | 2.0%                                                   | 2.0%                                                    |

<sup>1</sup>Based on estimations provided by City of Abbotsford Social/Community Planner on August 31, 2010.

# STRATEGIC DIRECTIONS: THE MASTER PLAN FOUNDATION

Strategic directions are framed in Corporate and departmental statements that form the reference point for development of recommendations.

## CITY OF ABBOTSFORD STRATEGIC DIRECTIONS

### **Mission**

*“We deliver excellent services that improve the sustainability and quality of life in Abbotsford”*

Components of the Mission statement are

- The City has a service orientation
- The City strives to move towards sustainability
- The City is focused on improving the quality of life in Abbotsford
- The City is committed to being inclusive

### **Vision**

*“Abbotsford is the most sustainable, livable, and prosperous City in British Columbia.”*

A sustainable, livable, and prosperous community means a

- Complete community
- Compact community
- Connected community
- Safe community
- Healthy community
- Green community
- Inclusive community

### **Four Pillars & Eight Strategic Goals**

- **Fiscal-Economic**
  - Achieve economic and fiscal balance
  - Pursue economic competitiveness & innovation
- **Environmental**
  - Sustain healthy ecosystems & a healthy community
  - Reduce our environmental “footprint”
- **Social: Community**
  - Build a safer, healthier, more inclusive community
  - Enhance community connections
- **Social: Corporate**
  - Support an engaged and effective workforce
  - Provide exceptional customer service



## ABBOTSFORD FIRE RESCUE SERVICE

### **Mission**

The Abbotsford Fire Rescue Service is *“making a difference in our community”* through...

- **Prevention**; we are reducing the loss of life and property by providing education, inspections and investigation
- **Response**; we are providing the emergency and public service needs of our community
- **Safety**; we are providing a safer community to live and work in

### **Vision**

*Our family of dedicated people striving to be the best fire service in British Columbia.*

## INTEGRATION: AFRS MASTER PLAN & CITY OF ABBOTSFORD STRATEGIC DIRECTIONS

| Pillars                  | Strategic Goals                | Master Plan Initiatives                                   |
|--------------------------|--------------------------------|-----------------------------------------------------------|
| <b>Fiscal-Economic</b>   | Economic/Fiscal Balance        | New fire hall construction linked to community growth     |
|                          |                                | Fire halls meet requirements                              |
|                          |                                | Training Centre revenue                                   |
|                          |                                | Vehicle replacement schedule                              |
|                          |                                | Training staff on-shift                                   |
|                          | Competitiveness/Innovation     | Digital pre-incident plans                                |
|                          |                                | Digital fire inspections                                  |
|                          |                                | Career & Auxiliary fire fighter service delivery models   |
|                          |                                | Traffic pre-emption                                       |
|                          |                                |                                                           |
| <b>Environmental</b>     | Healthy Ecosystem/Community    | Response time targets                                     |
|                          |                                | Hazmat, aggressive mitigation                             |
|                          |                                | Burning & fireworks bylaws                                |
|                          |                                |                                                           |
|                          | Reduce Environmental Footprint | New fire halls energy efficient                           |
|                          |                                | Fleet maintenance & upgrade                               |
|                          |                                | LEED Silver (Leadership in Energy & Environmental Design) |
|                          |                                |                                                           |
| <b>Social: Community</b> | Safe, Healthy, Inclusive       | Response time targets                                     |
|                          |                                | Address seismic issues                                    |
|                          |                                | Address facility WorkSafe issues                          |
|                          |                                | Fleet meets requirements                                  |
|                          |                                |                                                           |
|                          | Community Connections          | Inspections                                               |
|                          |                                | Public Education                                          |
|                          |                                | Emergency Program                                         |
|                          |                                | Charities (e.g. Burn Fund, food drive)                    |
|                          |                                |                                                           |
| <b>Social: Corporate</b> | Effective Workforce            | Prioritized staff allocation                              |
|                          |                                | Training program                                          |
|                          |                                | Training Centre                                           |
|                          |                                | Annual Work Plans                                         |
|                          |                                | Pre-incident plans                                        |
|                          |                                | Occupational Health & Safety                              |
|                          |                                | Wellness/Fitness Program                                  |
|                          | Exceptional Customer Service   | Response time targets                                     |
|                          |                                | Inspection frequency                                      |
|                          |                                | Emergency service delivery                                |

# INTRODUCTION

The purpose of the Abbotsford Fire Rescue Service Master Plan 2011–2020 is to provide an updated, Council supported, goal oriented framework and long range guide for the cost-effective provision of fire and rescue services to the City of Abbotsford and contracted service areas.

The Master Plan strives to meet current and emerging emergency response, fire prevention, training, and emergency program requirements over the ten year period and establishes a foundation for service delivery beyond this time period. The Master Plan is largely built on performance measures as service delivery targets. The Master Plan is structured to comply with mandatory requirements (e.g. WorkSafeBC) and builds towards professional standards of occupational associations and other agencies (e.g. NFPA, FUS).

The vision of the Master Plan 2011–2020 is customer focused in providing core services to residents and visitors by way of a composite fire and rescue service. Confirmation of defined and Council supported response time targets for urban and rural neighbourhoods clarifies service delivery expectations through established performance measures. Consistency in service delivery and predictability is the desired outcome.

The Master Plan also responds to meeting approved fire prevention inspection frequencies and reaffirms the importance of public education to target audiences. The Master Plan proposes the next stage of development, implementation, and communication of the City's Emergency Program. Provision of services is augmented with staff training to develop and maintain knowledge and applied skill levels to safely meet service level targets.

The Master Plan promotes integration of service enabling capital requirements (i.e. facilities, vehicle replacement) into a predictably funded capital planning model and funds access process.

As a multi-purpose document, the Master Plan supports and enables

- Capital Plan and annual Capital Budget development
  - Facility planning
  - Scheduled vehicle replacement and new vehicle purchases
- Operating Budget development
  - Staffing
  - Vehicle Replacement Reserve contributions
- Annual Work Plan development, inclusive of objectives and performance measures
  - Annual major initiatives consistent with the City's Strategic Directions
  - Quarterly Council reporting of results to performance expectations
  - Annual Municipal Report provisions of the Community Charter requirements
- Provision of scheduled Council reporting and topical public information
- Performance monitoring and management of services delivered compared to service delivery targets
- Work scheduling of fire prevention inspections and public education sessions

- Training to meet and maintain staff knowledge, skill, and safety requirements
- Continuous service improvement initiatives based on performance data analysis

## **BACKGROUND: ABBOTSFORD FIRE RESCUE SERVICE**

### **OBJECTIVES OF THE MASTER PLAN**

The Objectives of the Master Plan are as follows:

- **Customer Service:** To maintain a high level of community satisfaction with core service delivery provided to the citizens of and visitors to the City of Abbotsford.
- **Measurable Performance:** To reaffirm Council support for specified performance measures for emergency response time targets (i.e. turnout and travel time), fire prevention inspection frequency, staff training, and vehicle replacement.
- **Resources:** To establish Council support for the facilities, vehicles and staff required to meet service level targets matched to community growth.
- **Risk Management:** To ensure services provided meet current and evolving regulatory requirements, prudent risk management requirements, and strive towards appropriate level of service guidelines recommended by professional bodies, including exceeding standards in appropriate situations.
- **Fire Prevention & Public Safety:** To provide fire prevention inspections at Council supported frequencies that enable incident avoidance and/or minimization of injuries, fatalities, and property loss, inclusive of investigation and public education.
- **Training:** To achieve and maintain the level of knowledge, skill and experience to safely and effectively perform responsibilities, and meet service delivery standards.
- **Emergency Program:** To communicate and practice the Emergency Program Plan for the City of Abbotsford.
- **Pre-Incident Planning:** To ensure up-to-date electronic pre-incident plans are in place for appropriate commercial, industrial, institutional, and multi-family complexes.
- **Composite Service:** To confirm composite service delivery by Career and Auxiliary fire fighters responsive to evolving growth patterns and service delivery requirements.
- **Performance Management:** To monitor, action, and report actual performance compared to performance measures to Council, and to meet Community Charter provisions.
- **Strategic Management:** To establish a strategic management framework that will:
  - Align the Master Plan with Council's Strategic Directions
  - Align with community growth projections in the Official Community Plan
  - Establish performance measures, performance monitoring, and reporting
  - Integrate the Master Plan with operating and capital budgets for facility, vehicle, and staff planning
  - Establish Annual Work Plan development to deliver core initiatives

- Continuous Improvement: To continue to foster an environment of continuous improvement and adopt or adapt best practices
- Communication: To enhance communication that optimizes service delivery, public education, and information sharing

## **METHODOLOGY FOR MASTER PLAN DEVELOPMENT**

The process methodology applied to develop the Master Plan included interviews, meetings, workshops, an electronic survey, and research of service data and reports.

- Input was solicited from 22 staff to identify what works well, what does not work well currently and for the future, opportunities and suggestions for improvement, and what outcomes were sought in Master Plan development
- Extensive involvement of a Project Team in developing the Master Plan, facilitated by Rick Taylor, Principal, Results Management Services (Role of Consultant – Appendix F). The Project Team was as follows
  - Fire Chief
  - Deputy Chief – Operations & Planning Logistics
  - Deputy Chief – Operations & Training
  - Deputy Chief - Fire Prevention
  - Deputy Chief - Emergency Program
  - Chief Liaison Officer - Auxiliary Division
  - Manager - Administrative Support
  - President - International Association of Fire Fighters (IAFF) Local 2864
- Interviews – 17 initial interviews
- Meetings with the City Manager, Director of Finance, Manager of Community Planning, Director of Strategic Planning & Business Improvement to solicit topical input and discuss recommendations
- Project Team workshop with the City Manager and Director of Finance
- Electronic Survey; 22 responses were received
- Master Plan 2011-2020 Council presentation
- Document References
  - 2010 City of Abbotsford Strategic Directions
  - AFRS Master Plan 2006-2015
  - 2010 Fire Underwriter’s Survey (FUS) Report: assessment and recommendations
  - Fire Underwriter’s Survey (FUS) insurance rating standards
  - Provisions of regulatory bodies such as WorkSafeBC
  - National Fire Prevention Association (NFPA) standards
  - 2009 Report: Transforming the Fire/Rescue Service - Fire Services Liaison Group

- 2001 Seismic Review
- Best practices from other fire rescue service Strategic/Master Plans; Kelowna, Kamloops, Surrey, Maple Ridge, and a few smaller fire departments

## **HISTORY**

The history of the Fire Rescue Service is both interesting and predictive of the next phase in provision of effective and efficient fire rescue services to the community. That history began as a volunteer fire service in 1927 for the former Districts of Abbotsford and Sumas. The Matsqui Volunteer Fire Department was formed in 1944. As the communities grew, volunteer fire services adapted to the growth. Abbotsford and Sumas joined forces in 1972 to become the Abbotsford Fire Department. In 1977, the Abbotsford Fire Department and Matsqui Fire Department amalgamated to form the Abbotsford-Matsqui Fire Department.

The communities continued to grow and the number of call-out incidents rose. The Councils recognized that volunteer fire fighters needed to be remunerated for services performed. The Auxiliary fire fighter was created in 1986 and built on a strong and dedicated volunteer history.

Rapid growth continued and demands for service from Auxiliaries became excessive for a totally Auxiliary fire rescue service. In 1981 the Councils created a two person team of Career fire fighters known as the Quick Response Team. It responded to emergency response needs and continued to call upon Auxiliary fire fighters to support initial attack teams and assist with larger and longer duration fires. This was the birth of the composite fire department. The composite fire department was managed by a Joint Fire Committee comprised of both community's Councils.

The amalgamation of Abbotsford and Matsqui in 1995 marked another transition milestone. The Joint Fire Committee was disbanded, the Fire Chief reported to the City Manager, and the department was renamed the Abbotsford Fire Department. In 1998 the department was renamed Abbotsford Fire Rescue Service.

As historical perspectives evolved into current times and in response to a growing community, additional Career fire fighters, vehicles, and facilities were created and worked within the context of an evolving and growing composite fire rescue service model.

In 2006, Council approved the first Abbotsford Fire Rescue Service Master Plan 2006-2015 to guide fire rescue service response to a growing community with evolving density patterns. The Master Plan provided a long range strategic framework for service delivery. The Master Plan 2011-2020 is a scheduled update to the previous Master Plan.

## **CORE SERVICES: FIRE RESCUE SERVICE**

Fire Rescue Service provides the following core services:

- Operations: Fire suppression, motor vehicle accidents, first medical responder, technical rescue (i.e. confined space, high angle, low angle, hazardous materials, auto extrication), and pre-incident planning.
- Fire Prevention: Fire prevention inspections of public buildings and development application review, fire investigations, public education, and public information.
- Training: Career and Auxiliary training for safe and effective service delivery including technical training (e.g. confined space) for Career fire fighters.

- Emergency Program: All functions related to mitigation, planning, response and recovery to all potential emergencies identified in the Hazard, Risk and Vulnerability Assessment conducted by the City of Abbotsford.
- Operational Support: Operating Guidelines, administrative and clerical services, information systems, communication, and fire hall, vehicle and equipment maintenance.

## SERVICE DELIVERY DATA

Service level data is provided for 2005 through 2009 on historical experience and to identify trends as one basis for recommendation development.

### Emergency Response Volumes

| Response Type/Year      | 2005        | 2006        | 2007        | 2008        | 2009        | 2009/2005 % Change |
|-------------------------|-------------|-------------|-------------|-------------|-------------|--------------------|
| Fires                   | 505         | 535         | 408         | 416         | 432         | (14)               |
| First Medical Responder | 1806        | 1703        | 2422        | 2430        | 2659        | 47                 |
| Motor Vehicle Accidents | 1045        | 1098        | 1087        | 1088        | 1013        | (3)                |
| Fire Alarms             | 839         | 889         | 962         | 964         | 920         | 10                 |
| Burning Complaints      | 455         | 400         | 475         | 414         | 425         | (7)                |
| Public Service*         | 575         | 480         | 655         | 702         | 619         | 8                  |
| <b>Total</b>            | <b>5225</b> | <b>5105</b> | <b>6009</b> | <b>6014</b> | <b>6068</b> | <b>16%</b>         |

*\*Incidents requiring a vehicle (e.g. Hazardous materials, CO detector, gas leaks, Hydro lines down, APD assist, aircraft/train responses, unfounded calls)*

The total volume of emergency call responses increased by 6% from 2005 to 2009. First Medical Responder calls volume increased by 47% during this time period.

### Emergency Response Process & Standards

Response time standards are comprised of three stages. National Fire Protection Association (NFPA) standards are provided for all stages.

- Dispatch Time: Dispatch is provided by the Fraser Valley Regional District Fire Dispatch Centre. The standard is 105 seconds, comprised of 30 seconds for call processing and 75 seconds for dispatch.
- Turnout Time: 80 seconds 90% of the time to don gear and leave the fire hall (Career fire fighters).
- Travel Time (Fire Hall to incident): The number of minutes for travel time varies with distance travelled, incident location, and road and weather conditions. The urban standard is 4.0 minutes for first Engine.

WorkSafeBC requires sufficient resources for an interior fire suppression attack based on time duration. Initially, 4 fire fighters must be on site for the initial 10 minutes. Additional fire fighters must be on site to continue interior attacks beyond 10 minutes.

### Fire Rescue Service Response Times

The Fire Rescue Service turnout time does not typically meet the NFPA turnout time standard of 80 seconds 90% of the time for fire halls staffed with Career fire fighters. Communication and operational initiatives would address this concern.

Auxiliary staff is at a time disadvantage since they must leave their location when paged, travel to the fire hall, and don turnout gear. Turnout time depends on incident location, time of day, time of year, and Auxiliary staff location. Auxiliary fire fighter average turnout time is 9 minutes 12 seconds.

Response times are tracked using Fire Department Management (FDM) software. The response time maps illustrate the geographical area covered for Urban and Rural response zones (Appendix A). Time trials supplemented FDM data in some cases.

## **FUTURE REQUIREMENTS & RECOMMENDATIONS**

The Fire Rescue Service's challenges are largely driven by increased community growth and corresponding increased response volumes and response to more distant incident locations. Anticipated further new development requires the matching of emergency response and fire prevention services to increased volumes and service level maintenance.

### **CITY OF ABBOTSFORD GROWTH & PATTERNS OF GROWTH**

2006 Census data has been adjusted with interim growth projections through to the opening population projection for 2011. The table below then references growth projections in the Abbotsford Official Community Plan (OCP) for the 10 year Master Plan timeframe and reflects the impact of development application generated growth.

Projections in the OCP are based on 30 year projections. Projections for the Fire Rescue Service Master Plan are congruent with OCP population projections and community growth projections.

- The average population growth rate from 2006 to 2010 was 1.8% per annum, lower than the 2.0% annual growth rate projection for the 2011 to 2020 timeframe of the OCP and Master Plan. By the end of the 10 year term of the Master Plan, Abbotsford's population is projected to be 166,800, a growth of 27,800 people. This represents a 20% increase.
- Average dwelling unit occupancy is projected at 2.4 persons/dwelling unit. The projected 27,800 population growth represents approximately 11,500 dwelling units by the end of 2020.
- Projected growth in developed areas is infill and greater density through higher buildings. Implications for the Fire Rescue Service, is to provide input to development application reviews that mitigate risk, and to respond to emergencies in higher density developments.
- Westward, the substantial areas of growth over 25 years are West Clearbrook (23%), West Townline (27%), South Clearbrook (34%), and Aberdeen/Airport (32%).
- To the northeast, the substantial areas of growth over 25 years are Clayburn/Sandy Hill (39%) and Sumas Mountain (61%). The northeast is an area of substantial growth currently, and as projected in the future.
- Population growth to the northeast is consistent with, and builds on, projections in the first Master Plan. Auguston (Phase 8) is multi-family and continues to be developed. Vicarro Ranch at build-out is projected to have 1,400 dwelling units (3,360 people).



- The City is also projected to grow substantially in the Abbotsford, McMillan and Lower Sumas/Kilgaard areas over 25 years. These areas are seen as well served for the term of the Master Plan 2011-2020 by Fire Hall 6 (Abbotsford) as a composite fire hall and Fire Hall 2 (Sumas) as a career fire hall.

City of Abbotsford Population Projections (Source: Community Planning)

| <b>Service Area/<br/>Projections</b> | <b>2006<br/>Estimate</b> | <b>2010<br/>Estimate</b> | <b>10 Year Annual<br/>Growth</b> | <b>2020<br/>Projected</b> | <b>2036<br/>Projected</b> |
|--------------------------------------|--------------------------|--------------------------|----------------------------------|---------------------------|---------------------------|
| Abbotsford                           | 130,000                  | 139,000                  | 2.0%                             | 166,800                   | 210,000                   |

While developers understandably hope for a quick build-out, actual absorption is speculative over a ten year time horizon. Phasing emergency response service increases must respond to fluctuations in the rate of dwelling unit absorption.

It will be important to monitor development activity and dwelling unit absorption against growth rate projections. The 10-year time frame for population projections should be refreshed after five years to retain currency with evolving economic and community circumstances.

Population projections and anticipated patterns of growth are by their nature, based on assumptions. The task is to identify the approximate point in time Fire Rescue Service resources need to increase to meet approved response times for a growing population residing and working in a larger and denser geographical footprint of constructed buildings.

The timing of fire hall construction and/or staffing that meets growth projections for property and people is mindful of the need to also match service provision to assessment base growth which in turn, enables provision of funding for the growing services.

## **OPERATIONS**

Operational requirements and challenges directly impact the Fire Rescue Service delivery efficiency and effectiveness.

The goal of emergency response services is to provide sufficient staff, vehicles and equipment on a timely basis, and take action to minimize adverse impacts on people and property. This applies to fire suppression, First Medical Responder, motor vehicle accidents, technical rescue, hazardous materials, and other types of emergencies to which the Fire Rescue Service responds.

The Fire Rescue Service has established response time targets and response zones, originating from the previous Master Plan. The Fire Rescue Service is staffed by a composite Career and Auxiliary fire fighter model providing defined emergency response services to Abbotsford

A background synopsis on emergency response provides context for proposed recommendations.

### **Fire Suppression**

Most fires within buildings develop in a predictable fashion, unless accelerated by highly flammable material. Ignition, or the beginning of a fire, starts the sequence of events. It may take some minutes or hours from the time of ignition until flames are visible. This

smoldering stage is very dangerous, especially during times when people are sleeping, since large amounts of highly toxic smoke may be generated.

Typically, once flames appear, the sequence accelerates rapidly. Combustible material adjacent to the flame heats and ignites which in turn heats and ignites other adjacent materials. As the objects burn, heated gases accumulate at the ceiling. Some gases are flammable; all are highly toxic.

Fire continues to spread quickly, soon flammable gases at the ceiling reach ignition temperature and flame-over occurs. Subsequently, flashover occurs where all contents ignite due to the extreme heat. Damage caused by the fire is significant and the environment within the room no longer supports life. Flashover usually occurs five to eight minutes from flame appearance in typically furnished and ventilated buildings.

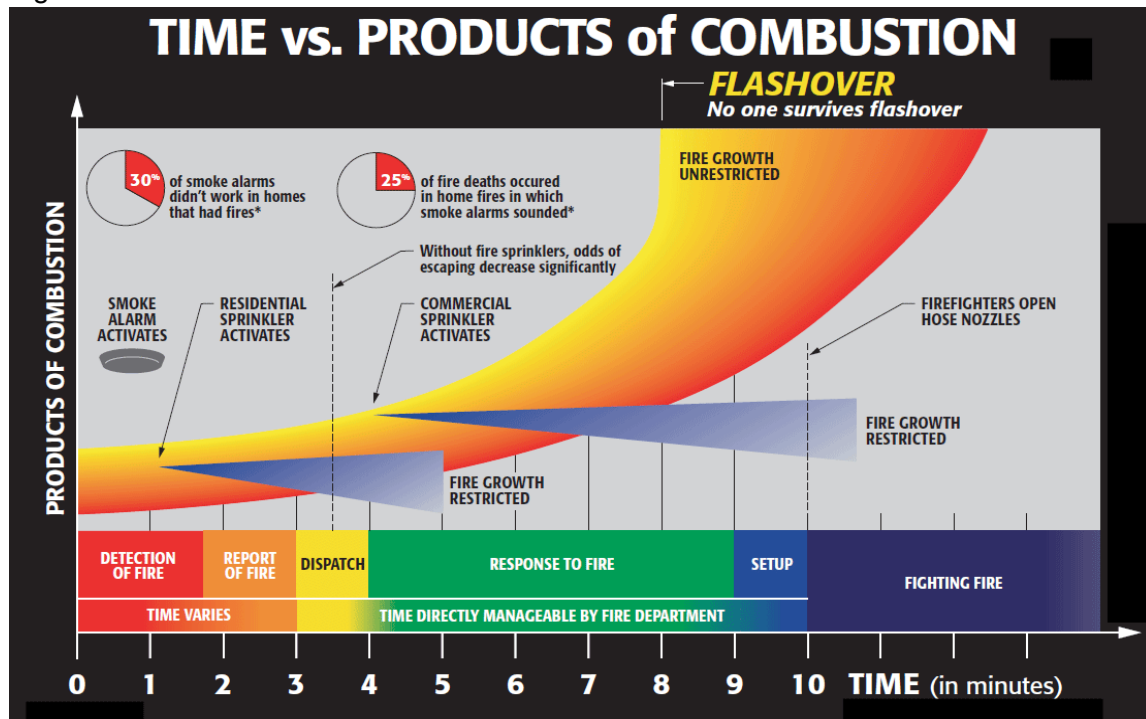
It is important to control a fire before lives are at risk and damage to the building frame occurs. Materials used to construct buildings today are often less fire resistant than heavy structural skeletons of older frame buildings. Roof trusses and floor joists are commonly made with lighter materials more easily weakened by fire. Light weight roof trusses fail after five to seven minutes of direct flame contact. Depending on adjacent flammable materials, plywood I-beam joists can fail after as little as three minutes of flame contact, creating a very dangerous environment for fire fighters.

Building contents today have much greater potential for heat production than in the past. The widespread use of synthetics in furnishings and light weight materials accelerates fire spread and increase the amount of water needed for fire control. The early application of water is essential to a successful outcome.

The time and temperature relationship provides direct guidance to the need to achieve response time targets. The shorter the time period between ignition and fire suppression, the lower the risk of injury, potential for loss of life, and value of property loss.

The Figure below illustrates the typical pattern of fire spread related to time.

Figure 1



Beginning with ignition and concluding with the application of water, the time required for each of the six steps in the response cycle varies.

- Detection: Detection happens by way of automated fire alarm system or by public emergency calls.
- Reporting: The emergency call is initially taken at the 9-1-1 Public Safety Answering Point (PSAP) and routed to the Fire Rescue Service for response.
- Dispatch: The Dispatcher identifies incident location and initiates the response.
- Turnout: Fire fighters don personnel protective equipment, assemble on the responding vehicle and leave the fire hall. Training and practice minimizes the time required for this step.
- Travel: This is the longest phase of the six step process as distance, road conditions, weather, time of day, and topography are major factors.
- Set-up: Once fire fighters arrive on a fire suppression scene, the fire vehicles are positioned, hose lines laid-out, additional equipment assembled, and preliminary tasks performed before entry is made to the structure and water is applied.

As is apparent by this sequence of events, ensuring efficient turnout and travel times are a significant challenge. Turnout time for career staff at a fire hall is much quicker than for auxiliary staff as they are not located at the fire hall.

## **First Medical Responder (FMR) Program**

The FMR program was created in 1989. The primary objective of the FMR program is to improve the continuity of patient care provided throughout the Province for pre-hospital emergencies. By recognizing Fire Rescue Service personnel are often available to assist patients prior to arrival of ambulance crews, basic medical training provides responders with the capability to deal with critical situations involving airway, breathing and/or circulation concerns until higher levels of assistance can take over.

There are over 7,000 First Medical Responders registered in the Province. Many have acquired additional training in the form of Automatic External Defibrillator (AED) and spinal management to address cardiac arrest and major trauma situations.

The experience in Abbotsford is similar to other communities where fire and rescue departments participate in FMR programs. Typically, about half of total call volume is for First Medical Responder and Medical Aid emergencies. Abbotsford is 47%.

Fire halls are typically positioned for fast response and are well suited to the program. Fire Rescue Service training in basic life support, spinal management, and rapid defibrillation protocols provides a successful level of pre-hospital care.

Cardiac arrest is generally used as the typical life threatening medical event. A victim of cardiac arrest has mere minutes in which to receive definitive lifesaving care if there is to be any hope of resuscitation.

The Canadian Heart and Stroke Foundation (CHSF) provides cardiopulmonary resuscitation guidelines designed to streamline emergency procedures for heart attack victims and to increase the likelihood of survival, including procedures for applying cardiac defibrillation to cardiac arrest victims.

The probability of recovery from cardiac arrest drops quickly as time progresses. The stages of medical response are very similar to the components described for a fire response. Heart attack survival chances fall by seven to ten percent for every minute between collapse and defibrillation. The CHSF recommends administration of cardiac defibrillation within five minutes of cardiac arrest.

## **Motor Vehicle Accidents**

The action taken within the first hour after a motor vehicle accident is important to survival. Within this hour, injured people need to be at a critical care facility to save lives, reduce suffering and enhance recovery.

Several factors must be addressed prior to patient transportation. First, the patient is stabilized prior to movement to prevent further injury or death. Second is extrication, a time consuming methodical process of removing the damaged vehicle from around the patient. Minimization and/or elimination of hazardous materials are often also involved.

## **Technical Rescue**

Technical rescue refers to specialized rescue operations that require specific rescue skill training. Examples include confined space and technical high angle rope rescue.

## **Response Volumes**

The total number of response calls increased by 16% over the five year period of 2005 (5,225) through 2009 (6,068). First Medical Responder (FMR) calls increased by 47%.

Fire suppression response volumes do not tend to increase exactly proportionally to population increase due to improved building codes and design. FMR calls tend to increase based on population increase and aging populations.

Overall growth in response volumes is linked to increased numbers of dwelling units and the corresponding population growth. Anticipated community growth, once realized, is anticipated to translate into higher fire suppression and FMR emergency call volumes.

## **Response Time Comparisons to Standards**

Response times are positively or adversely affected by facility location, vehicle availability and location, and staff complement at facilities or elsewhere. Response guidance is provided by regulatory requirements (e.g. WorkSafeBC) and by recommended, non-mandatory standards of professional bodies.

WorkSafeBC requires sufficient resources for an interior fire suppression attack based on time duration. Initially, four fire fighters must be on site for the initial 10 minutes. Additional fire fighters must be on site to continue interior attacks beyond 10 minutes. Complexity of the structure, property use and state of fire progression also determine staff response.

## **Response Times & Fire Halls: Townline and Clayburn Areas**

The staffed facilities component of the Master Plan represents the most substantial single issue to be addressed, in particular the Townline area and Fire Hall 7 (Clayburn) to enable response time targets to be achieved.

The Current Response Time map (Appendix A) provides travel time data in a visual representation of the capacity to respond within response time targets for response zones. This map illustrates that current urban response time targets cannot be met in the growing areas of the Townline and Clayburn-Sandy Hills areas. These are the highest priority service delivery areas.

The Master Plan 2006-2015 anticipated more rapid growth in the northeast Clayburn and Sumas Mountain areas. Council approved 20 Career fire fighters and a new engine to transition Fire Hall 7 (Clayburn) from an Auxiliary to Career staffed fire hall. The transition would substantially improve response times to the growing northeast areas.

The Master Plan 2006-2015 identified existing fire halls as the highest priority. The emergency operational workload in the Fire Hall 8 zone precipitated the requirement to provide staff for the Townline area. This created an imbalance that necessitated alteration of the facility plan. Instead of transitioning Fire Hall 7 to a Career staffed fire hall, the 20 Career fire fighters and Engine were stationed at Fire Hall 1 to improve operational workload balance and response times to the Townline area. This action did not eliminate the Fire Hall 7 Career staffing requirement; it responded to the highest need first.

In 2009, the Fire Rescue Service requested Capital budget funding to acquire land for a new Fire Hall 8 (Townline) to meet the Townline area response need. The intent was to relocate the 20 Career fire fighters and Engine to Fire Hall 8. Given the economic downturn

and other commitments, Fire Hall 8 land acquisition and construction was not approved. \$1.3 million is in the 2010 Capital budget for this purpose.

The 2010 Fire Underwriter's Survey recommends Fire Hall 8 (Townline) as beneficial to municipal insurance grading. The OCP continues to expect substantial growth in the Clayburn-Sandy Hills and Sumas Mountain communities. The need to staff Fire Hall 7 with Career fire fighters to meet response time targets for this urban area remains outstanding.

With Fire Hall 7 (Clayburn) and a new Fire Hall 8 (Townline) in place and both staffed with Career fire fighters, the City's urban areas would be largely covered within proposed response time targets. Appendix A illustrates the increased response distance reach between the Current Response Time map and Proposed Response Time map.

**Ladder Response in the Urban Zone**

The urban zone densification of multi-family residential complexes consisting of apartments, six-storey wood framed, and high-rise buildings poses a higher risk to citizens and fire fighters. Two staff would be required to safely operate a ladder. The ladder would be placed in Fire Hall 1.

**Career Fire Fighters**

Fire Hall 1 houses two engines of Career fire fighters to enhance response to the Townline area. The second company should be located in the Townline area.

As turnout time is a critical factor in emergency response, Career fire fighters will be informed of the turnout time target requirement of 80 seconds, to be achieved 80% of the time. Monitoring of target compliance should follow.

**Auxiliary Fire Fighters**

The Fire Rescue Service has retained a complement of well trained and experienced Auxiliary fire fighters. Recruitment and turnover is not insignificant, yet is somewhat lower than many municipalities. Auxiliary retention is a significant issue in some municipalities.

The contribution of Auxiliary fire fighters is noteworthy, particularly in rural areas and with the composite fire hall. As communities grow, Auxiliary fire fighters roles evolve towards providing exterior fire suppression and support.

AFRS auxiliary turnout time is typically 9+ minutes. The 8+ minute turnout time differentials for Auxiliary verses Career fire fighters extend overall response time. In most instances, career fire hall response to rural areas is quicker than for auxiliary fire hall response. Auxiliary fire fighter turnout time is favourably or unfavourably impacted by time of day, time of year, and work and home locations.

Auxiliary Fire Fighter Annual Turnover

| Year | # Auxiliary Positions | # Auxiliaries Recruited | % Turnover |
|------|-----------------------|-------------------------|------------|
| 2007 | 148                   | 34 (2 drives)           | 23         |
| 2008 | 148                   | 12                      | 8.1        |
| 2009 | 106                   | 15                      | 14.2       |

Auxiliary fire fighters train for 2 ½ hours at Wednesday evening sessions net of statutory holidays. Required attendance is 80% at training sessions. With an average of 85% attendance, this target is being achieved.

#### Auxiliary Fire Fighter (AFF) Training Night Attendance

| Year | # Practice Nights per Year | #AFF Filled Positions | % Attendance |
|------|----------------------------|-----------------------|--------------|
| 2008 | 49                         | 118                   | 83           |
| 2009 | 49                         | 99                    | 85           |

#### Auxiliary Fire Fighter Experience

| Year/Experience | <1 Year | 1-3 Years | 3 - 5 Years | >5 Years |
|-----------------|---------|-----------|-------------|----------|
| 2007            | 23%     | 26%       | 16%         | 35%      |
| 2008            | 8%      | 37%       | 25%         | 30%      |
| 2009            | 8%      | 40%       | 12%         | 40%      |

As communities grow and response volumes increase, the composite model of Career and Auxiliary fire fighters evolves towards an increased Career fire fighter complement in areas of higher population and density. Auxiliary fire fighters work and life commitments are best suited to lower call volume rural areas rather than high call volume urban areas.

### Existing Facility Status

Historically, the City of Abbotsford has been well served by fire halls and their locations. Community growth necessitates periodic review of call volumes and response times to areas of growth compared to response time targets. Fire hall condition relative to size for vehicles and building condition also change.

Existing facility descriptions and issues are as follows:

#### Fire Hall 1 (Clearbrook)

Fire Hall 1 is located at 32270 George Ferguson Way and was built in 1981 as a combined fire hall and administration facility. An addition was completed in 1988 and additional renovations were completed in 1993 and 2007. This facility has reached its capacity and has no room for expansion.

Although the fire hall is in good condition and meets WorkSafeBC requirements, it requires extensive modifications to meet BC Building Code (BCBC) seismic requirements.

#### Fire Hall 2 (Sumas)

Fire Hall 2 is located at 35995 North Parallel Road and was built in 1993. This fire hall serves Sumas Prairie, Glen Mountain, Regal Peaks, Sumas Mountain, and the Sumas Way corridor south of the freeway. The building was recently upgraded and meets BCBC seismic and WorkSafeBC requirements.

#### Fire Hall 3 (Aberdeen)

Fire Hall 3 is located at 28455 Fraser Highway and was replaced in early 2006. This fire hall mainly serves the agricultural areas of southwest Abbotsford as well as the new residential and commercial corridor of west Abbotsford. The building meets BCBC seismic and WorkSafeBC requirements.

### **Fire Hall 4 (Matsqui)**

Fire Hall 4 is located in Matsqui Village at 5775 Wallace Street and was built in 1963. This fire hall serves the agricultural area of Matsqui Prairie and the Abbotsford-Mission corridor. The fire hall consists of one long bay which requires vehicles to be parked bumper to bumper. Vehicle bays are too short to accommodate modern vehicle lengths as reserve vehicles are replaced.

The building does not meet BCBC seismic requirements or WorkSafeBC vehicle emission requirements. Replacement scheduled for 2002, remains outstanding.

### **Fire Hall 5 (Mount Lehman)**

Fire Hall 5 is located at 5875 Mount Lehman Road and was built in 1965. This fire hall serves the primarily rural areas of Mt. Lehman, Bradner and Glen Valley. It consists of two short single bays which require vehicles to be parked almost touching the doors. Vehicle bays are too short to accommodate modern vehicle lengths as reserve vehicles are replaced.

The building does not meet BCBC seismic requirements or WorkSafeBC vehicle emission requirements. Replacement of this fire hall was the subject of Public Private Partnership discussions. Replacement scheduled for 2001, remains outstanding.

### **Fire Hall 6 (Abbotsford)**

Fire Hall 6 is located at 2427 West Railway Avenue and was built in 1976. This fire hall serves the eastern downtown core, the residential areas east of the railway tracks, the rural areas south of the freeway and the McClure Road industrial area, and part of Sumas Way corridor. The fire hall consists of four single bays.

The building does not meet BCBC seismic requirements. Replacement scheduled for 2008, remains outstanding.

### **Fire Hall 7 (Clayburn)**

Fire Hall 7 is located at 34989 Old Clayburn Road and was built in 1995 and includes a two storey training and administration wing. This fire hall serves the residential areas of Old Clayburn, Ten Oaks and Sumas Mountain. The fire hall was designed for future use by Career fire fighters to meet service levels for east Abbotsford. The building meets BCBC seismic and WorkSafeBC requirements.

### **Training Centre**

The Fire Rescue Service Training Centre located at 1544 Riverside Road includes three classrooms with a number of training props for use by department staff and industry members. The Training Centre serves staff from all fire halls, fire service members in the region, and industry specific partners. A burn building and sufficient fire hydrants remain outstanding.

Completing the remaining elements of the Training Centre would enable revenue to be pursued. Soil on a portion of the Training Centre site is contaminated. While this does not reportedly create a risk, disposition of remediation is required.



## **Vehicles**

The corporate Vehicle Replacement Reserve includes all department vehicle replacements funded by annual department contributions. The Fire Rescue Service contributes to the reserve in accordance with vehicle lifecycle standards guided by Fire Underwriter's Survey standards. Replacement schedules meeting FUS standards are beneficial to municipal insurance grading. Fire Rescue Service replacement vehicles are listed for replacement within the reserve.

When vehicle replacement is due, a series of approvals to release funding are required. Streamlined budget and funding access processes would be clearer and more efficient.

Given the corporate nature of the reserve, it is unknown whether Fire Rescue Service annual contributions are adequate to meet future year vehicle replacements. It is unclear if contributions are being "reserved" within the reserve to fund their replacement vehicles.

The 2010 Fire Underwriter's Survey observed that vehicle pumping capacity does not fully meet FUS standards. While some deficiencies may be addressed through vehicle reallocation, some new vehicles may need higher pumping capacity. The Fire Rescue Service will determine the impact on future vehicle purchases, and identify cost differentials.

Larger, modern vehicles will not fit in Fire Halls 4 and 5. Scheduled vehicle replacements in 2015 will not fit in these fire halls. Fire hall replacement needs to be timely.

The Corporate Fleet Study will address Vehicle Replacement Reserve issues, determine if funding contributions are adequate, and review the reserve fund access process.

## **RADIO SYSTEM UPGRADE**

A radio system upgrade for Fraser Valley Regional District municipalities may occur during the term of the Master Plan. Presently, technical specifications, financial impact, and timing are unknown or speculative. The upgrade to the Abbotsford Police Department's radio system reportedly costs \$1.0 million annually. A comparable upgrade to the Fire Rescue Service radio system and licensing fees may be in the order of \$800,000 annually.

As direction and timing becomes clearer, the Fire Rescue Service can evaluate the implications.

## **EMERGENCY MEDICAL RESPONSE**

For several years, adoption and implementation of Emergency Medical Response (EMR) as an evolution of the First Medical Responder program has been under review. British Columbia is currently the only province in Canada that has not implemented EMR for standardized and licensed pre-hospital care.

The City of Prince George is currently conducting an EMR pilot program. Broader disposition of EMR in British Columbia is unknown. If the Province decides to proceed the Fire Rescue Service can evaluate the implications and determine the requirements.

## RECOMMENDATIONS: OPERATIONS

The previous Master Plan divided the City into two response zones, urban and rural. Facilities, vehicles and staff support achievement of specified response time targets for a growing and evolving community.

### Response Time Zones

The Master Plan continues separating response times into two response zones based on the Abbotsford Official Community Plan with defined response time targets.

- Urban Zone: Higher density residential and commercial areas
- Rural Zone: More sparsely populated and distant areas

### Confirm Response Travel Time Targets by Zone

Recommended response time targets meet or approach the National Fire Protection Association (NFPA 1710/1720) standards and best practices that communities can strive to achieve and maintain. While NFPA standards are neither mandated nor legally required, they do represent standards recommended by subject matter experts based on a broad and deep body of knowledge and experience.

Response time “targets” are targets and not implied guaranteed service levels. Response times can be adversely affected by other incidents in progress, weather, road conditions, construction, and incident location. WorkSafeBC regulations provide mandatory staffing requirements for building entry during a fire.

Recommended travel time response time targets are identical to those in the previous Master Plan.

Travel Time Response Targets by Response Zone

| Zone  | Response                         | AFRS Travel Time Standard                  | NFPA Travel Time Standard                 |
|-------|----------------------------------|--------------------------------------------|-------------------------------------------|
| Urban | 1 <sup>st</sup> Engine           | 4 minutes - 4 persons<br>90% of the time   | 4 minutes - 4 persons<br>90% of the time  |
|       | 1 <sup>st</sup> Alarm Assignment | 9 minutes - 12 persons<br>90% of the time  | 8 minutes - 15 persons<br>90% of the time |
| Rural | 1 <sup>st</sup> Engine           | 11 minutes – 4 persons<br>80% of the time  | 14 minutes - 6 persons<br>80% of the time |
|       | 1 <sup>st</sup> Alarm Assignment | 15 minutes – 12 persons<br>80% of the time | Not Defined                               |

Response time targets are linked to the time/temperature relationship and the fire propagation curve (Figure 1). Simply put, the sooner the response team responds to a fire, the lower the risk of injury or death, and the lower the property loss.

### Establishing a Career Fire Fighter Turnout Time Target

The turnout time target was adjusted to be consistent with the updated NFPA standard of 80 seconds, achieved 90% of the time. Career fire fighters will be informed of the adjusted turnout time target of 80 seconds and work towards achieving and maintaining this target 90% of the time.

## **Auxiliary Fire Fighters: A Continuing Role Evolution**

It is recommended to develop a vision for the evolving role of Auxiliary fire fighters and communicate that vision. Auxiliary fire fighters are primarily used for exterior fire ground attack, incident scene support, water/air supply, salvage and overhaul, traffic control, special apparatus, and other support roles. Auxiliary fire fighters respond to rural fire suppression calls and support all zones.

It is recommended to confirm the continued Auxiliary fire fighter role in public education and to enhance the Emergency Program in providing information and communication.

## **Core Enablers Supporting Response Time Achievement**

Achieving response time targets is through resources: facilities, vehicles and staff. These resources are largely brought forward from the previous Master Plan, and phased in.

### **Facilities**

The facility plan component of the Master Plan 2006-2015 anticipated more rapid growth in the northeast Clayburn and Sumas Mountain areas than occurred in the five year period. Council approved 20 Career fire fighters and an Engine to transition Fire Hall 7 (Clayburn) from an Auxiliary to Career staffed fire hall. The transition would substantially improve response times to the growing northeast areas.

The Master Plan 2011–2020 seeks to re-establish a facilities plan that matches emergency response to community growth and response time targets. The facilities plan in the Master Plan 2011–2020 provides timely emergency response to both the Townline area and Clayburn and northeast area, in that order of priority. Staff and vehicles currently exist for Fire Hall 8 (Townline).

The previously recommended upgrade of seismically deficient fire halls which also have vehicle bays that cannot accommodate larger modern vehicles, and exhaust handling and other building issues has been modified. It is recommended to replace seismically deficient fire halls at the appropriate size on a priority basis. The cost difference is offset by building life, functionality, and lower maintenance costs over the long term.

Within this context, it is recommended that the following facility recommendations be approved to meet response time targets and address replacement of seismically deficient and undersized fire halls.

- 2010: Complete Fire Hall 8 (Townline) site acquisition, building design, permits, offsite servicing, and tendering. \$1.3 million is in the 2010 Capital budget.
- 2011: Construct Fire Hall 8 at an estimated cost of \$1.7 million.
- 2012: Complete building design, permits, servicing, and tendering for Fire Hall 6 replacement at an estimated cost of \$300,000.
- 2013: Construct Fire Hall 6 (four bays) at an estimated cost of \$3.5 million.
- 2014: Complete Fire Hall 4 and Fire Hall 5 building design, permits, servicing, and tendering at an estimated total cost of \$500,000. Re-explore replacement of Fire Hall 5 as a Public Private Partnership (P3).
- 2015: Construct Fire Hall 4 at an estimated cost of \$2.5 million.
- 2015: Construct Fire Hall 5 at an estimated cost of \$1.0 million (if P3).

- 2016: Complete Fire Hall 9 (Auguston) building design, permits, servicing, and tendering at an estimated cost of \$300,000. The land has been acquired.
- 2017: Construct Fire Hall 9 at an estimated cost of \$2.5 million. \$1.15 million is in an Auguston/Area H reserve fund, for a net \$1.35 million addition to the Capital budget.
- 2019: Upgrade Fire Hall 1 to meet seismic standards at an estimated cost of \$2.0 million.

## Vehicles

It is recommended that the Corporate Fleet Study include Fire Rescue Service vehicles and address the following requirements:

- Ensure annual contributions to the reserve are adequate to fund Fire Rescue Service scheduled vehicle replacements
- Segregate Fire Rescue Service contributions for vehicle replacement and to ensure funding is maintained
- Streamline the process for accessing reserve funding for replacements

It is recommended that replacement lifecycles for Fire Rescue Service vehicles be consistent with lifecycles recommended by the Fire Underwriter's Survey (FUS) to maintain municipal insurance gradings.

- Ladder & Other Aerial: 15 years front line plus 5 years in reserve
- Engine: 15 years front line plus 5 years in reserve
- Squad: 15 years front line plus 5 years in reserve
- Tender: 15 years front line plus 5 years in reserve
- Wildland Interface: 15 years front line plus 5 years in reserve

The 2010 Fire Underwriter's Survey noted deficiencies in pumping capacity. While some of the deficiency can be mitigated through vehicle relocation, some new and replacement vehicles will require increased pumping capacity to fully address the deficiency.

The FUS extended the lifecycle of engines at Fire Hall 4 and 5 from 15 to 20 years and reserve engines from 20 to 29 years, subject to excellent maintenance. The less frequent use of engines originating from these Auxiliary rural fire halls supported the extension.

It is recommended that consistent with the vehicle replacement schedule, the following vehicles be replaced within the term of the Master Plan. Estimated costs include fit-up, but not estimated future value in Canadian dollars.

- 2011 & 2012: Replace Engine (1990) at an estimated cost of \$315,000 per year
- 2012: Replace Tender Chassis (1992) at an estimated cost of \$175,000
- 2013: Replace Engine (1990) & Engine (1993) with a Quint at an estimated cost of \$1,050,000
- 2014: Purchase Engine for Fire Hall 7 at an estimated cost of \$630,000
- 2015: Replace Engine (1995) at an estimated cost of \$630,000
- 2015: Replace Engine (1995) at an estimated cost of \$630,000

- 2016: Replace Engine (1997) at an estimated cost of \$630,000
- 2017: Replace Engine (1997) at an estimated cost of \$630,000
- 2017: Replace Engine (1998) at an estimated cost of \$630,000
- 2018: Replace Aerial Ladder (1998) at an estimated cost of \$1,050,000
- 2018: Replace Squad (1998) at an estimated cost of \$500,000
- 2019: Replace Tender Chassis (1999) at an estimated cost of \$175,000
- 2019: Replace Tender Chassis (1999) at an estimated cost of \$175,000
- 2020: Replace Tender Chassis (2000) at an estimated cost of \$175,000
- 2020: Replace Special Operations Trailer (1999) with Special Operations Vehicle at an estimated cost of \$500,000

## **Staffing**

Staffing recommendations address provision of services matched to staffing requirements to improve response times to growing areas of the community. Fire Hall location and staffing recommendations are complementary and maximize response distance reach within time targets.

It is recommended that the following staffing recommendations are supported:

- 2011: Late in 2011, relocate 20 Career fire fighters from Fire Hall 1 to Fire Hall 8; no cost is incurred
- 2012: Five Career fire fighters for Fire Hall 7 at an estimated annual cost of \$500,000 inclusive of benefits
- 2013: Five Career fire fighters for Fire Hall 7 at an estimated annual cost of \$500,000 inclusive of benefits
- 2014: Five Career fire fighters for Fire Hall 7 at an estimated annual cost of \$500,000 inclusive of benefits
- 2015: Five Career fire fighters for Fire Hall 7 at an estimated annual cost of \$500,000 inclusive of benefits
- 2015: Fire Hall 7 completes the transition from an Auxiliary to Career fire hall
- 2017: Relocate Fire Hall 7 Auxiliary fire fighters to Fire Hall 9; no cost is incurred
- 2019: Five Career fire fighters for a staffed Ladder vehicle at Fire Hall 1 at an estimated annual cost of \$500,000 inclusive of benefits
- 2020: Five Career fire fighters for a staffed Ladder vehicle at an estimated annual cost of \$500,000 inclusive of benefits

The approach to staffing responds to current staffing requirements and to meet response time targets. The recommendations are phased to match service cost to community growth (i.e. property assessment).

## FIRE PREVENTION

Fire Prevention services are proactive and preventative in nature. The model for efficient service delivery is correspondingly largely scheduled to provide core services. Monitoring actual performance to expectations and schedules is integral to Fire Prevention services.

Seven staff report to the Deputy Chief–Fire Prevention, five are assigned to inspection, development application review and fire investigation, and two are assigned to Public Education.

### Fire Prevention Inspection

Fire prevention inspections are completed in accordance with approved frequencies translated into monthly inspection schedules for Fire Inspectors. Company inspections are completed for lower risk properties and monitored. There is a need to enhance inspection scheduling and monitor productivity.

Fire Inspectors complete all inspections except categories “D” and “E” which are completed by Career fire fighters as “company inspections”. Fire Inspectors support company inspections. They also perform re-inspections, Business license inspections, and occupancy permit inspections for new and substantial renovation of industrial, commercial, institutional, and residential buildings greater than two dwelling units. The Fire Prevention Officer follows-up with property owners and/or tenants who fail to correct deficiencies and initiate enforcement processes and legal proceedings.

#### Fire Prevention Inspection Categories & Inspection Frequencies

| Inspection Category | Description                                                      | Inspection Frequency |
|---------------------|------------------------------------------------------------------|----------------------|
| Group A             | Churches, Halls, Schools, Pubs, Commercial Daycares, Restaurants | Annually             |
| Group B             | Institutions, Group Homes, Hospital                              | Annually             |
| Group C             | Hotels, Motels, Apartments, B&Bs                                 | Annually             |
| Group D             | Offices, Banks, Professional Services                            | Every Two Years      |
| Group E             | Retail Outlets                                                   | Every Two Years      |
| Group F1            | Industrial – High Hazard                                         | Annually             |
| Group F2 & 3        | Industrial – Medium to Low Hazard                                | Every Two Years      |

#### Fire Prevention Inspections Required & Completed

| Inspection Category | 2007 To Do  | 2007 Done   | 2008 To Do  | 2008 Done   | 2009 To Do  | 2009 Done   | 2009 % Done |
|---------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Group A             | 524         | 524         | 516         | 514         | 497         | 467         | 94          |
| Group B             | 75          | 75          | 47          | 47          | 41          | 41          | 100         |
| Group C             | 406         | 406         | 417         | 416         | 375         | 348         | 93          |
| Group D             | 553         | 553         | 540         | 539         | 607         | 597         | 98          |
| Group E             | 567         | 567         | 548         | 546         | 579         | 565         | 96          |
| Group F             | 799         | 799         | 1010        | 1003        | 947         | 908         | 96          |
| Re-inspections      | 12          | 286         | 13          | 276         | 20          | 323         | 100         |
| Business License    | 0           | 55          | 0           | 63          | 0           | 65          | 100         |
| <b>Totals</b>       | <b>2640</b> | <b>2926</b> | <b>3081</b> | <b>3068</b> | <b>2609</b> | <b>2932</b> |             |

Inspections to be completed and those actually completed are tracked by category. Detailed data is somewhat limited by data categorization and reporting. Re-inspections, occupancy permit inspections on industrial, commercial, institutional, and multi-family, and building permits are not adequately segregated. Re-inspection records are retained.

### Development Application Review

Development application review is in place and integrated with land and property development processes. Development application review and select building inspections are performed by Fire Inspectors as part of fire prevention inspection.

### Fire Investigation

Operations completes a fire investigation report for review by Fire Inspectors. Fire Inspectors investigate fires that include injuries, fatalities, suspicious origin, and substantial property loss. Timeliness of report submission to the OFC could be improved.

#### Estimated Fire Loss Values

| Year | # Incidents | Total Dollar Loss | # Reports to OFC | % Reports Submitted |
|------|-------------|-------------------|------------------|---------------------|
| 2007 | 408         | \$11,200,00       | 408              | 100                 |
| 2008 | 416         | \$6,500,000       | 416              | 100                 |
| 2009 | 432         | \$10,100,000      | 432              | 100                 |

The Office of the Fire Commissioner (OFC) requires fire investigation reports for all fires. The OFC implemented electronic reporting which will aid timely report submission.

### Public Education

A comprehensive Public Education Program is in place. Program offerings are developed and delivered to meet current and evolving public education requirements. Pro-emptively responding to emerging public education issues and opportunities is important to retaining Public Education currency.

#### Public Education Participation Volume (# Events)

| Program Name          | 2007       | 2008       | 2009       | % Change   |
|-----------------------|------------|------------|------------|------------|
| FireSmart Sessions    | 2          | 2          | 1          | (50)       |
| Child Restraint Seats | 147        | 169        | 108        | (26)       |
| Pre-school            | 8          | 5          | 21         | 61         |
| Learn Not To Burn     | 13         | 15         | 48         | 73         |
| Adult                 | 16         | 17         | 26         | 35         |
| Seniors               | 5          | 4          | 4          | (20)       |
| Juvenile Fire Setters | 11         | 10         | 20         | 85         |
| Fire Extinguishers    | 4          | 2          | 10         | 60         |
| Fire Hall Tours       | 20         | 15         | 18         | (10)       |
| Fireworks Safety      | 2          | 2          | 2          | 0          |
| <b>Total</b>          | <b>227</b> | <b>241</b> | <b>305</b> | <b>+26</b> |

The number of public education events/sessions completed during the three years has risen by 26%. It is important to ensure that public education event offerings match demand and continue to seek to address target areas of concern (e.g. multi-family complexes).

## Public Information

A higher profile of AFRS public information for Council and the public is required. These audiences expect current timely information on performance targets and initiatives. AFRS media relations requires enhancement in order to assist with messaging to the public.

## RECOMMENDATIONS: FIRE PREVENTION

It is recommended that an organization and work assignment review be completed in 2010 for implementation in early 2011 to ensure resources effectively and efficiently complete assigned responsibilities.

### Fire Prevention Inspection

It is recommended that inspection frequencies be confirmed as noted in the table below. The inspection frequencies are attainable with existing resources.

Fire Prevention Inspection Categories & Confirmed Inspection Frequencies

| Inspection Category | Description                                                      | Inspection Frequency |
|---------------------|------------------------------------------------------------------|----------------------|
| Group A             | Churches, Halls, Schools, Pubs, Commercial Daycares, Restaurants | Annually             |
| Group B             | Institutions, Group Homes, Hospital                              | Annually             |
| Group C             | Hotels, Motels, Apartments, B&Bs                                 | Annually             |
| Group D             | Offices, Banks, Professional Services                            | Every Two Years      |
| Group E             | Retail Outlets                                                   | Every Two Years      |
| Group F1            | Industrial – High Hazard                                         | Annually             |
| Group F2 & 3        | Industrial – Medium to Low Hazard                                | Every Two Years      |

It is recommended by the first quarter of 2011, the Deputy Chief - Fire Prevention develops and implements a comprehensive inspection management model.

- Ensure the inventory to be inspected is maintained
  - Linkage to the property address database to ensure properties to be inspected are identified and current
  - Linkage to the business license database for at risk uses
  - Enhance scheduling of currently in place joint occupancy permit inspections with building inspection for commercial, industrial, institutional and multi-family developments
- Ensure FDM data for construction inspections and occupancy permit inspections are segregated for tracking
- Enhance, reaffirm, and monitor the monthly schedule quotas for Fire Inspectors and company inspections to meet inspection frequency requirements
- Monitor results on a daily, weekly and monthly basis
- Update Operating Guidelines
  - Ensure the properties to be inspected are identified by inspection category and remain current
  - As required, update inspection checklists by inspection category



- Develop standardized inspection protocols for consistency and thoroughness of inspections by different staff and for company inspections
- Complete training and coaching as required for Fire Inspectors and company inspections to ensure consistency, accuracy, thoroughness, and timeliness
- Generate monthly reports of actual verses planned inspections, by inspector, for the inspection group, and for company inspections

Full implementation of handheld inspection “tablets” by Fire Inspectors and the use of printers in Fire Inspector vehicles is recommended. It is recommended that work scheduling, processes, and monitoring productivity be outlined in an operating guideline.

It is recommended to explore alternate solutions in higher risk outlying areas.

### **Fire Investigation**

It is recommended that the current process of quarterly fire investigation report submission to the OFC be reduced to monthly except in exceptional circumstances.

Lessons learned from fire investigations should continue to be linked to weekly practice sessions, fire prevention inspections, and public education.

### **Public Education**

It is recommended that Fire Prevention develop a comprehensive Public Education program during 2010 prioritized on benefits generated. Where possible, continue to include standardized OFC and other fire service’s prepared training packages that meet Public Education requirements. Examples include:

- Getting to Know Fire
- FireSmart for specific high risk areas
- Juvenile Fire Setters
- Fire safety for seniors in complexes
- Fire safety for strata complex owners and tenants
- Group sessions in wildland interface neighbourhoods

### **Public Information**

It is recommended to develop and deliver a Public Information model that includes

- Quarterly Council reports on actual performance matched to planned performance (e.g. response time targets, inspections)
- Topical initiative and status reports for Council and the public
- Website content review and enhancement
- Media relations

## **PRE-INCIDENT PLANNING**

Pre-incident plans are not in place for approximately 4,000 buildings. This is an outstanding requirement from the earlier Master Plan. The 2010 Fire Underwriter's Survey also recommended completion of digital pre-incident plans. Risk management for fire fighters, the public and containing property loss, drive pre-incident plan development and maintenance.

Digital pre-incident plans should be developed for more complex buildings, properties with higher fire risk features and/or uses, and complex or challenging commercial, industrial, institutional and multi-family buildings. These plans should be electronically accessible on primary response vehicles. Pre-incident plans should be developed for high and moderate priority ranked buildings. Pre-incident plans for lower risk ranked buildings can follow.

Recently work began on development of digital pre-incident plans for high priority properties.

## **RECOMMENDATIONS: PRE-INCIDENT PLANNING**

Pre-incident planning is the review of high risk structure design and use, typically, industrial, some commercial, institutional and multi-family complexes, with development of electronic plans to ensure effective and safe fire suppression response. Readily available pre-incident plans at the incident location are important for reasons of safety and to ensure effective service delivery. There are approximately 4,000 buildings requiring pre-incident plans.

It is recommended that pre-incident plans be developed on a descending priority basis.

- 2010: Multi-family dwellings of three or more stories
- 2011: Hospitals and other medical care facilities
- 2011: High hazard industrial plus public assembly buildings
- 2012 - 2014: Remaining industrial and other moderate hazard buildings

It is recommended that the availability of printers in response vehicles be considered to supplement onboard computer access. A pilot study may be a worthwhile approach.

## **REGULATIONS & BYLAWS**

City Council passes bylaws enforced by the Fire Rescue Service or through Bylaw Enforcement. The Fire Rescue Service applies Provincial regulations and bylaws to ensure public safety. The primary effectiveness of bylaws is achieved through encouraging adherence to bylaw provisions.

- Fire Department Act: Provides direction on the two platoon system and hours of work.
- Fire Services Act: Outlines responsibilities and authorities of the Office of the Fire Commissioner and Local Assistants, including public building fire prevention inspections and fire investigation and reporting.
- BC Fire Code: Regulates the use and demolition of buildings and the design, construction and condition of specific building elements, as well as protection measures.
- Emergency Program Act: Outlines responsibilities for development of an Emergency Program and Emergency Social Services.
- Workers Compensation Act: Among other provisions, specifies on-site staffing minimums during interior fire suppression attacks.
- Federal Regulation: Bill C45 is a criminal code amendment indicating potential employer consequences for negligence.
- Fire Service Bylaw #1513 - 2006: Establishes the Fire Rescue Service, defines Fire Chief authorities, burning regulations and permitting, inspection, hydrants, fees and enforcement.
- Fireworks Bylaw #1439 - 2005: Regulates the sale, discharge and permitting of fireworks.
- Emergency Measures Bylaw #1142 - 2002: Establishes the Emergency Program, Coordinator position, and responsibilities and authorities.
- Development Application Review: A process that enables fire safety input to land use development applications on property access, egress, turning radius, hydrant location, road grade and width, and wildland/urban interface mitigation.
- Building Permit Application Review: Application review and provision of alternate solutions to comply with BCBC provisions on commercial, industrial, institutional, and multi-family residential buildings.

The Fire Service Bylaw and Fireworks Bylaw provide the authoritative framework for the mandate of the Fire Rescue Service.

The trend is to consolidate fire rescue topics into a single, all encompassing bylaw. The advantage of a single bylaw lies in comprehensiveness, topical linkages, process clarity, and ease of reference by the public and staff. Consolidation could be considered at some point.

## **RECOMMENDATIONS: REGULATIONS & BYLAWS**

It is recommended that at an appropriate time, the Fire Service and Fireworks Bylaws be consolidated into a single, all encompassing bylaw and include inspection frequency, open burning, fireworks, authorities, and enforcement.

## **PARTNERSHIPS & AGREEMENTS**

The Fire Rescue Service has established partnerships in service provision as follows:

- Automatic Aid Agreement: Chilliwack (Dixon Rd. to Boundary Rd. in Abbotsford)
- Mutual Aid Agreements: The Fire Rescue Service has mutual aid agreements with the City of Chilliwack, District of Mission, Langley Township, and Sumas, Washington (Can/US West Agreement)
- Fire Suppression Agreements: Matsqui First Nations and Sumas First Nations
- Ministry of Forests: Fire Rescue Service and BC Forest Service for the Forest Protection Program for non-structure fires on Crown land in Area "G" on Sumas Mountain
- Disaster Response & Recovery Plan Partnerships:
  - City of Abbotsford
  - Abbotsford Police Department
  - RCMP
  - Provincial Emergency Program
  - Abbotsford Emergency Social Services
  - BC Ambulance Service
  - Fraser Health Authority
  - Abbotsford International Airport
  - BC Ministry of Forests
  - BC Ministry of Environment
  - School District #34
  - Fraser Valley University
  - Private Schools
  - Churches
  - Central Fraser Valley Search & Rescue
  - Amateur Radio Club
  - Canadian Red Cross
  - Salvation Army
  - WestJet Airlines
  - Terasen Gas & Oil
  - Telus
  - BC Hydro
  - Kinder Morgan Pipeline
  - Shaw
  - Justice Institute of BC
  - Matsqui First Nations
  - Sumas First Nations

## **RECOMMENDATIONS: PARTNERSHIPS & AGREEMENTS**

It is recommended that the Fire Rescue Service further explore its use of partnerships to realize efficiencies and enhanced responses.

- Explore expanded training program contracts with other municipalities and agencies.
- Explore partnerships where practical for joint vehicle, equipment, and core major supplies purchase contracts.

Partnership recommendations can begin in 2010 and be expanded and confirmed as an operating protocol for the term of the Master Plan and beyond.

## TRAINING

Training is provided by two Training Officers and five Auxiliary Training Captains reporting to the Deputy Chief-Operations & Training. Training is scheduled two years in advance and includes special technical training, refresher training, and recertification.

Training is provided to both Career and Auxiliary fire fighters consistent with NFPA and service delivery requirements (Appendix B). Training is a mixture of theory and skill-based learning with hands-on practice in training simulations. Some training requires certification and periodic re-certification to ensure knowledge and skills are maintained. There are 3 categories:

- Standard Training: Career and Auxiliary fire fighters receive initial training courses. The Fire Rescue Service has identified completion of Fire Fighter II as mandatory for Career fire fighters. Basic Fire Fighter course completion is mandatory for Auxiliary fire fighters.
- Specialized Training: Training is provided to develop skills for specialized emergency rescue (e.g. confined space, hazmat)
- Maintenance Training: Recertification and/or refresher training applies to both Career and Auxiliary fire fighters.

Due to the diverse nature of fire fighter responsibilities and the associated occupational risk, it is important that fire fighters receive training that provides and maintains the necessary skills to safely and efficiently perform their duties.

Bill C45 requires that employers protect employees through training, suitable and maintained equipment, and personal protective equipment. The consequences of non-compliance could include charges being laid against the employer.

Training is important from a risk management perspective. Actions of fire and rescue services are subject to scrutiny. Delivery of a comprehensive training plan, service delivery model that meets legislated requirements, and working towards professional standards, will work to minimize risk and the potential for liability. Training course completion, certification, re-certification, and refresher tracking, and training records are required documentation. Technical training ensures specific skill development to provide specialized rescue services.

Training required for Career and Auxiliary fire fighters is presented below. Fire Prevention staff would complete applicable courses listed. Training for Career fire fighters and Fire Prevention staff is current. Training for Auxiliary fire fighters is ongoing at weekly practice evenings. Training not yet completed, generally relates to recently recruited fire fighters. Specialized training for Career and Auxiliary fire fighters is up-to-date. Training courses and practices are designed to comply with applicable WorkSafeBC regulations and NFPA standards (Appendix B).

Training gaps temporarily occur with new Career and Auxiliary recruits who are scheduled into an adjusted two year training schedule. Historical records of course completion, recertification, and refresher completion are retained on file.

### Career Fire Fighter Standard Training (Includes Courses for Fire Prevention Staff)

| Course Name                              | Course Name                          |
|------------------------------------------|--------------------------------------|
| Fire Fighter II (NFPA 1001)              | Fire Inspector I                     |
| Emerg. Vehicle Driving Regs. (NFPA 1002) | Fire Inspector II                    |
| Emerg. Vehicle Operator (NFPA 1002)      | Fire Investigator I                  |
| Emergency Scene Traffic Control          | Fire Investigator II                 |
| Fire Service Evaluator                   | Fire Investigator III                |
| Fire Life Safety Educator I              | Fire Plan Review                     |
| Fire Service Instructor I                | Fire Officer I                       |
| Vehicle Rescue I                         | Fire Officer II                      |
| Vehicle Rescue II                        | Forestry Suppression S100            |
| FMR Level III with AED* & Spinal         | Forestry Suppression S215            |
| Incident Safety Officer                  | Introduction to Emergency Management |
| Incident Command 100                     | Emergency Operations Centre I        |
| Incident Command 200                     | Emergency Operations Centre II       |
| Incident Command 300                     | Local Assistant to Fire Commissioner |

\*Automatic External Defibrillator

### Specialized Training

Some emergency responses require special training. There are three levels for each specialty: Awareness, Operations, and Technician. Career fire fighters require awareness and operations levels in each specialty. Technician level training applies to a lesser number of Career fire fighters for each specialty. Auxiliary fire fighters receive Awareness training in each specialty.

- Hazardous Materials (Hazmat)
- Confined Space Rescue
- Technical High Angle Rope Rescue (THARR)
- Low Angle Rescue
- Trench Rescue
- Chemical, Biological, Radiological, Nuclear (CBRN)

### Auxiliary Fire Fighter Standard Training

| Course Name                                 | Course Name                 |
|---------------------------------------------|-----------------------------|
| Basic Fire Fighter                          | Incident Command 100        |
| Emergency Vehicle Driving Regs. (NFPA 1002) | Fire Service Evaluator      |
| Emergency Vehicle Operator (NFPA 1002)      | Fire Officer I              |
| Emergency Scene Traffic Control             | Fire Life Safety Educator I |
| First Medical Responder Level III           | Fire Service Instructor I   |
| Forestry Suppression S100                   | Incident Safety Officer     |
| Forestry Suppression S215                   |                             |

### Refresher & Recertification Training

- Emergency Vehicle Recertification - Every two years
- Confined Space Recertification - Every two years

- First Medical Responder Recertification - Every three years
- Vehicle Rescue I/II Refresher – Annually
- Forestry Suppression S100 Refresher – Annually
- Forestry Suppression S215 Refresher – Annually
- Rope Rescue Refresher – Annually

## **Training Centre**

The Training Centre is operational and has proven to be an excellent initiative. The next step is to construct the remaining elements of the Training Centre (i.e. sufficient hydrants, burn building) to enable enhanced training and practice features. Completion of the remaining elements better enables the Training Centre to be marketed to other municipalities and agencies for a fee. The 2011 Capital budget includes \$567,000 which will be phased over three years.

A marketing plan is not in place to establish Training Centre direction and its role in fee-for-service/rental provision to other municipalities and agencies. Regional municipality and agency interest has been identified. The role of the Training Centre could evolve further towards an accreditation facility.

A portion of the Training Centre site has contaminated soil estimated to cost \$1.5 million to remediate. While that part of the site does not reportedly pose a hazard, a decision on soil remediation and timing is outstanding.

## **Staffing**

Current staffing resources are at capacity. There are inadequate training staff resources to meet training requirements for an increasing staff complement, specialized technical skills, skills maintenance, and further development of the Training Centre. The Fire Rescue Service will be experiencing increased retirements. Training for replacement recruits will increase.

The 2010 Fire Underwriter's Survey (FUS) observed that additional training resources would assist with skills maintenance. FUS also recommended increased Officer training.

Training Officers spend substantial amounts of time performing clerical, logistical, records management, and other clerical tasks. Their skills would be better allocated to training.

## **RECOMMENDATIONS: TRAINING**

### **Training Plans**

It is recommended that the current Career fire fighter training plan and two year training schedule process be continued. The schedule is adjusted to address staff turnover and evolving training knowledge and skill requirements.

It is recommended to implement the Officer training recommendation in the 2010 FUS report.

It is recommended to develop succession plan training pathways for staff with the interest, knowledge, skills, and potential for career progression.

It is recommended to seek delegated accreditation where practical for cost containment and to minimize staff time loss for accreditation and recertification at distant locations.

### **Supplemental Training**

It is recommended that training include developing a training and related succession plan for officers.

### **Training Centre**

It is recommended to develop a marketing plan for the Training Centre inclusive of consideration of regional training centre status with partner municipalities and agencies. The Training Centre could produce increased revenues flowing from implementation of the Marketing Plan. The services offered could expand on the current accreditation initiative.

It is recommended to complete the remaining elements of the Training Centre (i.e. sufficient hydrants, burn building) to enable enhanced training features. Capital budget requirements are phased over three years, \$190,000 in each of 2011 and 2012, and \$187,000 in 2013.

It is recommended that in 2012 contaminated soil at the Training Centre be remediated at an estimated cost of \$1.5 million.

### **Staffing**

It is recommended that to meet training requirements, an additional Training Officer position is created in 2012 at an estimated annual cost of \$120,000 inclusive of benefits. The 2010 FUS report recommended a Training Officer position to enable training program maintenance. The Training Officer would also increase capacity.

- Training an ongoing increased staff complement (Fire Hall 7)
- Training replacement recruits for Career fire fighters approaching retirement
- Evolving specialized technical training
- Officer training (2010 FUS recommendation)
- Maintaining training levels (2010 FUS recommendation)
- Training Centre development and offerings
- Increased accreditation capability for cost containment



## **EMERGENCY PROGRAM**

The previous Master Plan recommended creation of a position to undertake development of a City of Abbotsford Emergency Program. A Deputy Chief and an Emergency Advisor are in place and work is well underway. The Emergency Program is responsible to develop an Emergency Program Plan (EPP) for the corporation and the community. The EPP is comprised of several component plans that respond to the Hazard, Risk and Vulnerability Assessment.

There are several challenges in developing a major program for the corporation and the community. There is the need for a shared and supported direction for a comprehensive Emergency Program Plan (EPP), a complete inventory of services, short term and long term goals, and implementation and communication plans. There are resource requirements, including department staff assignments for EPP development and delivery. There is a need to build and/or maintain interest and momentum within the corporation. There is also a need to raise public and corporate profile and involvement.

While good progress has been made, work remains. Comprehensive component plans are under development for business continuity, flood plain, evacuation, response routes, airport, hazardous materials, and wildfires. A guiding framework would assist in providing higher profile direction.

### **RECOMMENDATIONS: EMERGENCY PROGRAM**

It is recommended that a comprehensive Emergency Program Plan (EPP) be developed with input and endorsement from partner departments and agencies. The EPP should contain a comprehensive inventory of services, short and long range goals, an implementation plan, and a communication plan for presentation to City Council. It is recommended that this work begin in 2010 with the Council presentation of the EPP to occur in the first quarter of 2011.

It is recommended that table top exercises be scheduled beginning in the third quarter of 2011. Field exercises should be scheduled, as well.

It is recommended to consider establishing public education, field event support, and emergency program service delivery through the use of volunteers, Auxiliary police, Auxiliary fire fighters, and/or other partnering agency volunteers.

## **ADMINISTRATIVE & SUPPORT SERVICES**

Administrative support issues relate to a combination of Master Plan support services and Annual Work Plan items to achieve Master Plan objectives.

### **Administrative Clerical Support**

There are inadequate clerical resources to support Fire Prevention, Training, and the Emergency Program. Technical and management staff are performing clerical functions. The current resource shortage will worsen as additional front line fire fighter resources are added to meet service delivery targets and expectations.

An Auxiliary clerical position has been filled full time for two years with temporary staff funding and is required. Fire Inspectors, public educators, Training Officers, and Emergency Program staff perform required clerical duties at the expense of regular duties. Even with the full time funded Auxiliary clerical position, a clerical shortfall remains.

## **RECOMMENDATIONS: ADMINISTRATION & SUPPORT SERVICES**

In order to provide adequate levels of administrative and clerical support to Operations, Fire Prevention, Training and the Emergency Program, administrative support positions are required. It is recommended that current administrative support requirements are met and new positions phased-in commensurate with department and community growth.

- 2011: Convert the existing full time (2 years) funded Auxiliary clerical position to a regular full time clerical position. No cost is incurred.
- 2011: One clerical position to support Fire Prevention, Training, and the Emergency Program at an estimated annual cost of \$46,000 inclusive of benefits.
- 2015: One half-time clerical position to provide support service requirements at an estimated annual cost of \$23,000 inclusive of benefits.

## **RETAINING CURRENCY**

To ensure the Master Plan meets community growth projections over the 10 year term of the Master Plan, it is recommended that a Master Plan review and update be completed in 2015.

# **APPENDICES**

## **APPENDIX A: MAPS**

M-901 Fire Hall Current Approximate Response Times

M-900 Fire Hall Proposed Approximate Response Times

## **APPENDIX B: TRAINING REQUIREMENTS – WORKSAFE BC REGULATIONS & NFPA STANDARDS**

## **APPENDIX C: 2010 FIRE UNDERWRITERS SURVEY RECOMMENDATION SUMMARY**

## **APPENDIX D: VEHICLES & STAFF BY FIRE HALL**

## **APPENDIX E: PARTICIPANTS-MASTER PLAN 2011 – 2020**

## **APPENDIX F: CONSULTANT & CLIENT ROLES**

**APPENDIX A: MAPS**

**M-901 - Current Response Time Map**

**M-900 - Proposed Response Time Map**

## **APPENDIX B: TRAINING REQUIREMENTS - WORKSAFE REGULATIONS & NFPA STANDARDS**

Abbotsford Fire Rescue Service trains fire fighters in the regulatory requirements of WorkSafeBC (WorkSafe) and National Fire Protection Association (NFPA) standards.

### **WORKSAFE REGULATIONS**

- WorkSafe Part 8 Personal Protective Clothing and Equipment
- WorkSafe Part 9 Confined Space
- WorkSafe Part 10 De-energization and Lockout
- WorkSafe Part 11 Fall Protection
- WorkSafe Part 18 Traffic Control
- WorkSafe Part 19 Electrical Safety
- WorkSafe Part 31 Fire Fighting
- WorkSafe Part 32 Evacuation and Rescue

### **NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS**

- NFPA 13E Recommended Practice for Fire Department Operations Protected by Sprinklers and Standpipe Systems
- NFPA 402 Guide for Aircraft Rescue and Fire Fighter Operations
- NFPA 405 Recommended Practice for the Recurring Proficiency Training of Aircraft Rescue and Fire Fighting Services
- NFPA 422 Guide for Aircraft Accident Response
- NFPA 424 Guide for Airport/Community Emergency Planning
- NFPA 471 Recommended Practices for Responding to Hazardous Materials Incidents
- NFPA 472 Standard for Professional Competence of Responders to Hazardous Materials Incidents
- NFPA 921 Guide for Fire and Explosion Investigations
- NFPA 1000 Standard for Fire Service Professional Qualifications Accreditation and Certification Systems
- NFPA 1001 Standard for Fire Fighter Professional Development
- NFPA 1002 Standard for Fire Apparatus Driver/Operator Professional Qualifications
- NFPA 1003 Standard for Airport Fire Fighter Professional Qualifications
- NFPA 1006 Standard for Rescue Technician Professional Qualifications
- NFPA 1021 Standard for Fire Officer Professional Qualifications

- NFPA 1031 Standard for Professional Qualification for Fire Inspector and Plan Examiner
- NFPA 1033 Standard for Professional Qualification for Fire Investigator
- NFPA 1035 Standard for Professional Qualification for Public Fire/Life Safety Educator
- NFPA 1041 Standard for Fire Service Instructor Professional Qualifications
- NFPA 1071 Standard for Emergency Vehicle Technician Professionals
- NFPA 1201 Standard for Providing Emergency Service to the Public
- NFPA 1401 Recommended Practice for Fire Service Training Reports and Records
- NFPA 1403 Standard for Live Fire Training Evolutions
- NFPA 1404 Standard for Fire Service Respiratory Protection Training
- NFPA 1410 Standard on Training for Initial Emergency Scene Operations
- NFPA 1451 Standard for a Fire Service Vehicle Operations Training Program
- NFPA 1500 Standard for Fire Department Occupational Safety and Health Program
- NFPA 1521 Standard for Fire Department Safety Officer
- NFPA 1561 Standard on Emergency Services Incident Management System
- NFPA 1670 Standard on Operations and Training for Technical Search and Rescue Incidents
- NFPA 1710 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments
- NFPA 1720 Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments
- NFPA 1936 Standard on Powered Rescue Tool Systems

## **EMA FIRST RESPONDER PROGRAM**

The primary objective of the First Responder Program is to improve the continuity of patient care provided for pre-hospital emergencies. Fire department personnel are often available to assist patients prior to ambulance arrival. Basic medical training provides fire department responders with the knowledge and skills to deal with critical situations involving airway, breathing and/or circulation until higher levels of help can take over. Even when first responders can only comfort the patient and document initial findings, a difference can be observed.

## APPENDIX C: 2010 FIRE UNDERWRITERS SURVEY RECOMMENDATIONS

|                   |                                                                    |
|-------------------|--------------------------------------------------------------------|
| Recommendation 1  | Provide Additional Apparatus                                       |
| Recommendation 2  | Provide a Reserve Ladder                                           |
| Recommendation 3  | Improve Apparatus Pumping Capacity                                 |
| Recommendation 4  | Train and Qualify Additional Fire Fighters to Officer Positions    |
| Recommendation 5  | Improve Total Available Fire Force                                 |
| Recommendation 6  | Improve in Service Apparatus Company Staffing                      |
| Recommendation 7  | Reassign spare SCBA                                                |
| Recommendation 8  | Reassign spare Hose                                                |
| Recommendation 9  | Consider hiring Additional Training staff                          |
| Recommendation 10 | Improve first Alarm Response to Commercial Districts               |
| Recommendation 11 | Pre-Incident Planning Program                                      |
| Recommendation 12 | Proceed with Plan to Construct Fire Hall 8                         |
| Recommendation 13 | Consider Additional Fire Hall for Auguston as Development Proceeds |
| Recommendation 14 | Improve Reliability of Principal Mains                             |
| Recommendation 15 | Upgrade Water Main Sizes                                           |
| Recommendation 16 | Improve Hydrant Distribution                                       |
| Recommendation 17 | Classify Fire Hydrants According to NFPA 291                       |
| Recommendation 18 | Implement Sprinkler Bylaw                                          |

### Recommendation 1: Provide Additional Apparatus

For Fire insurance Grading purposes, Abbotsford Fire Rescue Service can receive extra credit by acquiring additional apparatus. Fire apparatus should be ULC listed, be of an appropriate age, have an adequate pumping capacity, and be proven reliable. Doing so may help to provide an adequate level of protection and potentially improve the fire insurance grade for the community.

Fire Hall 3 and 4 received the least credit in this item, 35.42% and 38.33%, respectively. With the addition of Fire Hall 8 (and moving a Pumper apparatus from Fire Hall 1 to Fire Hall 8), Fire Hall 3 will receive potential extra credit (52.92%) and Fire Hall 6 will receive slightly lesser credit. Fire Hall 4 will now have the most deficiency in this grading item. Noting the effect on the Fire Department Relative Classification (see Table 7-4 Relative Classification Summary) the addition of Fire Hall 8 can bring the Relative Classification for Fire Hall 3 from 5 to 3; however, Fire Hall 4 remains a 6. Adding one additional pumper apparatus at Fire Hall 4 should bring the credit applied under this item to 76% and bring the Relative Classification to a 4 (adding apparatus also has a cascading effect on other items of the grading, especially item 3 (section 7.1.3) and 4 (section 7.1.4)). Additionally, adding additional Fire Fighters should bring the overall PFPC for Fire Hall 4 to 3 (discussed further in section 7.1.7). Consideration should be given to moving Fire Hall 4 further south along the Abbotsford-Mission hwy in order to compensate for the loss in credit applied to Fire Hall 6 (credit loss 95.42% to 87.08%) with the construction of Fire Hall 8.

Adding one additional Pumper apparatus to Fire Hall 5 should bring the Relative Classification to 4 resulting in overall PFPC 3 for Fire Hall 5.



Should the plans for constructing a new Fire Hall near the intersection of Blauson Blvd and McKee Road proceed, additional apparatus should be acquired for this Fire Hall.

Acquiring additional Fire apparatus is a serious matter that requires careful consideration. There are many factors to consider and fire insurance grading is only one such factor.

### **Recommendation 2: Provide a Reserve Ladder**

To ensure an adequate response when a fire department has its ladder apparatus out for repair, a fire department should have a reserve ladder apparatus equipped, maintained and ready for replacement purposes if its primary ladder is out of service. At a minimum one ladder apparatus should be kept in reserve for each five ladder apparatus which would include a single ladder apparatus having a replacement apparatus.

### **Recommendation 3: Improve Apparatus Pumping Capacity**

To receive maximum credit for this grading item the fire department's pumping capacity would be need to be increased. Additional credit can be received up to the maximum by acquiring additional resources. Improving credit in pumping capacity is directly proportional to credit received for engine and ladder companies. Apparatus should be acquired of a reasonable age and pump capacity for fire insurance grading.

Acquiring additional apparatus may have positive benefit effects in terms of fire insurance grading. Acquiring new apparatus is a serious matter that requires careful consideration. There are many factors to consider and fire insurance grading is only one such factor. Note that the comments in Recommendation 1 will have a cascading effect here.

### **Recommendation 4: Train and Qualify Additional Fire Fighters to Officer Positions**

Having sufficient company Officers available and assigned to provide one on duty response with each required engine or ladder company, is the benchmark against which this item is measured in the fire insurance grading index. Company Officers should be adequately trained and competent to provide leadership to engine and ladder companies.

Abbotsford Fire Rescue Service can receive additional credit up to the maximum if it increases the total number of Company Officers on the department. The Company Officers should be adequately trained, preferably in accordance with *NFPA 1021, Standard for Fire Officer Professional Qualifications, 2009 Edition*.

### **Recommendation 5: Improve Total Available Fire Force**

Providing additional staffing, either being career or auxiliary, is a serious matter that requires careful consideration. There are many factors to consider and the fire insurance grading is only one such factor. It should also be noted that the requirements of the fire insurance grading provide a benchmark against which all fire departments are measured; the requirements of at least six competent fire fighters available and assigned to respond to fire for duty with each required engine and ladder company 24/7 are intended only as a benchmark for grading.

Fire Hall 4 has the least amount of credit applied under this item (21%). With the addition of Fire Hall 8, all Fire Halls receive additional credit except Fire Hall 4; Fire Hall 6 also receives lesser credit. Adding additional Career Fire Fighters (trained as officers) to provide 1 on duty

(24/7) to fire Hall 4, in addition to Recommendation 1 should bring the overall PFPC to 3 for the area covered by Fire Hall 4.

It should also be carefully noted that currently the number of Fire Fighters assigned to Fire Hall 5 does not meet the minimum requirements for Dwelling Protection Grade (DPG) 3A (see Appendix A); however, due to the distance from Fire Hall 5 to the next closest Fire Hall (4) being less than 8km, DPG 3A applies. Fire Hall 5 should remain less than 8km road distance from the nearest Fire Hall conforming to the requirements for DPG 3A or higher (2,1).

Although, the credit applied to Fire Hall 1 under this item is low, additional Fire Fighters will not have a major effect on the overall PFPC for Fire Hall 1.

### **Recommendation 6: Improve In Service Apparatus Company Staffing**

Abbotsford Fire Rescue Service can receive additional credit up to the maximum in this grading item if it improves its staffing of in-service fire apparatus. It should be noted that this grading item is connected with other fire insurance grading items including engine service, ladder service and total available fire force. Changes in those grading items can affect the amount of credit received in this grading item.

### **Recommendation 7: Reassign spare SCBA**

Abbotsford Fire Rescue Service can receive additional credit up to the maximum in this grading item if spare SCBA are assigned to Fire Hall 4 and 5.

### **Recommendation 8: Reassign spare Hose**

Abbotsford Fire Rescue Service can receive additional credit up to the maximum in this grading item if spare hose is reassigned to Hall 3.

### **Recommendation 9: Consider hiring Additional Training staff**

Should there be ongoing difficulty in completing skills maintenance training, consideration should be given to the hiring of additional training staff.

### **Recommendation 10: Improve First Alarm Response to Commercial Districts**

First alarm response to commercial districts can be improved through the addition of apparatus. Fire apparatus should be ULC listed, be of an appropriate age, have an adequate pumping capacity, and be proven reliable. Doing so may help to provide an adequate level of protection and potentially improve the fire insurance grade for the community. Apparatus should be first considered for Fire Halls in a Fire Zone with a higher Required Fire Flow. Recommendation 1 will have a cascading effect here.

Acquiring additional fire apparatus is a serious matter that requires careful consideration. There are many factors to consider and fire insurance grading is only one such factor.

### **Recommendation 11: Pre-Incident Planning Program**

Ensure that the all pre-incident plans are updated and converted to digital format.

### **Recommendation 12: Proceed with Plan to Construct Fire Hall 8**

The construction of Fire Hall 8 (with apparatus and staffing as discussed) would be beneficial for fire insurance grading.

### **Recommendation 13: Consider Additional Fire Hall for Auguston as Development Proceeds**

The suggested Fire Hall located in the Auguston should be considered as development in this area proceeds.

### **Recommendation 14: Improve Reliability of Principal Mains**

Redundancy of principal is important to ensure adequate pressures and flows can be continually provided throughout the municipality. Areas of the water distribution system should be reviewed to determine mains that are most important and improve redundancy for those mains. Redundancy can be accomplished through twinning principal mains or improving storage on the distribution system.

### **Recommendation 15: Upgrade Water Main Sizes**

Water mains less than 150mm in diameter do not have adequate flow capacities for fire fighting purposes. To reduce the risk of fire flows being overly restricted through small portions of pipe, all new water lines and later branches should be a minimum of 150mm (6 inches). Pre-existing pipes that are smaller should be upgraded on a priority basis. *Reference: NFPA 24, Standard for the Installation of Private Fire Service Mains and Their Appurtenances, recent Edition.*

*“5.2.1 Private Fire Service Mains. Pipe smaller than 6 in. (152.4 mm) in diameter shall not be installed as a private service main supplying hydrants.”*

### **Recommendation 16: Improve Hydrant Distribution**

Hydrant distribution can be improved within the City of Abbotsford's water system. Additional credit up to the maximum can be received if hydrant distribution is improved. It is recommended that additional hydrants be installed to allow for a sufficient volume of water available to buildings. It should be noted that for additional hydrants to be effective, a sufficient amount of water must be available within the water system.

Effective hydrant distribution will help provide a greater level of fire protection throughout commercial and residential areas by allowing for greater volumes of water to be used during fire ground operations, provided that the system has been designed, installed and capable of meeting such demands. Refer to Appendix B FUS – 1999 Water Supply for Public Fire Protection.

### **Recommendation 17: Classify Fire Hydrants According to NFPA 291**

To help improve the effectiveness of the fire department to effectively plan and fight fires, hydrants should be classified in accordance with sections 5.1 and 5.2.1.2 of *NFPA 291, Recommended Practise for Fire Flow Testing and Markeing of Hydrants, 2010 Edition.*

*5.1 Hydrants should be classified in accordance with their rated capacities [at 20 psi (1.4 bar) residual pressure or other designated value] as follows:*

- (1) Class AA – Rated capacity of 1500 USgpm (5680 L/min) or greater*
- (2) Class A – Rated capacity of 1000 – 1499 USgpm (3785-5675 L/min)*
- (3) Class B – Rated capacity of 500 – 999 USgpm (1900-3780 L/min)*
- (4) Class C – Rated capacity of less than 500 USgpm (1900 L/min)*

*5.2.1.2 The tops and nozzle caps should be painted with the following capacity-indicating color scheme to provide simplicity and consistency with colors used in signal work for safety, danger, and intermediate condition:*

- (1) Class AA – Light blue*
- (2) Class A – Green*
- (3) Class B – Orange*
- (4) Class C – Red*

Hydrants that are classified with the above colours will enable the department to better prepare itself when it arrives on scene to provide sufficient flows for offensive and defensive fires.

### **Recommendation 18: Implement Sprinkler Bylaw**

Credit can be received in the area of fire safety control through implementing a sprinkler bylaw that requires all buildings other than detached dwellings to be sprinkler protected. Furthermore, additional credit could also be received if the City extended this bylaw to include detached dwellings and/or developed a retrofit requirement for the existing building stock.

Implementing a sprinkler bylaw, positively affects Required Fire Flow calculations by reducing the Required Fire Flow if the sprinkler system is properly designed, maintained and tested according to NFPA 13. This may in turn lower the benchmark Basic Fire Flow of the community if implemented in buildings with high Required Fire Flow.

## APPENDIX D: VEHICLES & STAFF BY FIRE HALL

### Vehicles

Vehicles by fire hall assignment are as follows

- Fire Hall 1 (Clearbrook)
  - 1998 Anderson Engine 1
  - 2009 American LaFrance Engine 8
  - 1997 Superior Engine - Reserve
  
- Fire Hall 2 (Sumas)
  - 2009 American LaFrance Engine 2
  
- Fire Hall 3 (Aberdeen)
  - 2001 Smeal Quint Engine 31
  - 1992 Firehorse Tender 35
  - 2005 E-One Squad 36
  - 1990 Superior Engine 32
  
- Fire Hall 4 (Matsqui)
  - 1995 Hub Engine 41
  - 1999 ProFire Tender 45
  
- Fire Hall 5 (Mount Lehman)
  - 1995 Hub Engine 51
  - 1998 ProFire Tender 55
  
- Fire Hall 6 (Abbotsford)
  - 2005 E-One Engine 6
  - 1992 Nova Quintec Engine 61
  - 1990 Anderson Engine 62
  - 1998 Anderson Squad 66
  - 1997 Anderson Aerial Platform Ladder 67
  
- Fire Hall 7 (Clayburn)
  - 1997 Superior Engine 71
  - 1998 ProFire Tender 75

- Training Centre
  - 1985 Hub Engine
  - 1986 Superior Engine
  - 1999 Special Operations Trailer
  - 2005 HazMat Operations Trailer

## **Fire Hall Staffing**

The Fire Rescue Service staff complement is 104 full time staff and 106 Auxiliary fire fighter positions.

- Fire Hall 1 (Clearbrook) - Career
  - 1 Fire Chief
  - 1 Deputy Chief – Operations & Planning Logistics
  - 1 Deputy Chief – Operations & Training
  - Operations
    - 8 Captains
    - 34 Career Fire Fighters
  - 1 Deputy Chief – Fire Prevention
    - 1 Fire Prevention Officer
    - 2 Fire Prevention Lieutenants
    - 4 Fire Inspectors
  - 1 Deputy Chief – Emergency Program
    - 1 Emergency Advisor
  - 1 Chief Liaison Officer – Auxiliary Division
  - 1 Manager – Administrative Support Services
    - 1 Administrative Support Clerk
    - 1 Fire Clerk
    - 1 Staffing Clerk
    - 1 Software Systems Specialist
  
- Fire Hall 2 (Sumas) - Career
  - 4 Captains
  - 16 Career Fire Fighters
  
- Fire Hall 3 (Aberdeen) - Auxiliary
  - 1 Auxiliary District Chief
  - 3 Auxiliary Officers
  - 20 Auxiliary Fire Fighters

- Fire Hall 4 (Matsqui) - Auxiliary
  - 1 Auxiliary District Chief
  - 3 Auxiliary Officers
  - 14 Auxiliary Fire Fighters
  
- Fire Hall 5 (Mount Lehman) - Auxiliary
  - 1 Auxiliary District Chief
  - 3 Auxiliary Officers
  - 14 Auxiliary Fire Fighters
  
- Fire Hall 6 (Abbotsford) - Composite
  - 4 Career Captains
  - 16 Career Fire Fighters
  - 1 Auxiliary District Chief
  - 5 Auxiliary Officers
  - 22 Auxiliary Fire Fighters
  
- Fire Hall 7 (Clayburn) -Auxiliary
  - 1 Auxiliary District Chief
  - 3 Auxiliary Officers
  - 14 Auxiliary Fire Fighters
  
- Training Centre
  - 2 Training Officers

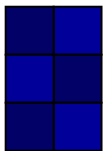
**APPENDIX E: PARTICIPANTS - ABBOTSFORD FIRE RESCUE SERVICE  
MASTER PLAN 2011–2020**

| <b>Name</b>     | <b>Position Title</b>                          | <b>Type of Involvement</b>   |
|-----------------|------------------------------------------------|------------------------------|
| Don Beer        | Fire Chief, Project Manager                    | Project Team, all components |
| Dale Unrau      | Deputy Chief – Operations/Planning/Logistics   | Project Team, all components |
| Dean Colthorp   | Deputy Chief – Operations/Training             | Project Team, all components |
| Mike Helmer     | Deputy Chief – Fire Prevention                 | Project Team, all components |
| Ron Hull        | Deputy Chief – Emergency Planning              | Project Team, all components |
| Gerry Gracey    | Chief Liaison Officer – Auxiliary Division     | Project Team, all components |
| Donna Taschuk   | Manager – Administrative Support               | Project Team, all components |
| Lud Schierling  | IAFF Union President Local 2864                | Project Team, all components |
|                 |                                                |                              |
| Frank Pizzuto   | City Manager                                   | Meetings, Workshop           |
| Judy Lewis      | Director – Finance                             | Meetings, Workshop           |
| Karen Sinclair  | Director – Strategic Planning/Bus Improve.     | Meetings                     |
| Carl Johannsen  | Manager – Community Planning                   | Meetings                     |
| Hugh Davidson   | Manager – Applications Development             | Meeting                      |
|                 |                                                |                              |
| Stuart Smith    | Fire Fighter, IAFF Executive Local 2864        | Interview                    |
| John Markwat    | Fire Fighter                                   | Interview                    |
| Tony Lucas      | Fire Prevention Lieutenant                     | Interview                    |
| Craig Bird      | Training Officer                               | Interview                    |
| Larry Hooge     | Suppression Captain                            | Interview                    |
| Andy Vanderveen | Suppression Captain                            | Interview                    |
| Tom Dodd        | Fire Fighter                                   | Interview                    |
| Greg Bowie      | Suppression Captain, IAFF Executive Local 2864 | Interview                    |
| Wade Wood       | Fire Fighter, IAFF Executive Local 2864        | Interview                    |
|                 |                                                |                              |
| Survey          | 22 Survey Questionnaire Respondents            | Survey Monkey                |
|                 |                                                |                              |
| Rick Taylor     | Principal-Results Management Services          | Consultant                   |



## **APPENDIX F: CONSULTANT & CLIENT ROLES**

The consultant was retained to facilitate the development of, and write the Master Plan 2011–2020 with the Abbotsford Fire Rescue Service management team supplemented by input from other staff. The consultant is a process consultant, rather than technical fire rescue services consultant, relying on service data, information, cost projections, mapping, and regulatory and fire and rescue technical knowledge provided by the Abbotsford Fire Rescue Service. The consultant assumes no liability for errors and/or omissions in the Master Plan.



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