CITY OF REVELSTOKE

FIRE DEPARTMENT REVIEW

1 Executive Summary

To fulfill its 2013 objective to conduct an operational review of at least one department, the City of Revelstoke engaged The Davis Consulting Group to review the Fire Department. The Consulting Team:

- Interviewed the Mayor and Council members, senior administrators, the Fire Chief, full-time Firefighters, and the executive of the Revelstoke Fire Rescue Society;
- Reviewed an extensive array internal documentation;
- Interviewed Fire Chiefs from similar municipalities; and
- Conducted a workshop with Council to facilitate discussion of service level choices in light of the risks faced and the constraint of available funding.

The key problems identified with the current mode of delivering fire services are:

1. High turnover rate of volunteer Firefighters results in continuous efforts to recruit and train sufficient numbers of volunteer Firefighters to meet response requirements. Low retention of volunteers leads to lower experience levels among responders and limits training that can be provided as training resources are directed at new recruits.

2. Lack of reliability of response to pages lengthens elapsed time until fire attack commences, and risks not having sufficient resources to effectively deal with emergency events. This situation is mitigated by routinely paging off-duty full-time members on overtime.

3. Lack of policies for services and service levels leaves expectations unclear; lack of good performance measurement and reporting makes governance more difficult.

The Consulting Team offers 26 recommendations to Council and the Administration, which are presented below. For clarity, numbering of these is kept consistent with the main body of the report.

1.1 Council Recommendations

#3 That Council approve the services and service level targets presented below.

Exhibit 7 – Service Levels

SERVICE PROVIDED	TARGETED LEVEL of SERVICE
Emergency Dispatch Services (911 Service)	24/7 911 call answer and dispatch service to North American Emergency Dispatch standard.

SERVICE PROVIDED	TARGETED LEVEL of SERVICE
Response Time Targets: All calls except Motor Vehicle Accidents, First Medical Responses and Specified Other Emergencies.	First Pump/Engine on scene within 8 minutes, 80% of responses with at least one Firefighter trained to NFPA 1001 Level II standard. Second Pump/Engine on scene within 12 minutes, 80% of responses with at least four Firefighters trained to JIBC Basic training standard. Additional Firefighters to respond on scene as available (no time target set).
Responding Force: Structural, Chimney, Residential, Industrial, Commercial, Vehicle, Wildland Interface Fire.	First and second Pump/Engine with at least five Firefighters. All available additional Firefighters paged. Additional apparatus response as needed, including aerial platform, bush truck, and tenders.
Responding Force: Alarm, or Miscellaneous Fire	One Pump/Engine on scene with at least one Firefighter. Other Firefighters and resources to be determined at the discretion of the first responding Firefighter.
Responding Force: Medical First Response	Provided only to life threatening calls. Response of two Firefighters, one of whom is trained to First Responder Level 3 training standard, within 12 minutes, 80% of responses. Other Firefighters and resources to be determined at the discretion of the first responding Firefighters.
Responding Force: Hazardous Materials Release, Gas leak or Fuel Spill or Energized Electrical Equipment Involvement	First and second Pump/Engine or Rescue with at least five Firefighters. All available additional Firefighters paged. Additional apparatus response as needed, including aerial platform and tenders.
Responding Force: Motor Vehicle Accident – In City	First Pump/Engine or Rescue with at least five Firefighters. Other Firefighters and resources to be determined at the discretion of the first responding Firefighter.

SERVICE PROVIDED	TARGETED LEVEL of SERVICE
Response: Other Emergencies, Including Wires Down	Response of two Firefighters, within 12 minutes, 80% of responses. Other Firefighters and resources to be determined at the discretion of the first responding Firefighters.
Response: Miscellaneous Calls, Including Burning Complaints	One Pump/Engine on scene within 12 minutes, 80% of responses, with at least one Firefighter.
Response: Rescue: elevator, confined space, trench or water	One Rescue unit on scene within 12 minutes, 80% of responses, with at least two Firefighters. Other Firefighters and resources to be determined at the discretion of the first responding Firefighters.
Services Outside the City	Ongoing services will be provided only under agreement with external agencies.
Inspection Services • **Code enforcement;** • **Bylaw enforcement;** • **Plans review for new buildings and renovations;** • **Fire safety plan review;** • **Pre-incident planning;** • **Fire investigation / cause and determination**	As per defined service level policy FD-4
Investigation Services	All Fires within City limits and those under the jurisdiction of the Fire Department are Investigated for Cause and origin.

SERVICE PROVIDED	TARGETED LEVEL of SERVICE
Public Education Services	Fire Prevention programs are scheduled considering the specific needs of the community and availability of partners and opportunities.

#4 That Council adopt the position that it will not send its Firefighters to structure fires outside of the City unless there is provided a level of fire inspections matching that within the City of Revelstoke.

#5 That Council initiate discussions with the CSRD to rectify this. Council may choose to offer to provide fire inspection services on a fee for service basis to the CSRD.

#8 That Council approve an increase in the volunteer service to 40 positions as a first step in ensuring adequate turnout to calls.

#13 That Council adopt a policy of providing NFPA standard training to full-time Firefighters and Officers, commensurate with their rank and roles.

#14 That Council adopt a policy for training and direct compensation of volunteer Firefighters as follows:

Exhibit 8 - Progression of Rank and Training for Part-Time Firefighters

	Prerequisite Training	Years of Service	Pay Level
Recruit	None		78%
Firefighter D Class	JIBC Basic training before they are permitted to respond to emergency events		78%
Firefighter C Class	First Aid training at First Responder Level 3, NFPA 1001 Level 1 and Motor Vehicle Extraction (NFPA 1006)	>1	83%
Firefighter B Class	Emergency vehicle driving (air brake endorsement and, as needed, Class 3 drivers licences for tankers and ladder apparatus; NFPA 1002)	>2	90%
Firefighter A Class	NFPA 1001 Level 2	>3	100%
Lieutenant	NFPA 1021 Level 1	>4	112%

1.2 Administration Recommendations

#1 That the Administration prepare a fire/rescue policy (incorporating Exhibit 7 as approved or amended) for Council approval.

#2 That the Administration report on performance measures, as shown in Exhibits 10-13.

#6 That the Fire Department continue its existing composite full-time/volunteer staffing model.

#7 That, to aid in recruitment and retention, the Fire Department:

a. Enlist the assistance of Council in approaching community leaders in recruiting suitable volunteers;

b. Issue uniforms for volunteers after completion of an established level of JIBC Basic Firefighting training, consisting of duty pants and shirts similar to those issued to full-time Firefighters;

c. Improve training of volunteers, as part of introducing a rank structure in the Fire Department, as described in Sections 4.2 and 4.3;

d. Reduce the stipend paid to the Revelstoke Fire Rescue Society to $5,000 annually; $50,000 to be paid by the City directly to individual volunteer Firefighters. Consider increasing incentive pay to volunteers, if through monitoring turnout it is found that turnover rate among volunteers is not improving significantly.

#9 That in the longer term if, through monitoring turnout, it is found that there are delays in second engine response or more than rare instances of inadequate response, the Fire Department consider increasing use of standby, developing an expected minimum number of stand by shifts each member should contribute.

#10 That, as the turnout rate improves and volunteer experience levels increase, the Fire Department reduce callout of full-time Firefighters on overtime with the goal of eliminating this in all but the most significant events.

#11 That the Fire Department implement a rank structure within the Fire Department as follows:

a. All emergency response incidents shall have an Incident Commander per NFPA Standard;

b. Full-time Firefighters be tasked with the roles and rank of Captain and appropriately trained to NFPA 1021 Fire Officer Level 2 standard for this rank;

c. Volunteer Firefighters with more than four years of service be tasked with the roles and rank of Lieutenant and appropriately trained to NFPA 1021 Fire Officer Level 1 standard for this rank.

#12 That the Administration provide standby pay to the Fire Chief and full-time staff and that they rotate on-call duty so that one is always available when needed.

#15 That the Fire Chief, in conjunction with the Assistant Chief/Training Officer, establish annual training goals for full-time and volunteer Firefighters in compliance with NFPA 1500.

#16 That the Fire Department prepare a City Policy for Council approval to adopt NFPA standards for apparatus and equipment maintenance, testing, refurbishment and replacement as follows:

Exhibit 9 – Apparatus Standards

Equipment Replacement	Standard
Fire Apparatus shall be maintained as per NFPA Standard and replaced at a maximum life of 20 years.	NFPA 1901 Standard for Automotive Fire Apparatus NFPA 1911 Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus NFPA 1914 Standard for Testing Fire Department Aerial Devices NFPA 1915 Standard for Fire Apparatus Preventive Maintenance Program
Personal Protective Equipment shall be purchased, maintained and life-cycled as per NFPA Standards.	NFPA 1500 Standard for Fire Department Occupational Safety and Health Program. NFPA 1851 Standard for Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting NFPA 1852 Standard for Selection, Care, and Maintenance of Open-Circuit Self-Contained Breathing Apparatus (SCBA) NFPA 1971 Standard for Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting

Equipment Replacement	Standard
General Equipment shall be purchased, maintained and tested as per the applicable NFPA Standard.	NFPA 1931 Standard for Manufacturer's Design of Fire Department Ground Ladders NFPA 1932 Standard for Use, Maintenance, and Service Testing of In-Service Fire Department Ground Ladders NFPA 1936 Standard for Powered Rescue Tools NFPA 1961 Standard for Fire Hose NFPA 1962 Standard for the Inspection, Care and Use of Fire Hose, Couplings and Nozzles and the Service Testing of Fire Hose NFPA 1963 Standard for Fire Hose Connections NFPA 1964 Standard for Spray Nozzles NFPA 1965 Standard for Fire Hose Appliances

#17 That the Administration adopt a least economic cost model for determining lifecycle replacement of fire apparatus and plan apparatus replacement schedules based on these.

#18 That the Administration prepare a policy for Council approval to fund all planned apparatus and equipment replacement, considering alternatives of lease financing, debt and reserve fund contributions.

#19 That the Administration review the Fees Bylaw and assess and present to Council options for implementing additional user charges for fire/rescue services that includes:

- Responses:
  - Motor Vehicle Accidents;
  - Fuel/gas spill or other hazardous materials response;
  - Medical first response;
- Licenses and permits:
  - Fireworks permits;
  - Burning permits;
  - Alarm permits and inspection;
- Inspections;
- Inspections of premises in CSRD (upon agreement with CSRD);
- Investigation reports for third parties;
- Provide fire suppression training to other organizations in the City and surrounding area.

#20 That the Fire Department supplement existing Standard Operating Guidelines with on-scene response guidelines for each type of incident, which details for each:

- Minimum staffing requirements and critical tasks;
- Apparatus types and staffing levels; and
- Baseline apparatus response.

#21 That the Administration ensure that a Satellite Fire Station remain available on the south side of the Illecillewaet River.

#22 That the Fire Chief investigate the feasibility and cost of remote status heads in apparatus.

#23 That the Fire Chief develop Standard Operating Guidelines for incident data capture which require Incident Commanders at each scene to review data before entry to FDM, with review by the Fire Chief or a designate before posting.

#24 That the Administration collect and report to Council quarterly or annually the measures as shown in the tables below.

#25 That the Fire Chief confirm the current level of performance shown.

#26 That the Fire Chief investigate all instances where the mandated level of service has not been achieved to determine root causes and that these be reported to Council annually.

1.3 Other Questions

The Consulting Team was asked to review the continued use of 24-hour shifts for full-time career Firefighters. A literature review was conducted (summarized in Appendix 1). Although the merits of this shift schedule are arguable, it is prescribed under the collective agreement between the City and the IAFF local union. For purposes of this review, this collective agreement provision is viewed as a fixed constraint.

Terms of reference for this review includes assessment of the alternative of replacing existing full-time suppression Firefighters aided by volunteers with a solely Paid-on-Call firefighting force. This assessment is presented in Appendix 2. We do not recommend replacement of full-time Firefighters with Paid-on-Call Firefighters in Revelstoke as this will increase response times, save only about $26,000 annually, and the transition is very difficult and will have unknown one-time costs.

Contents

2 Introduction

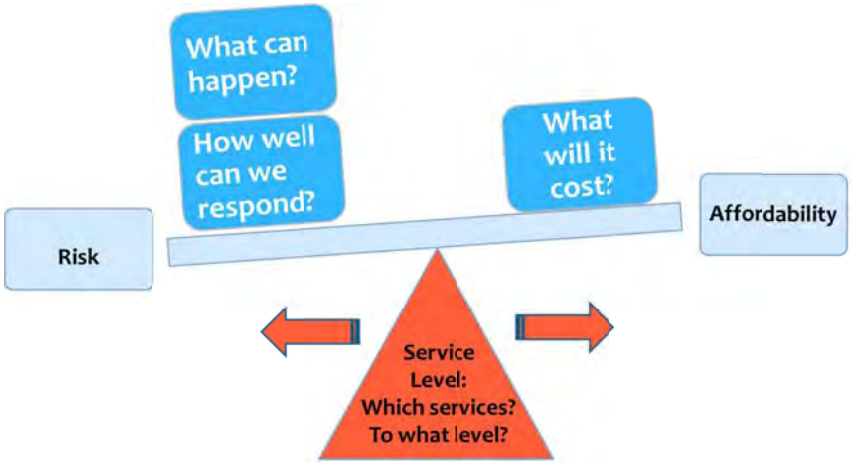
The City of Revelstoke's 2013 Council Goals and Objectives state the need for the City to provide efficient operation of programs, including delivery of services that enhance safety and protection of citizens. A separate goal is to complete an operations review of at least one City Program, with a longer term objective of reviewing all departments.

To implement action on these goals, the Chief Administrative Officer prepared Terms of Reference and issued a Request for Proposals for a Review of the Fire Department. The Davis Consulting Group was selected to perform this review, which began in March 2013.

This report is a summary of the goals of the review, its key findings and recommendations. Recommendations are segregated by those which require Council approval as policy matters or because of impact on budgets and those which the Administration has the authority and resources to implement.

3 Key Goals

For Council, provision of fire and rescue services involves selecting service levels which balance the risks inherent in the community, the actions needed to mitigate the risks or respond to events, and the City's ability to afford the costs of those actions.



This review is designed to assist Council in finding this balance through:

- Describing the risks in Revelstoke which are not normally expected in a community of the same size;
- Comparing the service level to similar municipalities;
- Providing Council with information on the science of structure fire evolution and the timing of fire spread;
- Facilitating discussion among Council to gain a sense of direction. (A summary of the Council workshop presentation is attached to this report.)

The City's desire to ensure effective utilization of resources was addressed by reviewing all aspects of Fire Department operations:

- Demand for services of all types;
- Response models;
- Staffing and deployment, including full-time career staff and volunteers;
- Training;
- Apparatus and equipment;
- Facilities;
- Operational guidelines;
- Prevention and public education activities;
- Data management and technologies; and
- Management and measurement of performance.

The Consulting Team addressed specific questions raised with respect to:

- Continued use of 24-hour shifts for full-time career Firefighters;
- Effectiveness and cost of converting from composite full-time and volunteer staffing to a Paid-on-Call staffing model;
- Impact of the Fire Underwriters' Survey on insurance premiums; and
- Utilization of the Fire Station.

4 Current State

4.1 Governance

Bylaw 1899 establishes a fire service and identifies the roles and responsibilities of the Fire Chief. This bylaw and the Fire Alarm Bylaw 1928, provide for regulation of activities and events in the city which may affect fire safety and regulates water supply and hydrants. It adopts The British Columbia Fire Code and Regulations and the British Columbia Building Code and provides authority for inspection of premises.

City Policy FD-4 provides a service level for frequency of inspections conducted by the Fire Department. The Fire department currently has no service levels defined regarding types of response, training, and equipment. There are standards set for frequency of Fire Inspections for different building tenancies.

To add detail to the City's corporate strategic planning process, the Fire Chief in conjunction with the CAO develops specific annual objectives (about six in number), including the financial impact, relationship to Council's goals and expected time frame for each. In addition, a Fire Department Operational Guideline states the following goals for the Department:

> *To provide cost-effective, high levels of service in the protection of life and property from fire and related hazards and also provide highly skilled services in the fire prevention, code enforcement, arson investigation and educational programs.*

To work together with other City Departments to ensure effective fire-related services that will provide reasonable protection against fire and related hazards.

As well, specific goals are set for suppression, prevention, training, and mechanical activities. Other Operational Guidelines set expectations for common tasks and activities of the Fire Department.

4.2 Unique Risks in Revelstoke

This review was not intended to conduct a detailed risk assessment for the City of Revelstoke. The Consulting Team suggests that the Fire Department conduct this assessment over a period of time, utilizing its full-time staff. We did, however, conduct a high level assessment and found the following notable risks:

- Geography:
  - River impedes access to some areas
  - Big Eddy has poor access and unknown water supply reliability
  - Revelstoke Mountain Resort is distant, congested and uphill
  - Remote from assistance from others
- Hazards from:
  - Transportation by rail
  - Highway traffic
  - Dam
  - Wood stove heating
- Propane:
  - Handling creates risks
  - Heavier than air and doesn't disperse like natural gas
- Land use and built form:
  - Separation of residences from higher hazards is low:
    - Helicopter landing zones in hotel parking lots
    - School next to forestry products plant
  - Older buildings
    - Close together, with metal roofs facilitates fire spread
    - Balloon frame construction
    - Dated safety codes and compliance issues expected
- Shadow population of tourists and seasonal owners
  - May not know how to use facilities or react to emergencies
  - May have higher level of expectations for response

4.3 Services – Responses to Emergencies

The Department responds to all emergency events in the City including:

- Airplane crashes;
- Alarms;
- Outside brush/grass fires;
- Burning complaints;
- Hazardous materials releases, including gasoline/diesel spills;
- Wildland interface fires;
- Motor vehicle accidents;
- Rescues - confined space, trench or water are conducted;
- Structure fires;
- Vehicle fires;
- Electrical wires down.

The department has no formal response service level other than the Fire Bylaw, and the First Responder program (initiated in 2011). The First Responder program was initiated in 2011 in response to shortfalls identified from the BC Ambulance Service. The career members and a number of the volunteers are certified to a (emergency medical) First Responder 3 level of training.

Highway rescue services outside City of Revelstoke are currently provided by the Highway Rescue Society. But with increased workloads and lack of members the Rescue Society is being amalgamated with the volunteer firefighters. This is still a new area as the transition took place in February of 2012. The response for motor vehicle accidents is for all members responding to muster at the fire station and under the command of the duty firefighter respond to the incident with the rescue apparatus.

4.4 External Service Agreements

The City has an agreement to provide response to alarms and fires in an adjacent area of the Columbia Shuswap Regional District (CSRD) and is implementing training to provide response to motor vehicle accidents on the Trans-Canada Highway outside the City under agreement with the Province.

There is also in place an agreement between the Fire Department and Parks Canada for the provision of fire suppression for structure and vehicle fires within the National Park. This agreement clearly defines the services provided and describes a clear method for cost recovery based on hourly rates for each apparatus for callout, standby or response.

The Fire Chief attempted to initiate agreements for mutual aid with the nearest municipal fire departments in Golden, Malakwa, Sicamous and Salmon Arm. There has been no response from any of these municipalities.

4.5 Call Volumes

Call volumes for the past years have been growing, as is shown in the exhibit below, due to undertaking medical first responses and the opening and development of Revelstoke Mountain Resort:

Exhibit 1 – Call Volumes

To put this in perspective, in 2008 there were about three calls per week. In 2012 this has risen to more than 10.

9-1-1 calls are routed through RCMP Kelowna to Surrey Fire Department for dispatch (under contract). The communications with dispatch was recently changed over to voice-over-IP this appears to make the communications more reliable. Surrey Dispatch reports that it is meeting a 90 second total dispatch time, 92.5% of the time, which exceeds NFPA standards.

The duty member on shift will upon receipt of the call information from 911 in Surrey determine if the call warrants paging out the volunteer fire fighters and other members. This reduces call outs for investigation type calls such as false alarms, burning complaints, etc.

There are five alarm tones available in the paging system, so that a staged paging system could be supported. Currently, the tones are interpreted by members to mean:

- All members are paged;
- First medical responders are paged;
- Highway rescue responders are paged;
- Career staff only are paged;
- Chief is paged.

This permits different response levels for different events, as shown below.

Exhibit 2 – Response Staffing Model

Call type	Response
Alarm	Duty firefighter, with discretion to page others
Medical response or EMS assist	2-3 firefighters
Minor motor vehicle accident, complaint, gas odour, minor fuel spill, outside fire	2-6 firefighters
All others: CSRD or wildland fire, serious motor vehicle accident, structure fires, vehicle fires, hazardous materials releases, complex rescues, etc.	All full-time and volunteers are paged

If the duty member on shift determines that volunteers need to respond Dispatch is advised to page the department to respond. The collective agreement is interpreted in a manner which so that off-duty full-time members are also paged at the same time as volunteers if there is a general page (all call).

The duty member and any other full-time members who are in station at the time of the call then don turnout gear and take the first out pump (Engine 1) to the scene and assumes command. He completes initial size up, reporting to Surrey Dispatch, and may initiate an exterior knock down if applicable. The volunteers respond in one of two ways, based on the city being divided north and south of the rail line:

- If the members live in the area that the incident is in, they respond directly to the scene with their home set of turnout gear, check in with the incident commander (the duty staff member) and are given their task;
- Members who are not in the area of the call respond to the fire station and bring the next required piece of equipment – pump, rescue etc.

For calls in the city proper, this system allows the initial size up to be completed at about the same time the first volunteer members who live close by are arriving. This accommodates the unique geography of the City - long narrow lay out with the fire station located in the middle.

Full-time staff understand that after a call volunteers may need to get back to their jobs as soon as possible. It is common practice to release the volunteers as soon as possible after a call and the full-time duty staff will complete all the cleanup of equipment and place the units back into service.

With the call out model in place, the first engine is out within about 90 seconds and on scene typically within another six or seven minutes. Total response time for the first engine, including 90-second dispatch, 90 second chute time, is generally under 10 minutes. Second engine out includes time for off-duty members to muster to the station or directly to the scene. Second engine arrives typically within 12 minutes total response time. Because of the layered response model, firefighting typically does not commence until the second engine is on scene. This time should be used for comparison to response standards performance of other fire departments.

To understand the implications of this response model, in 2012 there were 566 total responses, but only 68 of these required full response (all call) and 282 or 50% (alarms and motor vehicle accidents) were deemed limited response calls.

4.6 Services – Prevention and Education

The Fire Department introduced a program for inspection of premises that have higher risk profiles in 2009. Inspections have been meeting targets except in 2012, when the Fire Inspection Officer was absent from work for an extended period.

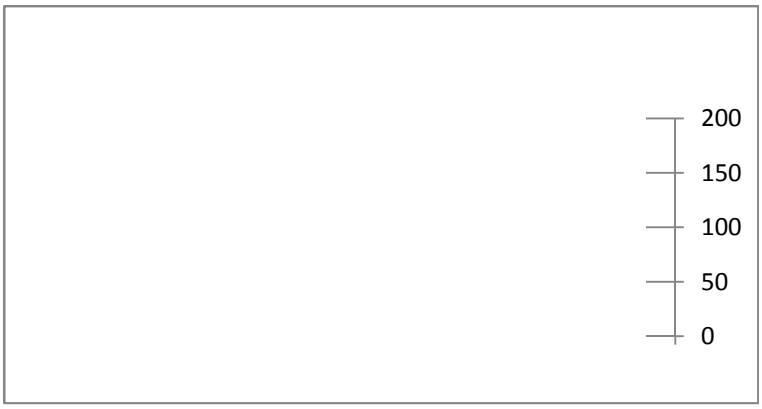
Currently the Fire Prevention Branch is staffed by a Fire Inspector / Assistant Chief. This position is responsible for the establishment and administration of programs. Inspections are done by, completed

and followed up by one full time staff member with support from on-duty members and the front office staff member. Related duties include:

- Code enforcement;
- Bylaw enforcement;
- Plans review for new buildings and renovations;
- Fire safety plan review;
- Pre-incident planning;
- Fire investigation / cause and determination

Volume of inspections performed is shown in the exhibit below.

Exhibit 3 – Fire Inspections



The Fire Prevention Branch, assisted by other members, also engages in public education activities, following an annual program, and with non-scheduled events provided as requested.

- Fire Prevention Week - Presentations to elementary schools K-3;
- Burn Awareness Week - elementary Schools K-3;
- "Working Smoke Alarms Save Lives" Campaign - partnership with Revelstoke Food Bank;
- Fire Extinguisher Training;
- High School Career Development Program;
- Tailored fire safety presentations;
- Getting to Know Fire program;
- Juvenile Fire Setter Program.

The frequency of building inspections is prescribed by the defined service level policy FD-4, with different frequencies depending on building classification and type. Each type has a frequency depending on the associated risk and that varies from every six months to every two years. The service level is currently being met. Note that no inspections are performed for areas outside the city.

Fire investigations are completed with the reporting requirements being met. The department has used the Office of the Fire Commissioner for complicated and high dollar loss events.

The Fire Prevention programs are well established in the schools with the schools contacting the department for programs and information. The department is able to meet the needs with the current staff in place.

There is limited pre fire planning done within the department; no pre-planning is done for buildings in the CSRD area.

4.7 Resources

4.7.1 Staffing

The Department has full-time staff consisting of:

- Fire Chief
- Assistant Fire Chief/Inspector
- Training Officer/ Assistant Fire Chief – also serves as a regular duty firefighter
- 3 regular duty Firefighters
- 1 flex Firefighter
- 1 Dispatcher/Clerk

The flex firefighter position is a common in the industry, as it provides filling of shift absences caused by vacations, sickness or injury, redemption of banked overtime or other leave.

There are 33 volunteer Firefighter positions (full complement), although at any one time, not all are filled. Other than the Chief and Assistant Chiefs, there is no other rank structure for Firefighters. The deployment model has at least one full-time Firefighter on scene as incident commander, but there is no other command structure. In incidents where there is a large complement of staffing, this creates a large span of control for the incident commander to manage.

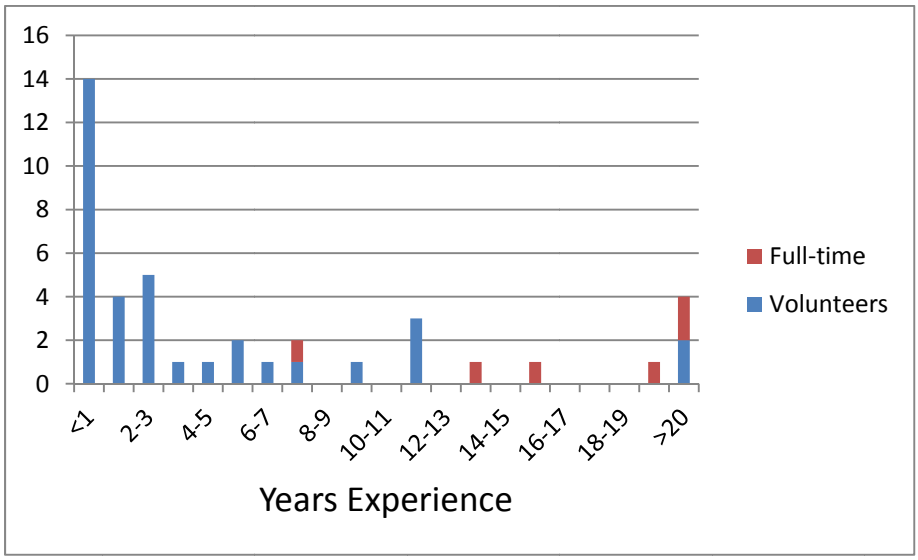
Volunteer turnover has been higher than expected for the size of community, as shown below.

Exhibit 4 – Volunteer Firefighter Turnover

Year	No. Recruits Hired	No. Members Resigned/Retired *
2008	7	4
2009	6	7
2010	4	6
2011	6	11
2012	9	12
2013	15	2 (year-to-date)

The average turnover rate in the past five has been about 25%; over33% in the past three years. As a result of this, the experience level among volunteers is very low.

Exhibit 5 – Tenure of Firefighters



It is unclear why the turnover rate among volunteers is so high – it is expected from experience in other volunteer fire departments that turnover would be 10-15% annually. It has been suggested that the reason is high transiency among the population from which firefighters are recruited. The Chief states that he is often unable to contact volunteers because they have left the community.

Also shown in the above exhibit is the experience level of full-time Firefighters. Volunteers state they would not feel comfortable or safe on their own; instead they rely on the on-scene direction, command and control of the duty fire fighter and other full-time members responding.

The Consulting Team asked existing volunteers to comment on their experiences.

- The group stated that the morale and interaction between the career and volunteers is at an all-time high and is working very well. They stated they feel valued and that their contributions are recognized by the fire administration and by the career firefighters.
- They are not prepared to take on more calls; in other words the way the calls are screened by the on duty Firefighters is working and they get called upon only when needed.
- Volunteers believe and support the response system with them responding either directly to the scene or to the fire station.

Full-time staff stated that the current relationship with the volunteers is very positive and working. They feel that the volunteers look to them for guidance and leadership at calls and although the full-time staff are Firefighters in rank, they do fill the role of an officer during calls. The full-time staff state that they believe they have a mutual respect for the roles that each group fills in the fire department and would like the volunteers better organized and structured.

The volunteer society receives its stipend monthly from the city, totalling $55,000 annually and purchases t-shirts for the members, funds equipment for their exercise room, hold social events and at the end of the year if there are any funds remaining volunteers may receive some cash payment. Most years this does not happen.

The only direct remuneration for volunteers is pay for weekend stand-by ($80 per 24 hour shift) for the summer months to ensure there are a minimum of 8 members in the city for response.

4.7.2 Budgets

The 2013 budget for the Fire Department is summarized in the table following.

Exhibit 6 – 2013 Proposed Budget

Items	2013 Budget
Administration, including Chief	$155,450
Firefighting force, including Inspections and Training	751,750
Overtime	62,000
Dispatch	25,000
Equipment	83,300
Facilities	82,500
Hydrants	47,500
Revenues	(22,000)
Net Cost	1,185,500

The firefighting force includes the Assistant Chief and Dispatcher/Clerk, as well as the suppression firefighters. The cost of a full-time firefighter, including wage overheads, is approximately $100,000 each.

Overtime has many causes, including:

- Call back of full-time staff to respond to events;
- Workload extending beyond end of scheduled shifts;
- Call back of full-time staff for delivering or attending training and attending staff meetings.

The collective agreement provides for staff banking overtime instead of taking cash payment. This reduces the overtime budget.

The Fire Department generates some revenues from filling SCBA bottles for other organizations and from activities prescribed in the recently-amended fees and charges bylaw. Annual revenue budgets are $22,000.

4.7.3 Training

Ongoing training is provided to full-time Firefighters and volunteers; initial training is provided to new volunteer recruits and consists of the Justice Institute of BC basic firefighter course supplemented by

hands-on training within the department. The training program is organized by the Trainer/Assistant Chief with a schedule laid out on a yearly calendar and communicated to all members. The training planned and taken is documented, as per industry practice.

Training is held on Wednesday evenings, for 90 minutes, three times per month year round. Some adjustment is made in summer months to accommodate decreased availability of firefighters. One Wednesday night per month has been sacrificed for the general business meeting of the Volunteer Society.

The department has created a fire training area with a live training structure and has plans to continue to add various props to grow the facility. This facility provides a means of practicing skills to develop them initially and to keep Firefighters' skills current.

There is no progressive development program for either career or volunteer firefighters. Such a program would list the certification level and specific training that is required and desired for each group, the order in which training should occur (where this is important) milestone training targets, and targeted timeframes for both initial and refresher training. There is recognized need for training objectives to be set as a department goal; this would facilitate a long term training plan with appropriate benchmarks.

4.7.4 Apparatus and other equipment

The Department has the following apparatus:

- Bush One - 2008 Ford F550;
- Engine One - 2009 American LaFrance Eagle Pumper;
- Engine Two - 1986 International 1950B Superior Chassis;
- Engine Three - 1981 International 1950B King Seagrave Chassis – currently located at the airport;
- Rescue One - 2000 Freightliner FL 80;
- Snorkel Six - 1977 Scot SE 2074 King Seagrave Chassis;
- Tender Five - 1999 International SE 2074 Superior Chassis

Snorkel Six is in process of being replaced by an aerial platform device which has been ordered.

Along with equipment comes the need for training. Sufficient staff must be trained and certified to drive the vehicles, operate pumps and the aerial platform, Jaws of Life and other commonly used apparatus and equipment. At present, there are times when second engine responses are delayed until a driver with an air brake endorsement musters to the fire station. There are plans in place to provide training to volunteers who will be expected to operate the aerial platform.

There is no policy or funding mechanism to support regular lifecycle replacement of needed vehicles/apparatus or equipment such as turnout gear, breathing apparatus, hoses, etc. As a result, there has been a history of over-life utilization of equipment and apparatus. One of the significant factors in the Fire Underwriters' Survey downgrade of rating in 2009 was overage apparatus and equipment.

4.7.5 Operational Guidelines

The Fire Department has created 95 Operational Guidelines (Standard Operating Procedures) which provide members with guidance on most aspects of their roles and responsibilities. Few of these cover tasks on scene, for which training is relied on as the source of guidance.

4.7.6 Data Management and Technology

Revelstoke Fire Rescue Services utilizes two fire reporting systems: FDM is used in conjunction with Surrey Dispatch for incident and inspections reporting, and managing data regarding personnel, training and properties; FirePro2 is used to manage equipment inventory.

Data capture related to Revelstoke Fire Department's actions is manual, based on entries by dispatchers for firefighters radio reports related to:

- On route/away from fire station;
- At scene; and
- Leaving scene.

Capture of time of call transfer at Surrey Dispatch and time of alarm to Revelstoke Fire Department are within Surrey's procedures and not assessed. Surrey Dispatch is able to produce reports on their dispatch performance, based on these measures.

Reporting categories within the FDM reporting appear to be standardized by Surrey. Categories are summarized into an annual report of call volumes by the Fire Department.

4.7.7 Facilities

The Fire Station is a purpose-built facility, with accommodation for:

- Administrative spaces, including reception, office space for the Dispatcher/Clerk, Chief, Fire Inspector, Training Officer and Volunteer Society Executive;
- Dormitory room;
- Alarm room;
- Training room, including kitchen which also serves as a meeting room and social space;
- Locker room;
- Apparatus bays for six large apparatus plus the Chief's SUV and includes shop space, storage for equipment and refill station for SCBA tanks;
- A vehicle bay which has been used as a museum space; and
- A basement gymnasium facility, including space for a no-longer-working spa tub, showers and lockers.

The station is used only by the Fire Department and is sufficiently large to accommodate current and foreseeable needs.

4.8 Measurement

Measurements fall into two broad categories: governance measures that will assist Council in setting policies and monitoring outcomes of those policies, and operational/management measures.

Some governance measures currently reported in the annual report are:

- Fire losses;
- Achievement of inspection targets;
- Call volume statistics are reported, by type of call and type of response provided.

The Chief was able to provide data to support other governance measures:

- % of resources used in prevention;
- % of full-time staff who exceed basic training requirements;
- % of volunteer staff who exceed basic training requirements;
- Staff turnover;
- Budget expense and revenue variances;
- Overtime costs and % of total expenses;
- Achievement of strategic initiatives.

Operational and management measures that are available include:

- Sickness and injury days lost per 1,000;
- Overtime use, by cause;
- Expenses and revenues by line code;
- Achievement of recruitment targets;
- Turnout of called-back members and volunteers;
- Achievement of objectives;
- Detailed call volumes and responses;
- Apparatus maintenance achievement to standards.

Of note, response times for Engine One and Engine Two are not summarized as fractals.

4.9 Leadership

Leadership involves managing the culture of the organization. Leadership can come from ranking or experienced staff, managers, senior executives or Council.

The level of pride exhibited by firefighters and the comments made to the Consulting Team indicate a strong culture has developed among firefighters, which is common in almost all departments. The culture is generally positive, with career and volunteer firefighters demonstrating mutual respect and able to effectively perform as a team. The relationship between the City and the firefighters' union is also cordial and expresses mutual respect and value for the others' perspectives and goals.

There is some controversy in the community regarding the fire department:

- Full time firefighters work 24 hour shifts and sleep while on duty. While both of these are common in the industry, the perception among the some in the community is adverse. Shift schedules are established within the collective agreement between the City and the IAFF union local and are not unilaterally changeable.
- There are questions in the community regarding the department's affordability, particularly as it relates to full-time staffing and to the cost of apparatus. Full-time firefighters are well paid and have an attractive benefits package. There may be some envy in the community regarding this.
- There is some feeling among firefighters that there is little recognition of accomplishment by the City for:
    - Reaching training targets for full time and volunteer firefighters;
    - Good responses to incidents – buildings saved, etc.;
    - Volunteers responding in adequate numbers; or
    - Volunteer longevity.

Part of leadership is managing community expectations and perceptions. The Chief makes effort to recognize members and to promote and publicize the Fire Department and its members for their achievements. The Mayor also provides recognition of volunteers and firefighters in general.

Another part of leadership is managing incentives. While the City has influence over incentives for full-time members, through negotiation of a collective agreement, incentives to volunteers are indirect, as the stipend is paid to the Volunteer Society rather than to individual firefighters. This effectively reduces the value of incentives from the City's perspective as they cannot be managed to the City's objectives.

5 Findings and Assessment

We assess organizational performance on the factors shown in following model. Our experience has been that, if these factors are adequately in place, the organization will perform well.

Exhibit 7 – Organizational Performance

Against these factors are industry norms and the models and processes used by similar fire departments and other organizations. To assess the performance of other fire departments, the Consulting Team was directed to contact the following departments, chosen by the Administration based on similarity in community size, degree of isolation from assistance from other fire departments: Salmon Arm, Nelson, Kitimat, Sooke, Terrace and Dawson Creek. Results of this survey are presented in the table below and are interpreted in following sections as relevant.

Exhibit 8 - Comparing to Other Municipalities

	Revelstoke	Salmon Arm	Nelson	Kitimat	Sooke	Terrace	Dawson Creek
Population	7,200 + 2000-5000 shadow population	17,500	10,230	8,300 + 2,000 shadow population	11,400	11,500	11,600
Remoteness – nearest comparable department	1 hour	.5 hours	.5 hours	1 hour	.25 hours	1 hour	1 hour
Industry	Tourism, Forestry	Tourism, Forestry	Tourism, manufacturing	Smelting; energy transportation	Tourism	Mining, service centre	Agriculture
Union?	IAFF	IAFF	IAFF	IAFF	IAFF	IAFF	IAFF
Officers	Chief, Ass't Chiefs: Prevention; Training	Ass't Chiefs: Admin/Safety; Prevention; Training and Operations	Ass't Chief, Captain/Fire Prevention Officer	Deputy, Emergency Planner	Deputy; Ass't Training,	Deputy	Deputy; Fire Prevention Officer
Full-time Firefighters	5, including Ass't Chief/Training Officer	0	9 firefighters, including 2 Captains and Captain/Fire Prevention Officer	18, including 4 Captains	0	8	16
Support staff	1	1	1	1	1 part-time	1	1
Part-time	33	75 PoC	21 Aux/PoC	0	30 firefighters, 6 educators/ support services staff	30 Volunteers	12 Auxiliary/ Volunteers – not deployed as off duty firefighters called in

	Revelstoke	Salmon Arm	Nelson	Kitimat	Sooke	Terrace	Dawson Creek
Part-time Compensation	Stipend to Association	$16/hr call out, practice or extra duties; stipends for officers, standby duty crew of 2 at each hall, and Duty Chief	$18 (top of scale after 4 years) for calls or practice/ Training	0	Stipend to Association; $33/shift for standby duty; Duty Officer $66/shift for standby duty	Stipend to Association; no cash to volunteers	$15 /practice + $10/hr for calls
Services	Vehicle extraction, low angle, confined space, elevators, hazardous materials, medical first response	Low angle, confined space, elevator, ice, trench, limited hazardous materials Vehicle extraction provided by Rescue Society No medical first response	Vehicle extraction, high angle, confined space, hazardous materials, medical first response	Vehicle extraction, high angle, confined space, hazmat, Integrated Fire/EMS	Vehicle extraction, confined space, high angle and low slope, water, hazardous materials, medical first response	Vehicle extraction, confined space, high angle, hazmat operational, medical first response	Vehicle extraction
Municipal Budget	$16,694,000	$28,705,000	$23,139,000	$24,280,000	$13,578,000	$19,000,000	$35,314,000
Fire Dept Budget	$1,339,000, includes $230,000 transfer to capital)	$1,002,000	$1,800,000	$2,925,000	$869,000	$1,600,000	$3,000,000
% of Municipal Budget	6.6%	3.4%	7.8%	12.0%	6.4%	8.4%	8.4%
$/capita	$186	$57	$176	$352	$76	$139	$259

	Revelstoke	Salmon Arm	Nelson	Kitimat	Sooke	Terrace	Dawson Creek
Area served	40.76 km^2 + CSRD contract area	155.3 km^2 + 216 total	11.9 km^2 + 35km^2 contract area	242.63 km^2 + EMS as assigned by BCAS	56.72 km^2 + 201.6 km^2 total	57.4 km^2 + portions of Regional District and First Nation; 75 km for MVAs	24.4 km^2 + 8 km radius >200 km^2 total
Mutual aid	No agreements	Agreements with close-by small departments	Tenders only with 5 departments within 30 km	Agreements with Terrace and Thornhill (40 minutes); fee for service for Haisla First Nation.	Agreements with close-by small departments	Agreements with Kitimat and Thornhill (adjacent volunteer department)	Handshake agreements with close-by small communities
1st engine staffing	1 Firefighter	Minimum 2 Firefighters, more typically 4 or 5	Minimum 2 Firefighters; no interior attack until 2nd engine	>3 Firefighters engine + callback	3+ Firefighters	1 Firefighters minimum, page to both scene and fire hall	2 (60%) Firefighters to 4 + call in
Response targets	No target; second engine typically <12 minutes	6-7 minutes average	80% within 8 minutes	No target; 7-8 minutes average	None	Target 10 minutes to commence attack	Target 7 minutes for 1st engine; in town actual 90%
Call volumes	350 fire/rescue; 216 Medical First Response; 262 inspections	220 (2012) No Medical First Response	590 fire-related; 422 Medical First Response; 69 MVA/rescue; 69 hazmat; 1100 inspections	1100 EMS; 300 fire/rescue	771 (2012) includes 134 burning complaints and 40% Medical First Response	120-150 fire; 700-900 medical First response; 20-30 rescue	Average 405 over five years

	Revelstoke	Salmon Arm	Nelson	Kitimat	Sooke	Terrace	Dawson Creek
Chief's Assessment of Volunteers/ PoC	Retention problems	Recruitment problems in two rural halls	Recruitment and retention OK; Volunteers trained to NFPA 1001, career firefighters trained to NFPA 1002 + Officer Level 2	N/A	Recruitment difficult	Recruitment and retention are good	Volunteers not used
Shift Schedule	24 Hours	Fulltime M-F days	10/14	10/14	Full time: 4 on-4 off 11 hour days	10/14	10/14

Municipal Budget = all revenues except extraordinary utility revenues

5.1 Governance – Some Pieces Missing

The governance structure currently in place is good, as far as it goes. However, to this point there have been no specific policies established with respect to levels of the services to be provided in terms of response times, number of responders expected, the capabilities of responders and other significant standards to be met. Nor is there a regular reporting to Council of achievements against the targets established. These deficiencies result in Council having a more difficult task in its governance role.

5.2 Level of Service Provided – Some Concerns

The response system does appear to be functioning in most cases, however without measurable service level there is no certainty of knowing this. There are examples of lower than desired responses (time and number of responders), indicating the potential for service failure.

Fire Underwriters' Survey concluded, and we concur, that the Fire Prevention services are ensuring the safety systems built into the buildings are being maintained and that the department's efforts are contributing to a safer city for residents, visitors and the responders. This is well done.

We share concerns for the responders called to commercial fires in the CSRD contracted fire protection area , as these buildings have had no inspections and the buildings' safety systems may or may not function, the fire loading may be over code limits and exits may not be clear.

5.3 Resources

5.3.1 Staffing and Deployment Model– At Risk

The composite full-time and part-time staffing structure in place is effective in terms of its ability to place resources of the right kind at most scenes. Of the other municipalities contacted, two use solely part-time firefighters, two use solely full-time firefighters and two use a composite model. Terms of reference for this review includes assessment of the alternative of solely Paid-on-Call suppression firefighters and this will be presented in the final report.

The ability to attract and retain volunteer firefighters places response at risk. Except for summer weekends when volunteers are paid for standby, there is no assurance that there will be enough firefighters turning out to pages. Unreliability of volunteers is partially mitigated by paging off-duty full-time firefighters, at overtime rates. Even with this measure, there are still events where the arrival of the second engine is slow as it awaits sufficient firefighters with the appropriate skills to deploy. This aggravates the already high level of risk in the community.

The common response in North America to the widespread problem of recruiting and retaining volunteer firefighters is to provide incentives through compensation. In Revelstoke, volunteers are not compensated directly by the City. Instead, the Volunteer Society receives a stipend, which it spends or distributes as it sees fit. This results in the loss of ability for the City to employ payment as an effective incentive as there is no assurance that the payment will be received by the volunteers. This may contribute to some of the recruitment and retention problems; in the least it does not contribute to

their resolution. The current relationship between the City, its full-time firefighters and volunteers is very positive. It is in the City's best interests to continue to foster this beneficial relationship.

There is need for a Command structure at incidents. The on-duty firefighter assumes this role and, being first on scene, is in good position to carry out his role. In events with a larger response, there is also need for experienced commanders to take on implementation and monitoring of significant response activities. Ideally, these additional command roles are taken on by off-duty firefighters who respond. There is also requirement for dedicated and trained operators for each engine pumping, as well as the aerial platform. The uncertain response to pages places availability of appropriate command and operating skill sets at risk.

The cost of full-time staffing has been raised as an issue. Review of other communities shows that those with full-time firefighters have a higher cost structure than those with composite full-time and part-time firefighters, or those that deploy volunteers only.

The current collective agreement between the City and the IAFF local union stipulates pay rates and states that full-time staff may not be replaced by scheduled part-time staff. For purposes of this review, this collective agreement provision is viewed as a fixed constraint.

The City does control the cost of volunteer firefighters, indirectly and in some cases directly. Volunteers are paid $80 per 24 day for standby during summer weekends. This is very high compensation: Sooke pays $33 per day and one other department pays part-time members $60 per week for standby.

5.3.2 Training – Meeting Current Needs

Overall, training is meeting the needs of responders, and documentation of training meets requirements. There is a training plan adopted for new recruits, and aall full time firefighters are required to be trained to meet the NFPA 1001 standards and work toward a Firefighter II level. Requirement for additional training beyond these fundamentals is not as rigourous, with no objectives or set program in place. Instead there is an annual plan, including live fire training, which lists and schedules topics to be covered.

While the full-time staff have basic Incident Command training, this does not go far enough for the responsibility and leadership expected of them. Composite departments commonly have a rank structure whereby there are full-time staff in Captain roles (and having NFPA Captain certification) and experienced part-time firefighters trained to and providing Lieutenant roles in engine companies. This ensures the most appropriate mix of skills. Ideally there would be a formal rank structure for fire ground operations and training provided to those to better function within the incident command system. Training would be progressive, with milestones for each rank and experience level.

5.3.3 Dispatch and Communications – Working as Planned

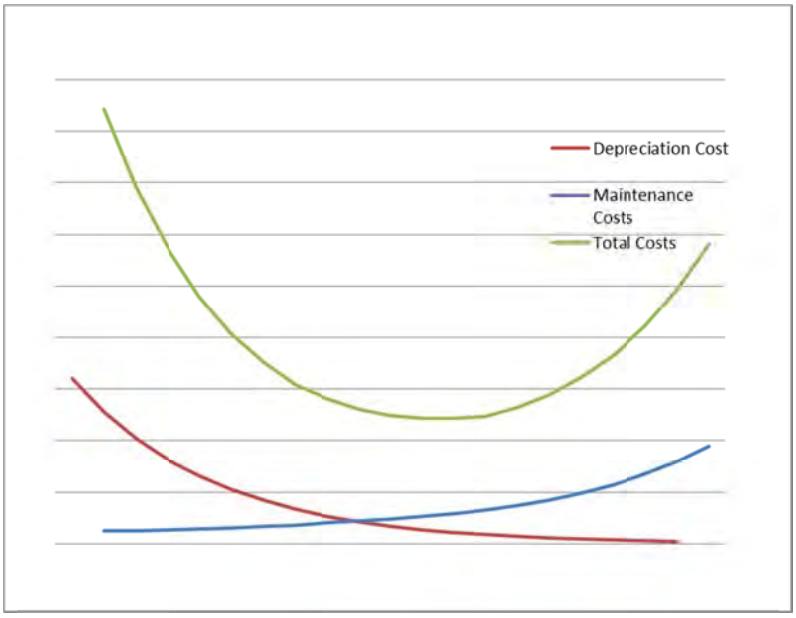
The current contract with Surrey to provide dispatch was not examined. But the Chief and firefighters did comment on the recent improvement in communication technology and dispatch performance exceeds the 90 second/90% of time NFPA standard, achieving 92.5% in 2012.

5.3.4 Apparatus and Equipment – Correcting Past Problem, But Need to Address Future

The Fire Underwriters Survey was highly critical of the age and condition of available apparatus and equipment, and we concur with the City's plans to replace over-age apparatus and equipment.

The absence of provision for periodic replacement for all equipment and apparatus is serious. In all instances, NFPA standards for maintenance, testing and replacement represent the minimum acceptable standard. Industry leading practice for vehicles, including fire apparatus, is use a least economic cost model to trade in vehicles where the annual total costs for depreciation and maintenance have reached their lowest point and costs begin to increase. As shown in the chart below, annual vehicle depreciation (loss of trade-in-value) is highest in the early years and decreases with age. Conversely, maintenance costs increase with age. The total of these two costs forms an inverted "U" shape. The optimal trade-in/replacement point is at the bottom of this curve.

Exhibit 9 – Least Economic Cost Replacement Model



Replacement of fire equipment and apparatus can be relatively expensive and financing these needs to be planned. Currently, some items are lease financed, with a new aerial platform apparatus being funded through a 15 year debenture. A fire equipment reserve is in place, and funds mainly minor capital replacements and some apparatus leases. It is unclear if there is sufficient reserve contributions to be able to fund all anticipated future purchases.

A city policy specifying fire apparatus replacement intervals and creating the needed funding mechanisms should be in place to avoid a recurrence of over-age equipment.

5.3.5 Operational Guidelines – Well Done

Firefighting as a line of business is both routine and highly exceptional. While each emergency scene is unique and requires judgement and discretion in the suppression and rescue activities undertaken, the industry has attempted to routinize as many tasks as possible to provide stability of performance. Part of this effort is to establish standard operating procedures, or operational guidelines.

The existing Operating Guidelines adequately address many of the expectations of the department on its full-time and volunteer members. These are highly beneficial as a source of setting expectations and for training in a department with high turnover of members. There would be benefit in supplementing these with on-scene response guidelines for each type of incident, which details for each:

- Minimum staffing requirements and critical tasks;
- Apparatus types and staffing levels; and
- Baseline apparatus response.

5.3.6 Data Management and Technology – Getting Started

Implementation of FDM as an operational data management and reporting tool is a good first start for being able to manage the Fire Department toward being intelligence-led. One report reviewed though showed Engine One turnout times at 0 or 1 second for some incidents with no ready explanation. This leads to suspicion about quality of the data capture and management processes related to responses. Leading practice is to employ remote sensing equipment to trigger event milestones. A remote status head in the apparatus signals dispatch and thus the FDM system of leaving the station with the turning on of lights and siren; arrival at scene is signalled by setting the parking brake, etc. This reduces effort and human error in data capture.

Leading practice also has on-scene commanders completing scene reporting and reviewing data captured immediately after arrival back in the station; officers review the data reported before the system accepts it for reporting. This provides further integrity to this data that will be used to track performance.

5.3.7 Facilities – Far-sighted Design

The Fire Station was designed with ample size for housing people, apparatus and equipment. It is rare to find a facility of this age which was designed with such foresight. There is room to accommodate all existing and planned resources of the Fire Department.

We assess that there is potential in the station to accommodate other compatible groups such as municipal enforcement staff and emergency support groups, should this be desired. This would require some retrofitting to meet specific needs.

We were provided with a tour of the museum which is housed at the Fire Station. This facility – an addition to the Fire Station – was built during the 1980's with funds raised by Firefighters. It is a source of pride among members and does promote esprit de corps and good public profile. The museum itself lacks the curated exhibits, a formal acquisitions and retention policy ongoing operational funding strategies, etc. of a modern museum and is, in essence, a private collection of artifacts, albeit open to the public.

5.4 Measurement and Reporting – Formality Missing

We identified an array of measures and gathered information to report on most areas of performance, as shown in the table below.

5.4.1 Community Outcome Measures

Draft Outcome	Potential measures	Current Level
Freedom from injury or loss of life or property from fire	$ Loss of property FUS Rating	$1,260,000 FUS Class 7
General perception of security	Citizens' perception of municipality as safe place to live Percentage of citizens surveyed who are satisfied with the Fire Department.	TBD 85% are satisfied or very satisfied with Police, Fire and EMS as a group
Responsive fire service meeting agreed upon service target	Total response time (dispatch + chute + drive) as fractal (% of calls responded to within X minutes)	~10 minutes (Estimated)
Effective Fire/Injury Prevention program	% of Resources used on Prevention as fractal. % of planned inspections conducted.	~$100,000 out of $1.3M = 7.7% (Needs to be confirmed) 100%

5.4.2 Human Resources Measures

Draft Outcome	Potential measures	Current Level

Draft Outcome	Potential measures	Current Level
Well trained work force	% of FT staff who have completed NFPA Level 1 certification % of FT staff who have exceeded NFPA Level 2 training % of volunteers who exceed basic JIBC certification	86% 57%; remainder in progress 71%
Effective recruitment	Recruitment actual to planned Turnover FT/volunteers	100% 0% /~25%
Staff health and satisfaction	Sickness/injury rates Staff satisfaction as reported via staff survey.	<10 days per 1,000 in 2012 31 days per 1,000 in 2011 <10 days per 1,000 in 2008-10 TBD

5.4.3 Effective Management

Draft Outcome	Potential measures	Current Level
Financially prudent service provision	$ per capita Actual to budget net costs Overtime as % of budget	$186 per capita 86% in 2012; average 106.5% previous 4 years 3.7%
Support City's strategic direction	Progress on Business Plan initiatives.	TBD

5.5 Leadership – Effective within Department

Leadership exhibited by the Chief, Officers, and senior staff is effective in facilitating a valuable work culture that supports the teamwork required in responding to emergencies. This leadership also extends to the senior administration and many members of Council.

The absence of control by the City of incentives paid to volunteers hinders the strategic use of payment to attract and retain volunteers.

5.6 Summary of Findings

The key problems identified with the current mode of delivering fire services are:

- Ability to recruit and retain sufficient numbers of volunteer firefighters, which leads to lower experience levels and limits training that can be provided;
- Lack of reliability of response to pages, which leads to calling back off-duty full-time members, lengthens elapsed time until fire attack commences, and risks not having sufficient resources to effectively deal with emergency events;
- Lack of policies for services and service levels leaves expectations unclear; lack of good performance measurement and reporting makes governance more difficult.

Although there are other smaller issues to resolve and opportunities for improvement, unless the above problems are resolved the overall performance of the Fire Department will be largely unchanged.

The issue of 24 hour shifts was raised. Although the merits of this shift schedule are arguable, they are prescribed under the collective agreement between the City and the IAFF local union. For purposes of this review, this collective agreement provision is viewed as a fixed constraint.

6 Alternatives and Recommendations

This section presents alternatives to resolving the issues identified in the previous section, as well as our recommended course of action. We have also included recommendations for improving the effectiveness of the Fire Department and for implementing some leading practices. We have attempted to strike a balance between our understanding of Council's desires for level of service and the City's constraints on what is affordable.

We rely heavily on NFPA standards. NFPA represents the entire spectrum of the fire prevention and suppression industry, examines all aspects of practices and establishes minimum standards and guidelines. As such, NFPA is a key source of leading practice. Other sources include the other municipalities we surveyed, and our own experiences as managers of and advisors to municipal fire departments.

To aid in reading this report, within each section we present our recommendations first, followed by a discussion of the targets toward which we are aiming and the alternatives considered. We have included recommendations for Council (matters of policy or budget) and for the Fire Chief/Fire Department and the City Administration (operational recommendations). In every case we have identified to whom the recommendation is directed.

6.1 Governance

Recommendations:

1. **That the Administration prepare a fire/rescue policy (incorporating the Table 7 below, as approved or amended) for Council approval.**

2. **That the Administration report on performance measures, as shown in Exhibits 10-13.**

Fire protection, firefighting, rescue and other emergency response services are fundamental municipal services. The governance role of City Council on behalf of the community is to:

- determine what services are to be provided;
- determine to which levels services are to be provided;
- identify the funding within which services will be provided;
- monitor how the City's administration is performing in achieving the service level targets.

Administration's role is to assist Council in fulfilling its governance role through development of policies for consideration and reporting on both its compliance with policies and the achievement of the outcomes underlying policies.

6.2 Level of Service

Recommendations:

3. **That Council approve the services and service level targets presented in Exhibit 7, below:**

Exhibit 7 – Service Levels

SERVICE PROVIDED	TARGETED LEVEL of SERVICE
Emergency Dispatch Services (911 Service)	24/7 911 call answer and dispatch service to North American Emergency Dispatch standard.
Response Time Targets: All calls except Motor Vehicle Accidents, First Medical Responses and Specified Other Emergencies.	First Pump/Engine on scene within 8 minutes, 80% of responses with at least one Firefighter trained to NFPA 1001 Level II standard. Second Pump/Engine on scene within 12 minutes, 80% of responses with at least four Firefighters trained to JIBC Basic training standard. Additional Firefighters to respond on scene as available (no time target set).

SERVICE PROVIDED	TARGETED LEVEL of SERVICE
Responding Force: Structural, Chimney, Residential, Industrial, Commercial, Vehicle, Wildland Interface Fire.	First and second Pump/Engine with at least five Firefighters. All available additional Firefighters paged. Additional apparatus response as needed, including aerial platform, bush truck, and tenders.
Responding Force: Alarm, or Miscellaneous Fire	One Pump/Engine on scene with at least one Firefighter. Other Firefighters and resources to be determined at the discretion of the first responding Firefighter.
Responding Force: Medical First Response	Provided only to life threatening calls. Response of two Firefighters, one of whom is trained to First Responder Level 3 training standard, within 12 minutes, 80% of responses. Other Firefighters and resources to be determined at the discretion of the first responding Firefighters.
Responding Force: Hazardous Materials Release, Gas leak or Fuel Spill or Energized Electrical Equipment Involvement	First and second Pump/Engine or Rescue with at least five Firefighters. All available additional Firefighters paged. Additional apparatus response as needed, including aerial platform and tenders.
Responding Force: Motor Vehicle Accident – In City	First Pump/Engine or Rescue with at least five Firefighters. Other Firefighters and resources to be determined at the discretion of the first responding Firefighter.
Response: Other Emergencies, Including Wires Down	Response of two Firefighters, within 12 minutes, 80% of responses. Other Firefighters and resources to be determined at the discretion of the first responding Firefighters.

SERVICE PROVIDED	TARGETED LEVEL of SERVICE
Response: Miscellaneous Calls, Including Burning Complaints	One Pump/Engine on scene within 12 minutes, 80% of responses, with at least one Firefighter.
Response: Rescue: elevator, confined space, trench or water	One Rescue unit on scene within 12 minutes, 80% of responses, with at least two Firefighters. Other Firefighters and resources to be determined at the discretion of the first responding Firefighters.
Services Outside the City	Ongoing services will be provided only under agreement with external agencies.
Inspection Services • **Code enforcement;** • **Bylaw enforcement;** • **Plans review for new buildings and renovations;** • **Fire safety plan review;** • **Pre-incident planning;** • **Fire investigation / cause and determination**	As per defined service level policy FD-4
Investigation Services	All Fires within City limits and those under the jurisdiction of the Fire Department are Investigated for Cause and origin.
Public Education Services	Fire Prevention programs are scheduled considering the specific needs of the community and availability of partners and opportunities.

4. **That Council adopt the position that it will not send its Firefighters to structure fires outside of the City unless there is provided a level of fire inspections matching that within the City of Revelstoke.**

5. **That Council initiate discussions with the CSRD to rectify this. Council may choose to offer to provide fire inspection services on a fee for service basis to the CSRD.**

Organizations that perform well clearly understand the outcomes they are seeking to influence and agree on how they will exert that influence. In the case of municipal fire departments, it is necessary that Council determine both the specific services which will be offered and the level of performance that it expects and which, in turn, it will fund. Council has completed this role in the past through approval of operating and capital budgets. Approval of a policy and specific levels of service provide formality to this, which results in clarity at Council, within the Administration and, particularly, the Fire Department, and to the community.

We believe that only Council can set services and service levels. Our role as Consultants has been to facilitate Council to reach these decisions; we did this through a Council workshop. The services and targeted service levels described in Exhibit are either those that Council favoured in discussion or those that are currently provided, with small adjustments thereto.

It is noted that there are limited formal inspections performed for structures in the CSRD response area outside the City. It is believed the CSRD Fire Services Manager inspects only on a request basis. This places these properties and their occupants at increased risk, reduces the opportunity for the Fire Department to pre-plan responses to be more effective responders, and also increases the safety risk to responding Firefighters. While the level of risk and effectiveness of response to fires in the CSRD are matters for the CSRD Board to consider, safety of City of Revelstoke Firefighters is a concern for Council. Our view is that Revelstoke Firefighters should be placed at no higher degree of risk outside of the City than they are within.

6.3 Resources

6.3.1 Staffing and Deployment Model

Recommendations:

6. **That the Fire Department continue its existing composite full-time/volunteer staffing model.**

7. **That, to aid in recruitment and retention, the Fire Department:**

    a. **Enlist the assistance of Council in approaching community leaders in recruiting suitable volunteers;**

b. Issue uniforms for volunteers after completion of an established level of JIBC Basic Firefighting training, consisting of duty pants and shirts similar to those issued to full-time Firefighters;

c. Improve training of volunteers, as part of introducing a rank structure in the Fire Department, as described in Sections 4.2 and 4.3 below;

d. Reduce the stipend paid to the Revelstoke Fire Rescue Society to $5,000 annually; $50,000 to be paid by the City directly to individual volunteer Firefighters. Consider increasing incentive pay to volunteers, if through monitoring turnout it is found that turnover rate among volunteers is not improving significantly.

8. **That Council approve an increase in the volunteer service to 40 positions as a first step in ensuring adequate turnout to calls.**

9. **That in the longer term if, through monitoring turnout, it is found that there are delays in second engine response or more than rare instances of inadequate response, the Fire Department consider increasing use of standby, developing an expected minimum number of stand by shifts each member should contribute.**

10. **That, as the turnout rate improves and volunteer experience levels increase, the Fire Department reduce callout of full-time Firefighters on overtime with the goal of eliminating this in all but the most significant events.**

The Consulting Team reviewed options for achieving the service levels recommended in Section 3 above. The largest issues being faced in achieving the recommended service levels are:

- The ability to recruit and retain sufficient numbers of volunteer Firefighters, which leads to lower experience levels and limits training that can be provided;
- Lack of reliability of response to pages, which leads to calling back off-duty full-time members, lengthens elapsed time until fire attack commences, and risks not having sufficient resources to effectively deal with emergency events.

The Consulting Team assessed a Paid-on-Call (PoC) staffing model (with full-time management and administrative personnel) as an alternative to the existing composite full-time/volunteer staffing model. This assessment is presented in Appendix 2. A staffing model of 10-member platoons was determined to provide a reasonable balance of response capability to almost 90% of calls (remainder would require an all-call response) and affordability. Advantages of this model are:

- Response to events would be more consistent as there would be 10 members almost guaranteed to muster for any emergency, and all-call of other off-duty Firefighters is available for those events where a larger response is needed.

- PoC members are more likely to have higher retention than volunteers, increasing current level of experience.
- The model implements a rank structure among PoC Firefighters, ensuring appropriate incident command at larger events.
- The model is predicted to save about $26,000 annually compared to current costs, excluding any implementation costs.

There are definite challenges to implementing this model in Revelstoke:

- There will be a small but measurable increase in time to commence fire attack (we estimate two to three minutes) as PoC Firefighters must first muster to the Fire Station before responding, rather than having one full-time member respond to the scene to be joined by some volunteers as in the current model.
- Article 12.07 of the Collective Agreement states that Paid-on-Call Firefighters may not be scheduled to regular shifts or perform duties of the regular full-time Firefighters in a manner that would cause a permanent full-time Firefighter to be displaced or not replaced when a position is left vacant, unless agreed to by the Union. This provision could effectively limit the City's staff deployment options. Further, the IAFF would likely defend this provision if the City attempted to negotiate a change to allow replacement of full-time members with solely a Paid-on-Call force. There are potential risks to the existing positive labour relations by bringing this issue forward should the Union perceive it as a negative move.
- It will take a significant initial effort to recruit and train additional 10 part-time members to transition to this model.
- The change from the present composite full-time/volunteer firefighting force to a Paid-on-Call firefighting force requires that the existing full-time Firefighters remain on staff and fully functioning until all the PoC Firefighters are recruited and trained. Motivation may be an issue as will the change in culture. Some full-time Firefighters may seek employment elsewhere, leaving the Fire Department short-staffed. No assessment has been made at this point regarding the willingness of current members to move into the more responsible positions of Captain and Lieutenant (4 of each are needed).
- The IAFF local union may be certified to represent PoC members, so wages, benefits and working conditions would be subject to negotiation and cannot be arbitrarily set by the City.

To increase the minimum turnout number to pages, the Consulting Team reviewed a number of options:

- Increasing the volunteer service to 40 positions and creating four 10-member platoons, which will also promote mentoring and allow for ease of training. By increasing the pool of trained Firefighters, this option would increase number who turnout when paged. This the least cost option to improve turnout numbers. Incremental costs would depend on approval of the recommendations for compensation of volunteers, as discussed below, but could be estimated to be

$15,000 to $20,000 in direct compensation, plus additional training estimated to be $20,000 initially and $2,000 annually thereafter.

- Increasing the use of standby is effective (as it has been shown during summer weekends in Revelstoke), but is costly. The current rate of standby pay ($80 per day) is far higher than is provided elsewhere. Among the municipalities contacted, we found:

  - One which paid $33 per day;
  - One which pays $60 per week ($8.60 per day);
  - One which pays $2 per hour ($48 per day).

If the City reduced standby pay to $33 per shift and placed five volunteers on standby each shift, this would increase costs by $60,600 annually.

To assess alternatives for improving recruitment and reducing turnover, the Consulting Team contacted the municipalities of Whistler and Tofino, both similar in that they are resort communities with high proportion of transient population.

Whistler was once in a similar position to Revelstoke regarding reliability of turnout and difficulties in recruitment and retention of volunteers, but now deploys 24 full-time Firefighters and a force of 60 PoC Firefighters. The Deputy Chief in Whistler states that they conduct annual employee satisfaction surveys and have found that their PoC members are motivated by (in order of importance):

- Training provided – even though members are lost to full-time positions in other jurisdictions, those that remain value training highly;
- Service to the community;
- Camaraderie of the Fire Department, where they are treated as full partners;
- Pay.

Whistler targets its recruitment to the older (30+) established population which has less likelihood of moving out of the area. They use the personal contacts of existing members and other community contacts to reach this target group. Whistler's turnover rate among PoC Firefighters is 10%, just below industry average.

Tofino retains a solely volunteer department and continues to struggle to recruit and retain volunteers. They have made some improvements in the past two years through a program of improved training to volunteers. They are, like Revelstoke, making efforts to raise awareness and image of volunteer Firefighters in the community. This includes presenting volunteers as professionals by issuing uniforms – at a cost of $120 per member per year.

The Consulting Team is aware of some innovative volunteer recruitment practices that should be considered in Revelstoke:

- Providing a "head-hunting" reward to Firefighters and other City staff for each volunteer from the targeted (older, more established in the community) population that is recruited and completes first year training.
- Enlisting Council in approaching business owners and other community leaders (through the Chamber of Commerce or similar organizations) requesting their help in identifying and recruiting suitable community members. In essence, the case to be made is that the choices the community faces are:

  - Improve recruitment and retention of volunteers;
  - Increase costs through implementation of a composite full-time/Paid-on-Call service model in place of the existing full-time/ volunteers model; or
  - Accept lower service levels.

Paying volunteers directly, instead of through the Revelstoke Fire Rescue Society will improve the value of incentives to volunteers. For example, $50,000 distributed to 40 volunteers results in an average payment of $1,250 to each.

Once volunteer turnout reliability improves, the routine paging of full-time Firefighters for most calls can be discontinued, which will assist in defraying increased costs.

6.3.2 Command structure/training

Recommendations:

11. **That the Fire Department implement a rank structure within the Fire Department as follows:**

    a. **All emergency response incidents shall have an Incident Commander per NFPA Standards;**

    b. **Full-time Firefighters will be tasked with the roles and rank of Captain and appropriately trained to NFPA 1021 Fire Officer Level 2 standard for this rank;**

    c. **Volunteer Firefighters with more than four years of service will be tasked with the roles and rank of Lieutenant and appropriately trained to NFPA 1021 Fire Officer Level 1 standard for this rank.**

12. **That the Administration provide standby pay to the Fire Chief and full-time staff and that they rotate on-call duty so that one is always available when needed.**

Emergency events are, by nature, unplanned and uncontrolled. Each is unique, although the emergency response industry has developed protocols to provide more structure to responses. Incident command is recognized as being essential to ensure that the unique aspects of each emergency are addressed in

an effective and safe response. While full-time Firefighters are trained in the adopted incident command system, there is need for a multi-level command structure when the number of responders includes two or more engine companies.

Larger emergency scenes would benefit from the command experience of a senior Firefighter, Fire Chief or Assistant Chiefs in addition to the first responding full-time Firefighter. At present, only the Fire Chief is expected to be on-call for these emergencies. In his absence from the City, there is no other on-call senior officer. This is a serious deficiency in the City's capacity to deal with emergency and disaster events.

Having a second full-time Firefighter on call will also improve responses to Medical First Responses as it guarantees a second team member will be available to respond immediately.

6.3.3 Training

Recommendations:

13. **That Council adopt a policy of providing NFPA standard training to full-time Firefighters and Officers, commensurate with their rank and roles.**
14. **That Council adopt a policy for training and compensation of volunteer Firefighters as follows:**

Exhibit 8 - Progression of Rank and Training for Part-Time Firefighters

	Prerequisite Training	Years of Service	Pay Level
Recruit	None		78%
Firefighter D Class	JIBC Basic training before they are permitted to respond to emergency events		78%
Firefighter C Class	First Aid training at First Responder Level 3, NFPA 1001 Level 1 and Motor Vehicle Extraction (NFPA 1006)	>1	83%
Firefighter B Class	Driving (including air brake endorsement), pump operator and aerial apparatus operator (NFPA 1002)	>2	90%
Firefighter A Class	NFPA 1001 Level 2	>3	100%
Lieutenant	NFPA 1021 level 1	>4	112%

15. **That the Fire Chief, in conjunction with the Assistant Chief/Training Officer, establish annual training goals for full-time and volunteer Firefighters in compliance with NFPA 1500.**

Response to the emergency events prescribed in the service level recommendation requires a high level of training, to ensure effective response and safety of the responders. NFPA training is the agreed industry standard for training.

Volunteer training must be provided efficiently and effectively to that they may assume the roles required by responses. Specific training should be provided for:

- Basic firefighting skills;
- Medical first responder;
- Emergency vehicle driving (air brake endorsement and, as needed, Class 3 drivers licences for tankers and ladder apparatus);
- Pump operation – must be one trained operator for each engine or other pumping apparatus;
- Ladder/platform operation.

Industry leading practice is to provide compensation to reflect the level of training and rank achieved by volunteers.

Ongoing training is required to ensure that competencies are maintained and newest equipment and latest methods are deployed.

6.3.4 Apparatus and Equipment

Recommendations:

16. **That the Fire Department prepare a City Policy for Council approval to adopt NFPA standards for apparatus and equipment maintenance, testing, refurbishment and replacement as follows:**

Exhibit 9 – Apparatus Standards

Equipment Replacement	Standard
Fire Apparatus shall be maintained as per NFPA Standard and replaced at a maximum life of 20 years.	NFPA 1901 Standard for Automotive Fire Apparatus NFPA 1911 Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus NFPA 1914 Standard for Testing Fire Department Aerial Devices

Equipment Replacement	Standard
	NFPA 1915 Standard for Fire Apparatus Preventive Maintenance Program
Personal Protective Equipment shall be purchased, maintained and life-cycled as per NFPA Standards.	NFPA 1500 Standard for Fire Department Occupational Safety and Health Program. NFPA 1851 Standard for Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting NFPA 1852 Standard for Selection, Care, and Maintenance of Open-Circuit Self-Contained Breathing Apparatus (SCBA) NFPA 1971 Standard for Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting
General Equipment shall be purchased, maintained and tested as per the applicable NFPA Standard.	NFPA 1931 Standard for Manufacturer's Design of Fire Department Ground Ladders NFPA 1932 Standard for Use, Maintenance, and Service Testing of In-Service Fire Department Ground Ladders NFPA 1936 Standard for Powered Rescue Tools NFPA 1961 Standard for Fire Hose NFPA 1962 Standard for the Inspection, Care and Use of Fire Hose, Couplings and Nozzles and the Service Testing of Fire Hose NFPA 1963 Standard for Fire Hose Connections NFPA 1964 Standard for Spray Nozzles NFPA 1965 Standard for Fire Hose Appliances

17. **That the Administration adopt a least economic cost model for determining lifecycle replacement of fire apparatus and plan apparatus replacement schedules based on these.**
18. **That the Administration prepare a policy for Council approval to fund for all planned apparatus and equipment replacement, considering alternatives of lease financing, debt and reserve fund contributions.**

While current plans to upgrade existing apparatus and equipment are appropriate, it is essential that maintenance and lifecycle asset management standards be established and that funding mechanisms be planned so that maintenance, refurbishment and replacement can occur as planned. Leading practice for all aspects of apparatus and equipment maintenance, testing and replacement are provided in the cited NFPA standards. These ensure effective, safe and reliable apparatus and equipment is available.

Fleet industry leading practice is to use a least economic cost model to optimize timing of vehicle trade-in and replacement. This model results in vehicles traded in when the additional costs of maintaining older vehicles, when added to the reduced of depreciation in market value costs reach their lowest point and begin to increase. This model is widely used in commercial fleet management as it is economically optimal.

6.3.5 Revenues

Recommendation:

19. **That the Administration review the Fees Bylaw and assess and present to Council options for implementing additional user charges for fire/rescue services that includes:**

- Responses:
  - Motor Vehicle Accidents;
  - Fuel/gas spill or other hazardous materials response;
  - Medical first response;
- Licenses and permits:
  - Fireworks permits;
  - Burning permits;
  - Alarm permits and inspection;
- Inspections
- Inspections of premises in CSRD (upon agreement with CSRD);
- Investigation reports for third parties;
- Provide fire suppression training to other organizations in the City and surrounding area.

The Fire Department's 2013 budget of $1,455,500 includes:

Exhibit 10 – 2013 Proposed Budget

Items	2013 Budget
Administration, including Chief	$155,450
Firefighting force, including Inspections and Training	751,750
Overtime	62,000
Dispatch	25,000
Equipment	83,300
Facilities	82,500
Hydrants	47,500
Revenues	(22,000)
Net Cost	1,185,500

We were unable to identify any significant savings beyond those already identified by the Fire Chief. In the absence of opportunities for cost reductions, the Consulting Team looked toward revenue generation. Research of other fire departments resulted in identification of those items listed which are in addition to those currently implemented. There are numerous instances where municipal councils have implemented each of those charges presented here.

It is Council's role to determine if municipal services should be funded by general revenues or through user charges. Where user charges are determined to be in the best interests of the municipality, there is a further decision on how much to charge. Again, this is the purview of Council.

6.3.6 Procedures

Recommendation:

20. That the Fire Department supplement existing Standard Operating Guidelines with on-scene response guidelines for each type of incident, which details for each:

- Minimum staffing requirements and critical tasks;
- Apparatus types and staffing levels; and
- Baseline apparatus response.

We reviewed the extensive volume of Standard Operating Guidelines in use and found them to be well done. We did note that there are none that relate to on scene roles and requirements.

6.3.7 Facilities

Recommendation:

21. **That the Administration ensure that a Satellite Fire Station remain available on the south side of the Illecillewaet River.**

The geography of the City presents the risk of response vehicles not being able to cross the bridge to properties south of the Illecillewaet River. Stationing an older engine at the airport is a suitable means of reducing this risk. In the longer term, the Fire Chief should determine if a Satellite Fire Station or Emergency Service Building at the Revelstoke Mountain Resort is warranted.

6.3.8 Data capture and management

Recommendations:

22. **That the Fire Chief investigate the feasibility and cost of remote status heads in apparatus.**
23. **That the Fire Chief develop Standard Operating Guidelines for incident data capture which require Incident Commanders at each scene to review data before entry to FDM, with review by the Fire Chief or a designate before posting.**

The ability to generate accurate and reliable performance measures for management and operational decisions as well as to support Council in its governance role is dependent on good data collection processes and proper data validation and management. The Fire Department is somewhat limited in its opportunities to change data collection and management as much of this occurs within Surrey Dispatch Centre. However, manual entry of status changes by Dispatchers, which can lead to erroneous data, can be automated through installation of remote status heads on apparatus. Remote status head allow the apparatus operator to automatically transmit status data (leaving station, arrival at scene, etc.) to the records system as these changes occur, without need to radio Dispatch and have the Dispatcher manually enter this data. Within the industry, this has been found to improve data accuracy.

Other errors in data capture can be corrected through validation procedures prior to posting within the data management system.

6.4 Performance Measurement

Recommendations:

24. **That the Administration collect and report to Council quarterly or annually the following measures as shown in the tables below.**
25. **That the Fire Chief confirm the current level of performance shown.**
26. **That the Fire Chief investigate all instances where the mandated level of service has not been achieved to determine root causes and that these be reported to Council annually.**

To fulfill its governance role Council must have information which describes how well the City is influencing its expected outcomes and how well the Administration has been meeting mandated service

levels and complying with Council policies. The Community Outcome and Effective Management measures presented below are intended to provide Council with that information.

Measures are also useful for management in that they provide the standards of performance and point out where those standards have not been realized. It is then management's responsibility to determine why the level of performance has not met expectations and make adjustments to operations or, if necessary, recommend changes in resource levels or service targets or other policies.

The Employee Satisfaction measures are a management tool to help the CAO and Fire Chief devise the best recruitment and retention strategies to meet the mandated service level. They do not require reporting to Council, but may be used to assess the impact of policy choices.

Exhibit 10 – Community Outcome Measures

Draft Outcome	Potential measures	Reporting Frequency	Current Level
Freedom from injury or loss of life or property from fire	$ Loss of property FUS Rating	Quarterly Annually	$1,260,000 FUS Class 7
General perception of security	Citizens' perception of municipality as safe place to live Percentage of citizens surveyed who are satisfied with the Fire Department.	Annually Annually	TBD 85% are satisfied or very satisfied with Police, Fire and EMS as a group
Responsive fire service meeting agreed upon service target	Total response time (dispatch + chute + drive + setup) as fractal (% of calls responded to within X minutes)	Report percentage of calls meeting this standard, quarterly	~12 minutes (Estimated)
Effective Fire/Injury Prevention program	% of Resources used on Prevention as fractal. % of planned inspections conducted.	Annually Quarterly	~$100,000 out of $1.3M = 7.7% (Needs to be confirmed) 100%

Exhibit 12 - Effective Management

Draft Outcome	Potential measures	Reporting Frequency	Current Level
Financially prudent service provision	$ per capita	Annually	$186 per capita
	Actual to budget net costs	Annually	86% in 2012; average 106.5% previous 4 years
	Overtime as % of budget	Quarterly	3.7%
Support City's strategic direction	Progress on Business Plan initiatives.	Quarterly	TBD

Exhibit 13 - Employee Satisfaction

Draft Outcome	Potential measures	Reporting Frequency	Current Level
Well trained work force	% of FT staff who have completed NFPA 1001 Level 1 certification	Annually	86%
	% of FT staff who have exceeded NFPA 1001 Level 2 training	Annually	57%; remainder in progress
	% of FT staff who have completed NFPA 1002 level certification	Annually	71%
	% of PT staff who have completed NFPA 1002 level certification	Annually	
	% of FT staff who have completed NFPA 1021 Level 1 certification	Annually	
	% of PT staff who have completed NFPA 1021 Level 1 certification	Annually	
Effective recruitment	Recruitment actual to planned	Annually	100%
	Turnover FT/volunteers	Quarterly	0% /~25%

Draft Outcome	Potential measures	Reporting Frequency	Current Level
Staff health and safety	Sickness/injury rates	Annually	<10 days per 1,000 in 2012 31 days per 1,000 in 2011 <10 days per 1,000 in 2008-10
	Staff satisfaction as reported via staff survey.	Annually	TBD

Appendix 1 Analysis of 24-Hour Shifts

The current collective agreement requires that regular duty Firefighters work 24-hour shifts, working one day on and having three days off (Clause 3.02). This shift pattern is very common among Firefighters and is very much favoured by them as a significant benefit. In many jurisdictions IAFF has negotiated to implement 24-hour shifts as a new shift schedule, and to retain this benefit. In two instances in Canada, this included arbitration awards favouring this.

Twenty-four hour shift schedules have both advantages and disadvantages to employees and the employer. These are discussed in the section below.

6.5 Advantages and Disadvantages of 24-hour Shifts for Emergency Service Workers

Most research on the impact of 24 hour shifts relates to Paramedics, who are more likely to be active throughout the 24 hour shift period. There is almost no scientifically valid information on the impact of 24 hour shifts on Firefighters. In Revelstoke, Firefighters provide first response to high priority medical calls (accounts for more than half of all calls) and therefore there can be some inference from the research related to Paramedics.

6.5.1 Summary of Research

Advantages	Disadvantages
To the public served: **There may be improved response to off-duty callback due to the fact that Firefighters do not experience less restful sleep due to working multiple consecutive night shifts.** **To the Worker:** **Staff preference for more concentrated time off.** **To the Organization** **Less expensive (only when) compared to situations where the alternative requires overlap of staff shifts.** **Less shift-end overtime when workers are on scene because there are fewer shift-ends.**	**To the public served:** 1) In one study, Paramedics reported they "provide less then optimal care" near the end of a shift. 2) In a study of 742,000 emergency trauma and medical incidents attended by 2,381 Paramedics, performance towards the end of the shift was poorer when compared to their own performance during shorter duration shifts. In addition, fewer medical interventions were performed toward the end of an extended shift and with deteriorated speed. 3) Dawson and Reid studied fatigue's effect on cognitive psychomotor performance and determined that effects of moderate sleep loss (after hour 17 of a 24-hour shift) affected performance similar to moderate alcohol intoxication. 4) Increased reaction time, lapse of attention, poor motor function, memory loss. **To the Worker:** 1) Toward end of shift – if cognitive psychomotor performance affected- will decrease safety. 2) May have harmful consequences for immune and endocrine systems. **To the Organization:** 1) 24 hour shifts remove the possibility of scheduling more Firefighters to Number shifts that have

	higher call volumes. Instead resources must be added for all time periods. This can increase costs needlessly. 2) May increase liability with legal and financial consequences – policy decisions allowing (or not discouraging) practices leading to impaired workers (providing critical care and driving) 3) Cost of accidents and how this will impact insurance 4) More complaints (from hospitals and other departments) 5) More serious clinical errors in first aid and other treatment. 6) Increased sick time related to effects of chronic fatigue on Paramedics health and increased costs related to occupational hazards such as needle stick injuries. 7) It would appear that overtime costs, at the very least, are not reduced with 24-hour shifts. More likely, a fire service could expect overtime costs to increase. 8) Fire departments employing the 24-hour shift schedule have found it difficult to manage fatigue when there are high call volumes, an insufficient number of Firefighters to manage rotating crews during a long incident, or when there is an insufficient number of Firefighters on duty to guarantee that some members can sleep while on duty. This results in sleep debt and fatigue that affects a Firefighter's overall level of performance. This can have a number of negative physical, mental, and performance outcomes, including a greater risk for certain physical and mental problems, on the job injuries, public safety concerns, and family challenges. While those working longer shifts can be encouraged to sleep while on duty, regular sleep cannot always be guaranteed.

There is no impact on the number of Firefighters needed to staff a service. Each Firefighter works 42 hours per week, or 2,184 hours per year. There are four Firefighters required to work shifts to complete the 8,760 hours in a year, irrespective of whether these four Firefighters work 24-hour shifts, or 10/14 hour shifts, or any other hours for that matter.

There was no clear consensus in the literature on the effects of the 24-hour shift schedule on absenteeism.

Firefighters sleep while on duty overnight. This occurs regardless of shift length. Permitting sleep is a well-established tradition for Firefighters, despite research that shows chute time for Firefighters increases if they are asleep when an alarm occurs.

It should be noted that research from the United States with fire departments using the 24-hour shift schedule indicated that there were very few complaints from Firefighters, the unions that represent them, or family members about working extended shifts. In fact, many Firefighters are quite resistant to any change away from the 24-hour schedule. The IAFF has strenuously fought any collective agreement

limits on 24 hour shifts, successfully defending their position in arbitration hearings in Alberta and Ontario.

Appendix 2 Paid-on-Call Service Model for Revelstoke Fire Department

6.6 Introduction

As part of the Review of the City of Revelstoke's Fire Department, Consultants were asked,

"Is a "Paid on Call" or other staffing model more effective? What are the options and ramifications of making changes in this area?"

This briefing paper develops what we would recommend as the most appropriate Paid-on-Call (PoC) model and assesses it in terms of cost and ability to provide the service level that Council favours.

6.7 Current Situation

Currently, Revelstoke Fire Department consists of the following staffing and staffing-related costs:

Exhibit 14 – Staff Costs

Position/Item	2012 Budget
Chief	$ 90,000
Dispatcher/Clerk	$ 44,800
Ass't Chief/Inspector	$ 80,000
Ass't Chief/Training Officer	$ 80,000
Full-time Firefighters (3)	$ 225,000
Flex Firefighter	$ 75,000
Total Full-time Salaries	$ 594,800
Benefits (25%)	$ 148,700
Sub-total, full-time staff	$ 743,500
Volunteers	$ 55,000
Overtime	$ 50,000
Training Overtime	$ 12,000
Total Staffing Costs	$ 860,500

The deployment model used for response is such that a full-time (FT) Firefighter is scheduled for each shift. When Dispatch notifies the Fire Department of a call, the FT Firefighter determines the type of

response needed and requests Dispatch to page an appropriate number of off-duty full-time members and volunteers using one of five paging tones available.

Exhibit 15 – Response Protocol

Call Type	Response
Business/Industrial/Commercial	All call
Chimney Fire	All call
Energized Electrical Equipment	All call
Fire Alarm	Discretionary: 1 to All Call
Gas Leak/Fuel Spill	All call
Miscellaneous	Discretionary: 1 to All Call
Miscellaneous Fire	Limited call 2-6 to All Call
Motor Vehicle Accident	Discretionary: 2 to 6
Municipal Burning	FT member investigates
Residential Fire	All call
Vehicle Fire	All call
Wildland Interface Fire	All call
Wires Down	Discretionary: 2-6
Medical First Response	Limited call – discretionary 2-3

6.8 Assessment

This response model allows the full-time Firefighter the discretion to determine initial response. In many alarms, for instance, the full-time Firefighter will investigate on his/her own before making any further determination of resources needed. This reduces the number of responders to false alarms. The need for all call paging is driven by the unknown number of Firefighters who will respond to the page. Nor is it predictable how quickly paged Firefighters will arrive on scene.

The advantage of this model is that the full-time member responds to the scene in an engine immediately after the initial notification from Dispatch. He/she is able to evaluate the incident, determine how many Firefighters are required and begin development of the best way to deploy arriving resources. The result is that, when the paged Firefighters respond they can begin assigned duties immediately; this is quicker than if the entire responding force arrived at the same time.

In place of the existing full time firefighting force, assisted by volunteers, a Paid-on-Call (PoC) staffing model which would be best suited to Revelstoke has been developed, with the following features and assumptions:

- Three existing full time (regular) Firefighter positions and one full-time flex Firefighter position would be eliminated;
- Full-time staff would be retained consisting of the Chief, Assistant Chief/Inspector, Assistant Chief/Trainer and Clerk/Dispatcher;
- Existing career and volunteer Firefighters would be retained as PoC, if they wish;
- 40 PoC members would be retained or recruited, in four platoons of 10;
- Each platoon would have one Captain, one Lieutenant and eight Firefighters;
- Captains and Lieutenants would be trained to NFPA standards for their respective ranks, including training in the Incident Command System used;
- Salary structure for PoC staff would be based on rank and training/skill level achieved: hourly rates apply to call outs and to attending training sessions:
    - Fully-trained Firefighters would be paid $20 per hour; a lower rate would be paid to new recruits/trainees;
    - Lieutenants would be paid $23 per hour;
    - Captains would be paid $26 per hour
- PoC platoons would rotate on-call status so that one platoon is always on-call; events that require more than the platoon of Firefighters would be paged as an all call;
- Standby pay would be $100 per week and would be payable to PoC members;
- Under most situations, only PoC members would respond to scene; the Chief and Assistants would rotate on-call status if needed to respond to major incidents and be compensated for on-call at $100 per week.

Costs of this PoC model are based on a targeted number of Firefighters responding for events.

Exhibit 16 – Response Effort

Call Type	Targeted Response	2012 Number	Average Hours/ Event
Business/Industrial/Commercial	15	5	3
Chimney Fire	15	5	3
Energized Electrical Equipment	6	0	2
Fire Alarm	2	64	2

Call Type	Targeted Response	2012 Number	Average Hours/ Event
Gas Leak/Fuel Spill	6	13	3
Miscellaneous	2	44	2
Miscellaneous Fire	6	2	3
Motor Vehicle Accident	6	147	2
Municipal Burning	1	43	2
Residential Fire	15	9	3
Vehicle Fire	6	6	2
Wildland Interface Fire	15	3	3
Wires Down	6	9	2
Medical First Response	4	216	2

The entire platoon must be paged for each call, although not all may be needed. This will result in some being sent home. BC Labour code requires that called-in staff be paid a minimum of 2 hours. Where the event requires more Firefighters than exist in one platoon, an all call will be issued. This is projected to occur in about 12% of calls.

Had this PoC model been used in 2012 total hours for all responses would have been 11,090, and the costs for responses in 2012 would have been $232,000, plus an estimated $7,000 for premium pay for required work on statutory holidays.

Other costs would be incurred, as follows, assuming a weighted average salary of $20.90:

Exhibit 17 – Other Costs

Reason	Members, Hours and Events	Cost
Standby:	11@$100/wk X 52 weeks	$57,200
Truck/Equipment Checks	4@4hrs for 52 weeks	17,388
Training – Wednesday Nights	40@2hrs for 52 weeks	86,944
Training Weekends	20@20hrs for 6 weekends	50,160

Reason	Members, Hours and Events	Cost
Officer Training	8@20hrs for 3 sessions	11,040
Officer Meetings	8@2hrs for 4 meetings	1,568
Instructor Meetings	4@2hours for 12 meetings	2,208
Total		$226,508

To these costs are added the salaries and benefits of full-time staff:

Exhibit 10 – Additional Full-Time Staffing Costs

Position	2012 Budget
Chief	$ 90,000
Dispatcher/Clerk	$ 44,800
Ass't Chief/Inspector	$ 80,000
Ass't Chief/Training Officer	$ 80,000
Benefits (25%)	$ 73,700
Total	$ 368,500

The total cost of this model is $834,008 a potential savings of $26,492 over the present model, excluding any implementation costs.

6.9 Conclusions

If the model were implemented, its advantages over the existing model are:

- There is a small annual saving, estimated to be $26,000.
- Response to events would be more consistent as there are 10 members almost guaranteed to turn out for any emergency, and all-call of other off-duty Firefighters is available for those events where a larger response is needed.
- PoC members are more likely to have higher retention than volunteers, increasing current level of experience.
- The model implements a rank structure among PoC Firefighters, ensuring appropriate incident command at larger events.

There are definite challenges to implementing this model in Revelstoke:

- There will be a small but measurable increase in time to fire attack (we estimate two to three minutes) as PoC Firefighters must first muster to the Fire Station before responding, rather than having one full-time member respond to the scene to be joined by some volunteers.
- Article 12.07 of the Collective Agreement states that paid-on-call Firefighters may not be scheduled to regular shifts or perform duties of the regular full-time Firefighters in a manner that would cause a permanent full-time Firefighter to be displaced or not replaced when a position is left vacant, unless agreed to by the Union. This provision could effectively limit the City's staff deployment options. IAFF would likely defend this provision if the City attempted to negotiate a change to allow replacement of full-time members with solely a Paid-on-Call force. There are also potential risks to the existing positive labour relations by bringing this issue forward should the Union perceive it as a negative move.
- It will take a significant initial effort to recruit and train additional 10 part-time members to transition to this model;
- No assessment has been made at this point regarding the willingness of current members to move into the more responsible positions of Captain (4 are need) and Lieutenant (4 are needed).
- PoC members are likely to be represented by the IAFF local union, so wages, benefits and working conditions are subject to negotiation and cannot be arbitrarily set by the City.
- There will be an initial effort and associated cost to recruit and train an additional 10 part-time members to transition to this model;
- PoC members are likely to be represented by the IAFF local union, so wages, benefits and working conditions are subject to negotiation and cannot be arbitrarily set by the City.
- The change from the present composite full-time/volunteer firefighting force to a Paid-on-Call firefighting force requires that the existing full-time Firefighters remain on staff and fully functioning until the PoC Firefighters are recruited and trained. Motivation may be an issue as will the change in culture; some full-time Firefighters may seek employment elsewhere, leaving the Fire Department short-staffed.

Because of the challenges involved, we are not recommending this model.