COMMITTEE OF THE WHOLE
STAFF REPORT TO COUNCIL

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CITY OF PRINCE GEORGE

DATE:	February 24, 2023
TO:	**COMMITTEE OF THE WHOLE**
NAME AND TITLE:	Adam Davey, Director of Public Safety
SUBJECT:	Fire Services Future Planning and Training Site Feasibility Study
ATTACHMENT(S):	Five (5): BC Structure Firefighter Minimum Training Standards; 2016 Standards of Cover Report; 2022 Strategic Plan update; Executive Summary PowerPoint from Dave Mitchell & Associates; AND Fire Services PowerPoint presentation

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RECOMMENDATION(S):

THAT Council RECEIVE FOR INFORMATION the report titled, "Fire Services Future Planning and Training Site Feasibility Study," dated February 24, 2023 from the Director of Public Safety, for future City budgetary planning, commencing with a 2024 service enhancement request for deliberation as part of the 2024 City Budget.

PURPOSE:

The intent of this report is to highlight the Fire Services future planning and fire training site feasibility study. In 2022, the Office of the Fire Commissioner (OFC) released the *BC Structure Firefighter Minimum Training Standards* (attached*)*, fulfilling the OFC legislative mandate to define the minimum standards of training required for structure firefighters in British Columbia. A priority of this standard is for local authorities to define, determine, and establish the communities service level to be provided by the fire department. To achieve this, *Fire Bylaw 8272, 2013* will require an update.

The consultancy firm, Dave Mitchell & Associates was awarded the contract to complete a 'Standards of Cover' report in 2015 (published in 2016, attached) and a strategic plan update in 2022 (updated with 2023 data, attached). These reports identified several recommendations, including the three priorities to:

1. Replace Fire Hall 1 with a state-of-the-art fire administration building (*new Fire Hall 1 completed 2021*);
2. Address the changes in the community and fire department with a comprehensive long term staffing plan (*attached, in progress, 2024 – 2028*), and
3. Develop a formal fire training facility within the community (*feasibility study in progress, approved in the 2023 City Budget. Findings and recommendations to be presented to Council in Q3*).

Dave Mitchell and Chief Warner are in attendance to present the findings from the strategic plan update and to lay to framework and foundation for the future of Fire Services in Prince George. The BC Structure Firefighter Minimum Training Standards, 2016 Standards of Cover and 2022 Strategic plan reports, executive summary PowerPoint, and fire service presentation are attached.

STRATEGIC PRIORITIES:
This program supports the City's 2023-26 strategic plan in two of four sustainable strategic pillars:

Pillar I: City Government
- Grow the city;
- Continue to improve processes and practices to support effective and efficient service delivery.

Pillar III: Social Health & Well-Being
- Maximize the quality of life for all residents;
- Document, communicate, and implement the City's homelessness and public safety strategies to support advocacy efforts and enhance service delivery to ensure a safe, healthy, and clean community for all.

FINANCIAL CONSIDERATIONS:
This is a multi-year, multi-million-dollar program. Detailed costing shall be conducted as part of the first service enhancement request during the 2024 City budget process.

SUMMARY AND CONCLUSION:
This extensive presentation package delivers the future needs of Fire Services, ensuring Mayor and Council are well informed to support their upcoming planning decisions and growth of the city.

This report provides the high-level findings of the Strategic Plan Update of Fire Services. This package represents the culmination of nearly a decade of planning. Options to update and improve the Fire Bylaw, aligning with the Provincial Firefighter Training Standards will formalize the long-standing service the Fire Department has provided to the city – a Full-Service Fire Department. The fire training site feasibility study will identify stakeholders, concept layout of a proposed site at two prescribed locations, including a phased rollout plan, and capital budget estimation. Concept drawings and capital budget estimations will also be provided to support future capital renewal and expansion in accordance with the staffing and service plans, for future budget considerations. Following through on the 5-year staffing plan will bring the Fire Department within compliance of NFPA 1710, ensuring the appropriate number of firefighters on scene to fight residential structure fires in the recommended length of time. Additionally, the staffing enhancement will support the increase in requests for service in recent years. Finally, Fire Services have committed to support the Capital Budgeting process by laying out future capital expenditures.

This package is intended to ensure Council is well-informed in advance of upcoming budget years and service enhancement requests. The Fire Training Center feasibility study findings shall be presented to Council in Q3. Following this, planning for a training center to be incorporated into future capital expenditure plan(s) shall coincide with service enhancement requests in accordance with the 2024-2028 staffing plan, should Council approve.

When considered in aggregate with the concurrent Police Services Review 2023-2027 plan, the proposed enhancements to protective services throughout the 2020s is the most significant change to the provision of public safety to the residents of Prince George in over a generation. The current rate of call volume and demand for protective services is no longer sustainable without substantial, multi-year increases to police and fire services.

RESPECTFULLY SUBMITTED:

Adam Davey
Director of Public Safety

APPROVED BY:

Andy Beesley,
Director of Civic Facilities and Events/
Acting City Manager

MEETING DATE: March 1, 2023

British Columbia

Structure Firefighter

Minimum Training Standards

Office of the
Fire Commissioner
Emergency Management BC

BRITISH COLUMBIA

Third Edition: September 2022

Table of Amendments

Description	Effective Date
Original document issued	September 2014
Amended	May 2015
Amended	September 2022

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Introduction

In 2014, the British Columbia Structure Firefighter Minimum Training Standards (formerly referred to as "Playbook") replaced the previous OFC firefighter training standards (a Minister Order that made the full National Fire Prevention Association (NFPA) firefighter 1001 the standard) that was effective as of January 1, 2003. The "Playbook" introduced revised and appropriate training requirements for the Authority Having Jurisdiction (AHJs) for their established fire departments, which continues with this updated version of the **BC Structure Firefighter Minimum Training Standards** (the 'Training Standards').

Office of the Fire Commissioner (OFC) - the Fire Commissioner is the senior provincial fire prevention authority in BC. Under the *Fire Services Act* the Fire Commissioner must support the fire prevention and suppression activities of local governments specifically by establishing the standards for selection and training of fire service personnel.

Local Governments - local authorities, as defined in OFC policy, (also referred to as Authority Having Jurisdiction - AHJ) have the role and responsibility to determine and deliver fire suppression and fire protection services to the residents in all or in any defined area of their community or jurisdiction. The establishment and provision of fire services is typically based on the community's desire and willingness (normally through property taxes) to support this important local government service.

Fire Service - this term encompasses all structure fire suppression and prevention activities provided by local fire departments and individual firefighters of a local authority fire department.

Authority and Purpose

Under paragraph 3(3)(b) of the *Fire Services Act*, the Fire Commissioner must establish the minimum standards of training required for fire services personnel in British Columbia.

Amendments shall be shared by being posted to the Province of BC website.

The Office of the Fire Commissioner has a unique and separate mandate within the organization of Emergency Management BC (EMBC). All Policies, Principles, Concepts, Terms and Definitions formerly embedded within this Training Standards document have been removed, updated, and are now found on the OFC Policy webpage.

The objective for the Training Standards is to identify the competencies and skills that all structure firefighters must have to enhance their personal safety and wellbeing while performing the functions of a firefighter for their community.

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Other Important Statutes

It is recognised that there are other statutory or regulatory requirements on fire services that have influence; by legislation and from organizations other than the OFC. While some important statutes are listed below, this is not an exhaustive list. Local governments, the owners and employers of the fire department and personnel, should maintain familiarity with all relevant legislations, regulations and standards that affect the management of fire services in their jurisdiction.

Motor Vehicle Act

Understanding that fire departments may be operating large fire apparatus vehicles, it was determined that minimum driving requirements be included in the Training Standards. There are significant driver licensing and insurance considerations that must be addressed for a structure firefighter to operate this equipment effectively and safely for their department. These items are referenced in the Apparatus Driver sections of the Exterior and Interior Operations level competency matrix charts.

Workers Compensation Act and Occupational Health & Safety Regulations

In BC, all employers are required to ensure that their employees are properly trained for their assigned jobs and properly supervised while performing their jobs or tasks. There are clear expectations identified by WorkSafeBC regarding the roles and responsibilities of Employers and Workers (AHJ and fire service members) in the *Workers Compensation Act* (WCA) and relevant *Occupational Health and Safety regulations (OHS Regulations)*.

The responsibility for providing workers with the necessary information, instruction, training, and supervision generally rests with the employer (WCA s. 21(2)(e)). There are also circumstances where an employer will have a general duty to ensure the health and safety of other workers at a workplace (WCA s.21(1)(a)(ii)).

WorkSafeBC OHS Regulation has some core worker safety requirements that apply to all workplaces including:
- Part 3: Rights and Responsibilities -- a workplace health and safety program, investigations and reports, workplace inspections, the right to refuse work and first aid.
- Part 4: General Conditions -- workplace safety, building and equipment safety, emergency preparedness, preventing violence, working alone, ergonomics, illumination, indoor air quality, smoking, and lunchrooms.
- Parts 5-19: General Hazard Requirements deal with general hazards found in several workplaces, usually higher-hazard operations. Topics include the safe use of chemicals, confined space entry procedures, guarding of machinery and the use of mobile equipment.

The OFC Training Standards is focussed on the expectations identified by WorkSafeBC regarding workers involved in structure firefighting – OHS Regulation Part 31: Firefighting which can be found here:
https://www.worksafebc.com/en/law-policy/occupational-health-safety/searchable-ohs-regulation/ohs-regulation/part-31-firefighting

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With particular focus on:

- Sec 31.2 – Application;
- Sec 31.4 – Instruction and Direction: The employer must ensure the adequate instruction and direction of structure firefighters in the safe performance of their duties;
- Sec 31.5 – Procedures: Outlines written procedures that must be established and followed by a fire department;
- Sec 31.10 to 31.18 - outline provisions for Personal Protective Clothing and Equipment;
- Sec 31.18 to 31.26 - outline provisions for Respirators, which includes the requirements for use of SCBA and corresponding requirements for Entry into Buildings;
- Sec 31.27 to 31.32 - outline provisions for Transportation;
- Sec 31.33 to 31.37 - outlines provisions for Aerial Devices and Ground Ladders; and
- Sec 31.38 to 31.39 - outlines provisions for Other Equipment including flashlights, hand lanterns, plaster hooks and pike poles.

In addition, WorkSafeBC provides associated OHS Guidelines for many of the OHS Regulation sections that are intended to assist users of their documents in the interpretation and application.

Amendments to the Criminal Code of Canada

Bill C-45 (Westray Mines Bill) amended the Canadian *Criminal Code* (section 217.1) and established legal duties for workplace health and safety and imposed serious penalties for violations that result in worker injuries or death. The Bill introduced rules attributing criminal liability to organizations, including corporations, their representatives and those who undertake, or have the authority, to direct how another person does work or performs a task.

This implication imposes significant importance upon the AHJ, fire service leaders and the individual firefighter to establish, implement and enforce these Training Standards.

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Important Considerations for Authority Having Jurisdiction

The current edition of the Training Standards includes more detailed lists of training competencies in specific skill areas required for a local government's fire department to safely operate at an emergency fire incident. Skills related to the functions of Apparatus Driver, Team Leader (Exterior and Interior), Incident Safety Officer, and Incident Commander (Exterior and Interior) are addressed to enable a fire department to deliver safe fire services at the AHJ's intended service levels and within the firefighter safety OHS Regulation requirements.

It is recognized that some of the competencies may not be applicable for all jurisdictions (e.g., fire hydrants). Therefore, the AHJ can identify the competencies that do or do not have application in their jurisdiction. Where the firefighter training is to be reduced based on local circumstances, these reductions must be identified in the fire department's training program and testing processes as well as in departmental Operating Guidelines. If these reductions affect the fire department's service capacity or service level, they must be reflected in the AHJ's Fire Service Level Declaration.

The determination and declaration of a service level for a local government fire department is intended to assist in the development of a training program for their structure firefighters. The training program is expected to enable the department personnel that attends a fire scene will have the skills and abilities to safely and effectively deliver, fire services to the declared service level.

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BC Structure Firefighters Minimum Training Standards Manual
Competency Matrix

This summary is provided to assist fire departments and AHJs when examining the Competency Matrix defined in the Training Standards for developing or modifying their respective structure firefighter training program. Readers should review the more detailed explanations of these individual requirements and refer to the appropriate identified NFPA standards, the *Workers Compensation Act*, the *Motor Vehicle Act*, and any other referenced regulations.

- Determination by the AHJ of the service level appropriate to their community needs is critical and the Training Standards document is based on three general service level categories:
  - Exterior Operations Level;
  - Interior Operations Level; and,
  - Full-Service Operations Level.

- Ensure the service level is correctly identified and declared in bylaw, policy statement, statute, or contract establishing a fire department's authority and anticipated capability.

- Ensure a training program to match the declared service level is in place that includes a comprehensive process for recording and retaining training records and at least meets the intent of the OHS Regulations 3.22 to 3.25.

- AHJ has registered with WorkSafeBC for structure firefighter coverage.

- WorkSafeBC worker safety and functional requirements are in place *(e.g., firefighter fitness records, Employer/Worker joint safety committee (or worker representative), OH&S program, OGs covering fundamental operational procedures, etc.).*

- Appropriate equipment, apparatus, personnel, and training is provided to deliver the declared service level capabilities and requirements.

The specific nature of an emergency fire incident will have a direct influence on the type of roles/positions and numbers of personnel required to manage a given incident. The typical roles or positions required on the "fire ground" to manage most fire-involved structures incidents are common from one situation to another.

The Training Standards has established a functional Competency Ladder (see Appendix A) that identifies the minimum competencies necessary to perform many of the typical roles or functions required for fire departments to effectively provide structural fire suppression services to their community at each of the defined service levels.

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Function Competency Ladder:

Exterior Operations Service Level
- Exterior Operations Firefighter
- Apparatus Driver/Operator (Exterior)
- Team Leader (Exterior)
- Incident Commander (Exterior)

Interior Operations Service Level
- Interior Operations Firefighter
- Apparatus Driver/Operator (Interior)
- Team Leader (Interior)
- Incident Safety Officer (Interior)
- Incident Commander (Interior)

Full-Service Operations Level
- Full-Service Operations Firefighter
- Company Fire Officer
- Training Officers

Each function in the competency ladder is listed with the requisite minimum firefighter training requirements that must be met to achieve proficiency (job performance requirement – JPR) at that given function in the competency ladder.

In addition, there are also requirements related to WorkSafeBC (WCA and OHS Regulations) and other important statutes added to each function as a reference and to be considered in the training programs.

<u>The format of the function JPR tables:</u>

In each table that is listed in this manual the reader will find a listing of relevant NFPA standard JPRs. The listing provides the chapter identifier followed by a full colon (:) to assist the reader in searching in the NFPA catalogue. The specific JPR related to the functional competency is then listed and is the applicable JPR that is required to be trained on.

Example - NFPA 1500 (2018 edition) -   8.1,
                                             8.2: 8.2.1 to 8.2.5.2

For this example, the required JPRs are the entire chapter 8.1 and the sub-chapters of 8.2.1 to 8.2.5.2 inclusive, not the entire chapter of 8.2.

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All Levels of Fire Services

Risk Management Function:

The responsibility for the Risk Management function typically is encompassed within the Fire Chief position/role. However, recognizing the challenge that this may pose on many small AHJs, this function may be delegated to another member of the fire department or even shared by the AHJ OHS staff, depending on the composition and structure of the department and local government. This individual(s) needs to have significant structure firefighting experience and/or appropriate training to ensure that they understand the administrative functions, structures and processes that must be in place to guide a fire department's training, safety programs and resultant operational capabilities.

The Risk Management function is not an operational role in a fire incident response but must be formally addressed by all fire departments. The individual(s) who fulfil this function is responsible for ensuring that the department has in place Operational Guidelines (OGs), training programs and other oversight processes that ensure safe and effective operations at all fire department involved incidents. In the Training Standards, the term Risk Management is applied to identify the individual responsible for overseeing the development and implementation of any processes which are necessary to ensure a fire department's practices are planned for, safe, and effective at any fire ground operations as a matter of principle.

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Risk Management – JPRs/Competencies

SCOPE: The Risk Management Role is an administrative function that provides guidance and oversight to ensure compliance with the Training Standards and other firefighter safety regulations and requirements. While these duties are typically performed by the fire chief, the responsibilities can be distributed among more than one person where required.

REQUIREMENTS:
All applicable Firefighter competencies based upon the declared level of service plus, completion of the following:

NFPA 1250 (2020) - 4.1, 4.3, 4.4, 4.5, 4.6, 4.7, 7.1, 8.1, 9.1, 9.2, 9.3, 9.4, 9.5

NFPA 1500 (2018) - 4.1, 4.2

NFPA 1500 (2018 edition) - 5.1, 5.2, 5.3, 5.4, 5.5, 5.6

NFPA 1401 (2019) - Recommended Practice for Fire Service Training Reports and Records

In-depth Knowledge of:
OHS Regulation Part 3.1, 3.2, 3.3 (OHS Program) 3.22, 3.23, 3.24, 3.25
OHS Regulation Part 31.5 Procedures
OHS Regulation Part 31 - General: 31.12, 31.13, 31.14, 31.15, 31.16, 31.17 and 31.18
OHS Regulation Part 31 - Respiratory Program: 31.19, 31.20, 31.21, 31.22, 31.23, 31.24, 31.25 and 31.26
OHS Regulation Part 31 - Other Equipment: 31.27, 31.28, 31.29, 31.32, 31.33, 31.34, 31.35, 31.36 and 31.37

General knowledge of:
British Columbia *Interpretation Act, Community Charter*, or *Local Government Act*
- Fire department bylaw
- Bylaw reflecting services provided by the fire department
- Fire protection district boundaries
- Emergency Health Services regarding First Responder Program
- Fire service-related agreements for:
  - inspections, investigations, rescue services, etc.
- Written Mutual Aid agreements
- Automatic Aid agreements

Local Government Management Association (LGMA) Records Management Records (2017), Retention and Scheduling

Local government requirements for writing the hiring and evaluation policy or practices for new recruits.

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Exterior Operations Level

All functions within the Exterior Operations Level conduct structure firefighting activities from the outside of structures and are not provided with any training to safely enter any structure in an active fire incident. Exterior Operations Firefighters must not perform any fire suppression activity that requires entry into any structure, building, vehicle, dumpster, or other object regardless of an Immediately Dangerous to Life or Health (IDLH) or harmful atmosphere is present or not. Exterior Operation Firefighters must only engage in external fire suppression and/or mitigation activities. Operational Guidelines that restrict them to Exterior Operations must be written and enforced by the local fire department, even though they may possess equipment that would otherwise permit them to respond in a more complex manner.

In all fire scenes where there is a potential risk of an IDLH atmosphere developing, or risk of exposure exists from smoke, particulate matter, or products of combustion, even when conducting external operations, SCBA must be worn in accordance with WorkSafeBC OHS Regulation requirements.

Team leaders (Exterior) and Incident Commanders (Exterior) are trained to supervise exterior operations only.

The Exterior Operations Service Level applies to all external fire ground operational functions except support positions such as, but not restricted to: first aid, first medical responder, critical incident stress support, hazardous spill response, etc. Specific training is required for these functions, applicable to the hazards involved, and must be addressed elsewhere in departmental training programs.

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Exterior Operations Firefighter – JPRs/Competencies
Scope: Operating outside of a structure at the task level, the Exterior Operations Firefighter applies the following competencies to perform fire ground tasks as assigned by the Team Leader (Exterior) or Incident Commander (Exterior) in accordance with the Incident Action Plan (IAP).
Requirements: *Must meet the following NFPA Job Performance Requirements and related competencies below:*

General Knowledge, Safety and Communications:

NFPA 1001 (2019 edition) – 4.1: 4.1.1, 4.1.2
4.2: 4.2.1, 4.2.2, 4.2.3, 4.2.4
4.3: 4.3.2
NFPA 1500 (2018 edition) – 8.1
8.2: 8.2.1 to 8.2.5.2
8.5

Personal Protective Clothing & Equipment, Self Contained Breathing Apparatus:

NFPA 1001 (2019 edition) – 4.1: 4.1.2
4.3: 4.3.1, 4.3.2
4.5: 4.5.1
WorkSafeBC OHS Regulations Part 31 (31.10 to 31.26 & 31.38)

Water Supply:

NFPA 1001 (2019 edition) – 4.3: 4.3.15
4.5: 4.5.1, 4.5.2

Hose Lines, Nozzles and Appliances, and Fire Streams:

NFPA 1001 (2019 edition) – 4.3: 4.3.7, 4.3.8
4.5: 4.5.1, 4.5.2

Ground Ladders:

NFPA 1001 (2019 edition) – 4.3.6
4.5.1

WorkSafeBC OHS Regulations Part 31: 31.37

Scene Lighting and Utilities:

NFPA 1001 (2019 edition) – 4.3: 4.3.17, 4.3.18

Ropes and Knots – Hoisting Tools and Equipment:

NFPA 1001 (2019 edition) – 4.1.2
4.3.20
4.5.1

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WorkSafeBC OHS Regulation Part 31: 31.39
Building Construction and Fire Behaviour: NFPA 1001 (2019 edition) – 4.3: 4.3.11 NFPA 220 (2018 edition) – Chapter 4, Five Types of Construction; NFPA 921 (2017 edition) – Chapter 5, Basic Fire Science. NFPA 5000 (2018 edition) – Chapter 7, Construction Type and Heights and Area Requirements
Gas & Electrical Safety for Firefighters: *(supplied by a BC Utility utilizing an evaluation mechanism)* WorkSafeBC OSH Regulation Part 31: 31.5 (2) (f)
Establish Safe Work Areas, Traffic and Scene Control: NFPA 1001 (2019 edition) – 4.3.3 WorkSafeBC OHS Regulations Part 31: 31 (1) (d) and 18
Forcible Entry: NFPA 1001 (2019 edition) – 4.3.4 (not intended for firefighter entry into any structure)
Ventilation – Horizontal: NFPA 1001 (2019 edition) – 4.3.11 4.5.1
Exterior Fire Attack/Extinguishment: *(accomplished with or without involvement of "live fire")* NFPA 1001 (2019 edition) – 4.3: 4.3.5, 4.3.7, 4.3.8, 4.3.16, 4.3.19 5.3: 5.3.1, 5.3.3
Hazmat Awareness: NFPA 1072 (2019 edition) – Chapter 3 and Chapter 4 WorkSafeBC OHS Regulations Part 31: 31.5 (2) (C)
ICS 100

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Apparatus Driver/Operator (Exterior) – JPRs/Competencies

Scope: The Apparatus Driver/Operator (Exterior) drives a variety of small utility vehicles and large fire trucks to and from incident scenes and in non-emergency situations. They may also operate complex vehicles and features such as fire pumps, aerial devices, water tenders, etc. upon meeting additional competencies.

Requirements:
Preference for all Exterior Operations Firefighter competencies; plus,
must meet all the following NFPA Job Performance Requirements and competencies to drive any fire department vehicle:

WorkSafeBC OHS Regulation Part 31: 31.5 (1) (e) and 31.27 to 31.32.

Driver's License requirements in the Fire Service based on the size of apparatus
> Class 5 Vehicle licence (single axle)
> Class 3 Commercial vehicle license
> Air brake endorsement

Speciality Requirements:
Must meet all Apparatus Driver/Operator (Exterior) competencies above; plus,
the NFPA Job Performance Requirements for each additional function that they perform below;

Additional Competencies for Drivers/Operators
Emergency Vehicle Driver – EVD: *(for drivers of large fire apparatus)*
NFPA 1002 (2017 edition) –   4.2
                                    4.3

Emergency Vehicle Operator – EVO:
For apparatus equipped with a fire pump: *(only for drivers operating a fire pump)*
NFPA 1002 (2017 edition) –   4.2
                                    5.1
                                    5.2
For apparatus equipped with an aerial device: *(only for drivers operating aerial devices)*
NFPA 1002 (2017 edition) –   4.2
                                    6.1
                                    6.2
For mobile water supply apparatus: *(only for drivers operating water tenders)*
NFPA 1002 (2017 edition) –   4.2
                                    10.1
                                    10.2

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Team Leader (Exterior) – JPRs/Competencies for those leading Exterior Ops Activities or Groups
SCOPE: Operating outside of a structure at the task level, the Team Leader (Exterior) applies the following competencies within the scope of supervising Exterior Operations Firefighters in the performance of specific tasks as assigned by the Incident Commander (Exterior) in accordance with the Incident Action Plan (IAP), including task size-up, action planning, communications, and personnel accountability.
REQUIREMENTS: *Must meet all Exterior Operations Firefighter competencies; plus,*   *completion of the following:*

Incident Management:

NFPA 1001 (2019 edition) –   5.1: 5.1.1, 5.1.2
                             5.2: 5.2.2
                             5.3: 5.3.4

Personnel Management and Supervision:

NFPA 1021 (2020 edition) –   4.1: 4.1.1

Task Size-up:

NFPA 1021 (2020 edition) –   4.2: 4.2.1, 4.2.2, 4.2.3

Action Planning:

NFPA 1021 (2020 edition) –   4.6: 4.6.1 & 4.6.2

Personnel Accountability:

NFPA 1500 (2018 edition) –   8.5: 8.5.2, 8.5.3, 8.5.5, 8.5.6, 8.5.7, 8.5.8, 8.5.9
                             8.6: 8.6.4, 8.6.5, 8.6.6

WorkSafeBC OHS Regulation Part 31.5(1)(a)

ICS 100

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Incident Commander (Exterior) – JPRs/Competencies
SCOPE: Operating outside of a structure, the Incident Commander (Exterior) manages the overall incident by applying the following competencies within the scope of tactical size-up; tactical action planning; and developing an Incident Action Plan (IAP). This function establishes Incident Command; manages communications; ensures scene safety; and supervises and accounts for all emergency responders operating at the incident in the implementation of the IAP.
REQUIREMENTS: *Must meet all Team Leader (Exterior) Competencies; plus,*   *completion of the following:*
Personnel Management and Supervision: NFPA 1021 (2020 edition) – 4.1: 4.1.1
Tactical Size-up: NFPA 1021 (2020 edition) – 4.5: 4.5.2, 4.5.3
Tactical Action Planning: NFPA 1021 (2020 edition) – 4.6: 4.6.1 & 4.6.2
Emergency Service Delivery: NFPA 1021 (2020 edition) – 4.1: 4.1.2
Initiate the Incident Command System – ICS: NFPA 1500 (2018 edition) – 8.1: 8.1.5, 8.1.6, 8.1.7, 8.1.8
Incident Size-up: NFPA 1500 (2018 edition) – 8.6.8.1
Personnel Accountability: NFPA 1500 (2018 edition) – 8.3   8.4   8.5: 8.5.4, 8.5.12   8.6   8.7   8.9   WorkSafeBC OHS Regulations Part 31: 31.5(1)(a)
Incident Safety Officer: NFPA 1521 (2020 edition) – 5.2: 5.2.1, 5.2.2, 5.2.3, 5.2.4, 5.2.5, 5.2.6, 5.2.7, 5.2.8,   5.2.9, 5.2.10, 5.2.11, 5.2.12, 5.2.13, 5.2.14, 5.2.15   WorkSafeBC OHS Regulations Part 31: 31.6
ICS 200

Interior Operations Level

Interior Operation Level structure firefighters may engage in fire suppression activities within simple structures (as described in BC Building Code Part 9 – buildings of 3 stories or less with maximum of 600 sq metres of living space) or objects such as a vehicle, single family dwelling or other small structures. Interior Operations may also operate inside larger or more complex structures (multi-story, high-rises, commercial complexes, etc.) that the AHJ has allowed to be developed and constructed, where the fire department has pre-planned the structure and determined it safe for internal operations by appropriately qualified firefighters. Firefighters must be trained specifically to the risks associated with each large or complex structure.

Interior Operations Level fire services must have Operational Guidelines written and enforced by the local department, that describe the advanced training and procedures that allow for a safe fire attack within permitted structures and objects. This includes skills such as firefighter self-rescue and calling a "Mayday".

Interior operations must be undertaken in accordance with the requirements of WorkSafeBC (especially sections 31.19 and 31.23 of the OHS Regulation; accompanied by the OHS Guideline G31.23). The Incident Commander (Interior) must recognize the need, and coordinate staff appropriately, for adherence to the OHS Regulations, including the establishment of a Rapid Intervention Team (RIT) with appropriately trained and equipped firefighters, and following the time limit requirements also outlined by WorkSafeBC OHS Regulations.

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Interior Operations Firefighter – JPRs/Competencies
Scope: Capable of operating inside of a structure at the task level, the Interior Operations Firefighter applies the following competencies to perform fire ground tasks as assigned by the Team Leader (Interior) or Incident Commander (Interior) in accordance with the Incident Action Plan (IAP).
Requirements: *Must meet all Exterior Operations Firefighter competencies; plus,* *the following NFPA Job Performance Requirements and related competencies below:*
Communications: NFPA 1001 (2019 edition) – 5.2.2
Exit a Hazardous Area: NFPA 1001 (2019 edition) – 4.3.5
Conduct a Search and Rescue: NFPA 1001 (2019 edition) – 4.3.9
Loss Control – Overhaul and Salvage: NFPA 1001 (2019 edition) – 4.3: 4.3.13, 4.3.14
Pre-Incident Planning: NFPA 1001 (2019 edition) – 5.5.3 NFPA 1620 (2020 edition) Standard for Pre-Incident Planning – familiarity requirement
Interior Fire Attack/Extinguishment: (accomplished with or without involvement of "live fire") NFPA 1001 (2019 edition) –   4.3: 4.3.9, 4.3.10, 4.3.13 5.3: 5.3.1, 5.3.3 (control of flammable gas cylinder)
Rapid Intervention Team Member – RIT: NFPA 1407 (2015 edition) – Chapters 4,5,7,8 WorkSafeBC OHS Regulation Part 31: 31.23

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Apparatus Driver/Operator (Interior) – JPRs/Competencies

Scope: The Apparatus Driver/Operator (Interior) drives a variety of small utility vehicles and large fire trucks to and from incident scenes and in non-emergency situations. They may also operate complex vehicles and features such as fire pumps, aerial devices, water tenders, etc. upon meeting additional competencies.

Requirements:
Preference for all Interior Operations Firefighter competencies; plus,
must meet all the following NFPA Job Performance Requirements and competencies to drive any fire department vehicle:

WorkSafeBC OHS Regulation Part 31: 31.5 (1) (e) and 31.27 to 31.32.

Driver's License requirements in the Fire Service based on the size of apparatus
      Class 5 Vehicle licence (single axle)
      Class 3 Commercial vehicle license
      Air brake endorsement

Specialty Requirements:
Must meet all Apparatus Driver/Operator (Interior) competencies above; plus,
the NFPA Job Performance Requirements for each additional function that they perform below:

Additional competencies for Drivers/Operators:
Emergency Vehicle Driver – EVD: *(for drivers of large fire apparatus)*
NFPA 1002 (2017 edition) –   4.2
                                  4.3

Emergency Vehicle Operator – EVO:
For apparatus equipped with a fire pump: *(only for drivers operating a fire pump)*
NFPA 1002 (2017 edition) –   4.2
                                  5.1
                                  5.2
For apparatus equipped with an aerial device: *(only for drivers operating aerial devices)*
NFPA 1002 (2017 edition) –   4.2
                                  6.1
                                  6.2
For mobile water supply apparatus: *(only for drivers operating water tenders)*
NFPA 1002 (2017 edition) –   4.2
                                  10.1
                                  10.2

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Team Leader (Interior) – JPRs/Competencies

Scope: Capable of operating inside of a structure at the task level, the Team Leader (Interior) applies the following competencies within the scope of supervising Interior Operations Firefighters in the performance of specific tasks as assigned by the Incident Commander (Interior) in accordance with the Incident Action Plan (IAP), including task size-up, action planning, communications, and personnel accountability.

Requirements:
Must meet all Interior Operations Firefighter competencies; plus,
completion of the following:

Incident Management:
NFPA 1001 (2019 edition) –   5.1: 5.1.1, 5.1.2
                              5.2: 5.2.1

Personnel Management and Supervision:
NFPA 1021 (2020 edition) –   4.1: 4.1.1
                             4.2: 4.2.1, 4.2.2, 4.2.3

Tactical Size-up:
NFPA 1021 (2020 edition) –   4.5: 4.5.2, 4.5.3

Risk Management:
NFPA 1500 (2018 edition) –   4.2
                             8.4
                             8.5

Tactical Action Planning:
NFPA 1001 (2019 edition) –   5.3.2
NFPA 1021 (2020 edition) –   4.6: 4.6.1 & 4.6.2

Implement the Tactical Action Plan:
NFPA 1001 (2019 edition) –   5.3.4
NFPA 1500 (2018 edition) –   8.6: 8.6.4, 8.6.5, 8.6.6

Communications:
NFPA 1001 (2019 edition) –   5.3.2

Rapid Intervention Team (RIT)
NFPA 1500 (2018 edition) –   8.8

Personnel Accountability:
NFPA 1500 (2018 edition) –   8.5: 8.5.2, 8.5.3, 8.5.4, 8.5.5, 8.5.6, 8.5.7, 8.5.8, 8.5.9, 8.5.10, 8.5.11

WorkSafeBC OHS Regulations Part 31.5(1)(a)

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Incident Safety Officer

NFPA 1521 (2020 edition) – 5.2

ICS 200

Incident Safety Officer (ISO) (Interior Operations) – JPRs/Competencies

Scope: The Incident Safety Officer (Interior Operations), when activated by the Incident Commander (Interior), monitors the safety of all emergency responders operating at an emergency incident including altering or suspending unsafe activities. This function also supports the Incident Commander (Interior) in ongoing incident size-up and the development of the Incident Action Plan (IAP).

Requirements:
Must meet all Team Leader (Interior) competencies; plus,
completion of the following:

NFPA 1521 (2020 edition) – 5.3: 5.3.1, 5.3.2, 5.3.3, 5.3.4

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Incident Commander (Interior) – JPRs/Competencies

Scope: The Incident Commander (Interior) manages the overall incident by applying the following competencies within the scope of tactical size-up; tactical action planning; and developing an Incident Action Plan (IAP). This function establishes Incident Command; manages communications; ensures scene safety; and supervises and accounts for all emergency responders operating at the incident in the implementation of the IAP.

Requirements:
Must meet all Team Leader (Interior) and Incident Safety Officer (Interior) competencies; plus, completion of the following:

Risk Management:

NFPA 1500 (2018 edition) – 8.6.8.1
8.7: 8.7.1, 8.7.4.4.1, 8.7.4.4.4, 8.7.5
8.8: 8.8.1, 8.8.4.1, 8.8.7

Initiate the Incident Command System – ICS:

NFPA 1500 (2018 edition) – 8.1: 8.1.1, 8.1.2, 8.1.3, 8.1.5, 8.1.6, 8.1.7, 8.1.8

Develop an Incident Action Plan – IAP:

NFPA 1021 (2020 edition) – 4.6: 4.6.1

Implementation of the Tactical Action Plan:

NFPA 1021 (2020 edition) – 4.6: 4.6.2
NFPA 1500 (2018 edition) – 8.6: 8.6.1.3, 8.6.13, 8.6.13.1, 8.6.13.2

Communications:

NFPA 1500 (2018 edition) – 8.6.15.6
8.7: 8.7.2, 8.7.3

Personnel Accountability:

WorkSafeBC OHS Regulations Part 31.5(1)(a)

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Full-Service Operations

Full-Service Operations Fire Departments are equipped and have completed the appropriate training identified in the OFC Training Standards (directly aligned with and inclusive of the NFPA standards) to provide a full spectrum of fire services.

These services are based on the Competencies included within the NFPA 1001 Firefighter 1 and 2 Standard and relevant NFPA 1021 Fire Officer Standards.

Full-Service fire departments will have Operational Guidelines that must be written and enforced by the local department, that describe appropriate training requirements in fire operations activities.

These fire departments are organized such that the suppression activities that occur are based on response protocols which include the appropriate staffing levels, and number and type of apparatus on scene.

All Functions (Full-Service)

Competencies required for a Full-Service Fire Department to complete:
NFPA 1001 (FF-I & FF-II);
NFPA 1021 Fire Officer (FO I);
NFPA 1041 Fire Service Instructor I;
NFPA 1072 Haz Mat Operations with Specific Mission; and
NFPA 1521 Incident Safety Officer, Pre-Incident Planning.

NFPA 1001 (2019 edition) – Chapter 4 and Chapter 5
NFPA 1021 (2020 edition) – 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7
NFPA 1041 (2019 edition) – 4.1, 4.2, 4.3, 4.4, 4.5
NFPA 1072 (2019 edition) – Chapter 5, 6.2, 6.6
NFPA 1521 (2020 edition) – 5.1, 5.2, 5.3, 5.6, 5.7
NFPA 1620 (2020 edition)
ICS 100, 200
BCEMS
Other NFPA Standards that local government and the Fire Chief (Risk Officer function) require to deal with hazards associated within their jurisdiction.

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Company Fire Officer

> **Company Fire Officer – JPRs/Competencies**
> NFPA 1001 FF II; and
> NFPA 1041 Fire Service Instructor I.

Additional Competencies:

The duties of the Company Fire Officer are many, and range from human resource management, community relations, administration, health, and safety, to emergency service delivery and others.

NFPA 1021, the Standard for Fire Officer Professional Qualifications, identifies four levels of Fire Officer, the most common being Fire Officer I ("FO-I") and Fire Officer II ("FO-II").

Each local government and fire department must determine the nature of the role of any specific Company Fire Officer and ensure they meet the required Competencies identified in the pertinent JPR(s) of the NFPA 1021 Standard (2020 edition).

Training Officer and Instructors

> **Training Officer or Instructors – JPRs/Competencies**
> All NFPA Standards required to train must be completed
> Plus, completion of the following:

NFPA 1041 (2019 edition) FSI-I – 4.2.1, 4.2.2, 4.2.3, 4.2.4, 4.2.5
4.3.2, 4.3.3
4.4.2, 4.4.3, 4.4.4, 4.4.5
4.5.2, 4.5.3, 4.5.4, 4.5.5

WorkSafeBC OHS Regulation Part 31.4

An individual who is responsible for instructing a specific competency(ies) to another firefighter or fire officer to ensure they achieve the required knowledge and/or skills, must already have achieved the requirements for that competency and be considered by the department as being capable of providing such instruction of those competencies to other members of the department.

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Trainer and Assessor Competencies

Training and testing can be conducted "in-house" by qualified department personnel or be administered via third party providers. This section describes the requirements for "In-House" delivery of training requirements and assessments. Where a department has decided to use a third-party training provider, it should ensure that the training provided addresses the competencies set out in the Training Standards.

Regardless of which Service Level is declared, each local government and Fire Chief (Risk Management function) must ensure their training program meets the requirements of the OFC Training Standards to ensure that they can perform their fire scene operations in accordance with WorkSafeBC OHS Regulations.

Trainer competencies for "In-House" training delivery:
The OFC Training Standards recognizes the "Trainer function", which means the fire department member who is responsible for delivering the in-house delivery of training to other fire department members, and potentially even the evaluation of such training. The use of this term is not meant to prescribe an actual title to any position as assigned by a fire department.

Trainer – JPRs/Competencies
Scope: The In-House Trainer instructs members within their home fire department to the Level and Functions to which they are personally qualified and approved by the fire department.
Requirements: *Must meet all competencies for each Level and Function they would instruct; plus, completion of the following competencies:*
NFPA 1041 Fire Service Instructor (2019 edition) – Chapter 4 *(accredited certification is not required)*

Assessor requirements for "In-House" training delivery:

The oversight of the testing processes used by a department for its in-house training program is the responsibility of the Officer who has oversight of the delivery and testing of the training being provided.

For each Service Level, an individual who is responsible for conducting specific testing of fire department personnel's competency must already have achieved that competency and been determined by the department as capable of conducting such testing. While the requirements for an Assessor are the same as a Training Officer, the fire department must authorize them to perform one, or both, respective functions.

| **Assessor** – JPRs/Competencies |
| --- |
| **Scope:** The Training Officer/Assessor evaluates members within their home fire department to the Level and Functions to which they are personally qualified and approved by the fire department. |
| **Requirements:**
 Must meet all competencies for each Level and Function they would assess; plus,
 completion of the following: |
| NFPA 1041 Fire Service Instructor (2019 edition) – Chapter 4 *(accredited certification is not required)* |

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Training Records

Each fire department's Risk Management function (the 'Fire Chief') is responsible for ensuring that accurate and current records of the training and certifications of each of its firefighters and officers are created and retained in alignment with the intent of the WorkSafeBC OHS Regulation 3.23. Third-party training providers for individual fire departments are also required to track training and maintain individual training records for each firefighter and officer.

There is no current standard for training record formats at this time, but some essential components would be:

- Name of individual
- Competency or JPR that was trained for – course name
- Date of training
- Validation or indication of actual completion of the course would be essential
- If applicable an appropriate retraining target date or timing cycle

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Appendix A – Flow diagram for the Competency Ladder

Training Standards Competency Ladder Logic Diagram

FULL SERVICE

- Firefighter 1 → Firefioghter 2 → Officer

INTERIOR OPERATIONS LEVEL

- Interior Ops FF → Apparatus Driver Int → Team Leader Int → Incident Safety Officer → Incident Commander Int

EXTERIOR OPERATIONS LEVEL

- Exterior Op FF → Apparatus Driver Ext → Team Leader Ext → Incident Commander Ext

New Hire

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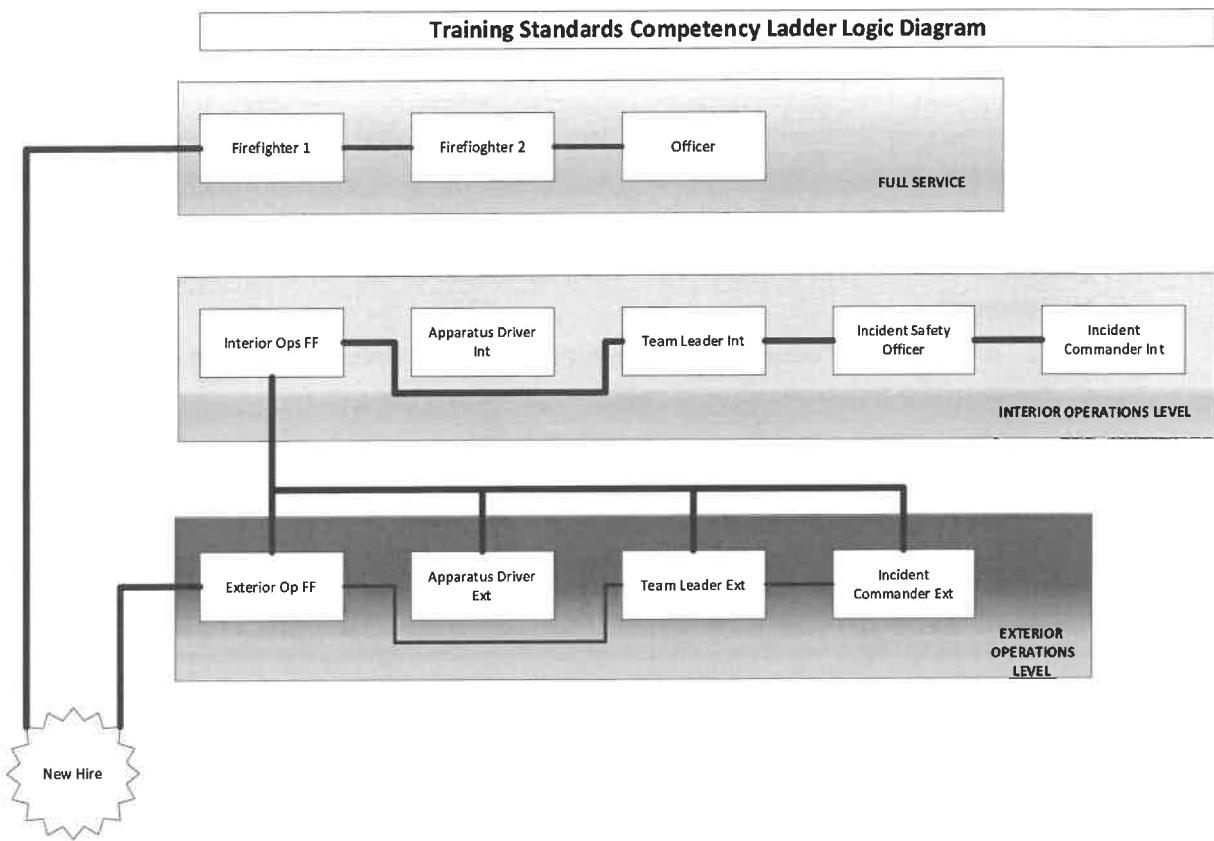
Appendix B – Excerpt from Policy 3.200 - Procedures

Methods to Adopt the Training Standards:

Fulfilling the Training Standards can be achieved through the following methods as determined by the AHJ:

- Develop and implement an in-house training and assessment program at the local level
- Utilize a third-party training provider
- Conduct a local review of individual's training records to identify prior learning that could be deemed to:
    - meet the full competency requirements for any Level or Function and allow the AHJ/Fire Department to recognize equivalency, or;
    - meet partial competency requirements for any Level or Function that could allow the AHJ/Fire Department to train the individual to only those competencies that were not covered by prior learning.
- Any combination of the methods above that the AHJ determines to meet the required competencies for individual personnel.

Updating existing personnel from the old Playbook to the new Training Standards:

- Personnel who are already trained to the old Playbook Levels and Functions do not require retraining to equivalent Functions in the new Training Standards, provided that the fire department's maintenance training program complies with the new Training Standards competencies where any minor training gaps will be achieved over time.

- Personnel who perform any of the newly defined functions within the new Training Standards [*e.g., Apparatus Driver/Operator (Exterior), Apparatus Driver/Operator (Interior), Incident Safety Officer (Interior), Team Leader (Interior), Incident Commander (Exterior), and Incident Commander (Interior)*] must meet the competencies for those functions through one of the adoption methods listed above.

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Prince George Fire Rescue
Standards of Cover

Dave Mitchell & Associates Ltd.
June 2016

Table of Contents

Executive Summary

The City of Prince George Fire Rescue Department (the "Department" or "PGFR") is undertaking a review of its responses to incidents of all types within its current mandate to determine the level of service being provided. One goal is to determine whether the current standard of service is appropriate and if not, how it might be adjusted. The Department is also addressing a potential downgrade of its rating by the Fire Underwriters that could negatively affect insurance rates for commercial/industrial properties.

The Department is guided by external standards provided by the National Fire Protection Association (the "NFPA") which propose a defined number of trained fire fighters to be able to arrive at a structure fire within eight minutes within the 90th percentile. This staffing/deployment requirement relates to the speed of fire propagation and for a 2,000 square foot home is set at 14 fire fighters including officers. The NFPA standards also outline time requirements to complete the dispatch process and for fire fighters to 'turnout' from the fire hall in addition to traveling to the scene.

At present the Department is not able to provide the 14 prescribed fire fighters within eight minutes; for the past three years they have not been able to achieve this a single time. This is for a couple of reasons, the most significant being that the majority of structure fires occur in the central part of the city which is responded primarily from Hall 1 and Hall 2. The total staffing from these two fire halls is eleven and requires the four staff from one of the fire halls to the north (Hall 4) or the west (Hall 3) to achieve the staffing and given travel times this has not been possible. For that reason, it is recommended that the Department fully staff another unit, probably at Hall 1 to provide the minimum staffing for structure fire responses.

The incident volume handled from Hall 1 is 52% of the entire call volume for the Department and this is coupled with the location for this fire hall away from the center of its response district. As well the fire hall no longer meets the needs of the Department and will require rebuilding. Because of its location on a small piece of property and the need to make it more central to its responses, it is recommended that it be relocated to the south of its current location.

In their report, the Fire Underwriters (the "FUS") identified a concern with a response time deficit in the industrial area south of Hall 1 and relocation of this fire hall should provide some relief in addressing the issue. The FUS report also provides some guidance in terms of how the rating for the Department could be improved.

Fire departments in British Columbia are also required to meet a service mandate outlined in the Playbook[1]. This requires the local authority to define the level of service which for Prince George will be 'full service'. The requirements of the Playbook and the service levels are discussed in detail in the report and complying with these will require a number of actions by the Department, one of which will be to develop and utilize an enhanced training site. At present the Department has a training area at Hall 2 but it is recommended that the training site be expanded to provide all required class room space and training props as well as a live burn facility.

One option would be to construct a new, more complete, fully compliant training center in the industrial property south of Hall 1. This should allow for all of the activities including live fire training to be held; in addition, given that it would be utilized on a daily basis it would further enhance response in the industrial area.

The Department has also reviewed its ability to provide fire inspections and is considering a number of strategies including having on-duty crews conduct a number of these. Other options include development of a variable inspection frequency based on risk.

Background

The Community

The City of Prince George (the "City") is northern British Columbia's largest city, with a population of over 73,000 (2014).[2] In addition the City is a service and commercial hub for a rural population of approximately 88,043. The population is anticipated to increase to between 78,900 and 90,200 by 2025[3]. The City lies at the meeting point of the Nechako and Fraser Rivers and at the crossroads of Highway #97 and Highway #16.

The Department was established in 1914 and operates as a career fire department. The Department provides fire suppression, emergency medical services and special response services to an area approximately 318 square kilometers within the City limits.

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[1] On 14 October 2014, the Office of the Fire Commissioner (the "OFC") issued a new training standard applicable to the training of fire services personnel in the province. This new standard, entitled: *British Columbia Fire Service Minimum Training Standards: Structure Firefighters – Competency and Training Playbook* (September 2014) (the "Playbook"), was issued pursuant to and approved by the Minister of Justice under paragraph 3(3)(b) of the *Fire Services Act* (B.C.). The Playbook replaces the previous minister's order on training and is binding on all "fire services personnel" in the province

[2] BC Stats, Population Estimates, "Highlights and Summary Table (2014)" at p. 5 of 8; available at: http://www.bcstats.gov.bc.ca/StatisticsBySubject/Demography/PopulationEstimates.aspx (accessed on 10 October 2015).

[3] Official Community Plan, page 13.

The fire and emergency protection area consists of high density urban city core, large expanses of mixed suburban and commercial development, and a large industrial area which includes several pulp mills, chemical manufacturers and a petroleum refinery. Major rail lines and transport corridors run through the City, and a major rail yard lies directly adjacent to the urban city core. In addition, the City has a significant urban interface wildfire risk.

The building stock within the urban city core is largely pre-1970's construction, before there were requirements to use modern, fire resistant construction methods or sprinkler systems. The City's suburban and commercial development consists of a mixture of pre-1970's building stock and more modern construction. A detailed assessment of the fire risks is discussed later in this report. Overall the City has a very unique industrial risk profile compared to cities of a similar size.

The Purpose

In 2014 the Department undertook a Standards of Coverage Review. This comprehensive review addresses the following matters:

- the level of service the Department has provided in the past;
- the nature of the environment in which the Department delivers service;
- the levels of risk that exist within the community (life and property);
- the anticipated development and evolution of the community over the next 10 – 20 years;
- the level of service that is expected of the Department now and into the future;
- the resources (including facilities, apparatus and personnel) needed to deliver this desired level of service safely and effectively;
- how the Department's resources should be deployed to improve or provide the expected level of service; and
- how resources available to the Department will need to change in the future in order to maintain the expected levels of service.

A considerable portion of the initial work involved in a Standards of Coverage Review entails a detailed analysis of what has happened in the past as it relates to the emergency services provided by the Department. While not absolute the following is a list of example material that has been reviewed during the course of this review: incident volumes and types, response time statistics, apparatus types, fire hall locations, fire prevention activities including inspections and pre-planning, training programs and record keeping, dispatching procedures and communications. The purpose of conducting a historic review of the Department's past performance is to provide a baseline for measuring improvement or changes into the future.

After completion of the historic review, the process of determining the current and future level of service in the fire protect area begins. This involves a thorough risk assessment of the community, a review for planned expansion or anticipated changes in use, an assessment of the level of service required to meet current and anticipated future needs, and an analysis of the resources required to provide that level of service.

The service level objectives, recommendations and standards of coverage outlined within this report have been developed in accordance with these practices. In short – the historical achieved outcomes have been compared to the future anticipated outcomes (Standards of Coverage) and provide the measurable goals and objectives for the future.

Benchmarking

The benchmark departments used were Kamloops, Nanaimo. These cities were chosen for their similarity to Prince George in terms of population as well as their industrial risks. Also, due to their locations, neither department benefits from having mutual aid partners adjacent.

Kamloops and Nanaimo are composite departments with a career staff supplemented by paid-on-call staff. Prince George does not utilize volunteer/paid-on-call staff. A summary of the benchmark information is shown in Table 1.

Benchmark Item	Kamloops	Nanaimo	Prince George
Population	88,084	83,810	72,000
Fire loss 2010	$4,017,530	$4,186,426	$11,715,750
Fire loss 2011	$2,649,392	$3,410,814	$84,808,670
Fire loss 2012	$9,901,250	$1,704,500	$85,719,472
Fire loss 2013	$1,184,835	$2,687,256	$6,341,296
Fire loss 2014	$3,304,430	$2,822,515	$3,469,200
Total Losses	$21,057,437	$14,811,511	$192,054,388
Loss per Capita	**$239.06**	**$176.73**	**$2,667.42**
Engine staffing	Crew of 4[4]	Crew of 4	Crew of 4
Ladder staffing	Crew of 4		Crew of 4[5]
Total Incidents	7,529	7,067	6,075

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[4] Exception is one Engine that responds with a crew of 2.

[5] Note that the Ladder is cross staffed with an Engine, thus it is either the Engine or the Ladder that responds from Hall 2.

Benchmark Item	Kamloops	Nanaimo	Prince George
Incidents/10,000 persons	**855**	**843**	**844**
2014 City budget	$189,900,000	$150,567,685	$156,833,535
Fire Department budget	$17,427,136	$17,622,051	$15,812,309
Fire Department/capita	**$197.85**	**$210.26**	**$219.62**
Number of Fire Halls[6]	7	5	4
Fire Underwriter Rated	2013	1991	2014
DPG (Residential)	N/A	1	1
PFPC (Commercial)	N/A	4	5

Table 1

From Table 1 it can be seen that in terms of responses per population that the Department responds to the median. Unit staffing levels are at, or very near to the benchmark of a minimum of four per engine or ladder. The per capita budget for the Department is only slightly higher than the two benchmark departments; the budget for the City is higher than Nanaimo but lower than Kamloops.

In fire losses for the most recent four years, the Department is significantly higher than either Kamloops or Nanaimo even discounting the major fires in 2011 and 2012.

The survey also provided data in terms of high risk properties and these are summarized in Table 2 and from this it can be shown that the Department has a similar or higher number of risk properties compared to the benchmarks.

Risk Properties	Kamloops	Nanaimo	Prince George
High-rise structures	20	4	13
Pulp mills	1	0	3
Saw mills	1	0	2
Refineries	0	0	1
Hospitals	1	1	2
Other care facilities	12	8	30
Freeways	1	1	1
Interface risk	Yes	Yes	Yes

Table 2

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[6] Including paid-on-call in Kamloops and Nanaimo.

OFC Fire Loss Data

The Office of the Fire Commissioner (the "OFC") publishes an annual report which may provide some comparisons in terms of fire losses. The data published is available on the OFC website and it is for the years 2004 to 2012 inclusive. The average per capita loss over this period is shown in Figure 1.

Some caution should be used when reviewing this data as there is not necessarily full compliance with fire departments reporting

Figure 1: OFC Statistics for Fire Losses 2004 to 2012

fire losses. However, for the period noted each of the fire departments had reported fire losses for a total of nine years. On the basis of the OFC data it is clear that the average per capita fire loss for the Department is significantly higher than for the benchmark departments. This is consistent with the loss data in Table 1 which is for a much shorter period of time.

Mandate

The Department has been continued under and operates pursuant to *Bylaw No. 8272, 2013*. Bylaw No. 8272 is the fundamental constitutional document which underpins the Department's establishment and defines its operational mandate and administrative processes. As a starting point, it needs to be recognized that fire departments are an optional service provided by local government.[7] Unlike police and ambulance, which are established under and/or operate pursuant to provincial statutes and have a uniform range of powers across the province, a fire department only has the power and authority granted to it under the local bylaw which creates and defines its operations.

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[7] The only exception to this is the City of Vancouver, which is required to maintain a fire department pursuant to the terms of the *Vancouver Charter* (B.C.).

Outside of its operating jurisdiction – which, in the case of a municipal department, typically is the boundaries of the municipality[8] – a fire department has no specific authority to act at or to respond to an incident. Care must be taken, therefore, to ensure that the Department has the full range of powers needed to respond effectively to incidents within its jurisdiction; where it is responding outside of its ordinary jurisdiction, express consideration should be given to the source of the Department's powers to respond and operate – whether in a mutual or automatic aid agreement, under a fire service contract or in support of another emergency response agency, such as Wildfire Management Branch or BC Ambulance Service.

Similarly, there is no standard range of services defined for a fire department. A department is authorized to provide only those services which are stipulated in its bylaw. Given that fire departments are the only "all hazards" response agency available to local government, we recommend that both the grant of powers and authorization to respond to incidents be very broadly cast, but that their exercise be made subject to training and the availability of necessary personnel and equipment.[9]

- The Department is currently undertaking a review of its establishment and operational bylaw and the Consultants have provided suggestions for additions and amendments accordingly. Detailed written comments were provided separately to the Department and, given that the bylaw is now being revised, will not be reproduced here.

Historical Risk Assessment

Occupational Health and Safety Program

Formal occupational health and safety programs are a requirement under the *Workers Compensation Act* (B.C.) (the "WCA") and the *Occupational Health and Safety Regulation* (B.C. Reg. 295/97, as amended) (the "Regulations"). The Department has an effective program in place and is operating a joint health and safety committee that meets the substantive requirements of the WCA and Regulations. Some minor issues were noted with the language in the health and safety program, and from the review conducted with the Department, recommendations were made to cross-reference more effectively between the program, the relevant statutory provisions and any implementing

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[8] For a fire department established by a municipality, the operational boundaries are those defined in the bylaw as the boundaries of the municipality. In the case of the Department, it is the boundaries of the City of Prince George.

[9] There may also be a need for additional authorizations to provide some services – for example, first medical response services requires appropriate training and certification and an agreement with the Emergency Health Services Commission.

operational guidelines. The only real deficiency noted was that a formal annual review of the program is not conducted and recorded.

Overall, management and the union have clearly taken their occupational health and safety obligations seriously and should be commended for their attention to this critical area of fire department operations.

Civilian Death and Injury

The number of civilian deaths and injuries were reviewed from 2008 to the end of 2013 and are summarized in Table 3.

Year	Injuries	Deaths
2008	3	3
2009	0	0
2010	0	1
2011	7	3
2012	40	3
2013	37	2
Total	87	12
Average	14.5	2
Median	5	2.5

Table 3: Civilian Death and Injuries 2008 – 2013

The average number of fire related injuries per year is 14.5; the average number of fatalities is two. This type of data is quite variable, and the six-year period for which statistics were available is insufficient to draw strong conclusions. The number of injuries and deaths is normally quite low; however, several major fires in 2012 and 2013 skewed the data as shown in Figure 2. What this does demonstrate, however, is the City has a number of very high risk undertakings operating within its boundaries: the Department has to be in a position to manage those risks, in addition to the more typical residential dwelling or commercial operation. As will be discussed, this makes the Department's fire prevention efforts critical to reducing the overall risk faced by the City; it also means that it is essential the Department have in place effective pre-incident planning for all such industrial operations.
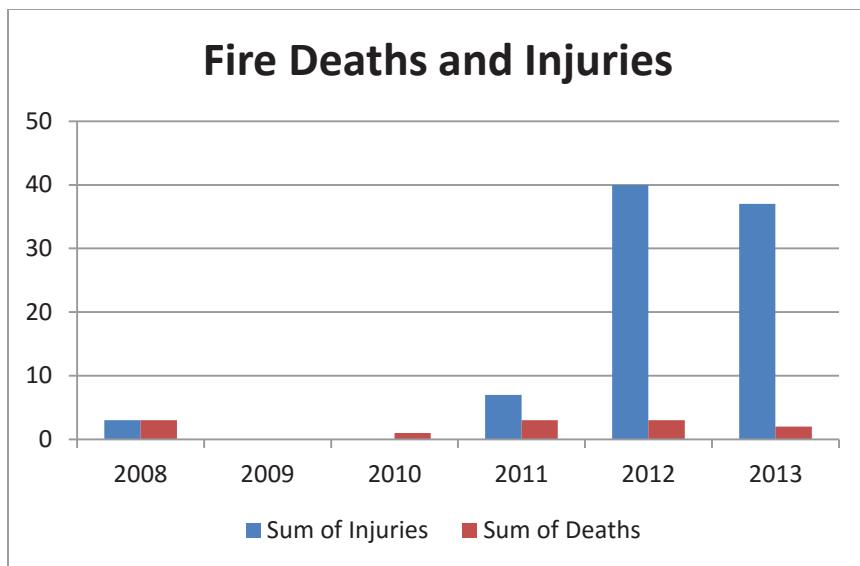
Figure 2: Fire Deaths and Injuries

Property Loss Statistics

The amount of property lost to fires is significant, and is shown in Table 4.

Year	Sum of $ Loss
2008	$110,855,295
2009	$2,168,886
2010	$2,461,364
2011	$5,664,540
2012	$85,606,070
2013	$9,639,955
2014	$9,797,435
Total	$226,193,545
Average	$32,313,364

Table 4: Fire Losses 2008 – 2014

These losses are very significant in terms of what might be seen in other departments of similar size. In five of the seven years in the period studied, losses were between $2.1 and $9.7 million; in the other two years they ranged between $85.8 and $118.8 million. By comparison, the District of North Vancouver has a reasonably comparable population and their average annual losses over this period were $2.9 million compared to the average loss of $32.3 million in Prince George.

As with the civilian death and injury statistics previously noted, the property loss statistics include two years of extremely high losses which create a high annual average over the seven-year sample period. However, it also serves to highlight both the values

at risk which the Department is responsible for protecting, and the fact that the City has operating within its boundaries a number of industrial and commercial concerns which pose significant challenges from a fire protection perspective.
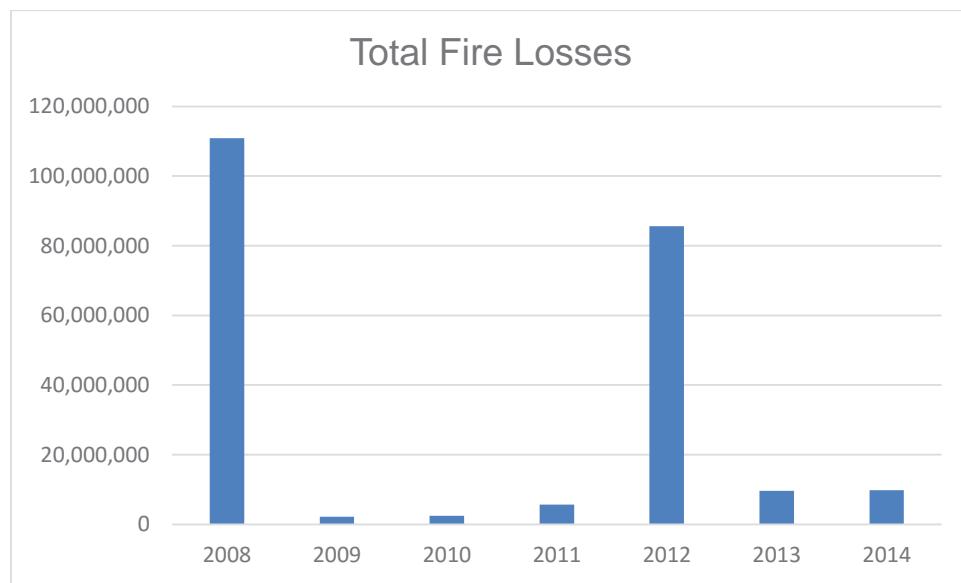

Figure 3: Total Fire Losses

Current Risk Assessment

Hazard, Risk and Vulnerability Analysis

The level of risk in Prince George was analyzed using the risk assessment model proposed by Emergency Management BC ("EMBC"). The model is called the Hazard, Risk and Vulnerability Analysis (the "HRVA")[10] and was reviewed with the Steering Committee. The complete analysis can be found at Appendix 4.

The analysis includes the development of a community profile as well as an assessment of business and industry, critical lifelines, and partnerships.

The HRVA tool kit provides a standard list of hazards and allows for additional ones to be identified. The analysis indicates the following risks need to be managed within the City. For many of these risks, the Department will be the principal emergency response agency; for others, it will be providing support to other emergency agencies. From an overall risk management perspective, it means that the Department's training of its members and officers needs to be comprehensive and well-designed. It also is essential that the Department have strong and well developed working relationships with other

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[10] http://www.embc.gov.bc.ca/em/hrva/toolkit.html

emergency response agencies, including the RCMP, BC Ambulance, Ministry of the Environment and Ministry of Transportation and Infrastructure (among others). The risks identified include the following:

- Air crashes
- Dam failures, not local but upstream
- Diseases (human and animal)
- Forest fires
- Gas explosions and gas leaks
- Hazardous material accidents ("Hazmat")
- Heat waves
- Ice storms and ice fogs
- Interface fires
- Landslides, cut banks,
- Lightning
- Local flooding
- Marine accidents
- Motor vehicle accidents
- Power outages
- Rail accidents
- Rain storms
- Riots, unlikely
- Snow melt river flooding
- Snow storms
- Structural collapse
- Technological failure (computer hardware and software), including specifically for the Department in Hall 1
- Terrorism, oil refinery
- An industrial incident, mill explosion and fire, oil refinery fire or accident
- Urban fires

In terms of risk assessment, the following types of incidents were determined to be a high risk with some occurring more frequently.

- High Risk, more frequent occurrence
    o Forest fire/interface fire
    o Rail
    o Hazmat
    o Flooding, ice jam or freshet,
    o Urban fires
    o Industrial incidents
    o Major power failure/freezing rain
    o Gas explosion/leak
- High Risk, lower occurrence
    o Air crash
    o Dam failure
    o Loss of water supply
    o Major MVI, commercial trucks[11]
    o Disease, Pandemic

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[11] It is noted that the Department is not registered with EMBC for road rescue.

In terms of vulnerability, the various risks were evaluated and identified the following.

Risks which threaten physical damage to infrastructure, public and private buildings, and the environment include the following:

- Forest fire: significant impact on staff and equipment; may lose highway access, may lose utilities, may lose power to pumping stations, may lose radio transmission sites like Pilot Mountain; may cause widespread damage, including to communities on the City's periphery
- Major power loss: lack of standby power with the exception of Hall 1; short term loss of power for air bottle filling, etc., may lose power to pumping stations, note the backup FOCC at Hall 2 does not have standby power
- Rail accident/fire: significant impact on staff and equipment + supplies like foam, significant impact on the economy; potential environmental damage; potential widespread damage to buildings
- Major flooding: significant impact on staffing, impact on the economy; potential for widespread damage, evacuation; can result in material property losses
- Industrial/HAZMAT incidents: may result in major evacuations of the downtown or other areas, impact on the economy, staffing
- Loss of communication (Telephone/Internet/Data): this would result from the loss of above ground or buried wiring/fibre due to fire, flood or landslides

Social impacts on individuals, families, children, community organizations and society as a whole:
- Short term and long term health issues including for firefighters
- Loss of jobs, family support
- Stress, including for fire fighters and other responders

Health issues
- Ongoing assessment, and is variable based on the nature of the disaster

Economic losses
- Job losses
- Loss of revenue not just from the direct loss, but indirect from companies that support them; loss of tax revenue to the City
- Cost to replace public infrastructure
- Economic impact if businesses choose not to rebuild

What is the likely impact of hazards on your community or agency?
- Ongoing assessment, and is variable based on the nature of the disaster

Following the vulnerability assessment, the level of mitigation was reviewed noting those items which are complete and which require further action.

Complete

- Wildfire mitigation: clearing underbrush and dead trees
- Flooding: raised the berm on River Road
- Resurrected PG IMAC
- Fire Chief is Deputy Director of the EOC
- EMR program – higher level of training provides for improved support by the Department of BC Ambulance service, ensuring better city-wide coverage medical first response services in the event of a major incident

Recommended

- Continuous review of emergency planning
- Back-up power generators for all fire halls
- Dedicated emergency program coordinator
- Revise and update the emergency response plan and regular practicing of same
- Development of clear evacuation routes based on likely threats or risks
- Improved community education for disaster planning
- Reinforce the emergency operations centre in the City by conducting regular activations/exercises
- Should have regular activations of the EOC to ensure procedures are well understood
- Acquisition of apparatus for interface fires, such as structure protection units
- Specialized training for major mitigation such as interface fires, Hazmat incidents, rail incidents, major industrial
- Regular exercises to test the planning at a local/tactical level, to enhance inter-agency responses and improve coordination with industry
- Acquire some apparatus and units with off-road capability
- Develop a community refuge and/or educate the community about "shelter in place"

The final step was to review the level of preparedness for the City and this analysis is found in detail in Appendix 4. Key issues for the Department and the City include:

- Clarifying and understanding all of the risks; assessing and prioritizing resources based on level of risk and anticipated frequency
- Conduct training and exercises
- Engage with identified partners (including industry)
- Develop common radio talk groups for all emergency response services
- Develop an evacuation plan and escape routes
- Develop an emergency operations plan for members of the Department
- Identify alternate sources for equipment and material not currently under the direct control of the Department
- Develop an integrated media plan for the City

RHAVE

The Response Analysis section of this report discusses 'actual' responses, based on the current information from the dispatch system. It could reasonably be inferred from that data that the area with the highest occurrence of structure fires, would probably also have the largest number of buildings subject to fires. However, in terms of future planning, the fire service cannot only examine what has already happened, but must also consider and plan for what might occur. One way in which this is done is by conducting an analysis of all of the principal risks within the City.

The risk analysis that was undertaken by the Department utilizing a software application called RHAVE.[12] This application is produced by the U.S. Fire Administration and is provided for the fire service in North America. It enables departments to survey their response areas and to assign relative risk values to individual buildings or structures as an aid to response planning.

The process requires a significant amount of field data to be gathered in a prescribed format and then entered into the software application which in turn develops a risk value. The review was conducted by Department staff with assistance from the Consultants. The requirements for data gathering were carefully reviewed and once staff was comfortable with the process, they continued and evaluated 169 representative properties.[13] The data was reviewed and then entered into the software application and relative risk values developed.

The risk evaluation process is complex and the weightings are focused on the type of construction, water supply, the presence of sprinklers, an evaluation of the residents (i.e., whether the residents are an at risk population), whether the property has good access, whether it has a fire alarm, whether it undergoes regular inspections, etc. In general terms the majority of properties assessed fell within the moderate range (53.8%) and a summary of the four types of risk levels present are shown in Table 5.

Risk	Count	Percentage
Low	0	0%
Moderate	91	53.8%
Significant	75	44.4%
Maximum	3	1.8%

Table 5: RHAVE categories by count and percentage

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[12] Risk, Hazard and Value Evaluation

[13] This software application will stay with Department staff which may continue to evaluate additional properties and may also use this to evaluate new development proposal as an additional planning tool.

The following three figures display spatially the Moderate, Significant and Maximum risks identified through the RHAVE analysis. Also shown on the figures are fire hall locations and the existing response boundaries from each hall.
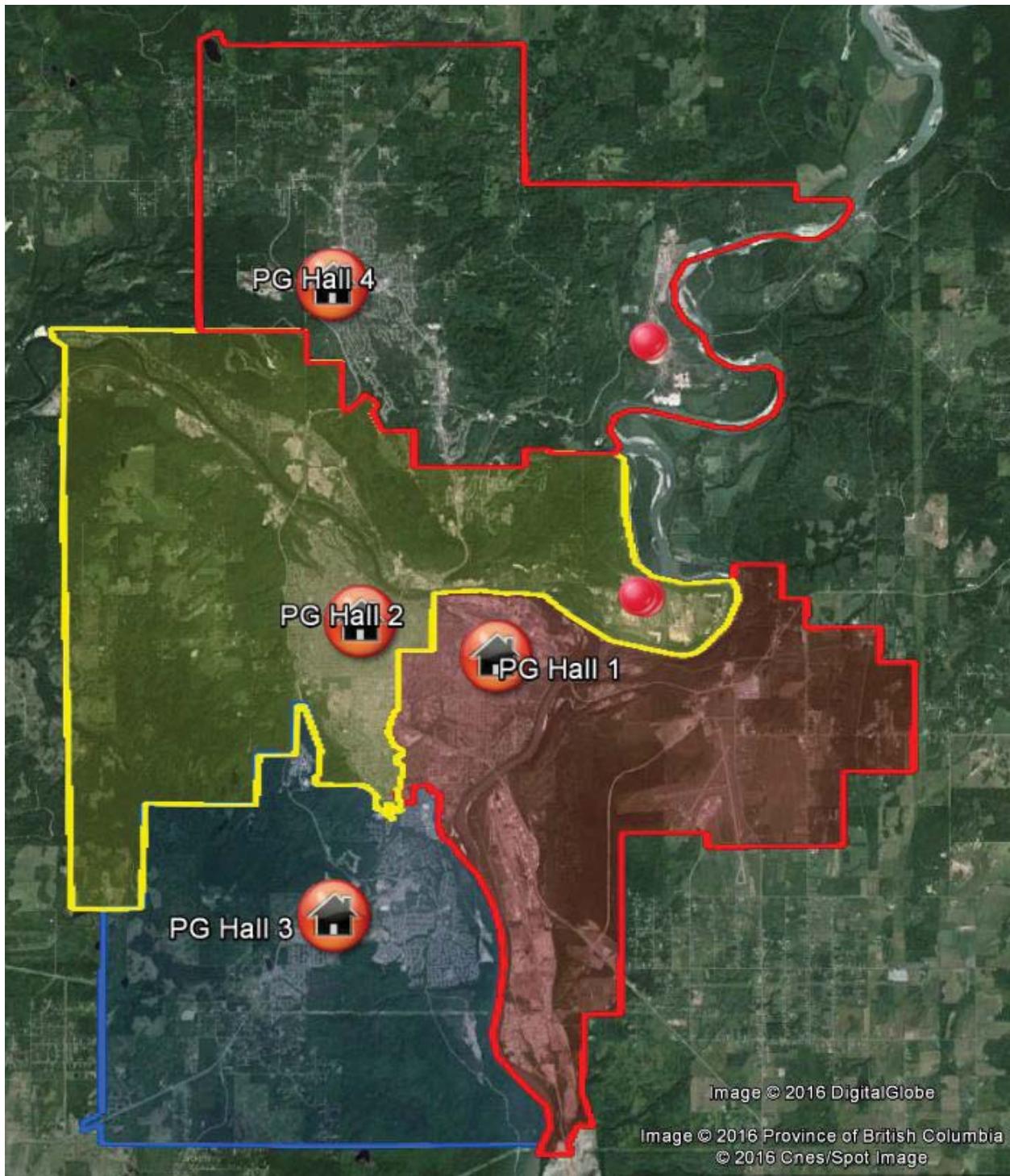

Figure 4: RHAVE Maximum Risks (red dots)
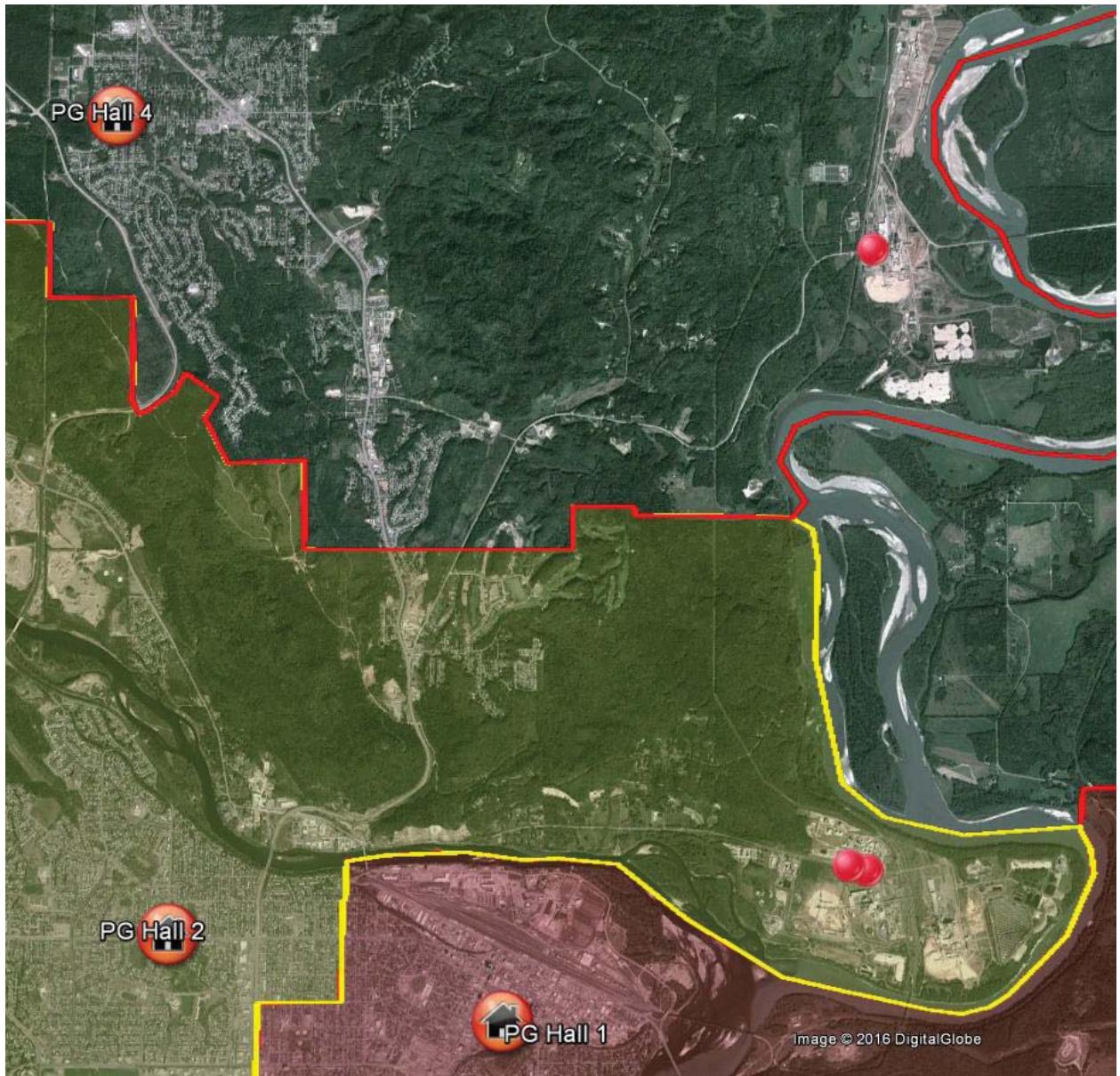
Figure 5: RHAVE Maximum Risk, Detail (red dots)
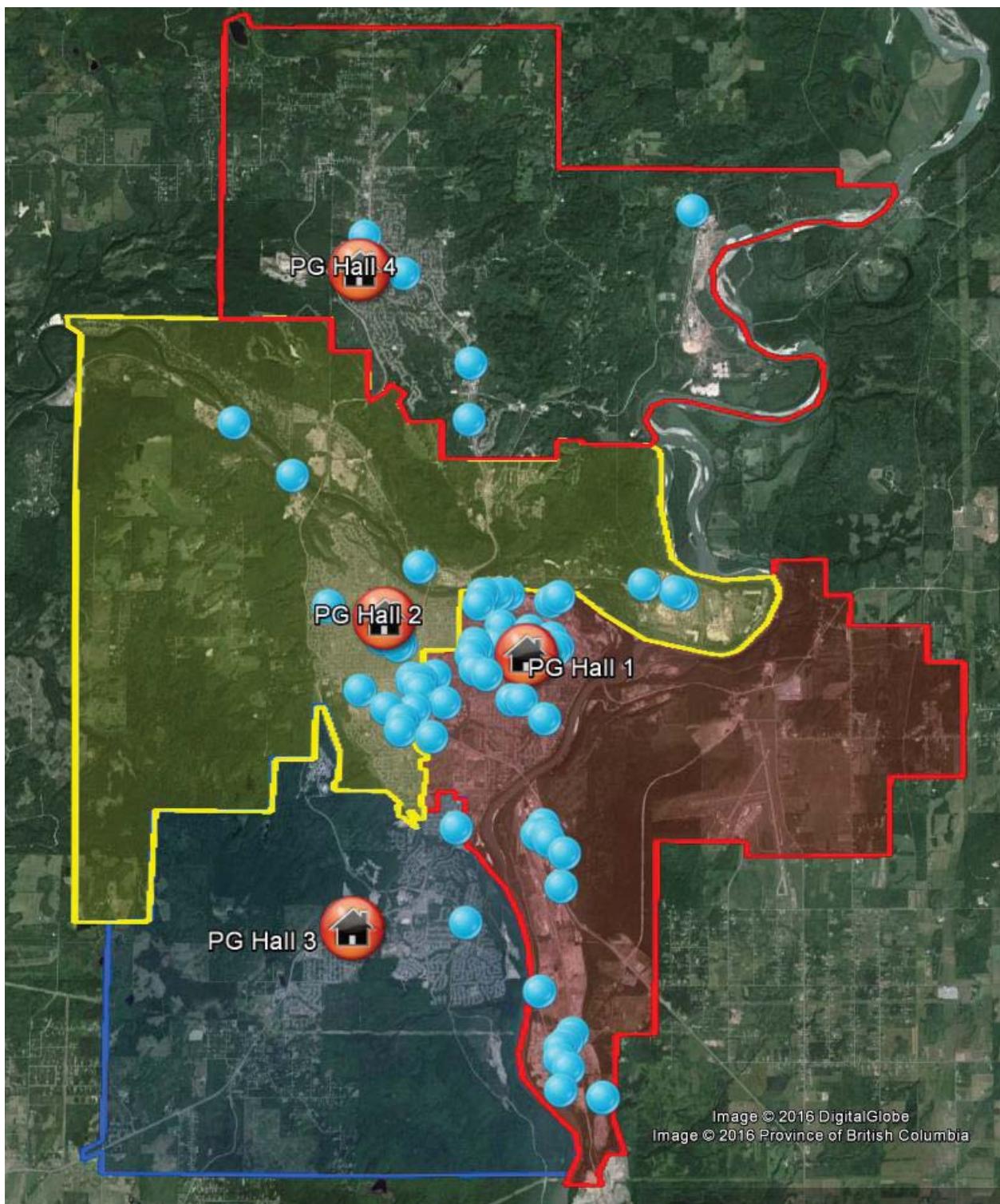
Figure 6: RHAVE Significant Risks (blue dots)
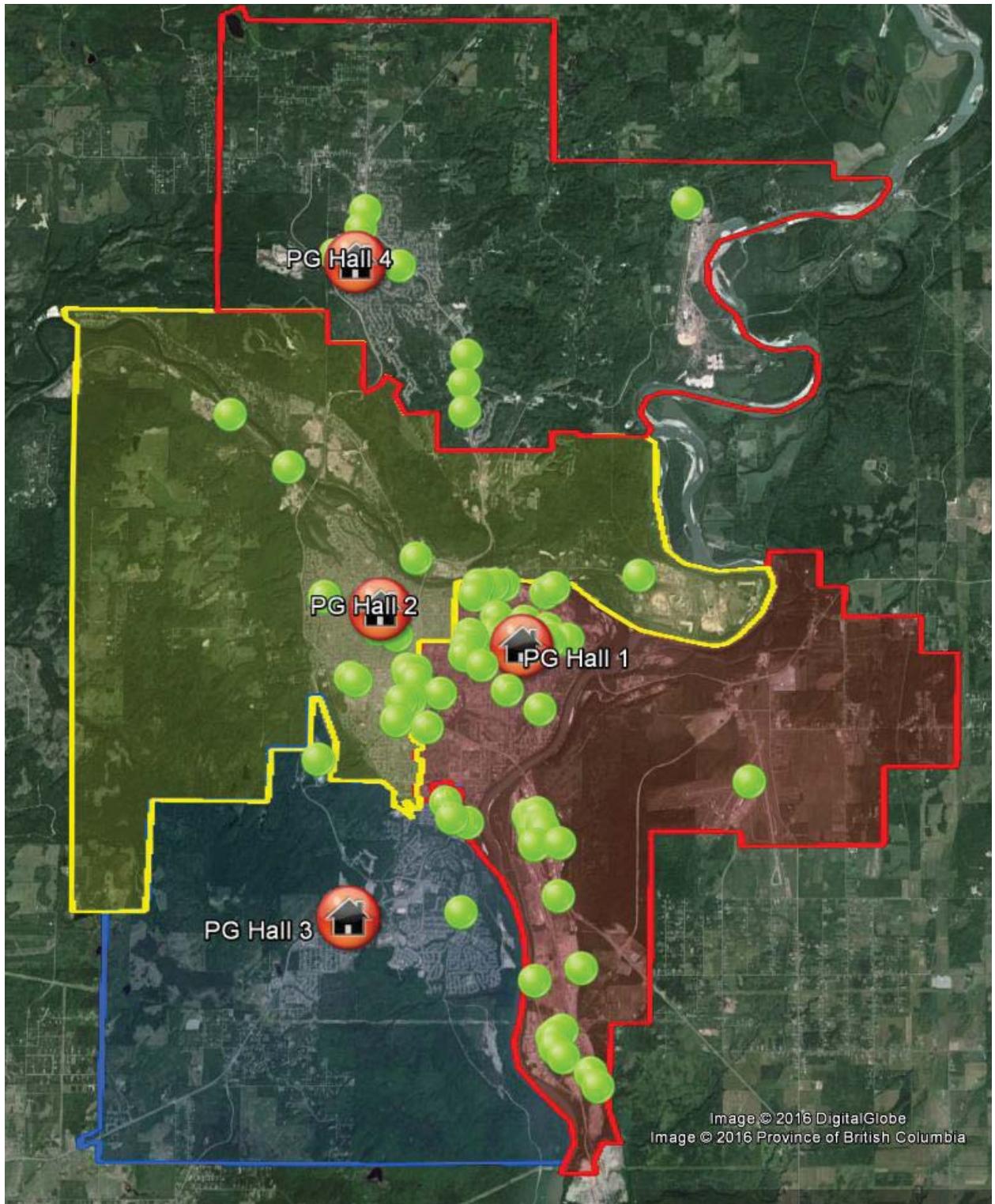
Figure 7: RHAVE Moderate Risks (green dots)

Fire Underwriters Survey

Background

In 2013, the City received an updated review by the Fire Underwriters (the "PG Review").[14] The review includes an assessment of four principal factors:

- The Department's operational capabilities;
- The water supply system in the City;
- The fire prevention and control mechanisms present in the City and operated by the Department; and
- Emergency dispatch and communications.

This section provides an overview of the role and importance of Fire Underwriters' reviews, including a brief background on the methodology employed and importance of such reviews to residents in the Department's fire service area. It also examines in some detail the results from the 2013 review, which included the possibility of a downgrade in the City's rating for its commercial and multi-family properties.

The Fire Underwriters are a national organization administered by Opta[15] (formerly, SCM Risk Management Services Inc.). It has a number of earlier incarnations – it was formerly CGI Insurance Business Services, the Insurers' Advisory Organization and Canadian Underwriters Association – but in each instance, the organization was, and we believe remains, owned or controlled by the insurance industry. For convenience, we refer to them throughout as either the "Fire Underwriters" or "FUS".

The primary purpose of the Fire Underwriters is to establish the Dwelling Protection Grade ("DPG") and Public Fire Protection Classification ("PFPC") for each community in the country.[16] The DPG rating generally applies to single family detached residences[17] while the PFPC rating covers commercial, industrial and institutional buildings and/or districts, or multi-family

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[14] Fire Underwriters, "City of Prince George: Fire Protection Services Study – Final" (2013).

[15] There are various names in use, including "Opta Municipal Consulting" and, in the case of this report, "Opta Information Intelligence, an SCM Company".

[16] There is on-going consideration by the Fire Underwriters of the two types of classifications: it is possible that, in the not-to-distant future that the two ratings will be combined so that only a single rating system exists, covering both residential and commercial/multi-family properties.

[17] Under the FUS definitions, the DPG ratings generally apply to the following: "One- and Two-Family Detached Dwellings (buildings containing not more than two dwelling units) in which each dwelling unit is occupied by members of a single family with not more than three outsiders, if any, accommodated in rented rooms." Also under this system, a "typical" detached dwelling is a maximum of 3,600 square feet in size. Fire Underwriters Survey website, "Terms of Reference", http://www.fireunderwriters.ca/dpg_e.asp accessed on 31 January 2015.

residential complexes and generally is applied by the "commercial lines" arm of the insurance industry.[18]

Most residential homeowners and businesses carry fire and general perils insurance and any person with a mortgage is required to maintain such insurance by the mortgagee bank or financial institution. Where a community has a fire department which meets Fire Underwriters' standards for performance, the cost of insurance will be significantly lower than in unprotected or less protected areas. Thus, one aspect of the cost-benefit analysis that underpins the investment required to maintain an FUS-rated fire department is the trade-off between the taxes needed to pay for the department, versus the savings residents and businesses enjoy on their respective insurance costs.

With a well-rated fire department, the saving in insurance premiums often will offset, in whole or in significant part, the costs of operating the fire department. For an individual with a house that is assessed at a replacement cost for insurance purposes of $250,000, a "protected" rating (DPG 3A or better) will generally result in cost saving on insurance of as much as $2,000 a year. For commercial properties, significant reductions in commercial insurance rates can be expected when the community obtains a PFPC rating of 7 or better. From the savings enjoyed on insurance, the tax cost of maintaining the service would then need to be deducted to determine the net direct financial benefit (or cost) of having a "well-rated" department, and the investment required to maintain such rating.

In the Prince George Review, the Fire Underwriters estimated the total savings enjoyed by local residents; they also showed a table of the savings received by commercial entities based on the PFPC rating that was received. For example, in the case of a structure with a replacement value of $400,000 the estimated annual premium in an area without fire protection was $4,200; if considered semi-protected it was $1,675 and if fully protected, $1,140. These tables are reproduced below:

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[18] Fire Underwriters Survey website, "What is the PFPC" at http://www.fireunderwriters.ca/pfpc_e.asp , accessed on 31 January 2015.

Table 22 Rate Setting Estimates

Replacement Value $	Unprotected Rate $		Semi Protected Rate $		Fully Protected Rate $
100,000	1,165		465		315
125,000	1,470		585		400
150,000	1,750		700		475
175,000	2,040		815		555
200,000	2,300		915		625
250,000	2,790		1,110		755
300,000	3,290	60± % reduction	1,310	32± % reduction	890
350,000	3,750		1,495		1,015
400,000	4,200		1,675		1,140
450,000	4,655		1,855		1,260

Table 6: Estimated Residential Insurance Cost Savings: from page 110/187 of the PG Review

Table 23 Rate Estimates under the Dwelling Protection Grade System

	No Fire Department/Water Supply for Public Fire Protection	Total Rate Estimates Prior to FUS Study	Total Rate Estimates Post FUS Study
DPG 1		$9,638,976	$9,638,976
DPG 1 (Private Hydrant Protected)		$326,679	$326,679
DPG 3B		$2,228,460	$2,228,460
DPG 5	$45,020,310	$2,670,020	$2,670,020
Total	$45,020,310	$14,864,135	$14,864,135

Table 7: Aggregate of Estimated Residential Insurance Cost Savings in the City: from page 124/187 of the PG Review

Table 24 U-Rate typical percentage decreases

PFPC	U-Rate percentage decreases
PFPC 10 to PFPC 9	99.2%
PFPC 9 to PFPC 8	96.6%
PFPC 8 to PFPC 7	82.4%
PFPC 7 to PFPC 6	74.4%
PFPC 6 to PFPC 5	63.1%
PFPC 5 to PFPC 4	53.8%
PFPC 4 to PFPC 3	48.0%
PFPC 3 to PFPC 2	47.3%
PFPC 2 to PFPC 1	45.8%

Table 8: Estimated Commercial Insurance Rate Savings: from page 125/187 of the PG Review

The rating systems are described in greater detail in the next section. ***It must be stressed that the actual cost for insurance for any homeowner or business varies based on a number of individual and site-specific factors***. While the fire grading for the area has a significant impact, a host of other considerations are also involved in the setting of insurance rates, including matters specific to the individuals or properties involved, or the competitive forces at work in the region.

It also should be noted that, from the perspective of residential homeowners, the "insurance value" of a home is not the same as the "assessed value". The latter is based on an assessment of the market value; the former generally involves an assessment of replacement cost. Construction costs vary depending on location in the province, but on a conservative basis, one would have to assume at least $125 - $150/square foot for building a new home.[19] That would mean that a 2,000 sq. ft. house would cost at least $250,000 - $300,000 to replace and likely would be insured accordingly.

In relation to commercial insurance rates, as can be seen in Table 8 above, ratings improvements do not result in straight-line decreases. From a cost-benefit perspective, moving a rating from PFPC 8 down to ~PFPC 4 provides the optimal savings for business, and may well be worthy of consideration on a hard cost-benefit analysis (i.e., amount required to be invested in improving the service, versus insurance saving for owners of commercial, industrial and multi-family properties.)[20] Below PFPC 4, the amount required to be invested in the fire service to obtain the improved rating likely will outweigh any insurance savings. The table also is averaged: not all commercial entities enjoy the same level of savings at each rating level.

A further complicating factor is that the ratings applied to a community are not necessarily uniform. FUS considers a series of issues (examined further below), which include distance from the fire hall and availability of water supplies for fire suppression. Thus, the benefits may not be equally enjoyed by all ratepayers within the same fire protection area.

Methodology Employed

Overall Ratings Weighting: The FUS ratings are weighted against the following four areas of assessment:[21]

- Fire Department: 40%
- Water Supply: 30%
- Fire Safety Control: 20%
- Fire Service Communications: 10%.

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[19] This would likely be a bare minimum. In many areas of the province, replacement costs are estimated at $150/sq. Ft. or higher.

[20] The amount of savings can also vary with the particular type of industry or commercial undertaking. See the more detailed discussion of PFPC ratings below. The table gives the average of all savings, across all industry types.

[21] This information is based on various FUS reviews we have examined in work for other clients

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The assessment also involves a consideration of the principal fire risks covered by the subject department, including determination of the basic fire flow for the community (i.e., water flow requirements for the particular hazards and risks).

There are 19 separate categories of assessment within the fire department rating section. The assessment includes, among other things, a consideration of apparatus, equipment, staffing, training, operations and administration, and the location/distribution of fire halls and fire companies. In this segment of its review, FUS analyzes the effectiveness of the fire department's ability to extinguish fires in all parts of its fire protection area.

Part of that assessment includes a review of the apparatus in use and its suitability for the subject department's fire risks. In general, the Fire Underwriters set 20 years as the maximum age for front-line use of apparatus by small-medium sized communities. It also has requirements for certain apparatus types (e.g., an aerial device) depending on its assessment of the community's fire risks.[22]

The "Water Supply" section looks at the hydrant system (if present), and considers issues such as water flow, supply reliability and system redundancy, based on criteria set out in its document, "Water Supply for Public Fire Protection".[23] Where no hydrant system is present or where the hydrant system only covers a portion of the fire protection area, the Fire Underwriters look at the ability of the fire department to access, load, transport and unload water against the risks faced in the non-hydrant protected area. In such cases, the assessment is usually considered as part of the "Fire Department" analysis.

The "Fire Safety Control" category covers fire prevention programs/public education, fire inspections and building/fire code and bylaw enforcement. The Fire Underwriters will look at whether local government is making effective use of these tools in managing the level of fire risk throughout the fire protection area.

The "Fire Service Communications" category involves an assessment of dispatch services, paging systems, radio communications and related systems and infrastructure.

Changing Format and Content of FUS Reports: It should be noted that reviews by the Fire Underwriters have undergone some material changes over the last several years. The rating areas have changed somewhat, with new (or more formal) categories and scoring systems being introduced. As noted, the assessment of the "Fire Department" is now broken into 19

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[22] FUS recommends an aerial device once a community has a water flow requirement that is calculated to exceed 3,300 Imperial gallons per minute or where there are five or more buildings in the community which exceed 3 stories (10.7 metres) in height.

[23] FUS, "Water Supply for Public Fire Protection" (1999), which is available at: http://www.scm-rms.ca/docs/Fire%20Underwriters%20Survey%20-%201999%20Water%20Supply%20for%20Public%20Fire%20Protection.pdf

separate sub-categories, each individually weighted and often containing further individual sub-categories within them. Although material portions of the assessment are still subjective, the scoring system used suggests a precision that can be difficult support.

Penalties: In addition, as part of this revised format, the Fire Underwriters have introduced two new "penalties" which have the effect of reducing a department's overall score: a "divergence penalty" and "special hazards" penalty. The first use of these penalties that we saw commenced with the PG Review, appear to be based on similar penalties applied by the ISO,[24] the American equivalent to the Fire Underwriters.

These penalties impacted the Department's score, resulting in a drop of more than 10% in its final assessed score.

The rationale behind the Divergence Penalty is not actually explained in the PG Review. In the more recent review conducted by the Fire Underwriters for the Northern Rockies Regional Municipality (the "NRRM Review"), it was described as follows:[25]
"Where the water supply is considerably better than the fire department, or vice versa, the better feature cannot be utilized to full value. A divergence penalty is subtracted from the total credit for differing levels of available protection between the Water Supply and Fire Department when determining the final credit score for the Public Fire Protection Classification"

How this penalty is actually calculated is not expressly stated in the any of the FUS reviews that we have seen; nor is it discussed in the background literature available on the Fire Underwriters' website. Our research suggests that the following formula is used:

$$[(\text{Weighted Fire Department Score} \times 0.75) - (\text{Weighted Water Score})] \times 0.5$$

Regardless of the sign (i.e., whether the result is a positive or negative number), the result is subtracted from the overall score achieved.

In the Department's case, the calculation looks like this: [26]

$$[(15.67 \times 0.75) - (22.70)] \times 0.5 = 5.47$$

There are two issues to note in respect of the Divergence Penalty:

(i)   The Fire Underwriters have provided no background documentation substantiating that the formula applied and the penalty that results reflect an actual real-world diminution in a fire department's operational effectiveness; and

(ii)   The effect of the divergence penalty is that it increases the relative weight (importance) of the category that scored the worst. In the Department's case, this is

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[24] Insurance Services Office

[25] NRRM Review at p. 125/205.

[26] See Table 18 at p. 103/187, which sets out the weighted scores and the divergence penalty.

the Fire Department score, which means that, from the perspective of improving the Department's PFPC rating, improving the score in the "Fire Department" category will have a larger overall effect on the final score than improvements in any of the three remaining categories (water supply, fire prevention/control or emergency communications).

The weighting effect can be seen in Table 9, which shows the impact on the final score of a 100-point improvement in each separate category:

Category	Points Gained	Impact on Final Score
Fire Department	100	~3.06 points
Water Supply	100	~0.88 points
Fire Prevention & Control	100	2.00 points
Emergency Communications	100	2.00 points

Table 9: Leverage Effect of Improved Scores by Category

As can be seen, the effect of improving the score in the "Fire Department" category of assessment by 100 points translates into an improvement of about 3.06 points in the final score. The reason for this leverage is two-fold: what the category is scored out of relative to their respective weights; and the effect of reducing the "Divergence Penalty". Conversely, improvements in the Water Supply score have a reduced effect, principally because this would increase the Divergence Penalty.[27]

This leverage issue will necessarily impact any strategy developed by the Department regarding how best to improve the overall PFPC rating (to achieve the "PFPC 4" score which has been awarded only provisionally, as noted below).

The second penalty category is the "Special Hazards Analysis". **This penalty has not been applied in the PG Review** (perhaps because it had not yet been developed when the review was undertaken in 2013). The NRRM Review describes this penalty as follows:[28]

"Special hazard analysis may be applied to a community, a municipality or a fire protection area to recognize climatic factors or adverse effects upon fire control of certain environmental features that inhibit firefighting operations or contribute to fire spread.

The phenomena would be expected to contribute to the propagation of the fire by damaging communication, water mains and fire stations and blocking apparatus

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[27] There are some odd effects that result from the Fire Underwriters introducing minimum scores for 3 of the 4 categories of assessment. As such, even without taking into account the effect of the Divergence Penalty, a 50 point improvement in the Water Supply score does not have an equal effect on the final score as a 50 point improvement in any of the other categories.

[28] Review at p. 125/205.

response or by damaging buildings and increasing fire intensity. Credit reduction up to a maximum of 10 percent may be applied on the rate of occurrence and severity of floods, hurricanes, tornadoes, blizzards and earthquakes."

Where we have seen this penalty applied (e.g., Whistler, NRRM), the Fire Underwriters do not specifically identify what factors are taken into account. They do not explain how these risks are assessed, their individual impact rated and the final penalty determined. Rather, where it has been applied, they simply note that the municipality was "reviewed for the potential interference with firefighting…[that] climatic factors and earthquakes would have on the current public fire protection programs in place."[29] There is no actual explanation of the rating involved.

Ratings System: As noted above, FUS reviews involve two entirely separate rating systems – one for residential properties (DPG) and one for commercial/multi-family properties (PFPC).

The DPG rating is calculated on a five-point numerical scale, while the PFPC rating is based on a 10-point scale. In both cases, a "1" is the highest rating achievable. In simplest terms, the goal of an FUS review is to provide insurance companies with a grading of fire protection services provided across a fire protection area.

Insurance companies use the grading rate provided by the FUS as one of a number of factors in determining local fire protection insurance rates. It should be emphasised that the system is quite fluid, and individual insurers can and will set rates based on considerations other than the FUS ratings (either higher or lower, depending on the insurer's perception of actual risk, competitive concerns and other factors).[30] It is up to individual insurance companies to determine what weight they give the FUS grading when determining insurance rates.

DPG Rating: In essence, for residential homeowners the rating system is from 1 – 5 (where "1" is best), with a split at "3", where "3A" means there is an approved hydrant or water supply system, and "3B" means that the department relies on mobile water supplies. From the insurance industry's perspective, the ratings for residential homeowners are generally treated as follows:

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[29] *Ibid.*

[30] See a list of other factors on the Fire Underwriters Survey website, "How the PFPC affects individual insurance policies" at http://www.fireunderwriters.ca/pfpc_e.asp , accessed on 27 March 2014.

DPG Rating	Insurance Status	Comment
5	Unprotected	No savings on insurance from having a fire department.
4	Semi-protected	Some savings on insurance likely will be enjoyed; in some regions, this rating and "3B" often are treated as essentially equivalent.
3B	Semi-protected	This is usually the rating level at which significant cost savings on insurance are enjoyed. This is usually the highest rating available in areas which are not hydrant-protected. Insurance savings will be in the range of 50 – 60%
3A; 3B(S)[31]	Protected	Progressively greater savings on insurance. Fully protected status typically means a savings of as much as 73% on insurance costs.
2	Protected	
1	Protected	

Table 10: Dwelling Protection Grade Ratings

In general, FUS estimates that a community which achieves fully protected status can enjoy savings on insurance of some 70%+ versus communities which are "unprotected".[32] By way of example, in a recent fire master plan we worked on two of the members of council to whom we delivered the final report exemplified the difference that the Fire Underwriters' rating makes. In that instance, the fire department's protection zone was greater than eight kilometers, so that residents outside of the eight kilometers limit did not receive the benefit of a reduced insurance rate. One councilor was paying over $3,000 for insurance, while the other was paying less than $1,000 – in relation to properties that the two agreed were otherwise broadly similar, other than the distance from the fire hall.[33]

There are some fundamental location and distance requirements for an area to receive a protected or semi-protected rating:

- residents must live within eight kilometers by road of a fire hall (i.e., the measurement is based on distance travelled on the existing road network, not in a straight line from the fire hall); and

[31] A rating of 3B(S) is an FUS accreditation for tanker shuttle capability, where a department is able to demonstrate its ability to maintain a specified water flow for a stipulated period of time, using tanker units. It applies to areas which are not hydrant-protected, and must be periodically renewed. This specialty rating is treated by most insurers as being the equivalent of a "DPG 3A" (fully protected) rating.

[32] See the Review at p. 135. Based on table 14.1-1, the savings average about 73%.

[33] The example also illustrates a problem where the financial benefits of having a fire department are not equally enjoyed by all taxpayers.

- for hydrant protected areas, the residence must be within 300 meters of a fire hydrant (or else the residence is classed based on the community's "non-hydrant protected" rating).[34]

Properties which are more than eight kilometres by road from a fire hall typically are treated as DPG 5 (unprotected). The issue of there being differential grades applies to the Department's coverage zone, as shown in the table from p. 105/187 of the PG Review:

SUB DISTRICT(S)	DPG 1985	DPG 2013	COMMENTS
Prince George - F.S.#1 - HPA[7] Prince George - F.S.#2 - HPA Prince George - F.S.#3 - HPA Prince George - F.S.#4 - HPA	1	1	Hydrant Protected – Personal Lines insured properties within 300 m of a fire hydrant on the City of Prince George water system and within 8 road km of a Prince George Fire Hall.
Prince George - F.S.#1 Prince George - F.S.#2	3B	4	Fire Hall Protected – Personal Lines insured properties not within 300 m of hose lay of a hydrant on the City of Prince George water system but within 8 road km of Prince George – F.S.#1 and F.S.#2
Prince George - F.S.#3 Prince George - F.S.#4	3B	3B	Fire Hall Protected – Personal Lines insured properties not within 300 m of hose lay of a hydrant on the City of Prince George water system but within 8 road km of Prince George – F.S.#3 and F.S.#4
Areas beyond 8km road response distance	5	5	Unprotected – Personal Lines insured properties not within 8 road km of a Prince George Fire Station

Table 11

Residential properties which are not within 300 metres of a hydrant (but are within 8 km. of a fire hall) receive a semi-protected rating. Residential properties which are more than 8 km. from a fire hall are treated as unprotected.

PFPC Rating: The PFPC rating, which is determined at the same time as the DPG rating, is based on similar factors. The impact of an improved classification varies with the industry and higher risk industries often enjoy greater savings at certain levels – for example, as the PFPC rating improves from 8 to 7.[35] Table 8 above, excerpted from the PG Review, shows the approximate effect each rating improvement will have on commercial insurance rates.

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[34] This distance can be extended to 600 metres if a department is qualified by FUS as capable of "large diameter hose-lay". See: FUS, *Accreditation of Alternate Water Supplies for Public Fire Protection* (December 2010), at http://www.fireunderwriters.ca/doc/FUSBulletin-2010.12.10-AlternativeWaterSupplyAccreditation.pdf, accessed on 25 March 2014.

[35] Based on other FUS reviews, where for one department's area, industry classified as "Manufacturing (Wood)", showed a 17% insurance cost saving when moving from a PFPC 8 to PFPC 7, which contrasted with only 3 – 4% savings enjoyed by less risky undertakings.

The following factors or areas of assessment are integrated into the PFPC analysis: [36]

1. Fire Risk, including analysis of required fire flows for individual buildings, building groups and zones of similar risk (Fire Flow Demand Zones) of the community;
2. Fire Department, including apparatus, equipment, staffing, training, operations and geographic distribution of fire companies;
3. Water Supply system, including source to distribution analysis, redundancy factors, condition and maintenance of various components, and storage volume;
4. Fire Prevention and Fire Safety Control programs, including public education, codes/bylaws implementation and use of codes/bylaws in managing the level of fire risk throughout communities; and
5. Emergency Communication systems, including telephone systems, telephone lines, staffing, and dispatching systems.

The PFPC rating is essentially a benchmarking against various standards or requirements in each category and in relation to other communities.

For a commercial property, the application of the rating system depends on the distance from the fire hall and, in hydrant protected areas, distance from a fire hydrant. This can result in "split ratings" for a fire protection area. The FUS describes split ratings as follows: [37]

> "In many communities, FUS develops a split classification (for example, 5/9). Generally, the first class, (Class 5 in the example) applies to properties insured under Commercial Lines within five road kilometres of a fire station and within 150 metres of a fire hydrant. The second class (Class 9 in the example) applies to properties insured under Commercial Lines within five road kilometres of a fire station but beyond 150 metres of a hydrant. FUS assigns Class 10 to properties insured under Commercial Lines that are located beyond five road kilometres from the responding fire station."

It should be noted that newer FUS reviews, in addition to introducing more detailed ratings, are increasingly focusing on fire prevention, fire education and the importance of bylaws which support good fire protection practices (e.g., sprinklering requirements, a well-considered fire inspection program, etc.).

In the Prince George Review, the Department received the following PFPC ratings:

[36] From: Fire Underwriters Survey website, "How the PFPC grading system works", at http://www.fireunderwriters.ca/pfpc_e.asp, accessed on 1 February 2015.

[37] From: Fire Underwriters Survey website, "Split Classifications", at http://www.fireunderwriters.ca/pfpc_e.asp, accessed on 1 February 2015.

SUB DISTRICT(S)	PPFC 1985	PFPC 2013	COMMENTS
Prince George - F.S.#1 - HPA[6] Prince George - F.S.#2 - HPA Prince George - F.S.#3 - HPA Prince George - F.S.#4 - HPA	4	5	Hydrant Protected – Commercial Lines insured properties within 150 m of hose lay of a hydrant on the City of Prince George water system and within 5 road km of a Prince George Fire Hall.
Prince George - F.S.#1 Prince George - F.S.#2	9	9	Fire Hall Protected – Commercial Lines insured properties not within 150 m of hose lay of a hydrant on the City of Prince George water system but within 5 road km of a Prince

Table 21 City of Prince George Fire Insurance Grading Classifications

Prince George - F.S.#3 Prince George - F.S.#4			George Fire Hall.
Areas beyond 5km road response distance	10	10	Unprotected – Commercial Lines insured properties not within 5 road km of a Prince George Fire Hall.

Table 12

Although the Department's score only qualified it for a PFPC 5 rating, the Fire Underwriters conditionally granted a PFPC 4 while the Department sought to address the issues raised in the PG Review. This conditional rating was initially granted by letter dated 18 February 2014; it was extended for a further year by a letter dated 19 February 2015.[38]

The conditional nature of the PFPC rating makes addressing the issues raised by the Fire Underwriters a matter of some urgency.

As noted above, the leverage effect which results from the application of the "divergence penalty" means that improved scores in the various areas of assessment of Fire Department operations will have the most impact on the overall score.

The Department's final scores (unadjusted for any errors in the PG Review), are shown in table 18, on p.103/187 of the PG Review:

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[38] Fire Underwriters Survey to Acting Fire Chief John Iverson, "Re: Fire Underwriters Survey 2014 [*sic*] – City of Prince George" (18 February 2014); and Fire Underwriters Survey to Fire Chief John Iverson, "Re: Fire Underwriters Survey 2014 [*sic*] – City of Prince George" (19 February 2015).

Table 18 Summary of Public Fire Protection Classification Grading Areas

Area of Grading	Weight within Grading	Credit Received 2012	Relative Classifications 2012	Relative Classifications 1985	Difference in Relative Classifications
Fire Department	40	15.67	7	5	-2
Water Supply	30	22.70	3	3	0
Fire Safety Control	20	10.88	5	4	-1
Fire Service Communications	10	7.70	3	5	+2
Divergence Penalty		-5.47			
Total Credit Score		51.48			

The City of Prince George's overall credit score for the Public Fire Protection Classification in 2012 is 50.69. Table 19 indicates the credit range of each PFPC grade.

Table 13: Table 18 from the Prince George FUS Report

There is an obvious error in text under the table, which suggests the final score is 50.69, rather than the 51.48 show in the table itself. Even the latter score may have been artificially lowered through rounding errors.

However, assuming that the Department's score of 51.48 is correct, it means that it must improve by a total of 8.52 points to reach 60 points overall, which translates into a PFPC 4 rating. The following table shows approximately how many points in each separate category need to be scored in order to achieve a final score of 60 (assuming, for the sake of illustration, that one were to improve in only a single category of assessment).

Category	Final scoring effect of a 100 point increase/category	Total final scoring points required to get to 60	Improvement required in each category to get to 60
Fire Department	~3.06		279
Water Supply	~0.88		969
Fire Prevention	2.00	8.52	426
Communications	2.00		426

Table 14

Note: it is not possible to achieve a final score of "60" through increases solely in the water supply category (there's not enough point left to be gained in the category). Similarly, the 426 points would need to be shared between "Fire Prevention" and "Communications", unless the Department was able to score a nearly perfect score in "Fire Prevention". There are not enough points left in the Communications category alone to achieve the final score of "60" (even if the Department was able to raise its rating to 100% in this area).

As can be seen in the table above, **from the perspective of improving the PFPC rating**,[39] the Department would do well to concentrate on issues related to the Department's operational rating. Secondarily, they can also seek to improve in either the Fire Prevention and/or Fire Communications assessments. Based solely on the Fire Underwriters' scoring system, there is little or no benefit to putting extra work into improving the water supply system.

In-Service Training and Certification

Applicable Standards[40]

Office of the Fire Commissioner – Training Playbook

On 14 October 2014, the Office of the Fire Commissioner (the "OFC") issued a new training standard applicable to the training of fire services personnel in the province. This new standard, entitled: *British Columbia Fire Service Minimum Training Standards: Structure Firefighters – Competency and Training Playbook* (September 2014) (the "Playbook"), was issued pursuant to and approved by the Minister of Justice under paragraph 3(3)(b) of the *Fire Services Act* (B.C.). The Playbook replaces the previous minister's order on training and is binding on all "fire services personnel" in the province.[41] The previous minister's order, MO-368 (December 2002), has been rescinded. A second edition of the Playbook was released, with some material updates and clarifications, in May 2015[42].

The new Playbook contemplates that a fire department may deliver one of three possible levels of service, and establishes the principal minimum training required to qualify for each level of service:

> **Exterior Operations** – where a fire department does not undertake interior attack or rescue operations on a fire-involved structure or object, or operate in an environment that is "immediately dangerous to life and health".

> **Interior Operations** – where a fire department, in appropriate circumstances, will enter a fire-involved structure or object to undertake fire suppression activities or conduct rescue operations. Interior operations by these departments are generally to be limited to smaller structures, single family dwellings and vehicles, except where specific hazard assessments and planning have been undertaken in respect of more complex risks.

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[39] We caution that the issues raised by the Fire Underwriters do not necessarily reflect the actual strategic and operational needs of the Department, or the needs of the City (e.g., in terms of water supply).

[40] The Playbook, plus NFPA 1001 and NFPA 1021; plus any applicable NFPA standards for specialty teams and other-hazards responses as required.

[41] As that term is defined in the *Fire Services Act* (B.C.). The Playbook is not binding on fire suppression operations undertaken by Wildfire Management Branch under the *Wildfire Act* (B.C.).

[42] The Playbook requirements for each level of service are shown in Appendix 6.

> **Full Service** – a full service department is equipped, staffed and trained to provide a full spectrum of fire services.

One of the new aspects introduced by the Playbook is an explicit requirement for the "Authority Having Jurisdiction" over a fire department expressly to set the level of service that is expected to be provided by the department. The training, organization, staffing, equipment and apparatus required to support the chosen level of service will be impacted by that determination.

The "Authority Having Jurisdiction" or "AHJ" in relation to the Department is the City. As such, the City must now set – whether under bylaw or by policy – the service level that it expects the Department to provide. Presumably, the service level chosen will be a "Full Service" department. In the second edition of the Playbook, the OFC has required that each AHJ establish a service level for its department (or departments) by 30 June 2016.

One issue with the new system is the question of what standards apply to matters not covered by the Playbook itself. Although there are several indications in the Playbook itself that the NFPA standards are expected to apply to other functions (which was what was required by the previous Minister's Order on training), [43] ambiguity now exists as to the standards applicable for a wide range of firefighter training.

Given the requirements of the *Workers Compensation Act* (B.C.), which imposes a positive obligation on employers to train workers appropriately, and given that the only recognized standards that exist in North America for the training of fire services personnel are those established by the NFPA, the better approach is to assume that those standards remain applicable to the Department's operations. Should a local government choose to adopt a different standard (or no standard at all) in relation to the training applicable to other fire service functions, if an incident occurs which relates back to training issues (as occurred in the Clearwater case[44]), that local government will be faced with the unenviable task of justifying the approach that it has taken – in circumstances where, *prima facie,* there is evidence of a problem.

As such, when the City formally implements the service level standard for the Department, it is recommended that it also require that NFPA standards form the basis of all training for the operational functions undertaken and emergency services provided by the Department.

The Playbook also establishes minimum standards for individuals providing training. The second edition clarified that no third-party certification is required for in-house trainers. Rather, they must be "qualified" in the subjects or areas that they are teaching.

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[43] The second edition did not entirely clarify the matter, though it even more clearly suggests that the appropriate standards applicable to matters not yet covered, are those set by the NFPA.

[44] The death of fire fighter Chad Schapansky in Clearwater, BC in 2004 which resulted in a Coroner's report "Judgement of Inquiry into the Death of Chad Jerry Schapansky". This report found that the Clearwater fire department lacked written operational guidelines governing interior attacks; it could also produce no training records for accredited training done by the interior attack team, rapid intervention team or fire officers in charge.

Review of Current Training Levels

A determination of required training levels is based on a departments mandate and response requirements. Currently the Department provides services at the following levels and in the following priority:

- Fire Suppression – to the full-service operations level.
- Fire Prevention – fire life safety building inspections, public education and fire investigation.
- Emergency Medical Services (EMS) – to the EMR level.
- Emergency Vehicle Driver (EVD) – in-house program conducted through the International Academy for Professional Driving (IAPD).
- Vehicle Extrication – In-house program similar to Rescue I, Instructors to Rescuer Basics & Rescue I & II.
- Hazardous Materials Response – operations level.
- Technical Rescue – high-angle rope & confined space to operations level, swift water and ice (shore based) to operations level.
- Wildland/Urban Interface – S100 with Wildfire Management Branch[45].
- Railcar Incidents – will respond, some basic training[46].
- Aircraft Incidents – will respond, no training.
- Structural Collapse – will respond, no training.
- Trench Rescue – will respond, no training, orientation only.

Appendix 5 provides a detailed listing of our review of the Departments current training programs and proficiency criteria including those delivered in-house and those delivered by external providers.

The training division considers it necessary to develop and maintain the following programs at the same, or an improved level:

- Fire suppression.
- Fire prevention.
- Fire Officer Development.
- EVD & EVO – consider achieving the requirements of NFPA 1002.
- Technical Rescue Responses – consider increasing the training in some programs:
  - Rope Rescue – to level II (technician)
  - Confined Space – to level II (technician)
  - Haz-Mat – to level II (technician)
  - Vehicle Extrication – to level II (technician)

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[45] WMB has developed a course specific for structural fire fighters and members of the Department have now received this training.

[46] Training provided by CN Rail.

Prince George Fire/Rescue Department · Page **37** of **147**

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The difficulty in maintaining and/or increasing the level of proficiency in any area of service delivery is the challenge of maintaining these proficiencies through on-duty training.

The Department strives to meet the standards and proficiency requirements of the applicable NFPA standards for all operational skills where possible through delivery of the initial training/skills, and then the subsequent maintenance of those skills through ongoing training processes. This approach, however, is complicated due to the number of personnel on duty at any given time, and the inability to remove these members from a primary response role to permit them to conduct the necessary maintenance training.

As such, many of these training endeavors, both the initial and subsequent maintenance training are conducted on the members' 'days off' using the Accumulated Time Off (ATO) approach. This is accomplished by having the member attend work on one or more of their days off to receive the training; however, this then impacts the member's number of days off and as such is often not an option, and therefore the sessions are not well attended.

This approach also relies on the trainers working on their day off to conduct the training. Training sessions are a half-day so that member can then work their night shifts; if they were trained the whole day, they would need to have the night shift off.

Without additional funding to support training to recognized levels of proficiency, in the form of training personnel and time for members to train on shift, and to then maintain these skills, some programs may not be able to be maintained to the required proficiency levels. Without the funding to ensure the proficiencies are maintained, there will need to be consideration given to what training programs are to be continued at the desired/appropriate level and which should be discontinued, or have the proficiency/operational level reduced. This assessment will have to be made in line with the City's mandate for service established for the Department.

Analysis of any fire service standards applicable to the above training levels required to achieve the Department's response requirements must also consider any WorkSafeBC requirements.

The applicable standards and associated requirements for training and development should include the following:

- The Playbook – Training requirements for Full Service Department Operations Level;
- NFPA 1001 for Firefighter training (level II recommended);
- NFPA 1021 for Fire Officer development; and
- Emergency Medical Services (EMS) – to the training to the EMR level.

For specialty teams and other hazard responses required, the following training levels are suggested:

- Emergency Vehicle Driver and Operator (EVD & EVO) – NFPA 1002.
- High-Angle Rope Rescue – operations or technician level,
- Confined Space Rescue – operations or technician level,

- Trench Rescue – operations or technician level,
- Hazardous Materials Response – operations or technician level,
- Swift Water & Ice Rescue – operations or technician level,
- Vehicle Rescue/Auto Extrication – operations or technician level,
- Wildland/Urban Interface – S100.

In terms of the OFC Playbook, the Department is a Full Service Operations department and as such must meet the following two training requirements:

- Firefighter training – FF-I & II NFPA 1001 Standard and Hazardous Materials Operations Level NFPA 472.

- Fire Officer development – Fire Officer I (FO-I) NFPA 1021 Standard, Fire Service Instructor I (FSI-I) NFPA 1041 Standard, and ICS 200 (an integral part of FO-I)

The Department currently meets these two requirements for Firefighter and Fire Officer training. In addition, the Department currently meets and exceeds industry standards for training for the provision of Emergency Medical Services (EMS).

As can be seen in Appendix 5, the area of training for the various technical rescue responses and more specifically the requisite of on-going maintenance training, is proving difficult for the Department. Currently, while members are proficient in the specialty rescue areas such as high angle or swift water rescue when initially trained, their skills will lessen if not practiced on a regular basis. This is in part due to the problems faced by the training division having to scheduling members on their days off for re-occurring training (discussed earlier). It is imperative that if the Department is mandated to provide a specific rescue service, that a corresponding training budget is approved to ensure that the required training can be provided.

We would recommend that the Department undertake an internal review of all rescue services currently provided to determine: 1) If the service needs to be provided by the Department, 2) The required training levels necessary to provide that service, 3) The actual funding needed to provide that service including equipment, initial training and on-going maintenance training. Once these questions have been answered, the Department should seek appropriate approval and funding from Council.

The Department currently maintains its training records in its FDM records management system, and has done so since 2009. Prior to 2009 all training records were tracked either through hard copy files or using in-house designed spreadsheets. The training officer openly admits that the Department's training records prior to 2009 were not well maintained and as such they would be hard pressed to produce accurate individual records on some members' past training. The current training records are electronically tracked by individual firefighter, on a per fire hall, per shift basis. Retrieval of training data is considerably easier under the new system. The Training Office does not currently track the dispatchers' training or that of the fire

prevention office in the FDM system, although the setup of this process is currently underway. The training division does not train fire prevention officers or dispatchers.

When setting up a training records system, whether a commercial database like FDM or a hard copy filing system, it is important to understand the purpose of a training record. While it is important to record what training a member has received, it is equally important to be able to determine what training an individual has not had or has not had for a long time. The importance of maintenance training, or reviewing what has been learned in the past, cannot be overstated. In addition, as training programs change it is important to ensure you can track who has and who hasn't had the updated program. The Department is currently reviewing their records system to ensure it will meet their needs into the future.

There is not a record currently of what every person should have, as opposed to what they actually have. There is a regular training schedule for each date; mostly skills maintenance, but this could be expanded to record this on a year by year basis for each individual.

There are gaps between when a member is hired initially to when they are trained / confirmed as an officer. There are yearly performance appraisals conducted by the captains who will identify any gaps, however these are not recorded in FDM. The recertification frequency is not identified for all programs. Some is mandatory, where others to be determined by the department. The present goal for the changes is to ensure consistency and objectivity in the recording of all training for all members.

Recommendations for changes to existing training programs, including content, proficiency criteria, and method of delivery; as well as for any additional training programs not currently in place.

Our recommendations are as follows:

Recommendation: Consideration should be given to improving the training facilities. (currently fire hall setting) This should include a dedicated Department training site (possibly located in the industrial area) to simulate scenario-based common types of incidents and allow for live-fire exercises. The site should also include training rooms, required training facilities/equipment and outside props.

Recommendation: Currently most of the training provided is for firefighters; more should be provided for the fire officers. Tailor the curriculum for the positions.

Recommendation: We would recommend that the Department undertake an internal review of all rescue services currently provided to determine: 1) If the service needs to be provided by the Department, 2) The required training levels necessary to provide that service, 3) The actual funding needed to provide that service including equipment, initial training and on-going

maintenance training. Once these questions have been answered, the Department should seek appropriate approval and funding from Council.

Recommendation: To ensure competency is maintained, an annual skills maintenance training plan including evaluation models should be developed. The plan should encompass all aspects of firefighter and officer training including those skills required for specialty teams.

Recommendation: The current system of training members on their days off and accumulating days off is not working. Members are not required to attend training sessions and as such training in several specialties is often suffering (e.g., high angle and water rescue). The Department continues to respond to these events albeit with members who are not always trained as well as they need to be. This is a safety issue for both the members and the public they serve. Serious consideration should be given to either fully funding the required training or to cease providing (or significantly limit) the service.

Recommendation: That the Department consider more web based on duty training.

Fire Inspection Intervals and Code Compliance; Public Education

Prince George Fire Rescue – Fire Inspection Cycle

When the work with the Department on this section was originally undertaken, the inspection regime that applied was that prescribed under sections 26 and 36 of the *Fire Services Act* (B.C.) (the "FSA"), which required the "regular" inspection of commercial and public buildings. Subsection 26(1) of the FSA provided as follows:

> "A municipal council must provide for a regular system of inspection of hotels and public buildings in the municipality."

This obligation is then largely duplicated in subsection 36(3).[47] Since this section of the report was initially prepared, a new *Fire Safety Act* has been passed by the Province.[48] This new act will require the Department to review and potentially revise its approach to fire inspections. The impact of the new statute is considered at the end of the section on Fire Investigations, below. In terms of the recommendations, one issue to note is that the Office of the Fire Commissioner is supposed to establish standards for individuals conducting "Fire Safety Inspections" under the new act. It is not known, at this time, what those standards will be, or how they may affect duty crew inspections.

This section examines the current mandate and responsibilities of the Department's Fire Prevention Branch and identifies the principal challenges it faces in meeting its existing responsibilities, including the fire inspection schedule.

The Fire Prevention Branch (the "FPB") is currently approved for four FTE[49] positions: a Chief Fire Prevention Officer (the "CFPO")[50] and three full time inspectors.

As part of this project, the mandate for the FPB was formally identified and documented, based on the responsibilities historically assigned to this section and the collective job descriptions. This review showed that the FPB has a broad mandate covering the following matters:

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[47] Subsection 36(3) requires the regular inspection of "buildings" as defined in subsection 36(1). The terms "hotel" and "public buildings" are defined in section 1 of the FSA. There is substantial overlap between the two sections and various defined terms.

[48] *Fire Safety Act*, SBC 2016, c. 19. The act passed third reading on 28 April 2016 and received Royal Assent on 19 May 2016.

[49] "FTE" - Full time equivalent

[50] The CFPO is an Assistant Chief-equivalent position.

- Operation of a regular system of inspection of public buildings in accordance with the requirements of ss. 26 and 36 of the FSA and the Department's service and establishment bylaw (the "Bylaw")[51];

- Conducting fire investigations in accordance with the requirements of s. 9 the FSA;

- Review of Fire Safety Plans in accordance with s. 2.8.2.1(1) of the *Fire Code*;

- Preparation of pre-incident plans for the Department for major risks to meet the requirements of the *Workers Compensation Act* (B.C.), the Playbook[52] and the requirements of the Fire Underwriters;

- Conducting inspections on complaint in accordance with the provisions of s. 21 of the FSA and in accordance with section 7.1 of the Bylaw;

- Provision of fire safety education to the public, including:

  o To at risk populations (e.g., the elderly, school children and handicapped); and

  o Other (e.g., fire extinguisher education for adults, Fire Smart, etc.);

- Training of FPB and other Fire Department members; and

- Handling public enquiries.

The FPB is not currently conducting plan checks for new construction. Plan checks ensure that new construction meets both *Fire Code* requirements, as well as the practical operational needs of the Department (e.g., appropriate clearances for apparatus, appropriate access and placement of fire protection equipment and related systems, etc.). The existing practice, which involves the Department only conducting a review when there is final check before occupancy, does not permit changes easily to be made if problems are identified. It is recommended that this responsibility be formally added to the FPB's mandate, which will necessitate additional training for FPB personnel.

Recommendation: Expand the FPB's role to include a plan check for new construction, with a focus on major commercial, industrial, public institutional and multi-family projects, to ensure compliance with the Fire Code and with the Department's operational requirements.

Following a review of the FPB's current operational approach, it is recommended that certain changes be made to the allocation of various responsibilities and duties, in particular with respect to the role of duty crews in the conduct of fire inspections. If such reallocation occurs, it

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[51] City of Prince George Fire Protection and Emergency Response Bylaw No. 8272, 2013

[52] The Playbook sets various requirements for local governments in respect of the operation of fire departments and training of firefighters and officers. One of the new requirements is the obligation to conduct pre-planning of major risks.

appears likely that, it will be able to meet the mandate as revised, though some supplemental assistance may be required to address the backlog which has built up.

Fire Inspections

The largest single responsibility for the FPB is managing the regular system of inspections of public and commercial buildings as required by the FSA and the Bylaw. The City currently has approximately 2,450 inspectable properties (the precise number varies from year to year depending on changes in occupancy, use and new construction or renovation[53]).

The FPB currently uses a three-year inspection cycle and has divided the inspections into three categories based on the property classification and the CFPO's informal discretionary assessment of risk:[54]

- Annual inspections: 646 properties;
- Biennial inspections: 901 properties;
- Triennial inspections: 902 properties.

In general, even for lower risk properties, a triennial inspection is a long cycle. The Fire Underwriters, which consider fire prevention activities as a significant aspect of their assessment of a fire department's operations, recommend that such inspections occur at least annually.[55]

This system generates some 4,191 inspections triennially, averaged over any two inspection cycles,[56] or about 1,400 inspections per year. There are 26 broad categories in a fire inspection under which a deficiency can arise. The FPB, however, only conducts a re-inspection in relation to deficiencies noted in six of those categories: water supply/hydrants; standpipes and hoses; sprinklers; fire pumps; fire alarm systems; and fixed suppression systems. If deficiencies are noted in other categories, the owner is directed to correct the problem, but follow up only occurs at the next inspection cycle for that property.

In addition to conducting inspections, the Department's inspectors are responsible for undertaking various other activities required to meet the FPB's mandate, including fire investigations, public education, fire safety plan reviews and managing the inspection schedule of the duty crews.

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[53] By way of example, when the Fire Underwriters prepared conducted its survey in 2012 – 13, data for 2011 showed 2,643 inspectable properties in the Department's database. See: FUS Review, p. 59.

[54] The numbers are based on the most current list of inspectable properties, which totals 2,449 inspectable properties.

[55] See the discussion of the Department's fire inspection program at pages 59 – 62 of: Fire Underwriters Survey, *City of Prince George: Fire Protection Services Study* (Final: 2013). For its overall fire prevention program, the Department scored only 229 out of a possible 500 points. Improving this score is important to retaining the City's existing commercial fire protection (PFPC) rating.

[56] The biennial inspection cycle generates 1.5 inspections for each property in that category in any given three year period.

Using the data from the 2010 – 2014 period, when the Department had two full time fire inspectors operating, each inspector completed on average about 290 inspections per year. However, one inspector was focused more on conducting inspections than other aspects of the role. That individual completed an average of some 350 inspections and re-inspections per year. His rate of inspection has fallen in 2015, as his duty mix was shifted to include more responsibility for fire safety plan review. At his present rate of completion, it is expected he will conduct some 300 or so inspections in 2015.

The use of duty crews in the conduct of inspections is typical for most career departments. There are excellent operational and efficiency reasons for this approach: by having the fire crews conduct the inspections of local businesses, members become familiar with the buildings in their response zones, which will help increase effectiveness if an emergency response is required. It also provides an opportunity for the crews to meet business owners and members of the community, improving the connection between the Department and the residents of the City. Finally, for most of the lower risk categories of buildings – in essence, everything that the FPB has currently categorized as requiring a biennial or triennial inspection – the inspections are generally straight forward and easily managed by the crews. This work can be conducted as part of their regular duties (many departments schedule specific days for such inspections, subject obviously to any emergency calls), reducing the need to increase staffing in the FPB. Typically, buildings in the following occupancy categories are or should be assigned to duty crews, unless special circumstances warrant having the work covered by an FPB member:

While a certain portion of the inspections are assigned to duty crews, the numbers of such inspections is low compared to other career departments. Over the course of the 2012 - 2014 calendar years, the duty crews averaged some 360 inspections and re-inspections annually, divided between Halls 2, 3 and 4, with Hall 2 handling approximately one-half of that total and the balance being divided between Halls 3 and 4. As of 1 July 2015, duty crews in Hall 1 also will begin undertaking inspection duties.

The current inspection workload for duty crews is as follows (based on all four shifts being assigned inspection responsibilities):

Hall	Number of Inspections/Year	Inspections/Shift/Month
2	180	4.5
3	90	1.875
4	90	1.875
Total	**360**	

Table 15: Inspections by Fire Hall

As can be seen, each shift in Hall 2 only is required to manage 4.5 inspections a month with the other halls managing fewer than 2. This contrasts with other departments, where it is not unusual to see 20 inspections/month required for each shift.

We would recommend that frequency of inspections be increased so that all inspections occur at least annually, and that more inspections be assigned to duty crews. All four shifts in each of

Halls 1 and 2 (where most of the inspectable properties are located) would be involved. At Halls 3 and 4, only Shifts A, B, and C would undertake inspections. The "D" Shift at Halls 3 and 4 would have responsibility for preparing certain categories of pre-incident plans (discussed in the next section below).[57]

Hall	Number of Inspections/Year	Inspections/Shift/Month
1	768	16
2	768	16
3	216	6 (A, B & C Shifts only)
4	216	6 (A, B & C Shifts only)
Total	**1,968**	**Would include re-inspections**

Table 16

The bulk of the inspectable properties are located within the coverage zones of Halls 1 and 2. As crews rotate between the halls, the workload will balance out between them.

The inspection frequency also should be considered. By transferring responsibility for the lower-risk inspections to the duty crews, it should be possible to increase the inspection rate of high hazard industrial undertakings.

Recommendation: The FPB requires a full complement of active staffing to meet its mandate and ensure the City meets its statutory obligations under the FSA. The Department should review whether some additional assistance is required to address the existing backlog in inspections.

Recommendation: The Department should review the conduct of fire inspections by duty crews and increase the number of inspections and reinspections that are assigned to such crews.

Recommendation: With the increase in the number of inspections by duty crews, the FPB should review the inspection frequency. The goal should be to ensure that all inspectable properties are reviewed at least annually; where possible, the highest risk properties should be reviewed more frequently.

Fire Investigations

Fire investigations are required to be conducted under section 9 of the FSA. The FPB investigates any fire which results in death, injury, serious property loss or where there are suspicious circumstances (typically on request of the RCMP). The CFPO is the primary

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[57] The table below offers an example only of how the inspections could be assigned. The FPB will need to review the locations of the properties which can properly be assigned to duty crews and make an allocation accordingly.

investigator in the current structure, with the full time inspector conducting investigations when requested by the CFPO. Both are fully trained investigators.

A fire report must be submitted to the Office of the Fire Commissioner; investigation reports are logged and maintained by the Department. They are subject to request by the RCMP and, under FOI legislation, by insurers and property owners.

The Department is substantially up to date in its investigations and related reports.

New Fire Safety Act

The new *Fire Safety Act* replaces the FSA. It received Royal Assent on 19 May 2016. At a high level, this new statute will impact:

- Inspections of public buildings;
- Fire investigations; and
- Fire Chief and local government powers.

Fire Inspections

Under the new *Fire Safety Act*, the existing obligation to operate a regular system of inspections of public buildings[58] is replaced by the obligation to establish a risk-based compliance monitoring system for public buildings which encompasses:

- fire safety inspections; and

- fire safety assessments.[59]

Following a transition period, fire safety inspections will need to be conducted by "fire inspectors" who meet the requirements specified by regulation.[60] The City is required to specify the class of persons who will act as fire inspectors[61] – a matter which will need to be addressed when the Department's establishment and operational bylaw is updated.

As part of its obligation to operate this new risk-based system, the Department will need to conduct risk assessments of public buildings. The OFC is expected to issue regulations under the *Fire Safety Act* clarifying how those risk assessments are to be conducted, but they have not yet been promulgated.

The concept of a "fire safety assessment" is new. It amounts to a "self-inspection" of a property by the owner. Under the existing *Fire Services Act*, there has been some uncertainty about whether self-inspection systems complied with the statutory requirements. It will be up to the City to determine which public buildings are to be permitted or required to conduct self-

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[58] *Fire Services Act* (B.C.), ss. 26 and 36.

[59] *Fire Safety Act*, s. 20. The term "public buildings" is defined in s. 1.

[60] *Fire safety Act,* s. 8(2). The transition period is provided for in s. 53.

[61] *Fire Safety Act*, s. 8(1).

assessments, presumably as part of the overall risk analysis that must be conducted. The new self-assessment system will have to follow a form which is to be prescribed by the Fire Commissioner under the new statute.

A new Appendix 7 has been added to this report, with some suggested language for dealing with the new system in the revised bylaw.

Fire Investigations

The requirement to conduct fire investigations is prescribed by section 25 of the new *Fire Safety Act*. Under that section, the City is required to commence a fire investigation within five days of learning of a fire that has destroyed or damaged property or resulted in death or injury.   Section 23 requires the City to designate in writing persons or a class of persons as "fire investigators." As with fire inspectors, following a transition period, fire inspectors must meet the training requirements specified by regulation.[62] Those regulations have not yet been promulgated.

Powers and Authority

Under the *Fire Services Act*, powers and authority were granted principally through the mechanism of appointing fire chiefs as "local assistants to the fire commissioner".[63] In a municipality, the fire chief automatically became the local assistant. The role of local assistant, however, has been abolished.[64] In place of the powers granted to local assistants, the new statute:

- grants a fire chief (or designate) the power to order a tactical evacuation where he or she "believes that there is an immediate threat to life due to a fire or explosion";[65] and

- deems "fire chiefs," "fire investigators" and "fire inspectors" to be peace officers for the purposes of the new act.

Certain other powers are granted to both fire inspectors and fire investigators to conduct their inspections or investigations (e.g., entry on property, ability to make orders, etc.). In addition, local governments are granted the power to order a "preventive evacuation" where the local authority "believes that conditions exist on or in the premises that fire on or in the premises would endanger life."[66]

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[62] *Fire Safety Act* s. 23(2); the transition period is provided for in s. 53.

[63] *Fire Services Act*, s. 6.

[64] Under s. 55 of the *Fire Safety Act*, local assistants are required to return their badges within three months of the new statute coming into force (so, by 19 August 2016).

[65] *Fire Safety Act*, s. 13.

[66] On fire inspectors' powers, see ss. 10 and 11; on fire investigators' powers, see s. 26. The power of a "local authority" to order a preventive evacuation is set out in s. 14 of the *Fire Safety Act*.

Fire Safety Plan Reviews and Pre-Incident Planning

In practice, most commercial properties and public buildings are required to prepare a fire safety plan which conforms to the requirements of the *Fire Code*.[67] The required contents of the fire safety plan vary with the risks involved: where there are greater risks, the fire safety plan is required to cover more issues in greater detail. Under the *Fire Code*, the Department is required to "cooperate" with property owners in the development of fire safety plans.[68]

A separate, but related issue is the need to develop pre-incident plans for major risks in the City. Proper pre-incident planning is critical to improving the effectiveness of an emergency responses and enhancing the safety of responders. In addition, the Playbook suggests that such pre-incident plan is necessary for risks larger than a standard residential dwelling. These pre-incident plans map out and identify essential information for responding crews, such as: floor plans, sprinkler connections, gas connections, electrical rooms, building exits, stairways, hazards products stored within the building etc.

The information from a pre-incident plan can be presented enroute to crews through mobile work stations and such plans also can be integrated into Department training, so that crews are familiar with the major risks in their coverage zones.

The two issues – fire safety plans and pre-incident plans – however, should not be conflated: not all properties which must have fire safety plans necessarily require formal or detailed pre-incident plans to be prepared.[69] The determination of whether a pre-incident plan is required, and the detail needed in it, involves a risk assessment by the Department.

The Fire Underwriters gave the Department essentially no credit for pre-incident planning, scoring it 9 (or 6) of 200.[70] From both an operational effectiveness and safety perspective, there are compelling reasons to undertake an immediate effort to develop pre-incident plans for the City's major industrial, commercial and public building risks. This effort also will greatly assist in improving the Departments commercial insurance rating score, thereby preserving the existing PFPC rating for businesses.

This section will consider first the issues around an effective fire safety plan program, and then discusses how work on such plans should be integrated into the development of pre-incident plans.

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[67] The properties and businesses which must prepare a fire safety plan are identified in s. 2.8.1.1 of the *Fire Code*. These requirements are reproduced in Appendix A, "Fire Safety Plan Requirements".

[68] *Fire Code*, s. 2.8.2.1(1)

[69] The 2013 PG Review likely conflates fire safety plan requirements – which are an obligation of the building owner – with pre-incident plans, suggesting that 2,178 properties require "a pre-fire plan" (p. 61). It is not clear how the Fire Underwriters determined that number.

[70] In the body of the text, the score is recorded as "6"; in the summary table at the end, the score is shown as being "9". See PG Review, p. 57 (section 7.20 "Pre-Incident Planning") and p. 96 (Table 14: FD-18 – Pre-Incident Planning).

Under the *Fire Code*, a fire safety plan is the responsibility of the building owner or occupier. A property is required to prepare a fire safety plan where certain specified conditions are met – e.g., buildings used for public assembly, buildings which are required to have fire alarms, properties where combustible fuels are stored or dangerous processes (e.g., dust-producing processes) are undertaken.[71] However, as noted above, the content of the plan varies with risk. A fire safety plan for an ordinary commercial undertaking will be relatively simple. However, for a high hazard industrial operation, it can easily run to 200 pages in length, and requires careful consideration and analysis by the business owner or occupier to complete properly.[72] The Department charges a fee of $180 for fire safety plan reviews.

As noted, the obligation to prepare a fire safety plan falls on the property owner or occupier. However, under the *Fire Code*, a fire department is required to "cooperate" with business owners in connection with the preparation of their plans. There also appears to be some confusion in industry between an "Emergency Response Plan" and a "Fire Safety Plan". The former does not meet the statutory requirements of the latter. The FPB has reported that some of the larger industrial risks in the City have submitted voluminous but inadequate fire safety plans (composed principally of their emergency response plans), which consumes substantial staff time to review. In one case, it took an inspector several days to review the submitted material and the plan was wholly inadequate.

The bylaw should be reviewed and revised to:

- Reduce the risk that Department and the City will become liable for the fire safety plans which are submitted for review;
- To ensure that the plans are submitted in a format acceptable to the Department and, for more complex risks, using electronic drawings that can form the basis of a pre-incident plan; and
- For more complex risks, where plans are being submitted that are inadequate, giving the Department authority to compel the owner or occupier to have it certified by a qualified external third party before submission or re-submission.

Recommendation: In the updating of the Department's operational and establishment bylaw, ensure that there is clear language permitting the Department to require the submission of additional information with a fire safety plan, that is necessary for pre-incident planning, and that such information is submitted in an electronic format that will enable the Department readily to develop effective pre-incident plans.

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[71] For an excerpt of the requirements, see Appendix A.

[72] Even a simple plan will run to 60 – 70 pages – though most of it is highly standardized and essentially the same from property to property. The City of Esquimalt maintains a sample plan on its website that illustrates the general content required. See: City of Esquimalt: *Fire Safety Plan* at: http://www.esquimalt.ca/files/pdf/public_safety/fire_safety_plan.pdf.

Recommendation: The Department and City should consider requiring that the most significant industrial / commercial risks, which require the most detailed fire safety plans, have their fire safety plans certified by an external third party before submission for review by the Department.

At present, out of the ~2,450 inspectable properties, the FPB is uncertain as to how many are required to produce a FSP. This makes it challenging to estimate the overall workload requirement to meet this obligation.

The Department is in transition in its records keeping approach regarding fire safety plans. It currently has recorded 291 FSPs in the RMS.

With fire safety plans provided in an appropriate electronic format, it will be easier to integrate such materials into a usable pre-plan. The FPB will need to develop and implement a usable template for such preplans, one which Department members will be able to utilize. We would recommend that work on the simpler pre-plans be assigned to the D Shifts from Halls 3 and 4. Before any pre-plan goes live – i.e., is considered available for use in an emergency response – the pre-plan needs to be checked against the building in question. Again, for simpler pre-plans, this can be done by the duty crews when conducting the regular inspections. For the high hazard industrial risks or other major commercial or public assembly risks, responsibility for confirming the pre-plan information should rest with the FPB.

Pre-plans should then be subject to review and updating as part of the regular inspection of that building.

Recommendation: The FPB identify all properties in respect of which pre-incident plans should be created, and prioritize those properties based on risk.

Recommendation: The Department should develop or acquire a user-friendly electronic template for pre-incident plans. The "D" shift crew at halls 3 and 4 should be trained to develop pre-incident plans from fire safety plan data. Duty crews should be responsible for developing pre-incident plans for simpler or more straightforward risks only, as determined by the CFPO.

Recommendation: The FPB should remain responsible for developing pre-incident plans for all major industrial, commercial and institutional risks in the City.

Recommendation: Before any pre-incident plan goes live, it must be checked through a physical inspection of the property in question. Pre-incident plans should be regularly reviewed as part of the annual fire safety inspection for each property for which they exist.

Inspections on Complaint

Conducting inspections on complaint is a statutory obligation under section 21 of the FSA. Complaints are reviewed initially by CFPO, who either delegates the issue to the inspector or

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manages the complaint himself. The FPB treats complaints as requiring immediate attention and strive to respond within five business days of receipt.

Unlike the regular system of inspections, inspections on complaint may relate to private dwellings. Concerns have been raised regarding the Department's right to effect entry onto private property to investigate complaints and related hazards. This issue should be clarified in the Department's operational bylaw. Local government has broad authority to order entry onto properties under section 16 of the *Community Charter* (B.C.); in addition, there are similar powers granted under the *Fire Services Act* (B.C.) to local assistants to the Fire Commissioner.[73] The revised Bylaw should specify the Department's power to make entry when investigating a complaint and the Department should develop clear policy for how such powers will be exercised. Where relevant, social service agencies and, potentially, the police, should be involved in appropriate situations (e.g., in connect with hoarders, or where there are issues which may present a risk to Department personnel).

Recommendation: The Department should ensure that its powers of entry for investigating fire hazards on complaint or where the FPB or Department members have a concern, are clearly set out in the revised establishment and operational bylaw. The Department should develop clear operational guidelines for dealing with problem properties, including coordination with law enforcement and socials service agencies, where required.

Public Relations

The Department is currently using social media (Twitter and Facebook) to communicate with the public. The Association also provides public safety information to the public.

The Department conducts safety talks with apartment owners and others but is not currently able to provide these after hours. The increased training schedule has somewhat constrained the time available for public education.

Recommendation: That the FPB be fully staffed (4 FTE's) and that personnel on long term absences are replaced on a temporary basis until their return to active duty.

Recommendation: That the FPB in cooperation with the Building Department implement a plan checking program for all new construction and major renovations in existing buildings. This may require additional training for the existing staff.

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[73] It should be noted that the powers to undertake entry under the *Fire Services Act* have been constrained by regulation, which limits the right to enter a private dwelling.

Recommendation: That the City of Prince George develop a policy whereby all lower risk properties are conducted on a bi-annual basis and that all high risk properties are conducted on an annual basis.

Recommendation: That duty crews are assigned all lower risk inspections and those higher risk inspections that the Chief Fire Prevention feels are appropriate for duty crews. Those high risk buildings not assigned to the duty crews will remain the responsibility of the FPB. This may require additional training for existing staff.

Impact of Future Development

Official Community Plan

The City of Prince George's Official Community Plan (the "OCP") is contained in Bylaw 8383 adopted June 25, 2012. The OCP notes the population of Prince George is expected to increase requiring 3,600 to 7,500 additional housing units by 2025[74].

Areas of Anticipated Growth

The OCP notes proposes a shift in terms of development away from a more suburban model to a focus on the city core, specifically.

> Past trends have seen growth concentrated on the outskirts of the urban area, drawing energy away from downtown and towards new centres, and increasing reliance on automobile transport and causing problems like high infrastructure maintenance costs, high accident-related costs, and obesity. The key issue for growth management is to focus growth closer to downtown and existing neighbourhood centres, within the context of what the market can deliver.[75]

The focus on the city core is also reflected in specific policies from the OCP, as follows[76]:

Policy 8.3.1 The City attaches a high priority to encouraging the development of downtown. As such, it should consider the effects on the downtown in the evaluation of all new commercial/retail policies or applications, resource allocation, and priorities.

Policy 8.3.2 To expand the range of single-family housing options, facilitate redevelopment of areas close to downtown, and encourage attractive development, the

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[74] OCP, page 13.

[75] OCP, page 92.

[76] OCP, page 106.

City should permit narrow lot developments within areas identified in Schedule D-5: Intensive Residential Development Permit Area. These developments require development permits and require developed lane access and a maximum of 9 m wide lot.

Policy 8.3.3 The City should allow and encourage office uses downtown, and restrict them outside the downtown. Office uses outside the downtown should be limited to those professional services that are regularly used by individuals, for who nearby access is important, such as insurance, banks, medical and dental offices. Office development in Business Districts is not supported, except where the office use is ancillary to the primary use.

In summary, the OCP proposes that growth and density should be directed to the city core, or close to it and this is one of the considerations for the level of service to be provided by the Department. The linkage to the Department is noted in Policy 13.4.30.

A Fire Master Plan should be developed for fire rescue services and consider calls for service in consideration of expected population projections to: identify any fire service deficiencies, determine feasibility for and location of a new fire hall and, identify appropriate siting criteria for such use[77].

Response Analysis

Response analysis in the fire service has two aspects. One is outlined by the Fire Underwriters (the "FUS") who set a threshold in determining whether a property can be considered as protected based on the road network. Specifically, the FUS define the limit of protection for a commercial property as being one which is within 5 Kilometers of a fire hall and for a residential property one which is within 8 Kilometers.

NFPA 1710

The other perspective is that provided by the NFPA. Their measurement criteria are time-based and are the sum of 911 call handling, time for the dispatcher to pick up the phone, the time to dispatch the event, the time for the crew to 'turnout' from the fire hall and the time to travel to the scene. This sequence is shown in Figure 8 and is from the current edition of the standard[78].

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[77] OCP, page 216.

[78] NFPA 1710, 2016 Edition, ORGANIZATION AND DEPLOYMENT OF FIRE SUPPRESSION OPERATIONS BY CAREER FIRE DEPARTMENTS.

State of normalcy
Event initiation
Discovery of event
Alarm transfer time*
Alarm answering time
Alarm processing time
Turnout time   (NFPA 1710)
Travel time   (NFPA 1710)
Initiate action/ intervention time
Control and mitigate event
Recovery
State of normalcy

Alarm handling time (NFPA 1221)

Total response time

Impacted by fire department

*If alarms are received directly at the fire department communication center and not transferred from a PSAP, alarm transfer time is zero.

Figure 8: NFPA 1710: "Cascade of Events"[79]

The specific timeframes for turnout and travel time are described in the standard as follows.

> *4.1.2.1 The fire department shall establish the following objectives:*
> *(1) Alarm handling time to be completed in accordance with 4.1.2.3.*
> *(2) 80 seconds turnout time for fire and special operations response and 60 seconds turnout time for EMS response*
> *(3) *240 seconds or less travel time for the arrival of the first arriving engine company at a fire suppression incident*
> *(4) For other than high-rise, 480 seconds or less travel time for the deployment of an initial full alarm assignment at a fire suppression incident*
> *(5) For high-rise, 610 seconds or less travel time for the deployment of an initial full alarm assignment at a fire suppression incident[80]*

The NFPA notes these should be achieved at the 90th percentile[81].

The relationship between the deployment of sufficient firefighters within a defined timeframe relative to fire loss and injury has been documented by the NFPA in the most recent standard which is applicable for a career fire department. This is shown in Table 17, and from this it can be seen that controlling a fire to the room of origin results in an average dollar loss of $2,993.

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[79] NFPA 1710, 2016 Edition, page 18

[80] NFPA 1710, page 8

[81] Ibid, page 9

Flame Spread	Civilian Deaths	Civilian Injuries	Average Dollar Loss per Fire
Confined fires or contained fire identified by incident type	0.000	10.29	$212
Confined fire or flame damage confined to object of origin	0.65	13.53	$1,565
Confined to room of origin, including confined fires and fires confined to object	1.91	25.32	$2,993
Beyond the room but confined to the floor of origin	22.73	64.13	$7,445
Beyond floor of origin	24.63	60.41	$58,431

Table 17

For fires which extend beyond the room of origin but which are contained to the floor of origin result in an average dollar loss of $7,445 while fires which extend beyond the floor of origin result in an average dollar loss of $58,421[82] as shown in Figure 9.

Figure 9: Average $ Loss / 1,000 Fires

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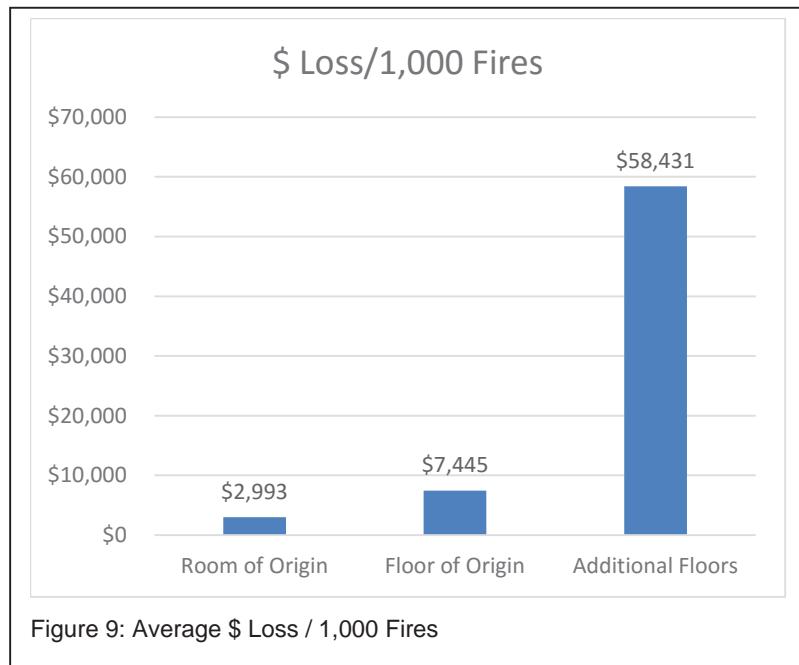
[82] The data used in this table is for the United States; there is no similar aggregation of national data in Canada.

Similarly, Figure 10, illustrates that where a fire is held to the room of origin civilian fire injuries are less than half those for a fire that extends beyond the room of origin.

In the case of fire deaths, they do not exceed 1.91 per thousand fires if the fire is held to the room of origin, but where the fire extends beyond that point there are 22.73 deaths per thousand fires.

Death and Injuries/1,000 Fires Based on Room/Floor of Origin Containment

Figure 10
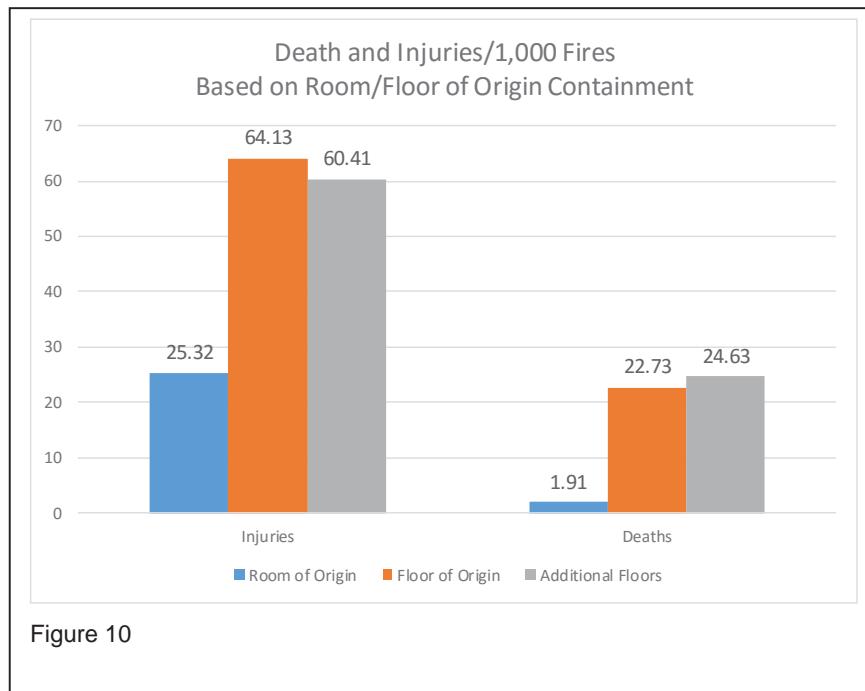
Analysis of response by the Department is for the period 1 January 2009 to 31 December 2014 and comprises 33,318 separate incidents as recorded by the Computer Aided Dispatch ("CAD") system. In their busiest month (July 2014) the Department responded to 592 incidents or one every 75 minutes on average. At peak hours up to 15 units may be dispatched, about one every four minutes.

A few notes on the use of data is in order. Emergency response data, by its very nature, is quite variable. The use of trend lines, therefore, should be treated as indicative and not conclusive. That being said, with a large enough data set, it becomes possible to identify trends or situations that are more conclusive (e.g., quietest versus busiest days of the week; busiest times for certain incident types, etc.), which can assist in Department planning. The data used was all that was reliably available from CAD: the Department can and should continue to track the various event types and analyze its data to determine whether problems are emerging or to track if (for example) specific prevention initiatives are having an effect.

The number of total incidents for the period is shown in the following graph. The trend line demonstrates a modest increase of approximately 6%.
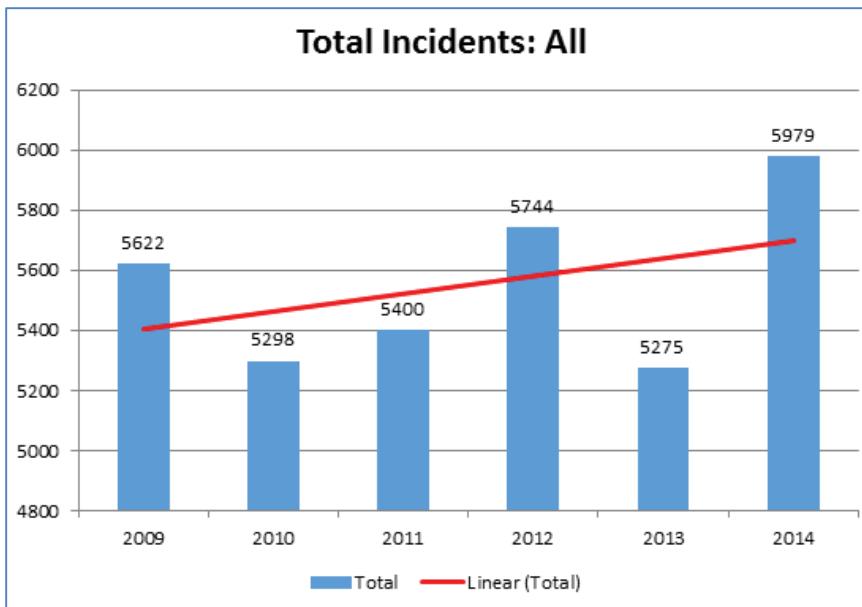
Figure 11: All Incidents (N=33,318)

The Department uses a wide range of categories for different call types. The full range of different call types is set out in Appendix 3. Where appropriate, related categories have been consolidated in the following table, which shows the Department's total response in the period from 2009 – 2014. Within this, a number of event types are showing a much more dramatic increase, some are showing relatively little change, while others are decreasing.

Incident	Count
Medical	13,439
Cancelled	7,454
Fire Alarm	2,851
Unspecified	2,434
MVI	1,702
Complaint	937
Structure Fire	625
Admin	548
Open Air Fire	546
Wildland	398
False Alarm	374
Incident not found	275
Smoke Report	274
CO Alarm	238
Vehicle Fire	227
Odour Unknown	212
Gas Leak	156
Hazmat	143

Incident	Count
Dumpster	105
Patient Not Found	86
Hydro Lines Down	75
Notification	63
Rescue	61
Transformer/Pole Fire	30
Flooding	15
Aircraft	11
Bomb	11
BBQ	9
Structure Collapse	8
Explosion	6
Substation Fire	4
911 Hang Up	1
Grand Total	**33,318**

Table 18: Incidents by Total Count

Incidents: Rising Demand

One of the incident types showing an increase is the number of structure fires as shown in Figure 12. The trend line indicates an increase of approximately 15% over the six-year period. As has been discussed above, and will be shown in a later section the average annual dollar losses for half of the period under study approached $100 million, well above other benchmark departments.
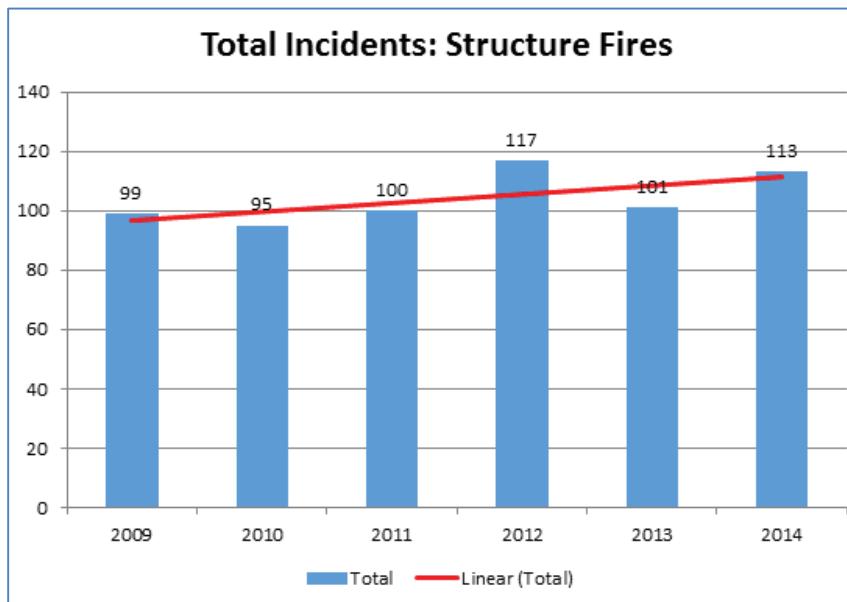
Figure 12: Structure Fires (N=625)

The number of medical/EMR responses is shown in Figure 13. This shows an interesting distribution with the two peak years being 2011 and 2012 in the range of 2,400. The years 2009 and 2010 show a lower level of responses (in the range of 2,000 per year); while 2013 and 2014 have approximately 2,200 a year.

Although it is difficult to ascertain any particular trend, in general as the population increases the medical and EMR response also can be expected to increase. In addition, with the pressure on BC Ambulance and changes to its response protocols, the Department may well find itself responding to more requests for assistance and being committed longer at some of these calls.
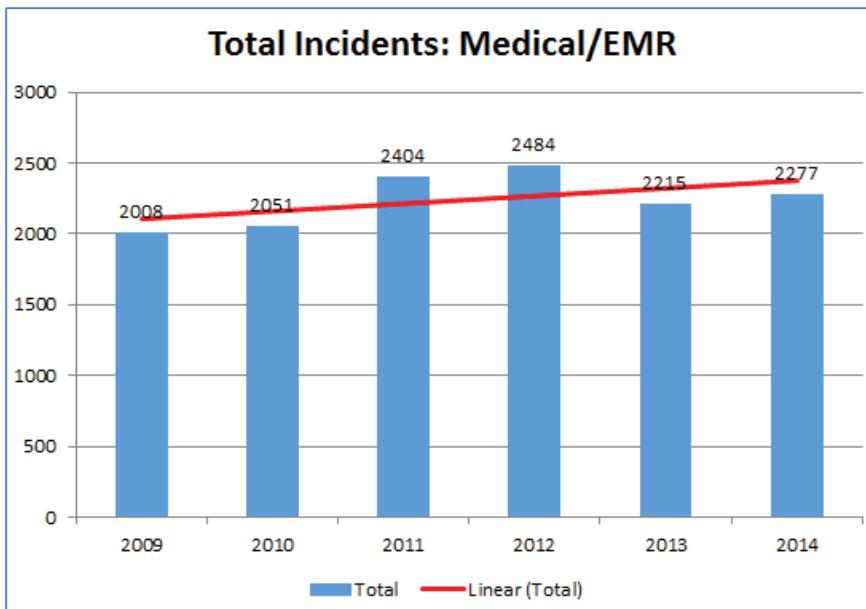
Figure 13: Medical/EMR Response (N=13,439)

The number of responses to Motor Vehicle Incidents is shown in Figure 14 and this incident type appears to be increasing over the period. If 2009 is included the trend would suggest an increase of around 15%, however without that year, the trend would be essentially flat.
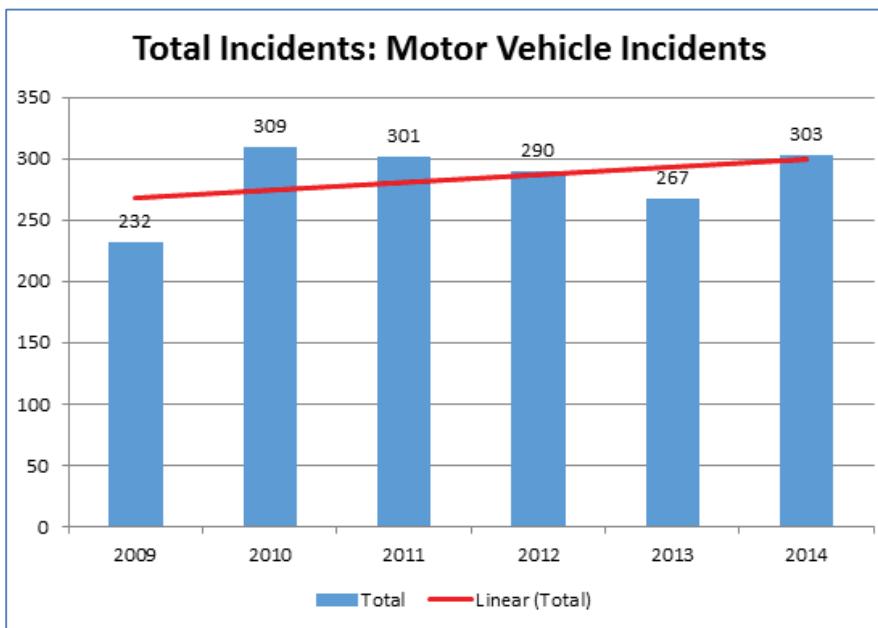
Figure 14: Motor Vehicle Incidents (N=1,702)

The number of responses for alarm system activations is shown in Figure 15 and over the period the trend line suggests an increase of approximately 15%.

Total Incidents: Alarms Ringing
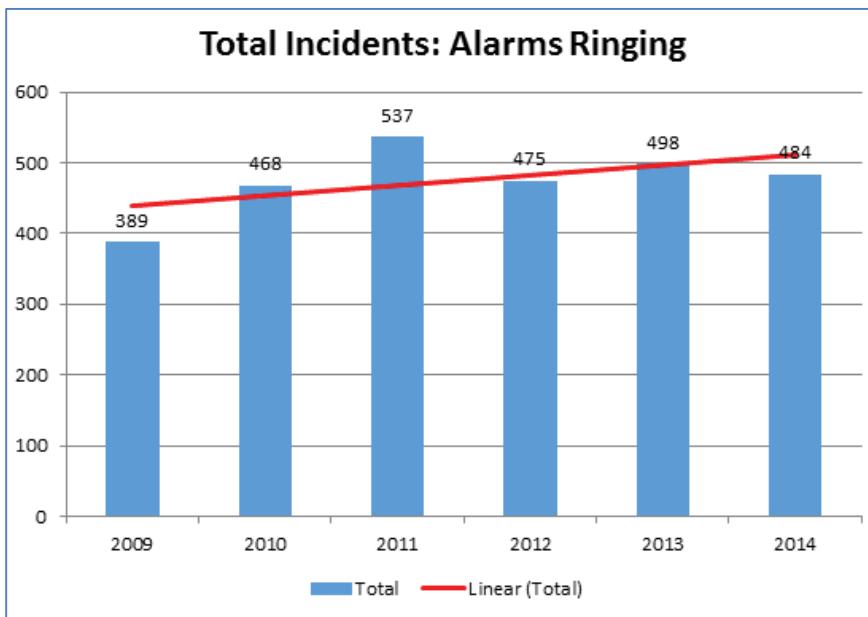
Figure 15: Alarms Ringing (N=2,851)

Incidents: Flat Demand

The number of Hazmat incidents per year is shown in Figure 16. The trend line for this period is flat however given the relatively small number of incidents (143) the data is variable and the trend may be misleading. The risks posed by these call types, moreover, are of a nature that requires significant training as well as pre-planning and coordination with other agencies (and with industry).

Hazmat incidents are high risk for both the public and for responders. With between 1.5 and 2 calls per month, depending on the year, the Department needs to ensure that its members are properly trained and equipped for managing this call type.
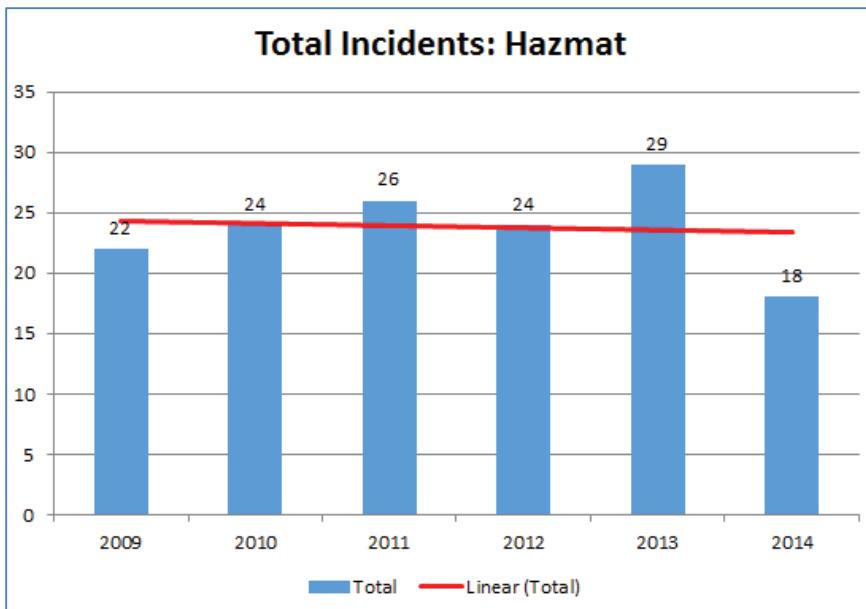
Figure 16: Hazmat (N=143)

The number of responses for a report of smoke showing is shown in Figure 17. Over the period covered by the data, the trend is essentially flat.
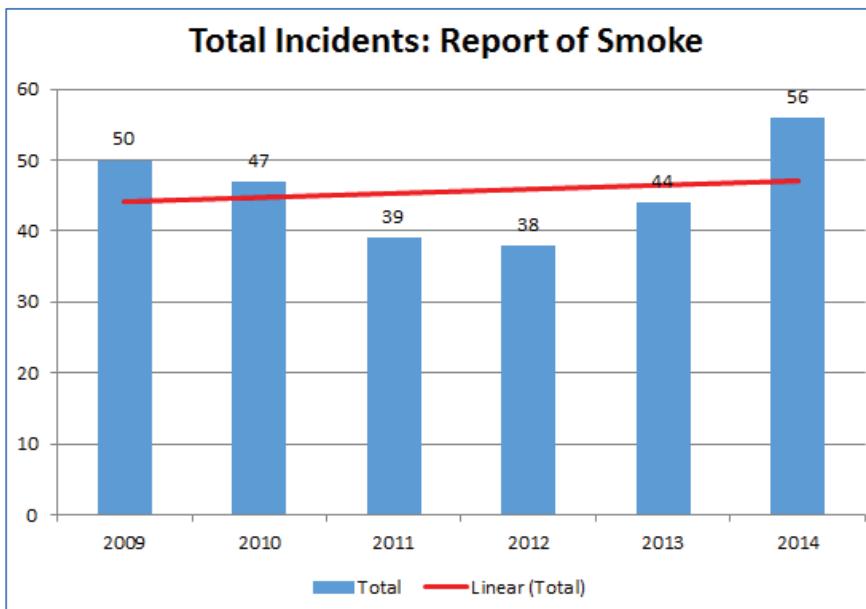
Figure 17: Report of Smoke (N=274)

Incidents: Falling Demand

A number of incidents responses show a significant decline, including fires in dumpsters as shown in Figure 18. This represents a significant decline in responses, albeit that these types of incidents are relatively infrequent overall.
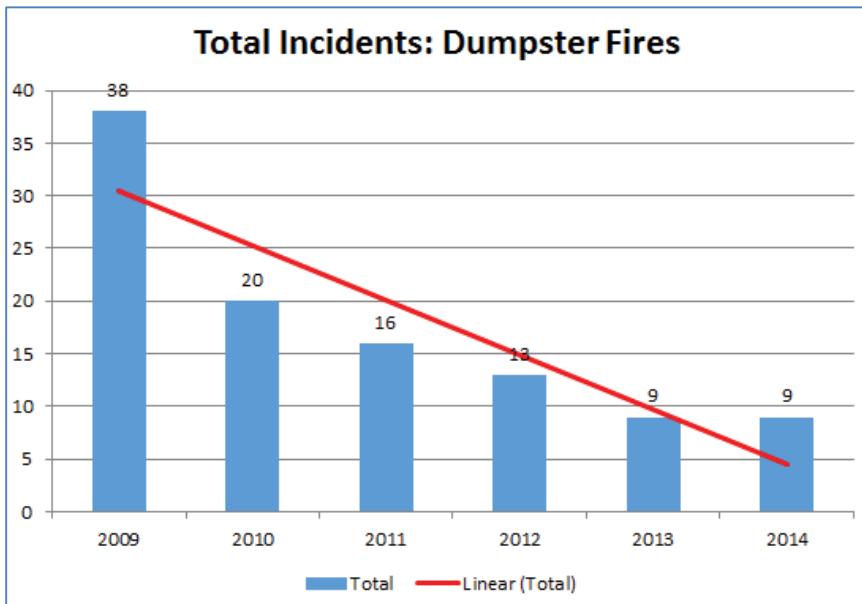

Figure 18: Dumpster Fires (N=105)

In a similar fashion, the number of false alarms shows a significant decrease over the period as shown in Figure 19 and may indicate a heightened degree of follow up by fire prevention to reduce the number of these calls for service.
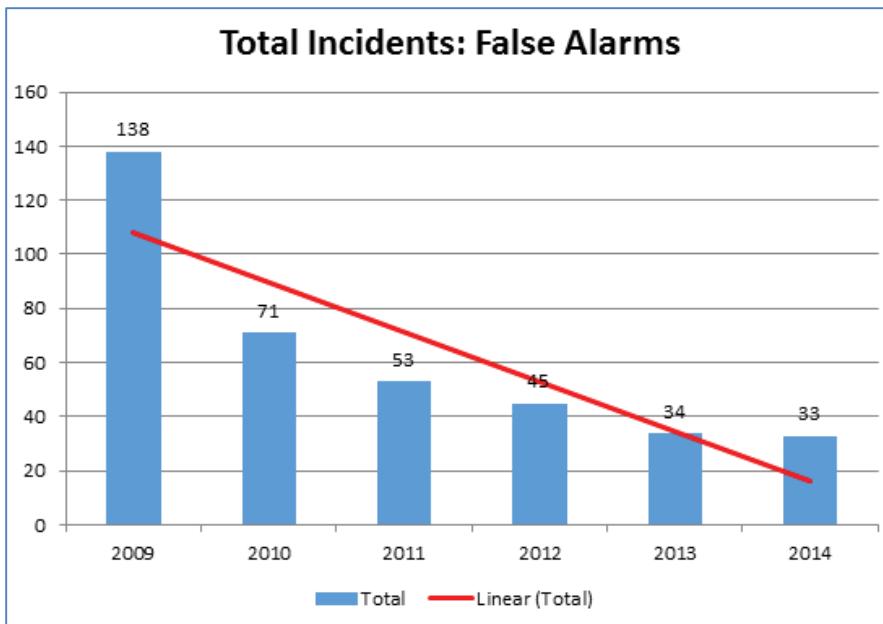
Figure 19: False Alarms (N=374)

The number of responses for vehicle fires is shown in Figure 20. This shows a significant decline, verging on 50% and this may be ascribed to a number of issues that might include somewhat safer as well as newer vehicles.
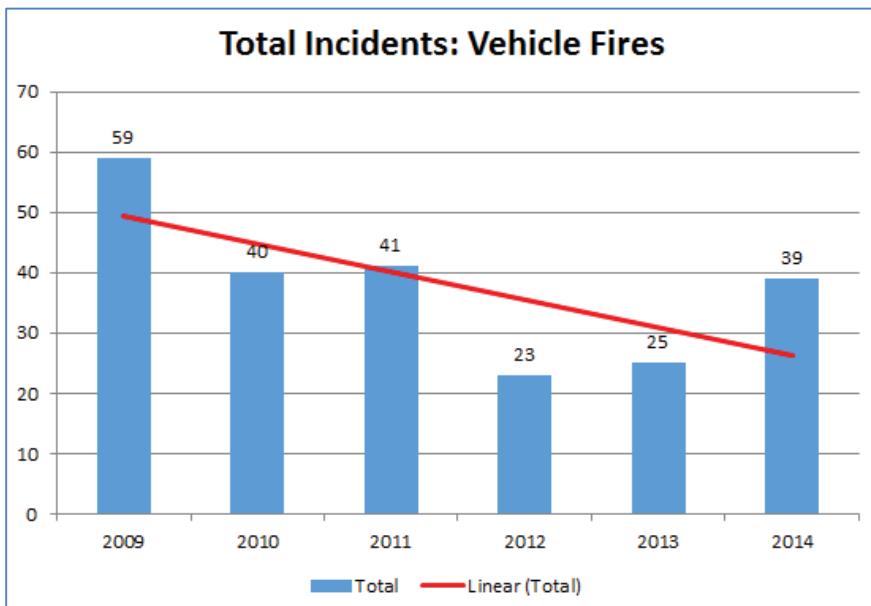

Figure 20: Vehicle Fires (N=227)

Response by Month, Day and Hour

The following section will review the Department's response by month, day and hour to illustrate the degree to which responses change during the year. In summary the Department responds

differently by volume and by type at different times of the year. Even within a single day, or a seven-day period, the Department's responses vary considerably.

Response by month is shown in Figure 21 and this shows that May is the busiest month of the year. Over the six years being reviewed, the peak months for all incidents are May, July and August. By contrast, the slowest month of the year (February) has only 75% of the call volume compared with May.

This information has value for the Department as it plans its principal activities, including major training initiatives or any other undertaking requiring a material commitment of on-duty personnel or apparatus (e.g., joint training exercises, table top exercises, etc.). Where possible these should be scheduled for months with a lower call volume as they are less likely to be disrupted by responses to active incidents.
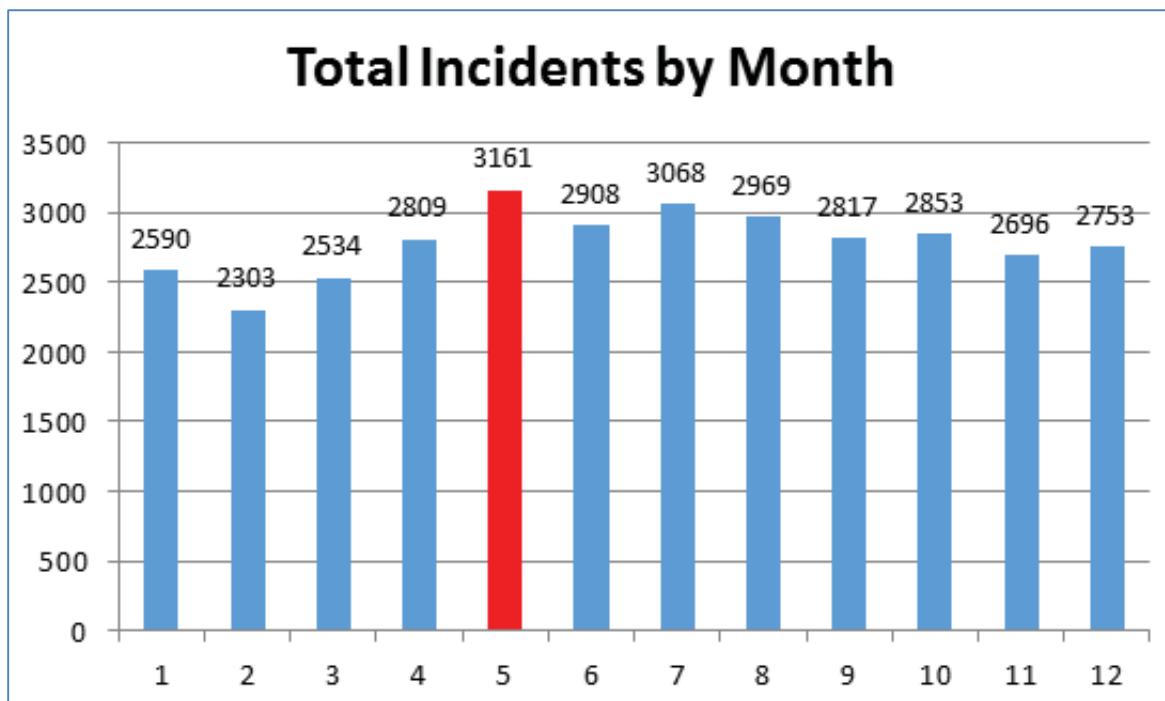

Figure 21: Total Incidents by Month

The Department's responses by day of the week are shown in Figure 22 and the result is typical of most urban fire departments, with a peak at the end of the week compared to the period Sunday through Tuesday. Similar to the previous section, the Department should consider scheduling significant training exercises, apparatus maintenance or technology changes where possible, to occur on days with a lower call volume to minimize disruption.
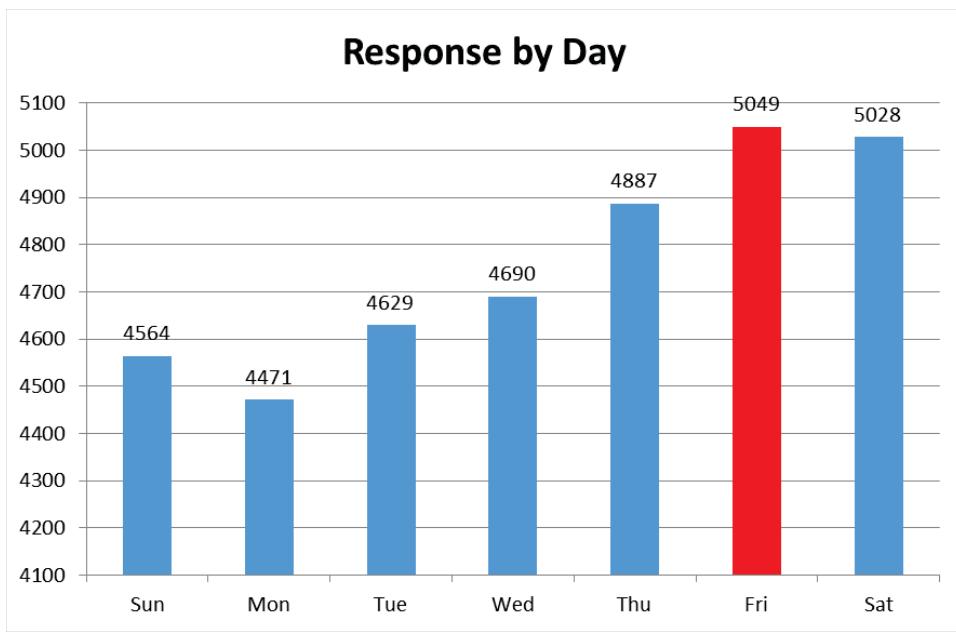
Figure 22: Response by Day of the Week (N=33,318)

Responses to all incidents by hour are shown in Figure 23. This 'curve' of responses is similar to many urban departments however the busy period from 10:00 a.m. extends longer than for most which typically see a drop off in responses around 5:00 p.m.
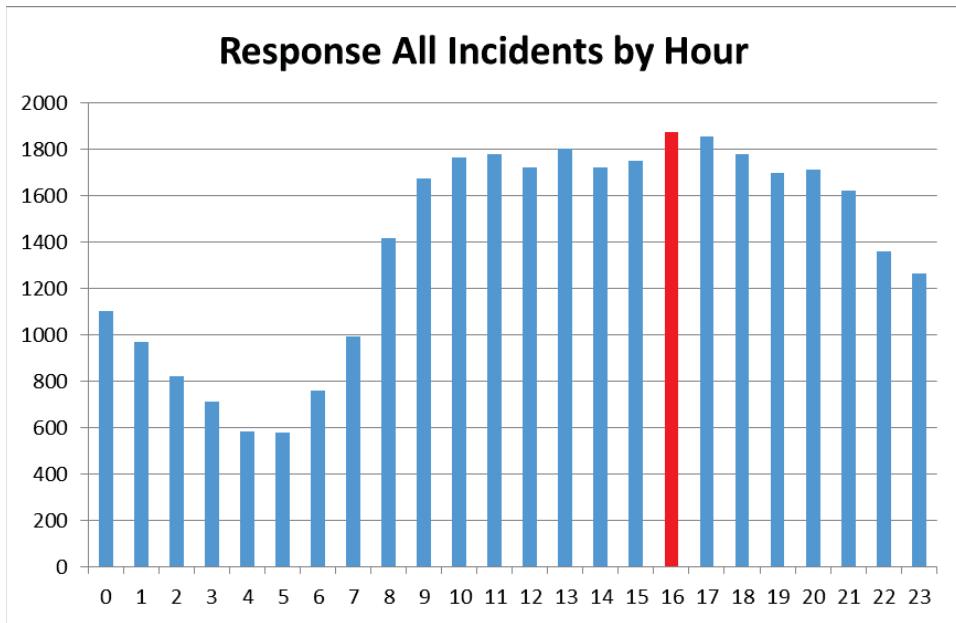

Figure 23: Response by Hour (N=33,318)

The Department's responses to incidents over a 7/24 period can be displayed in a hot spot 'map' as shown in Figure 24. This shows responses from Sunday to Saturday by hour with the count for each hour and color coded green to red by call volume from low to high.

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	High	Low
Midnight	197	126	134	142	146	141	217	1103	1103
1:00 AM	187	113	121	121	128	115	186	971	971
2:00 AM	170	95	86	85	94	112	180	822	822
3:00 AM	125	102	92	81	102	74	137	713	713
4:00 AM	118	66	63	80	62	76	116	581	581
5:00 AM	84	80	70	77	88	87	93	579	579
6:00 AM	119	80	102	104	120	111	121	757	757
7:00 AM	123	143	124	144	158	147	153	992	992
8:00 AM	119	212	252	217	251	227	139	1417	1417
9:00 AM	192	230	265	272	264	261	188	1672	1672
10:00 AM	188	248	264	288	284	276	219	1767	1767
11:00 AM	230	247	264	231	285	278	246	1781	1781
12:00 PM	234	254	206	256	252	257	265	1724	1724
1:00 PM	234	252	279	252	272	285	230	1804	1804
2:00 PM	196	268	250	249	236	257	268	1724	1724
3:00 PM	251	236	263	244	251	268	238	1751	1751
4:00 PM	257	267	256	267	297	286	244	1874	1874
5:00 PM	257	236	255	277	265	277	287	1854	1854
6:00 PM	229	246	238	256	286	267	256	1778	1778
7:00 PM	249	214	219	234	252	275	253	1696	1696
8:00 PM	252	228	248	231	236	255	263	1713	1713
9:00 PM	217	222	235	211	203	275	257	1620	1620
10:00 PM	183	161	192	170	186	229	238	1359	1359
11:00 PM	153	145	151	201	169	213	234	1266	1266
High	4564	4471	4629	4690	4887	5049	5028		
Low	4564	4471	4629	4690	4887	5049	5028		

Figure 24: Hot Spot Map--All Incidents

This heat map and the ones that follow illustrate the way in which the Department requires a dynamic deployment model. In the case of all incidents, the busiest day of the week is Friday, the slowest day in Monday; the busiest hour is from 4:00 p.m., the quietest hour from 5:00 a.m. The busiest single hour is from 4:00 p.m. on Thursday.

The number of incidents at the busiest hour is more than 300% higher than the slowest hour. The busiest day (Friday) is around 14% busier than the slowest day (Sunday).

The heat map for medical/EMR response is shown in Figure 25. In this case the busiest hours are 5:00 p.m, followed closely by 10:00 a.m. The busiest day in Saturday, the quietest day is

Monday. For this incident type as well, the busiest hour is more than 300% above the slowest hour.

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	High	Low
Midnight	89	48	50	55	64	55	91	452	452
1:00 AM	84	51	53	51	57	52	80	428	428
2:00 AM	82	40	33	35	34	39	80	343	343
3:00 AM	62	41	46	38	45	34	67	333	333
4:00 AM	45	29	24	42	30	37	53	260	260
5:00 AM	42	28	32	39	38	34	38	251	251
6:00 AM	40	24	35	41	51	36	42	269	269
7:00 AM	57	72	47	68	57	52	68	421	421
8:00 AM	54	75	100	71	89	74	56	519	519
9:00 AM	77	86	88	91	86	80	74	582	582
10:00 AM	84	105	103	121	112	115	92	732	732
11:00 AM	95	83	105	87	109	99	113	691	691
12:00 PM	97	96	84	97	110	101	101	686	686
1:00 PM	99	107	106	102	110	85	101	710	710
2:00 PM	65	86	95	95	94	91	119	645	645
3:00 PM	112	91	96	86	106	103	87	681	681
4:00 PM	84	86	99	85	133	105	92	684	684
5:00 PM	121	83	104	123	95	110	121	757	757
6:00 PM	87	93	90	115	105	113	103	706	706
7:00 PM	105	85	100	105	107	118	103	723	723
8:00 PM	113	106	103	101	104	98	102	727	727
9:00 PM	83	100	99	83	91	116	109	681	681
10:00 PM	81	71	88	85	70	96	110	601	601
11:00 PM	73	65	58	79	73	94	115	557	557
High	1931	1751	1838	1895	1970	1937	2117		
Low	1931	1751	1838	1895	1970	1937	2117		

Figure 25: Hot Spot Map--Medical/EMR Incidents

The heat map for MVIs is shown in Figure 26 and is similar to medical responses but does not have a peak in the morning hours. The busiest hours are at 4:00 p.m. and 5:00 p.m.

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	High	Low
Midnight	8	1	0	5	2	2	10	28	28
1:00 AM	3	2	4	3	4	3	10	29	29
2:00 AM	5	1	1	0	3	1	8	19	19
3:00 AM	4	1	0	1	0	3	6	15	15
4:00 AM	2	1	1	0	1	2	4	11	11
5:00 AM	4	0	3	1	5	2	6	21	21
6:00 AM	1	1	5	3	6	3	4	23	23
7:00 AM	7	6	8	7	14	14	4	60	60
8:00 AM	1	18	17	16	14	17	1	84	84
9:00 AM	7	10	11	13	11	15	6	73	73
10:00 AM	18	9	11	10	10	14	13	85	85
11:00 AM	9	14	19	17	16	20	12	107	107
12:00 PM	16	19	14	15	14	21	14	113	113
1:00 PM	12	17	15	11	15	28	13	111	111
2:00 PM	15	16	20	23	20	13	16	123	123
3:00 PM	18	17	20	14	22	25	17	133	133
4:00 PM	10	24	23	22	18	34	13	144	144
5:00 PM	17	22	30	18	24	20	14	145	145
6:00 PM	8	16	4	10	23	18	19	98	98
7:00 PM	3	7	9	6	10	15	12	62	62
8:00 PM	14	3	11	8	8	15	15	74	74
9:00 PM	6	8	9	7	8	14	8	60	60
10:00 PM	5	3	4	10	6	8	14	50	50
11:00 PM	0	2	5	4	3	12	8	34	34
High	193	218	244	224	257	319	247		
Low	193	218	244	224	257	319	247		

Figure 26: Hot Spot Map--Motor Vehicle Incidents

The heat map for structure fires is shown in Figure 27 and is quite different from the previous examples. The busiest hours are 3:00 p.m. and 7:00 p.m., the quietest hour is 4:00 a.m. The busiest day is Tuesday, the quietest day is Wednesday.

	Sun	Mon	Tue	Wed	Thu	Fri	Sat	High	Low
Midnight	2	4	2	4	1	4	1	18	18
1:00 AM	6	4	0	2	4	4	3	23	23
2:00 AM	4	4	3	0	1	8	0	20	20
3:00 AM	4	3	5	2	5	1	9	29	29
4:00 AM	2	0	2	2	0	0	0	6	6
5:00 AM	3	3	5	2	2	3	4	22	22
6:00 AM	4	1	1	0	2	3	2	13	13
7:00 AM	3	1	4	6	3	3	6	26	26
8:00 AM	3	2	6	3	7	1	3	25	25
9:00 AM	3	1	3	3	2	2	1	15	15
10:00 AM	4	2	3	1	3	0	3	16	16
11:00 AM	2	4	4	2	2	2	5	21	21
12:00 PM	6	6	5	3	1	3	6	30	30
1:00 PM	4	8	4	5	3	3	2	29	29
2:00 PM	2	3	7	5	3	2	4	26	26
3:00 PM	3	7	7	5	6	3	10	41	41
4:00 PM	6	2	7	3	5	3	5	31	31
5:00 PM	0	9	8	2	8	6	2	35	35
6:00 PM	3	4	13	1	7	5	4	37	37
7:00 PM	10	4	4	4	5	11	2	40	40
8:00 PM	3	3	6	5	5	6	4	32	32
9:00 PM	3	5	2	3	7	1	5	26	26
10:00 PM	9	3	5	8	8	2	2	37	37
11:00 PM	3	3	6	4	5	2	4	27	27
High	92	86	112	75	95	78	87		
Low	92	86	112	75	95	78	87		

Figure 27: Hot Spot Map--Structure Fires

Comparing the busiest to the quietest hour, the peak hours are 650% busier than the slowest.

The information in these hot spot maps illustrates the degree of flexibility required by the Department. The number of medical and MVI responses is certainly larger than the number of structure fires, however the latter requires a commitment of nearly all of the Department's resources to a single incident, where most medical responses require only a single unit.

In summary, the Department's responses peak on different days and at different times, depending of the incident type as shown in Table 19.

Call volume/incident	Sun	Mon	Tue	Wed	Thu	Fri	Sat
All Incidents: peak						4 pm	
Structure fires: peak			3 pm				
FMR: peak							5 pm
MVI: peak						5 pm	
Alarms ringing: peak						6 pm	
Vehicle fires: peak		5 pm	5 pm		5 pm		
Gas leak/hazmat: peak						11 am	
Electrical fires: peak		9 pm					

Table 19: Peak Occurrence by Incidents Type and Time

Response by Hall Area

The Department's responses vary greatly by hour, day and month as noted in the previous section. They also vary significantly by fire hall area with Hall 1 being the busiest with more than 52% of all responses within their immediate area.
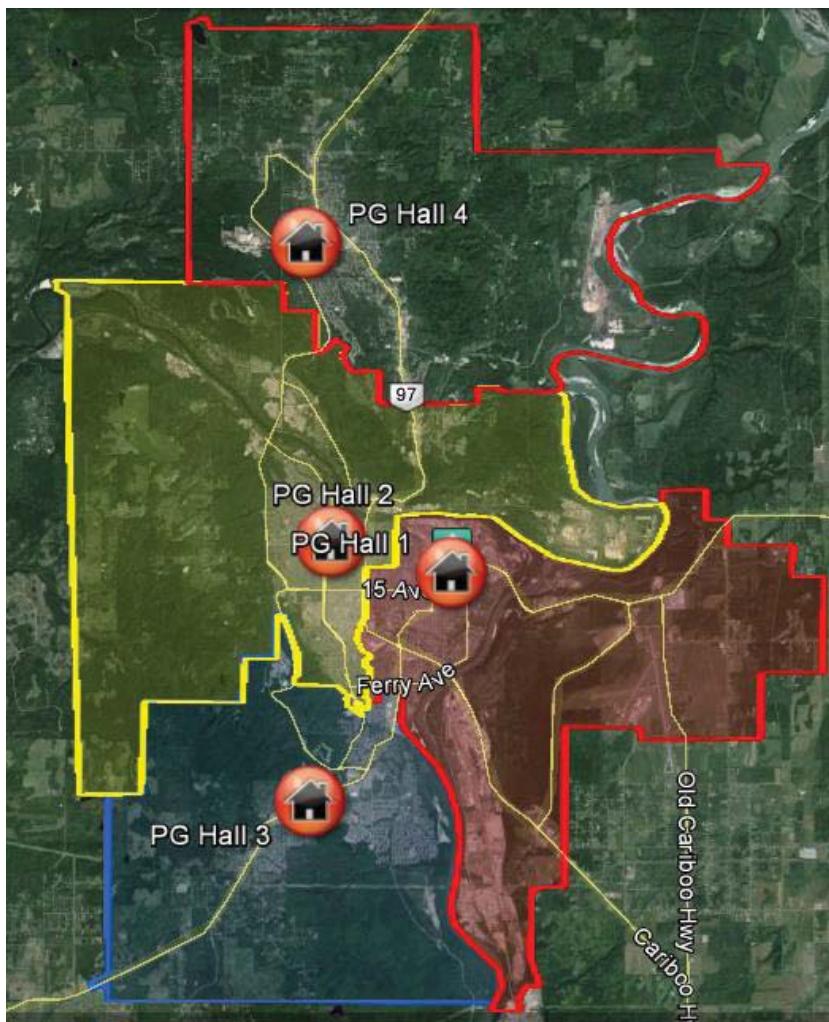
Figure 28: Prince George--4 Fire Hall Areas

The responses in Hall 1's area are shown in Figure 29 and the trend is increasing.
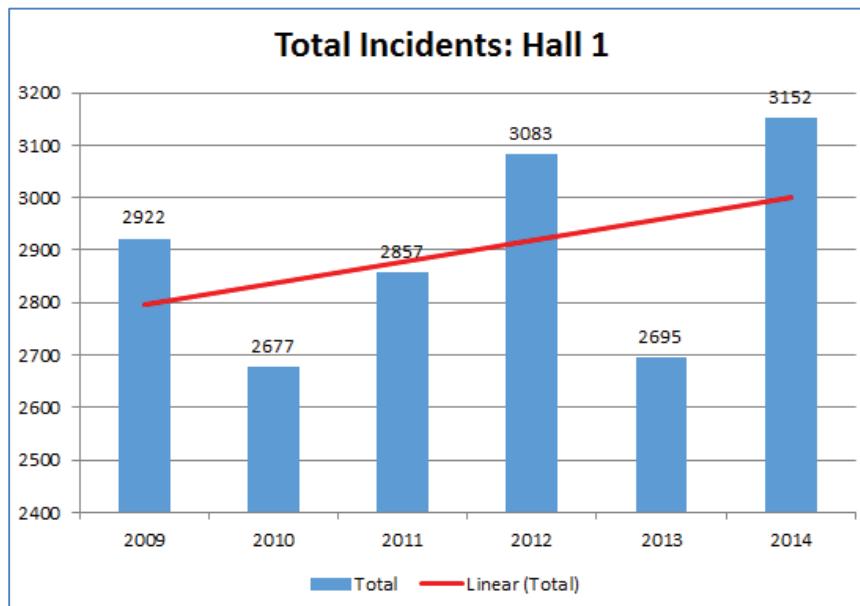
Figure 29: Hall 1 Total Responses, N=17,386

This response area includes the older, original part of the City as well as the industrial property to the south, and the area to the airport and east.

During the period the trend shows an increase of approximately 7%. Hall 1 also has the busiest fire apparatus in the Department with a utilization that is significantly higher than all other Engines.

Hall 1 is also a concern in terms of its physical condition and configuration as well as its location and this is discussed in other sections of this document.
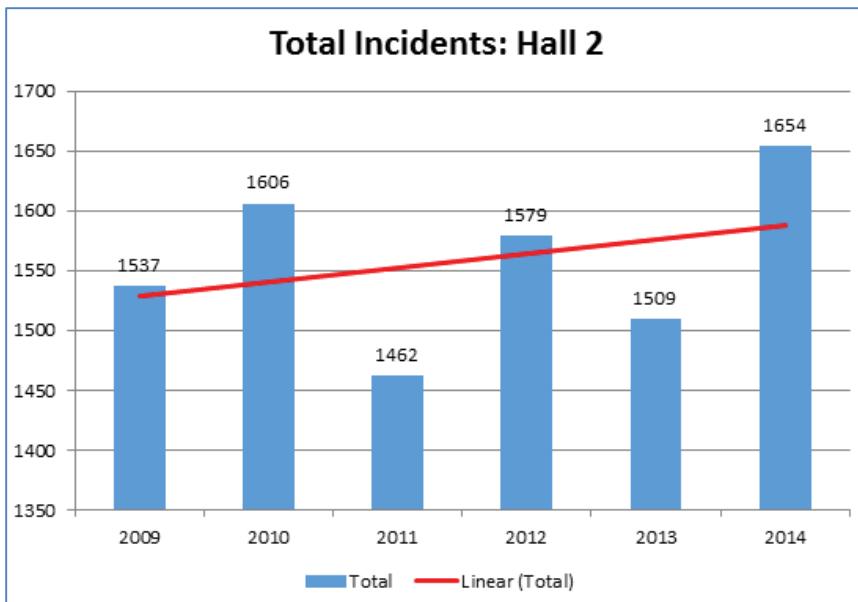
Figure 30: Hall 2 Total Responses, N=9,347

Responses in Hall 2's area are shown in Figure 30. This is the second busiest fire hall in the Department and over the period being reviewed responses have increased by approximately 3%.

Responses for Hall 3 are shown in Figure 31 and for the period, are essentially flat.
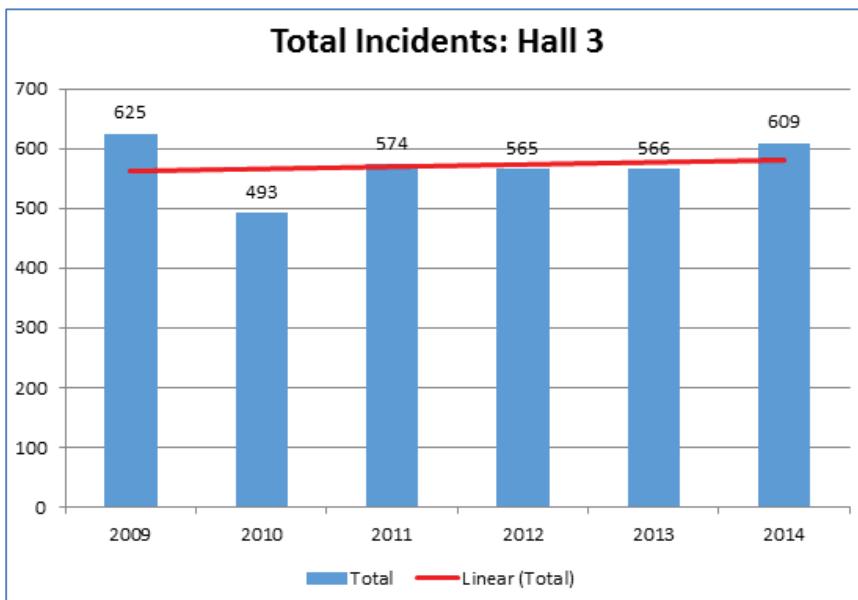
Figure 31: Hall 3 Total Responses, N=3,432

Responses for Hall 4 are shown in Figure 32 and show a general increase with a significant spike in 2014.
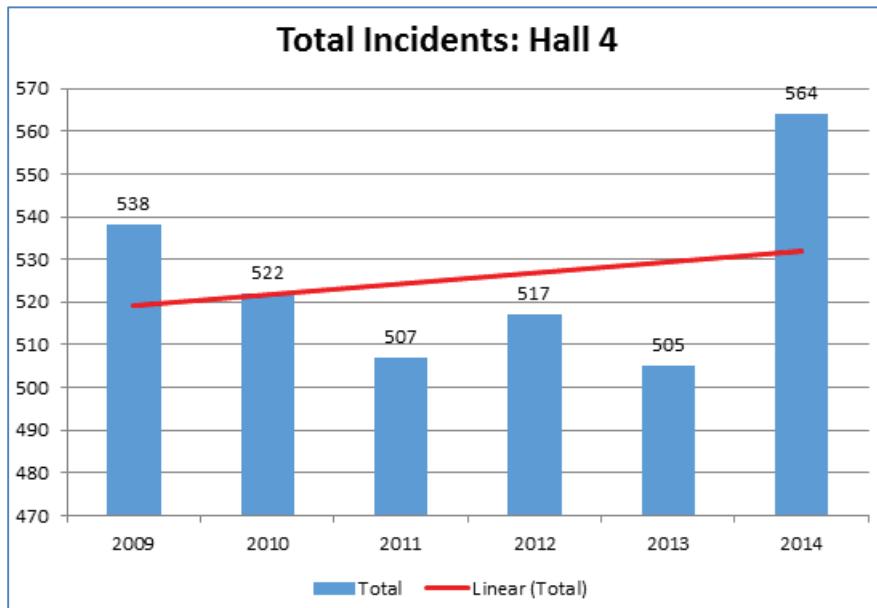
Figure 32: Hall 4 Total Responses, N=3,153

One additional consideration is the trend by fire hall area for certain event types. This will be particularly important as the response capability of the Department is evaluated in terms of apparatus allocation for its various tasks.

Structure Fires

The trend in terms of the number of fires, by fire hall area is shown in Figure 33. From this it can be seen that the area responded to by Hall 1 is the only one in which structure fires are increasing. For each of the other three fire hall areas, the incidence of structure fires is essentially flat.

In the case of Hall 1, the range of structure fire is considerable with a low of 38 to a high of 64.
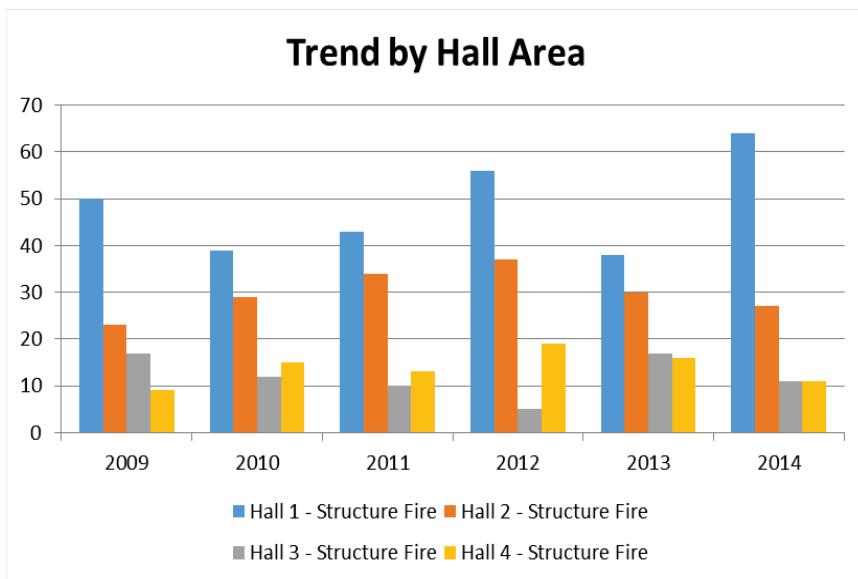
Figure 33: Response to Structure Fires, by Fire Hall Area

The response to EMR incidents is shown in Figure 34, and in this case the trend is flat across all four response areas.
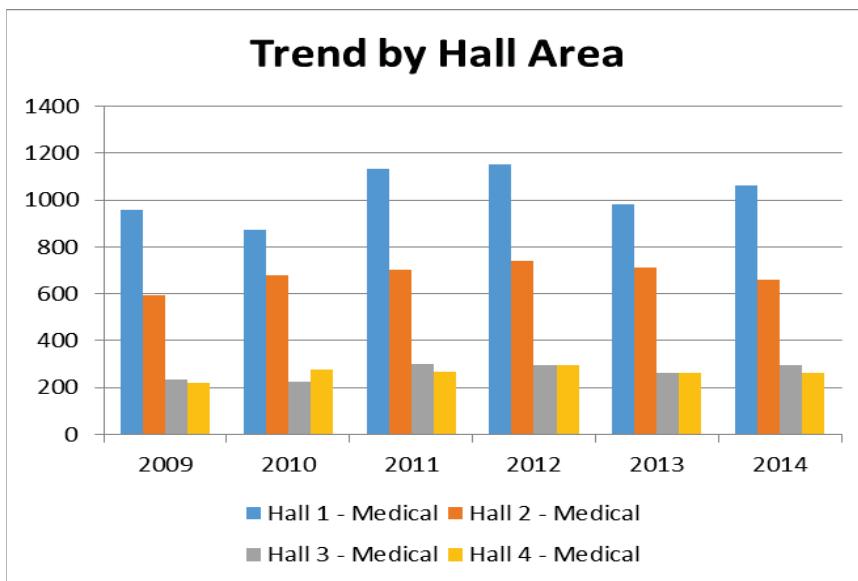
Figure 34: Response to Medical/EMR, by Fire Hall Area

Similar to EMR incidents, the trend in terms of MVI responses is flat across all four response areas.

Trend by Hall Area
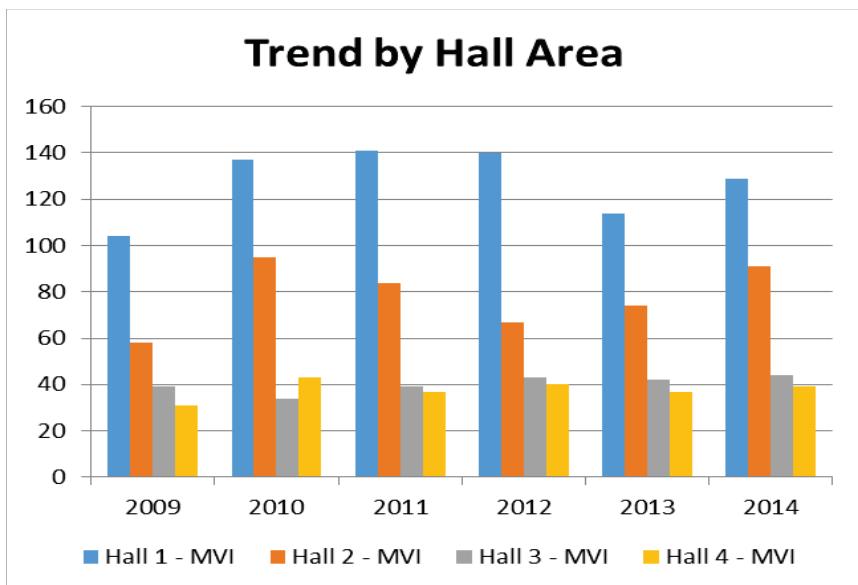
Figure 35: Response to MVIs, by Fire Hall Area

The number of calls for alarms ringing is one of the higher volume responses in terms of occurrence and the trend in these by fire hall area is shown in Figure 36. In this case the trend also appears to be flat over the period being reviewed.

Trend by Hall Area
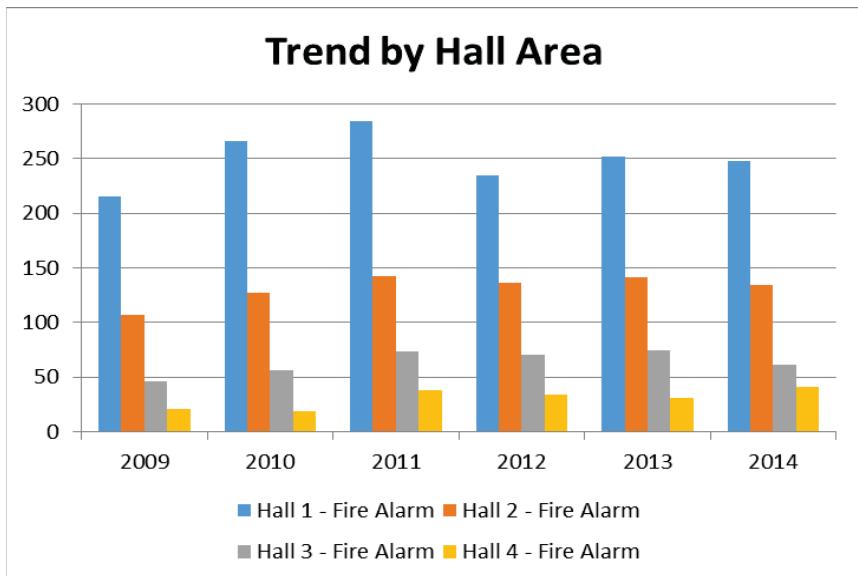
Figure 36: Response to Alarms Ringing, by Fire Hall Area

In summary, most incident types are trending reasonably flat in each of the fire hall areas. One notable exception is the case of structure fires where the trend is increasing and this will be one consideration in terms of the asset mix for each of the halls, given that structure fires require a response by virtually all of the Department's apparatus at the present time.

Response by Hall Area: 5 Year Projections

One objective of the current study is to provide recommendations with regard to fire halls and crewed fire apparatus for the next five to ten years. This will be developed based on an understanding of a number of factors including the Official Community Plan, population trends, changes in use for properties and areas, hazard assessment and response projections.

One method by which future response requirements can be estimated is by a mathematical projection based on the previous changes in call volume. There are some risks in relying on this totally as emergency response data is 'lumpy' and it cannot predict future changes in land use or change in population. That said, and given that the Department has six years' worth of data, this may provide some guidance.

Figure 37 shows the mathematical response projection for Hall 1. This estimates an annual response rate of 3,200 compared with the average for the past six years of nearly 2,900.
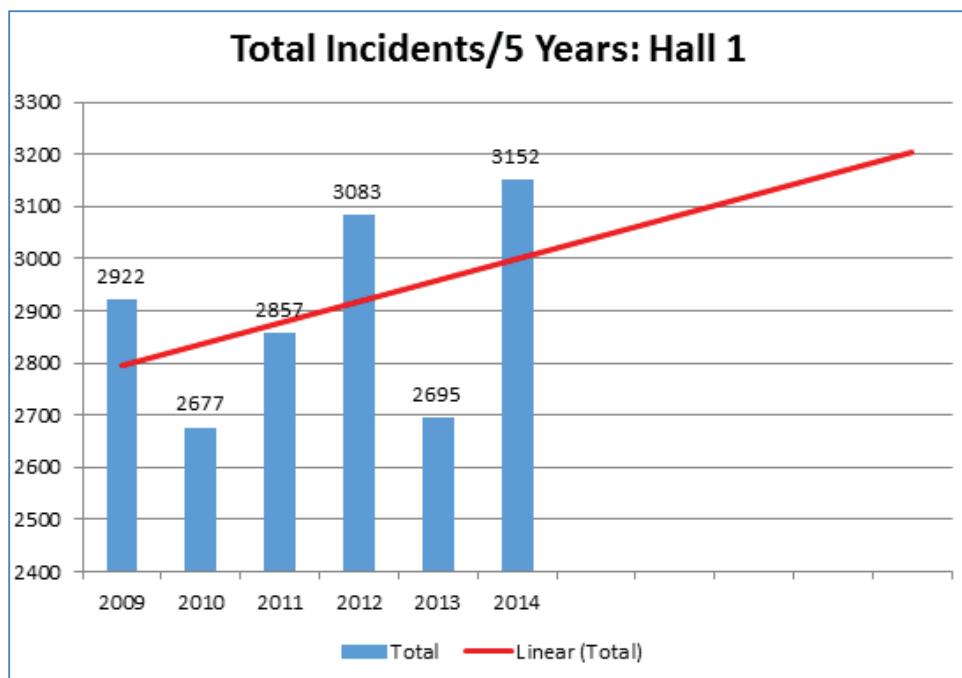
Figure 37: 5 Year Projection Hall 1 = 3,200, Average for 2009-2014 = 2,898

The five-year projection for Hall 2 as shown in Figure 38 is slightly less than Hall 1 and suggests an estimated annual response rate of 1,650. This number of responses may suggest an upward adjustment to the staffing and apparatus mix for this hall may be required.
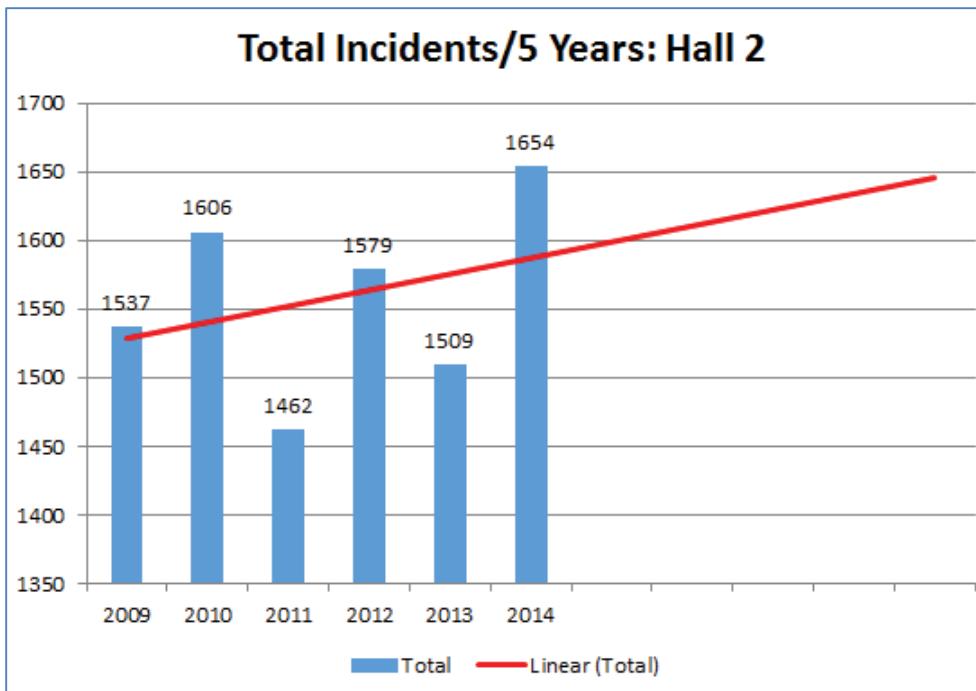
Figure 38: 5 Year Projection Hall 2 = 1,650, Average for 2009-2014 = 1,558
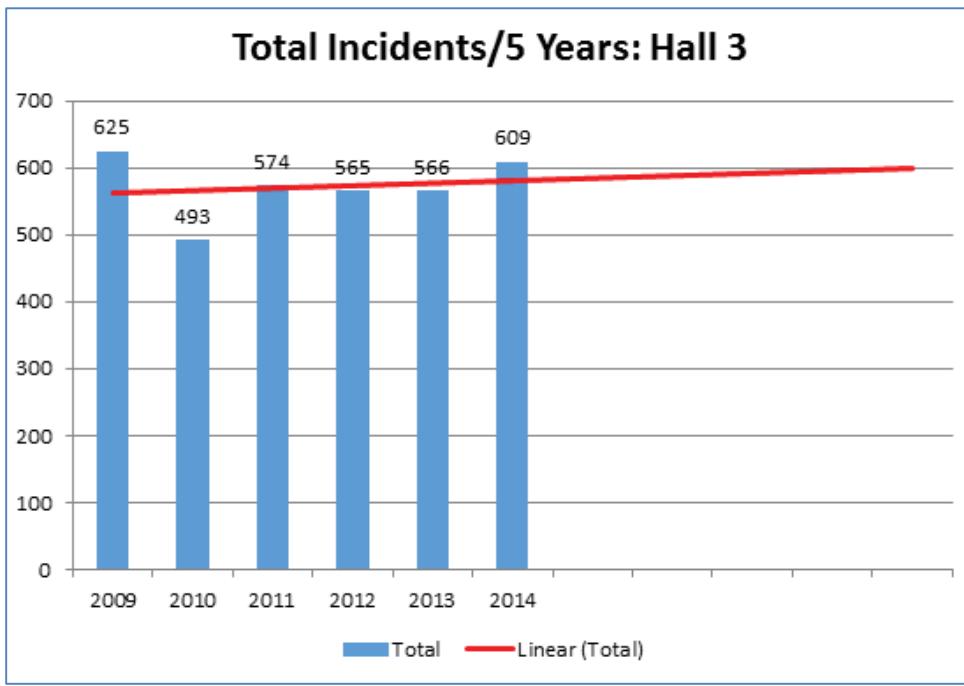
Figure 39: 5 Year Projection Hall 3 = 600, Average for 2009-2014 = 572

The five-year projection for Hall 3 is shown in Figure 39 and is essentially flat. By comparison in 2019 (assuming the projections are accurate) the responses by the Engine at Hall 1 will be five times that for the Engine at Hall 3.
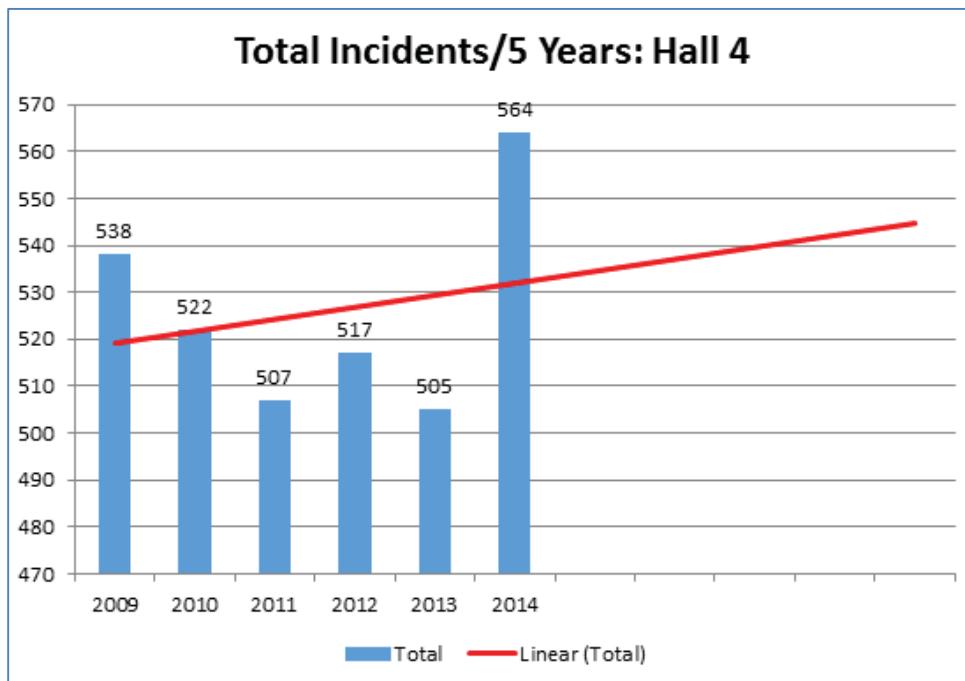
Figure 40: 5 Year Projection Hall 4 = 545, Average for 2009-2014 = 526

The response projection for Hall 4 is shown in Figure 40. There was a significant spike in responses during 2014 which materially affects the projected trend (and without which, the responses from this hall actually would be declining).

Apparatus Response and Utilization Rates

One response measure utilized by the fire service is the ability to assemble a crew within a specific timeframe for structure fires. The standard is the NFPA 1710 and departments measure their ability to provide a minimum of 14 fire fighters within eight minutes of travel time as follows:

> *A.4.1.2.1(3) This service delivery requirement is intended to have a fire department plan and situate its resources to consistently meet a 240-second travel time for the initial company fire suppression response; for other than high-rise, a 480-second travel time for the full alarm fire response assignment; and for high-rise, a 610-second travel time for the full alarm fire response assignment.*[83]

The staffing levels at Hall 1 and Hall 2 are insufficient to provide 14 fire fighters as a minimum and require the unit from either Hall 3 or Hall 4. For this reason, and given that the travel

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[83] NFPA 1710, 2016 edition, page 19.

distances from Hall 3 and Hall 4 into the Hall 1 and 2 areas is significant, the Department rarely meets the standard.

Between 2009 and 2014 the Department has only achieved 14 or more fighters on scene seven times out of 248 incidents, a rate of slightly less than 3%.

Staffing Count	Occurrences
16	1
15	5
14	1
13	2
12	6
11	30
10	5
9	7
8	4

Staffing Count	Occurrences
7	58
6	31
5	16
4	62
3	9
2	4
1	7

Table 20: NFPA 1710 Compliance—Objective is 14 or more Firefighters on Scene

This data can be summarized by year as shown in Table 21 and this indicates that the success rate in achieving staffing of 14 on the fire ground within 8 minutes continues to decline.

Year	# of Structure Fires with Staffing at 14 or over	Compliance %
2009	3 out of 43	6.5%
2010	3 out of 36	8.5%
2011	1 out of 38	2.6%
2012	1 out of 46	2.2%
2013	0 out of 36	0.0%
2014	0 out of 54	0.0%

Table 21

Another response target established in NFPA 1710, is responder turnout time from the fire hall, which is the interval between when the fire crew hears the alert until the time they begin response to the scene of the emergency. This objective is stated as follows:

> *80 seconds for turnout time for fire and special operations response and 60 seconds turnout time for EMS response.*[84]

Turnout out time can be expected to vary by the incident type with the longest times expected for structure fires as the crew is required to don all of their protective equipment prior to initiating

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[84] NFPA 1710, page 7

the response. Conversely we would expect that response to EMR responses to be quicker, and this reflects the guidelines in NFPA 1710.

Figure 41 shows the average turnout time for EMR calls for each Engine unit for the period being reviewed. Hall 1 has the quickest and most consistent times, ranging between 91 seconds and 99 seconds. Hall 2 is the next quickest with times ranging from 96 seconds to 110 seconds.
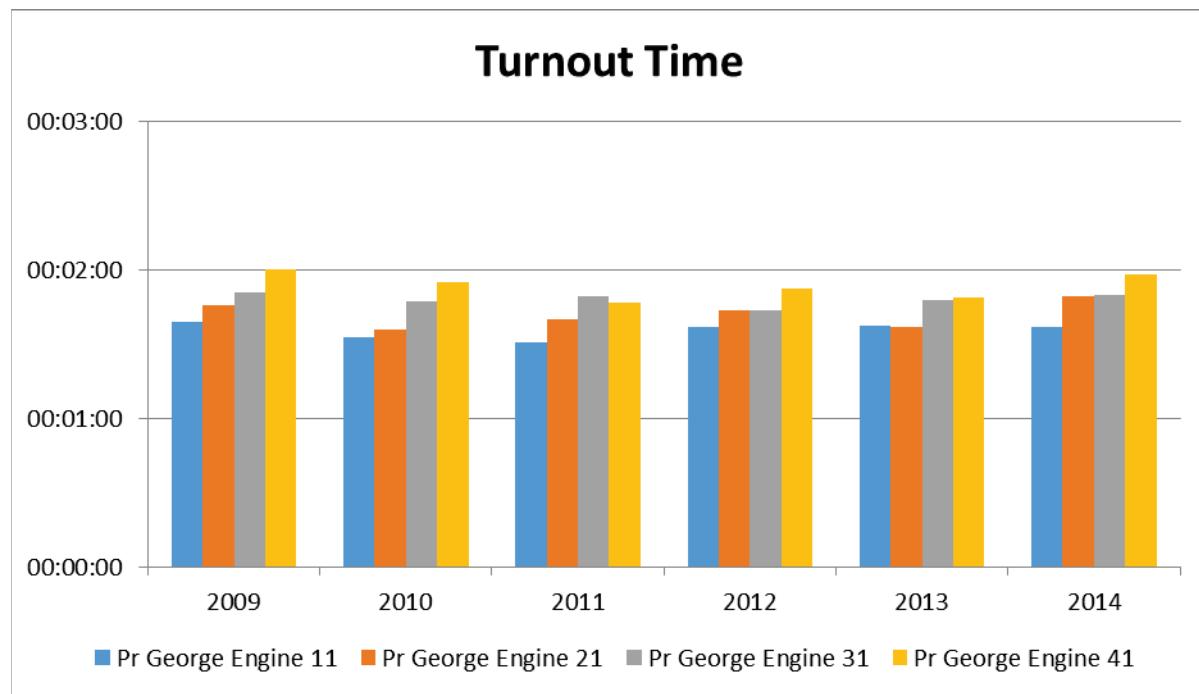

Figure 41: Turnout Time for EMR responses

The graph in Figure 42 shows the turnout time for structure fire incidents and in general the fire halls are in the same order from quickest to longer as with EMR responses. What this also indicates is the turnout time is consistently longer, by 40-50 seconds, representing the time taken to don all protective equipment prior to responding.
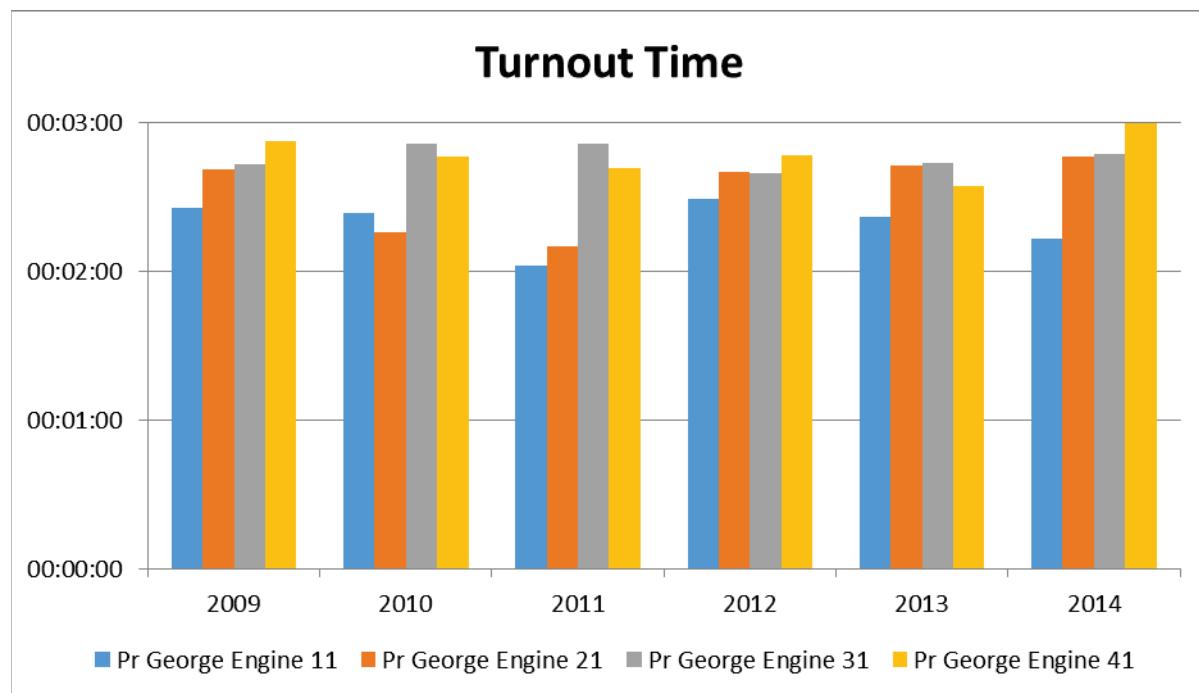
Figure 42: Turnout Time for Structure Fires

The consistent difference in turnout times between the fire halls for each incident type can be reviewed but is most likely a function of the difference in the layout of the halls; essentially the ergonomics of each. This may relate to the placement of personal protective equipment, the location of rip and run printouts, the location of portable radios and any number of factors. Hall 3 and Hall 4 are similar in design and may require more steps to initiate response than is found in Hall 1 in particular. Going forward, consideration of fire hall ergonomics will be important in terms of renovations or replacements of any of the halls.

Recommendation;   Consideration should be given to improving turnout times throughout the Department. This may not be easily achievable if fire hall ergonomics are the issue, however, often a simple process of educating the crews to the importance of quicker turnout times can effect improvements.

Fire Halls: Locations and Suitability

There has already been some discussion regarding a shift of Hall 1 further south to put it more central to its response area. This would place it in the area of Victoria near 20th Avenue and may better meet the recommendations of the Fire Underwriters with regard to coverage for the

industrial property in the south. Halls 2, 3 and 4 are probably in the suitable locations for their respective response areas.

The other question to consider is whether an appropriate training site is constructed as part of new Hall 1 or developed at a different site. Discussions have been held with the Chief and Deputies in terms of recommending a location south of new Hall 1, perhaps at or near the industrial zoned properties. This would have the advantage of being more suitable for a live burn facility and would also enhance day time response to the industrial area.

Recommendation: Consider replacing Hall 1 with larger headquarters hall south of the current location.

Apparatus Recommendations

The Department is now procuring a Quint which will provide a second aerial devices and this will go some way to addressing concerns of the FUS. One further consideration that has been discussed and that is a recommendation of the report is to add a second staffed unit at (new) Hall 1.

This would address the much higher call volume at Hall 1, which alone handles >50% of all responses.

Recommendation: Consider adding a second staffed unit at Hall 1 to deal with the significant call volume at this hall. A second staffed unit would also provide a better opportunity to meet the NFPA 1710 requirements to have a minimum of 14 fire fighters on scene in 8 minutes.

Standards of Cover

The Department is a multi-response agency providing fire suppression, emergency medical response, rescue services, fire prevention and investigations as well as emergency communications. The majority of its emergency responses require one or two staffed units, while a minority of its responses are for structure fires requiring a major commitment of personnel and apparatus. This is typical for most major career departments.

The staffing requirement for structure fires is described by the NFPA 1710 standards and requires a minimum of 14 personnel, with apparatus for a fire in a single-family dwelling. Further, they require this within eight minutes of travel time. On review, the Department has not been able to achieve this response standard a single time.

The ability to arrive in a timely manner with sufficient trained personnel was described in a previous section and a major recommendation of this report is to increase staffing at Hall 1 and

Hall 2 to ensure this minimum staffing level. It is proposed that a second fully staffed unit be provided at Hall 1 increasing its complement to 11. This staffing level along with the four on duty at Hall 2 would provide the minimum staffing level in the downtown core which has the largest portion of structure fires, and where all major fires have occurred. The Department should continue to review response data and report on their degree of compliance in this regard. This would include its ability to meet the response time objective for turnout from the fire hall.

This recommendation is coupled with the replacement of Hall 1 at a location more central to its response district and built to accommodate all required apparatus and personnel.

The level of service the Department provides is Full Service as outlined by the Playbook. Council as the AHJ should confirm this level of service and provide support for the level of training and assessment to ensure this is achieved. This level of service should be regularly audited against the requirements and regularly reported to Council.

The Department provides a wide range of first medical response and rescue and this should continue. That said, the Department should regularly review its capability to respond to each of these responses to ensure that training and equipment is appropriate and that they are meeting such standards as may be identified. One example of this would be those defined by the BC Ambulance Service.

The level of fire inspections was reviewed and the Department has made major strides to meet its inspections targets in terms of frequency and quantity. The Department should monitor the impending changes to provincial legislation in terms of the new Fire Safety Act which may change its obligations for inspections and investigations.

Summary

The Department has undertaken a complete review of the services it provides for emergency and non-emergency responses as well as training, fire prevention and fire inspections. The review was conducted with the complete participation of a representative steering committee composed of members of the Department at all levels, including the IAFF. They are to be commended for their attention to the level of detail and support of the process.

The review was conducted to clarify the current levels of service and then to consider how they might be improved. For emergency responses the standards of service recommended are those of the NFPA. These standards derive from the nature of fire propagation and require the Department to dispatch and assemble a crew of sufficient size to perform rescue and fire suppression. The most serious of these event types are structure fires and the Department does not at the present time meet the required standard. For this reason, a major recommendation of this report is to increase the available staffing in the downtown core with another 4-person unit. This will allow the Department to assemble 14 firefighters, including officers within eight minutes of travel time for the majority of the structure fires it responds to.

Review of the Department's response capability included an assessment of the existing fire halls in terms of their configuration and condition. Hall 1 was identified as requiring replacement both in terms of its physical condition as well as its location. The Hall has been identified in previous reports as requiring replacement as it would not meet contemporary standards for seismic stability; as well it lacks sufficient space for required apparatus and crews as well as office and storage space. The Hall is also some distance away from its response area and when it is replaced a location further south would provide much better coverage for the majority of its calls and would provide more immediate coverage to the industrial properties south of that location.

As part of the review, the Department undertook a full HRVA assessment and is in the process of addressing the identified risks. The Department also considered its ability to provide fire inspections in a timely manner and is reviewing a number of strategies to shift some inspections to the on-duty fire crews, to consider basing some inspections based on their risk and adjusting the frequency of re-inspection in others.

The level of training was reviewed both in terms of the risk assessment as well as the Playbook. Based on the risk profile of the City, the Department must be considered as providing Full Service. The requirements for compliance with this level of service have been discussed and require the Department to provide training and assessment as defined in the Playbook[85]. Compliance will require very detailed records of training and assessment for every member of the Department. It is also recommended that the Department develop an appropriate training

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[85] The detailed requirements can be found at Appendix 6: Playbook Compliance.

center including the capability for 'live fire' training, either at one of the fire halls or in the industrial area south of the downtown area.

List of Recommendations

Recommendation: Consideration should be given to improving the training facilities. (currently fire hall setting) This should include a dedicated Department training site (possibly located in the industrial area) to simulate scenario-based common types of incidents and allow for live-fire exercises. The site should also include training rooms, required training facilities/equipment and outside props.

Recommendation: Currently most of the training provided is for firefighters; more should be provided for the fire officers. Tailor the curriculum for the positions.

Recommendation: We would recommend that the Department undertake an internal review of all rescue services currently provided to determine: 1) If the service needs to be provided by the Department, 2) The required training levels necessary to provide that service, 3) The actual funding needed to provide that service including equipment, initial training and on-going maintenance training. Once these questions have been answered, the Department should seek appropriate approval and funding from the City.

Recommendation: To ensure competency is maintained, an annual skills maintenance training plan including evaluation models should be developed. The plan should encompass all aspects of firefighter and officer training including those skills required for specialty teams.

Recommendation: The current system of training members on their days off and accumulating days off is not working. Members are not required to attend training sessions and as such training in several specialties is often suffering (e.g., high angle and water rescue). The Department continues to respond to these events albeit with members who are not always trained as well as they need to be. This is a safety issue for both the members and the public they serve. Serious consideration should be given to either fully funding the required training or to cease providing (or significantly limit) the service.

Recommendation: That the Department consider more web based on duty training.

Recommendation: Expand the FPB's role to include a plan check for new construction, with a focus on major commercial, industrial, public institutional and multi-family projects, to ensure compliance with the Fire Code and with the Department's operational requirements.

Recommendation: The FPB requires a full complement of active staffing to meet its mandate and ensure the City meets its statutory obligations under the FSA. The

Department should review whether some additional assistance is required to address the existing backlog in inspections.

Recommendation: The Department should review the conduct of fire inspections by duty crews and increase the number of inspections and reinspections that are assigned to such crews.

Recommendation: With the increase in the number of inspections by duty crews, the FPB should review the inspection frequency. The goal should be to ensure that all inspectable properties are reviewed at least annually; where possible, the highest risk properties should be reviewed more frequently.

Recommendation: In the updating of the Department's operational and establishment bylaw, ensure that there is clear language permitting the Department to require the submission of additional information with a fire safety plan, that is necessary for pre-incident planning, and that such information is submitted in an electronic format that will enable the Department readily to develop effective pre-incident plans.

Recommendation: The Department and City should consider requiring that the most significant industrial / commercial risks, which require the most detailed fire safety plans, have their fire safety plans certified by an external third party before submission for review by the Department.

Recommendation: The FPB identify all properties in respect of which pre-incident plans should be created, and prioritize those properties based on risk.

Recommendation: The Department should develop or acquire a user-friendly electronic template for pre-incident plans. The "D" shift crew at halls 3 and 4 should be trained to develop pre-incident plans from fire safety plan data. Duty crews should be responsible for developing pre-incident plans for simpler or more straightforward risks only, as determined by the CFPO.

Recommendation: The FPB should remain responsible for developing pre-incident plans for all major industrial, commercial and institutional risks in the City.

Recommendation: Before any pre-incident plan goes live, it must be checked through a physical inspection of the property in question. Pre-incident plans should be regularly reviewed as part of the annual fire safety inspection for each property for which they exist.

Recommendation: The Department should ensure that its powers of entry for investigating fire hazards on complaint or where the FPB or Department members have a concern, are clearly set out in the revised establishment and operational bylaw. The Department should develop clear operational guidelines for dealing with problem properties, including coordination with law enforcement and socials service agencies, where required.

Recommendation: That the FPB be fully staffed (4 FTE's) and that personnel on long term absences are replaced on a temporary basis until their return to active duty.

Recommendation: That the FPB in cooperation with the Building Department implement a plan checking program for all new construction and major renovations in existing buildings. This may require additional training for the existing staff.

Recommendation: That the City of Prince George develop a policy whereby all lower risk properties are conducted on a bi-annual basis and that all high risk properties are conducted on an annual basis.

Recommendation: That duty crews are assigned all lower risk inspections and those higher risk inspections that the Chief Fire Prevention feels are appropriate for duty crews. Those high risk buildings not assigned to the duty crews will remain the responsibility of the FPB. This may require additional training for existing staff.

Recommendation;   Consideration should be given to improving turnout times throughout the Department. This may not be easily achievable if fire hall ergonomics are the issue, however, often a simple process of educating the crews to the importance of quicker turnout times can effect improvements.

Recommendation: Consider replacing Hall 1 with larger headquarters hall south of the current location. This could be at or near Victoria and 20th Avenue. The fire hall should provide a minimum of four drive through bays.

Recommendation: Consider adding a second staffed unit at Hall 1 to deal with the significant call volume at this hall. A second staffed unit would also provide a better opportunity to meet the NFPA 1710 requirements to have a minimum of 14 fire fighters on scene in 8 minutes.

Appendix 1: List of Abbreviations/Acronyms

- AHJ   Authority Having Jurisdiction
- ATO   Accumulated Time Off
- CAD   Computer Assisted Dispatch
- CFPO   Chief Fire Prevention Officer
- DPG   Dwelling Protection Grade
- EMBC   Emergency Management BC
- EMR   Emergency Medical Response
- EMS   Emergency Medical Service
- EOC   Emergency Operations Center
- EVD   Emergency Vehicle Driver
- EVO   Emergency Vehicle Operator
- FPB   Fire Prevention Branch
- FSA   Fire Services Act
- FSP   Fire Safety Plan
- FUS   Fire Underwriters
- HRVA   Hazard, Risk and Vulnerability Analysis
- IAPD   International Academy for Professional Driving
- NFPA   National Fire Protection Association
- OCP   Official Community Plan
- OFC   Office of the Fire Commissioner
- PFPC   Public Fire Protection Classification
- RHAVE   Risk, Hazard and Value Evaluation
- WCA   Workers Compensation Act

Appendix 2: NFPA 1901 Guidelines for Apparatus Replacement

Annex D Guidelines for First-Line and Reserve Fire Apparatus
This annex is not a part of the requirements of this NFPA document but is included for informational purposes only.

D.1 General. To maximize fire fighter capabilities and minimize risk of injuries, it is important that fire apparatus be equipped with the latest safety features and operating capabilities.
In the last 10 to 15 years, much progress has been made in upgrading functional capabilities and improving the safety features of fire apparatus. Apparatus manufactured prior to 1991 usually included only a few of the safety upgrades required by the recent editions of the NFPA fire department apparatus standards or the equivalent Underwriters' Laboratories of Canada (ULC) standards. Because the changes, upgrades, and fine tuning to NFPA 1901, *Standard for Automotive Fire Apparatus*, have been truly significant, especially in the area of safety, fire departments should seriously consider the value (or risk) to fire fighters of keeping fire apparatus older than 15 years in first-line service.

It is recommended that apparatus greater than 15 years old that have been properly maintained and that are still in serviceable condition be placed in reserve status and upgraded in accordance with NFPA 1912, *Standard for Fire Apparatus Refurbishing*, to incorporate as many features as possible of the current fire apparatus standard *(see Section D.3)*.
This will ensure that, while the apparatus might not totally comply with the current edition of the automotive fire apparatus standards, many of the improvements and upgrades required by the recent versions of the standards are available to the fire fighters who use the apparatus.

Apparatus that were not manufactured to the applicable NFPA fire apparatus standards or that are over 25 years old should be replaced.

D.2 How the Standards Have Changed. It is a generally accepted fact that fire apparatus, like all types of mechanical devices, have a finite life. The length of that life depends on many factors, including vehicle mileage and engine hours, quality of the preventative maintenance program, quality of the driver training program, whether the fire apparatus was used within the design parameters, whether the apparatus was manufactured on a custom or commercial chassis, quality of workmanship by the original manufacturer, quality of the components used, and availability of replacement parts, to name a few.

In the fire service, there are fire apparatus with 8 to 10 years of service that are simply worn out. There are also fire apparatus that were manufactured with quality components, that have had excellent maintenance, and that have responded to a minimum number of incidents that are still in serviceable condition after 20 years. Most would agree that the care of fire apparatus while being used and the quality and timeliness of maintenance are perhaps the most significant factors in determining how well a fire apparatus ages.

Prior to 1991, NFPA 1901 was basically a "reactive standard." If something worked well in field use for a few years, it might have been suggested for inclusion in NFPA1901. It was a very basic standard. In the late 1980s, the Technical Committee on Fire Department Apparatus decided to become proactive and to greatly enhance the value of the standard for the fire service. Task groups were appointed to develop reasonable requirements for the various components that made up a fire apparatus, and a safety task group was charged with looking at issues across the board that would improve the safety of fire fighters who use the apparatus.

The completely revised 1991 editions of the NFPA fire department apparatus standards were the result of those efforts and the full committee's strong desire to make the automotive fire apparatus standards not only more safety oriented but also more user friendly.

Contained within the 1991 edition of the fire department apparatus standards were requirements for such items as fully enclosed riding areas with reduced noise (dBA) levels to keep crew members safe and informed, seats and seat belts for all crew members riding on the apparatus, fail-safe door handles so the sleeve of a coat did not inadvertently catch a handle and open a door, and signs requiring everyone to be seated and belted. Also included were increased battery capacity to ensure starting under most conditions; improved warning lights, including intersection lights for increased visibility; removal of all roof-mounted audible warning devices to reduce hearing problems; a flashing light in the cab to warn if a cab or body door is open; a backup alarm; an automatic transmission to make it easier to drive (unless the purchaser has a specific reason for a manual transmission); auxiliary braking systems; and reflective striping.

The tip load for an aerial ladder was required to have a minimum carrying capacity of 250 lb (114 kg) when the aerial ladder was at zero degrees elevation and maximum extension. Other requirements, such as a minimum rail height, the minimum design strength of the rungs, and a minimum load carrying requirement for folding steps, were added to make the aerial ladder safer for fire fighters to use. Where a water tower was equipped with a ladder, the same requirements that applied to an aerial ladder were required of the ladder on the water tower.

The carrying capacity of elevating platforms at zero degrees elevation and maximum extension was raised to 750 lb (340 kg). Elevating platforms were also required to have handrails, breathing air available in the platform (with low-air warning capability) for at least two fire fighters, and a water curtain cooling system under the platform.

All aerial devices had to be capable of supporting a static load of one and one-half times their rated capacity in any position. A requirement for a stabilizer movement alarm and reflective striping with warning lights was added. Interlocks to prevent inadvertent movement to an unsupported side and to prevent raising the aerial device prior to the stabilizers being deployed were specified. One hundred percent non-destructive tests (NDT) became a requirement. All these requirements were included in the 1991 editions of the NFPA fire department apparatus standards

In the pump area, the standard specified that 3 in.

(75 mm) or larger valves be "slow close," that caps on intakes and discharge outlets be tested to 500 psi (3400 kPa), that an intake relief valve be provided to help manage incoming pressure, that 30-degree sweep elbows be provided on the discharges to eliminate hose kinking, and that all 3 in. (75 mm) and larger discharges be eliminated from the pump panel to reduce the possibility of injuries to the pump operator.

Fire apparatus equipped with electronic or electric engine throttle controls were required to include an interlock system to prevent engine speed advancement, unless the chassis transmission was in neutral with the parking brake engaged or unless the parking brake was engaged, the fire pump was engaged, and the chassis transmission was in the correct pumping gear.

The 1991 editions have been recognized as the benchmark from which improved and safer fire apparatus have evolved.

In 1996, many requirements were added throughout the document to improve the safety for fire fighters using the apparatus. These requirements included limiting the height of controls to 72 in. (1830 mm) above the standing position of the operator, requiring equipment in driving and crew areas to be securely fastened or in a compartment, increasing work lighting around the apparatus, and better grouping of pump controls to keep the operator away from the intake and discharge outlets. The low voltage electrical chapter was totally rewritten to require load analysis and load management if the total connected load could not be supplied by the vehicle's alternator. The requirements for warning lights were also rewritten to provide for different lighting for "calling for right of-way" versus "blocking right-of-way." Requirements for warning lights were increased to provide more visibility of the fire apparatus.

The 1999 edition of NFPA 1901 added requirements to further increase the safety for the users. In the body area, the minimum step surface size, slip resistance, and load-carrying capabilities were increased. Handrails were required to be slip resistant, and reflective striping was required on all four sides of the apparatus. To ensure the capability for continuous operation at fire scenes, a 2-hour, maximum load electrical test for line voltage systems was implemented.

The 1999 standard also required more secure mounting of equipment in the driving and crew compartment, minimum performance and pre-delivery testing of foam systems, and design of fill stations for breathing air cylinders to totally contain a rupturing cylinder.

The 2003 edition continued to refine the requirements in the driving and crew riding areas, increasing the head height at seating positions, bright-red seat belts, reflective material inside each cab door, automatic door-open lights, and more secure mounting of SCBAs in seat backs, all aimed at reducing fire fighter injuries. The test protocol for slip resistance of standing and walking surfaces was better defined. Because of the size of emergency vehicles, a label was required to remind operators of the height, length, and weight of the apparatus.

D.3 Upgrading Fire Apparatus. Any apparatus, whether in first-line or reserve service, should be upgraded in accordance with NFPA 1912, as necessary, to ensure that the following features are included as a minimum:

(1) Fully enclosed seating is provided for all members riding on the fire apparatus.

(2) Warning lights meet or exceed the current standard.

(3) Reflective striping meets or exceeds the current standard.

(4) Slip resistance of walking surfaces and handrails meets the current standard.

(5) A low-voltage electrical system load manager is installed if the total connected load exceeds the alternator output.

(6) The alternator output is capable of meeting the total continuous load on the low voltage electrical system.

(7) Where the gross vehicle weight rating (GVWR) is 36,000 lb

(16,000 kg) or more, an auxiliary braking system is installed and operating correctly.

(8) Ground and step lighting meets or exceeds the current standard.

(9) Noise levels in the driving and crew compartment(s) meet the current standard, or appropriate hearing protection is provided.

(10) All horns and sirens are relocated to a position as low and as far forward as possible.

(11) Seat belts are available for every seat and are new or in serviceable condition.

(12) Signs are present stating that no riding is allowed on open areas.

(13) A pump shift indicator system is present and working properly for vehicles equipped with an automatic chassis transmission.

(14) For vehicles equipped with electronic or electric engine throttle controls, an interlock system is present and working properly to prevent engine speed advancement at the operator's panel, unless either the chassis transmission is in neutral with the parking brake engaged, or the parking brake is engaged, the fire pump is engaged, and the chassis transmission is in pumping gear.

(15) All loose equipment in the driving and crew areas is securely mounted to prevent its movement in case of an accident.

D.4 Proper Maintenance of Fire Apparatus. In addition to needed upgrades to older fire apparatus, it is imperative that all fire apparatus be checked and maintained regularly to ensure that they will be reliable and safe to use. The manufacturer's instructions should always be followed when maintaining the fire apparatus. Special attention should be paid to ensure that the following conditions,

which are particularly critical to maintaining a reliable unit exist:

(1) Engine belts, fuel lines, and filters have been replaced in accordance with the manufacturers' maintenance schedule(s).

(2) Brakes, brake lines, and wheel seals have been replaced or serviced in accordance with the manufacturers' maintenance schedule.

(3) Tires and suspension are in serviceable condition, and tires are not more than 7 years old.

(4) The radiator has been serviced in accordance with the manufacturer's maintenance schedule, and all cooling system hoses are new or in serviceable condition.

(5) The alternator output meets its rating.

(6) A complete weight analysis shows the fire apparatus is not over individual axle rating or total GVWR.

(7) The fire pump meets or exceeds its original pump rating.

(8) The water tank and baffles are not corroded or distorted.

(9) If the apparatus is equipped with an aerial device, a complete test to original specifications has been conducted and certified by a certified testing laboratory.

(10) If so equipped, the generator and line voltage accessories have been tested and meet the current standard.

D.5 Refurbishing or Replacing Fire Apparatus. Fire department administrators and fire chiefs should exercise special care when evaluating the cost of refurbishing or updating an apparatus versus the cost of a new fire apparatus. Apparatus that are refurbished should comply with the requirements of NFPA 1912, *Standard for Fire Apparatus Refurbishing*. A thorough cost–benefit analysis of the value of upgrading or refurbishing a fire apparatus should be conducted. In many instances, it will be found that refurbishing costs will greatly exceed the current value of similar apparatus.

Some factors to consider and evaluate when considering whether to refurbish or replace a fire apparatus include the following:

(1) What is the true condition of the existing apparatus? Has it been in a major accident, or has something else happened to it that would make spending significant money on it ill advised?

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(2) Does the current apparatus meet the program needs of the area it is serving? Is it designed for the way the fire department operates today and is expected to operate into the foreseeable future, or is the apparatus functionally obsolete? Can it carry everything that is needed to do the job without being overloaded?

(3) If the apparatus is refurbished, will it provide the level of safety and operational capability of a new fire apparatus? Remember, in many cases, refurbishing does not mean increasing the GVWR, so it is not possible to add a larger water tank or additional foam agent tanks or to carry massive amounts of additional equipment. Enclosing personnel riding areas might add enough weight to the chassis that existing equipment loads need to be reduced to avoid overloading the chassis. An aerial ladder that does not have a 250 lb (114 kg) tip load rating at zero degrees elevation and maximum extension cannot be made stronger.

(4) What is the anticipated cost per year to operate the apparatus if it were refurbished? What would the cost per year be for a new apparatus? Do not forget insurance costs, downtime costs, maintenance costs, depreciation, reliability, and the safety of the users and the public. At

what rate are those costs rising each year? Are parts still readily available for all the components on the apparatus? A refurbished 15-year-old apparatus still has 15-year-old parts in it. How long could the fire department operate without the apparatus if it suddenly needed major repairs?

(5) Is there a current trade-in value that will be gone tomorrow? Most apparatus over 12 years old have little trade-in value. Are there creative financing plans or leasing options that can provide a new fire apparatus for little more than the cost of refurbishing or maintaining an older apparatus?

D.6 Conclusion. A fire apparatus is an emergency vehicle that must be relied on to transport fire fighters safely to and from an incident and to operate reliably and properly to support the mission of the fire department. A piece of fire apparatus that breaks down at any time during an emergency operation not only compromises the success of the operation but might jeopardize the safety of the fire fighters relying on that apparatus to support their role in the operation. An old, worn-out, or poorly maintained fire apparatus has no role in providing emergency services to a community.

Appendix 3: Consolidated Incident Types

Initial Incident Type	General Type
911 Hang Up	911 Hang Up
Admin Call Records	Admin
Aircraft Emergency Landing	Aircraft
Aircraft Fire	Aircraft
Aircraft Standby	Aircraft
Ambulance - Notification	Notification
Assist	Medical
Barbeque Fire	BBQ
Bomb Threat	Bomb
Burning Complaint	Complaint
Cancelled On Arrival	Cancelled
Cancelled On Route	Cancelled
Carbon Monoxide Alarm	CO Alarm
Chimney Fire	Structure Fire
Complaints	Complaint
Dispatcher Test	Admin
Dumpster	Dumpster
Duty Officer Notification	Notification
Electrical Fire - Substation	Substation Fire
Explosion	Explosion
False Alarm	False Alarm
Fire Alarms - Commercial	Fire Alarm
Fire Alarms - False	Fire Alarm
Fire Alarms - Residential	Fire Alarm
Flooding	Flooding
HazMat1 - Low Risk	Hazmat
HazMat2 - Mod Risk	Hazmat
HazMat3 - High Risk	Hazmat
Hydro - Notification	Notification
Hydro Lines Down	Hydro Lines Down
Incident Not Found	Incident not found
Isolated Fire	Structure Fire
Kitchen Fire	Structure Fire
List Assist	Medical
Medical Aid	Medical
MVI1 - Motor Vehicle Incident	MVI
MVI2 - Multiple Vehicles	MVI

MVI3 - Entrapment; Motor Vehicle Incident	MVI
MVI4 - Entrapment; Multiple Vehicles/Patients	MVI
Natural Gas Leak	Gas Leak
Odour Unknown	Odour Unknown
Open Air Fire	Open Air Fire
Patient Not Found	Patient Not Found
Pedestrian Struck	Medical
Police - Notification	Notification
Rescue - Confined Space	Rescue
Rescue - High Angle	Rescue
Rescue - Low Risk	Rescue
Rescue - Water	Rescue
Smoke Report - Inside	Smoke Report
Smoke Report - Outside	Smoke Report
Structure Collapse	Structure Collapse
Structure Fire - Large	Structure Fire
Structure Fire - Small	Structure Fire
Terasen Gas - Notification	Notification
Transformer/Pole Fire	Transformer/Pole Fire
Vehicle Fire	Vehicle Fire
Wildland - Interface	Wildland
Wildland - Large	Wildland
Wildland - Small	Wildland

Appendix 4: Hazard, Risk and Vulnerability Analysis

Community Profile

What kind of community (or agency) do you live (or work) in? For example: size, demographics (age, socio-economic status, ethnic background, languages, disabilities) etc.

- Size,
    - 318.26 square kilometers
- Demographics (age, socio-economic status, ethnic background, languages, disabilities)
    - 2011 population 71,974[86] with 88,043 in the metropolitan area
    - median age is 33.9, compared to 38.4 for British Columbia
    - socio-economic issues
        - substantial transient population
            - those who are working in the region; also those not working or passing through
        - hub for social services for the region
        - low income housing, distributed
        - ethnic minority groups, with language issues
        - homeless population
        - high income, large homes
        - post-secondary education centre for the northern region
        - development in the north-east and north-west will affect the economy and population mix
    - ethnic background
        - first nations, Caucasian, mix of others
    - English, south Asian, and others

Business and Industry

What businesses and industries support your community or agency? How critical are they and what would happen if they were lost because of a disaster?

- Forestry, logging, sawmills, pulp mills, silviculture
    - Pulp mills are huge employers, they require transportation and support companies such as Chemtrade. They are very important economically, they are also high-risk
    - This industry supports not just Prince George, but a large area outside of the city

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[86] Source: www.CivicInfo.bc.ca

- o The Prince George Fire Department has a recent history with a number of significant fire losses including Canfor and Lakeland
  - o These facilities are located very near the centre of the city
  - o A number of explosions at pellet mills in the recent past
  - o Recycling facilities, mostly related to paper products
  - o Lakeland review demonstrated a need for more regular training events with response partners to improve operations and communications
- Oil refinery, transportation
  - o Husky provides all or most of the refined product for the North and North-west
  - o Directly employ 120
  - o Have had a number of fires in the piping and the refinery
  - o 2014 tabletop identified a number of operational and communications deficiencies
- Chemical plants to support other industries
  - o Principally for the pulp facilities within Prince George and within the larger region
  - o Have had calls to Peroxychem; also at Chemtrade,
- Northern Health
  - o Very large employer, multiple locations throughout the city
  - o This is the only hospital within 100 KM for this area
  - o Cancer clinic, with nuclear medicine
- Education, with the college and university
  - o UNBC, has a chemical storage facility a recent incident with picric acid that required the Canadian military
  - o Significant employer
  - o Residences, with day care
  - o Student population includes a number from outside of the city and region
  - o Wood waste power generation plant
  - o College of New Caledonia, within the city, multiple sites; focus on trades training
- Transportation, CNR
  - o Inland container port
  - o Increased traffic through Prince George to and from the west coast;
    - ▪ Task: to determine the growth in rail traffic through Prince George; this should also include an assessment of grade levels, crossing and turns
  - o Challenges to engage with them about content
  - o Prince George Fire has had incidents with content spillage
  - o Recent document describes the incidence of rail accidents; it is particularly noteworthy that dangerous good accidents are increasing over previous years and that the highest number of accidents occur at level crossings
  - o Need for table top/scenario exercises
- Government
  - o Large employer
  - o Support local, provincial, regional and federal government activities
- Construction

- o Present but mostly residential; also road construction
- o Multiple contractors operating in Prince George supply services within the city and within the region including major industries such as forestry, mining and petroleum
- Airport
  - o New tank farm
  - o Future plans might include a cargo hub, but this has not yet happened (distribution warehouse/waste disposal under construction)
  - o Planes, terminal buildings
  - o Runway is designated as an emergency stop for larger transcontinental planes; one reason for the very long runway which is the third longest in Canada
  - o Is an international airport
  - o Small airplane maintenance
  - o Training airport
  - o Regional air tanker base for forestry
  - o Note the 'accord' is dated and needs to be reviewed
  - o PG Fire attends for standby, but without training and equipment
- Retail, with a large number of people travelling to here to shop
  - o Commercial hub for the region
  - o Major, big box retailers
  - o Older commercial section in the downtown area

Critical Lifelines

What infrastructures are critical lifelines for your community or agency? Which elements of infrastructure are most vulnerable and what would be the impact of the partial or total loss of each or all of these elements of infrastructure?
In the case of most of these, the impact of a loss is huge

- Rivers
  - o Fraser and Nechako; small amounts of boat traffic, as well there is recreational use which may lead to a request for rescue
  - o Flooding is a low risk except in the original parts of the city;
- Bridges
  - o Two bridges, One road to the pulp mills and the refinery
  - o John Hart
  - o Foothills
  - o Simon Fraser
  - o Yellowhead
  - o Rail
  - o Cameron Street
- Rail
  - o CN Rail, all four directions; loss of the rail connection would be significant

- Highways
  - Multiple highways in and out from north, east, west, south, but they are single routes so the potential loss of these is significant
- Airport
  - In 2011 the airport (YXS) supported 770 person years of employment generating $24 Million in wages[87]
- Hydro
  - Main transmission line from Bennett Dam to the south runs through the area
- Communications
  - On a fiber link which has vulnerabilities
  - In this area the majority of fiber is above ground
  - Site 'C'
- Gas/Oil
  - Pipelines run through the City
  - Refinery on the north side of the river
  - High pressure,
  - Note that some of this infrastructure is outside of the city limits, but there would an expectation that PG Fire would respond to prevent further spread into the city either of a fire, contamination or a smoke plume

Partnerships

Partnerships are an important part of successful emergency management. What public and private resources might be available to help your community or agency prevent, prepare for, or recover from a disaster? Where are they located, who controls them, and what are their capabilities?

- Provincial
  - BCAS
  - Forestry, assist with interface fires along with wildfire management branch
  - Ministry of Transportation, Environment
  - EMBC, PEP
  - SAR
  - UNBC, chemists are a resource
  - Northern Health,
- Federal
  - RCMP
  - Military
- RDFFG
- City of Prince George
- Industrial

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[87] http://www.pgairport.ca/Airport_Info/air_service_development.php, accessed April 6, 2015

- o PG IMAC,
- o Industrial Mutual Aid Committee, multi-part group public and private
- o Rail
- o Trucking,
- Airport Authority
- E-Comm
- Utilities
  - o Hydro, Fortis, Telus,
- Private contractors – Clean harbours/Newalta

Hazard, Risk and Vulnerability Analysis

The following list is taken from BCERMS. Within this list most may occur in Prince George with the exception of those noted.

- Air crashes
- Dam failures, not local but upstream
- Diseases (human and animal)
- Forest fires
- Gas explosions and gas leaks
- Hazardous material accidents
- Heat waves
- Ice storms and ice fogs
- Interface Fires
- Landslides, cut banks,
- Lightning
- Local flooding
- Marine accidents
- Motor vehicle accidents
- Power outages
- Rail accidents
- Rain storms
- Riots, unlikely
- Snow melt river flooding
- Snow storms
- Structural collapse
- Technological failure (computer hardware and software), including specifically for the department re Hall 1
- Terrorism, oil refinery
- An Industrial incident, mill explosion and fire, oil refinery
- Urban Fires
- None, or very low likelihood

- Hailstorms, infrequent, low damage
- Tsunami, none
- Volcanic activity, none
- Space object crash, unlikely
- Earthquakes, minimal
- Avalanches, unlikely
- Mine explosions, none locally

Additional hazards would include the following.
- None identified

Risk Assessment

Prioritize the hazards in your community or agency.
- High Risk, more frequent occurrence
  - Forest fire
  - Rail
  - Hazmat
  - Flooding, ice jam or freshet, or dam failure
  - Urban fires
  - Industrial incidents
  - Major power failure/freezing rain
  - Gas explosion/leak
- High Risk, lower occurrence
  - Air crash
  - Loss of water supply
  - **noted not registered with EMBC for road rescue
  - Major MVI, commercial trucks
  - Disease, Pandemic

Vulnerability Assessment

Once an emergency management organization has analyzed the risk to the community of potential disasters, it must look at the impact of such events and the community's vulnerability. Each hazard can affect the community in different ways, such as:

Physical damage to the infrastructure, public and private buildings, and the environment
- Forest fire; significant impact on staff and equipment; may lose highway access, may lose utilities, may lose power to pumping stations, may lose radio transmission sites like Pilot Mountain,
- Major power loss; lack of standby power with the exception of Hall 1; short term loss of power for air bottle filling, etc., may lose power to pumping stations, note the backup FOCC at hall 2 does not have standby power

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- Rail accident/fire, significant impact on staff and equipment + supplies like foam, significant impact on the economy
- Major flooding, significant impact on staffing, impact on the economy
- Industrial/HAZMAT, may result in major evacuations of the downtown or other areas, impact on the economy, staffing
- Loss of communication (Telephone/Internet/Data)

Social impacts on individuals, families, children, community organizations and society as a whole:
- Short term and long term health issues including for fire fighters
- Loss of jobs, family support
- Stress, including for fire fighters and other responders

Health issues
- To be determined

Economic losses
- Job losses
- Loss of revenue not just from the direct loss, but indirect from companies that support them
- Cost to replace infrastructure;
- Economic impact if businesses choose not to rebuild

What is the likely impact of hazards on your community or agency?
- To be determined

Mitigation

Examples of mitigation efforts that have been (or should be) taken in your community or agency.

Complete

- Wildfire mitigation, clearing underbrush and dead trees
- Raise the berm on River Road
- Resurrected PG IMAC
- Fire Chief is Deputy Director of the EOC
- EMR program – higher level of training provides for city wide coverage in the event of a major incident

Recommended

- Emergency planning
- Generators for all halls
- Emergency program coordinator

- Revise, update the emergency response plan
- Evacuation routes
- Community education,
- Reinforce the emergency operations centre in PG
- Should have regular activations of the EOC
- Apparatus for interface fires, such as structure protection units
- Specialized training for major mitigation such as forestry incidents,
- Need to exercise the planning at a local/tactical level
- Off-road capability
- Community refuge and/or shelter in place

Preparedness

Preparedness consists of activities designed to ensure the following:

1. Plan for effective response to and recovery from disasters

   - Understanding the risks, underway
   - Training and exercises
   - Clarify current staffing and apparatus, and will this accommodate the response
   - Community refuge; cooking facilities, water
   - Engage with identified partners such as ESS, Red Cross, SAR, conservation to avoid duplication, enhance response
   - Interagency PFA communication
   - Social media plan
   - Evacuation plan, evacuation routes
   - Review PG emergency plan
   - Develop an emergency operations plan for the Department for staff on and off duty
   - Identification of sources for other equipment we may not have access to
   - Clarify which plugs are on a UPS at Hall 1 and what isn't

2. Arrange for both internal and external resources to be available when needed

   - Review EMBC and the role of the PREOC
   - EOPS plan for staff

3. Provide education and training for everyone with a role during a disaster, from first responders to members of the public, with the education and training needed to respond effectively

   - Have a media plan to advise the public about emergency response and their role, expectations of the Department

- Provide more site support, EOC training
- Develop an agreed plan for the City and the RD
- Ensure that public education includes awareness of the plan, terms and phrases
- Noted that the city has a public awareness program that resides with a single individual
- Review and consider the implications of the Renteira report

4. Provide education and public awareness about emergency preparedness
   - Review and revise the emergency preparedness plan prior to discussing with the public
   - Plan for community/public education; this might be targeted to children, similar to fire prevention; this will require funding
   - Agreed that the best bang for the buck is the correct messaging ahead of the event;

5. Train, exercise and evaluate emergency plans, and
   - Discussed above, agreed this is a first step before a new plan can be rolled out and tested
   - Look for best practices
   - Department should designate an 'owner' for this

6. Revise plans and procedures.
   - To be done

What types of preparedness activities has your community or agency engaged in (i.e., public education, staff training, exercises, etc.)?

- Have conducted exercises in the past
- City does have a media person
- Have done pre-incident preparation with some industries
- Meet with officials from the PG PREOC
- Meet with Forestry annually
- Participate with PGIMAC
- Meet with utilities
- Working relationship with Northern Health
- Engage UNBC to access chemists
- Others?

Response

Response consists of activities designed to address the short-term effects of a disaster. This includes agency response, resource coordination, organizational structure, protection/warning systems and communication.

Response Agencies: A number of agencies may be involved in responding to a disaster. The most common first responders are law enforcement, fire and rescue, emergency medical

services and public works personnel. Your emergency management organization must work closely with these agencies to determine the type of response required for each hazard identified and the capabilities and resources needed by responders.

Resource Coordination: During a disaster, most communities and organizations will not have enough resources. A number of gaps in resources will be identified during the planning process. For example, there may be a need for more firefighting resources. Your organization should consider how extra resources could be accessed in case of a disaster. Private industry and other nearby municipalities may be able to provide resources. Resources based outside your community may not be immediately available after a disaster, so it may be necessary to plan interim measures.

Organizational Structure: The organizational structure during a disaster is usually different from day-to-day community management. The British Columbia Emergency Response Management System (BCERMS) is the structure used in this Province in case of a disaster.
How your organization will be structured during an emergency must be planned in advance. To prepare people to successfully fulfill their roles, the structure needs to be practised through training and exercises.

Protection/Warning Systems: A protection/warning system may be needed in your community. Based on their hazard analyses, some communities in BC have already implemented protection/warning systems. Port Alberni has an audible warning system to notify the public of a tsunami threat. Other communities have telephone warning systems in case of a hazardous materials incident.

Communication: Our society has become heavily dependent on technology for communications and computer systems. During a major emergency or disaster, there will be a large demand on such systems. Alternate systems should be available in case a disaster affects or shuts down day-to-day communication modes.

What response agencies exist in your community?

- PG Fire,
- RCMP,
- BCAS,
- Public Works,
- PG IMAC,
- Northern Health,
- SAR,
- Red Cross,
- Salvation Army,
- EMBC,
- Regional District,

- Utilities,
- Province: Ministry of the Environment; Transportation as required
- Federal Government: Military, DFO,
- Response partners outside of Prince George
- Contractors, Clean Harbours/Newalta; consider Ritchie Brothers for equipment
- Mobile fuel services for apparatus

How would (or could) your community notify the public of an impending disaster?

- At the present time by using the media (social media is being developed)
- RCMP door to door
- Mass notification service – blasts notification to subscribers

What alternate means of communications are available in your community?

- Social media
- Community notification systems in the future
- PG has a small capability to message the public for specific events
- In future consider MASAS

Recovery

Short-term recovery from a disaster returns vital life support systems to minimum operating standards. Long-term recovery may continue for years. Everyone in a community will be involved in recovery, including all levels of government, the business sector, families, and individuals. Ideally, disaster recovery processes will improve the community and make it a better, safer place for citizens.

Based on the hazards in your community, what may be some of the short-term recovery issues you could be faced with?

- Shelter and food, clean water, sewer
- Utilities for power and communication
- Fuel, [note no diesel tanks at the fire halls; fill at the City yard, but this would be impacted if a loss of power]
- Staffing
- Fatalities…(including for body storage0
- Internal dealing with any loss of staff or major injury
- Conflicting or multiple priorities
- Opening transportation routes

Based on the hazards in your community, what may be some of the long-term recovery issues you could be faced with?

- Environmental
- Major transportation disruptions
- Major communication disruptions
- Loss of major infrastructure such as the hospital
- Loss of a fire hall or equipment
- Loss of homes, requiring rebuild
- Loss of a major employer
- Unanticipated, uninsured costs
- Replacement of equipment
- Long-term health issues
- Conflicting or multiple priorities

Appendix 5: Review of existing training programs and proficiency criteria

The following is a review of the Department's current training programs and proficiency criteria, including those delivered in-house and those delivered by external providers.

Fire Suppression – full-service operations level which includes the following

- New Recruits – pre-requisites for new recruits are:
  - NFPA 1001
  - OFA or EMR
  - Class 3 drivers licence with air endorsement
  - Firefighter Candidate Physical Ability Test (CPAT).
- Once hired – all recruits receive PGFR specific fire ground operations and equipment training (9 weeks), which includes the following:
  - RIT – 3 day in-house program
  - EVD – 2 day in-house through IAPD program
  - Haz-Mat – 2 day in-house program
  - EMR – 2-3 day of EMR in-house program followed by a 2 day EMA Licence process.
  - Live Fire – 1 day at Fort St. James training facility
  - Swift Water Rescue – Ops. level, 2 days through Rescue Canada program
  - Vehicle Extrication – 2 day in-house program
  - Tender Operations – 1 day in-house program
  - Emergency Traffic Control – 1 day in-house program
  - Wildland for structural firefighters – S100 course
  - Radio procedures – in-house program
  - Fire Prevention Awareness – in-house program

Full Service Level Firefighter skills maintenance program

The Department is currently implementing an in-house program which will be conducted annually, and to include the following:

- All basic firefighter skills requirements of NFPA 1001 FF-I & II
- An orientation with all specialty services/teams skill sets
- Captains will be required to provide the training, and to maintain the training records (via RMS)

Fire Prevention – fire and life safety building inspections, fire investigation, and public education

- Oversight for training of the Fire Prevention Office is the responsibility of the Chief Fire Prevention Officer.
- Pre-requisite for the FPO – FF with Fire Inspection Level I (3rd party accredited course).

- Lt. Fire Inspection – requires FO-I and 2 years in the FP division.
- Capt. Fire Inspection – requires FO-II and 4 years in the FP division.
- In-house program to include:
  - Fire Investigator Level I, II & III (scene/incident investigation)
  - Fire Code course through the JIBC
  - Ongoing Fire Prevention Officers Association courses
  - Public Education course through the JIBC or the FPO Association

Emergency Medical Services (EMS)
- All Firefighters and several Fire Officers licenced to the EMR level through BC EMA licencing.
- All in-house instructors and evaluators certified through Red Cross EMR Program.
- All evaluators are EMA licenced to conduct in-house EMA evaluations (2 days) for candidates to receive their EMA licence – renewed every 5 years.
- Must be maintained with 20 education credits and 20 patient contacts per year.

Emergency Vehicle Driver (EVD) and Emergency Vehicle Operator (EVO)

- In-house 2-day EVD program, conducted by four in-house instructors certified through the International Academy for Professional Driving (IAPD) Program.
- Evaluations conducted with IAPD evaluation procedures.
- Uncertain as to whether this program meets the requirements of NFPA 1002.
- All new recruit firefighters receive this 2-day EVD program.
- Pre-requisites to drive engines, rescues and tenders:
  - 20 hours minimum driving non-emergency
  - 10 hours pumping operations
  - No evaluation process; qualified at the discretion of the Company Officer
- Pre-requisites to drive aerial ladders:
  - Qualified to drive engines (see above)
  - 10 hours minimum driving non-emergency (aerial)
  - 5 aerial set-ups and pump water
- All firefighters up to approximately the 20 year service level have had the 2-day EVD program; those senior to that have probably not had this training.
- No formal EVO (pumps & pumping) program – conducted in-house by apparatus drivers . . . Word of mouth, no formal program or evaluations.

Vehicle Extrication

- In-house program similar to Vehicle Rescue Level I.
- Instructors and evaluators trained to Vehicle Rescue Level II (JIBC accredited).
- Rescuer Basics (JIBC) is a pre-requisite for Rescue Level I.
- Two instructors have Commercial Vehicle Heavy Rescue training.

- All members receive in-house vehicle rescue level I program.
- Maintenance for auto extrication – trainers/instructors are assigned to a hall and the crews are rotated through that hall for training; hall 3 for auto-ex.

Hazardous Materials Response

- 3rd party accredited training program to NFPA 472 awareness and operations level.
- All firefighters trained to the awareness and operations level.
- Approximately 25 members trained to the technician level.
- Approximately 10 of these members (lead instructors) have additional training in CBRNE as well as the Pueblo Colorado Transportation Technology Centre Training which includes managing rail car incidents.

Technical Rescue Responses

As a pre-requisite to any specific technical rescue skill/team, all technical rescue members receive the Rescuer Basics course (JIBC) prior to their training for a specific discipline.

High-Angle Rope Rescue

- All members trained to level I (operations level), with 3rd party accreditation.
- In-house instructors are trained to level II (technician level), along with tower crane rescue. (5 members are funded through the THARP program)
- Skills maintenance is primarily achieved by conducting this training on the members' days off using the Accumulated Time Off (ATO) approach; as such, good attendance is a struggle, thus it is difficult to maintain the required skill sets.

Confined Space Rescue

- All members trained to level I (operations level), with 3rd party accreditation.
- In-house instructors are trained to level II (technician level).
- Skills maintenance is primarily achieved by conducting this training on the members' days off using the Accumulated Time Off (ATO) approach; as such, good attendance is a struggle, thus it is difficult to maintain the required skill sets.

Swift Water and Ice Rescue (shore based)

- All members are trained to level I (operations level), certified through the Rescue Canada program.
- In-house instructors for both swift water and ice rescue are trained to level II (technician level), certified through the Rescue Canada program.
- Internal instructors for water rescue are also certified by Rescue Canada in boat-based rescue and rescue boat operator.

- Skills maintenance is primarily achieved by conducting this training on the members' days off using the Accumulated Time Off (ATO) approach; as such, good attendance is a struggle, thus it is difficult to maintain the required skill sets.

Trench rescue

- No specific training – orientation to the dangers of trench rescues only, but will respond.

Structural collapse rescue

- No specific training, but will respond.

Aircraft crash rescue

- An agreement is in place for the department to respond to the airport for structural fires and fire inspections.
- No specific training for crash rescue, but will respond.
- Some awareness/orientation with the airport equipment and procedures, but nothing in the past 8 to 10 years.

Rapid Intervention Teams (RIT)

In-house RIT program, RIT trainers are internal; all members have now been trained through this in-house program.

Wildland/Urban Interface Responses
- All new members for past 6 years receive S100 from Wildfire Management Branch; have members certified to teach parts of this program
- Also have some members certified as fallers/danger tree assessors.
- Prior to that most received informal in-house familiarization with PGFR equipment.
- A new program, Wildland for Structural Firefighters, is now available from the Wildfire Management Branch. (the Dept. Has 2 instructors for this program)

Fire Officer Development

There is no pre-requisite program; the training opportunity is posted and available to those who accept the opportunity on a seniority basis.

Fire Officer I training (FO-I)
- Provided through an external third party accredited program certified to NFPA 1021 FO-I.

- The administrative, supervisory, managerial, and leadership portions of the program are delivered in-house, while the emergency incident management portions are delivered by an third party external provider.
- This program is also supplemented by in-house program operated by the Department.
- This program is required to perform at the rank of Captain.
- All FO-I candidates also receive the Fire Service Instructor (FSI) I & II courses through the JIBC.
- Skills maintenance is primarily achieved through conducting a 2-day incident management and strategies and tactics seminar every two to three years; delivered by a 3rd party external provider.
- FO-I (captain) performance evaluations are formally conducted by the Assistant Chief annually.

Fire Officer II training (FO-II)
- Pre-requisite for FO-II is successful completion of FO-I and two 3-credit post-secondary courses.
- FO-II training is provided through an external 3rd party accredited program certified to NFPA 1021 FO-II.
- The administrative and managerial portions of the program are delivered in-house, while the emergency incident management portions are delivered by an outside provider.
- This program is also supplemented by a PGFR in-house program.
- This program is required to perform at the rank of Assistant Chief.
- The candidate, in addition to the FO-I program, must also have successfully completed (70%) a 3-person panel interview to be eligible to "act" in this position/rank.
- The candidate, in addition to the above noted requirements, must also have completed an additional three 3-credit post-secondary courses (one per year) to be eligible for permanent promotion to this rank.
- FO-II (assist. Chief) performance evaluations are formally conducted by the Deputy Chief annually.

Captain in Training Division
- The position is a one year secondment.
- Required to be FO-I qualified with FSI-I.
- Must be an instructor in at least one specialty team.

Assistant Chief Training
- Same requirements as for FO-II (assist. Chief) noted above.
- Be an instructor in at least two specialty teams.

Assistant Chief Fire Prevention
- Same requirements as for FO-II (assist. Chief) noted above.
- Completed Fire Inspector level I.

- Be a Captain in Fire Prevention with a minimum of four years in the division, continuously for the past one year.
- Have completed four 3-credit post-secondary courses.

Deputy Fire Chief
- An exempt position, selected through city hall interview process.
- No pre-requisite education required.

Fire Chief
- An exempt position, selected through city hall interview process.
- No pre-requisite education required.

Appendix 6: Playbook Compliance

Structure Firefighters Competency and Training
PLAYBOOK
Second Edition: May 2015

References to NFPA Standards for:

- Train the Trainer

- Exterior Operations Firefighter

- Interior Operations Firefighter

- Full Service Operations Firefighter

- Team Leader Exterior and Interior

- Risk Management Officer

- Company Fire Officer

Standards Referenced:

NFPA 220	Standard on Types of Building Construction
NFPA 921	Guide for Fire and Explosion Investigations
NFPA 1001	Standard for Fire Fighter Professional Qualifications
NFPA 1021	Standard for Fire Officer Professional Qualifications
NFPA 1041	Standard for Fire Service Instructor Professional Qualifications
NFPA 1407	Standard for Training Fire Service Rapid Intervention Crews
NFPA 1500	Standard on Occupational Safety and Health Program
NFPA 1584	Standard on the Rehabilitation Process for Members During Emergency Operations and Training Exercises
NFPA 5000	Building Construction and Safety Code

Train the Trainer	Competency Met
NFPA 1041 4.2.1 – 4.2.4 / 4.3.2 – 4.3.3 / 4.4.1 – 4.4.4 / 4.5.1 – 4.5.3 and 4.5.5	
4.2.1 Definition of Duty. The management of basic resources and the records and reports essential to the instructional process.	
4.2.2 Assemble course materials, given a specific topic, so that the lesson plan and all materials, resources, and equipment needed to deliver the lesson are obtained. **(A) Requisite Knowledge.** Components of a lesson plan, policies and procedures for the procurement of materials and equipment, and resource availability. **(B) Requisite Skills.** None required.	Yes ☐ No ☐
4.2.3 Prepare requests for resources, given training goals and current resources, so that the resources required to meet training goals are identified and documented. **(A) Requisite Knowledge.** Resource management, sources of instructional resources and equipment. **(B) Requisite Skills.** Training schedule completion.	Yes ☐ No ☐
4.2.4 Schedule single instructional sessions, given a training assignment, department scheduling procedures, instructional resources, facilities and timeline for delivery, so that the specified sessions are delivered according to department procedure. **(A) Requisite Knowledge.** Departmental scheduling procedures and resource management. **(B) Requisite Skills.** Training schedule completion.	Yes ☐ No ☐
4.3.2* Review instructional materials, given the materials for a specific topic, target audience, and learning environment, so that elements of the lesson plan, learning environment, and resources that need adaptation are identified. **(A) Requisite Knowledge.** Recognition of student limitations and cultural diversity, methods of instruction, types of resource materials, organization of the learning environment, and policies and procedures. **(B) Requisite Skills.** Analysis of resources, facilities, and materials	Yes ☐ No ☐
4.3.3* Adapt a prepared lesson plan, given course materials and an assignment, so that the needs of the student and the objectives of the lesson plan are achieved. **(A)* Requisite Knowledge.** Elements of a lesson plan, selection of instructional aids and methods, and organization of the learning environment. **(B) Requisite Skills.** Instructor preparation and organizational skills.	Yes ☐ No ☐
4.4.1 Definition of Duty. The delivery of instructional sessions utilizing prepared course materials.	
4.4.2 Organize the classroom, laboratory, or outdoor learning environment, given a facility and an assignment, so that lighting, distractions, climate control or weather, noise control, seating, audiovisual equipment, teaching aids, and safety are considered. **(A) Requisite Knowledge.** Classroom management and safety, advantages and limitations of audiovisual equipment and teaching aids, classroom arrangement, and methods and techniques of instruction. **(B) Requisite Skills.** Use of instructional media and teaching aids.	Yes ☐ No ☐
4.4.3 Present prepared lessons, given a prepared lesson plan that specifies the presentation method(s), so that the method(s) indicated in the plan are used and the stated objectives or learning outcomes are achieved, applicable safety standards and practices are followed, and risks are addressed. **(A)* Requisite Knowledge.** The laws and principles of learning, methods and techniques of instruction, lesson plan components and elements of the communication process, and lesson plan terminology and definitions; the impact of cultural differences on instructional delivery; safety rules, regulations, and practices; identification of training hazards; elements and limitations of distance learning; distance learning delivery methods; and the instructor's role in distance learning. **(B) Requisite Skills.** Oral communication techniques, methods and techniques of instruction, and utilization of lesson plans in an instructional setting.	Yes ☐ No ☐

Train the Trainer	Competency Met
4.4.4* Adjust presentation, given a lesson plan and changing circumstances in the class environment, so that class continuity and the objectives or learning outcomes are achieved. **(A) Requisite Knowledge.** Methods of dealing with changing circumstances. **(B) Requisite Skills.** None required	Yes ☐ No ☐
4.5.1* **Definition of Duty.** The administration and grading of student evaluation instruments.	
4.5.2 Administer oral, written, and performance tests, given the lesson plan, evaluation instruments, and evaluation procedures of the agency, so that bias or discrimination is eliminated the testing is conducted according to procedures, and the security of the materials is maintained. **(A) Requisite Knowledge.** Test administration, agency policies, laws and policies pertaining to discrimination during training and testing, methods for eliminating testing bias, laws affecting records and disclosure of training information, purposes of evaluation and testing, and performance skills evaluation. **(B) Requisite Skills.** Use of skills checklists and oral questioning techniques.	Yes ☐ No ☐
4.5.3 Grade student oral, written, or performance tests, given class answer sheets or skills checklists and appropriate answer keys, so the examinations are accurately graded and properly secured. **(A) Requisite Knowledge.** Grading methods, methods for eliminating bias during grading, and maintaining confidentiality of scores. **(B) Requisite Skills.** None required.	Yes ☐ No ☐
4.5.5* Provide evaluation feedback to students, given evaluation data, so that the feedback is timely; specific enough for the student to make efforts to modify behavior; and objective, clear, and relevant; also include suggestions based on the data. **(A) Requisite Knowledge.** Reporting procedures and the interpretation of test results. **(B) Requisite Skills.** Communication skills and basic coaching.	Yes ☐ No ☐

Exterior Operations – Firefighter	Competency Met
Emergency Scene Traffic NFPA 1001 5.3.3	
5.3.3* Establish and operate in work areas at emergency scenes, given protective equipment, traffic and scene control devices, structure fire and roadway emergency scenes, traffic hazards and downed electrical wires, an assignment, and SOPs, so that procedures are followed, protective equipment is worn, protected work areas are established as directed using traffic and scene control devices, and the fire fighter performs assigned tasks only in established, protected work areas. **(A) Requisite Knowledge.** Potential hazards involved in operating on emergency scenes including vehicle traffic, utilities, and environmental conditions; proper procedures for dismounting apparatus in traffic; procedures for safe operation at emergency scenes; and the protective equipment available for members' safety on emergency scenes and work zone designations. **(B) Requisite Skills.** The ability to use personal protective clothing, deploy traffic and scene control devices, dismount apparatus, and operate in the protected work areas as directed.	Yes ☐ No ☐
Safety & Communications NFPA 1001 5.1.1, 5.1.2, 5.2, 5.2.1, 5.2.2, 5.2.3, 5.3.2, 5.3.17, 5.3.18	
5.1 General. For qualification at Level I, the fire fighter candidate shall meet the general knowledge requirements in 5.1.1; the general skill requirements in 5.1.2; the JPRs defined in Sections 5.2 through 5.5 of this standard; and the requirements defined in Chapter 5, Core Competencies for Operations Level Responders, and Section 6.6, Mission-Specific Competencies: Product Control, of NFPA 472, *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents.*	Yes ☐ No ☐
5.1.1 General Knowledge Requirements. The organization of the fire department; the role of the Fire Fighter I in the organization; the mission of fire service; the fire department's standard operating procedures (SOPs) and rules and regulations as they apply to the Fire Fighter I; the value of fire and life safety initiatives in support of the fire department mission and to reduce fire fighter line-of-duty injuries and fatalities; the role of other agencies as they relate to the fire department; aspects of the fire department's member assistance program; the importance of physical fitness and a healthy lifestyle to the performance of the duties of a fire fighter; the critical aspects of NFPA1500, *Standard on Fire Department Occupational Safety and Health Program.*	Yes ☐ No ☐
5.1.2 General Skill Requirements. The ability to don personal protective clothing, doff personal protective clothing and prepare for reuse, hoist tools and equipment using ropes and the correct knot, and locate information in departmental documents and standard or code materials.	Yes ☐ No ☐
5.2 Fire Department Communications. This duty shall involve initiating responses, receiving telephone calls, and using fire department communications equipment to correctly relay verbal or written information, according to the JPRs in 5.2.1 through 5.2.4.	
5.2.1* Initiate the response to a reported emergency, given the report of an emergency, fire department SOPs, and communications equipment, so that all necessary information is obtained, communications equipment is operated correctly, and the information is relayed promptly and accurately to the dispatch center. **(A) Requisite Knowledge.** Procedures for reporting an emergency; departmental SOPs for taking and receiving alarms, radio codes, or procedures; and information needs of dispatch center. **(B) Requisite Skills.** The ability to operate fire department communications equipment, relay information, and record information.	Yes ☐ No ☐
5.2.2 Receive a telephone call, given a fire department phone, so that procedures for answering the phone are used and the caller's information is relayed. **(A) Requisite Knowledge.** Fire department procedures for answering nonemergency telephone calls. **(B) Requisite Skills.** The ability to operate fire station telephone and intercom equipment.	Yes ☐ No ☐

Exterior Operations – Firefighter	Competency Met
5.2.3 Transmit and receive messages via the fire department radio, given a fire department radio and operating procedures, so that the information is accurate, complete, clear, and relayed within the time established by the AHJ. **(A) Requisite Knowledge.** Departmental radio procedures and etiquette for routine traffic, emergency traffic, and emergency evacuation signals. **(B) Requisite Skills.** The ability to operate radio equipment and discriminate between routine and emergency traffic.	Yes ☐ No ☐
5.3.2* Respond on apparatus to an emergency scene, given personal protective clothing and other necessary personal protective equipment, so that the apparatus is correctly mounted and dismounted, seat belts are used while the vehicle is in motion, and other personal protective equipment is correctly used. **(A) Requisite Knowledge.** Mounting and dismounting procedures for riding fire apparatus, hazards and ways to avoid hazards associated with riding apparatus, prohibited practices, and types of department personal protective equipment and the means for usage. **(B) Requisite Skills.** The ability to use each piece of provided safety equipment.	Yes ☐ No ☐
5.3.17 Illuminate the emergency scene, given fire service electrical equipment and an assignment, so that designated areas are illuminated and all equipment is operated within the manufacturer's listed safety precautions. **(A) Requisite Knowledge.** Safety principles and practices, power supply capacity and limitations, and light deployment methods. supply and lighting equipment, deploy cords and connectors, reset ground-fault interrupter (GFI) devices, and locate lights for best effect.	Yes ☐ No ☐
5.3.18 Turn off building utilities, given tools and an assignment, so that the assignment is safely completed. **(A) Requisite Knowledge.** Properties, principles, and safety concerns for electricity, gas, and water systems; utility disconnect methods and associated dangers; and use of required safety equipment. **(B) Requisite Skills.** The ability to identify utility control devices, operate control valves or switches, and assess for related hazards.	Yes ☐ No ☐
PPE and Self Contained Breathing Apparatus NFPA 1001 5.1.2, 5.2, 5.3, 5.3.1, 5.3.2, 5.5.1	
5.1.2 General Skill Requirements. The ability to don personal protective clothing, doff personal protective clothing and prepare for reuse, hoist tools and equipment using ropes and the correct knot, and locate information in departmental documents and standard or code materials.	Yes ☐ No ☐
5.2 Fire Department Communications. This duty shall involve initiating responses, receiving telephone calls, and using fire department communications equipment to correctly relay verbal or written information, according to the JPRs in 5.2.1 through 5.2.4.	Yes ☐ No ☐
5.3 Fireground Operations. This duty shall involve performing activities necessary to ensure life safety, fire control, and property conservation, according to the JPRs in 5.3.1 through 5.3.20.	
5.3.1* Use self-contained breathing apparatus (SCBA) during emergency operations, given SCBA and other personal protective equipment, so that the SCBA is correctly donned, the SCBA is correctly worn, controlled breathing techniques are used, emergency procedures are enacted if the SCBA fails, all low-air warnings are recognized, respiratory protection is not intentionally compromised, and hazardous areas are exited prior to air depletion. **(A) Requisite Knowledge.** Conditions that require respiratory protection, uses and limitations of SCBA, components of SCBA, donning procedures, breathing techniques, indications for and emergency procedures used with SCBA, and physical requirements of the SCBA wearer. **(B) Requisite Skills.** The ability to control breathing, replace SCBA air cylinders, use SCBA to exit through restricted passages, initiate and complete emergency procedures in the event of SCBA failure or air depletion, and complete donning procedures.	Yes ☐ No ☐

Exterior Operations – Firefighter	Competency Met
5.3.2* Respond on apparatus to an emergency scene, given personal protective clothing and other necessary personal protective equipment, so that the apparatus is correctly mounted and dismounted, seat belts are used while the vehicle is in motion, and other personal protective equipment is correctly used. **(A) Requisite Knowledge.** Mounting and dismounting procedures for riding fire apparatus, hazards and ways to avoid hazards associated with riding apparatus, prohibited practices, and types of department personal protective equipment and the means for usage. **(B) Requisite Skills.** The ability to use each piece of provided safety equipment.	Yes ☐ No ☐
5.5.1 Clean and check ladders, ventilation equipment, SCBA, ropes, salvage equipment, and hand tools, given cleaning tools, cleaning supplies, and an assignment, so that equipment is clean and maintained according to manufacturer's or departmental guidelines, maintenance is recorded, and equipment is placed in a ready state or reported otherwise. **(A) Requisite Knowledge.** Types of cleaning methods for various tools and equipment, correct use of cleaning solvents, and manufacturer's or departmental guidelines for cleaning equipment and tools. **(B) Requisite Skills.** The ability to select correct tools for various parts and pieces of equipment, follow guidelines, and complete recording and reporting procedures.	Yes ☐ No ☐
Ropes and Knots NFPA 1001 5.1.2, 5.3.20, 5.5.1	
5.1.2 General Skill Requirements. The ability to don personal protective clothing, doff personal protective clothing and prepare for reuse, hoist tools and equipment using ropes and the correct knot, and locate information in departmental documents and standard or code materials.	Yes ☐ No ☐
5.3.20 Tie a knot appropriate for hoisting tool, given personnel protective equipment, tools, ropes, and an assignment, so that the knots used are appropriate for hoisting tools securely and as directed. **(A) Requisite Knowledge.** Knot types and usage; the difference between life safety and utility rope; reasons for placing rope out of service; the types of knots to use for given tools, ropes, or situations; hoisting methods for tools and equipment; and using rope to support response activities. **(B) Requisite Skills.** The ability to hoist tools using specific knots based on the type of tool.	Yes ☐ No ☐
5.5.1 Clean and check ladders, ventilation equipment, SCBA, ropes, salvage equipment, and hand tools, given cleaning tools, cleaning supplies, and an assignment, so that equipment is clean and maintained according to manufacturer's or departmental guidelines, maintenance is recorded, and equipment is placed in a ready state or reported otherwise. **(A) Requisite Knowledge.** Types of cleaning methods for various tools and equipment, correct use of cleaning solvents, and manufacturer's or departmental guidelines for cleaning equipment and tools. **(B) Requisite Skills.** The ability to select correct tools for various parts and pieces of equipment, follow guidelines, and complete recording and reporting procedures.	Yes ☐ No ☐
Fire Streams, Hose and Appliances NFPA 1001 5.3.7, 5.3.8, 5.5.1, 5.5.2	

Exterior Operations – Firefighter	Competency Met
5.3.7* Attack a passenger vehicle fire operating as a member of a team, given personal protective equipment, attack line, and hand tools, so that hazards are avoided, leaking flammable liquids are identified and controlled, protection from flash fires is maintained, all vehicle compartments are overhauled, and the fire is extinguished. **(A) Requisite Knowledge.** Principles of fire streams as they relate to fighting automobile fires; precautions to be followed when advancing hose lines toward an automobile; observable results that a fire stream has been properly applied; identifying alternative fuels and the hazards associated with them; dangerous conditions created during an automobile fire; common types of accidents or injuries related to fighting automobile fires and how to avoid them; how to access locked passenger, trunk, and engine compartments; and methods for overhauling an automobile. **(B) Requisite Skills.** The ability to identify automobile fuel type; assess and control fuel leaks; open, close, and adjust the flow and pattern on nozzles; apply water for maximum effectiveness while maintaining flash fire protection; advance 1½ in. (38 mm) or larger diameter attack lines; and expose hidden fires by opening all automobile compartments. in stacked or piled and small unattached structures or storage containers that can be fought from the exterior, attack lines, hand tools and master stream devices, and an assignment, so that exposures are protected, the spread of fire is stopped, collapse hazards are avoided, water application is effective, the fire is extinguished, and signs of the origin area(s) and arson are preserved.	Yes ☐ No ☐
5.3.8* Extinguish fires in exterior Class A materials, given fires in stacked or piled and small unattached structures or storage containers that can be fought from the exterior, attack lines, hand tools and master stream devices, and an assignment, so that exposures are protected, the spread of fire is stopped, collapse hazards are avoided, water application is effective, the fire is extinguished, and signs of the origin area(s) and arson are preserved. **(A) Requisite Knowledge.** Types of attack lines and water streams appropriate for attacking stacked, piled materials and outdoor fires; dangers — such as collapse — associated with stacked and piled materials; various extinguishing agents and their effect on different material configurations; tools and methods to use in breaking up various types of materials; the difficulties related to complete extinguishment of stacked and piled materials; water application methods for exposure protection and fire extinguishment; dangers such as exposure to toxic or hazardous materials associated with storage building and container fires; obvious signs of origin and cause; and techniques for the preservation of fire cause evidence. **(B) Requisite Skills.** The ability to recognize inherent hazards related to the material's configuration, operate handlines or master streams, break up material using hand tools and water streams, evaluate for complete extinguishment, operate hose lines and other water application devices, evaluate and modify water application for maximum penetration, search for and expose hidden fires, assess patterns for origin determination, and evaluate for complete extinguishment	Yes ☐ No ☐
5.5.1 Clean and check ladders, ventilation equipment, SCBA, ropes, salvage equipment, and hand tools, given cleaning tools, cleaning supplies, and an assignment, so that equipment is clean and maintained according to manufacturer's or departmental guidelines, maintenance is recorded, and equipment is placed in a ready state or reported otherwise. **(A) Requisite Knowledge.** Types of cleaning methods for various tools and equipment, correct use of cleaning solvents, and manufacturer's or departmental guidelines for cleaning equipment and tools. **(B) Requisite Skills.** The ability to select correct tools for various parts and pieces of equipment, follow guidelines, and complete recording and reporting procedures.	Yes ☐ No ☐

Exterior Operations – Firefighter	Competency Met
5.5.2 Clean, inspect, and return fire hose to service, given washing equipment, water, detergent, tools, and replacement gaskets, so that damage is noted and corrected, the hose is clean, and the equipment is placed in a ready state for service. **(A) Requisite Knowledge.** Departmental procedures for noting a defective hose and removing it from service, cleaning methods, and hose rolls and loads. **(B) Requisite Skills.** The ability to clean different types of hose; operate hose washing and drying equipment; mark defective hose; and replace coupling gaskets, roll hose, and reload hose.	Yes ☐ No ☐
Ventilation NFPA 1001 5.3.11, 5.5.1	
5.3.11 Perform horizontal ventilation on a structure operating as part of a team, given an assignment, personal protective equipment, ventilation tools, equipment, and ladders, so that the ventilation openings are free of obstructions, tools are used as designed, ladders are correctly placed, ventilation devices are correctly placed, and the structure is cleared of smoke. **(A) Requisite Knowledge.** The principles, advantages, limitations, and effects of horizontal, mechanical, and hydraulic ventilation; safety considerations when venting a structure; fire behavior in a structure; the products of combustion found in a structure fire; the signs, causes, effects, and prevention of backdrafts; and the relationship of oxygen concentration to life safety and fire growth. **(B) Requisite Skills.** The ability to transport and operate ventilation tools and equipment and ladders, and to use safe procedures for breaking window and door glass and removing obstructions	Yes ☐ No ☐
5.5.1 Clean and check ladders, ventilation equipment, SCBA, ropes, salvage equipment, and hand tools, given cleaning tools, cleaning supplies, and an assignment, so that equipment is clean and maintained according to manufacturer's or departmental guidelines, maintenance is recorded, and equipment is placed in a ready state or reported otherwise. **(A) Requisite Knowledge.** Types of cleaning methods for various tools and equipment, correct use of cleaning solvents, and manufacturer's or departmental guidelines for cleaning equipment and tools. **(B) Requisite Skills.** The ability to select correct tools for various parts and pieces of equipment, follow guidelines, and complete recording and reporting procedures.	Yes ☐ No ☐
Water Supply NFPA 1001 5.3.15, 5.5.1, 5.5.2	
5.3.15* Connect a fire department pumper to a water supply as a member of a team, given supply or intake hose, hose tools, and a fire hydrant or static water source, so that connections are tight and water flow is unobstructed. **(A) Requisite Knowledge.** Loading and off-loading procedures for mobile water supply apparatus; fire hydrant operation; and suitable static water supply sources, procedures, and protocol for connecting to various water sources. **(B) Requisite Skills.** The ability to hand lay a supply hose, connect and place hard suction hose for drafting operations, deploy portable water tanks as well as the equipment necessary to transfer water between and draft from them, make hydrant-to-pumper hose connections for forward and reverse lays, connect supply hose to a hydrant, and fully open and close the hydrant.	Yes ☐ No ☐
5.5.1 Clean and check ladders, ventilation equipment, SCBA, ropes, salvage equipment, and hand tools, given cleaning tools, cleaning supplies, and an assignment, so that equipment is clean and maintained according to manufacturer's or departmental guidelines, maintenance is recorded, and equipment is placed in a ready state or reported otherwise. **(A) Requisite Knowledge.** Types of cleaning methods for various tools and equipment, correct use of cleaning solvents, and manufacturer's or departmental guidelines for cleaning equipment and tools. **(B) Requisite Skills.** The ability to select correct tools for various parts and pieces of equipment, follow guidelines, and complete recording and reporting procedures	Yes ☐ No ☐

Exterior Operations – Firefighter	Competency Met
5.5.2 Clean, inspect, and return fire hose to service, given washing equipment, water, detergent, tools, and replacement gaskets, so that damage is noted and corrected, the hose is clean, and the equipment is placed in a ready state for service. **(A) Requisite Knowledge.** Departmental procedures for noting a defective hose and removing it from service, cleaning methods, and hose rolls and loads. **(B) Requisite Skills.** The ability to clean different types of hose; operate hose washing and drying equipment; mark defective hose; and replace coupling gaskets, roll hose, and reload hose.	Yes ☐ No ☐
Ladders NFPA 1001 5.3.6, 5.5.1	
5.3.6* Set up ground ladders, given single and extension ladders, an assignment, and team members if needed, so that hazards are assessed, the ladder is stable, the angle is correct for climbing, extension ladders are extended to the necessary height with the fly locked, the top is placed against a reliable structural component, and the assignment is accomplished. **(A) Requisite Knowledge.** Parts of a ladder, hazards associated with setting up ladders, what constitutes a stable foundation for ladder placement, different angles for various tasks, safety limits to the degree of angulation, and what constitutes a reliable structural component for top placement. **(B) Requisite Skills.** The ability to carry ladders, raise ladders, extend ladders and lock flies, determine that a wall and roof will support the ladder, judge extension ladder height requirements, and place the ladder to avoid obvious hazards.	Yes ☐ No ☐
5.5.1 Clean and check ladders, ventilation equipment, SCBA, ropes, salvage equipment, and hand tools, given cleaning tools, cleaning supplies, and an assignment, so that equipment is clean and maintained according to manufacturer's or departmental guidelines, maintenance is recorded, and equipment is placed in a ready state or reported otherwise. **(A) Requisite Knowledge.** Types of cleaning methods for various tools and equipment, correct use of cleaning solvents, and manufacturer's or departmental guidelines for cleaning equipment and tools. **(B) Requisite Skills.** The ability to select correct tools for various parts and pieces of equipment, follow guidelines, and complete recording and reporting procedures.	Yes ☐ No ☐
Rehabilitation Area (REHAB) NFPA 1001 5.1.1, NFPA 1500, NFPA 1584	
5.1.1 General Knowledge Requirements. The organization of the fire department; the role of the Fire Fighter I in the organization; the mission of fire service; the fire department's standard operating procedures (SOPs) and rules and regulations as they apply to the Fire Fighter I; the value of fire and life safety initiatives in support of the fire department mission and to reduce fire fighter line-of-duty injuries and fatalities; the role of other agencies as they relate to the fire department; aspects of the fire department's member assistance program; the importance of physical fitness and a healthy lifestyle to the performance of the duties of a fire fighter; the critical aspects of NFPA1500, *Standard on Fire Department Occupational Safety and Health Program*.	Yes ☐ No ☐
+ **NFPA 1500** Standard on Occupational Safety and Health Program	Yes ☐ No ☐
+ **NFPA 1584** Standard on the Rehabilitation Process for Members During Emergency Operations and Training Exercises	Yes ☐ No ☐
Introduction to Basic Fire Behavior and Building Construction NFPA 220, NFPA 921, NFPA 1001 5.3.11, 5.3.12, 5.3.13 NFPA 5000	

Exterior Operations – Firefighter	Competency Met
5.3.11 Perform horizontal ventilation on a structure operating as part of a team, given an assignment, personal protective equipment, ventilation tools, equipment, and ladders, so that the ventilation openings are free of obstructions, tools are used as designed, ladders are correctly placed, ventilation devices are correctly placed, and the structure is cleared of smoke. **(A) Requisite Knowledge.** The principles, advantages, limitations, and effects of horizontal, mechanical, and hydraulic ventilation; safety considerations when venting a structure; fire behavior in a structure; the products of combustion found in a structure fire; the signs, causes, effects, and prevention of backdrafts; and the relationship of oxygen concentration to life safety and fire growth. **(B) Requisite Skills.** The ability to transport and operate ventilation tools and equipment and ladders, and to use safe procedures for breaking window and door glass and removing obstructions.	Yes ☐ No ☐
5.3.12 Perform vertical ventilation on a structure as part of a team, given an assignment, personal protective equipment, ground and roof ladders, and tools, so that ladders are positioned for ventilation, a specified opening is created, all ventilation barriers are removed, structural integrity is not compromised, products of combustion are released from the structure, and the team retreats from the area when ventilation is accomplished. **(A) Requisite Knowledge.** The methods of heat transfer; the principles of thermal layering within a structure on fire; the techniques and safety precautions for venting flat roofs, pitched roofs, and basements; basic indicators of potential collapse or roof failure; the effects of construction type and elapsed time under fire conditions on structural integrity; and the advantages and disadvantages of vertical and trench/strip ventilation. **(B) Requisite Skills.** The ability to transport and operate ventilation tools and equipment; hoist ventilation tools to a roof; cut roofing and flooring materials to vent flat roofs, pitched roofs, and basements; sound a roof for integrity; clear an opening with hand tools; select, carry, deploy, and secure ground ladders for ventilation activities; deploy roof ladders on pitched roofs while secured to a ground ladder; and carry ventilation-related tools and equipment while ascending and descending ladders.	Yes ☐ No ☐
5.3.13 Overhaul a fire scene, given personal protective equipment, attack line, hand tools, a flashlight, and an assignment, so that structural integrity is not compromised, all hidden fires are discovered, fire cause evidence is preserved, and the fire is extinguished. **(A) Requisite Knowledge.** Types of fire attack lines and water application devices most effective for overhaul, water application methods for extinguishment that limit water damage, types of tools and methods used to expose hidden fire, dangers associated with overhaul, obvious signs of area of origin or signs of arson, and reasons for protection of fire scene. **(B) Requisite Skills.** The ability to deploy and operate an attack line; remove flooring, ceiling, and wall components to expose void spaces without compromising structural integrity; apply water for maximum effectiveness; expose and extinguish hidden fires in walls, ceilings, and subfloor spaces; recognize and preserve obvious signs of area of origin and arson; and evaluate for complete extinguishment.	Yes ☐ No ☐
+ **NFPA 220** Standard on Types of Building Construction	Yes ☐ No ☐
+ **NFPA 921** Guide for Fire and Explosion Investigations	Yes ☐ No ☐
+ **NFPA 5000** Building Construction and Safety Code	Yes ☐ No ☐

Exterior Operations – Firefighter	Competency Met
Dangerous Goods or Hazmat Awareness *(from NFPA 472)* • Can utilize any training provider, including internal, that meets the competencies of NFPA 472 – Awareness Level [Playbook: Page 16, note1]	Yes ☐ No ☐
Gas & Electrical Safety for Firefighters *(supplied by a BC Utility utilizing an evaluation mechanism)* • Can utilize any program, developed by a registered Gas or Electrical Utility within the Province of BC, which includes an evaluation instrument based upon current recommended practice [Playbook: Page 16, note 2]	Yes ☐ No ☐
Incident Command System 100 *(from BCERMS curriculum)* • Can utilize any training provider, including internal, using certified training and evaluation based upon the BCEMS model. [Playbook: Page 16, note 3]	Yes ☐ No ☐

Interior Operations – Firefighter	Competency Met
All of Exterior Operations Firefighter PLUS the following:	Yes ☐ No ☐
Organization, Safety and Communications NFPA 1001 5.2.4	
5.2.4* Activate an emergency call for assistance, given vision obscured conditions, PPE, and department SOPs, so that the fire fighter can be located and rescued. **(A) Requisite Knowledge.** Personnel accountability systems, emergency communication procedures, and emergency evacuation methods. **(B) Requisite Skills.** The ability to initiate an emergency call for assistance in accordance with the AHJ's procedures, the ability to use other methods of emergency calls for assistance.	Yes ☐ No ☐
RIT Training – pertinent to jurisdictional hazards NFPA 1001 5.3.9 NFPA 1407, NFPA 1500	
5.3.9* Conduct a search and rescue in a structure operating as a member of a team, given an assignment, obscured vision conditions, personal protective equipment, a flashlight, forcible entry tools, hose lines, and ladders when necessary, so that ladders are correctly placed when used, all assigned areas are searched, all victims are located and removed, team integrity is maintained, and team members' safety — including respiratory protection — is not compromised. **(A) Requisite Knowledge.** Use of forcible entry tools during rescue operations, ladder operations for rescue, psychological effects of operating in obscured conditions and ways to manage them, methods to determine if an area is tenable, primary and secondary search techniques, team members' roles and goals, methods to use and indicators of finding victims, victim removal methods (including various carries), and considerations related to respiratory protection. **(B)* Requisite Skills.** The ability to use SCBA to exit through restricted passages, set up and use different types of ladders for various types of rescue operations, rescue a fire fighter with functioning respiratory protection, rescue a fire fighter whose respiratory protection is not functioning, rescue a person who has no respiratory protection, and assess areas to determine tenability.	Yes ☐ No ☐
+ **NFPA 1407** Standard for Training Fire Service Rapid Intervention Crews	Yes ☐ No ☐
+ **NFPA 1500** Standard on Fire Department Occupational Safety and Health Program	Yes ☐ No ☐
Self-Contained Breathing Apparatus NFPA 1001 5.3.1, 5.3.5, 5.3.9	
5.3.1* Use self-contained breathing apparatus (SCBA) during emergency operations, given SCBA and other personal protective equipment, so that the SCBA is correctly donned, the SCBA is correctly worn, controlled breathing techniques are used, emergency procedures are enacted if the SCBA fails, all low-air warnings are recognized, respiratory protection is not intentionally compromised, and hazardous areas are exited prior to air depletion. **(A) Requisite Knowledge.** Conditions that require respiratory protection, uses and limitations of SCBA, components of SCBA, donning procedures, breathing techniques, indications for and emergency procedures used with SCBA, and physical requirements of the SCBA wearer. **(B) Requisite Skills.** The ability to control breathing, replace SCBA air cylinders, use SCBA to exit through restricted passages, initiate and complete emergency procedures in the event of SCBA failure or air depletion, and complete donning procedures.	Yes ☐ No ☐

Interior Operations – Firefighter	Competency Met
5.3.5* Exit a hazardous area as a team, given vision-obscured conditions, so that a safe haven is found before exhausting the air supply, others are not endangered, and the team integrity is maintained. **(A) Requisite Knowledge.** Personnel accountability systems, communication procedures, emergency evacuation methods, what constitutes a safe haven, elements that create or indicate a hazard, and emergency procedures for loss of air supply. **(B) Requisite Skills.** The ability to operate as a team member in vision-obscured conditions, locate and follow a guideline, conserve air supply, and evaluate areas for hazards and identify a safe haven.	Yes ☐ No ☐
5.3.9* Conduct a search and rescue in a structure operating as a member of a team, given an assignment, obscured vision conditions, personal protective equipment, a flashlight, forcible entry tools, hose lines, and ladders when necessary, so that ladders are correctly placed when used, all assigned areas are searched, all victims are located and removed, team integrity is maintained, and team members' safety — including respiratory protection — is not compromised. **(A) Requisite Knowledge.** Use of forcible entry tools during rescue operations, ladder operations for rescue, psychological effects of operating in obscured conditions and ways to manage them, methods to determine if an area is tenable, primary and secondary search techniques, team members' roles and goals, methods to use and indicators of finding victims, victim removal methods (including various carries), and considerations related to respiratory protection. **(B)* Requisite Skills.** The ability to use SCBA to exit through restricted passages, set up and use different types of ladders for various types of rescue operations, rescue a fire fighter with functioning respiratory protection, rescue a fire fighter whose respiratory protection is not functioning, rescue a person who has no respiratory protection, and assess areas to determine tenability.	Yes ☐ No ☐
Search and Rescue NFPA 1001 5.3.9	
5.3.9* Conduct a search and rescue in a structure operating as a member of a team, given an assignment, obscured vision conditions, personal protective equipment, a flashlight, forcible entry tools, hose lines, and ladders when necessary, so that ladders are correctly placed when used, all assigned areas are searched, all victims are located and removed, team integrity is maintained, and team members' safety — including respiratory protection — is not compromised. **(A) Requisite Knowledge.** Use of forcible entry tools during rescue operations, ladder operations for rescue, psychological effects of operating in obscured conditions and ways to manage them, methods to determine if an area is tenable, primary and secondary search techniques, team members' roles and goals, methods to use and indicators of finding victims, victim removal methods (including various carries), and considerations related to respiratory protection. **(B)* Requisite Skills.** The ability to use SCBA to exit through restricted passages, set up and use different types of ladders for various types of rescue operations, rescue a fire fighter with functioning respiratory protection, rescue a fire fighter whose respiratory protection is not functioning, rescue a person who has no respiratory protection, and assess areas to determine tenability.	Yes ☐ No ☐
Fire Behavior NFPA 1001	Yes ☐ No ☐
Fire Extinguishers NFPA 1001 5.3.16	

Interior Operations – Firefighter	Competency Met
5.3.16* Extinguish incipient Class A, Class B, and Class C fires, given a selection of portable fire extinguishers, so that the correct extinguisher is chosen, the fire is completely extinguished, and correct extinguisher-handling techniques are followed. **(A) Requisite Knowledge.** The classifications of fire; the types of, rating systems for, and risks associated with each class of fire; and the operating methods of and limitations of portable extinguishers. **(B) Requisite Skills.** The ability to operate portable fire extinguishers, approach fire with portable fire extinguishers, select an appropriate extinguisher based on the size and type of fire, and safely carry portable fire extinguishers.	Yes ☐ No ☐
Building Construction NFPA 1001 5.3.11, 5.3.12	
5.3.11 Perform horizontal ventilation on a structure operating as part of a team, given an assignment, personal protective equipment, ventilation tools, equipment, and ladders, so that the ventilation openings are free of obstructions, tools are used as designed, ladders are correctly placed, ventilation devices are correctly placed, and the structure is cleared of smoke. **(A) Requisite Knowledge.** The principles, advantages, limitations, and effects of horizontal, mechanical, and hydraulic ventilation; safety considerations when venting a structure; fire behavior in a structure; the products of combustion found in a structure fire; the signs, causes, effects, and prevention of backdrafts; and the relationship of oxygen concentration to life safety and fire growth. **(B) Requisite Skills.** The ability to transport and operate ventilation tools and equipment and ladders, and to use safe procedures for breaking window and door glass and removing obstructions.	Yes ☐ No ☐
5.3.12 Perform vertical ventilation on a structure as part of a team, given an assignment, personal protective equipment, ground and roof ladders, and tools, so that ladders are positioned for ventilation, a specified opening is created, all ventilation barriers are removed, structural integrity is not compromised, products of combustion are released from the structure, and the team retreats from the area when ventilation is accomplished. **(A) Requisite Knowledge.** The methods of heat transfer; the principles of thermal layering within a structure on fire; the techniques and safety precautions for venting flat roofs, pitched roofs, and basements; basic indicators of potential collapse or roof failure; the effects of construction type and elapsed time under fire conditions on structural integrity; and the advantages and disadvantages of vertical and trench/strip ventilation. **(B) Requisite Skills.** The ability to transport and operate ventilation tools and equipment; hoist ventilation tools to a roof; cut roofing and flooring materials to vent flat roofs, pitched roofs, and basements; sound a roof for integrity; clear an opening with hand tools; select, carry, deploy, and secure ground ladders for ventilation activities; deploy roof ladders on pitched roofs while secured to a ground ladder; and carry ventilation-related tools and equipment while ascending and descending ladders.	Yes ☐ No ☐
Forcible Entry NFPA 1001 5.3.4	
5.3.4* Force entry into a structure, given personal protective equipment, tools, and an assignment, so that the tools are used as designed, the barrier is removed, and the opening is in a safe condition and ready for entry. **(A) Requisite Knowledge.** Basic construction of typical doors, windows, and walls within the department's community or service area; operation of doors, windows, and locks; and the dangers associated with forcing entry through doors, windows, and walls. **(B) Requisite Skills.** The ability to transport and operate hand and power tools and to force entry through doors, windows, and walls using assorted methods and tools.	Yes ☐ No ☐

Interior Operations – Firefighter	Competency Met
Ventilation NFPA 1001 5.3.12	
5.3.12 Perform vertical ventilation on a structure as part of a team, given an assignment, personal protective equipment, ground and roof ladders, and tools, so that ladders are positioned for ventilation, a specified opening is created, all ventilation barriers are removed, structural integrity is not compromised, products of combustion are released from the structure, and the team retreats from the area when ventilation is accomplished. **(A) Requisite Knowledge.** The methods of heat transfer; the principles of thermal layering within a structure on fire; the techniques and safety precautions for venting flat roofs, pitched roofs, and basements; basic indicators of potential collapse or roof failure; the effects of construction type and elapsed time under fire conditions on structural integrity; and the advantages and disadvantages of vertical and trench/strip ventilation. **(B) Requisite Skills.** The ability to transport and operate ventilation tools and equipment; hoist ventilation tools to a roof; cut roofing and flooring materials to vent flat roofs, pitched roofs, and basements; sound a roof for integrity; clear an opening with hand tools; select, carry, deploy, and secure ground ladders for ventilation activities; deploy roof ladders on pitched roofs while secured to a ground ladder; and carry ventilation-related tools and equipment while ascending and descending ladders.	Yes ☐ No ☐
Loss Control NFPA 1001 5.3.13, 5.3.14	
5.3.13 Overhaul a fire scene, given personal protective equipment, attack line, hand tools, a flashlight, and an assignment, so that structural integrity is not compromised, all hidden fires are discovered, fire cause evidence is preserved, and the fire is extinguished. **(A) Requisite Knowledge.** Types of fire attack lines and water application devices most effective for overhaul, water application methods for extinguishment that limit water damage, types of tools and methods used to expose hidden fire, dangers associated with overhaul, obvious signs of area of origin or signs of arson, and reasons for protection of fire scene. **(B) Requisite Skills.** The ability to deploy and operate an attack line; remove flooring, ceiling, and wall components to expose void spaces without compromising structural integrity; apply water for maximum effectiveness; expose and extinguish hidden fires in walls, ceilings, and subfloor spaces; recognize and preserve obvious signs of area of origin and arson; and evaluate for complete extinguishment.	Yes ☐ No ☐
5.3.14 Conserve property as a member of a team, given salvage tools and equipment and an assignment, so that the building and its contents are protected from further damage. **(A) Requisite Knowledge.** The purpose of property conservation and its value to the public, methods used to protect property, types of and uses for salvage covers, operations at properties protected with automatic sprinklers, how to stop the flow of water from an automatic sprinkler head, identification of the main control valve on an automatic sprinkler system, forcible entry issues related to salvage, and procedures for protecting possible areas of origin and potential evidence. **(B) Requisite Skills.** The ability to cluster furniture; deploy covering materials; roll and fold salvage covers for reuse; construct water chutes and catch-alls; remove water; cover building openings, including doors, windows, floor openings, and roof openings; separate, remove, and relocate charred material to a safe location while protecting the area of origin for cause determination; stop the flow of water from a sprinkler with sprinkler wedges or stoppers; and operate a main control valve on an automatic sprinkler system.	Yes ☐ No ☐
Live Fire Exterior NFPA 1001 5.3.7, 5.3.8, 5.3.10, 5.3.19	

Interior Operations – Firefighter	Competency Met
5.3.7* Attack a passenger vehicle fire operating as a member of a team, given personal protective equipment, attack line, and hand tools, so that hazards are avoided, leaking flammable liquids are identified and controlled, protection from flash fires is maintained, all vehicle compartments are overhauled, and the fire is extinguished. **(A) Requisite Knowledge.** Principles of fire streams as they relate to fighting automobile fires; precautions to be followed when advancing hose lines toward an automobile; observable results that a fire stream has been properly applied; identifying alternative fuels and the hazards associated with them; dangerous conditions created during an automobile fire; common types of accidents or injuries related to fighting automobile fires and how to avoid them; how to access locked passenger, trunk, and engine compartments; and methods for overhauling an automobile. **(B) Requisite Skills.** The ability to identify automobile fuel type; assess and control fuel leaks; open, close, and adjust the flow and pattern on nozzles; apply water for maximum effectiveness while maintaining flash fire protection; advance $1\frac{1}{2}$ in. (38 mm) or larger diameter attack lines; and expose hidden fires by opening all automobile compartments.	Yes ☐ No ☐
5.3.8* Extinguish fires in exterior Class A materials, given fires in stacked or piled and small unattached structures or storage containers that can be fought from the exterior, attack lines, hand tools and master stream devices, and an assignment, so that exposures are protected, the spread of fire is stopped, collapse hazards are avoided, water application is effective, the fire is extinguished, and signs of the origin area(s) and arson are preserved. **(A) Requisite Knowledge.** Types of attack lines and water streams appropriate for attacking stacked, piled materials and outdoor fires; dangers — such as collapse — associated with stacked and piled materials; various extinguishing agents and their effect on different material configurations; tools and methods to use in breaking up various types of materials; the difficulties related to complete extinguishment of stacked and piled materials; water application methods for exposure protection and fire extinguishment; dangers such as exposure to toxic or hazardous materials associated with storage building and container fires; obvious signs of origin and cause; and techniques for the preservation of fire cause evidence. **(B) Requisite Skills.** The ability to recognize inherent hazards related to the material's configuration, operate handlines or master streams, break up material using hand tools and water streams, evaluate for complete extinguishment, operate hose lines and other water application devices, evaluate and modify water application for maximum penetration, search for and expose hidden fires, assess patterns for origin determination, and evaluate for complete extinguishment.	Yes ☐ No ☐

Interior Operations – Firefighter	Competency Met
5.3.10* Attack an interior structure fire operating as a member of a team, given an attack line, ladders when needed, personal protective equipment, tools, and an assignment, so that team integrity is maintained, the attack line is deployed for advancement, ladders are correctly placed when used, access is gained into the fire area, effective water application practices are used, the fire is approached correctly, attack techniques facilitate suppression given the level of the fire, hidden fires are located and controlled, the correct body posture is maintained, hazards are recognized and managed, and the fire is brought under control. **(A) Requisite Knowledge.** Principles of fire streams; types, design, operation, nozzle pressure effects, and flow capabilities of nozzles; precautions to be followed when advancing hose lines to a fire; observable results that a fire stream has been properly applied; dangerous building conditions created by fire; principles of exposure protection; potential longterm consequences of exposure to products of combustion; physical states of matter in which fuels are found; common types of accidents or injuries and their causes; and the application of each size and type of attack line, the role of the backup team in fire attack situations, attack and control techniques for grade level and above and below grade levels, and exposing hidden fires. **(B) Requisite Skills.** The ability to prevent water hammers when shutting down nozzles; open, close, and adjust nozzle flow and patterns; apply water using direct, indirect, and combination attacks; advance charged and uncharged $1\frac{1}{2}$ in. (38 mm) diameter or larger hose lines up ladders and up and down interior and exterior stairways; extend hose lines; replace burst hose sections; operate charged hose lines of $1\frac{1}{2}$ in. (38 mm) diameter or larger while secured to a ground ladder; couple and uncouple various handline connections; carry hose; attack fires at grade level and above and below grade levels; and locate and suppress interior wall and subfloor fires.	Yes ☐ No ☐
5.3.19* Combat a ground cover fire operating as a member of a team, given protective clothing, SCBA (if needed), hose lines, extinguishers or hand tools, and an assignment, so that threats to property are reported, threats to personal safety are recognized, retreat is quickly accomplished when warranted, and the assignment is completed. **(A) Requisite Knowledge.** Types of ground cover fires, parts of ground cover fires, methods to contain or suppress, and safety principles and practices. **(B) Requisite Skills.** The ability to determine exposure threats based on fire spread potential, protect exposures, construct a fire line or extinguish with hand tools, maintain integrity of established fire lines, and suppress ground cover fires using water.	Yes ☐ No ☐

Full Service Operations – Firefighter	Competency Met
All of NFPA 1001 – FF2 Competencies (except Hazmat and Medical Response) and with the addition of:	Yes ☐ No ☐
Live Fire Exterior and Interior	Yes ☐ No ☐
Hazmat Operations *(NFPA core competencies plus 6.6.1.1.2)*	Yes ☐ No ☐
6.6.1.1.2 The operations level responder assigned to perform product control at hazardous materials/ WMD incidents shall be trained to meet all competencies at the awareness level (*see Chapter 4*), all core competencies at the operations level (*see Chapter 5*), all mission-specific competencies for personal protective equipment (*see Section 6.2*), and all competencies in this section.	Yes ☐ No ☐

Team Leader Exterior & Interior	Competency Met
• Can utilize any training provider, including internal, that meets the competencies of NFPA 1021 – Fire Officer Professional Qualifications [Playbook: Page 16, note 3] *Completion of the Operational Firefighter requirements for <u>either the Exterior or Interior Service Level</u> <u>PLUS</u> the following Competencies from NFPA 1021:*	Yes ☐ No ☐
Incident Command and Fire Attack NFPA 1021 4.1.1, 4.2.1, 4.2.2, 4.2.3	
4.1.1* General Prerequisite Knowledge. The organizational structure of the department; geographical configuration and characteristics of response districts; departmental operating procedures for administration, emergency operations, incident management system and safety; fundamentals of leadership; departmental budget process; information management and recordkeeping; the fire prevention and building safety codes and ordinances applicable to the jurisdiction; current trends, technologies, and socioeconomic and political factors that affect the fire service; cultural diversity; methods used by supervisors to obtain cooperation within a group of subordinates; the rights of management and members; agreements in force between the organization and members; generally accepted ethical practices, including a professional code of ethics; and policies and procedures regarding the operation of the department as they involve supervisors and members.	Yes ☐ No ☐
4.2.1 Assign tasks or responsibilities to unit members, given an assignment at an emergency incident, so that the instructions are complete, clear, and concise; safety considerations are addressed; and the desired outcomes are conveyed. **(A) Requisite Knowledge.** Verbal communications during emergency incidents, techniques used to make assignments under stressful situations, and methods of confirming understanding. **(B) Requisite Skills.** The ability to condense instructions for frequently assigned unit tasks based on training and standard operating procedures.	Yes ☐ No ☐
4.2.2 Assign tasks or responsibilities to unit members, given an assignment under nonemergency conditions at a station or other work location, so that the instructions are complete, clear, and concise; safety considerations are addressed; and the desired outcomes are conveyed. **(A) Requisite Knowledge.** Verbal communications under nonemergency situations, techniques used to make assignments under routine situations, and methods of confirming understanding. **(B) Requisite Skills.** The ability to issue instructions for frequently assigned unit tasks based on department policy.	Yes ☐ No ☐
4.2.3 Direct unit members during a training evolution, given a company training evolution and training policies and procedures, so that the evolution is performed in accordance with safety plans, efficiently, and as directed. **(A) Requisite Knowledge.** Verbal communication techniques to facilitate learning. **(B) Requisite Skills.** The ability to distribute issue-guided directions to unit members during training evolutions.	Yes ☐ No ☐
Pre-Incident Planning, Size-up and Incident Action Planning NFPA 1021 4.5.2, 4.5.3, 4.6, 4.6.1, 4.6.2	

Team Leader Exterior & Interior	Competency Met
4.5.2 Identify construction, alarm, detection, and suppression features that contribute to or prevent the spread of fire, heat, and smoke throughout the building or from one building to another, given an occupancy, and the policies and forms of the AHJ so that a pre-incident plan for any of the following occupancies is developed: (1) Public assembly (2) Educational (3) Institutional (4) Residential (5) Business (6) Industrial (7) Manufacturing (8) Storage (9) Mercantile (10) Special properties **(A) Requisite Knowledge.** Fire behavior; building construction; inspection and incident reports; detection, alarm, and suppression systems; and applicable codes, ordinances, and standards. **(B) Requisite Skills.** The ability to use evaluative methods and to communicate orally and in writing.	Yes ☐ No ☐
4.5.3 Secure an incident scene, given rope or barrier tape, so that unauthorized persons can recognize the perimeters of the scene and are kept from restricted areas, and all evidence or potential evidence is protected from damage or destruction. **(A) Requisite Knowledge.** Types of evidence, the importance of fire scene security, and evidence preservation. **(B) Requisite Skills.** The ability to establish perimeters at an incident scene.	Yes ☐ No ☐
4.6* Emergency Service Delivery. This duty involves supervising emergency operations, conducting pre-incident planning, and deploying assigned resources in accordance with the local emergency plan and according to the following job performance requirements.	
4.6.1 Develop an initial action plan, given size-up information for an incident and assigned emergency response resources, so that resources are deployed to control the emergency. **(A)* Requisite Knowledge.** Elements of a size-up, standard operating procedures for emergency operations, and fire behavior. **(B)* Requisite Skills.** The ability to analyze emergency scene conditions; to activate the local emergency plan, including localized evacuation procedures; to allocate resources; and to communicate orally.	Yes ☐ No ☐
4.6.2* Implement an action plan at an emergency operation, given assigned resources, type of incident, and a preliminary plan, so that resources are deployed to mitigate the situation. **(A) Requisite Knowledge.** Standard operating procedures, resources available for the mitigation of fire and other emergency incidents, an incident management system, scene safety, and a personnel accountability system. **(B) Requisite Skills.** The ability to implement an incident management system, to communicate orally, to manage scene safety, and to supervise and account for assigned personnel under emergency conditions.	Yes ☐ No ☐
Fire Ground Accountability NFPA 1021 4.6.1, 4.6.2	

Team Leader Exterior & Interior	Competency Met
4.6.1 Develop an initial action plan, given size-up information for an incident and assigned emergency response resources, so that resources are deployed to control the emergency. **(A)* Requisite Knowledge.** Elements of a size-up, standard operating procedures for emergency operations, and fire behavior. **(B)* Requisite Skills.** The ability to analyze emergency scene conditions; to activate the local emergency plan, including localized evacuation procedures; to allocate resources; and to communicate orally.	Yes ☐ No ☐
4.6.2* Implement an action plan at an emergency operation, given assigned resources, type of incident, and a preliminary plan, so that resources are deployed to mitigate the situation. **(A) Requisite Knowledge.** Standard operating procedures, resources available for the mitigation of fire and other emergency incidents, an incident management system, scene safety, and a personnel accountability system. **(B) Requisite Skills.** The ability to implement an incident management system, to communicate orally, to manage scene safety, and to supervise and account for assigned personnel under emergency conditions.	Yes ☐ No ☐
Live Fire – Exterior *(Recommended for Exterior Operations)* NFPA 1001 5.3.7, 5.3.8, 5.3.10	
5.3.7* Attack a passenger vehicle fire operating as a member of a team, given personal protective equipment, attack line, and hand tools, so that hazards are avoided, leaking flammable liquids are identified and controlled, protection from flash fires is maintained, all vehicle compartments are overhauled, and the fire is extinguished. **(A) Requisite Knowledge.** Principles of fire streams as they relate to fighting automobile fires; precautions to be followed when advancing hose lines toward an automobile; observable results that a fire stream has been properly applied; identifying alternative fuels and the hazards associated with them; dangerous conditions created during an automobile fire; common types of accidents or injuries related to fighting automobile fires and how to avoid them; how to access locked passenger, trunk, and engine compartments; and methods for overhauling an automobile. **(B) Requisite Skills.** The ability to identify automobile fuel type; assess and control fuel leaks; open, close, and adjust the flow and pattern on nozzles; apply water for maximum effectiveness while maintaining flash fire protection; advance $1\frac{1}{2}$ in. (38 mm) or larger diameter attack lines; and expose hidden fires by opening all automobile compartments.	Yes ☐ No ☐
5.3.8* Extinguish fires in exterior Class A materials, given fires in stacked or piled and small unattached structures or storage containers that can be fought from the exterior, attack lines, hand tools and master stream devices, and an assignment, so that exposures are protected, the spread of fire is stopped, collapse hazards are avoided, water application is effective, the fire is extinguished, and signs of the origin area(s) and arson are preserved. **(A) Requisite Knowledge.** Types of attack lines and water streams appropriate for attacking stacked, piled materials and outdoor fires; dangers — such as collapse — associated with stacked and piled materials; various extinguishing agents and their effect on different material configurations; tools and methods to use in breaking up various types of materials; the difficulties related to complete extinguishment of stacked and piled materials; water application methods for exposure protection and fire extinguishment; dangers such as exposure to toxic or hazardous materials associated with storage building and container fires; obvious signs of origin and cause; and techniques for the preservation of fire cause evidence. **(B) Requisite Skills.** The ability to recognize inherent hazards related to the material's configuration, operate handlines or master streams, break up material using hand tools and water streams, evaluate for complete extinguishment, operate hose lines and other water application devices, evaluate and modify water application for maximum penetration, search for and expose hidden fires, assess patterns for origin determination, and evaluate for complete extinguishment.	Yes ☐ No ☐

Team Leader Exterior & Interior	Competency Met
5.3.10* Attack an interior structure fire operating as a member of a team, given an attack line, ladders when needed, personal protective equipment, tools, and an assignment, so that team integrity is maintained, the attack line is deployed for advancement, ladders are correctly placed when used, access is gained into the fire area, effective water application practices are used, the fire is approached correctly, attack techniques facilitate suppression given the level of the fire, hidden fires are located and controlled, the correct body posture is maintained, hazards are recognized and managed, and the fire is brought under control. **(A) Requisite Knowledge.** Principles of fire streams; types, design, operation, nozzle pressure effects, and flow capabilities of nozzles; precautions to be followed when advancing hose lines to a fire; observable results that a fire stream has been properly applied; dangerous building conditions created by fire; principles of exposure protection; potential longterm consequences of exposure to products of combustion; physical states of matter in which fuels are found; common types of accidents or injuries and their causes; and the application of each size and type of attack line, the role of the backup team in fire attack situations, attack and control techniques for grade level and above and below grade levels, and exposing hidden fires. **(B) Requisite Skills.** The ability to prevent water hammers when shutting down nozzles; open, close, and adjust nozzle flow and patterns; apply water using direct, indirect, and combination attacks; advance charged and uncharged $1\frac{1}{2}$ in. (38 mm) diameter or larger hose lines up ladders and up and down interior and exterior stairways; extend hose lines; replace burst hose sections; operate charged hose lines of $1\frac{1}{2}$ in. (38 mm) diameter or larger while secured to a ground ladder; couple and uncouple various handline connections; carry hose; attack fires at grade level and above and below grade levels; and locate and suppress interior wall and subfloor fires.	Yes ☐ No ☐
Live Fire – Exterior & Interior *(Recommended for Interior Operations)*	Yes ☐ No ☐

Risk Management Officer	Competency Met
Completion of the Team Leader requirements for the Exterior Operations level PLUS the following courses (1 from each area):	Yes ☐ No ☐
EITHER Incident Action Planning NFPA 1021 4.6.1, 4.6.2 *Requires a training program with subject matter covering areas such as strategies and tactics, fire ground command and emergency scene management* [Playbook: Page 16, note 5]	
4.6.1 Develop an initial action plan, given size-up information for an incident and assigned emergency response resources, so that resources are deployed to control the emergency. **(A)* Requisite Knowledge.** Elements of a size-up, standard operating procedures for emergency operations, and fire behavior. **(B)* Requisite Skills.** The ability to analyze emergency scene conditions; to activate the local emergency plan, including localized evacuation procedures; to allocate resources; and to communicate orally.	Yes ☐ No ☐
4.6.2* Implement an action plan at an emergency operation, given assigned resources, type of incident, and a preliminary plan, so that resources are deployed to mitigate the situation. **(A) Requisite Knowledge.** Standard operating procedures, resources available for the mitigation of fire and other emergency incidents, an incident management system, scene safety, and a personnel accountability system. **(B) Requisite Skills.** The ability to implement an incident management system, to communicate orally, to manage scene safety, and to supervise and account for assigned personnel under emergency conditions.	Yes ☐ No ☐
OR Incident Safety Officer NFPA 1521 6.1 – 6.7.2 *(operational)*	Yes ☐ No ☐
6.1 General Functions of the Incident Safety Officer. **6.1.1*** The incident safety officer (ISO) shall be integrated with the incident management system (IMS) as a command staff member, as specified in NFPA 1561, *Standard on Emergency Services Incident Management System*. **6.1.2*** Standard operating procedures (SOPs) shall define criteria for the response of a predesignated incident safety officer. **6.1.2.1** If the incident safety officer is designated by the incident commander, the fire department shall establish criteria for appointment based upon 6.1.1. **6.1.3*** The incident safety officer and assistant incident safety officer(s) shall be readily identifiable at the incident scene. **6.1.4*** Upon arrival or assignment as the incident safety officer at an incident, he or she shall obtain a situation-status briefing from the incident commander, that includes the incident action plan. **6.1.5** The incident safety officer shall monitor the incident action plan, conditions, activities, and operations to determine whether they fall within the criteria as defined in the fire department's risk management plan. **6.1.6** When the perceived risk(s) is not within the fire department's risk management criteria, the incident safety officer shall take action as outlined in Section 4.6. **6.1.7** The incident safety officer shall monitor the incident scene and report to the incident commander the status of conditions, hazards, and risks.	

Risk Management Officer	Competency Met
6.1.8 The incident safety officer shall ensure that the fire department's personnel accountability system is being utilized. **6.1.9*** The incident safety officer shall offer judgment to the incident commander on establishing control zones and no entry zones and ensure that established zones are communicated to all members present on the scene. **6.1.10** The incident safety officer shall evaluate motor vehicle incident scene traffic hazards and apparatus placement and take appropriate actions to mitigate hazards as described in Section 8.7 of NFPA 1500, *Standard on Fire Department Occupational Safety and Health Program*. **6.1.11** The incident safety officer shall monitor radio transmissions and stay alert to transmission barriers that could result in missed, unclear, or incomplete communication. **6.1.12*** The incident safety officer shall ensure that the incident commander establishes an incident scene rehabilitation tactical level management component during emergency operations. **6.1.13*** The incident safety officer shall communicate to the incident commander the need for assistant incident safety officers and/or technical specialists due to the need, size, complexity, or duration of the incident. **6.1.14** The incident safety officer or assistant incident safety officer shall survey and evaluate the hazards associated with the designation of a landing zone and interface with helicopters. **6.1.15*** The incident safety officer shall recognize the potential need for critical incident stress interventions and notify the incident commander of this possibility. **6.1.16** If the incident safety officer or an assistant safety officer needs to enter a hot zone or an environment that is immediately dangerous to life or health (IDLH), the incident safety officer or assistant safety officer shall be paired up with another member and check in with the entry control officer.	
6.2 Fire Suppression. **6.2.1** The incident safety officer shall meet the provisions of Section 6.2 during fire suppression operations. **6.2.2*** The incident safety officer shall ensure that a rapid intervention team meeting the criteria in Chapter 8 of NFPA 1500, is available and ready for deployment. **6.2.3** Where fire has involved a building(s) the incident safety officer shall advise the incident commander of hazards, collapse potential, and any fire extension in such building(s). **6.2.4** The incident safety officer shall evaluate visible smoke and fire conditions and advise the incident commander, tactical level management component's (TLMC) officers, and company officers on the potential for flashover, backdraft, blow-up, or other events that could pose a threat to operating teams. **6.2.5** The incident safety officer shall monitor the accessibility of entry and egress of structures and its effect on the safety of members conducting interior operations.	
6.3 Emergency Medical Service Operations. **6.3.1** The incident safety officer shall meet the provisions of Section 6.3 during emergency medical service (EMS) operations. **6.3.2** The incident safety officer shall ensure compliance with the department's infection control plan and NFPA 1581, *Standard on Fire Department Infection Control Program*, during emergency medical service operations. **6.3.3** The incident safety officer shall ensure that incident scene rehabilitation and critical incident stress management are established as needed at emergency medical service operations, especially mass casualty incidents (MCIs).	

Risk Management Officer	Competency Met
6.4 Technical Rescue. **6.4.1** The incident safety officer shall meet the provisions of Section 6.4 during technical rescue operations. **6.4.2*** In cases where a designated incident safety officer does not meet the technician-level requirements of NFPA 1006, *Standard for Rescue Technician Professional Qualifications*, the incident commander shall appoint an assistant incident safety officer or a technical specialist who meets the technician-level requirements of NFPA 1006 to assist with incident safety officer functions. **6.4.3** The incident safety officer shall attend strategic and tactical planning sessions and provide input on risk assessment and member safety. **6.4.4*** The incident safety officer shall ensure that a safety briefing is conducted and that an incident action plan and an incident safety plan are developed and made available to all members on the scene.	
6.5 Hazardous Materials Operations. **6.5.1** The incident safety officer shall meet the provisions of Section 6.5 during hazardous materials operations. **6.5.2*** In cases where a designated incident safety officer does not meet the technician-level requirements of NFPA 472, *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents*, the incident commander shall appoint an assistant incident safety officer or a technical specialist who meets the technician-level requirements of NFPA 472 to assist with incident safety officer functions. **6.5.3** The incident safety officer shall attend strategic and tactical planning sessions and provide input on risk assessment and member safety. **6.5.4*** The incident safety officer shall ensure that a safety briefing is conducted and that an incident action plan and an incident safety plan are developed and made available to all members on the scene. **6.5.5** The incident safety officer shall ensure that control zones are clearly marked and communicated to all members.	
6.6 Accident Investigation and Review. **6.6.1** Upon notification of a member injury, illness, or exposure, the incident safety officer shall immediately communicate this information to the incident commander to ensure that emergency medical care is provided. **6.6.2** The incident safety officer shall initiate the accident investigation procedures as required by the fire department. **6.6.3*** In the event of a serious injury, fatality, or other potentially harmful occurrence to a member, the incident safety officer shall request assistance from the health and safety officer.	
6.7 Post-Incident Analysis. **6.7.1*** The incident safety officer shall prepare a written report for the post-incident analysis that includes pertinent information about the incident relating to health and safety issues. **6.7.2*** The incident safety officer shall participate in the post incident analysis.	
EITHER	Yes ☐
FCABC/LGMA: Effective Fire Service Administration	No ☐
OR	Yes ☐

Risk Management Officer	Competency Met
Beyond Hoses and Helmets, or equivalent *(administrative)*	No ☐

Company Fire Officer	Competency Met
Fire Officer 1 (NFPA 1021 in its entirety)	Yes ☐ No ☐
Incident Command 200	Yes ☐ No ☐
Fire Service Instructor 1 (NFPA 1041 Chapter 4)	Yes ☐ No ☐
4.1 General. **4.1.1** The Fire Service Instructor I shall meet the JPRs defined in Sections 4.2 through 4.5 of this standard.	Yes ☐ No ☐
4.2 Program Management. **4.2.1 Definition of Duty.** The management of basic resources and the records and reports essential to the instructional process.	
4.2.2 Assemble course materials, given a specific topic, so that the lesson plan and all materials, resources, and equipment needed to deliver the lesson are obtained. **(A) Requisite Knowledge.** Components of a lesson plan, policies and procedures for the procurement of materials and equipment, and resource availability. **(B) Requisite Skills.** None required.	Yes ☐ No ☐
4.2.3 Prepare requests for resources, given training goals and current resources, so that the resources required to meet training goals are identified and documented. **(A) Requisite Knowledge.** Resource management, sources of instructional resources and equipment. **(B) Requisite Skills.** Oral and written communication, forms completion.	Yes ☐ No ☐
4.2.4 Schedule single instructional sessions, given a training assignment, department scheduling procedures, instructional resources, facilities and timeline for delivery, so that the specified sessions are delivered according to department procedure. **(A) Requisite Knowledge.** Departmental scheduling procedures and resource management. **(B) Requisite Skills.** Training schedule completion.	Yes ☐ No ☐
4.2.5 Complete training records and report forms, given policies and procedures and forms, so that required reports are accurate and submitted in accordance with the procedures. **(A) Requisite Knowledge.** Types of records and reports required, and policies and procedures for processing records and reports. **(B) Requisite Skills.** Basic report writing and record completion.	Yes ☐ No ☐
4.3 Instructional Development. **4.3.1* Definition of Duty.** The review and adaptation of prepared instructional materials.	
4.3.2* Review instructional materials, given the materials for a specific topic, target audience, and learning environment, so that elements of the lesson plan, learning environment, and resources that need adaptation are identified. **(A) Requisite Knowledge.** Recognition of student limitations and cultural diversity, methods of instruction, types of resource materials, organization of the learning environment, and policies and procedures. **(B) Requisite Skills.** Analysis of resources, facilities, and materials.	Yes ☐ No ☐
4.3.3* Adapt a prepared lesson plan, given course materials and an assignment, so that the needs of the student and the objectives of the lesson plan are achieved. **(A)* Requisite Knowledge.** Elements of a lesson plan, selection of instructional aids and methods, and organization of the learning environment. **(B) Requisite Skills.** Instructor preparation and organizational skills.	Yes ☐ No ☐
4.4 Instructional Delivery. **4.4.1 Definition of Duty.** The delivery of instructional sessions utilizing prepared course materials.	

Company Fire Officer	Competency Met
4.4.2 Organize the classroom, laboratory, or outdoor learning environment, given a facility and an assignment, so that lighting, distractions, climate control or weather, noise control, seating, audiovisual equipment, teaching aids, and safety are considered. **(A) Requisite Knowledge.** Classroom management and safety, advantages and limitations of audiovisual equipment and teaching aids, classroom arrangement, and methods and techniques of instruction. **(B) Requisite Skills.** Use of instructional media and teaching aids	Yes ☐ No ☐
4.4.3 Present prepared lessons, given a prepared lesson plan that specifies the presentation method(s), so that the method (s) indicated in the plan are used and the stated objectives or learning outcomes are achieved, applicable safety standards and practices are followed, and risks are addressed. **(A)* Requisite Knowledge.** The laws and principles of learning, methods and techniques of instruction, lesson plan components and elements of the communication process, and lesson plan terminology and definitions; the impact of cultural differences on instructional delivery; safety rules, regulations, and practices; identification of training hazards; elements and limitations of distance learning; distance learning delivery methods; and the instructor's role in distance learning. **(B) Requisite Skills.** Oral communication techniques, methods and techniques of instruction, and utilization of lesson plans in an instructional setting.	Yes ☐ No ☐
4.4.4* Adjust presentation, given a lesson plan and changing circumstances in the class environment, so that class continuity and the objectives or learning outcomes are achieved. **(A) Requisite Knowledge.** Methods of dealing with changing circumstances. **(B) Requisite Skills.** None required.	Yes ☐ No ☐
4.4.5* Adjust to differences in learning styles, abilities, cultures, and behaviors, given the instructional environment, so that lesson objectives are accomplished, disruptive behavior is addressed, and a safe and positive learning environment is maintained. **(A)* Requisite Knowledge.** Motivation techniques, learning styles, types of learning disabilities and methods for dealing with them, and methods of dealing with disruptive and unsafe behavior. **(B) Requisite Skills.** Basic coaching and motivational techniques, correction of disruptive behaviors, and adaptation of lesson plans or materials to specific instructional situations.	Yes ☐ No ☐
4.4.6 Operate audiovisual equipment and demonstration devices, given a learning environment and equipment, so that the equipment functions properly. **(A) Requisite Knowledge.** Components of audiovisual equipment. **(B) Requisite Skills.** Use of audiovisual equipment, cleaning, and field level maintenance.	Yes ☐ No ☐
4.4.7 Utilize audiovisual materials, given prepared topical media and equipment, so that the intended objectives are clearly presented, transitions between media and other parts of the presentation are smooth, and media are returned to storage. **(A) Requisite Knowledge.** Media types, limitations, and selection criteria. **(B) Requisite Skills.** Transition techniques within and between media.	Yes ☐ No ☐
4.5 Evaluation and Testing. **4.5.1* Definition of Duty.** The administration and grading of student evaluation instruments.	
4.5.2 Administer oral, written, and performance tests, given the lesson plan, evaluation instruments, and evaluation procedures of the agency, so that bias or discrimination is eliminated, the testing is conducted according to procedures, and the security of the materials is maintained. **(A) Requisite Knowledge.** Test administration, agency policies, laws and policies pertaining to discrimination during training and testing, methods for eliminating testing bias, laws affecting records and disclosure of training information, purposes of evaluation and testing, and performance skills evaluation. **(B) Requisite Skills.** Use of skills checklists and oral questioning techniques.	Yes ☐ No ☐

Company Fire Officer	Competency Met
4.5.3 Grade student oral, written, or performance tests, given class answer sheets or skills checklists and appropriate answer keys, so the examinations are accurately graded and properly secured. **(A) Requisite Knowledge.** Grading methods, methods for eliminating bias during grading, and maintaining confidentiality of scores. **(B) Requisite Skills.** None required.	Yes ☐ No ☐
4.5.4 Report test results, given a set of test answer sheets or skills checklists, a report form, and policies and procedures for reporting, so that the results are accurately recorded, the forms are forwarded according to procedure, and unusual circumstances are reported. **(A) Requisite Knowledge.** Reporting procedures and the interpretation of test results. **(B) Requisite Skills.** Communication skills and basic coaching.	Yes ☐ No ☐
4.5.5* Provide evaluation feedback to students, given evaluation data, so that the feedback is timely; specific enough for the student to make efforts to modify behavior; and objective, clear, and relevant; also include suggestions based on the data. **(A) Requisite Knowledge.** Reporting procedures and the interpretation of test results. **(B) Requisite Skills.** Communication skills and basic coaching.	Yes ☐ No ☐
Emergency Scene Management (4.6.1, 4.6.2)	
4.6.1 Develop an initial action plan, given size-up information for an incident and assigned emergency response resources, so that resources are deployed to control the emergency. **(A)* Requisite Knowledge.** Elements of a size-up, standard operating procedures for emergency operations, and fire behavior. **(B)* Requisite Skills.** The ability to analyze emergency scene conditions; to activate the local emergency plan, including localized evacuation procedures; to allocate resources; and to communicate orally.	Yes ☐ No ☐
4.6.2* Implement an action plan at an emergency operation, given assigned resources, type of incident, and a preliminary plan, so that resources are deployed to mitigate the situation. **(A) Requisite Knowledge.** Standard operating procedures, resources available for the mitigation of fire and other emergency incidents, an incident management system, scene safety, and a personnel accountability system. **(B) Requisite Skills.** The ability to implement an incident management system, to communicate orally, to manage scene safety, and to supervise and account for assigned personnel under emergency conditions.	Yes ☐ No ☐

Appendix 7: New Fire Safety Act

The following is draft language that the Department and City can consider for use when revising the Department's operational and establishment bylaw. This language is specifically aimed at addressing the new obligation to conduct "risk-based compliance monitoring" of public buildings. Certain issues – such as training requirements and the form that risk-based assessments are to take – remain to be clarified by regulation.

Definitions

    (a) "**Fire Inspector**" means a Member trained as a fire inspector in accordance with the requirements of the *Fire Safety Act* and regulations made thereunder;

    (b) "**Fire Investigator**" means a Member trained as a fire investigator in accordance with the requirements of the *Fire Safety Act* and regulations made thereunder;

    (c) "**Fire Safety Assessment**" means a fire safety assessment as defined in the *Fire Safety Act*;

    (d) ""***Fire Safety Act***" means the *Fire Safety Act*, SBC 2016, c. 19, as amended or re-enacted from time to time;

    (e) "**Inspection**" means a fire safety inspection as defined in the *Fire Safety Act*;

    (f) "**Public Buildings"** has the meaning ascribed thereto in the *Fire Safety Act;*

Fire Chief's Powers

1. The Fire Chief shall be deemed to be the fire chief of the City as contemplated by the *Fire Safety Act* and for all other purposes, and entitled within the City to exercise all of the powers of a fire chief as set out in the *Fire Safety Act.*

Risk-Based System of Compliance Monitoring

2. The Fire Chief shall establish, and the Department shall operate, a risk-based system of compliance monitoring of Public Buildings within the Fire Service Area, in accordance with the requirements of the *Fire Safety Act* and regulations made thereunder. The Department shall conduct such risk analysis as the Fire Chief determines is necessary and appropriate, subject to and in accordance with the requirements of the *Fire Safety Act.*

3. The Fire Chief shall determine which Public Buildings are to be subject to Inspections and which owners of public buildings are to be required to produce Fire Safety Assessments. The frequency of Inspection for any Public Building shall be set by the Fire Chief, based on the risk assigned to the particular Public Building.

4. Members of the Department are hereby authorized to conduct Inspections, provided that any Member conducting an Inspection shall be trained as a Fire Inspector as required by the *Fire Safety Act*.

5. The Fire Chief shall ensure that the risk assessments upon which the compliance monitoring system is based are reviewed by the Department not less than **[triennially,]** or as may be required by the *Fire Safety Act* and the regulations made thereunder. **[Note: this section talks about the frequency of conducting the overall risk assessments – it is not speaking to minimum inspection frequency of buildings themselves.]**

6. Owners of Public Buildings required to produce a Fire Safety Assessment shall do so in a within 30 days of the request therefor by the Department, using the format prescribed under the *Fire Safety Act*. A Fire Safety Assessment will be updated annually by the owner of the Public Building unless an Inspection is conducted by the Department. A Fire Safety Assessment will be updated by the owner of the Public Building at any time that there has been any change to the Public Building, or any change to the use thereof, that makes the existing Fire Safety Assessment inaccurate, incomplete or obsolete.

7. Where a Fire Safety Assessment has not been produced as required by section 6, the Department may conduct an Inspection and levy a charge therefor as provided in Schedule A to this bylaw.

8. Where a person, business or other undertaking is required by the Fire Code to develop and maintain a Fire Safety Plan, a copy of such Fire Safety Plan shall be submitted to the Department for review in accordance with the Fire Code. The Department may prescribe the form in which any Fire Safety Plan is to be submitted, including that the Fire Safety Plan must be submitted in a specified electronic format.

9. The Fire Safety Plan shall be reviewed not less than annually by the owner of the property and updated if required. The Fire Safety Plan shall be updated and a new Fire Safety Plan submitted to the Department for review at any time that there has been any change to a building, property or premises, or any change to the use thereof, that makes the existing Fire Safety Plan inaccurate or obsolete.

10. Notwithstanding any review of a Fire Safety Assessment or Fire Safety Plan by the Department, the owner of the Public Building (or other property) in respect of which such assessment or plan is submitted remains solely responsible therefor and neither Department nor the Corporation shall be liable for any defect in any Fire Safety Assessment or Fire Safety Plan or for any loss, damage, costs or injuries arising in connection therewith. **[Note: consider whether to include a provision which limits liability in relation to Fire Inspections as well. This would probably need to be a separate section.]**

11. The Department will conduct such pre-fire planning, including the development of pre-incident plans, as may be required by the Playbook, or as the Fire Chief may otherwise deem necessary or advisable. In connection with such pre-fire planning, the Department

may require any person submitting a Fire Safety Plan for review, to submit such additional information or data as may be required by the Department, all in a format determined by the Department.

12. The Department shall conduct such Fire Investigations and fire cause determinations as are required by the *Fire Safety Act*, or as otherwise deemed necessary or advisable by the Fire Chief. Fire Investigations shall be conducted by Members or other persons trained as Fire Investigators in accordance with the *Fire Safety Act*. **[Note: the actual requirements for being a fire investigator have not been issued. There also is a transition period under the Fire Safety Act that may need to be taken into account.]**

13. The Department may charge for the cost of conducting an Inspection (or any re-Inspection), reviewing a Fire Safety Assessment, conducting a Fire Investigation, reviewing a Fire Safety Plan or other use of Department services and resources, in each case in accordance with the **[City's Fees and Charges Bylaw.]**

PRINCE GEORGE FIRE & RESCUE

Strategic Plan Update

2022

Dave Mitchell & Associates Ltd.

15 February 2023

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Table of Contents

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1.0   Executive Summary

The Prince George Fire & Rescue Service ("PGFRS" or the "Department") provides fire, rescue and medical response services within the City of Prince George ("Prince George" or the "City") and to the Prince George Airport and to adjacent areas by request. The Department responded to 9,208 incidents in 2022 from its four fire halls. The population of Prince George was 76,708 in 2021.

The Department currently operates with 131 personnel and is managed by the Fire Chief, two Deputy Chiefs, a Chief Fire Prevention Officer, a Chief Training Officer, a Chief Communications Officer, an Assistant Chief (Communications), a Manager Emergency Programs and four Assistant Chiefs (Suppression), with one assigned to each of four shifts.

The strategic plan for the Department was undertaken to provide guidance on the further evolution of its service delivery in light of the current regulatory requirements and the Department's operational context, and to provide an update on the 2016 Standards of Cover Report. Dave Mitchell & Associates Ltd. ("DMA" or the "Consultants") was contracted for the review and met multiple times with the chief officers as well as with members of the Department and Prince George senior staff members. DMA examined a wide range of relevant background documentation, conducted an in-depth site review, and provided an initial draft report which was reviewed in detail with the Department and the City. DMA also made a presentation to Prince George Council summarizing the work undertaken and overall strategic plan on 15 August 2022.

The issues facing the Department, like all fire departments in the province, are complex. Provision of fire services in British Columbia is optional, but where they are provided, they are subject to a series of regulatory requirements, including the mandatory provincial training standards (the "Provincial Training Standards") established by the BC Fire Commissioner, as well as the training, equipment and other standards imposed by WorkSafe BC.

This report is based on the 2015 Edition of the Provincial Training Standards, which was the version in effect when the training review was undertaken, and related work conducted. The 2015 Edition was updated as of 28 September 2022, and the document is now titled: *British Columbia Structure Firefighter Minimum Training Standards*.[1] According to Office of the Fire Commissioner ("OFC") Policy 3.200, adoption of the 2022 Edition must be confirmed to the OFC by March 2024.[2] It is recommended that the Department undertake a review of the new standards, identify any additional training issues that may need to be addressed and ensure that compliance is achieved by 2024. In general, as the Department operates at the Full Service level and utilizes National Fire Protection Association ("NFPA") standards in all of its training, the changes arising from the 2022 Edition will have little impact on its operations or training

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[1] https://www2.gov.bc.ca/gov/content/safety/emergency-management/fire-safety/training/firefighter-training

[2] https://www2.gov.bc.ca/assets/gov/public-safety-and-emergency-services/emergency-preparedness-response-recovery/embc/fire-safety/policy/3-2_ofc_policy.pdf

processes. Training for Department members is conducted at the fire hall, with some training procedures, such as live fire, being provided at the Quesnel training facility. Other training is provided online.

Fire services in British Columbia are also required to comply with the *Fire Services Act,* which is expected to be superseded by the *Fire Safety Act*. The latter statute passed third reading in the Legislature in 2016, but has yet been proclaimed in force. When the *Fire Safety Act* comes into effect, it will require local governments to provide fire safety inspections somewhat differently than at present, and may extend that requirement to regional districts as well. The *Fire Safety Act* will introduce the concept of risk-based inspections, which may require a formal assessment of specific risks within the City. It also will implement minimum training requirements for fire inspectors and fire investigators, grant additional powers to fire chiefs and local governments, and eliminate the position of local assistant to the fire commissioner.

Other statutory changes that will impact local fire services include the pending update to the *Emergency Program Act,* which is anticipated in 2023. The new statute will include formal implementation of the Sendai Model for risk assessment, reduction, mitigation and response, and likely impose greater obligations on local governments to undertake formal risk assessment and mitigation actions.

The provision of fire services is also guided by the Fire Underwriters, an organization that provides an assessment and grading of fire departments which can affect the cost of fire insurance for single- and multi-family residences as well as commercial and industrial structures. Fire Underwriters' ratings involve an assessment of the fire department, water supply, fire prevention activities and emergency communications. Fire Underwriters' requirements include a maximum age for apparatus to be ratable, minimum pumping capacity requirements based on the service area's fire risks, optimum staffing levels, and training requirements.

In 2020, the Department's responses were significantly affected by the pandemic, as BC Emergency Health Services ("BCEHS") radically curtailed the number of calls sent to the fire service for the period from the end of March to about August/September. Conversely, in 2021, the Department's responses spiked, as BCEHS resources were overwhelmed by the Heat Dome . Viewed over the period 2014 to 2022, however, the Department's total call volume has risen. Notwithstanding the BCEHS-driven variability in the number of FMR calls, since 2018, there has also been a steady rise in other emergency incidents.

The concentration of calls in the City core – within the primary response areas of Halls 1 and 2 – has also increased. Thus, of the greater number of incidents occurring, a larger portion of such calls is concentrated in this core region. Hall 1 and 2's respective response areas accounted for some 77% of all incidents in 2015; they now account for more than 82% of a larger number of calls.

Occupational health and safety issues also have increasingly come to the fore. A total of 18 cancers now presumed related to firefighting under WorkSafe regulations, in addition to existing presumptions for cardiac events and post-traumatic stress disorder claims. These changes are

affecting WorkSafe BC assessment costs for the fire service, and driving the need to better manage, track and limit exposures, and improve mental health processes for Department members.

This report updates the previous report and contains nine new recommendations. Major issues include an additional staffed unit for Hall 1, provision of an appropriate local training site, and provision of a fifth staffed fire hall in the industrial area in the south-east portion of the City.

A recommendation for an additional staffed unit at Hall 1 was part of the 2016 Standards of Cover Report. Since that time, the Hall's call volume has increased by a further 66%, going from 2,903 events in 2016 to 5,409 in 2022.[3]

This report continues to recommend a fifth staffed firehall in the BC Rail industrial area, concurring with the recommendation of the Fire Underwriters. This additional unit will primarily address the fire risk associated with this area and will also provide additional response capability in the core of the City.

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[3] The Fire Underwriters in two recent surveys, one in Metro the other in the Capital Regional District note that 2,500 is the threshold at which a second unit is recommended: *Final apparatus needs are then based on the frequency of alarms for a fire company and total number of "Fire" calls annually. Where a Pumper company receives in excess of 2,500 calls per year, additional companies are needed.*

2.0   Summary of Recommendations

The following section extracts the recommendations contained within the report. The more expansive discussion in the report contains details regarding each of these recommendations. For convenience, the relevant headings from each section are included as a guide to the section from which the particular recommendation is extracted.

3.0   2016 Standards of Cover Report – Status

Table 1 in this section lists the recommendations from the 2016 Standards of Cover Report. There are four recommendations in progress and two to be completed.

5.0   Regulatory Matters

#5-1:   Consider updating Bylaw No. 8272.

#5-2:   Revise/update the OH&S program based on the discussion in this section.

7.0   Response Analysis

#7- 1   Consideration should be given to improving the training facilities (currently the fire hall setting). This should include a dedicated Department training site (possibly located in the industrial area) to simulate scenario-based common types of incidents and allow for live-fire exercises. The site should also include training rooms, required training facilities/equipment and outside props. The configuration for this training site should be led by a clear needs analysis including the options for partnerships with the JIBC and First Nations and then to retain one of a number space-planning companies to ensure the spatial requirements are well understood prior to developing a budget and authorizing construction.

8.0   Organizational Structure and Staffing

#8-1:   The City should prioritize the addition of one staffed engine in Hall 1.

#8-2:   The City should develop a plan to staff one additional engine for the proposed fire hall (Hall 5) in the BC Rail area.

10.0   Risk Assessment / HRVA

#10-1: That the Department consider adopting NFPA 1300 as a model for Community Risk Assessment and Community Risk Reduction.

11.0   Fire Prevention Branch

#11-1: The Department should review the staffing levels and responsibilities allocated to the Fire Prevention Branch and make the necessary changes to ensure that adequate resources are available to meet the mandate of the division.

13.0 Training and Qualifications

#13-1: Consideration should be given to improving the training facilities. (currently fire hall setting) This should include a dedicated Department training site (possibly located in the industrial area) to simulate scenario-based common types of incidents and allow for live-fire exercises. The site should also include training rooms, required training facilities/equipment and outside props.

#13-2: The Department should develop a plan to achieve compliance with the September 2022 Provincial Training Standards by Q2 2024.

3.0　2016 Standards of Cover Report – Status

The 2016 Standards of Cover Report (the "2016 SOC Report") provided a total of 24 major recommendations. Of these 18 have been fully completed, four are in progress and two remain to be addressed. The recommendations and progress achieved are summarized in Table 1.

The four items marked as ongoing were reviewed with the Department and they are to be commended for the work done to address these. Of these, the rewrite of the bylaw can likely be delayed until the *Fire Safety Act* comes into force, since that will affect the Department regulatory responsibilities and will need to be incorporated into the bylaw structure. It is possible that the act will finally come into force at some point in 2023.

Table 1: 2016 Standards of Cover Report - Update

2016 SOC Report Recommendations	2022 Status	Update/Notes
Training		
Consideration should be given to improving the training facilities. (currently fire hall setting) This should include a dedicated Department training site (possibly located in the industrial area) to simulate scenario-based common types of incidents and allow for live-fire exercises. The site should also include training rooms, required training facilities/equipment and outside props.	To be completed	Recommendation for 2023 budget
Currently most of the training provided is for firefighters; more should be provided for the fire officers. Tailor the curriculum for the positions.	Complete	Bi-annual crew officer strategies and tactics sessions added and conducted through training Branch
We would recommend that the Department undertake an internal review of all rescue services currently provided to determine: 1) If the service needs to be provided by the Department, 2) The required training levels necessary to provide that service, 3) The actual funding needed to provide that service including equipment, initial training and on-going maintenance training. Once these questions have been answered, the Department should seek appropriate approval and funding from the City.	Complete	Complete review of all rescue services; each program formalized; written guidelines and procedures; training frequencies and budgets
To ensure competency is maintained, an annual skills maintenance training plan including evaluation models should be developed. The plan should encompass all aspects of firefighter and officer training including those skills required for specialty teams.	On going	2019 Reviewed and updated RMS Training reporting structure resulting in efficiencies in tracking assigned training by rank and specialty

2016 SOC Report Recommendations	2022 Status	Update/Notes
The current system of training members on their days off and accumulating days off is not working. Members are not required to attend training sessions and as such training in several specialties is often suffering (e.g., high angle and water rescue). The Department continues to respond to these events albeit with members who are not always trained as well as they need to be. This is a safety issue for both the members and the public they serve. Serious consideration should be given to either fully funding the required training or to cease providing (or significantly limit) the service.	On going	Refocused training sessions as on site and off site; on site can be completed while crews are on shift and response ready. Off site sessions put crews in a non-response ready mode. Tested up staffing a 'training crew' this spring to complete auto X refresher training with all crews while on shift
That the Department consider more web-based on duty training.	Complete	Web based and online training incorporated into daily on shift training
Fire Prevention Branch		
Expand the FPB's role to include a plan check for new construction, with a focus on major commercial, industrial, public institutional and multi-family projects, to ensure compliance with the Fire Code and with the Department's operational requirements.	Complete	Web based and online training incorporated into daily on shift training
The FPB requires a full complement of active staffing to meet its mandate and ensure the City meets its statutory obligations under the FSA. The Department should review whether some additional assistance is required to address the existing backlog in inspections.	Complete	CFPO accepts develop and building permit plans; reviews for code compliance and provides feedback through Development Services prior to permits be issued

2016 SOC Report Recommendations	2022 Status	Update/Notes
The Department should review the conduct of fire inspections by duty crews and increase the number of inspections and reinspections that are assigned to such crews.	Complete	Property inspections are reviewed on a regular basis and division of inspections are spread through Prevention Inspectors and Duty crews based on risk level
With the increase in the number of inspections by duty crews, the FPB should review the inspection frequency. The goal should be to ensure that all inspectable properties are reviewed at least annually; where possible, the highest risk properties should be reviewed more frequently.	Complete	Hall 3 and 4 properties were adjusted to 1 year cycles
In the updating of the Department's operational and establishment bylaw, ensure that there is clear language permitting the Department to require the submission of additional information with a fire safety plan, that is necessary for pre-incident planning, and that such information is submitted in an electronic format that will enable the Department readily to develop effective pre-incident plans.	Complete	Pre-plan guideline and procedure developed resulting in construction fire safety plans required at development phase and transitioned in pre-plans once construction complete
The Department and City should consider requiring that the most significant industrial / commercial risks, which require the most detailed fire safety plans, have their fire safety plans certified by an external third party before submission for review by the Department.	Complete	High commercial/industrial risk properties are required to have consultant supported fire safety plans completed
The FPB identify all properties in respect of which pre-incident plans should be created, and prioritize those properties based on risk.	Complete	Fire Safety Plan for all commercial properties completed

2016 SOC Report Recommendations	2022 Status	Update/Notes
The Department should develop or acquire a user-friendly electronic template for pre-incident plans. The "D" shift crew at halls 3 and 4 should be trained to develop pre-incident plans from fire safety plan data. Duty crews should be responsible for developing pre-incident plans for simpler or more straightforward risks only, as determined by the CFPO.	Complete	Crews complete pre-plan check list and add required info/data to site drawing; Admin staff supported by inputting data into Arc GIS Pre-plan layer
The FPB should remain responsible for developing pre-incident plans for all major industrial, commercial and institutional risks in the City.	Complete	FPB maintain Pre-plans during site inspection cycles
Before any pre-incident plan goes live, it must be checked through a physical inspection of the property in question. Pre-incident plans should be regularly reviewed as part of the annual fire safety inspection for each property for which they exist.	Complete	All pre-plans are on 2nd or 3rd cycle; reviewed during each inspection cycle for any changes or updates
The Department should ensure that its powers of entry for investigating fire hazards on complaint or where the FPB or Department members have a concern, are clearly set out in the revised establishment and operational bylaw. The Department should develop clear operational guidelines for dealing with problem properties, including coordination with law enforcement and socials service agencies, where required.	Ongoing	Bylaw rewrite still to be completed; guideline and procedures for managing problem properties have been updated and incorporated prior to bylaw update
That the FPB be fully staffed (4 FTEs) and that personnel on long term absences are replaced on a temporary basis until their return to active duty.	Complete	Light duty or limited duration positions have been incorporated in the past and will be utilized in the future

2016 SOC Report Recommendations	2022 Status	Update/Notes
That the FPB in cooperation with the Building Department implement a plan checking program for all new construction and major renovations in existing buildings. This may require additional training for the existing staff.	Complete	CFPO accepts develop and building permit plans; reviews for code compliance and provides feedback through Development Services prior to permits be issued
That the City of Prince George develop a policy whereby all lower risk properties are conducted on a bi-annual basis and that all high-risk properties are conducted on an annual basis.	Complete	RMS is designed to prompt inspections based on risk level every 365 or 730 days
That duty crews are assigned all lower risk inspections and those higher risk inspections that the Chief Fire Prevention feels are appropriate for duty crews. Those high-risk buildings not assigned to the duty crews will remain the responsibility of the FPB. This may require additional training for existing staff.	Complete	Suppression staff have completed multiple comprehensive online and inhouse inspection training
Response Analysis		
Consideration should be given to improving turnout times throughout the Department. This may not be easily achievable if fire hall ergonomics are the issue, however, often a simple process of educating the crews to the importance of quicker turnout times can effect improvements.	Ongoing	Under review based on updated CAD data
Fire Halls And Apparatus		
Consider replacing Hall 1 with larger headquarters hall south of the current location. This could be at or near Victoria and 20th Avenue. The fire hall should provide a minimum of four drive through bays.	Completed	

2016 SOC Report Recommendations	2022 Status	Update/Notes
Consider adding a second staffed unit at Hall 1 to deal with the significant call volume at this hall. A second staffed unit would also provide a better opportunity to meet the NFPA 1710 requirements to have a minimum of 14 fire fighters on scene in 8 minutes.	To be completed	Recommendation for 2023 budget

4.0   Community Background

The Official Community Plan ("OCP") is contained in Bylaw 8383 adopted 25 June 2012 and updated 31 March 2021.[4] The OCP notes that the City is located within the traditional territory of the Lheidli T'enneh First Nation.[5]

The City covers a total area of some 318 square kilometres and in 2021, had a population of 76,708, a 3.7% increase over 2016. The 2012 OCP estimated that the City's population would be between 78,900 and 90,200 by 2025, and it appears on track to achieve the lower range of that estimate.[6] The population is young by provincial standards, as the City has a median age of 39 compared with 43 for the province.[7]

The Department was established in 1914 and operates as a career fire department. The Department provides fire suppression, emergency medical services and special response services, such as vehicle extrication and some technical rescue, within the City limits, an area of approximately 318 square kilometers.

The Department's service area consists of a high-density urban city core, large expanses of mixed suburban and commercial development, and a large industrial area which includes several pulp mills, chemical manufacturers and a petroleum refinery. Major rail lines and transport corridors run through the City, along with oil and gas pipelines, and a major rail yard that lies directly adjacent to the urban city core. In addition to this very unique set of industrial risks, the City has a significant urban interface wildfire risk, meaning that its overall risk profile is elevated compared to most cities of a similar size.

The OCP includes a number of references to the Department and its operations, including:

> Policy 13.4.29: The City shall pursue updating our city's Fire Underwriters Survey grading certificate which evaluates our city's fire risk and fire protection levels.

> Policy 13.4.30: A Fire Master Plan should be developed for fire rescue services and consider calls for service in consideration of expected population projections to: identify any fire service deficiencies, determine feasibility for and location of a new fire hall and, identify appropriate siting criteria for such use.[8]

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[4]   Available at: https://www.princegeorge.ca/Business%20and%20Development/Pages/Planning%20and%20Development/OfficialCommunityPlan.aspx

[5] OCP, at p. 12.

[6] OCP, at p.13.

[7] https://communityinformationtool.gov.bc.ca/cit-dashboard/home, accessed November 14, 2022.

[8] OCP, at p. 209.

The City followed through on these recommendations. It commissioned a Fire Underwriters' review in 2013, and undertook the 2016 SOC Report. Some follow up on the Fire Underwriters review was recommended in the 2016 SOC Report, and is reiterated here.

5.0　　Regulatory Matters

As a starting point, it needs to be recognized that, for local governments, fire protection is an optional service. Unlike police and ambulance, which are established under and/or operate pursuant to provincial statutes and have a uniform range of powers across the province, a fire department only has the power and authority granted to it under the local bylaw which creates and defines its operations. Outside of its operating jurisdiction – which, in the case of a service established by a municipality, is the municipal boundaries – a fire department has no specific authority to act at or to respond to an incident. Care must be taken, therefore, to ensure that the Department has the full range of powers needed to respond effectively to incidents within its jurisdiction. Where it is responding outside of its ordinary jurisdiction, express consideration should be given to the source of the Department's powers to respond to and operate at an incident – whether under a fire service contract, under a mutual or automatic aid agreement, or in support of another emergency response agency.

Similarly, there is no standard range of services defined for a fire department. A fire department is authorized to provide only those services which are stipulated in its service establishment and operational bylaws. Given that fire departments are the only "all hazards" response agency directly controlled by local government, we recommend that both the grant of powers and authorization to respond to incidents be very broadly cast, but that their exercise be made subject to training and the availability of necessary personnel and equipment.

This section reviews the existing bylaw structure governing the Department's establishment, administration and operations. It also reviews the *Fire Safety Act*, which will potentially impact the Department and the City, as well as the Department's occupational health and safety program. The City's emergency measures bylaw is reviewed in the emergency program section of this report.

Nothing in this report should be construed as legal advice. The City and the Department should review any recommendations or issues identified in this report through the City's ordinary legal review processes.

5.1　　Bylaw No. 8272

The *City of Prince George Fire Protection and Emergency Response Bylaw No. 8272, 2013* ("Bylaw No. 8272") is the principal bylaw governing the Department's continuation, organization, operations, and powers. It is a comprehensive bylaw, addressing both operational and fire prevention matters, including open air burning, Fire Code issues and *Fire Services Act* inspections. Bylaw No. 8272 is now about a decade old. Various regulatory changes – such as the introduction of the Provincial Training Standards, a new version of the Building Code being passed, new open burning smoke control regulations, etc. – have taken place since it was first passed. The Department has been working on updating Bylaw No. 8272 since the 2016 SOC Report. It may be useful for it to plan a new version based on the *Fire Safety Act*, which can then be introduced and passed once that statute comes into force.

Bylaw No. 8272 is generally well drafted and carefully constructed. It is a long and complex bylaw, as it combines both Department operational and administrative matters, along with a wide range of fire prevention and Fire Code issues. At a high level, it covers the following:

- the exclusion or limitation of liability of the City arising from the issuance of permits or the exercise (or failure to exercise) any powers or rights created by the bylaw (ss. 3.4, 3.5, 3.6 and 3.7);

- the continuation of the Department, and the Fire Chief's reporting lines (s. 5.1);

- the appointment by the Fire Chief of Department members (s. 4.1, definition of "Member");

- the powers and responsibilities of the Fire Chief and Deputy Fire Chief (ss. 5.2 and 5.3), and very broad powers for the Fire Chief in relation to the management and control of the Department (s. 5.4);

- the Department's jurisdictional limits and the authority of the Fire Chief to authorize extra-jurisdictional responses (s. 5.5);

- the powers and authority of the Fire Chief and Department members in relation to both incident responses and various non-emergency matters (e.g., ss. 6.1 (incident responses), and ss. 7.1, 8.2, 10.9, etc.);

- the power to issue orders requiring property owners and other to remove or correct fire hazards (ss. 9.1, 10.2), or to require a property owner to undertake a wildfire risk assessment and corresponding risk mitigation activities (s. 10.1);

- the operation of a regular system of inspections as contemplated by the *Fire Services Act*, and various powers which may be exercised in connection therewith (ss. 7.1- 7.3, 8.1 – 8.2);

- various other fire prevention matters, including: the regulation of exterior waste receptacles which have any dimension larger than 1.5 metres (s. 10.3); service station safety (s. 10.4); open air burning (s. 10.5); the regulation of barbeques (s. 10.6); obligations of owners or occupiers to properly maintain commercial cooking equipment (s. 10.12); the management of exit and emergency lighting (s. 10.14), etc.;

- the authority of the Fire Chief to issue permits or grant authorization for various matters, such as open burning, alterations to fire safety systems, and other matters (ss. 10.7, 10.13, and Parts 21 and 22);

- various powers and authorities for the Department, and obligations for property owners and occupiers, in relation to fire safety plans, pre-incident planning, fire department water connections, building signage, and visible addresses (ss. 11.1 – 11.8);

- management of contact persons for buildings with fire alarm systems (Part 12), the implementation of fire watches (Part 13), and the obligations of owners in relation to vacant and fire damaged buildings (s. 10.10);

- the management of sprinkler and fire alarm systems (Parts 15, 16 and 17);

- the management of private fire hydrants (Part 18);

- certain regulations regarding the use of smoke alarms (Part 19);

- the regulation of fireworks (Part 20); and

- various fees and charges that may be levied and processes for collection and enforcement of the bylaw (Parts 23 and 24).

We have previously provided detailed comments on this bylaw to the Department in the 2016 SOC Report.[9] In addition to updating various statutory references, the following additional matters should be considered for revision:

- In a number of more recent bylaws of this type, language has been included that seeks to limit the local government's liability for a delayed or insufficient response to an incident. For example, in the Metro Vancouver bylaw governing the Sasamat Volunteer Fire Department, there is a provision to the effect that the bylaw does not contemplate the protection of any person from economic loss; a warranty or guarantee as to the service levels that will be provided in connection with any particular incident; or any guarantee with respect to the timeliness of any response.[10] The City should consider with its legal counsel whether such language would be useful to include in any update of its bylaw, in addition to the exculpatory language that already exists.

- It is common in bylaws of this type to describe how the Fire Chief is appointed (e.g., by Council, or through some other process). Similarly, in the section dealing with the Deputy Fire Chief, as well as the various officer positions, the process for making relevant appointments should be set out, at least at a high level (e.g., by the Fire Chief).

- In connection with extra-jurisdictional operations (section 3.8) where no service agreement or mutual aid arrangement exists, the City should consider whether it is appropriate that the Fire Chief authorize such a response, or whether the issue should be subject to permission being granted by either the CAO and/or the Mayor. At the same time, consideration needs to be given to the source of the Department's operational powers outside of the City's jurisdictional limits. The absence of any mutual aid arrangements with the Regional District of Fraser-Fort George means that the nature

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[9] A mark up of the bylaw was provided when the previous review was conducted in 2016. A slightly revised version of that document has been provided separately to the Department for its consideration.

[10] Metro Vancouver, *Sasamat Volunteer Fire Department Administration and Regulation Bylaw No. 1204, 2014*, s. 1.5.

and extent of the Department's operational authorities beyond its boundaries are very uncertain.

- The bylaw should include authority for the Department to respond extra-jurisdictionally if it is operating under a service agreement or mutual aid agreement, and in connection with any state of local or Provincial emergency that may be declared.

- The use of the term "Authority Having Jurisdiction" (see sections 10.12 and 14.3, as well as the "Definitions" section) should be limited to its technical application under the Provincial Training Standards. In the other provisions that use this term, the relevant authority having jurisdiction (e.g., the City, or the Department) should be identified.

- The obligation of the Fire Chief to ensure compliance with the Provincial Training Standards and *Workers Compensation Act* requirements for training of personnel, corresponding records keeping, and supervision, should be added to the bylaw. The process by which the Department's service level is set also should be specified (with the service level either being set in the bylaw itself or by council policy).

- It is useful (and increasingly common) to list the services expected to be provided by the Department in its bylaw. At the same time, a process for setting the level of service provided in relation to any such service should be set out (e.g., "determined by the Fire Chief in consultation with the Director of Public Safety and Civic Facilities, and the City Manager, subject to any direction of Council"). It is critical to note that every specialty service – be it technical rescue, hazardous materials response, vehicle extrication or otherwise – carries with it increased training, equipment and staffing costs.

    - In relation to medical responses, consideration should be given to authorizing the Department to provide "emergency health services," subject to any agreement with BC Emergency Health Services, and "ancillary health services", in each case as defined in the *Emergency Health Services Act*, and subject to proper training and licensing in accordance with provincial requirements.

- In relation to enforcement of the bylaw through a ticketing process, it would be useful to cross-reference the City's municipal ticket information bylaw (Bylaw No. 8919) in section 24.1 of Bylaw No. 8272.

5.2   Fire Safety Act

The *Fire Services Act*, which grants certain powers and authority and imposes certain obligations on municipalities, is slated to be replaced. The *Fire Safety Act* received third reading back in May 2016, but still has not come into force. The Office of the Fire Commissioner (the "OFC") is in the process of completing the regulations and policies which are needed before the statute can come into effect. It is unclear when these processes will be finalized. More significantly, in a 2018 letter from the Minister of Public Safety and Solicitor General to the Union of BC Municipalities, the Province announced that it was going to amend

this new statute in a way that would materially impact the obligations of regional districts. [11] These potential amendments, and on-going discussions between the Province and regional districts regarding their implications, have delayed the statute from coming into effect. Our understanding is that the new statute is unlikely to come into effect until some time in 2023 at the earliest.

However, once the new act comes into force, it will materially affect the City's obligations with respect to fire inspections and fire investigations. As such, it is useful to understand what these new obligations will be, and to build them into the Department's medium-term planning. As suggested above, a replacement for Bylaw No. 8272 could be developed based on the *Fire Safety Act* and introduced when the new statute comes into force. At a high level, this new statute impacts the following principal matters relevant to the City and the Department:

- the fire inspection regime applicable to public buildings;

- fire investigations; and

- the powers exercised by fire chiefs and local governments.

Fire Inspections

Under the *Fire Safety Act*, the existing obligation to operate a regular system of inspections is replaced by the obligation to establish a risk-based compliance monitoring system for public buildings which encompasses:

- fire safety inspections; and

- fire safety assessments. [12]

Following a transition period, "fire inspectors" will need to meet the training and proficiency requirements prescribed by the Fire Commissioner. [13] Those requirements, which are expected to be similar in format to the Provincial Training Standards, have not yet been issued. However, these new training requirements will potentially impact the training of Department officers and members, who will have to meet the new standards if they are to be made responsible for fire safety inspections. As duty crew inspections – i.e., inspections by suppression crews – are regularly used by the Department, additional training may be required for members and officers. [14]

The new provisions mean that the Department will need to conduct risk assessments of public buildings within its service area. Those assessments will need to comply with the (yet to be

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[11] Letter, Farnworth (Minister of Public Safety and Solicitor General) to Booth (President, Union of BC Municipalities), 30 July 2018.

[12] *Fire Safety Act*, s. 20. The term "public buildings" is defined in s. 1.

[13] *Fire Safety Act,* s. 8(2). The transition period is provided for in s. 53.

[14] The Department's Fire Prevention Division staff are well trained and will undoubtedly exceed the minimum standards likely to be specified.

issued) regulations under the *Fire Safety Act*.[15] An inspection regime will then need to be developed based on the risk assessments that are conducted. Conceptually, the *Fire Safety Act* moves away from the existing "regular" inspection requirements, where, in practice most jurisdictions seek to inspect all properties annually, and heads towards a more flexible regime, where inspection frequency is based principally on risk. Under this approach, higher hazard or non-compliant properties should be subject to more frequent inspections, while lower risk, compliant properties can be inspected less frequently (perhaps coupled with intervening self-assessments by the owners during the non-inspection years).

The new *Fire Safety Act* also introduces the concept of a "fire safety assessment," which is the self-inspection of a property by the owner. Under the existing *Fire Services Act*, there is some uncertainty about whether self-inspection systems comply with the statutory requirements.[16] That issue is now laid to rest. However, it will be up to the City to determine which public buildings are to be permitted or required to conduct self-assessments, presumably as part of the overall risk analysis that must be conducted. The new self-assessment by owners will have to be conducted "in the form and manner required by the Fire Commissioner" under the new statute.[17] It is expected that the Fire Commissioner will issue policy or forms covering fire safety assessments, though these have not yet been released.

Section 10 of the *Fire Safety Act* grants various powers to fire inspectors to enter premises,[18] conduct their inspection (including testing and taking of samples, etc.), and to require the production of records related to the premises by the owner or occupier. Section 11 empowers a fire inspector to issue orders requiring an owner bring the property into compliance with the *Fire Safety Act* and regulations (which regulations will include the *Fire Code*).

The Department will need to incorporate the risk assessment obligation into its future workplans and budgeting. It may be that the OFC will permit generalized assessments, based on property type, to form the basis of such risk determination. However, it would be useful to conduct more detailed assessments where location, age, condition, use and site-specific features (e.g., exposures, or access issues for a Department response), would suggest that the building or premises present a higher risk than otherwise would be expected from the building classification alone.

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[15] *Fire Safety Act*, s. 20(1)(b).

[16] For opposing views, see the Fire Inspection and Prevention LAFC Inspection Working Group Sub-Group, *BC Fire Services Act: Regular System of Inspections – Considerations for Development* (January 2015) at p. 8 (suggesting such a system, on its own, is not compliant with the *Fire Services Act*); versus: L.C. Staples, Q.C., "Opinion letter to Fire Chiefs' Association of British Columbia," dated 30 Aug. 2012, which holds that such a system of self-inspections can be implemented in compliance with the existing *Fire Services Act* requirements.

[17] Fire Safety Act, s. 21(1).

[18] The power is specifically limited in s. 10(2) to exclude private dwellings unless a warrant has been obtained.

Under ss. 20(2) and (3) of the *Fire Safety Act*, the City may, by bylaw, charge "a reasonable fee" for conducting a fire safety inspection required by the new Act. Subsection 20(4) specifies the criteria which are to be applied when setting such fee.

Fire Investigations

While an argument can be made that Local Assistants to the Fire Commissioner ("LAFCs") (and not local governments *per* se) are currently responsible for fire investigations and reporting,[19] the new *Fire Safety Act* makes it clear that the obligation will now fall directly on the "local authority" (which includes a municipality). The requirements relating to fire investigations are set out in Part 7 of the *Fire Safety Act* (ss. 22 – 27). As with fire inspectors, a local authority:[20]

> must designate in writing persons or a class of persons as fire investigators to conduct fire investigations.

Following a transition period, fire investigators must meet the training standards which are to be specified by the Fire Commissioner.[21] Those standards have not yet been promulgated. These new training requirements will likely impact the Department's officers and fire prevention members, who are most likely to be charged with investigating fires. As with fire inspections, the Department's Fire Prevention Division members are already well trained in conducting fire investigations. However, it may be necessary to train up members who act as incident commanders to enable them to conduct fire investigation on basic fires.

Under section 25, each local authority is required to commence a fire investigation within five days of learning of a fire that has destroyed or damaged property or resulted in death or injury. The investigation must examine the "cause, origin and circumstances" of the fire. The facts ascertained about the cause, origins and circumstances of the fire must then be submitted to the OFC within 30 days after such fire.[22]

Fire investigators are granted broad powers of entry onto property or premises for the purposes of conducting a fire investigation, and to remove a record or thing, conduct testing, take samples and make such records, as required.[23]

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[19] As noted on the Province's website, when fulfilling the role of an LAFC, a fire chief, or other appointed fire department member, is accessing "provincial authority of the fire legislation and is accountable to the fire commissioner, not the local government." See: www2.gov.bc.ca/gov/content/safety/emergency-management/fire-safety/lafc (accessed 25 May 2022).

[20] *Fire Safety Act*, s. 23(1).

[21] *Fire Safety Act* s. 23(2); the transition period is provided for in s. 53.

[22] It is unclear in the statute whether the report must be submitted 30 days after the date of the fire, or 30 days after completion of the investigation of the fire.

[23] *Fire Safety Act*, s. 27.

Powers and Authority

Under the *Fire Services Act*, powers and authority were granted principally through the mechanism of appointing fire chiefs (and others) as LAFCs.[24] The role of local assistant, however, is being abolished.[25] In place of the powers granted to local assistants, the new statute:

- grants a fire chief (or designate) the power to order a tactical evacuation where he or she "believes that there is an immediate threat to life due to a fire or explosion";[26] and

- deems "fire chiefs", fire investigators and fire inspectors to be peace officers for the purposes of the new act.

In addition, as noted above, broad powers are granted to fire investigators conducting investigations, and to fire inspectors conducting inspections. Additionally, local authorities are granted the power to order a "preventive evacuation" where the local authority "believes that conditions exist on or in the premises that fire on or in the premises would endanger life."[27] Each of these new powers should be contemplated in any updated bylaw.

When the *Fire Safety Act* comes into force, it will be necessary to update Bylaw No. 8272, to address the new requirements and authorities.

5.3   Occupational Health and Safety

The statutory basis for occupational health and safety ("OH&S") programs is found in the *Workers Compensation Act* [RSBC 2019], ch. 1 (the "WCA"), and the *Occupational Health and Safety Regulation*, B.C. Reg. 296/97 (the "OH&S Regulation"), as well as in other regulations and the policies of WorkSafe BC. The requirements are complex and prescriptive. The WCA was recently comprehensively updated and revised: although the changes made were not substantive, virtually all of the divisions and sections were renumbered.[28]

The Department members are employees of the City for workers' compensation purposes. As such, it is the City's responsibility to ensure that the various obligations under the WCA and OH&S Regulation are being met.

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[24] *Fire Services Act,* s. 6.

[25] Under s. 55 of the *Fire Safety Act*, local assistants are required to return their badges within three months of the new statute coming into force.

[26] Fire Safety Act, s. 13.

[27] On fire inspectors' powers, see ss. 10 and 11; on fire investigators' powers, see s. 26. The power of a "local authority" to order a preventive evacuation is set out in s. 14 of the *Fire Safety Act*.

[28] The WCA was updated under the *Statute Revision Act*, with the revised statute brought into force with effect as of 6 April 2020, pursuant to OIC 103, 20 March 2020, and OIC 153, 30 March 2020. Under the *Statute Revision Act*, the updating can clarify and reorganize the statute in question, but not make substantive changes to it.

The WCA mandates that the relevant local government's occupational health and safety program is supposed to apply to its fire department.[29] Many local governments, however, develop a compliant, standalone program for their fire departments, given the special circumstances and risks that they face. The Department has a standalone program, that is implemented through its operational guidelines ("OGs").[30] That program comprises 15 separate parts: it largely tracks the form of a program first developed in the 1990s by OFC for use by the fire service. The Department has added to that program, by including a policy on "Workplace Wellness" and a policy on alcohol and drugs, as Parts 14 and 15, respectively.

The OH&S Program document is titled as "Appendix," but shown as an OG. However, it is not dated and signed like most OGs. It would be useful to have a formal date attached to the document and to track any changes that may be made to the program. In Part 13, there is provision for the mandatory review of the functioning of the Joint Committee (as required by s. 3.26 of the OH&S Regulation). However, there is no provision for a periodic review of the OH&S Program itself.

From the Joint Committee minutes, it is clear that the City conducts an annual review of OH&S processes, and that the Department participates to some extent in that review. However, it is not clear that such review extends to the Department's standalone program. We would recommend adding an additional section to Part 13 (as a new s. 13.02), stipulating that the Joint Committee will ensure that the OH&S Program is reviewed annually. The fact of that review (even if no changes are made) should be recorded in the Joint Committee minutes.

In relation to the OH&S Program itself, we would note that Part 2, although entitled "Written and Practical Safe Work Procedures," actually addresses personal protective equipment and use of other Department equipment. We would suggest:

- adding a new section to Part 2 that deals with the Department's Operational Guidelines, which constitute the Department's "written and practical safe work procedures"; and

- revising the title to refer as well to Personal Protective and Other Equipment.

As an aside, we would note that the implementing operational guideline - OG 1.01.02 – actually references the OGs as the written work procedures and makes no mention of personal protective or other equipment.

Proper OGs are critical for the fire service, and as noted by the OH&S Program, a WorkSafe BC requirement. We note that the Joint Committee is active in reviewing various Department OGs – though it would be useful in the meeting minutes to identify which are OGs are being reviewed and what process informs how OGs are brought forward for consideration.

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[29] The language in section 3.1(1.1) of Part 3 of the OH&S Regulation notes that the employer's OH&S program must cover the "whole of the employer's operations".

[30] The Department's OH&S Program is shown as OG 1.01.16 and comprises 15 separate sections.

Also in Part 2 of the OH&S Program, sections 2.05 and 2.06 deal with the provision and use of SCBA. The Department has developed a comprehensive set of OGs covering the use of SCBA, which it refers to as its "Respiratory Protection Program" (comprising OGs 1.02.01 – 1.02.11). We would suggest adding a reference to the Department's "Respiratory Protection Program" in sections 2.05 and 2.06 of the OH&S Program.

In relation to the Respiratory Protection Program, we note that the OGs are detailed and expansive. They appear to cover the requirements of Part 8, ss. 8.32 – 8.45, and Part 32, ss. 31.19 – 31.26, of the OH&S Regulation. Among other critical elements, proper periodic fit testing and proper SCBA maintenance, are covered in detail (and actively tracked by the Joint Committee – particularly the annual fit testing). In those OGs, however, where they cross-reference to the OH&S Regulation, reference to both Parts 8 and 31 should be included – e.g., in OG 1.02.02, and OG 1.02.08.

Under OG 1.02.09, an annual review of the Respiratory Protection Program is required to be undertaken. We did not see reference to such review in the Joint Committee minutes.[31] It may be that this program is reviewed as part of the City's annual processes, but if that is so, it should be more clearly reflected in the Joint Committee minutes (even if no changes to the program are warranted). Alternatively, it should formally be made part of the regular year-end review the Joint Committee undertakes of its own processes.

Part 6 of the OH&S Program includes provision for a Workplace Hazardous Materials Information System, and the Joint Committee minutes demonstrate that the Department actively manages this obligation.

Under section 31.3 of Part 31 of the OH&S Regulation, where an employer is required to maintain a joint committee, its fire department is required to operate a separate joint committee.[32] The Department has a separately constituted joint committee established in accordance with Part 11 of its OH&S program. In connection with Part 11, consideration should be given to the following issues:

- Worker representative selection: section 11.02 provides that the Department's membership "will elect…Safety Representatives." Subsection 34(a) of the WCA, however, provides that, where workers are represented by a union: "the worker representatives are to be selected according to the procedures established or agreed on by the union." While the election process may have been agreed with the union, we would suggest that the WCA requirements be more completely reflected in this section.

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[31] The minutes of 14 December 2021 noted that, as part of the annual OH&S process review (in this case, conducted by representative from the City of Kamloops), "Decon[tamination] and SCBA procedures [were reviewed] with Members…". It is not clear, however, whether the entire Respiratory Protection Program was reviewed as part of that work. Prince George Fire Rescue, "Monthly Safety Committee Minutes," 14 December 2021, Item 205, Health and Safety Audits, at p. 4.

[32] The need for a separate joint committee (or worker representative) for fire departments is set out in s. 31.3 of Part 31 of the OH&S Regulation.

- Employer representative section: in section 11.03, we would suggest changing the term "administrative representative" to "employer representative" (to better track the WCA language) and stipulate that such individuals must be selected from "from among persons who exercise managerial functions for the employer," as required by section 35 of the WCA.

- Selection and role of Co-Chairs: Part 11 could better describe the selection of the worker representative co-chair, as required by subsection 33(d) of the WCA. Each co-chair should have the same rights (e.g., to call a special meeting), and the possibility of having the worker representative chair the meeting should not be precluded by the OH&S Program (as is done in section 11.03).

- Functions of the Committee: in section 11.06, we would recommend amending this section to expressly track the language in section 36 of the WCA, which sets out the duties and functions of a joint committee.

- Agendas and Minutes: in section 11.09, a requirement that the minutes for at least the last three meetings be posted at each fire hall should be added, as required by section 44 of the WCA (along with the names of the committee members and any orders issued by WorkSafe BC). We would note that the 2021 OH&S process review conducted by the Department identified that the fire hall Safety Boards had not been kept up to date.[33]

We also would recommend adding new sections in Part 11 addressing the training requirements for Joint Committee members (which were added for new members in section 3.27 of the OH&S Regulation effective in 2017; the requirements for existing members are found in section 41 of the WCA), along with the requirement for an annual review of the Joint Committee's operations. We would note that the Department does in fact provide training opportunities for Joint Committee members (somewhat interrupted by the pandemic), and is doing its annual joint committee review using the template provided by WorkSafe BC, as evidenced by the Joint Committee minutes. Nevertheless, it would be useful to set out these requirements in the Part 11 of the OH&S Program.

In addition, the role of worker representatives on the Joint Committee in accident investigations should be better reflected, either in Part 11, or in Part 10 "Investigations of Workplace Incidents and Disease." Their responsibilities are identified in the WCA and relevant regulations (e.g., see subsection 36(i) of the WCA).

We reviewed joint committee minutes covering the period from January 2020 – April 2022, as well as the relevant OGs relating to the Department's OH&S obligations. Early in the pandemic, it appears that two of the monthly joint committee meetings were postponed (March and April 2020); and subsequently, the June 2021 and January 2022 meetings appear to have been put

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[33] Prince George Fire Rescue, "Monthly Safety Committee Minutes," 14 December 2021, Item 205, Health and Safety Audits, at p. 4.

off, but otherwise the committee continued with its regularly scheduled monthly meetings throughout the period.

The Joint Committee does a generally good job of tracking matters that are brought before it, and following up on matters to completion. During the period reviewed, the Department had relatively few time-loss injuries, and recorded only two material near misses. One set of matters that could be better represented in the Joint Committee minutes is the results of the regular reviews of the fire halls and other Department facilities. Even if these reviews did not identify any concerns, the fact that the review was undertaken should be recorded and tracked.

Where the Joint Committee is undertaking the annual review of its own processes, the results of that review need to be recorded in the minutes, including any feedback from the Joint Committee members, as required by subsection 3.27(6) of the OH&S Regulation. We would suggest the Department consider attaching the review document as an appendix to the relevant meeting minutes.

The Department is covered by the City's "Respectful Workplace Program", and has undertaken an active approach to mental health and wellness of its members: mental wellness issues are regularly considered by the Joint Committee and constitute a separate part of the overall OH&S program.

We would note that the Department clearly takes its occupational health and safety obligations seriously and is operating its program and Joint Committee in a professional and effective manner. Most of the concerns raised above relate to form rather than substance.

5.4 Recommendations

#5-1: Consider updating Bylaw No. 8272.

#5-2: Revise/update the OH&S program based on the discussion in this section.

6.0   Fire Underwriters

This section examines the role and importance of Fire Underwriters' reviews for property owners in a fire protection area and provides a brief overview of the methodology that those surveys employ. As the rating provided by the Fire Underwriters materially impacts insurance costs for both residential and commercial properties, it is important to understand how the rating system operates and the potential impact it has on the cost-benefit analysis of local governments investing in their fire services. In particular, it is important to understand how investing in the fire service through civic taxes, to establish, maintain or improve an area's rating from the Fire Underwriters, can potentially result in a net return (or the maintenance of major net savings) for residents and area businesses.

The Fire Underwriters are a national organization administered by Opta Information Intelligence. It has operated under a variety of names in the past (including SCM Risk Management Services Inc.), but in each instance, the organization was, and we believe remains, owned or controlled by the insurance industry.

The primary purpose of the Fire Underwriters is to establish the Dwelling Protection Grade ("DPG") and Public Fire Protection Classification ("PFPC") for each community in the country. The DPG rating generally applies to single family detached residences,[34] whereas the PFPC rating applies to multi-family residential, commercial, industrial and institutional buildings or districts, and generally is applied by the "commercial lines" arm of the insurance industry.[35]

Most residential homeowners and businesses carry fire and general perils insurance, and any person with a mortgage is required to maintain such insurance by the mortgagee bank or financial institution. Entities responsible for strata developments are required by provincial legislation to maintain insurance coverage.

Where a community has a fire department that meets Fire Underwriters' standards for performance, the cost of insurance can be significantly decreased. Thus, one of the cost-benefit analyses that underpins the investment required to establish or maintain a rated fire department is the trade-off between the taxes needed to pay for the department (and meet Fire Underwriters' standards) and the expected savings for residents and businesses on insurance costs.

With a well-rated fire department, the aggregate savings on insurance premiums often will offset, in whole or in significant part, the costs of operating the department. For an individual

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[34] Under the Fire Underwriters' definitions, the DPG ratings generally apply to the following: "One- and Two-Family Detached Dwellings (buildings containing not more than two dwelling units) in which each dwelling unit is occupied by members of a single family with not more than three outsiders, if any, accommodated in rented rooms." In addition, under this system a "typical" detached dwelling is a maximum of 3,600 square feet in size. Fire Underwriters Survey website, "Terms of Reference", http://www.fireunderwriters.ca/dwelling-protection-grade.html accessed on 19 October 2021.

[35] Fire Underwriters Survey website, "What is the PFPC" at http://www.fireunderwriters.ca/public-fire-protection-classification.html, accessed on 19 October 2021.

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with a house that is assessed at a replacement cost[36] for insurance purposes of $300,000, a "protected" or "semi-protected" rating will generally result in cost saving on insurance of between more than $2,000 annually. For commercial properties, significant reductions in insurance rates can be expected when the community obtains a PFPC rating of 7 or better. From the savings enjoyed on insurance, the tax cost of maintaining the service would then need to be deducted to determine the net direct financial benefit (or cost) of having a "rated" department.[37]

The following table is often shown in some Fire Underwriters' reports. The table shows the amount by which "average" insurance costs drop for residential properties as the DPG rating improves: [38]

Table 2: DPG Rating—Estimated Insurance Costs

Replacement Value $	Unprotected Rate $	60± % Reduction	Semi Protected Rate $	32± % Reduction	Fully Protected Rate $
100,000	1,165		465		315
125,000	1,470		585		400
150,000	1,750		700		475
175,000	2,040		815		555
200,000	2,710		1,215		739
250,000	3,290		1,475		893
300,000	3,880		1,741		1,053
350,000	4,422		1,987		1,201
400,000	4,953		2,226		1,349
450,000	5,489		2,465		1,491

Table 2, while somewhat dated in that it refers to average insurance costs from ~2015, is still useful in showing the material savings that result from having a semi- or fully-protected rating from the Fire Underwriters.

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[36] It is important to emphasize that "replacement cost" and the "assessed tax value" of a home are not interchangeable concepts. Replacement cost is driven by square footage, level of finishing and the cost of construction, while the assessed tax value of a home is driven by market factors.

[37] The rating system is described in greater detail in the next section. It must be stressed that the actual cost of insurance for any homeowner or business varies based on a number of individual and site-specific factors. While the Fire Underwriters' fire grading for the area has a significant impact, a host of other considerations are also involved in the setting of insurance rates, including matters specific to the individuals or properties involved, or the competitive forces at work in the region.

[38] This table is drawn from a 2015 Fire Underwriters' report. While the estimated rates are now low (as insurance costs have risen since that time), the approximate cost savings are still enjoyed.

The savings achieved for commercial and multi-family properties comes from the Department's PFPC rating. The table below shows the estimated savings as the rating improves:[39]

Table 3: PFPC Rating—Estimated Insurance Cost Decreases

Public Fire Protection Classification	U- Rate Percentage Decreases
PFPC 10 to PFPC 9	99.2%
PFPC 9 to PFPC 8	96.6%
PFPC 8 to PFPC 7	82.4%
PFPC 7 to PFPC 6	74.4%
PFPC 6 to PFPC 5	63.1%
PFPC 5 to PFPC 4	53.8%
PFPC 4 to PFPC 3	48.0%
PFPC 3 to PFPC 2	47.3%
PFPC 2 to PFPC 1	45.8%

As can be seen in Table 3, ratings improvements in the commercial classification do not result in linear decreases. From a cost-benefit perspective, moving a rating from PFPC 8 down to ~PFPC 4 seems to provide the optimal savings for businesses and multi-family properties. That non-linear relationship is worthy of consideration on a cost-benefit analysis between the amount required to be invested in improving the service and the expected insurance savings for owners of commercial, industrial and multi-family properties.[40] Below PFPC 4, the amount of investment needed to obtain the improved rating may well outweigh any insurance savings.

The City and Department were last formally reviewed in 2013, at which time the following ratings were given:[41]

Table 4: 2013 Fire Underwriters' Ratings for the City

Sub-District	Rating	Comment
PFPC Rating		
Halls 1 – 4	PFPC 5	Properties within 150 m. of a hydrant & within 5 km. of a fire hall
Halls 1 – 4	PFPC 9	Properties within 5 km. of a fire hall but more than 150 m. from a hydrant
Halls 1 – 4	PFPC 10	Properties more than 5 km. from a fire hall

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[39] Again, this table is drawn from a 2015 Fire Underwriters' report.

[40] The amount of savings can also vary with the particular type of industry or commercial undertaking. The table gives the average of all savings, across all property types and uses.

[41] Fire Underwriters Survey, *City of Prince George: Fire Protection Services Study – Final* (2013), at pp. 8 – 9 (the "2013 FUS Report")

Sub-District	Rating	Comment
DPG Rating		
Halls 1 – 4	DPG 1	Properties within 8 km. of a fire hall and within 300 m. of a fire hydrant
Halls 1 and 2	DPG 4	Properties within 8 km. of a fire hall but not within 300 m. of a fire hydrant
Halls 3 and 4	DPG 3B	Properties within 8 km. of a fire hall but not within 300 m. of a fire hydrant
Halls 1 – 4	DPG 5	Properties more than 8 km. from a fire hall

In the 2013 FUS Report, the Department's PFPC rating fell from its previous 1985 rating, dropping from PFPC 4 to PFPC 5. This report was reviewed in detail in the 2016 SOC Report prepared by the Consultants. At the time, we pointed out several mathematical errors in the report, and noted that, from the perspective of improving the Department's overall score, focussing on improving the score in the Fire Department category would yield the best results. That 2016 SOC Report should be consulted for a detailed review of the 2013 FUS Report and the Fire Underwriters' methodology.

The Department persuaded the Fire Underwriters to delay implementing the proposed PFPC downgrade, while it undertook the standards of cover review in 2015-16. In 2020, the Department set out a detailed submission on the improvements that had been implemented in response to the 2013 FUS Report, and in connection with the Standards of Cover Report.[42] The Fire Underwriters indicated that the additional information had been assigned to one of their surveyors for processing, and an update was expected by the end of 2020.

The improvements noted in the submitted documentation covered 12 of 14 recommendations from the 2013 FUS Report regarding the fire department assessment (all except the staffing and annual report recommendations).

Table 5: PGFR Response to 2013 FUS Recommendations

2013 FUS Report Recommendation		PGFR Response
1	Improve coverage within CPG	New Number 1 Fire Hall, currently under construction, located at 2012 Massey Drive, has an estimated completion date of fourth quarter, 2020. **[Now completed.]** The new Number 1 Fire Hall should improve the 8-minute response coverage footprint by 48% (Mitchell & Associates, 2016 fire hall location study).

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[42] Correspondence, Deputy Chief P. Knudsgaard, PDFR to M. Currie, Fire Underwriters, 14 September 2020, with a follow up on 16 October 2020.

2013 FUS Report Recommendation		PGFR Response
2	Improve Ladder coverage within CPG	Additional 75' Quint apparatus entered service in 2017. PGFR now has two staffed ladder trucks available to respond at all times.
3	Consider additional Fire Hall in BCR/Danson/ Prince George airport area	See Rec 1 (addressed, in part, by re-locating Hall 1).
4	Conduct a Standard of Response Coverage study	Standard of Response Coverage Study was completed in 2016.
5	Improve Pump Testing Program	Pump testing was completed in July 2020 and will be conducted based on NFPA standards going forward.
6	Consider additional staffing - add an additional on-duty company available to respond 24/7	Staffing has not increased since 2013 FUS
7	Improve Callback System - utilize cell based call back system	Callback system has been improved, utilizing a cell based texting call back system for off duty Firefighters. The callback system is scheduled to be further improved in 2020 utilizing a Telestaff automated software phone call and text system.
8	Integrate Training Program Database	A training database (FDM/RMS) is now developed and is used to assign and confirm that firefighters have completed assigned training.
9	Work with large scale industry sites to develop clear understanding of the risk levels for these sites	Under Prince George Industrial Mutual Aid Committee ("PGIMAC"), Prince George Fire/Rescue is working with large scale industrial sites through training events and ongoing meetings to further develop an understanding of the risk levels for these sites. Pre-Incident plans for all these sites have been completed or are currently under development.
10	Prepare Annual Report	Currently in planning phase.
11	Replace Fire Hall 1	Fire Hall 1 replacement currently under construction, estimated completion date: Fourth quarter 2020 **[Now completed]**

2013 FUS Report Recommendation		PGFR Response
12	**Upgrade Fire Hall 2**	Living quarters have been upgraded - washrooms, bedrooms, office, all renovated. Backup power is provided for communication equipment and emergency lighting.
13	**Upgrade Fire Hall 3**	Safety of working/living environment upgraded - modern emergency lighting and exit signage installed. Backup power is provided for communication equipment and emergency lighting.
14	**Upgrade Fire Hall 4**	Safety of working/living environment upgraded - modern emergency lighting and exit signage installed. Backup power is provided for communication equipment and emergency lighting.

The Department also detailed its and the City's response to the other recommendations regarding emergency communications, fire prevention and water supply system improvements. Significant progress against most of those recommendations was evident in the material submitted to the Fire Underwriters in 2020.

6.1 Summary

The principal benefit of having an effective, well-equipped and well-trained fire department is that it will materially improve the life safety of residents in its fire protection area. Indeed, we would stress that the life-safety issues are the principal ones to focus on, when communities examine the benefits and weigh the costs of investing in their fire services. From a financial perspective, however, it also is important to understand that a fire department which is well rated by the Fire Underwriters will likely result in materially reduced insurance costs for both residential and commercial property owners.

The Department has achieved the best possible rating for residential properties, and through a series of improvements since 2013, retained its PFPC 4 rating for commercial, industrial, institutional, and multi-family properties.

7.0 Response Analysis

The Department responded to a total of 55,937 incidents between 1 January 2014 and 31 December 2022.[43] The response data are provided from the computer aided dispatch (the "CAD") software used by the Fire Operations Communications Centre (the "FOCC"). The FOCC, which is staffed by members of the Department, also provides call taking and dispatch services for fire departments in the Regional District of Fraser-Fort George, the Kitimat Stikine Regional District, the Regional District of Bulkley Nechako, Regional District of Central Kootenay and the Cariboo Regional District. The following sections will include a review of the Department's responses by time as well as by incident type and by location and where possible will provide an assessment of any trends. The following sections will also review options for a new training site, a fifth fire hall and staffing requirements.

7.1 Temporal Analysis

7.1.1 Responses By Year

Responses by the Department are summarized in Table 6. There is noticeable variance by year, with the lowest annual number of responses in 2020 followed by the highest occurrence in 2022. This variance is largely related to the impact of the pandemic coupled with resultant changes in the dispatch transfer policy by BCEHS, followed by a resurgence in calls in 2021 and 2022, including a spike related to the Heat Dome in late June/early July 2021.

Table 6: PGFRS Responses, 2014 to 2022

Year	Count
2014	5,481
2015	5,530
2016	5,805
2017	6,500
2018	5,873
2019	5,496
2020	4,475
2021	7,569
2022	9,208
Total	55,937

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[43] The CAD also records additional dispatch transactions which include notification of other service providers, test signals for continuity checking purposes, etc. These transactions do not create a response by the Department's personnel and apparatus, so they are not part of this analysis.

These data are illustrated in Figure 1 with the noticeable dip to 4,475 responses in 2020 followed by a recovery to 9,208 in 2022. There has been a 67% increase in responses since the Department's last review in 2015.
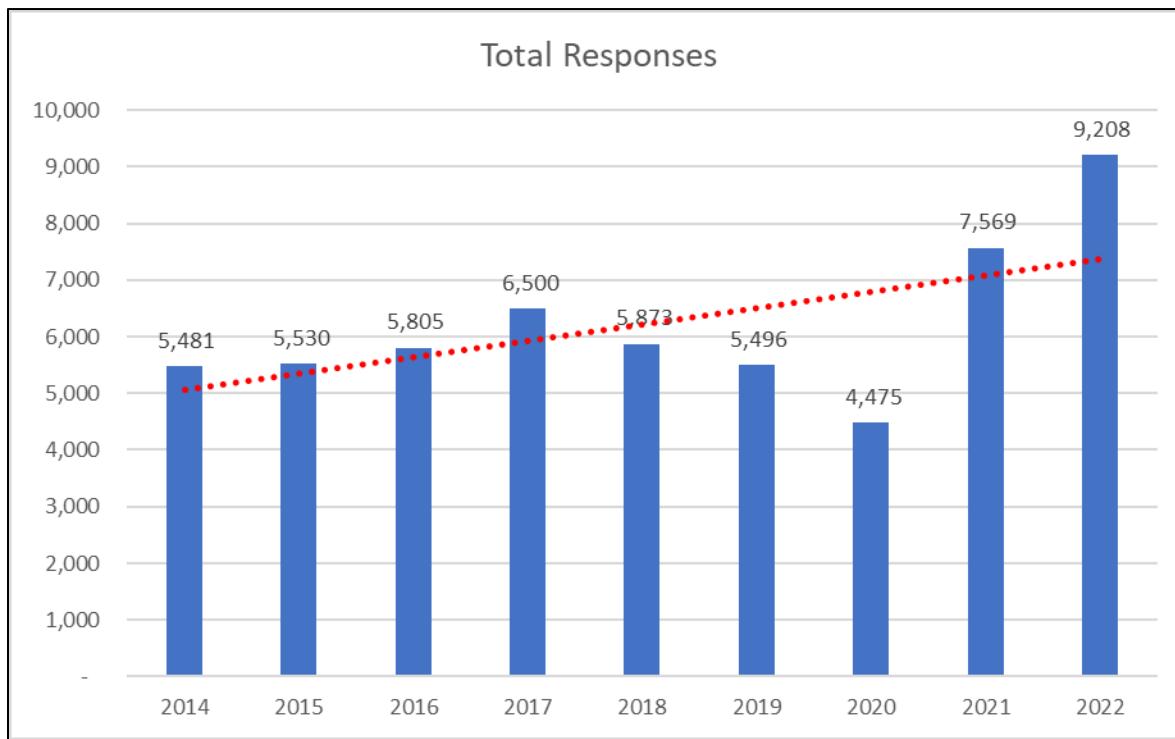
Figure 1: PGFRS Responses, 2014 to 2022

7.1.2   Medical Responses Only by Year

The decline in total responses in 2020 was largely due to changes in BCEHS response protocols during the first wave period of the pandemic – basically, from the end of March 2020 through to about September. The graph in Figure 2 illustrates the response data filtered to show medical responses only: The drop in calls and then the recovery is remarkable.
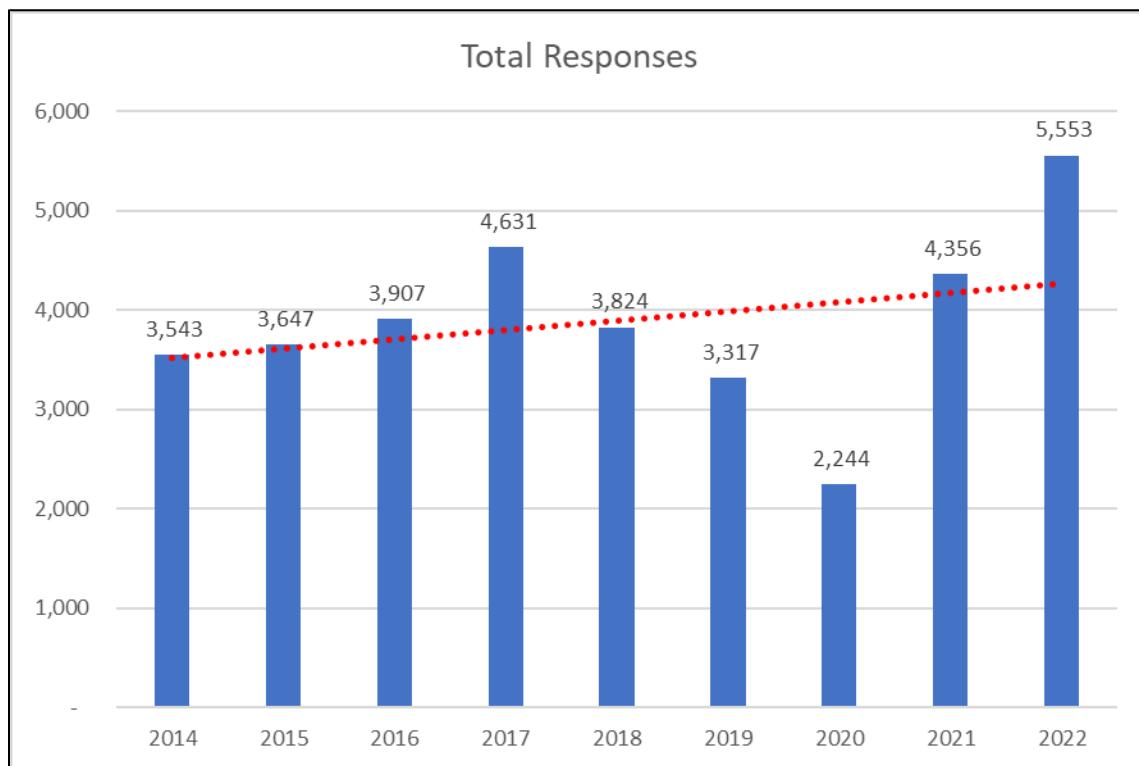
Figure 2: PGFRS Medical Responses Only, 2014 to 2022

Historically, BCEHS has unilaterally determined which call types and under what circumstances fire department assistance will be requested. The response protocols have materially changed three times over the course of the past decade. In addition to the significant change in 2020 in response to the pandemic, the protocols were changed twice:

- first, in 2013, when changes to what was then-called the "Resource Allocation Protocol" or "RAP", downgraded certain call types, and BCEHS stopped requesting fire department assistance for a range of incidents. These changes, however, appear to have been short-lived in practice. The 2016 SOC Report notes a drop in FMR calls in 2013, with some recovery in 2015. The number of calls then escalated significantly from 2015 through 2017 as shown in Figure 2, above;[44] and

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[44] While the cause of this escalation is not entirely clear, it may have been driven by BCEHS resource shortages during this period.

- more significantly, the RAP was replaced by a new "Clinical Response Model" or "CRM" with effect as of 30 May 2018. In addition to moving to a colour-coding system to indicate call priority, the new CRM materially reduced the number incidents to which fire departments would automatically be dispatched. Only the highest severity incidents (purple and red) now involve automatic dispatch by participating departments, with lower-coded events only triggering a fire department response if there are material delays in ambulance arrival or some other circumstance (e.g., access issues, lift assist requirements, hazardous materials present, etc.) where fire department assistance is required. The new CRM led to a 17.4% drop in the Department's FMR calls in 2018, and a further, drop in 2019, which fell about 13.3% compared to the previous year. As such, there was more than 1300 fewer FMR calls in 2019 compared to 2017.

As can be seen in the 2022 data, however, the call volumes have now returned to above the levels seen prior to the introduction of the new CRM.

This externally driven change in demand for the Department's services is challenging to manage, and makes forward planning difficult.

7.1.3   Medical Response by Year and Month, 2019 to 2022

The response protocol changes were made at the end of March 2020 and the sudden impact of the change is shown below in Figure 3 with the total responses falling from 271 in March to 61 in April. The protocols appear to have been reversed by September, with volumes rising significantly in the final quarter of the year. In 2021 the rate of medical incidents climbed again, beginning with the Heat Dome in late June, and continuing through the balance of the year and into 2022 (notwithstanding that the CRM itself was not materially revised).
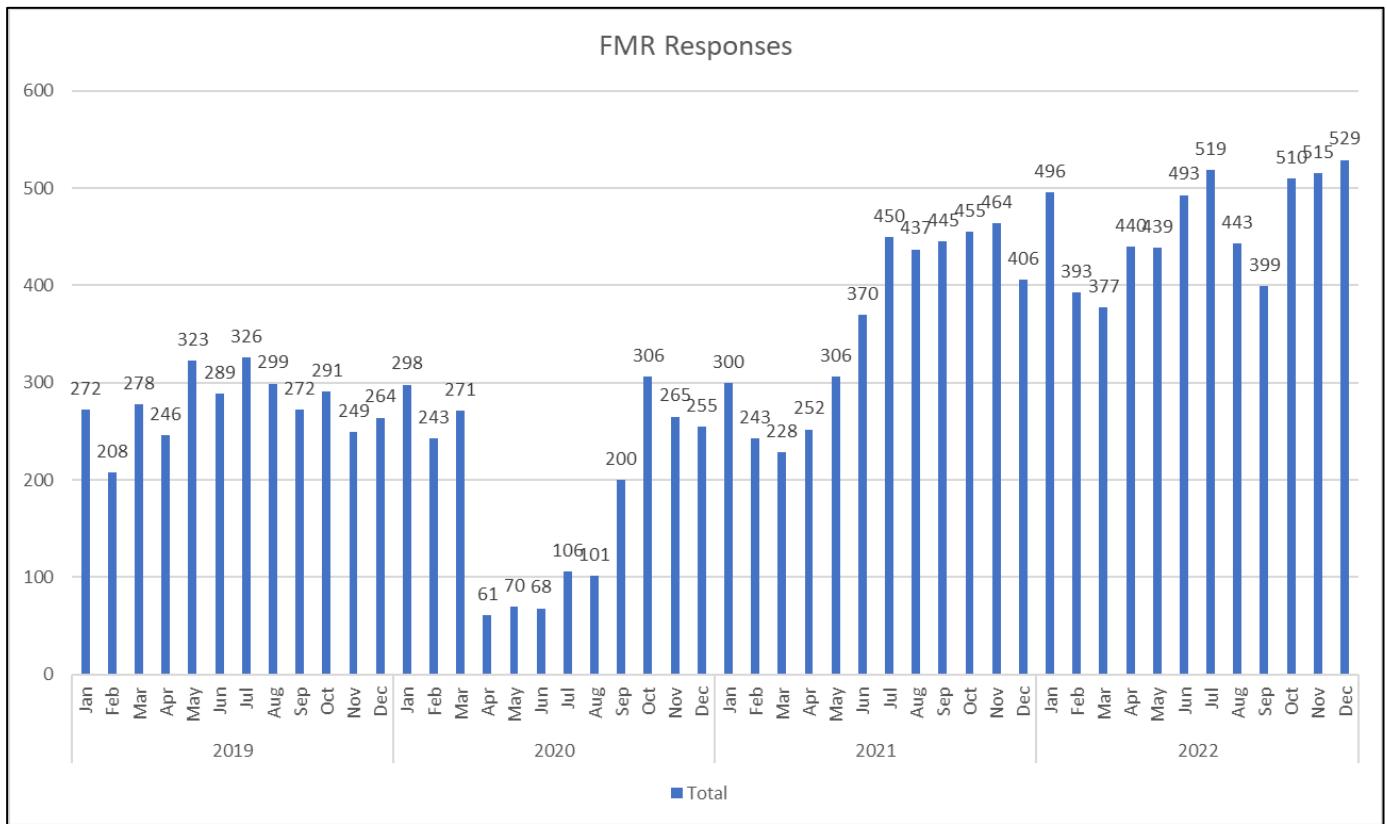
Figure 3: PGFRS Medical Response Only, 2019 to 2022

7.1.4   Responses By Month

Incidents by month are listed in Table 7 indicating the busiest month for the Department is October followed by July, December and May.

Table 7: PGFRS Responses by Month, 2014 to 2022

Month	Count
January	4,711
February	4,061
March	4,250
April	4,424
May	4,887
June	4,374
July	5,031
August	4,690
September	4,624
October	5,063
November	4,799
December	5,023
Total	**55,937**

These data are shown graphically in Figure 4 and illustrate a considerable range in requests for service on a monthly basis.
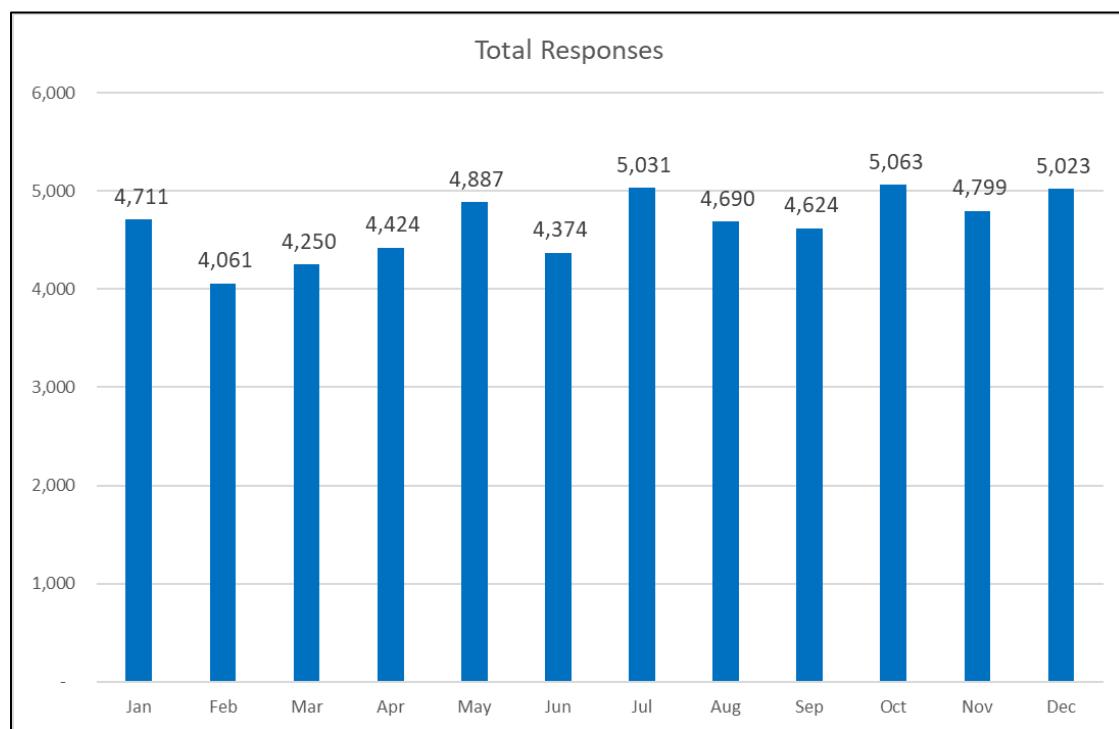
Figure 4: PGFRS Responses by Month, 2014 to 2022

7.1.5   Responses By Day

The number of incidents responded to by day of the week is listed in Table 8, with the busiest day being Friday and the lowest call volume occurring on Monday. The variation from the busiest (8,437) to the quietest day (7,593), however, is 11%, meaning that the Department is consistently busy across the week.

Table 8: PGFRS Responses by Day of the Week, 2014 to 2022

Day	Count
Sunday	7,593
Monday	7,720
Tuesday	7,822
Wednesday	8,086
Thursday	8,251
Friday	8,437
Saturday	8,028
Total	**55,937**

These data are shown in Figure 5 with the busiest two days being Friday, then Thursday.
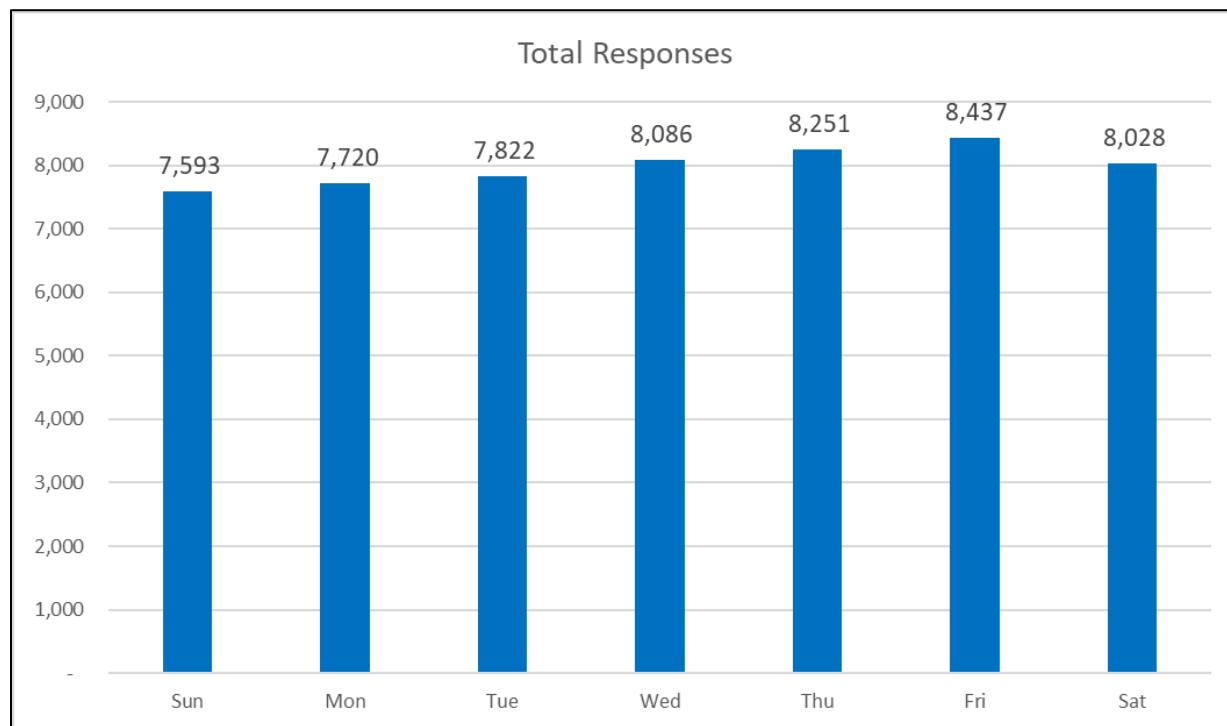
Figure 5: PGFRS Responses by Day of the Week, 2014 to 2022

7.1.6   Responses By Hour of the Day

Responses by hour of the day are listed in Table 9, which shows a wide range in the number of total responses from a low of 1,079 in the hour starting at 04:00, to a peak of 3,354 in the hour starting at 17:00 –triple the quietest hour. The variation is reasonably common – with early morning hours being the quietest, though the busiest hour tends to vary by department, with some peaking earlier than PGFRS.

Table 9: PGFRS Responses by Hour, 2014 to 2022

Hour	Incidents	Hour	Incidents
00:00	1,649	12:00	2,935
01:00	1,474	13:00	3,061
02:00	1,331	14:00	3,073
03:00	1,202	15:00	3,045
04:00	1,079	16:00	3,288
05:00	1,147	17:00	3,354
06:00	1,347	18:00	3,140
07:00	1,786	19:00	2,904
08:00	2,175	20:00	2,839
09:00	2,444	21:00	2,717
10:00	2,709	22:00	2,360
11:00	2,898	23:00	1,980
		Total	55,937

The large variability in responses is demonstrated in Figure 6 below which shows how responses begin to rise from mid-morning and are sustained until late evening, with the highest call volume between 14:00 and 19:00.
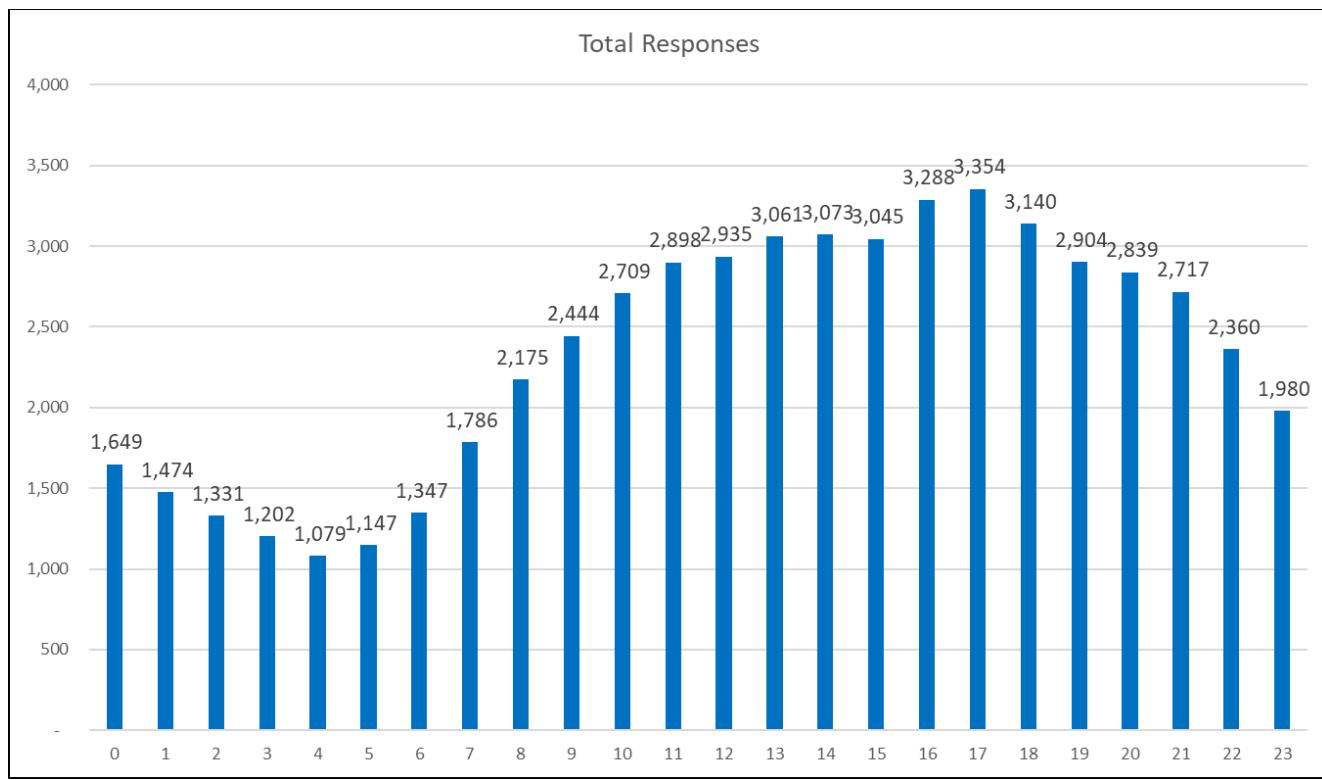
Figure 6: PGFRS Responses by Hour 2014 to 2022

The variability by year, month, day and hour can be presented in two different views, one showing the variability by year and month, the second showing day of the week and hour. These are shown in the following section and underscore the complexity in the Department's demand for service.

7.1.7 Responses by Year and Month

Table 10 displays the responses by year and month. The variation in call volumes over the period is evident.

Table 10: PGFRS Responses by Year and Month, 2014 to 2022

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2014	450	370	373	437	522	472	553	473	491	450	407	483	5,481
2015	460	392	448	471	535	425	511	437	429	503	419	500	5,530
2016	528	433	471	524	504	456	497	442	444	473	490	543	5,805
2017	500	493	486	508	595	541	634	655	499	503	527	559	6,500
2018	605	551	531	546	631	399	421	484	410	457	380	458	5,873
2019	420	376	475	437	547	467	545	467	439	485	425	413	5,496
2020	482	369	408	247	265	230	321	275	409	522	482	465	4,475
2021	522	449	413	500	557	636	745	719	762	786	771	709	7,569
2022	744	628	645	754	731	748	804	738	741	884	898	893	9,208
Total	4,711	4,061	4,250	4,424	4,887	4,374	5,032	4,689	4,624	5,063	4,799	5,023	55,937

There are a few matters that need to be noted from this data set:

- There was a steady rise in call volumes in the four-year period from 2014 to 2017 inclusive. This rise in volume largely (though not exclusively) tracked increases in FMR calls during this period;

- Notwithstanding the significant drop in FMR calls at the end of May 2018 as a result of the introduction of the new CRM by BCEHS, total call volumes in 2018 still exceeded those in 2016. This was partly driven by high FMR call volumes in the early part of the year, but also by a growing volume of non-FMR call volumes – which has proven to be the beginning of a trend that continues through 2022;

- The low call volumes in 2020 need to be treated as anomalous. The drop was driven by FMR volumes that were lower than had been seen at any point in the past decade, as result of unilateral response protocol changes by BCEHS; and

- The almost stunning growth in total call volumes in 2022, which is the Department's busiest year on record.

Indeed, the Department's non-FMR call volumes have risen since 2014, from 1,935 calls to 3,654 calls in 2022 – an increase of some 88% in that nine-year period. That increase in non-FMR calls is particularly evident for the four-year period from 2019 to 2022 inclusive, which saw a steady growth in these call types.

7.1.8   Responses By Day and Hour

These data can also be displayed to show the number of responses by day and hour. The hours with the lowest call volume occur after 23:00 through to 08:00, at which point they rise rapidly, as noted earlier. The call variability across each day is evident in the heat map shown in Table 11.

Table 11: PGFRS Responses by Day and Hour 2014 to 2022

Day	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
Sun	266	246	217	218	187	165	187	225	275	289	364	380	369	426	393	428	401	469	402	367	380	351	318	270	7,593
Mon	199	170	168	129	160	162	193	269	332	355	385	405	418	399	423	427	494	488	440	383	375	398	295	253	7,720
Tue	187	203	156	166	149	163	180	257	311	358	380	445	416	452	446	446	467	447	460	380	378	385	334	256	7,822
Wed	233	211	192	148	132	152	207	266	299	353	395	409	411	442	461	454	486	526	420	438	435	402	351	263	8,086
Thu	257	208	175	181	150	179	194	274	360	398	411	398	477	445	449	427	464	477	474	449	402	379	349	274	8,251
Fri	246	202	177	166	137	160	190	263	334	353	427	447	447	483	494	442	505	457	482	440	438	423	377	347	8,437
Sat	261	234	246	194	164	166	196	232	264	338	347	414	397	414	407	421	471	490	462	447	431	379	336	317	8,028
Total	1,649	1,474	1,331	1,202	1,079	1,147	1,347	1,786	2,175	2,444	2,709	2,898	2,935	3,061	3,073	3,045	3,288	3,354	3,140	2,904	2,839	2,717	2,360	1,980	55,937

These two data views illustrate the complexity of providing a response capability with a fixed staffing model, one which has not increased in a number of years.

7.2   Spatial Analysis

The Department protects an area of some 381 square kilometres, as shown in Figure 7. This map shows the municipal boundaries and the four fire hall locations, with the distance in kilometres between them. Also shown on this map are distances to the north limit on the Hart Highway, the west limit on Highway 16, and the south limit on Highway 97 as well as the distance to the industrial area, also known as the BC Rail property.
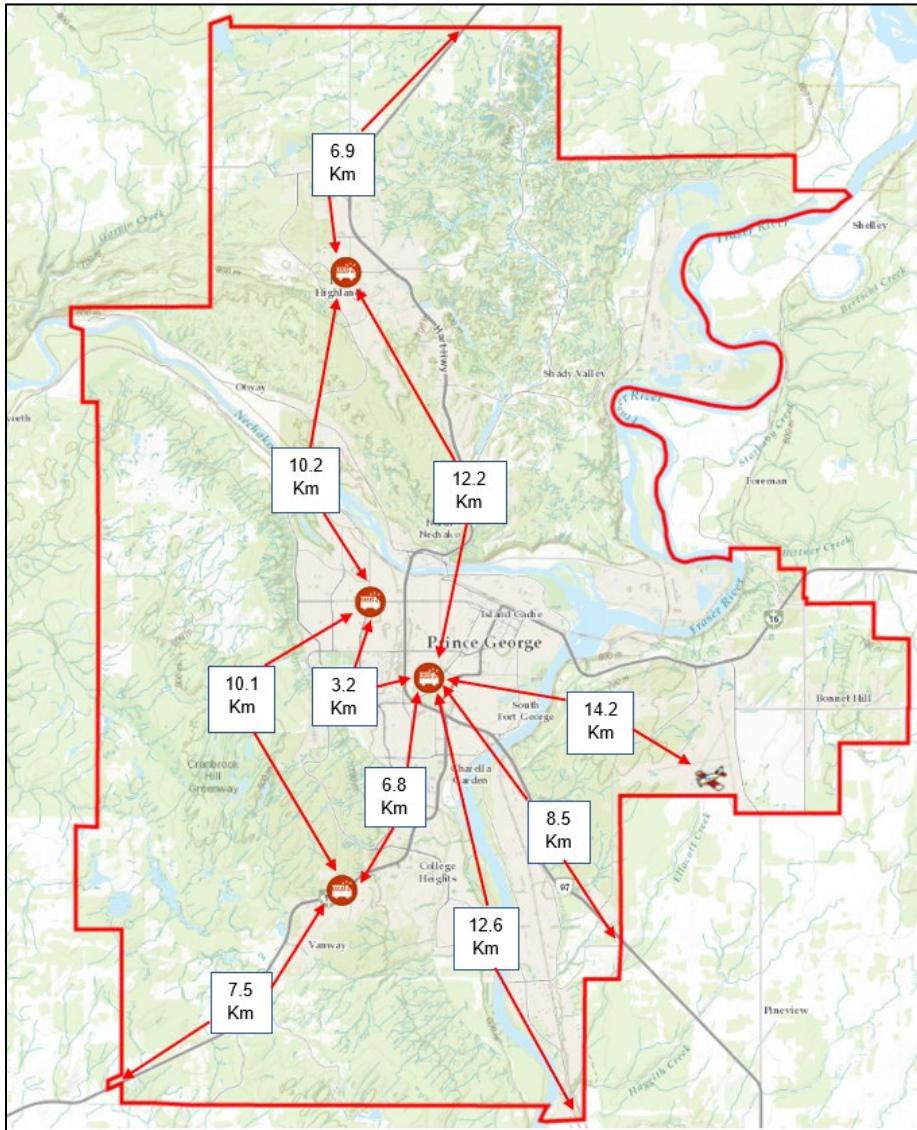
Figure 7: Prince George Municipal Boundaries with Four Fire Halls and Key Distances by Road Network.

Understanding the distances is important as it relates to the Department's ability to provide timely service and to meet the Fire Underwriters' DPG and PFPC requirements, which were discussed in the Fire Underwriters' section, above.

7.2.1 Responses By Fire Hall

The variability in the number and distribution of responses by fire hall response area is complex. The data are summarized in Table 12, which shows that incidents by year have significantly increased. Hall 1 has experienced the largest increase in total call volumes.

Table 12: PGFRS Incidents by Fire Hall Primary Response Area and Year, 2014 to 2022

Year	Hall 1	Hall 2	Hall 3	Hall 4	Total
2014	2,870	1,530	567	514	5,481
2015	2,800	1,575	602	553	5,530
2016	2,903	1,723	600	579	5,805
2017	3,556	1,711	675	558	6,500
2018	3,182	1,488	637	566	5,873
2019	2,974	1,375	630	517	5,496
2020	2,513	1,046	491	425	4,475
2021	4,536	1,694	733	606	7,569
2022	5,409	2,171	914	714	9,208
Total	**30,743**	**14,313**	**5,849**	**5,032**	**55,937**

These data are also illustrated in Figure 8 showing the largest increases being for Hall 1 which, in 2022, had 59% of all responses, while Hall 2 accounted for 23.6%, Hall 3 for 9.9% and Hall 4 for 7.8%. There is, however, an important caveat to these data. They show the total number of calls in the primary response area of each of the four Halls. They do not account for situations where:

- the call was of a nature (e.g., a structure fire) that required responses from the neighbouring halls as well; or

- the units from the particular Hall were already out on a response, resulting the in the call being responded to from one of the three other Halls.

As such, the calls by primary response area do not fully reflect the workloads being experienced by each Hall.
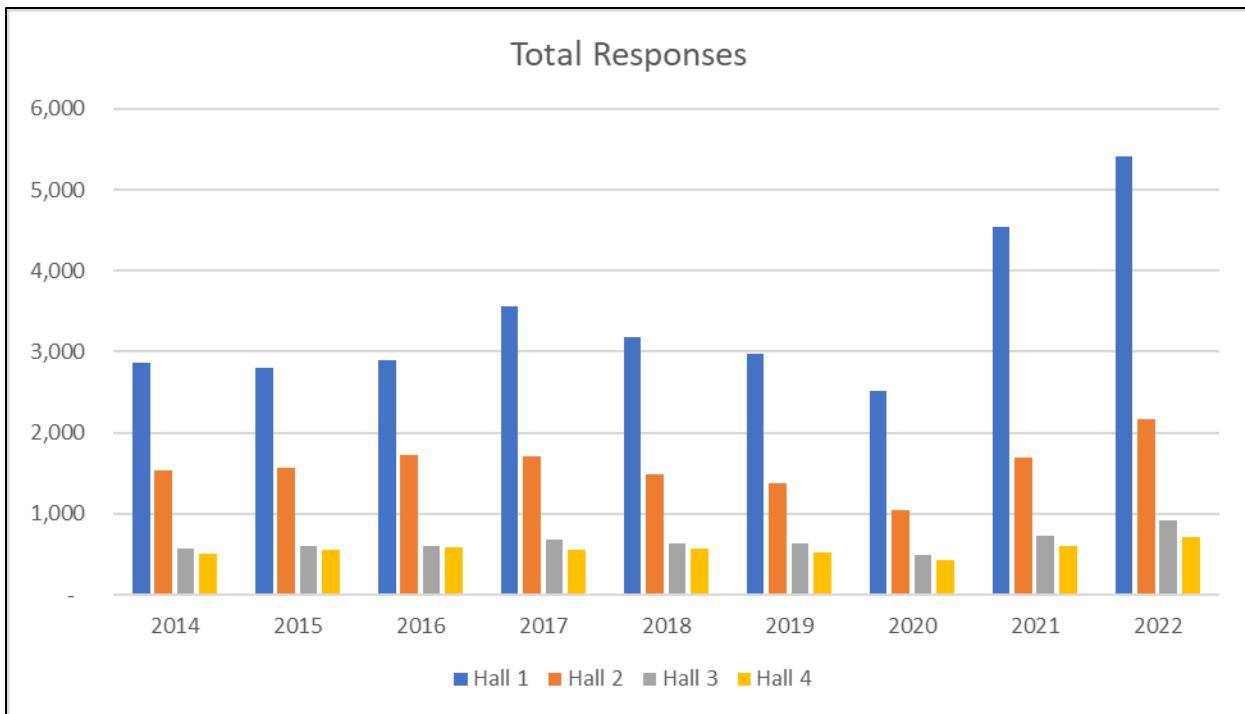
Figure 8: PGFRS Incidents by Fire Hall Primary Response Area and Year, 2014 to 2022

Over the period reviewed, there has also been a shift in the percentage of incidents occurring in the central portion of the City within the primary response areas of Halls 1 and 2. The total number of incidents in these two response areas has risen from 77.1% in 2015 (the year of the previous review) to 79.8% in 2022. These response areas cover the City core, including the downtown. The increase in responses may well reflect the growing challenges related to homelessness, mental health and addiction, which tend to be concentrated in the City core.

Table 13: PGFRS Responses by Halls, 2014 to 2022

Year	Hall 1 and 2	Hall 3 and 4
2014	78.6%	21.4%
2015	77.1%	22.9%
2016	77.5%	22.5%
2017	79.8%	20.2%
2018	79.5%	20.5%
2019	79.1%	20.9%
2020	79.5%	20.5%
2021	82.3%	17.7%
2022	79.8%	20.2%

It should be noted that the number of incidents occurring the primary response zones of Halls 3 and 4 are also increasing, rising from 1,081 in 2014 to 1,628 in 2022. The rate of increase, however, is slower than that being experienced in the two other response zones.

7.2.1.1   Responses to Structure Fires

Structure fires are the incident type which requires a response from the largest number of personnel and apparatus. Figure 9 is a spot map showing their distribution across the City. Again there is a concentration of such calls in the downtown core.
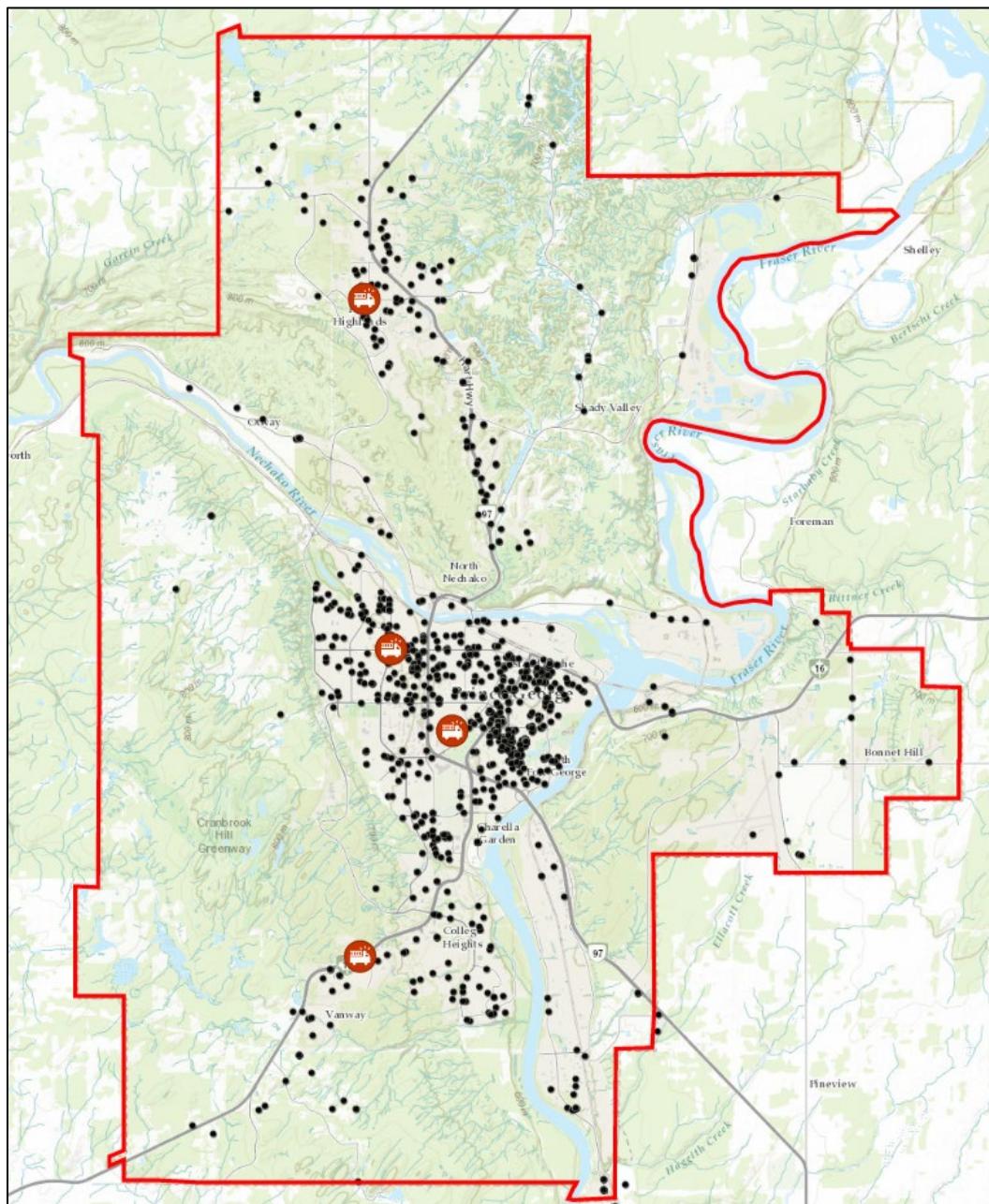
Figure 9: Structure Fires, 2014 to 2022

These data can also be displayed in a 'heat map' as shown in Figure 10.[45]
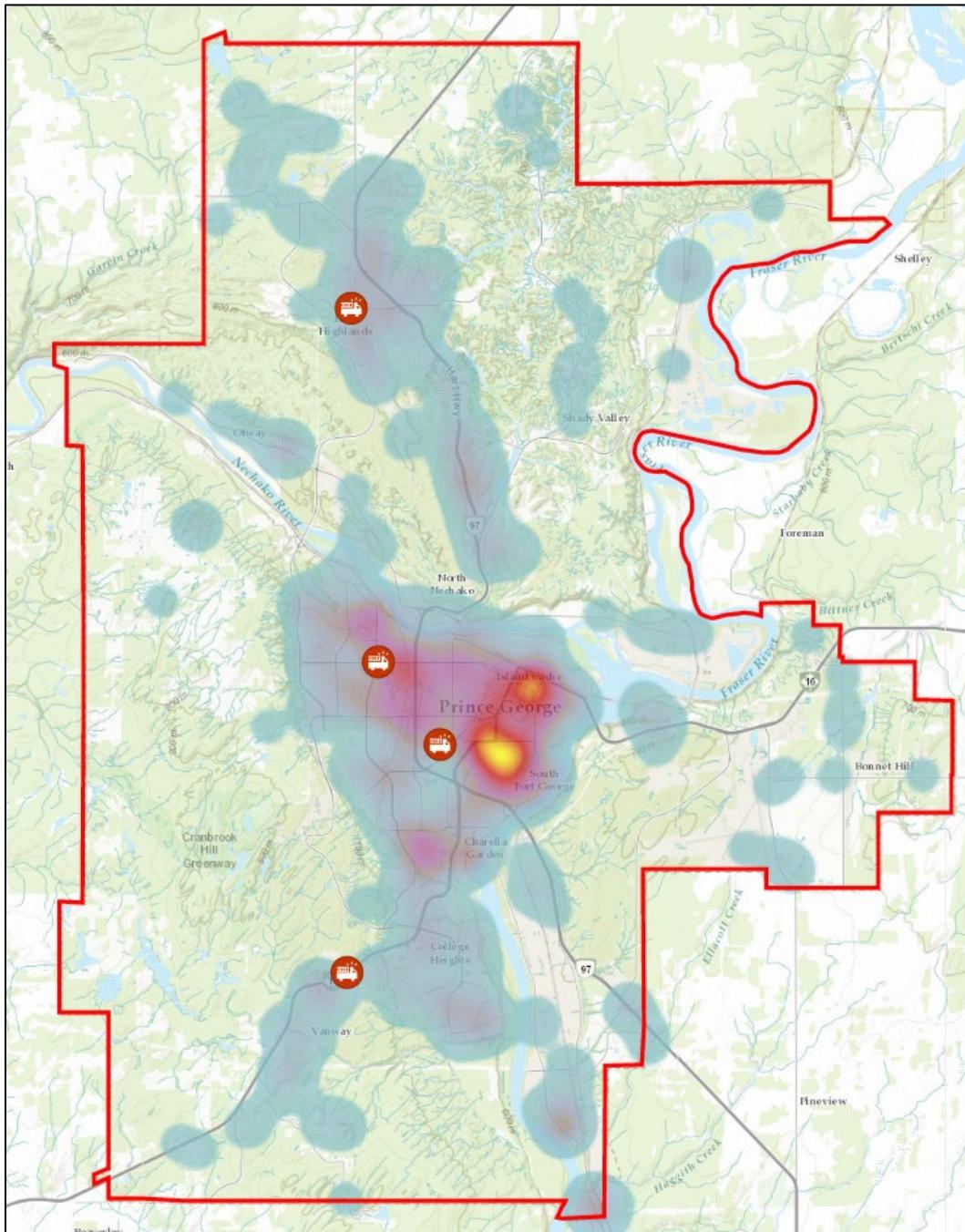
Figure 10: Structure Fires as a Heat Map, 2014 to 2022

This type of mapping clarifies that the area of the highest concentration of structure fires is within the central core of the City, with the highest concentration in the area immediately east of Hall 1.

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[45] The heat maps were generated for this report using ESRI mapping software.

7.2.2　Responses to Hazardous Materials Calls

The Department's responses include attending hazardous materials calls throughout the protection area including attendance at one or more of the high-risk industrial sites in the City. Hazardous materials ("hazmat") incidents during the period of this review are shown in Figure 11, with a concentration of these in the core area.
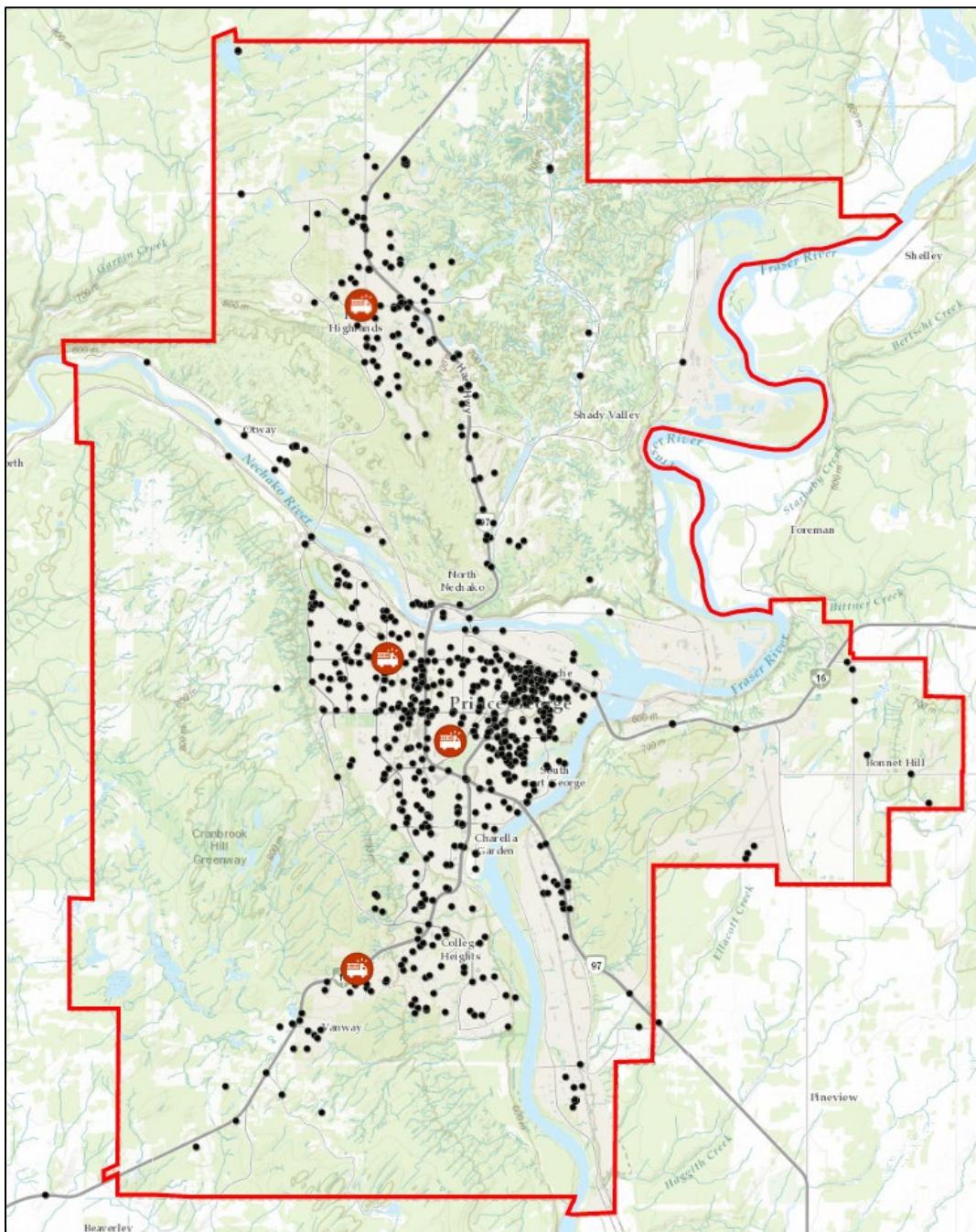
Figure 11: Hazmat Incident Locations, 2014 to 2022

Similar to the previous example with structure fires, these responses can be portrayed as a heat map (Figure 12) to more accurately show the concentration of such incidents.
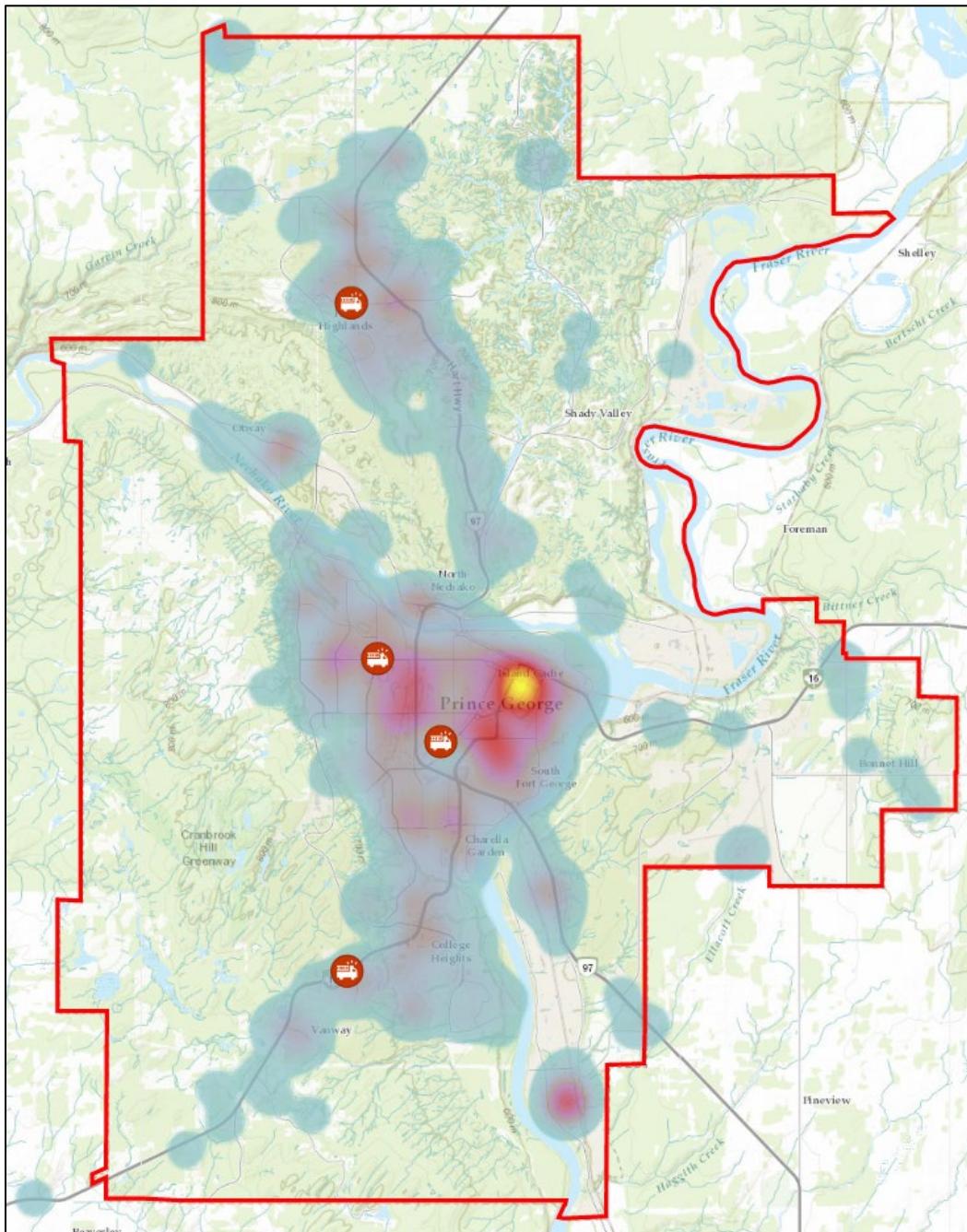
Figure 12: Hazmat Incidents as a Heat Map, 2014 to 2022

7.2.3   Responses to Alarm Activations

Responses to alarm activations are the third highest response type for the Department. This call type is displayed in Figure 13.
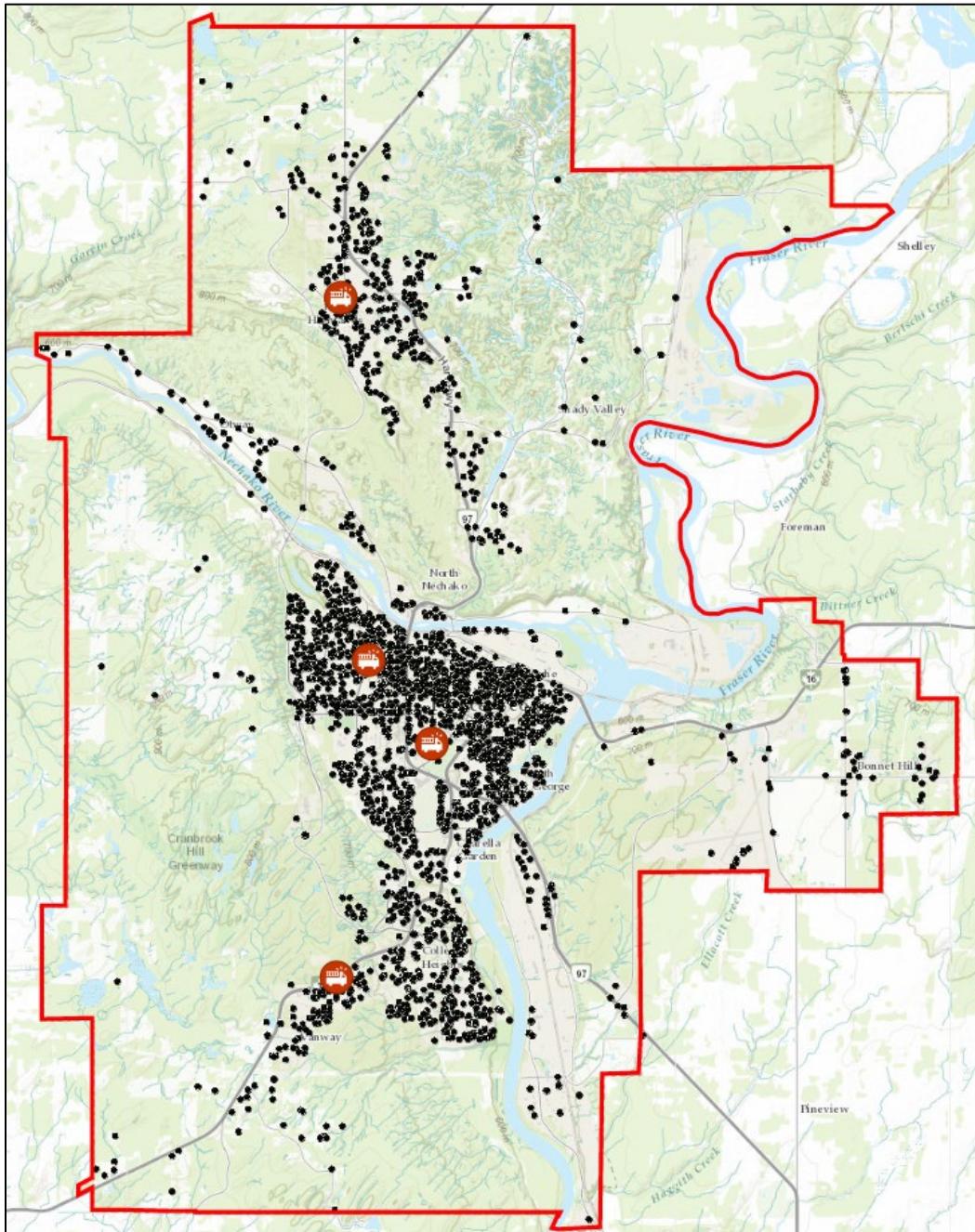
Figure 13: Alarms Activations, 2014 to 2022

This incident type can also be displayed as a heat map as shown in Figure 14, which shows a similar concentration in the core area of the City though further north.
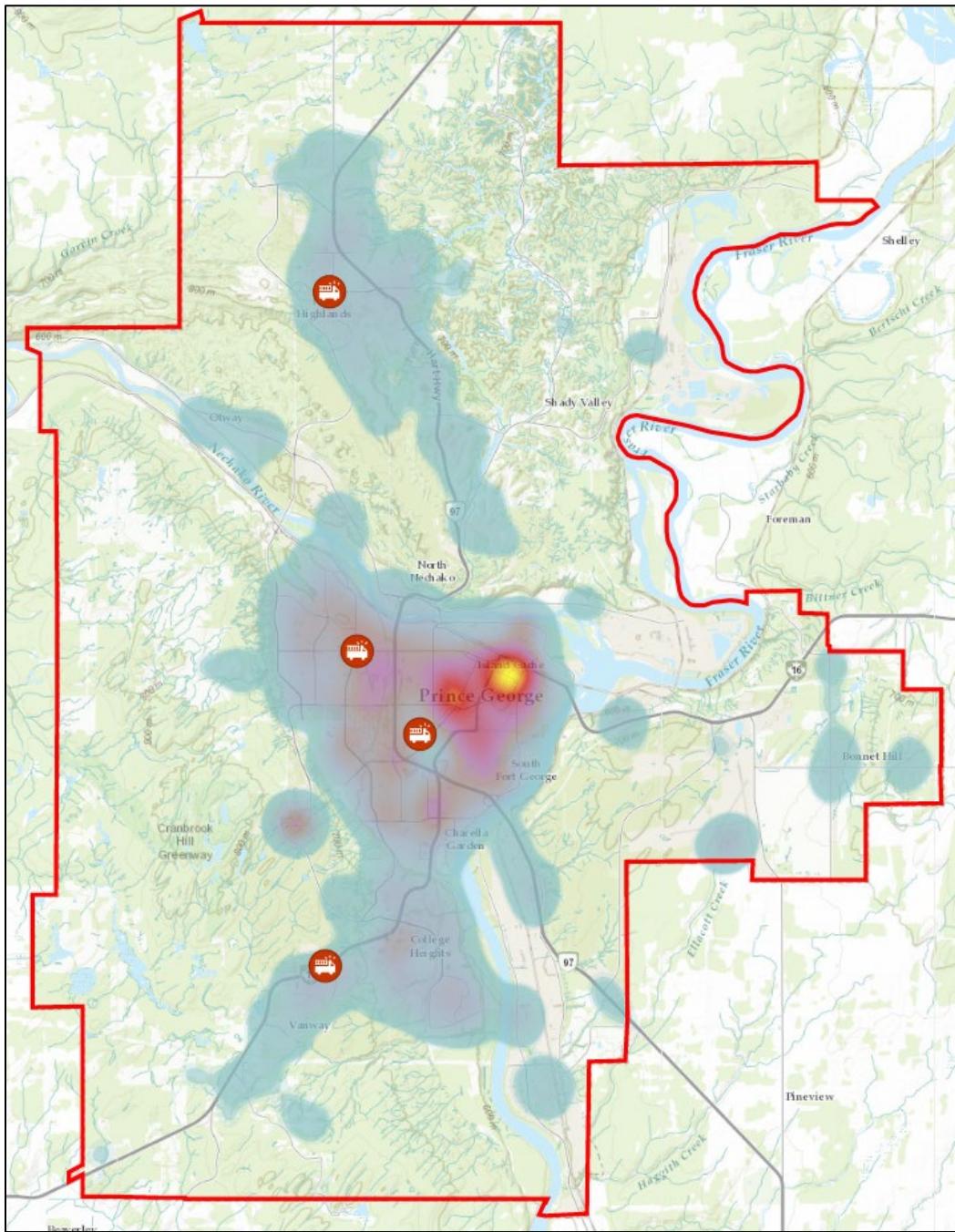
Figure 14: Alarm Incidents as a Heat Map, 2014 to 2022

7.3 Response Capability

The number of responses by the Department continues to increase with the central portion of the City accounting for more than 82% of all incidents in the most recent year. Incidents in Hall 1's primary response area alone accounted for more than 58% of all calls for service.

The current minimum number of on duty personnel is shown in Table 14 with only 11 on-duty suppression personnel protecting the central portion of the City.

Table 14: PGFRS Current Minimum Staffing.

Hall	Engine	Rescue	Assistant Chief	Total
1	4	2	1	7
2	4			4
3	4			4
4	4			4
			Total	19

The 2016 SOC Report recommended adding a second staffed unit at Hall 1 to deal with the significant call volume at this Hall. The staffing at Hall 1 is unchanged from the date of that report, even though the call volume in the Hall's primary response area has increased by some 93%, rising from 2,800 events in 2015 to 5,409 in 2022.

It is therefore recommended that the staffing for the core area of the City be increased by at least one apparatus staffed by four additional on-duty suppression personnel. This increase would reflect the first material increase in the number of suppression personnel since 2002.

It is important to understand that the staffing of a piece of apparatus on a 24/7/365 basis, covering four shifts, requires, on average, 22 additional firefighters. In other words, each on-duty suppression position requires 5.25 full time equivalent firefighters, to account for vacation, injury and illness, prescribed leaves (e.g., parental leave) and statutory holidays.

How this increase is allocated, and the period over which it is introduced, will need to be considered in discussions between the Fire Chief, the City Manager and Council. One option would be to staff Hall 2 with eight on-duty suppression personnel, allowing both the Engine and Ladder to be staffed; a second option would be to staff a second engine company at Hall 1, while moving the Rescue (which requires two suppression personnel to staff) to Hall 2. In either case, the on-duty staffing in the core portion of the City would rise from 11 to 15, which still is still slightly below the minimum requirement recommended under NFPA 1710 for a response to a single-family residence.[46]

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[46] National Fire Protection Association, *NFPA 1710: Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, s. 5.2.4 covers minimum deployment recommendations for structure fires. Under s. 5.2.4.1, the minimum number recommended for a house fire is 16 – 17 personnel. This staffing model is further discussed in Appendix 2.

7.4   Fire Hall Location Review

The City's existing fire halls do not provide sufficient coverage to some critical portions of the Department's service area. The Fire Underwriters' review in 2013 noted a coverage deficit for the industrial properties in the BC Rail / Danson Industrial park area, which are more than five kilometres from the nearest hall (Hall 1):

> (p. 8) The BCR/Danson/Prince George [Airport] area of the community is identified as high risk and having a low level of response. […]

> (p. 21) The BCR/Danson area shows a density of higher value Required Fire Flow points [i.e., areas requiring greater pumping capacity to manage potential fires]. […]

> (p. 36) First due pumper (engine) company coverage is weak in several areas of the city, particularly in the BCR industrial site. […]

> (p. 36) Recommendation 1: […] To provide a reasonable level of response in the BCR site, a fire station should be added in a position where all buildings on the site are within 5km by road of the fire station and preferably within 2.5 km.

> (p. 37) Recommendation 2: […] To provide good coverage with ladders, a ladder should be provided in the downtown, in the BCR industrial park (east of town), in the north and in the south (4 ladders total). […]

> (p. 39) Figure 10 Pumper Benchmark Deficiency […] This map clearly illustrates where weak response exists. Areas of note are as follows: […]

> - BCR/Danson area […]

> (p. 39) Recommendation 3: Consider Additional Fire Hall in the BCR/Danson/Prince George airport area. As previously identified an additional fire hall should be considered for serving the BCR/Danson and airport portion of the City […]

The Fire Underwriters' review then further considered the issue in section 13.3, noting that some road optimization may be necessary to provide coverage out to the airport (or the siting will vary considerably).[47]

While the newly built, relocated Hall 1 has somewhat improved coverage, much of the industrial area south and east of the Fraser River is still more than five kilometres distant. In addition, the 2016 SOC Report noted the need for a proper training facility for the Department. The fifth hall, located in an industrial area, would provide an excellent opportunity to build this needed infrastructure. However, the addition of such a training site is dependent on the City being able to acquire a suitably-sized piece of property. The Department is proposing to undertake a space allocation study, which will examine the issue of possible location for such a facility.

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[47] Fire Underwriters Report (2013), at p. 112. It is not clear, however, that any material road optimization is possible, given the geography and topography of the that portion of the City.

While this report suggests it be included as part of Hall 5, that suggestion is subject to the results of the more detailed study that is to be undertaken.

As part of the review a total of five potential sites were reviewed, three of which are in the BC Rail industrial property. The other two were east of Highway 97 in the direction of the airport. All five sites were assessed but the locations 4 and 5 were judged not suitable because of their distance from the core part of the City. A detailed analysis of these two sites was therefore not included. These potential locations are shown by blue icons in Figure 15 below. We have not examined any road optimization issues that were suggested in the 2013 review by the Fire Underwriters.
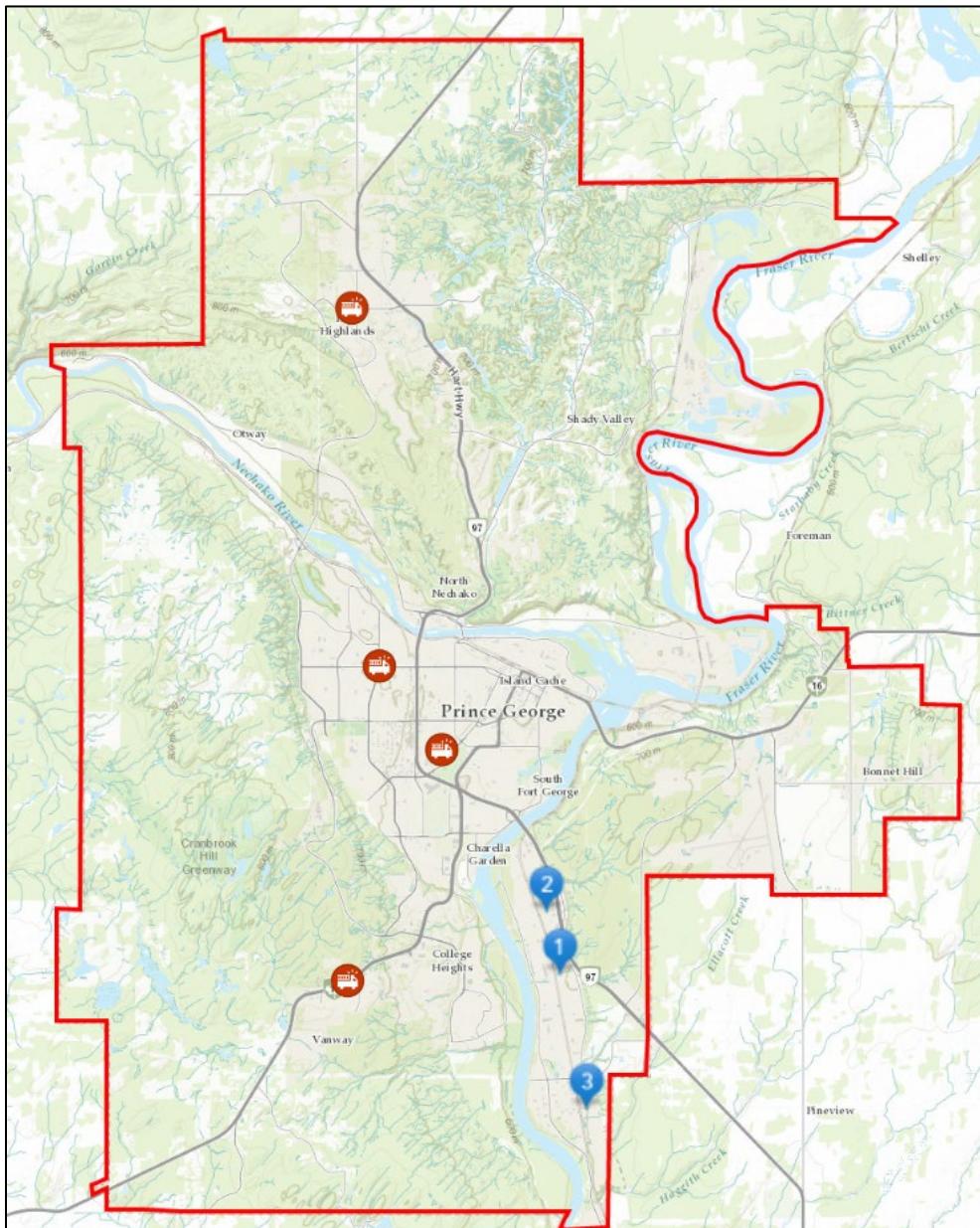
Figure 15: Prince George Four Fire Halls, plus Additional Optional Sites.

These issues and the possible location for a fifth hall are considered in the following sections which examine:

- existing coverage for this portion of the Department's service area;

- the need for a proper training site; and

- the possible locations for a fifth hall.

Provision of a staffed Hall 5 would materially improve coverage south and east of the Fraser River, meeting the Fire Underwriters' requirements for this area, and provide another staffed unit potentially capable of responding to back up or support Hall 1 in the City core. It also would reduce the number of calls currently attributed to Hall 1, by reducing its service area. In addition, it would enable the Department to build a badly-need training facility. The area is primarily industrial and commercial, which means the training activities will not create the use conflicts that would arise in a more residential part of the City.

7.4.1   Existing Coverage Issues

The coverage of the area south and east of the Fraser River is examined in this section. At present, this area forms part of Hall 1's primary coverage area. The coverage analysis is based on the Fire Underwriters' five- and eight-kilometre maximum travel distances for PFPC and DPG rating purposes. Notwithstanding the relocation of the Hall 1, much of the area is too far from the Hall to be rated as protected.

As Hall 4 does not provide Fire Underwriters-compliant coverage to either the City core or the industrial area southeast of the Fraser River, a review of its coverage zone was not included.

7.4.1.1   Hall 1 DPG and PFPC Coverage

Figure 16 shows the five- and eight-kilometre coverage for Hall 1 at its new location. The PFPC requirement is met for the majority of the downtown core area of the City shown by the red polygon, but only marginally for the industrial area in the south-east portion of the City. There is, however, now reasonable DPG coverage for a portion of the area southeast of the Fraser River (an improvement from Hall 1's former location), though most of the properties are industrial or commercial.
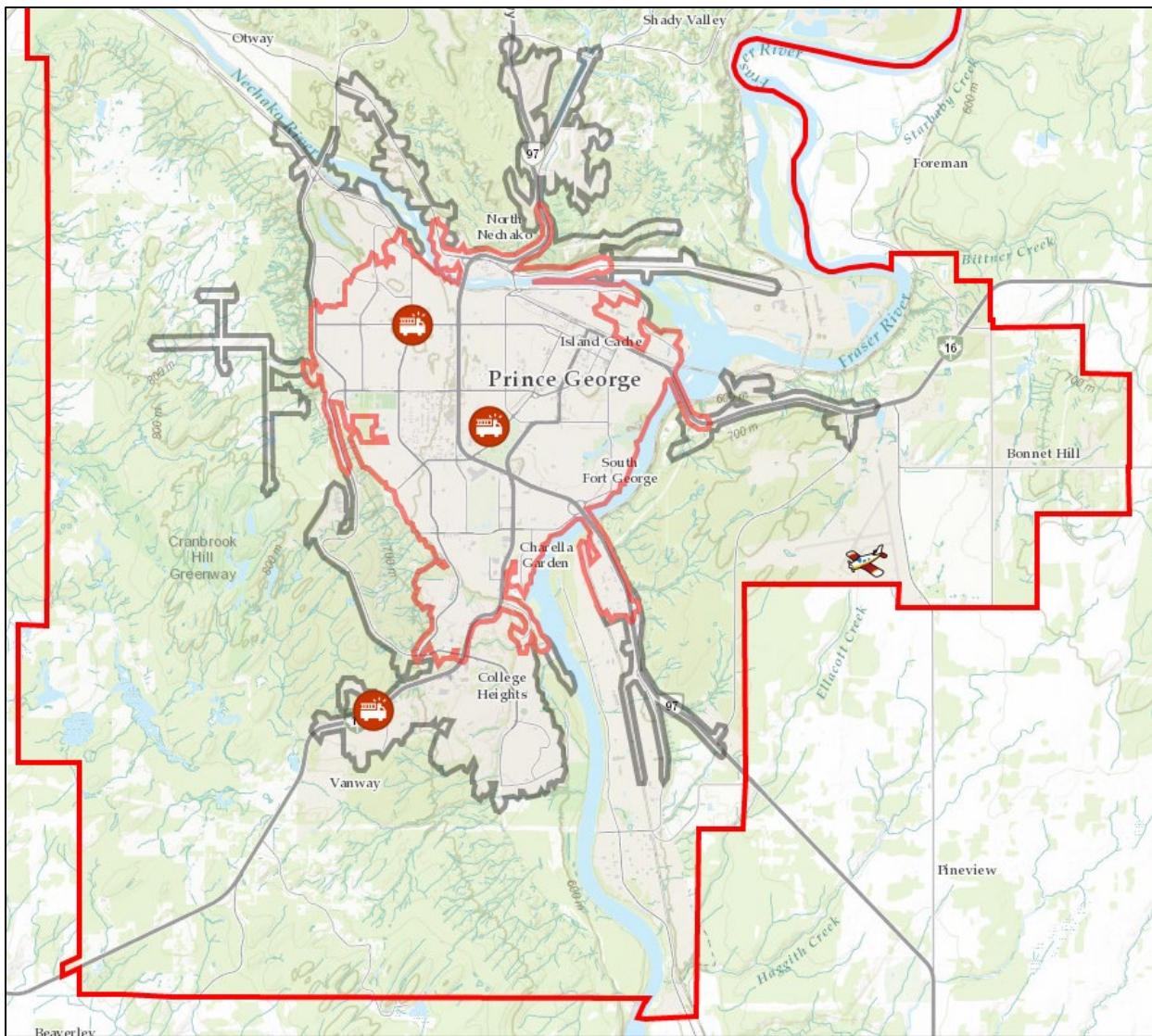
Figure 16: Hall 1 Coverage for DPG (eight kilometre black polygon) and PFPC (five kilometre red polygon).

7.4.1.2   Hall 2 DPG and PFPC Coverage

Figure 17 shows the five- and eight-kilometre coverage for Hall 2. The PFPC requirement is met for the majority of the downtown core area of the City shown by the red polygon, but it does not reach the industrial area in the south-eastern portion of the City.
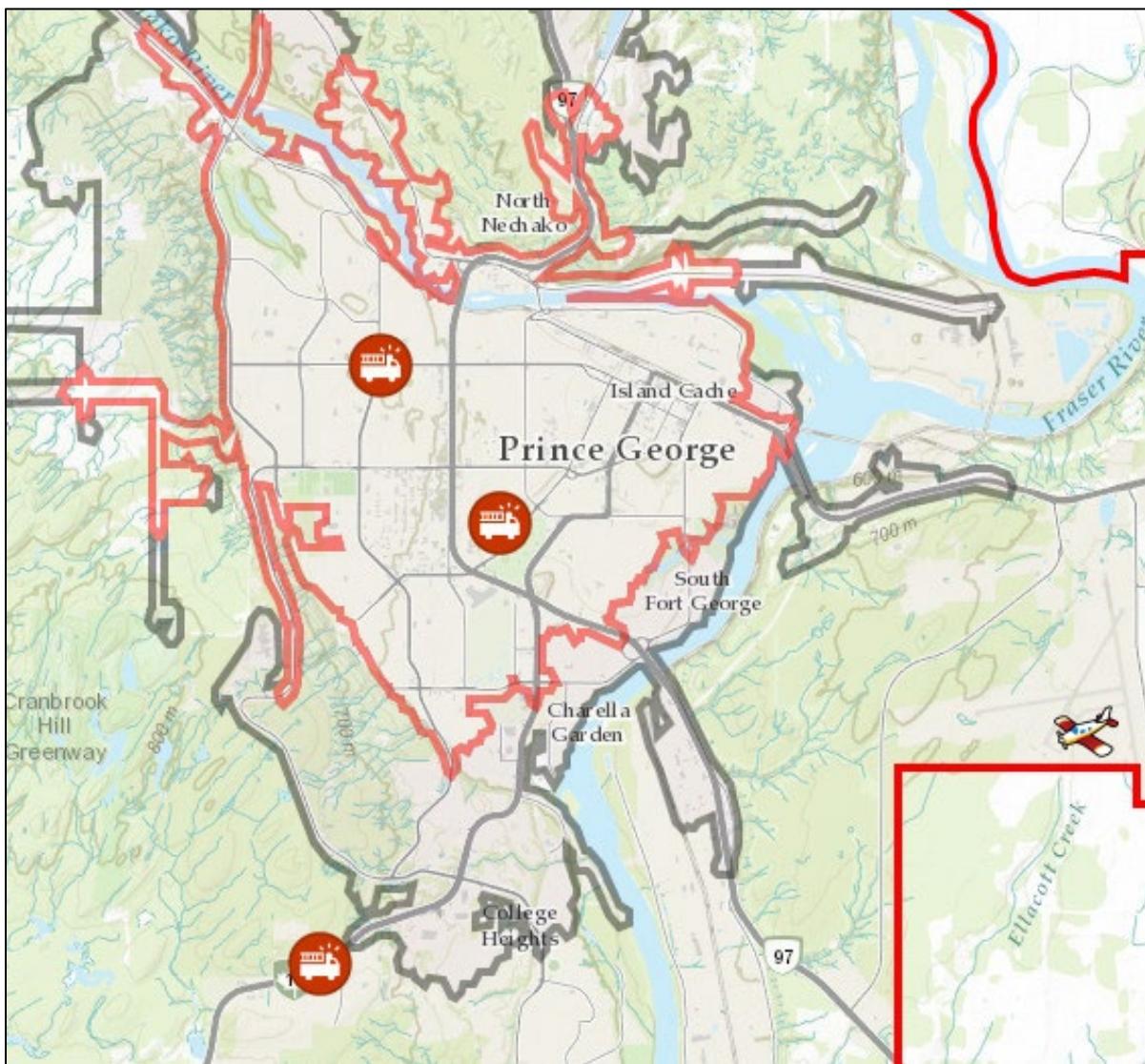
Figure 17: Hall 2 Coverage for DPG (eight kilometre black polygon) and PFPC (five kilometre red polygon).

7.4.1.3 Hall 3 DPG and PFPC Coverage

Figure 18 shows the five- and eight-kilometre coverage for Hall 3. The DPG, and to a lesser extent, the PFPC, requirements are met for a portion of the downtown core area of the City shown by the grey and red polygons, respectively. The industrial area in the south-eastern portion of the City is beyond a Fire Underwriters-compliant response from Hall 3.
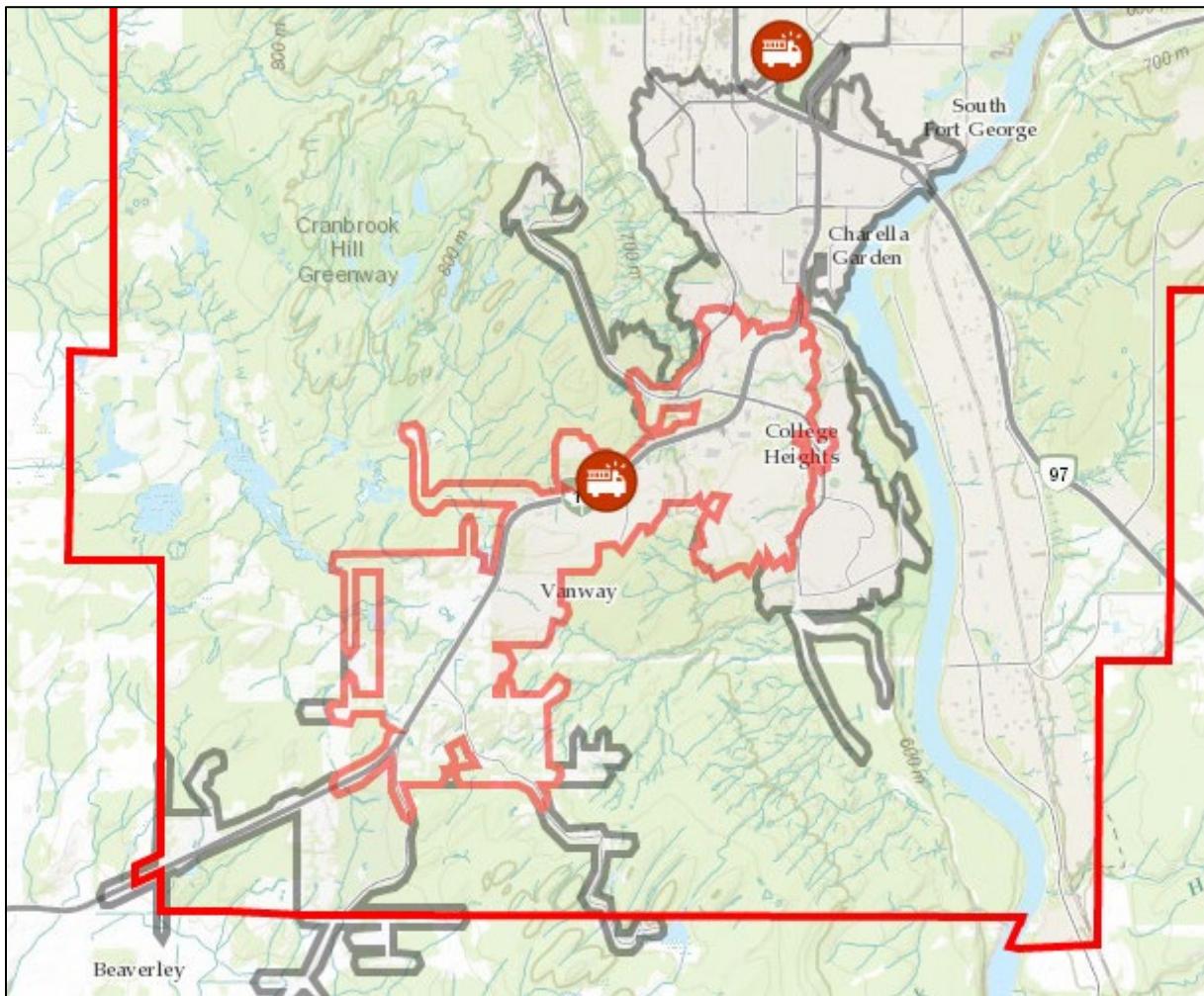
Figure 18: Hall 3 Coverage for DPG (eight kilometre black polygon) and PFPC (five kilometre red polygon).

7.4.1.4 Summary

Figures 16 – 18 aptly illustrate the lack of adequate coverage into the industrial lands in the southeastern portion of the City. The properties located there are not only significant in terms of value-at-risk, but they are of a nature and type that requires increased pumping capacity to undertake an effective response. The need for an additional hall to service this area is evident.

7.4.2   Training Site

A key recommendation of the 2016 SOC Report was the need to provide the Department with a dedicated site for training. The specific recommendation was as follows:

> **Recommendation:** *Consideration should be given to improving the training facilities. (currently fire hall setting). This should include a dedicated Department training site (possibly located in the industrial area) to simulate scenario-based common types of incidents and allow for live-fire exercises. The site should also include training rooms, required training facilities/equipment and outside props.*

The suggestion that the training site be located in the industrial area was to avoid the kinds of conflicts that arise when such sites are too closely situated to residential areas. This siting would allow for a live-fire training facility and well as a number of training activities which are, frankly, quite noisy (such as auto extrication training).

Given the need for a new hall to serve the industrial properties southeast of the Fraser River, the Department is considering how the active fire hall could be coupled with a new training facility. As part of the review, the Consultants, along with the Fire Chief and Deputy Chief of Operations, reviewed a number of modern training facilities in the lower mainland: Delta Hall 4; the Maple Ridge Fire Academy; Port Coquitlam Hall 1; and the Vancouver Fire/Rescue training site at Chess Street. Details of these site visits can be found in Appendix 3. During these discussions, the possibility of attracting one more partners for such a Prince George training facility was also canvassed with the Fire Academy at the Justice Institute of British Columbia and the First Nations Emergency Services Society of BC ("FNESS").

Each of these had live-fire capability, some using compressed gas, others using class A fuels (e.g., wood pallets). In the case of Delta, Port Coquitlam and the Maple Ridge Fire Academy, the training facility is co-located with a staffed fire hall. In the case of Maple Ridge, the hall is staffed by trainee firefighters, while Delta's is staffed by a regular on-duty crew. Port Coquitlam's facility is co-located with its main Hall 1. Vancouver operates a large standalone facility a few blocks from Hall 1. The Delta and Port Coquitlam facilities are approximately 13,000 square metres, the standalone facility in Vancouver is 11,600 square metres, the Maple Ridge site is much larger, at over 40,000 square metres.

The option for a combination fire hall/training facility was discussed with Delta and Port Coquitlam. Their comment was that having a staffed unit there achieved at least two objectives:

- the site was occupied and managed, reducing the time to activate it when being used and ensuring it is properly secure; and
depending on the status of the units being trained, the staffed unit could be used to fill in for at the hall that was attending for training.

7.4.3   Location Options

A total of five possible locations were examined. Two of these, north of Highway 97, were considered unsuitable. The other three are located close to the BCR lands: only two of them provide any material, Fire Underwriters' compliant coverage overlap into the City core.

7.4.3.1   Hall 5/Training Site Option 1

Figure 19 shows the five- and eight-kilometre coverage area for Option 1 for the proposed Hall 5. The PFPC requirement is met for a majority of the industrial area as well as for a portion of the downtown core area of the City. This is one location that should be studied in terms of siting, size and accessibility to transportation corridors as part of an overall needs assessment.
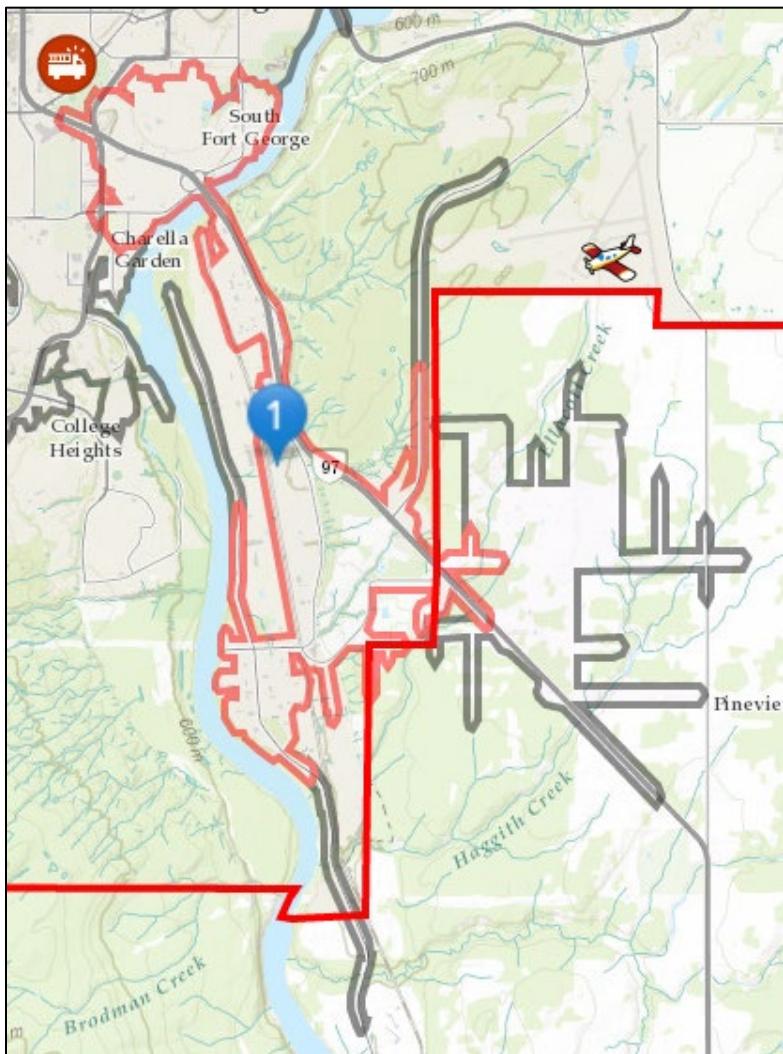
Figure 19: Option 1 for Hall 5/Training Site Coverage for DPG (eight kilometre black polygon) and PFPC (five kilometre red polygon).

7.4.3.2   Hall 5/Training Site Option 2

Figure 20 shows the five- and eight-kilometre polygons for Option 2 for the training site and Hall 5. The PFPC requirement is met for a similar majority of the industrial area as well as for a larger portion of the downtown core area of the city. Similar to Option 1, this location should be studied in terms of siting, size and accessibility to transportation corridors.
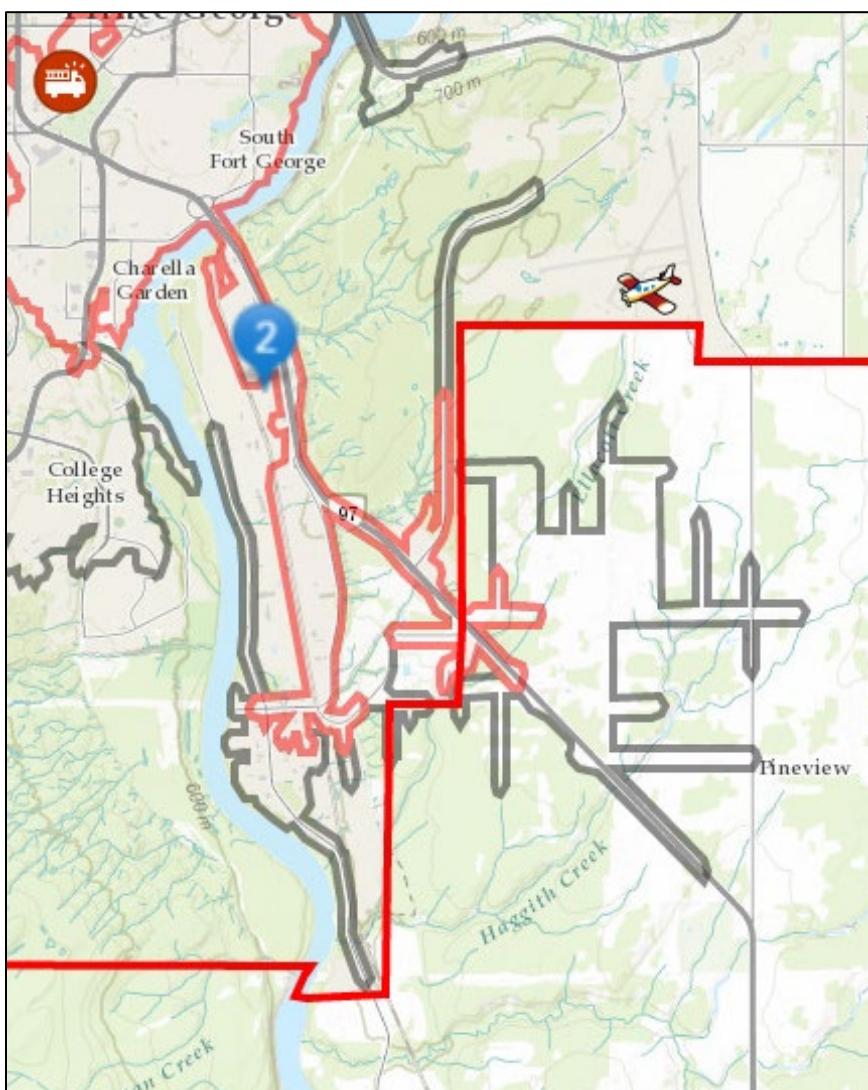
Figure 20: Option 2 for Hall 5/Training Site Coverage for DPG (eight kilometre black polygon) and PFPC (five kilometre red polygon).

7.4.3.3   Hall 5/Training Site Option 3

Figure 21 shows the five- and eight-kilometre polygons for Option 3 for the training site and Hall 5. The PFPC requirement is met for a majority of the industrial area but not for any portion of the downtown core area of the city.
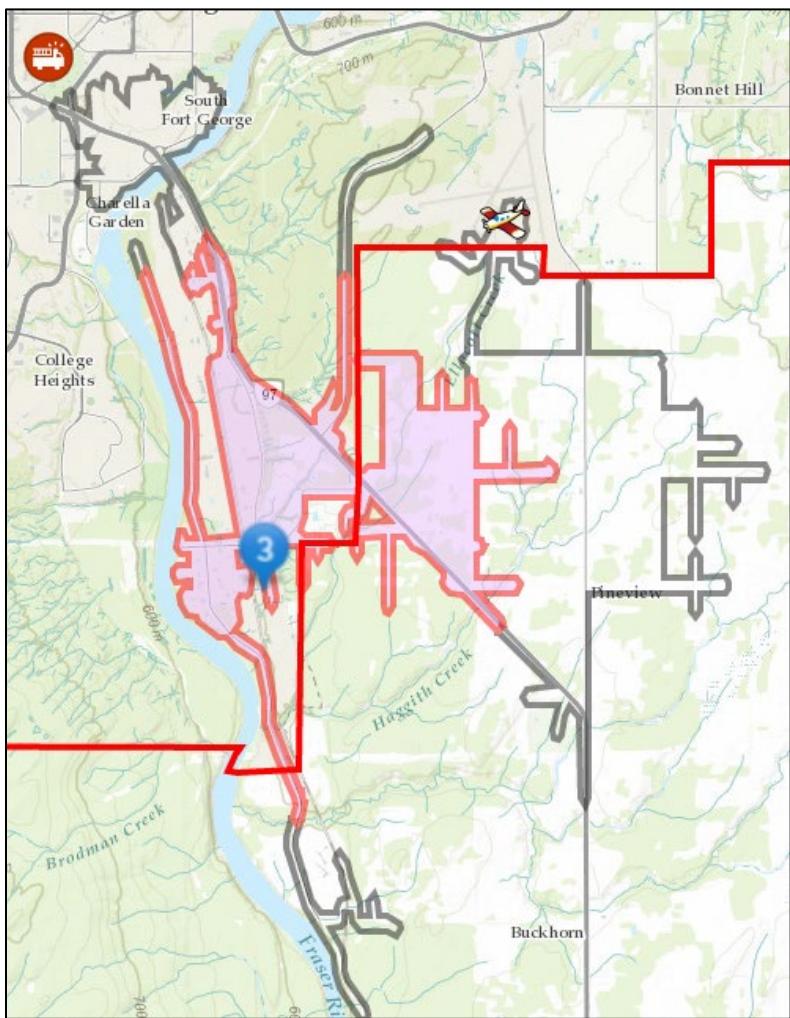
Figure 21: Option 3 for Hall 5/Training Site Coverage for DPG (eight kilometre black polygon) and PFPC (five kilometre red polygon).

7.4.4   Summary

Options 1 and 2 would be preferred as they each provide coverage to the BC Rail Industrial area as well as providing the additional staffed response to the core portion of the City to support the NFPA 1710 response requirements. Of the two, Option 2 would provide the greatest coverage for the core area. Option 3 would provide the highest degree of PFPC coverage for the industrial area but would not provide a similar benefit to the core portion of the City.

7.5　Training Site Next Steps

The need for a training site for the Department was identified in the 2016 SOC Report and remains a priority. Siting a training facility away from a residential area is a feature of each of the fire departments visited, each of which is located in either an industrial or remote area.

Lessons learned from the four sites visited had many common themes including the problem of building too small and leaving little room for expansion. In several cases there had not been sufficient planning for the amount of water runoff from fire training activities; in another case the amount of 'debris' from auto extrication had not been considered. The issue of training administration was repeated by each saying that they had not allowed sufficient space to record, store and access training records. The rail training facility at Maple Ridge is the only one available in the province but because of its distance from operating railroads, does not have contemporary tank cars.

The options to provide an operating partnership with either the JIBC or First Nations or both suggests that a period of needs identification and then space planning would be a priority. Some amount of onsite accommodation may be a requirement and with forethought this could be managed with an appropriately sized site.

The first recommendation then is for the City and the Department to develop a clear needs analysis including the options for partnerships with the JIBC and First Nations and then to retain one of a number space-planning companies to ensure the spatial requirements are well understood prior to developing a budget and authorizing construction.

The second recommendation is that the training site for the Department include sufficient space for its training department and also to include an operating fire hall, similar to Delta and Port Coquitlam.[48]

7.6　Recommendations

#7- 1　Consideration should be given to improving the training facilities (currently the fire hall setting). This should include a dedicated Department training site (possibly located in the industrial area) to simulate scenario-based common types of incidents and allow for live-fire exercises. The site should also include training rooms, required training facilities/equipment and outside props. The configuration for this training site should be led by a clear needs analysis including the options for partnerships with the JIBC and First Nations and then to retain one of a number space-planning companies to ensure the spatial requirements are well understood prior to developing a budget and authorizing construction.

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[48] There are other fire departments which have their training site adjacent to an operation fire hall, the latest being Coquitlam similar to others in Metro Vancouver, Saanich's Hall 2 and others.

8.0   Organizational Structure and Staffing

8.1   Current Organizational Model

The Department's current staffing is shown in Table 15 below and illustrated in the organizational chart in Figure 22. The approved staffing for the Department is 131.5 full-time equivalent positions ("FTEs") including 115.5 in Fire Services, fourteen in the FOCC and two in the Emergency Program.

Table 15: Department FTEs, 2022

Position	Fire Services	FOCC	Emergency Program	Total
Fire Chief	1			1
Deputy Fire Chief - Operations	1			1
Deputy Fire Chief - Administration	1			1
Administrative Coordinator 2	1			1
Administrative Assistant	1.5			2
Chief Communications Officer		1		1
Assistant Chief Communications Officer		1		1
Fire Dispatcher		8		8
Relief Fire Dispatcher		4		4
Manager, Emergency Programs			1	1
Emergency Program Coordinator			1	1
Chief Fire Prevention Officer	1			1
FPO Captain	1			1
FPO Lieutenant	1			1
FPO Inspector	1			1
Assistant Chief - Suppression	4			4
Captain - Suppression	16			16
Lieutenant - Suppression	4			4
Firefighter - Suppression	72			72
Relief Firefighter - Suppression	8			8
Chief Training Officer	1			1
Training Branch Captain	1			1
Total FTEs	**115.5**	**14**	**2**	**131.5**
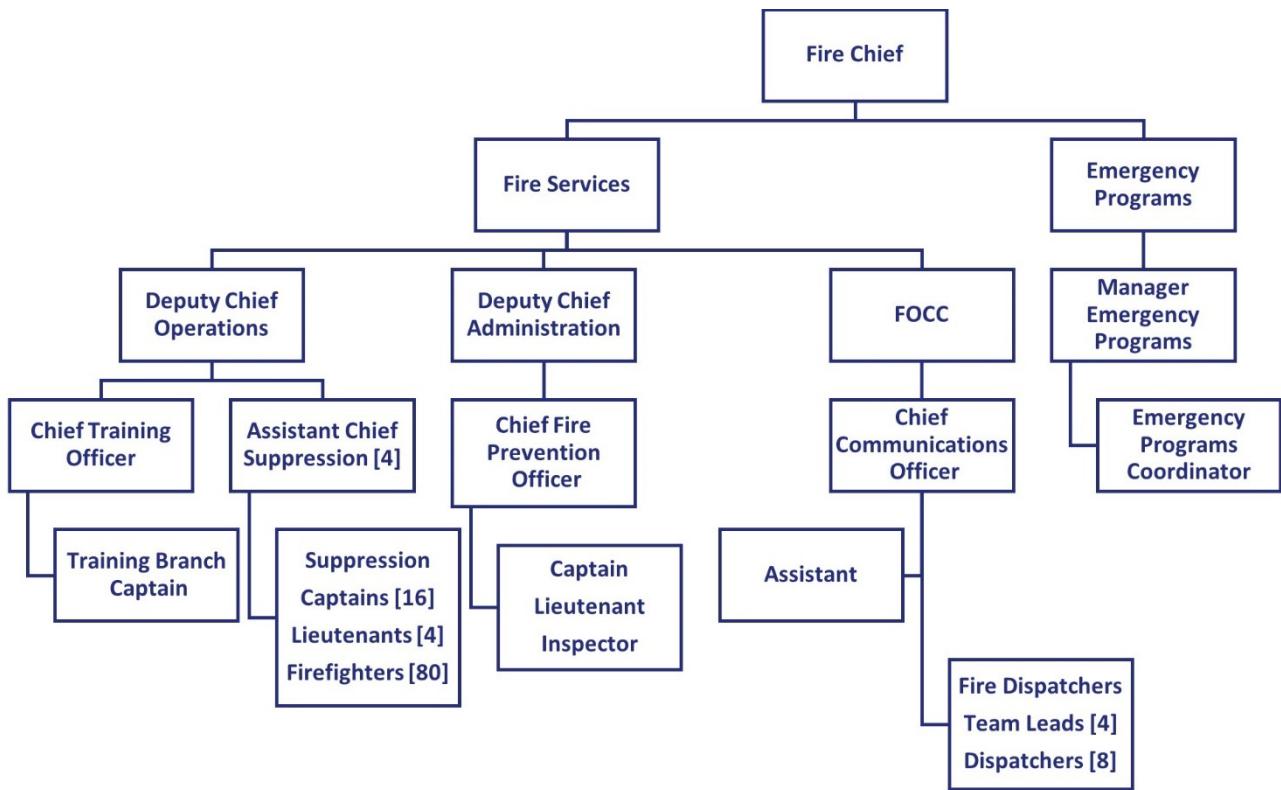
Figure 22: Department Organizational Chart, 2022

8.1.1　Leadership Team

The Department's leadership team consists of the following exempt positions:

- Fire Chief;
- Deputy Chief - Operations;
- Deputy Chief - Administration;
- Chief Communications Officer
- Assistant Chief Communication Officer; and
- Manager, Emergency Programs;

The Fire Chief is responsible for the overall direction and administration of the Department and has four direct reports including the two Deputy Chiefs, the Assistant Chief Communications Officer and the Manager of Emergency Programs.

- The Deputy Chief - Operations is responsible for training and the delivery of fire and rescue services and has five direct reports including one Chief Training Officer and four Assistant Chiefs.

  o The Chief Training Officer is responsible for the overall administration, development and coordinated delivery of training programs for the suppression division and utilizes fire captains, qualified shift trainers and external contractors to deliver training to the members.

- The Assistant Chiefs are assigned to the four platoons and work a two-platoon shift schedule of two dayshifts followed by two nightshifts followed by four days off. The Assistant Chiefs are responsible for the largest portion of the Department dedicated to fire suppression, emergency medical response, hazardous materials, rescues and many non-emergency incidents.

- The Deputy Chief - Administration is responsible for fire prevention and administration and has two direct reports including the Chief Fire Prevention Officer and the Administrative Coordinator.

  - The Chief Fire Prevention Officer leads the Fire Prevention Branch (the "FPB") and oversees three fire inspectors. The responsibilities of the FPB includes fire inspections, fire investigations, pre-planning, fire safety plans and public education. The FPB is described in more detail in Section 11.

  - The Administrative Coordinator oversees the administrative assistant positions and is responsible for providing support and financial expertise to the leadership team.

- The Chief Communications Officer and Assistant Chief Communications Officer are responsible for the overall supervision and operation of the FOCC.

- The Manager of Emergency Programs is responsible for overall management of the City's Emergency Management Program. This involves leading the development, implementation, maintenance, and management of various programs, processes and operations that serve as the City's emergency response framework. These include:

  - supervision of the Emergency Programs Coordinator (designated as the ESSD)

  - hazard, risk and vulnerability assessments; business continuity plans; response and recovery plans; community evacuation plans; information protocols; and a comprehensive training exercise plan.

8.1.2   On-Duty Suppression Staffing

The fire suppression staffing model has seen changes over the past thirty years, most notably in 1994 was when Council approved the on-duty staffing increase from three to four members for Halls 2, 3 and 4. The actual implementation of the additional firefighter staffing occurred in the following year after a recruitment process and completion of the training program for the new firefighters. Additional staffing improvements occurred in 2003 and 2020 with an increase of one firefighter and a lieutenant on the rescue truck.

The Department currently maintains twenty-five suppression members on each of the four shifts to staff the four firehalls. The minimum on-duty staffing level is nineteen and the Department's policy is to use relief firefighters and overtime to maintain that number. The on-duty staffing assignments for each hall are shown in Table 16 below and include cross-staffing of apparatus where noted.

Table 16: Current Minimum On-Duty Suppression Staffing

Fire Hall	Staffing
Hall 1	1 Assistant Chief 1 Captain* 1 Lieutenant 4 Firefighters • 3 on the Engine* • 1 on the Rescue
Hall 2	1 Captain 3 Firefighters (* cross-staffed engine/platform)
Hall 3	1 Captain 3 Firefighters (cross-staffed with engine/water tender)
Hall 4	1 Captain 3 Firefighters (cross-staffed with engine/water tender)

The chart below shows the current minimum on-duty staffing by hall.
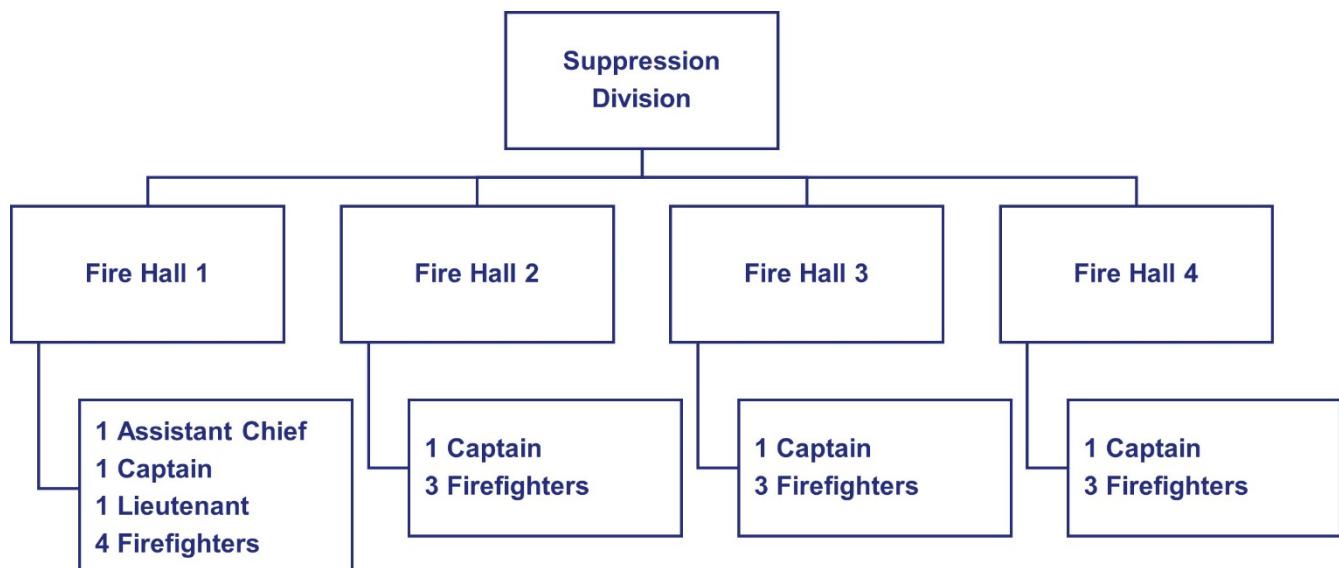
Figure 23: Current Minimum On-Duty Suppression Staffing

8.2 Proposed Changes to the Organizational Model

The 2016 SOC Report recommended that:

> The Department consider adding a second staffed unit at Hall 1 to deal with the significant call volume at this hall. A second staffed unit would also provide a better opportunity to meet the NFPA 1710 requirements to have a minimum of 14 fire fighters on scene in 8 minutes.

This recommendation has not been implemented but should be considered as a priority given the call volume in Hall 1's primary coverage area. The rationale for additional resources is included in other sections of this report and the tables and charts below have been provided to illustrate the impact of the recommended changes to the on-duty staffing model.

Table 17 below shows the current on-duty staffing at each hall.

Table 17: Current On-Duty Staffing Model

Fire Hall	Assistant Chief	Captain	Lieutenant	Firefighter	Total
Hall 1	1	1	1	4	7
Hall 2	0	1	0	3	4
Hall 3	0	1	0	3	4
Hall 4	0	1	0	3	4
Total	1	4	1	13	19

The City should prioritize the addition of one staffed engine in Hall 1. The impact of this change would add one captain and three firefighters to the on-duty staffing model in Hall 1 and as a result, the minimum number of on-duty members will increase from nineteen to twenty-three. The immediate benefit of this recommendation will be the additional support to the busiest response area, particularly in cases of serious fires or concurrent emergencies.

Table 18: Addition of One Staffed Engine at Hall 1

Fire Hall	Assistant Chief	Captain	Lieutenant	Firefighter	Total
Hall 1	1	2	1	7	11
Hall 2	0	1	0	3	4
Hall 3	0	1	0	3	4
Hall 4	0	1	0	3	4
Total	1	5	1	16	23

The City should develop a plan to staff one additional engine for the proposed fire hall (Hall 5) in the BC Rail area. The impact on the on-duty staffing model would include the addition of one Captain and three firefighters. Including the second engine in Hall 1, the total number of on-duty members would increase to twenty-seven.

The figure and chart below show the combined impact of adding one staffed engine to Hall 1 and one staffed engine in Hall 5. These changes require the addition of two Captains and six firefighters to increase the on-duty shift strength from nineteen to twenty-seven.

Table 19: : Addition of One Staffed Engine at both Hall 1 and the Proposed Hall 5

Fire Hall	Assistant Chief	Captain	Lieutenant	Firefighter	Total
Hall 1	1	2	1	7	11
Hall 2	0	1	0	3	4
Hall 3	0	1	0	3	4
Hall 4	0	1	0	3	4
Hall 5	0	1	0	3	4
Total	1	6	1	19	27

The chart below shows these changes.
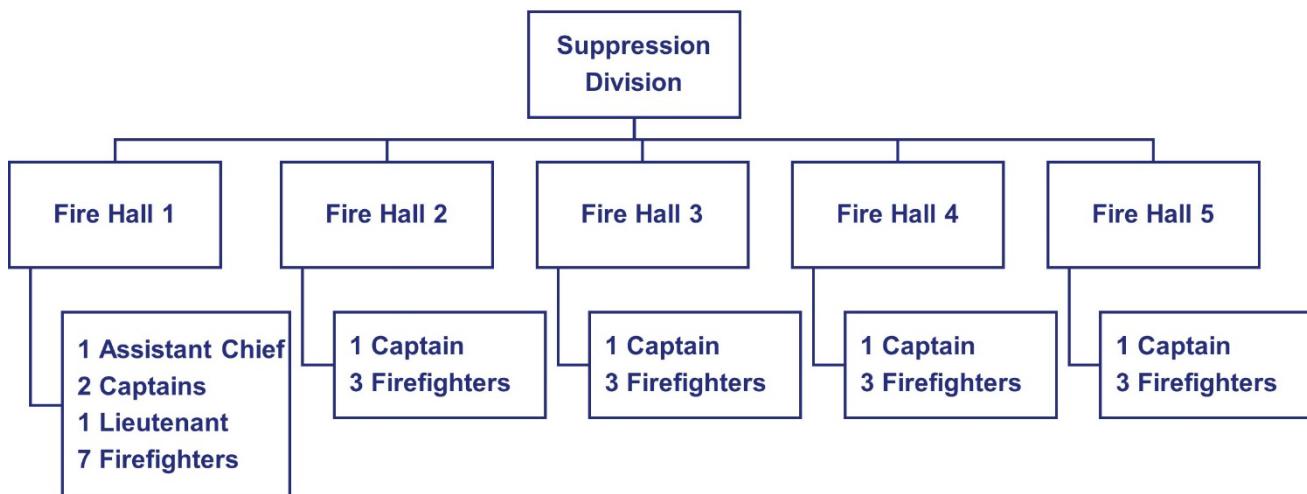
Figure 24: Proposed Organizational Model

The table below shows the incremental impact of the proposed staffing increases on the Department's overall FTE count based on the recommendation for additional staffed engines in Halls 1 and 5. The affected positions are shown in bold in the table.

Table 20: Proposed Staffing Increases – Number of FTEs

Position	Division	Current FTEs	Add 1 Engine (Hall 1)	Add 2 Engines (Hall 1 & 5)
Fire Chief	Administration	1	1	1
Deputy Fire Chief - Operations	Administration	1	1	1
Deputy Fire Chief - Administration	Administration	1	1	1
Administrative Coordinator 2	Administration	1	1	1
Administrative Assistant	Administration	1.5	1.5	1.5
Chief Communications Officer	Communications	1	1	1
Assistant	Communications	1	1	1
Fire Dispatcher - Team Lead	Communications	4	4	4
Fire Dispatcher	Communications	8	8	8
Manager, Emergency Programs	Emergency Program	1	1	1
Emergency Program Coordinator	Emergency Program	1	1	1
Chief Fire Prevention Officer	Fire Prevention	1	1	1
FPO Captain	Fire Prevention	1	1	1
FPO Lieutenant	Fire Prevention	1	1	1
FPO Inspector	Fire Prevention	1	1	1
Assistant Chief - Suppression	Operations	4	4	4
Captain - Suppression	**Operations**	**16**	**20**	**24**
Lieutenant - Suppression	**Operations**	**4**	**4**	**4**
Firefighter - Suppression	**Operations**	**72**	**86**	**100**
Relief Firefighter - Suppression	**Operations**	**8**	**10**	**12**
Chief Training Officer	Training	1	1	1
Training Branch Captain	Training	1	1	1
	Total FTEs	131.5	151.5	171.5

8.3   Recommendations

#8-1: The City should prioritize the addition of one staffed engine in Hall 1.

#8-2: The City should develop a plan to staff one additional engine for the proposed fire hall (Hall 5) in the BC Rail area.

9.0   Emergency Program

The *Emergency Program Act* (the "EPA") sets out the requirements for local authorities, which includes municipalities such as the City, relating to emergency planning, risk identification and mitigation, emergency response obligations and recovery efforts. Among other things, the EPA requires a local authority to prepare and maintain an emergency plan, assess area risks, establish and maintain an emergency management organization, provide training to its staff and volunteers, exercise its emergency plan and establish procedures to implement its plan (including responses, management of victims' needs and recovery processes).[49] The EPA permits a local authority to appoint an emergency program coordinator and/or one or more committees, and to delegate its authority (other than the authority to declare a state of local emergency) to such emergency program coordinator, committee(s) or its emergency management organization.[50]

The City's obligation to develop and implement an emergency program under the EPA is addressed by the *Emergency Program Bylaw No. 7920, 2006* ("Bylaw No. 7920"). It should be noted that the Province is in the process of developing a replacement for the EPA. Ironically, perhaps, its introduction has been delayed by a series of major crises over the past several years – including the pandemic and a significant wildfire season experienced in 2021. The new act is not expected to be introduced now until the spring of 2023.[51] When it comes into force, it will be necessary to review and revise Bylaw No. 7920, at which time the comments below also can be addressed (subject to also addressing any changes required by the new statute).

It also should be noted that British Columbia has formally adopted the Sendai model for planning, mitigation, response and recovery from disasters, which model is expected to be enshrined in the new statute. This model can be expected to result in increased obligations for risk mitigation efforts by local governments, improved recovery planning, and the formal inclusion of a broader range of stakeholders in emergency planning, including First Nations.

9.1   Structure

The structure of the Prince George Emergency Program is established in Bylaw No. 7920. The Emergency Policy Committee (the "Policy Committee") is responsible for setting overall policy and providing direction to the Emergency Planning Committee. The Policy Committee comprises the Mayor, City Manager and "senior management team of the City". It meets

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[49] EPA, s. 6, and *Local Authority Emergency Management Regulation*, B.C. Reg. 380/95 (as amended), s. 2.

[50] EPA, s. 6(4).

[51] See: Ministry of Public Safety and Solicitor General, "Where we are now," at https://www2.gov.bc.ca/gov/content/safety/emergency-management/emergency-management/legislation-and-regulations/modernizing-epa (accessed 8 September 2022).

annually to "discuss policy issues pertinent to the function of the City's Emergency Program" and sets policy for the Emergency Planning Committee.[52]

The City has delegated all of its powers and authority, save the power to declare a state of local emergency, to the City Manager, who is expected to act as the Emergency Operations Centre ("EOC") director.[53] The City Manager is responsible, among other things, for appointing the Emergency Program Coordinator (the "EPC").[54] The EPC is a Deputy Chief in the Department. Although the bylaw provides that the EPC reports to the City Manager, as a matter of practice, this position actually reports to the Manager, Emergency Programs (the "MEP"), a role fulfilled by an Assistant Chief within the Department. The MEP's role is not expressly identified in Bylaw No. 7920. When the bylaw is updated, the relevant positions, reporting lines, and authorities should be reviewed and updated as appropriate. In addition, the City should review whether the City Manager needs to be expressly granted the authority to onward delegate the powers delegated from Council under section 3.2 of the bylaw (e.g., to the MEP or EPC).[55]

The Emergency Planning Committee is chaired by the EPC. The Committee is appointed annually by the City Manager, but must include the City's public information officer, as well representatives from various City departments or functions, including Emergency Social Services, police, fire, land use planning, municipal infrastructure, environmental services and finance and administration. There is required to be someone appointed to manage inter-agency liaison, and the City Manager may appoint such other individuals, agencies or City departments as he or she considers necessary.[56]

The Emergency Response and Recovery Plan (September 2005) (the "Emergency Plan") outlines the City's authority to act in emergencies and sets out the policies and procedures to be followed. The Emergency Plan also recognizes the need for coordination with other organisations, both government and private, that may assist the City during an emergency. The Emergency Plan is some 17 years old, and contains a number of outdated terms (e.g., it still uses the term "BCERMS", which was revised some time ago to "BCEMS" by the Province): when the new EPA comes into effect, it will provide a good opportunity to review and update the Emergency Plan. When the revised plan is developed, there should be included a section at the front that tracks any amendments that may be made over time. The EPC should undertake at

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[52] Bylaw No. 7920, definition of the "Emergency Policy Committee" in s. 2 and s. 3.1.

[53] Bylaw No. 7920, s. 3.2.

[54] Bylaw No. 7920, s. 3.3.

[55] Onward delegation is expressly contemplated in the City's *Officer Positions and Delegation of Authority bylaw No. 8340, 2011* (as amended) ("Bylaw No. 8340"), but that delegation is limited to authorized designates and only relates to the powers and authorities expressly delegated under that bylaw. See s. 8 (Delegates and Authorized Designates) and s. 9 (No Delegation by an Authorized Designate). Bylaw No. 8340 expressly stipulates that it is not to be used "to interpret" and does not "otherwise affect" other delegation bylaws which are identified in Schedule B to Bylaw 8340 (a list which includes Bylaw No. 7920).

[56] Bylaw No. 7920, s. 3.4.

least an annual review of the content of the new plan, with the results of that review being appropriately minuted, even if no changes are made.

In practice, the Department is primarily responsible for the Emergency Program and members of the Department staff key positions, including the MEP and EPC roles. This responsibility should be more clearly represented in any update to Bylaw No. 7920, and in any update to the Emergency Plan itself. Both the MEP and the EPC work out of Hall 1 and are responsible for the day-to-day administration, planning and updating of the Emergency Program. Responsibilities also include the ongoing development of working relationships with other City departments, as well as with other local authorities and First Nations on emergency management. They are also responsible for the preparation and scheduling of training scenarios.

Emergency Social Services ("ESS") staff and volunteers, however, are managed by the City's Community Services department. There are approximately forty full- and part-time members who can be deployed to events when needed, including when victim services are required in connection with a police incident. Again, this role should be more clearly articulated in either the revised bylaw or updated Emergency Plan.

Subject to the provisions of the new EPA, the bylaw should formally recognize that the Emergency Planning Committee constitutes its "Emergency Management Organization" within the meaning of section 6(3) of the current EPA.

2017 and 2018 wildfire evacuation support were the last significant events resulting in a formal EOC activation. Divisional DOC's and EOC to a level 1 have occurred typically relating to weather events, specifically, heat, and significant rain events.

9.2 Training and Exercises

Training the City's personnel to perform emergency management roles is a critical and ongoing process that must be supported and maintained. The training programs are effective and designed to provide new members with a gradual introduction to emergency management starting with formal training and followed with the review of after-action reports in connection with supervised scenarios.

As with most organizations, the pandemic put a hamper of formalized training opportunities. With the move to the new fire hall, the Emergency Program have run informal ESS training sessions setting up reception Centres, Evacuee Registration training, and establishing a layout for the new EOC.

9.3 Facilities and Equipment

The City's primary EOC is located at Hall 1, which is built to post-disaster standards including back-up power supplies. It has sufficient meeting space and amenities to support operations for extended periods. The EOC is designed as a multi-use space that can be quickly configured to operate as a modern EOC. It is accessed only with a proximity card and its arrangement can be

scaled up or down depending on the needs of the event. Seating and workspaces are configurable, with access to data ports and visual aids that are strategically located in the space.

9.4   Planning

The Emergency Planning Committee's roles and responsibilities are set out in section 3.5 of Bylaw No. 7920. They include:

- preparing the Emergency Plan, which must both provide a general direction and framework that covers preparedness, response and recovery programs to deal with a disaster or emergency in the City, and set out the roles and responsibilities for all officials appointed pursuant to Bylaw No. 7920;

- establishing such sub-committees or working groups as it deems necessary to carry out its duties and obligations;

- subject to the final approval of Council, negotiating agreements with other municipalities or governments for the purpose of mutual aid or the formation of joint organizations;

- subject to the final approval of the City Manager, negotiating with individuals, societies, corporations or other legal entities, other than government bodies, for the engagement of one or more of their members deemed qualified to provided services necessary to achieve the objectives of Bylaw No. 7920; and

- submitting annually to Council, estimates of expenditures required to maintain and operate the Emergency Program.

10.0   Risk Assessment / HRVA

The City has recently updated its Hazard, Risk and Vulnerability Assessment ("HRVA").[57] The HRVA was originally prepared in 2009 by Smart Risk Control Inc., and updated by City staff in September 2020.

The HRVA identifies the most significant hazards facing the City as shown in Table 21, listing ten most likely to require site support from the EOC as well as nine others which are considered less likely to require such support.

Table 21: Hazards in Prince George (HRVA update 2020)

May Require Significant Site Support	Not Likely to Require Significant Site Support
1. Atmospheric Hazards	1. Bomb Threat
2. Disease - Human	2. Disease, Animal or Plant
3. Fire, Major Urban	3. Earthquake
4. Flooding	4. Food Contamination
5. Hazardous Materials	5. Landslide, Debris Flow
6. Terrorism	6. Lost Persons
7. Transportation Accident - Air	7. Social Disturbance, School Violence
8. Transportation Accident - Road	8. Structure Collapse
9. Utility Failure	9. Volcanic Eruption
10. Wildland / Urban Interface Fire	

The hazards are classified for likelihood of occurrence and consequence (impact and vulnerability) using a risk matrix as shown in Figure 25 below.

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[57] Smart Risk Control Inc., *Community Risk Assessment: Hazards, Vulnerabilities and Risks in the City of Prince George,* 31 December 2009, updated September 2020, by Clayton Sheen and Tanya Spooner, City of Prince George.

		1 Very Low	2 Low	3 High	4 Very High
Likelihood	6 Highly Likely		Flooding		Atmospheric Hazards
	5 Moderate or Likely			Fire, Major Urban	Disease - Human Hazardous Materials
	4 Occasional, slight chance		Utility Failure	Wildland / Urban Interface Fire	
	3 Unlikely Improbable		Transportation Accident – Air	Transportation Accident – Road	
	2 Highly Unlikely			Terrorism	
	1 Very Rare				

Consequence (Impact and Vulnerability)

Figure 25: Priority Concerns Risk Matrix

The 10 most significant risks are discussed below.

1. Atmospheric Hazards: Highly Likely Risk, Very High Consequence

    a. The HRVA notes five previous major events, two of which were windstorms, with the others being a rainstorm, a flood and a snowstorm.

    b. Vulnerabilities and impacts associated with these events include loss or blocking of major transportation routes, the loss of critical infrastructure, structural collapse and isolation of some neighborhoods.

2. Disease – Human: Moderate or Likely Risk, Very High Consequence

    a. Six major events are noted, starting with the 1918 influenza event, the early 2000s impact of SARS in Canada, Legionnaires Disease in Toronto, the contamination of the water supplies in Walkerton, and more recently H1N1 and Covid-19.

    b. Vulnerabilities include the frail and elderly as well as civic staff, the loss of whom even temporarily could seriously affect the City's response capabilities.

3. Fire, Major Urban: Moderate or Likely Risk, High Consequence

   a. The HRVA comments on the impact of fires as follows:

      "The threat of fire to buildings in Prince George ranks among the most likely and dangerous types of emergencies. Although severe fires are rare due to today's fire prevention measures, fire in a residential, commercial, or institutional building could result in catastrophic impacts, especially among high-density occupancies, such as schools, homes for seniors, and the hospital."[58]

   b. There is a reference to nine previous major events, the most recent of which were the fires at Lakeland Mills in 2012 and the Econo Lodge in 2020.

   c. Vulnerabilities include the need to evacuate residents where there are fires in larger structures. Also noted is the potential to lose major facilities including the City Hall, the hospital, student housing at University of Northern BC and the two correctional centres.

4. Flooding: Highly Likely Risk, Low Consequence

   a. The risk is high for this issue given that a significant portion of the City is at the confluence of the two rivers and is flood-prone, low-lying ground.

   b. Eight previous floods are noted, caused by ice jams and the spring runoff.

   c. Vulnerabilities includes the potential impact on many civic structures including the City Hall; mitigation efforts are focused on diking.

5. Hazardous Materials: Moderate or Likely Risk, Very High Consequence

   a. This risk arises from the sizable quantities of hazardous materials that are manufactured in, or transported through, the City. These materials are required by or produced by, among others, the pulp mills and the refinery, and delivered by pipeline, rail or truck.

   b. There are eight specific hazardous materials events noted: three were within Prince George; the others were in Quesnel, Maple Ridge and on Vancouver Island.

   c. Mitigation efforts include designation of dangerous goods routes as well as the PGIMAC, which promotes the sharing of training and resources as well development of strategic response plans.[59]

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[58] HRVA, at p. 29.

[59] A strategic plan for PGIMAC was prepared in 2014, with a hazardous materials tabletop exercise conducted in 2016.

6. Terrorism: Highly Unlikely Risk, High Consequence

    a. There are six referenced examples, the most recent being pipeline bombings in north-east BC in 2008. Others concerned a possible water contamination in Ladysmith (2001), a chemical release on a bus in Vancouver (2004), a bomb discovered on a BC Ferry (1999), the Air India bombing (1985) and the Sons of Freedom attacks on utilities and railways in the Kootenays (1960 to 1963).

    b. Vulnerabilities include the water system, transportation and major industrial facilities like the pulp mills.

    c. Mitigation efforts include ongoing threat and risk assessments and restricting access to critical infrastructure.

7. Transportation Accident – Air: Unlikely Improbable Risk, Low Consequence

    a. Five such accidents since 1989 were identified, four of which involving takeoff or landing at airports.

    b. The vulnerabilities are the areas immediately proximate to the airport or along the flight paths for takeoff and landing.

    c. Mitigation measures are limited to reviewing development proposals adjacent to the airport and limiting potential obstacles.

8. Transportation Accident – Road: Unlikely Improbable Risk, High Consequence

    a. There are seven reference accidents, all of which involved buses.

    b. The risks in this case include high occupancy vehicles like buses; and the potential for a major release of hazardous materials in the case of tanker trucks.

    c. Vulnerabilities include school children, followed by tourists and local residents while mitigation measures include ensuring that bus routes are assessed for risks.

9. Utility Failure: Occasional Risk, Low Consequence

    a. Six past events are identified, four of which were power outages, one a water shortage (Tofino in 2006) and the sixth, a failure of a natural gas pipeline in Dawson Creek in 2000. Two of the power failures were specific to Prince George, one in 2000 and the other in 2019.

    b. Vulnerabilities include most elements of the City including major facilities like schools and hospitals as well as major industries.

    c. Mitigation measures include backup power systems for some facilities as well as initiatives to place more power lines underground.

10. Wildland / Urban Interface Fire: Occasional Risk, High Consequence

    a. The HRVA notes that wildland fire "…ranks among the hazards of greatest concern for the City of Prince George, especially in neighbourhoods that border forested areas. Much of the 318 km^2 area within the city limits is provincial heavily forested Crown land. The potential safety challenges of wildland fires in rural and urban areas have been emphasized by the loss of structures and lives in other similar communities in BC and elsewhere."[60]

    b. There is a reference to four incidents in BC including Silver Creek / Salmon Arm (1998), Okanagan (2003), West Kelowna (2009) and collectively Northern BC (2017 and 2018).

    c. Vulnerabilities include essentially all of the City as well as the ten isolated neighborhoods listed below in Table 22.[61]

    d. There is a long list of mitigation measures, including removing pine beetle affected trees, planting tree species which are more fire resistant, implementation of the 2019 Community Wildfire Protection Plan, and using tabletop exercises to develop evacuation plans.

Table 22: Isolated Neighborhoods in Prince George Susceptible to Interface Fires

Name of Road	Planning Area
North Kelly Road	Austin North
Old Summit Lake Road	Summit Lake
East Austin Road	Austin East
Landooz Road	Shelley
Hoferkamp Road	N. Nechako
Blackwater / Leslie Roads	Southwest
Western / Corral	Southwest
Cranbrook Hill	Foothills
Tabor Blvd.	Heritage
Ridgeview Drive	Hart Highlands

As noted above, the Province is expecting to introduce new emergency program legislation in the spring of 2023. The new statute will implement the Sendai Model and is integrated with the Province's commitments under UNDRIP. It will likely legislate a requirement for additional community risk assessments and more proactive risk and hazard mitigation. These changes are being driven, in part, by the series of high risk events experienced in the province since

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[60] HRVA, at p. 44.

[61] HRVA, at p. 45.

2017, including major forest interface fires and flooding events, as well as the pandemic and the Heat Dome.

The NFPA has also addressed the need for more comprehensive risk management, with the rollout of *NFPA 1300 Community Risk Assessment and Community Risk Reduction Plan Development* (2020 ed.) ("NFPA 1300").[62] This standard was adopted in 2019 and has recently been used to assess the City of Yellowknife in 2022 for risks specific to the fire department.

NFPA 1300 includes the following definitions:

> **Community Risk**. Risk that pertains to the community, including the aggregate potential of loss or damage to critical infrastructure, individual properties, or stakeholders that could have a significant detrimental impact on the overall community.

> **Community Risk Assessment**. A comprehensive evaluation that identifies, prioritizes, and defines the risks that pertain to the overall community.

> **Community Risk Reduction**. A process to identify and prioritize local risks, followed by the integrated and strategic investment of resources to reduce their occurrence and impact.

> **Community Risk Reduction Plan**. A document that outlines the goals, objectives, programs, and resources used to reduce the risks identified by the community risk assessment.[63]

NFPA 1300 recommends that a Community Risk Assessment ("CRA") be conducted:

> "…every 5 years or more frequently based on community need," and that "…an annual review of the CRA shall be conducted to identify emerging trends that could impact the current CRR [Community Risk Reduction] plan and risk reduction programs."[64]

These timelines for updating and conducting CRAs are much shorter than is, in our experience, the common practice for how local governments manage their HRVAs. Given the experience of the past five years, the adoption by the City and the Department of the more frequent risk assessment model of NFPA 1300 is recommended (subject to any more stringent requirements that may be set under the new emergency management legislation).

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[62] NFPA 1300 was developed by a large group of stakeholders with subject matter expertise including Deputy Chief Randy Minaker of the Port Coquitlam Fire Department and Deputy Chief Jim Jessop of the Toronto Fire Services as well as other subject matter experts from both Canada and the United States.

[63] NFPA 1300, ss. 3.3.2, 3.3.3, 3.3.4 and 3.3.6.

[64] NFPA 1300, s. 5.3.

10.1   Recommendations

#10-1: That the Department consider adopting NFPA 1300 as a model for Community Risk Assessment and Community Risk Reduction.

11.0   Fire Prevention Branch

The FPB is responsible for regular fire inspections and inspections on complaint, fire investigations, fire safety plan reviews, preparation and maintenance of pre-incident plans, and public education. The 2016 SOC Report included a number of recommendations related to the FPB including:

- fire bylaw updates - powers of entry for investigating fire hazards;

- plan checks for new construction;

- pre-incident planning responsibilities, verification and forms;

- assessment of FPB staffing levels;

- review of fire inspection responsibilities and inspection frequency; and

- clarifying requirements for fire safety plans.

The recommendations in the 2016 SOC Report are shown below with status updates provided by the Department during the 2022 review.

11.1   Fire Bylaw

2016 Recommendation: The Department should ensure that its powers of entry for investigating fire hazards on complaint or where the FPB or Department members have a concern, are clearly set out in the revised establishment and operational bylaw. The Department should develop clear operational guidelines for dealing with problem properties, including coordination with law enforcement and socials service agencies, where required.

The Department reported that an updated bylaw is being prepared and will include the additional provisions recommended in the previous report regarding access to problem properties. The adoption of the revised bylaw will be delayed pending the implementation of the new *Fire Safety Act* by the Province.

The Chief Fire Prevention Officer (the "CFPO") advised that there is no operational guideline for dealing with problem properties and the current practice is to utilize the City building inspector, bylaw services, Northern Health and RCMP when assistance is required.

11.2   Fire Safety Plans

2016 Recommendation: In the updating of the Department's operational and establishment bylaw, ensure that there is clear language permitting the Department to require the submission of additional information with a fire safety plan, that is necessary

for pre-incident planning, and that such information is submitted in an electronic format that will enable the Department readily to develop effective pre-incident plans.

2016 Recommendation: *The Department and City should consider requiring that the most significant industrial / commercial risks, which require the most detailed fire safety plans, have their fire safety plans certified by an external third party before submission for review by the Department.*

Fire safety plans have been completed by the Department and a contractor for all significant industrial and commercial risk properties in the City. Robert Furlong Designs, considered by the CFPO to be an expert in this field, completed most of the fire safety plans for the industrial complexes.

The Department has not implemented the recommended requirement for third party certification for fire safety plans. Rather, a policy has been implemented to issue letters of receipt for fire safety plans received from contractors, but those plans are not reviewed or utilized by the Department.

11.3   Plan Checking

2016 Recommendation: *Expand the FPB's role to include a plan check for new construction, with a focus on major commercial, industrial, public institutional and multi-family projects, to ensure compliance with the Fire Code and with the Department's operational requirements.*

2016 Recommendation: *That the FPB in cooperation with the Building Department implement a plan checking program for all new construction and major renovations in existing buildings. This may require additional training for the existing staff.*

The FPB initiated a plan check review program in late 2019 that includes the review of all building permit applications for fire code and fire bylaw compliance along with practical operational needs of the Department. To provide continuity between the Building Department and the Department, the CFPO is given access to the City building permit file and issued a TASK file, which must be signed off by the CFPO before the City issues the building permit.

The plan check review program has also been expanded and now includes the review of new subdivisions, variance permits, demolition permits and temporary use permits. Additional requirements needed to obtain the fire service building permit approval include a Construction Fire Safety Plan ("Safety Plan") and in some cases, a Registered Professional Protection of Adjacent Buildings Report ("Protection Report"). The CFPO reviews and accepts both documents and conducts site visits to ensure the Safety Plan and the Protection Report are followed during the above grade construction process. Prior to the occupancy permit being granted by the City, the FPB must complete a final fire inspection and if approved, sign off on the TASK file.

11.4   Pre-incident Planning

2016 Recommendation: The FPB identify all properties in respect of which pre-incident plans should be created, and prioritize those properties based on risk.

2016 Recommendation: The Department should develop or acquire a user-friendly electronic template for pre-incident plans. The "D" shift crew at halls 3 and 4 should be trained to develop pre-incident plans from fire safety plan data. Duty crews should be responsible for developing pre-incident plans for simpler or more straightforward risks only, as determined by the CFPO.

2016 Recommendation: The FPB should remain responsible for developing pre-incident plans for all major industrial, commercial and institutional risks in the City.

2016 Recommendation: Before any pre-incident plan goes live, it must be checked through a physical inspection of the property in question. Pre-incident plans should be regularly reviewed as part of the annual fire safety inspection for each property for which they exist.

The FPB has been tasked with the responsibility for the management, development and maintenance of pre-incident plans. Fire crews also play a role in the development and updating of plans during company inspections.

The CFPO reported that pre-incident plans have been completed for all inspectable properties and for several non-inspectable properties including townhouses and trailer parks. Pre-incident plans are developed and verified during fire inspections in accordance with the Department's OG 5.04.03, "Pre-Incident Planning Procedures."

The procedure for developing pre-incident plans by fire crews includes the completion of a checklist of items that are marked on an overhead photo of the building during the fire inspection (see Figure 26 and Figure 27 which follow). The plan is then submitted to the Chief Fire Prevention Officer and fire prevention office for review and then sent to administrative staff. Pre-incident plans developed by fire inspectors are submitted directly to administrative staff, who are responsible for issuing the final plan.
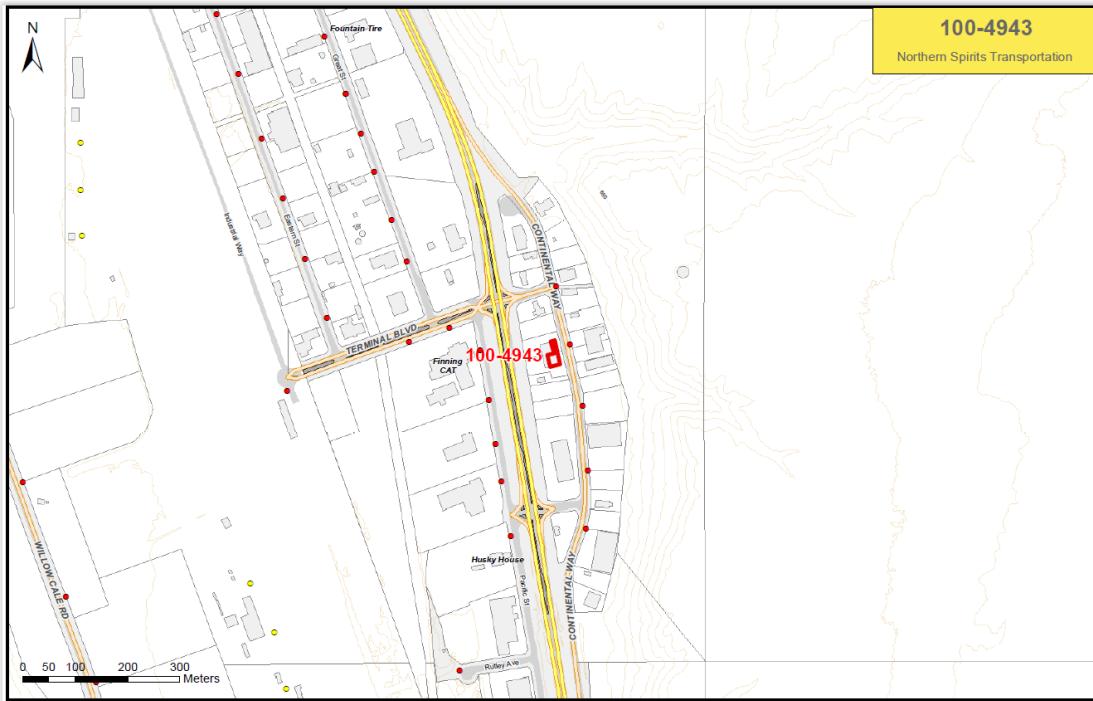
Figure 26: Preplan #100-4943.

Figure 27: Preplan #100-4943.

The Department is reviewing the APX software program as a solution for pre-incident planning going forward. The benefit of this program is that it will allow inspectors and company officers to complete, review and update pre-incident plans using tablets or iPhones which are available on

each apparatus. This change would eliminate the administrative staff from the pre-incident planning process.

11.5   Staffing Levels

__2016 Recommendation:__ The FPB requires a full complement of active staffing to meet its mandate and ensure the city meets its statutory obligations under the FSA. The Department should review whether some additional assistance is required to address the existing backlog in inspections.

__2016 Recommendation__: That the FPB be fully staffed (4 FTEs) and that personnel on long term absences are replaced on a temporary basis until their return to active duty.

The FPB is currently staffed with four full-time positions including the CFPO who reports to the Deputy Chief of Administration. Other staff in the FPB include one captain, one lieutenant and one fire Inspector. As recommended in the 2016 SOC Report, the division has been able to fill long-term absences through a six-month posting which has been used twice since 2016.

The Department's FPB staffing model has not changed for at least twenty years even though the responsibilities of the division have increased substantially. The following examples of these changes are not exhaustive but include:

- increases in the volume and complexity of fire and life safety inspections and fire investigations;

- increased plan checking;

- more comprehensive pre-incident planning;

- need for FireSmart programs;

- need to provide regular public education activities;

- increased administrative duties,

- technological changes; and

- the ongoing training, development and education required for fire prevention officers.

Other evolving issues that impact FPB resources include additional fire inspection training and oversight for company inspections; safety inspections in homeless camps; dealing with unauthorized suites; and the increased allocation of stretched resources needed to coordinate and work with other City departments and outside agencies.

11.6   Fire Inspections

Company Inspections

> ***2016 Recommendation:*** *The Department should review the conduct of fire inspections by duty crews and increase the number of inspections and reinspections that are assigned to such crews.*

Company inspections were implemented for all fire halls following the 2016 SOC Report recommendations. The number of inspections for each hall varies based on the property classification in their coverage area and the number of on-duty members.

- Hall 1: 10 to 12 inspections are assigned per month per shift.

- Hall 2: 4 to 12 inspections are assigned per month per shift.

- Hall 3: 2 to 5 inspections are assigned per month per shift.

- Hall 4: 1 to 4 inspections are assigned per month per shift.

> ***2016 Recommendation***: *That duty crews are assigned all lower risk inspections and those higher risk inspections that the Chief Fire Prevention feels are appropriate for duty crews. Those high-risk buildings not assigned to the duty crews will remain the responsibility of the FPB. This may require additional training for existing staff.*

Company inspections for Halls 3 and 4 are currently composed of lower risk buildings with annual inspection frequency. The CFPO has assigned one inspector to provide inspection training to the fire crews which has resulted in a higher level of quality for inspection reporting. The inspector also reviews the fire inspections and deals with any issues such as incomplete forms, missing reinspections or questions.

Frequency of Inspections

> ***2016 Recommendation:*** *With the increase in the number of inspections by duty crews, the FPB should review the inspection frequency. The goal should be to ensure that all inspectable properties are reviewed at least annually; where possible, the highest risk properties should be reviewed more frequently.*

> ***2016 Recommendation***: *That the City of Prince George develop a policy whereby all lower risk properties are conducted on a bi-annual [i.e., biennial] basis and that all high-risk properties are conducted on an annual basis.*

Table 23 below shows the building classifications and the current frequency of inspections. The Department reported that triennial inspections have been eliminated and noted an exception to the frequency for pulp and paper mills which are now inspected every six months. The data provided to the Consultants show that, in 2022, there was a total of 2,744 inspectable properties in the City.

Table 23: Frequency of Inspections

Classification	Description	Frequency
A1	Performing Arts	Biennially
A2	Other Assembly	Annually
A3	Arena	Biennially
A4	Open Air Assembly	Biennially
B1	Detention Occupancy	Annually
B2	Treatment Occupancy	Annually
B3	Care Occupancy	Annually
C	Residential	Annually
D	Business	Biennially
E	Mercantile	Biennially
F1	High Hazard Industrial	Annually
F2	Medium Hazard Industrial	Biennially
F3	Low Hazard Industrial	Biennially

Table 24 shows the fire inspection statistics based on the number of compliant and non-compliant inspections. The number of unsatisfactory initial inspections has increased slightly which the CFPO attributes to the increased training provided to engine companies, who are now better at identifying violations.

Table 24: Fire Inspection Compliance Report

Year	Reinspection[65]	Satisfactory	Unsatisfactory
2019	No	1,650	146
2019	Yes	154	32
2020	No	1,798	176
2020	Yes	165	51
2021	No	1,745	185
2021	Yes	155	50

[65] The Reinspection 'No' row indicates initial property inspections completed and the number of those that were unsatisfactory; the Reinspection 'Yes' row indicates the number of properties requiring a reinspection (return to property to review updates on deficiencies identified during initial inspection), and how many of those still did not achieve compliance.

11.7　Public Education

The 2016 SOC Report did not include any specific recommendations for public education activities, but the Department provided a comprehensive list of the current activities included in their annual program. One inspector is responsible for the majority of the public education programs and utilizes the other inspectors and fire crews when required. Public education events are completed during regular work hours as much as possible, but some are conducted during evenings and weekends depending on the venue and target audience.

The FPB also delivers a wide range of fire safety education and training to at risk populations and the public through the following programs:

- safety for seniors;
- safety for school children through the Hazard House program;
- mental and physical disability programs through College of New Caledonia;
- fire safety training for Home Alone and babysitting courses;
- fire extinguisher education – theory and practical;
- fire safety plan training;
- Fire Warden/Floor Warden training;
- Fire Smart;
- fire drill Draining;
- Juvenile Fire Setter – usually requested by school and/or parents;
- Fire Chief for a Day;
- Fire Prevention Week; and
- attendance at community or business events.

11.8　Recommendations

#11-1: The Department should review the staffing levels and responsibilities allocated to the Fire Prevention Branch and make the necessary changes to ensure that adequate resources are available to meet the mandate of the division.

12.0 Facilities, Apparatus and Equipment

12.1 Fire Halls

The location and suitability of the Department's fire halls were reviewed by DMA in the 2016 SOC Report. That report recommended Hall 1 should be moved south of its current location to improve coverage in the industrial properties and to better meet the recommendations of the Fire Underwriters. This recommendation was adopted by the City and the relocation and construction of the new fire hall was completed in December 2020. The new facility replaces the outdated hall located at 733 Dominion Street and improves the Department's eight-minute response time within the City core. The new state-of-the-art building includes five drive-thru apparatus bays, a hose tower, storage and work areas, and meeting rooms. It houses Administration, Fire Prevention, Fire Dispatch and Suppression divisions as well as the Emergency Operations Centre.

Figure 28: Hall 1 – 2012 Massey Drive

The 2016 SOC Report found that Halls 2, 3 and 4 were suitably located for responses within their respective primary response zones. The location and general details of the halls are shown below.

Hall 2 was constructed in 1968 and includes two primary apparatus bays plus two bays for reserve apparatus. The building is in fair condition and houses a suppression crew of four members. A burn building and pumping pit is located at the rear of the property. Annual facility maintenance is provided by the City and there are presently no planned renovations for the building.

Figure 29: Hall 2 – 3999 5th Avenue

Hall 3 was constructed in 1976 and includes two double depth apparatus bays that house a Quint, Water Tender and utility apparatus. The fire hall is in good condition and there are no planned renovations for the building.

Figure 30: Hall 3 - 3778 Konrath Road

Hall 4 was constructed in 1976 and includes two double depth apparatus bays that house a Quint, Water Tender and utility apparatus. The facility is in good condition. No renovations are planned and annual facility maintenance is provided by the City.

Figure 31: Hall 4 - 6555 Kelly Road South

12.2   Fire Apparatus

The Department's inventory of fire apparatus is show in the table below. All frontline apparatus meet the requirements of NFPA1901 *Guidelines for Apparatus Replacement.*

Table 25: Fire Apparatus

Unit	Year	Make	Type	Location	Tank	Pump	Class A Foam Tank	Built-In System	Mushroom Bladder Bags
E51	2001	Spartan	Pumper	Hall 1	500	1250	20 IG	Foam Pro	n/a
E11	2013	Rosenbauer	Pumper	Hall 1	444	1502	50 IG	Foam Pro	n/a
R11	2019	Rosenbauer	Commander	Hall 1	n/a	n/a	n/a	n/a	n/a
E21	2006	Cyclone II	Pumper	Hall 2	500	1500	25 IG	Foam Pro	n/a
L21	2020	Rosenbauer	Cobra Platform	Hall 2	300	1750	30 IG	Foam Pro	n/a
L31	2015	Rosenbauer	Quint	Hall 3	600	1506	48 IG	Foam Pro	n/a
T31	2007	Freightliner	Tender	Hall 3	2500	425	n/a	n/a	1500 IG
E41	2008	Rosenbauer	Pumper	Hall 4	600	1500	25 IG	Foam Pro	n/a
T41	2018	Rosenbauer	Tender	Hall 4	2500	840	n/a	n/a	1500 IG
T51	1996	Freightliner	Tender	Hall 4	2500	425	n/a	n/a	1500 IG
E52	2004	Superior	Pumper	Hall 4	500	1500	25 IG	Foam Pro	n/a

The Department's service vehicle inventory is shown in the table below.

Table 26: Service Vehicles

Vehicle	Unit	Year	Make	Type	Location
Assistant Chief 1	8544	2009	Chevrolet	Suburban 4X4	Hall 1
Chief 1	8547	2013	Dodge	1500 4WD Club Cab	Hall 1
Chief 2	8541	2008	Ford	Expedition	Hall 1
Chief 3	8540	2008	Ford	F150 4X4	Hall 1
Chief 4	8531	2007	Jeep	Liberty	Hall 1
Chief TO	8542	2008	Ford	F150 4X4	Hall 1
Fire Investigation	8549	2013	Blazer Cargo Mate	Trailer	Hall 1
Inspector 11	8537	2007	Jeep	Liberty	Hall 1
Inspector 12	8538	2007	Jeep	Liberty	Hall 1
Inspector 13	8545	2010	Dodge	Grand Caravan	Hall 1
Investigation 13	8543	2008	Ford	F150 4X4	Hall 1
Service 11	8501	2001	Ford	F350 4X4	Hall 1
Antique	8599	1927	REO Speedwagon	Pumper	Hall 3
Hazmat	8546	2008	Mirage	Hazmat Trailer	Hall 4
Hazmat 1	2437	2000	Ford	F550 Super Duty	Hall 4

12.3   Equipment

The Department maintains detailed equipment inventory lists for all apparatus and service vehicles. The crews perform daily checks and maintain the appropriate records to ensure the items are properly stored, cleaned and operational.

Auto Extrication

The Department completed a major auto extrication tool replacement in 2022 that included:

- 5 sets of Holmatro hydraulic equipment including pump, hose, spreader, cutter and power ram;

- 3 complete sets of Holmatro Pentheon including cutter, spreader and ram;

- 2 large Holmatro Pentheon combination cutter/spreader tools;

- 1 small Holmatro Pentheon combination cutter/spreader tool;

- 3 sets of hydraulic lifting bags; and

- 3 sets of vehicle stabilization bars.

SCBA Program

The Respiratory Protection Program OGs (1.02 and 1.02.01), specify that the program is under the direct control of the Deputy Chief – Operations. The Department completed a major upgrade of the SCBA equipment in 2020 and 2021 that included the purchase of:

- 60 - Scott X3 Pro suppression SCBA;

- 8 – Scott X3 Pro Hazmat SCBA;

- 4 – Scott Ska-Pak Plus confined space SCBA;

- full upgrade to Scott AV 3000 HT SCBA masks;

- 130 - Scott 4.5 air cylinders;

- 1 - Jordair two bottle filling station (Hall 4); and

- 1 - Jordair eight bottle filling station (Hall 1).

12.4   Asset Maintenance Programs

Maintenance for fire apparatus and equipment are performed as follows:

- fire apparatus and vehicles:
    - drivers are responsible for conducting daily fire apparatus pre-trip inspections and to report any defects to the Assistant Chief;
    - apparatus and vehicles are serviced by CUPE EVT certified fleet technicians; and
    - pump testing is performed in-house by Fleet EVT technicians; Ladder testing is conducted annually by fleet services and an external non-destructive testing contractor.

- SCBA equipment is serviced in-house by Scott Bench Tech certified technicians;

- PPE cleaning is completed in-house using commercial decontamination washers located in all four fire halls.
    - basic cleaning and annual inspections are performed in-house by qualified Gear Team Leads; and
    - advanced cleaning, inspections and repairs are sent out to an external service contractor.

- annual fire hose testing is completed in-house by hose/appliance/nozzle Team Leads; and

- record-keeping for all maintenance and repair is tracked through various Excel spreadsheets.

13.0   Training and Qualifications

The fire service has made significant changes over the past decade, particularly in the area of regulations and standards related to the management and administration of the service (such as the increased requirement for record keeping). Notwithstanding those improvements, the key to ensuring effective emergency ground operations, and the safety of firefighters and members of the public, continues to be effective and comprehensive training. Each operational member of a fire department must have the appropriate level and types of training to fulfil the roles and tasks he or she will be assigned at an emergency incident. To enable the Department to manage its obligations effectively, it is vital to ensure that all firefighters are trained to the appropriate level for the operations that they undertake. Appropriate training will improve firefighter safety and effectiveness and limit liability concerns for both the Department and the City.

The need for training needs to be examined in light of the risks faced by fire service personnel. The nature of modern construction techniques has amplified the risks faced by firefighters and the public. Lightweight construction components and contents made of composites, synthetics and other unusual fuels, cause fires to get hotter faster and with less predictability, creating a much more volatile fire environment than that of the past. Although firefighters are now better equipped, fires today pose a greater risk than those faced in the 1970s and 1980s.

Aggressive interior operations such as fire attacks and primary searches require firefighters to enter a hazardous environment, dramatically increasing the potential for encountering adverse fire events such as flashover, smoke explosion, or backdraft, along with exposure to a variety of other perils, thereby posing the most significant risk to firefighters involved in fire ground operations. A line of duty death or serious injury is a risk that all fire departments must seek to avoid. In the event of a serious injury or line of duty death, the impact on the individuals involved, their families and the Department can be severe and long lasting. There is also a significant potential for liability for the Department, its officers, and the City.

As a result, the fire service is increasingly focused on issues that affect firefighter safety, including the need to effectively manage and control interior operations, as departments seek to mitigate the risks to which firefighters are exposed. One of the primary ways to improve firefighter safety is to increase the level of comprehensive emergency incident management training – the knowledge and various skills required to perform a variety of supervisory functions safely and effectively at emergency incidents.

Many fire departments also provide other emergency response services in addition to fire suppression, such as first medical responder ("FMR"), vehicle extrication and rescue, high and low angle rescue, confined space rescue, hazardous materials responses, and other specialty services. Each of these service specialities, however, requires proper training for the firefighters involved, and appropriate incident scene management training for the officers. The time and costs involved in achieving both the initial qualifications required to deliver the service and then manage the on-going maintenance training necessary to keep the skills current, can prove challenging.

This issue of appropriate training levels also needs to be considered in the context of WorkSafe BC requirements and the obligation of employers to ensure that their workers are properly trained for their duties and supervised while performing them. An employer that fails to train and supervise its employees properly is in breach of the *Workers Compensation Act* (B.C.). The goal, therefore, should always be to maximize training for all firefighters, and to limit their fire ground operations to those tasks for which they have been properly trained. To put it another way: firefighters should NEVER be permitted to exceed their training.

13.1   Applicable Standards

Under the *Fire Services Act*, the Fire Commissioner is responsible for issuing training standards for "fire services personnel" in the province.[66] At the time of the previous standards of cover review, a major set of new Provincial Training Standards had just been issued in 2014, which was then updated and revised in a second edition in May 2015.[67] A third edition of such standards, the *British Columbia Structure Firefighter Minimum Training Standards*, was issued at the end of September 2022 (the "2022 Edition"): this analysis, however, was conducted on the basis of the 2015 Edition, which was in effect when the on-site and documentary reviews were conducted.

The Provincial Training Standards contemplate that a fire department may deliver one of three possible levels of service, and establishes the principal minimum training required to qualify for each level of service:

> **Exterior Operations** – includes fire fighting activities restricted to the control and/or extinguishment of fire from an external position to the building or object; where a fire department does not undertake interior attack or rescue operations on a fire-involved structure or object, or operate in an atmosphere that is "immediately dangerous to life and health".

> **Interior Operations** – where a fire department, in appropriate circumstances, will enter a fire-involved structure or object to undertake fire suppression activities or conduct rescue operations. Interior operations by these departments are generally to be limited to smaller structures, such as single-family dwellings and vehicles, except where specific hazard assessments and planning have been undertaken in respect of more complex risks.

> **Full-Service Operations** – a full-service department is equipped, staffed, and trained to provide a full spectrum of fire services by firefighters and fire officers who are trained to the competencies outlined in the NFPA 1001 FF-II and relevant NFPA 1021 Fire Officer

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[66] *Fire Services Act*, s. 3(3)(b). This power and obligation is continued in the new *Fire Safety Act*. The term fire services personnel is defined in the *Fire Services Act*: it covers essentially all fire departments undertaking structure firefighting, but excludes fire suppression operations undertaken by Wildfire Management Branch under the *Wildfire Act* (B.C.).

[67] *British Columbia Fire Service Minimum Training Standards: Structure Firefighters – Competency and Training Playbook* (September 2014; second edition – May 2015), (the "2015 Edition")

standards; and that such activities are based on response protocols which include appropriate staffing levels, and number and type of apparatus on scene.

The Provincial Training Standards establish an explicit requirement for the "Authority Having Jurisdiction" over a fire department to expressly set the level of service that is expected to be provided by its fire department. The training, organization, staffing, equipment, and apparatus required to support the chosen level of service will all then flow from that determination. The 2022 Edition has reiterated this requirement.

Even the 2022 Edition is not yet a complete system: it does not cover all emergency scene functions and responsibilities (though it is more expansive than its 2015 predecessor). Although there are several indications that the NFPA standards are expected to apply to other functions (which was what was required by the previous Minister's Order on training),[68] ambiguity now exists as to the standards applicable for a wide range of firefighter training.

Given the requirements of the *Workers Compensation Act* (B.C.), which imposes a positive obligation on employers to train workers appropriately, and given that the only recognized standards that exist in North America for the training of fire services personnel are those established by the NFPA, the better approach is to assume that those standards constitute an "industry best practice" and should be used to guide all aspects of the Department's operations. Should a local government choose to adopt a different standard (or no standard at all) in relation to the training applicable to other fire service functions, if there is a serious accident or line of duty death which relates back to training issues (as occurred in the Clearwater case[69]), that local government will be faced with the unenviable task of justifying the approach that it has taken in circumstances where there is clear evidence of a problem. The Department, as a matter of course, uses the relevant NFPA standards in the training of its members and officers.

The Provincial Training Standards also establish minimum standards for individuals instructing and evaluating competencies. The 2015 Edition clarified that no third-party certification is required for in-house trainers. Rather, they must be "qualified" in the subjects or areas they are teaching. That means that they must have already met the requirements for the competency they are teaching, which is achieved when they have been suitably evaluated so as to demonstrate they meet the requirements of the given standard. Proper training processes comprise the following:

- the training must be delivered, and evaluations undertaken by a qualified instructor. The instructor's qualifications to teach a particular subject or job performance requirement

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[68] The 2015 edition of the Provincial Training Standards did not entirely clarify the matter, though it even more clearly suggests that the appropriate standards applicable to matters not yet covered, are those set by the NFPA. The previous Minister's Order on training - MO-368 (December 2002) – incorporated by reference all NFPA standards.

[69] The death of fire fighter Chad Schapansky in Clearwater, BC in 2004 which resulted in a Coroner's report "Judgement of Inquiry into the Death of Chad Jerry Schapansky". This report found that the Clearwater fire department lacked written operational guidelines governing interior attacks; it could also produce no training records for accredited training done by the interior attack team, rapid intervention team or fire officers in charge.

("JPR") under the Provincial Training Standards or an NFPA standard, need to be provable (particularly where training is being delivered in-house). It must be possible to show that they have already met the requirements of the competency being trained and be considered by the department to be capable of providing instruction;

- each participant in the training needs to be evaluated, and his or her results duly recorded on an individualized basis. Ideally, the evaluation process should be described as part of the training program or evident from the records kept; and

- assessments and evaluations of competencies can be carried out internally by the AHJ so long as the evaluation instruments follow the criteria of the Provincial Training Standards (and other applicable NFPA standards), and that the oversight of the evaluation processes is the responsibility of the Training Officer;

- an individual who is responsible for conducting specific evaluations of another firefighter's or fire officer's competency must already have achieved that competency and be considered by the department to be capable of conducting such evaluation.

Another critical requirement in the Provincial Training Standards is that fire departments maintain accurate and current individualized records of each member's training and qualifications, which show compliance with the minimum and other applicable training standards:[70]

- It is the responsibility of all fire departments/AHJs to be able to accurately identify record, edit, and report out on a complete list of training records for each individual firefighter including specific training subjects covered at each training session. All training records must be kept in accordance with the requirements of the *Workers Compensation Act* (B.C.) and related regulations, and any other regulatory requirements; and

- the subject matter of the training and associated evaluation process need to be clearly described in the records. If the training relates to a particular JPR under the Playbook or an NFPA standard, that JPR should be identified along with the specific evaluation instrument, such as a skills checklist, that was utilized.

This section of the report will examine the Department's training processes in the context of its operational requirements, declared service level and the associated standards. It will also review the training facilities, the current levels of qualifications, the Department's training and evaluation processes, and the training records.

The Consultants attended site visits/meetings with the Fire Chief and Deputy Chief during the month of May 2022, along with Zoom meetings with the Deputy Chief (previously Training

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[70] 2015 Edition, pp. 4 and 6. The 2015 Edition's requirements were drawn from and reflect the records keeping requirements established under the *Workers Compensation Act* and regulations. The 2022 Edition also notes the need to keep property training records, but is less clear, in some respects, than its predecessor as to what those records should look like.

Captain) and the Chief Training Officer in the month of July 2022. During these meetings, various aspects of the Department's training processes were reviewed, including the program itself, as well as training records. As a part of the site visits, the Consultants also toured the service area, to better appreciate the nature of the Department's operational environment, and reviewed the Department's training area and facilities.

This section of the report references various NFPA training and related standards. A list of those standards can be found in Appendix 4.

13.2   Service Levels and Applicable Standards

The City is the AHJ in relation to the Department, and the service level that has been authorized by Council is "Full-Service Operations". A full-service department is required to be equipped, staffed, and trained to provide a full spectrum of fire services by its firefighters and fire officers. Firefighters must meet the competencies outlined in the NFPA 1001 Firefighter standard, and fire officers must meet the relevant NFPA 1021 Fire Officer standards, along with other NFPA standards, as identified in the current job descriptions and collective agreement.

Full-service departments are also required to have and to use written OGs that describe advanced training in fire ground operations activities.

A full-service department is required to be organized such that its suppression activities are based on response protocols that include appropriate staffing levels, as well as number and type of apparatus on scene for the services that they provide.

For a career department, the NFPA 1710 standard provides guidance on these performance or response objectives. For the most part, the standard is based on a department's response capability and the arrival time of the first due engine company and the second company, as well as the initial full first alarm response from the time of the reporting of the alarm. A department's ability to meet these response objectives will vary with staffing levels, alarm handling times, and turnout and travel times.

For example, fire suppression operations for a simple two-storey single-family residential dwelling (approximately 2,000 sq ft.), with no basement or adjacent exposures, should be organized to ensure that the department's fire suppression capability encompasses deployment of personnel, equipment, and resources for an initial arriving engine company, a second company, and the initial full first alarm assignment, such that as a minimum the following responses can be achieved 90% of the time:

- First due engine company (minimum 4 personnel) – 6 minutes;

- Second due company (minimum 4 personnel) – 8 minutes; and

- Initial full first alarm assignment (minimum 16 personnel) – 10 minutes.

"In addition, given the requirements of NFPA 1500, and those of WorkSafe BC regarding entry into fire-involved structures,[71] a Rapid Intervention Team ("RIT") must be established within 10 minutes of the first team's entry, or before a second team can make entry. As such, to conduct initial interior operations safely with two or more suitably staffed teams (3 or 4 firefighters each), a RIT will be required, and therefore, all personnel engaged in interior operations must also meet the competencies required for RIT as identified in the Interior Operations section of the Provincial Training Standards .[72]

Given that many single-family residential structure fires involve buildings much larger that 2,000 sq ft. (2,500 – 3,500 sq ft. is not uncommon), many with basements and adjacent exposures, along with other complexities and the need to properly address firefighter rehabilitation, a preferred and more realistic response is to have an additional one or two companies, 4 to 8 personnel available on duty, respond to support/assist the initial first alarm assignment within the next 6 to 8 minutes, resulting in a total of 20 to 24 personnel at the incident.

Given the Department's current staffing model, which is typically 19 members on shift including the Assistant Chief, and barring one or more crew(s) attending another response which results in only 15 to 17 members available for a working structure fire, the Department may only just meet the minimum requirements, and will not be able to meet the preferred response objectives from its initial response model of 19 personnel on duty. As such, the Department relies heavily on callback of off-duty members to achieve more than 17-19 operational personnel at a working structure fire of any significance.

Callback of members to alarms is becoming an increasingly significant problem, as many members are overburdened with the continued need for overtime for both alarm responses and training programs.

The services currently provided by the Department include:

Basic Fire Suppression:

- Firefighters

- Team Leader/Company Officers and an Operational Assistant Chief

- Emergency Vehicle Driver/Operators ("EVD/EVO")

- Rapid Intervention Team ("RIT")

Specialty Firefighter Skills:

- Emergency Medical Services ("EMS") – Emergency Medical Responder ("EMR") level

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[71] OH&S Regulation, s. 31.23

[72] In the 2015 Edition of the Provincial Training Standards, the training requirements for member of a RIT include those of an Interior Operations firefighter, plus various competencies in *NFPA 1407 - Standard for Training Fire Service Rapid Intervention Crews*.

- Hazardous Materials Response – operations and technician level

- Technical Rescue Responses:

  - Passenger Vehicle Rescue/Extrication – operations level

  - High/Low Angle Rope Rescue – operations and technician level

  - Tower Crane Rescue – operations and technician level

  - Confined Space Rescue – operations and technician level

- Wildland/Urban Interface – BC Wildfire S100 level

The applicable standards and associated requirements for training and development of Department members should include the following:

- The Playbook (which encompasses a range of NFPA standards in addition to those set out below);

- NFPA 1001 – Firefighter Level I and II;

- NFPA 1002 – Emergency Vehicle Driver and Operator (EVD and EVO);

- NFPA 1021 – Fire Officer Level I, II, III or IV (as per the Department's job descriptions);

- NFPA 1521 – Incident Safety Officer;

- NFPA 1041 – Fire Service Instructor I or II (as per the Department's job descriptions); and

- EMS – EMR level

The Department currently meets these requirements for firefighter and fire officer training. In addition, it also meets industry standards for EMS training, which are prescribed by BCEHS.

The NFPA standards for various specialty services typically contemplate three levels of competency: awareness, operations, and technician. The higher levels are more costly to attain and maintain, as they require more initial and maintenance training (and, potentially, more equipment). For specialty teams and responses to other hazards, the following training levels are suggested, given the Department's operational environment:

- NFPA 1072 – Hazardous Materials: operations mission specific and technician level;

- NFPA 1006 – Technical Rescue:

  - Passenger Vehicle Rescue/Extrication – operations or technician level;

  - High-Angle Rope Rescue – operations or technician level;

- o   Confined Space Rescue – operations or technician level;

- o   Tower Crane Rescue – operations or technician level;

- o   Trench Rescue – operations or technician level;

- Wildland/Urban Interface – WSPP-WFF1 (formerly S100 & S185) and WSPP-115 – Interface Structural Protection for Structural Firefighters (formerly S215).[73]

13.3   Department Training

As noted above, the Department's current staffing model has three exempt officers - the Fire Chief and two Deputy Chiefs – on day-shift hours, Monday to Friday. The roles of these exempt Chief Officers are principally administrative and fire prevention in nature, rather than operational.

The Department's operational organizational structure (suppression) currently includes:

- one Captain on each platoon/shift at each fire hall;

- one Lieutenant on each platoon/shift at Hall 1 (a relatively new position with no job description);

- one Assistant Chief on each platoon/shift at Hall 1; and

- three Firefighters on each shift at three of the fire halls, and four Firefighters on shift at Hall 1.

With vacations and other book-offs, there are typically 13 on-duty firefighters on each shift, along with four Captains. one Lieutenant, and the Assistant Chief for a total of nineteen members on-duty per shift across the four fire halls.

To support the training and development needs of the Department, there is one Chief Training Officer position ("CTO"). The CTO is supported by a Training Captain position, who assists with the training processes and programs.

The CTO is responsible for the planning and overall management of the Department's training portfolios, ensuring the Department's four shifts operate in a cohesive manner. The CTO is also responsible for determining the Department's training needs, developing training programs, planning, organizing, and directing training activities, and evaluating for continuity of training for the four shifts. In addition to scheduling training, the CTO is also responsible for conducting some aspects of training and for maintaining the Department's training records.

The required training levels are primarily determined by the Department's operational services mandate and the response requirements of the community as noted above. The nature of these

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[73] The S-100 standard is the minimum requirement recognized by Wildfire Service, and meets the training requirements for forestry workers under s. 26.3(1) of the OH&S Regulation.

services will determine the level of qualification to be achieved, the associated training programs required, and the manner in which the required competencies will need to be maintained. Given the declared operational service level – Full-Service Operations – along with the additional specialty services the City has determined the Department will provide, the Department's OGs need to address the full range of fire and emergency response activities that may be undertaken.

The Department does not currently have any mutual aid agreements in place with neighbouring fire departments. As such, there has been no joint training with neighbouring departments.

13.4 Training Facilities

The majority of required training for the Department's firefighters and fire officers is conducted at the Hall 1 site. The training classroom is a good size and well arranged. It is equipped with the required teaching aids and suitable for moderate sized groups.

The outdoor areas available for training are inadequate for basic training skills, and not suitable for larger, scenario-based, multi-unit/multi-storey exercises. The outdoor sites are also not adequately situated/configured for driver training, hazardous materials exercises, or any of the other specialty training disciplines. The need for an appropriate training facility has been noted and discussed in section 7.4, above.

13.5 Current Levels of Qualification

The required qualifications for each of the following roles within the Department, along with the qualifications of the incumbents, are set out in the table below.

Position(s)	Required Qualifications	Current Qualifications of Incumbent(s)
Chief Officers		
Fire Chief	• NFPA 1021 Fire Officer II ("FO-II") or higher • Diploma or degree in Fire Leadership or related discipline	Meets this requirement
Deputy Chiefs	• NFPA 1021 FO-II • Diploma or degree in Fire Leadership or related discipline	Both meet this requirement.
Operations Assistant Chief	• NFPA 1021 FO-II • Five 3-credit post-secondary courses	All meet these requirements.

Position(s)	Required Qualifications	Current Qualifications of Incumbent(s)
Acting Assistant Chief	• NFPA 1021 FO-II • Two or more 3-credit post-secondary courses	All meet these requirements.
Fire Prevention Chief	• NFPA 1021 FO-II • Five 3-credit post-secondary courses	Meets these requirements.
Company Officers		
Hall Captains	• NFPA 1021 Fire Officer I ("FO-I")	All meet these requirements.
Hall Lieutenants	• NFPA 1021 FO-I	All meet these requirements.
Other Officers		
Chief Training Officer	• NFPA 1021 FO-II • NFPA 1041 Fire Service Instructor ("FSI")-II • Qualified in at least two specialty disciplines • Five 3-credit post-secondary courses • Training Captain for minimum of one year	Meets these requirements.
Training Captain	• NFPA 1021 FO-I • Active member in at least one specialty team, or • A qualified instructor for EMS, EVD, or Vehicle Rescue	Meets these requirements
Fire Prevention Captain	• NFPA 1021 FO-II	Meets these requirements.
Fire Prevention Lieutenant	• NFPA 1021 FO-I	
Firefighters		
Firefighters	• NFPA 1001 FF-II	All firefighters meet these qualifications.

13.6   Training and Evaluation Processes

The Consultants did not witness actual operational training of Department members. As such, the following observations and comments are based on the various interviews and discussions

held with the Fire Chief, Deputy Chiefs, Chief Training Officer, and Training Captain as an indicator of the level of operational readiness of the Department to carry out its mandated emergency response services.

The current Chief Training Officer has been responsible for the Department's training for the past three years. Much of this period has been adversely affected by the restrictions accompanying the pandemic. The CTO develops an annual training plan, which consists of monthly training schedules, which are then broken down into weekly schedules across the four shifts. As such, most training requirements are identified in the monthly and weekly calendar put out to the Operations Assistant Chiefs, suppression Captains and Lieutenants.

The Department strives to meet the proficiency requirements of the applicable NFPA standards for substantially all operational skills. Where possible, these qualifications are achieved through on-duty delivery of the initial training, as well as the maintenance of those competencies and skills through subsequent on-duty training processes. The issue of maintenance training is considered in greater detail, below.

This approach, however, is complicated given the limited number of personnel on duty at any time, and the inability to remove these members from a primary response role to permit them to conduct the necessary training (whether initial or maintenance training). Thus, maintaining and/or increasing the level of proficiency in any area of service delivery is challenging. Given the limited time available for on-duty training, members often have to be brought in for off-duty training .

As such, many of these training endeavors, both the initial and subsequent maintenance training are conducted on the members' days off using the Accumulated Time Off (ATO) approach. This is accomplished by having the member attend work on one or more of their days off to receive the training; however, this then impacts the member's number of days off and as such is often not an option, and therefore the sessions are not well attended.

This approach also relies on the trainers working on their day off to conduct the training. Training sessions are a half-day so that member can then work their night shifts; if they were trained the whole day, they would need to have the night shift off.

The CTO indicated a growing reluctance of members to attend such off-duty training sessions, particularly given the number of overtime shifts they are expected to fill (due to book-offs for a variety of reasons), along with the call-out time for emergency responses. The reluctance of members to train on their days off negatively impacts the Department's ability to raise members' qualification levels and to keep qualifications current for several of the specialty services provided by the Department.

Without additional personnel to support on-duty training to recognized levels of proficiency, in the form of training personnel and time for members to train on shift, and to then maintain these skills through on-duty training, some programs may not be able to be maintained to the required proficiency levels. Given the challenges it faces in meeting its training requirements the Department will need to review whether it can maintain its service levels in each of the various

specialties, or whether some of these may need to be trimmed back to a lower level of qualification. This assessment will have to be made in line with the mandate for service established by the City for the Department.

The training division has recently implemented a new approach on a couple of occasions, such as for the vehicle rescue skills, by providing the maintenance training on duty using the flex members on shift to free up a given crew. Barring a significant incident occurring that day, this approach better enables them to take part in this training without interruption.

This approach can not be used all the time, and additional staffing is the better solution to achieving the specialty training and the associated maintenance training required. An additional engine company at Hall 1 would help support the Department's training needs, but allowing the extra unit to provide coverage at the other Hall, while that Hall's members are receiving their on-duty training.

The current training levels for the services provided by the Department are set out below.[74] Analysis of any fire service standards applicable to these training levels required to achieve the Department's response requirements must also consider any WorkSafeBC requirements.

As such, we would recommend that the Department undertake an internal review of all services currently provided to determine:

- if the service needs to be provided by the Department;

- the required training levels necessary to provide that service; and

- the actual funding and staffing needed to provide that service including equipment, initial training and on-going maintenance training, at the selected level.

For all of its training, whether provided in-house or by external third parties, the Department also needs to ensure that members are formally evaluated against the relevant standard, and the results of such evaluation consistently recorded on an individual basis.

13.7   Firefighter/Fire Suppression Training

Basic Fire Suppression

> As a Full-Service Operations level department, currently all new recruits/members are required to meet the NFPA 1001 Firefighter II certification, which includes hazardous materials at the operations level, when they are hired. As such, the Department meets the requirements for a Full-Service Operations department as established by the

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[74] For most specialty services (e.g., Hazmat), the NFPA standards have three qualification levels: "Awareness," "Operations," and "Technician" (in ascending order or level of required training).

Playbook. Included in this fundamental fire suppression training and qualification are the various aspects of live fire training and the associated fire ground skills.

Once hired, all new recruits take part in Probationary Firefighter program over the course of their first 12 months with the Department. During this time, an initial recruit training program of 12 weeks is utilized to assess and augment their basic firefighter skills such that they are refreshed and evaluated to ensure their capability for assignment to an on-shift platoon. During this time, all new recruits also take part in a 2-day apparatus driver/operator program.

Upon being assigned to a platoon, they take part in ongoing skills maintenance and associated assessments/evaluations of their performance over the course of the first year. This ongoing training is conducted by the on-shift Company Officers and firefighters, while being monitored by the CTO and Training Captain.

Emergency Medical Services

All members are trained to the EMR level. The EMR training is provided in-house with instructors and evaluators certified through the Red Cross EMR program. All evaluators are EMA licenced to conduct in-house evaluations (2 days) to achieve and maintain the EMA qualification through the provincial Emergency Medical Assistants Licensing Board, which is renewed every 5 years. This qualification must be maintained with 20 education credits and 20 patient contacts per year.

Emergency Vehicle Driver/Operator (EVD/EVO)

The Department has upgraded its previous in-house training program to meet the requirements of the NFPA 1002 standard for the driving and operating of its pumping and aerial apparatus. This program is now conducted by six new on-duty instructors qualified to the NFPA 1002 requirements through the Viera Pro Board accredited program, training the members in the basic skills, with specific members trained for particular apparatus. The Department is now in the process of revamping/developing an in-house assessment and evaluation process to ensure the members continue to meet he requirements of NFPA 1002, which will then be documented accordingly.

Rapid Intervention Team

This training is also provided in-house; however, the program is primarily skills-related and does not include an assessment process involving written exams and/or practical skills evaluations, and as such, most likely does not meet all requirements of the NFPA 1407 standard.

Team Leader Role

The majority of the competencies in the Playbook for this role are derived from the NFPA 1021 FO-I requirements. As such, all Captains and Lieutenants meet these requirements as they are qualified at the FO-I level or higher. In addition, all firefighters

qualified as acting Lieutenants and Captains also meet these requirements as they too are qualified at the FO-I level. As such, the Department has sufficient members available to meet the requirements of the Team Leader role as required by the Playbook. It should also be noted that the Playbook indicates that a fully qualified firefighter in a Full-Service department is essentially deemed to meet the Team Leader requirements.[75] However, care should be taken when assigning such roles to firefighters, to ensure that they have the necessary training and qualifications for the supervision they reasonably are expected to provide. This training is also not provided to the volunteer members.

13.8   Specialty Firefighter Skills Training

In addition to the basic fire suppression/firefighter skills, the Department also provides its members with training to acquire a number of required and/or specialty operational competencies or skills:

Hazmat Response

All members are initially trained to the Operations level, which as noted above, is achieved through their NFPA 1001 Firefighter II certification. In addition, approximately 25 members are also trained to the Technician level. In the past, this has been achieved through a Pro Board accredited program, whereby all Company Officers, suppression Lieutenants and Captains, were trained to this level; however, this is no longer the approach with this training now provided to those that request to be a part of the hazmat team/specialty.

The Department also has 6-8 technician members trained to the CBRN level, as well as 8-10 technician members qualified as railcar specialists.

Technical Rescue Responses

Vehicle Rescue/Extrication

The CTO indicates that most members are trained and operate to the Operations level through an in-house program along with in-house evaluation processes to meet the passenger vehicle/operations level requirements of the NFPA 1006 standard.

The Department has recently purchased new auto-ex rescue tools and equipment to replace the previous equipment, and as such, recently put all members through a refresher program to ensure familiarity with the new tools, and to refresh and evaluate all skills. As such, the CTO believes most members are now at the desired level. This training was conducted on-duty, using the flex members on shift to free up a given crew to enable better on duty training.

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[75] See: Provincial Training Standards, p. 5/20.

The Department is also looking to expand the Vehicle Rescue program to include the Technician/Heavy Rescue level in the future.

High/Low Angle Rope Rescue

Most members were initially trained and operate to the Operations level through a third-party accredited program, with about 5 members qualified at the Technician level. The Department has attempted to maintain this level of qualification through on-duty training, and has recently trained 6-8 members at the technician level through a non-accredited program; however, there are no formal assessments of this training, or the maintenance training over the years, and so no current records to qualify the members at these levels.

As with other specialty disciplines, the pandemic has made it difficult to maintain these skills. The in-house maintenance has no accredited certification, and uncertain if it meets the 1006 requirements. As such, the CTO is unable to indicate that all members meet the NFPA 1006 level requirements.

The training division is currently in the process of reviewing and redeveloping the in-house program to ensure it meets the 1006 requirements – creating a new program, to include the required assessment/evaluation processes. The recently trained tech level members will serve as the instructors and evaluators for this new program. The intention is for this program to also be provided on-duty.

Tower Crane Rescue

Same as for the above High/Low Angle Rope Rescue skills, with most all members at the Operations level as part of the high-angle rope rescue training, and approximately 5 members with the tower crane rescue component through the THARP program.

Confined Space Rescue:

Same as for the above High/Low Angle Rope Rescue skills, with all members at the Operations level and about 8 members at the Technician level through a third-party accredited program.

Given many similarities and cross-over skills with the rope rescue program, the Department has combined these skills into the rope rescue discipline; as such, the rope rescue members are now also confined space trained.

These skills are also maintained in-house, but given the lack of a formal evaluation processes, it is difficult to state that the members meet all of the NFPA 1006 requirements. As such, the Department would like to establish a similar process as is being developed for the rope rescue program.

Swift Water Rescue:

Most members are trained at the Operations level, with 6 members at the Technician level through Rescue Canada. This program comes with 3 years of certification, and then must be renewed. Rescue Canada provides documentation that indicates the level

achieved, such as tech level, as per the NFPA standard; however, only valid for 3 years and then members must be reassessed by Rescue Canada to be issued a new certificate.

These members then serve as the instructors for the operations members in-house training and maintenance. Rescue Canada recently did a reassessment of the current 6 tech members; as such, these members currently meet the 1006 requirements.

The Department now has a water rescue vessel/boat – still completing the required equipment and policies/OGs etc. to make functional, so not yet in service, but hope to be soon.

Ice Rescue:

Also provided by Rescue Canada for about fifteen members through the same format as the swift water rescue program above.

Wildland/Urban Interface:

Most all members have taken part in the basic wildland levels of S100 and S185 courses through the provincial wildfire programs. No members are currently training in the structural protection unit skills/competencies.

13.9   Company Officer Training

The Department has set NFPA 1021 FO-I as the minimum standard for their Company Officers, the shift Captains and Lieutenants, and for those members acting in the rank of Lieutenant or Captain.

Company Officer and firefighter training should also be supplemented by live fire training, as well as an appropriate level of emergency incident management training to ensure the Department has sufficient qualified individuals who can fill the role of incident commander.

These qualifications meet the requirements of the Provincial Training Standards. However, given the manner in which the NFPA 1021 standard is structured, we would recommend that the Captains meet or exceed the FO-II qualifications, and the Lieutenants meet the FO-I qualifications as is the current practice.

Currently there are several firefighters who also meet the requirements of FO-I, and as such are qualified to act in the role of Lieutenant. The fire officer development program consists primarily of external third-party Fire Officer courses for NFPA 1021, FO-I and II.

Another consideration in the development of Company Officers is the need to ensure that the Incident Safety Officer (the "ISO") role can be fulfilled. This is an area where the Department is also doing well, where almost all Company Officers have completed the ISO qualification over the past several years.

13.10   Chief Officer Qualifications

The Fire Chief is qualified at the FO-II level or higher, along with a post-secondary degree or diploma in Fire Leadership or related discipline, as well as having extensive fire service experience at a progressively more responsible levels within a municipal fire service in senior supervisory positions.

The Deputy Chief Officers are both qualified at the FO-II level or higher, as well as having completed three or more 3-credit post-secondary courses, and significant experience at responsible levels within the Department.

The Operations Assistant Chiefs are also qualified at the FO-II level, as well as having completed five or more 3-credit post-secondary courses.

The Chief Training Officer is qualified at the FO-II and FSI-II level, as well as having completed five 3-credit post-secondary courses.

13.11   Fire Prevention Qualifications

The duties of the Fire Prevention Officers include fire and life safety inspections, fire investigations, plan review, fire and safety public education and training for company officer inspections.

When the new *Fire Safety Act* comes into effect, there will be accompanying regulations relating to the minimum training required for fire safety inspections and fire investigations. Based on our understanding of what those requirements are likely to be, some of the Fire Prevention Officer's qualifications may not be sufficient, and where the Department undertakes duty-crew inspections, it may be necessary to upgrade the training of members taking on such a role.

13.12   Maintenance Training

Historically, the training and development of new skills, and the maintenance of these competencies, has been a priority for the Department with much of the maintenance training having to be conducted off-duty. The CTO notes that with the pandemic restrictions of the past 24 months, this goal has been more difficult to achieve. In his view, some of the existing skill sets need to be better maintained and improved in some areas.

The 2015 Edition of the Provincial Training Standards expressly requires on-going skills maintenance, noting that:[76]

> "the maintenance training for such competencies is the responsibility of the AHJ and it is expected that this will be accomplished through ongoing skills maintenance training and education. This ongoing training must be duly recorded for each firefighter and officer."

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[76] Provincial Training Standards, section 7, "Maintenance Training" at p. 7.

The area of training for the various technical rescue responses, and more specifically the requisite of on-going maintenance training, has proven difficult for the Department. Currently, while members are proficient in the specialty rescue areas such as high angle or swift water rescue when initially trained, their skills will lessen if not practiced on a regular basis. This is in part due to the problems faced by the training division having to scheduling members on their days off for re-occurring training (noted earlier). It is imperative that if the Department is mandated to provide a specific rescue service, that a corresponding training budget is approved to ensure that the required training can be provided.

One of the issues to consider in the overall approach to maintenance training by the Department, is to clarify that the Company Officers (Captains and Lieutenants) are primarily responsible for delivering such training. The training OG (OG #3.01), along with the job descriptions and qualification requirements for the shift Captains and Lieutenants, include a variety of training responsibilities and skillsets:

- NFPA 1021 Fire Officer I, II and/or III Certification; which includes the responsibility to direct unit members during a training evolution, to initiate actions to maximize member performance, and to evaluate the job performance of assigned members;

- NFPA 1041 Fire Service Instructor I Certification; to deliver instruction effectively, to modify lesson plans, develop an evaluation instrument, schedule training sessions, and supervise and coordinate training activities;

- Company Officers are expected to manage the training/certification requirements of all shift members, and liaise with the Training Division to ensure effective delivery;

- To facilitate both regular drills as scheduled, and impromptu drills as required, and supervise, coach, and evaluate their suppression staff.

As such, responsibility for on-going fundamental skills maintenance training properly falls to this position. Such an approach to operational maintenance training is common practice for career departments. During our interviews and meetings with the Chief Officers and the Training Captain, they agreed on the importance of quality skills maintenance training, and recognized that the Company Officers are a significant part of this responsibility. The Department and the CTO need to support the Company Officers in this role by:

- providing appropriate, standardized material covering the different skills to be taught or refreshed;

- establishing clear guidance on how such materials are to be used and how often different aspects of refresher training is required;

- setting out the processes which are to be used to assess and evaluate members who complete each element of such training; and

- ensuring that such training and the corresponding evaluations are properly recorded and documented.

From our review, it appears that this support was not always as available in as timely and consistent a manner as the Training Division would like, a problem exacerbated by the pandemic. However, with the pandemic restrictions now lifted, the CTO is putting out a more definitive monthly training schedule addressing a variety of skills which are to be the subject of training on a daily basis. As such, significant elements of firefighter maintenance training are now covered by the monthly training schedule.

As the CTO and Training Captains are very capable trainers, a concern exists that, when they visit the hall shifts, they will be expected to "take over" or to actually "perform" the maintenance training rather than it being directed and led by the Company Officers. The Training Division CTO and Training Captain are encouraged to engage and support both specialty service training and ongoing skills maintenance, but not to replace the Company Officers' role in the conduct of such training.

Given the current needs, it may be necessary to have more time scheduled for maintenance training, and to ensure the Captains are made more familiar with any support material that is available on the Department's computer network, and/or from the Training Division.

Another approach to the maintenance of the basic fire suppression skills might be to establish specific firefighters on each shift who are prepared by the CTO in the maintenance training competencies for each of the various areas of expertise, such that they can then be assigned/transferred from shift to shift and hall to hall delegated to assist the hall Captains with some of this responsibility in designated specific areas of firefighter competencies.

The Training Division continues to enhance maintenance training in most areas along with improved periodic assessment/evaluation processes. The CTO has also recently implemented a new approach on a couple of occasions by providing maintenance training on duty using the flex members on shift to free up a given crew, better enabling them to take part in this training without interruption. This approach is not always an option, additional staffing is a better solution to maintaining the skills and competencies associated with these specialty disciplines.

13.12.1 Firefighter/Fire Suppression Maintenance Training

The Department attempts to maintain members' skills through on-duty maintenance training. As noted above, the Department's staffing levels make this approach challenging. This section of the report necessarily overlaps somewhat with the section above addressing initial skills training.

The Training division has been providing a better-defined monthly/weekly training schedule over the past several years, addressing a variety of skills maintenance to be accomplished at the hall level on a daily basis in an effort to improve the overall maintenance of the member's skills and abilities. The Company Officers are responsible for determining how best to implement such training.

The Department's approach to maintenance training for fundamental fire suppression skills and qualifications is set out below, along with any challenges that were identified during the review.

All maintenance training needs to periodically include formal evaluation processes, the frequency of such evaluations determined by the CTO, with each member's results being maintained in an individualized record.

Basic Fire Suppression

More effort has been made by the Department over the past few years to ensure the consistent maintenance of the firefighter skills under the NFPA 1001 and related standards. This program includes improved lesson outlines and skills requirements, along with informal assessments, but does not include formal evaluations and the associated documentation required to enhance the individual training records. The Training Division is continuing to improve this program with additional training session materials and the implementation of enhanced skills evaluations and recording processes in the near future.

One of the challenges the Department faces in ensuring firefighter skills are maintained at the desired levels, is the limited training ground space at each of the fire halls, and the lack of a suitable training site and associated training facilities.

Given the need for certain training activities to be conducted in a secondary response mode, along with the insufficient number of on-duty personnel to do so, the Department is unable to achieve at all times the required maintenance training on-duty.

As such, the desire to have most all maintenance training take place on-duty is proving very difficult; given not all maintenance training can be conducted on duty, and the lack of a suitable training site and facilities, is resulting in a significant loss of available training time.

Emergency Medical Services:

All members undertake periodic in-house refresher/maintenance training and re-certification as required by the provincial Emergency Medical Assistants Licensing Board.

Live Fire

In the past, the Department has conducted live fire maintenance training at the Quesnel training ground facilities. Given the time required to drive to Quesnel and back (approximately 3 hours), a limited amount of actual training is accomplished on these days. Typically, these training exercises have been conducted by Prince George instructors, with the assistance of the Quesnel burn building technicians. As such, these training sessions were conducted with Prince George in-house programs and instructors, and most often not assessed or evaluated. Due to Covid restrictions, and other scheduling issues, the live fire maintenance training exercises have not taken place regularly for the past several years.

The CTO would like to re-establish these training sessions on a more routine basis, and to incorporate more of the evaluation component in future live fire sessions. To

accomplish this, the Department will need to develop a suitable training site and facilities within its own geographical area.

Given the potential risks associated with live fire training, the Department will also need to ensure that all instructors and evaluators are properly qualified to deliver such training.

Emergency Vehicle Driver/Operator

The maintenance training for EVO/EVD is conducted in-house but has lacked formal skills evaluation processes in the past; however, the new in-house maintenance program is being enhanced to include skills evaluation and recording processes to ensure members meet the requirements of the NFPA 1002 standard.

Incident Command Roles

The officers in the Department are trained at least to NFPA 1021 FO-I. However, based on our review, refresher training for Emergency Incident Management ("EIM") functions should be implemented for all Company Officers and Acting Officers to ensure the knowledge and skills of the Incident Command role are properly maintained on an annual basis.

Rapid Intervention Team Training

The maintenance of RIT skills has been addressed periodically with a variety of in-house training exercises; however, this process has only involved informal observations and assessment, and lacked formal evaluation processes. To ensure the member's skills and competencies meet the requirements of the NFPA 1407 standard, the Department should develop a more formal assessment and evaluation process to be used during these periodic maintenance training sessions.

13.12.2   Specialty Services Maintenance Training

The general feedback from our interviews regarding specialty skills maintenance training was that the competencies and skills in a number of these areas have not been as well maintained as they need to be, since the initial training was provided and qualifications achieved.

As noted above, the nature of the maintenance training for these specialty areas has to be based on the level of service being provided, to ensure these competencies and skills are maintained at the appropriate level.

Hazmat Response

The members are initially trained to the Operations level as part of their NFPA1001 certification, with some additional training to achieve Operations Mission Specific skills for some disciplines provided over the following years. Some 25 members are also trained to the Technician level (the highest qualification level), which is appropriate given the range of industrial and transportation hazards in the City. The NFPA 1072 standard, which governs, among other things, hazmat responses, requires personnel to remain

current with the general knowledge, skills and JPRs for each level or position of qualification under that standard.[77]

The Training Division attempts to include various components of the required hazmat skills in each monthly training schedule, though this is not always possible. Also, these processes did not include periodic formal assessment/evaluation of the required competencies and skills to ensure the members continue to meet the requirements of the NFPA 1072 standard.

In the past, to maintain these skills, the maintenance training took place several times throughout the year with much of this having to be conducted during off duty sessions; however, this approach waned as result of the pandemic restrictions, and the Department has not been able to re-implement the maintenance training in the same manner. As such, minimal maintenance training has been conducted in the past two to three years.

The Training division is attempting to correct this situation with plans to schedule more hazmat maintenance training through the in-house program and added assessment processes to ensure they meet the NFPA 1072 requirements. This maintenance training is better accomplished on-duty; however, some aspects will require a secondary response model.

Technical Rescue Responses:

Section 1.2.6 of NFPA 1006, the standard for technical rescue qualifications, requires that technical rescue personnel remain current with the general knowledge, skills, and JPRs addressed for each level or position of qualification. Technical rescue personnel are required to remain current with technical rescue practices and applicable standards and to demonstrate competency on an annual basis.

Vehicle Rescue/Extrication:

The vehicle rescue/auto-extrication in-house training program and evaluation processes are intended to meet the requirements of the NFPA 1006 standard, as such, most members were initially qualified at the Operations level for typical passenger vehicles.

Maintenance training was performed regularly in the past, however, recently hampered by the pandemic restrictions.

The Department recently purchased new auto-ex rescue tools and equipment and put all members through a refresher program to ensure familiar with these new tools, and to refresh and evaluate these skills. As such, all members currently meet the required competencies of the 1006 standard. This training was conducted on duty, using the flex members on shift to free up a given crew to enable better on-duty training.

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[77] *NFPA 1072: Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*, s. 2.1.6.

High/Low Angle Rope Rescue:

All members are trained and operate to the Operations level, with six to eight members trained to the higher Technician level.

The Department has attempted to maintain these skills through various training sessions conducted throughout the year; however, as with other specialty disciplines, the pandemic has made it difficult to maintain these skills.

The in-house program does not include formal assessments or records to evidence these qualifications, and therefore, it is difficult to determine if the majority of these members have maintained their skills at the operations level, and more particularly, that the six or eight members trained to the technician level have maintained their skills at the higher level.

The Department is now in the process of reviewing and redeveloping the in-house program to ensure it meets the 1006 requirements, and to include the required assessment/evaluation processes. It is also intended that this program be provided on-duty. The tech level members will be the instructors/evaluators for the new program and assist in maintaining the other members at the operations level.

Tower Crane Rescue

As for the High/Low Angle Rope Rescue skills noted above, most all members were qualified at the Operations level as part of the high-angle rope rescue training, and approximately 5 members qualified with the tower crane rescue component through the THARP program.

The in-house program does not include formal assessments or records to evidence these qualifications, and therefore, it is difficult to determine if the majority of these members have maintained their skills at the operations level, and more particularly, that the five members trained in the tower crane rescue component have maintained their skills at this level.

Confined Space Rescue:

As with the above noted technical rescue skills, all career members were initialled trained at the Operations level with about eight members trained to the Technician level. The Department then seeks to maintain these skills through various in-house training sessions incorporated with the rope rescue disciplines, and conducted throughout the year, but does not have formal assessment processes or records to evidence the members' qualifications.

Given the lack of formal assessments or records it is difficult to determine if the majority of these members have maintained their skills at the operations or technician level.

The Training division would like to develop a similar approach as is being developed and implemented for the rope rescue program.

Swift Water Rescue:

With the tech rescue trained members as the instructors, the in-house training and maintenance for all swift water team members is conducted once per year.

Ice Rescue:

The maintenance of these skills is also achieved through an in-house program similar to that of the swift water program.

Wildland/Urban Interface:

Most members have received the basic wildland S100 training sessions; however, there is no indication that these skills been maintained.

The Department recognizes that maintenance of specialty skills is a significant challenge, and that many of these skills may not been adequately maintained, or, at least formally assessed to be able to demonstrate that members' qualifications have been maintained to the required level. Although the members have achieved the necessary qualifications in several specialty rescue areas, such as vehicle rescue or confined space rescue, their skills and qualifications require regular refreshing. Part of the problem is the interrelated issues of time, cost and training space/facilities. In addition, continued support from the Department, in the form of curriculum and associated evaluation materials, is required to enable the Company Officers to provide properly evaluated and documented skills maintenance training in an on-duty format.

In relation to maintenance training for specialty skills, there appears to be enough specialty team instructors to maintain these programs, and more on-duty time is now being dedicated to achieving the required maintenance training. Part of this issue, as noted above, is that some of this training requires that members be moved from a primary to secondary response role (i.e., taken out of service), leading to a need to backfill positions, and increasing overtime costs (as well as impacting members' off-duty days) to meet these training requirements.

As noted above, training for the various technical rescue responses and more specifically the provision of required on-going maintenance training for these skills, is proving difficult for the Department, both in terms of the desired level of qualification, an available training site with appropriate facilities, and resources and budget. However, it is imperative that, if the Department is intending to provide a specific service at a specific level, a corresponding training budget and related resources be approved to ensure that the required initial and maintenance training can be provided.

Given the importance of ensuring that specialty team training is properly maintained, we would suggest the Training division budget be reviewed to determine if sufficient funds have been allocated to address the added costs of overtime for additional members to back-fill units, or to provide off-duty training, when these specific training exercises are required.

If there is insufficient funding to support the required initial and on-going maintenance training for various specialty services, it may not be possible to maintain such services at the existing proficiency levels. It may be that the cost of maintaining these services at higher levels of

qualification are considered too great: Such a determination, however, needs to be based on an assessment of the risks faced within the City, the City's mandate for service established for the Department, the Department's operational capabilities, and a comprehensive cost-benefit analysis.

We would recommend that the Department undertake an internal review of all specialty services currently provided to determine:

- whether the service needs to be provided by the Department given its operational environment, and if so, to what level;

- the required training necessary to provide that service at the determined level; and

- the actual funding needed to provide such specialty service including equipment, initial training, and on-going maintenance training and periodic requalification of members and officers.

Once responses to these questions have been determined, the Department should seek appropriate approval and funding from Council to better manage all required training functions and processes. Where it is not possible to ensure a proper training and qualification regime for any specialty service, that service should be discontinued, as it poses a significant risk to the responders and increases the risk of liability for the City should an incident response go badly.

The other significant issue for consideration, is the lack of a suitable local training site along with the required facilities and props to be able to provide and maintain the training for these various services.

13.12.3 Company Officer Maintenance Training

Maintenance training for the Company Officers (Captains and Lieutenants) has been conducted somewhat in the past, with an attempt to hold quarterly officer meetings to address day-to-day administrative and supervisory issues, along with occasional EIM scenario-based exercises.

The importance of EIM training and/or refresher seminars cannot be overstated. As such, one area where further attention should be placed is on the regular maintenance training of the EIM skills and knowledge to ensure the Company Officers are properly prepared for the potential range of emergency incidents that they may face.

The Department should review the EIM skills of each of its officers and, if necessary, implement regular "refresher" or maintenance training sessions as required.

Given there is currently no formal program or process for the maintenance and review of the various Company Officers' role and skills, this maintenance training requirement, along with that of others, are now being added to the monthly training schedule, which identifies the areas that are to be reviewed during that time frame.

13.13   Training Records

The critical nature of proper records keeping was made evident in the accident investigation report conducted by WorkSafe BC into the 2004 line of duty death in Clearwater. In that case, the department involved lacked the records needed to demonstrate that its members were properly trained, and the training properly maintained, for roles assigned to them.

Both the *Workers Compensation Act* and the Provincial Training Standards require that appropriate training records be maintained for firefighters and fire officers. The 2015 Edition of the Provincial Training Standards make clear that the training records need to be maintained on an individual basis, and that the AHJ is ultimately responsible for ensuring proper records are kept.[78] That requirement is fully consistent with the AHJ's obligations as the employer under the *Workers Compensation Act* and related OH&S regulations.

When setting up a training records system, whether a commercial database like FDM or Vector Solutions (formerly Target Solutions), or a hard copy filing system, it is important to understand the purpose of a training record. While it is important to record what training a member has received, it is equally important to be able to determine what training an individual has not had or has not had for a long time.

The importance of maintenance training, or reviewing what has been learned in the past, cannot be overstated. In addition, as training programs are revised and updated, it is important to ensure the Department is able to track who has, and who has not, had the updated program. As noted earlier, the subject matter of the training needs to be clearly described in the records. If the training relates to a particular JPR under the Provincial Training Standards, or an NFPA standard, that JPR should be identified along with the specific evaluation instrument, such as a skills checklist, that was utilized.

If the records are incomplete for any members, the issue can be addressed through a formal performance appraisal conducted by the Training Division, Company Officers, and/or shift instructors, with the results being duly recorded. Such assessments will identify any training gaps in a member's skills and competencies between when they are initially hired to when they are trained or confirmed as an officer, and direct the maintenance training required to ensure these members are able to demonstrate the appropriate competencies in a given time period.

The requalification frequency for all programs should be identified so as to provide a guide for the Company Officers and shift instructors who are responsible for maintaining these skills and competencies. The present goal for any changes is to ensure consistency and objectivity for all maintenance training and subsequent record keeping for all members.

The Department currently maintains its training records in its FDM records management system, and has done so since 2009. Prior to 2009 all training records were tracked either through hard copy files or using in-house designed spreadsheets. The CTO indicates that the Department's training records prior to 2009 were not well maintained and as such they would be

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[78] 2015 Edition, Section 6, "Instruction, Evaluation and Records Keeping" at p. 6.

hard pressed to produce accurate individual records on some members' past training. The current training records are electronically tracked by individual firefighter, on a per fire hall, per shift basis; as such the retrieval of training data is considerably easier under the new system. Day to day training sessions are recorded by the hall Captains in the FDM RMS, these are then reviewed by the Operational Assistant Chief and by the Training Division.

The Training Division does not provide training for the fire prevention officers or dispatchers currently, and as such does not track the dispatchers' or fire prevention office training in the FDM system.

Currently there is not a record of what every person should have, as opposed to what they actually have. There is a regular training schedule, mostly skills maintenance, but this could be expanded to identify on a year-by-year basis the maintenance training needs for each individual.

Gradually over the past several years, more of this training documentation and maintenance requirements are being added into the system; however, not all the assessment/evaluation processes used. The current system does not identify how they were assessed for general firefighter skills. Most of the specialty disciplines have the evaluation processes built into the maintenance training, but these not formally identified in the records.

The RMS does have an evaluation "tab" to enable the recording of maintenance training assessments/evaluations; however, this is currently not being utilized.

The CTO and Training Captain are slowly creating additional training and performance evaluation documentation, such that these can also be entered into the records management system to improve its ability to report out on the statistics for individual training accomplishments and qualifications.

The improvement of the current records management system is a work in progress. When the planned updates are completed, it will identify all drill and maintenance training, and associated assessment processes, for all individuals who attended. In its present state, however, it is somewhat difficult to identify the specifics of a particular training event, exactly what skills were performed, and how, or if, they were evaluated, as a complete training record of an individual member.

13.14   Recommendations

#13-1: Consideration should be given to improving the training facilities. (currently fire hall setting) This should include a dedicated Department training site (possibly located in the industrial area) to simulate scenario-based common types of incidents and allow for live-fire exercises. The site should also include training rooms, required training facilities/equipment and outside props.

#13-2: The Department should develop a plan to achieve compliance with the September 2022 Provincial Training Standards by Q2 2024.

Appendix 1:   Defined Terms and Acronyms

Term/Acronym	Definition
2015 Edition [Provincial Training Standards]	*British Columbia Fire Service Minimum Training Standards: Structure Firefighters – Competency and Training Playbook* (September 2014; second edition – May 2015).
2022 Edition [Provincial Training Standards]	*British Columbia Structure Firefighter Minimum Training Standards* (28 September 2022).
2013 FUS Report	Fire Underwriters Survey, *City of Prince George: Fire Protection Services Study – Final* (2013)
2016 SOC Report	Dave Mitchell & Associates Ltd, *Prince George Fire Rescue Standards of Cover*, June 2016
AHJ	Authority Having Jurisdiction
BCEHS	British Columbia Emergency Health Services
BCEMS	British Columbia Emergency Management System
Bylaw No. 7920	*Emergency Program Bylaw No. 7920, 2006*
Bylaw No. 8272	*City of Prince George Fire Protection and Emergency Response Bylaw No. 8272, 2013*
CAD	Computer Aided Dispatch
CFPO	Chief Fire Prevention Officer
City	City of Prince George
Consultants	Dave Mitchell & Associates Ltd.
CRA	Community Risk Assessment
CRM	Clinical Response Model
CTO	Chief Training Officer
Department	Prince George Fire Rescue Service
DMA	Dave Mitchell & Associates Ltd.
DPG	Dwelling Protection Grade
EIM	Emergency Incident Management
EMBC	Emergency Management BC
EMR	Emergency Medical Responder
EMS	Emergency Medical Services

Term/Acronym	Definition
EOC	Emergency Operations Centre
EPA	Emergency Program Act
EPC	Emergency Program Coordinator
ESS	Emergency Social Services
EVD/EVO	Emergency Vehicle Driver/Operators
FMR	First Medical Responder
FF-I and FF-II	Firefighter I, Firefighter II
FOCC	Fire Operations Communications Centre
FO-I and FO-II	Fire Officer I, Fire Officer II
FPB	Fire Prevention Branch
FSI	Fire Service Instructor
FTE	Full-Time Equivalent
Hazmat	Hazardous Materials
HRVA	Hazard, Risk and Vulnerability Assessment
ISO	Incident Safety Officer
JIBC	Justice Institute of BC
JPR	Job Performance Requirement
LAFC	Local Assistant to the Fire Commissioner
MEP	Manager, Emergency Programs
NFPA	National Fire Protection Association
OCP	Official Community Plan
OFC	Office of the Fire Commissioner
OG	Operational Guideline
OH&S	Occupational Health and Safety
OH&S Regulations	*Occupational Health and Safety Regulation*, B.C. Reg. 296/97
PFPC	Public Fire Protection Classification
PGFRS	Prince George Fire & Rescue Service
PGIMAC	Prince George Industrial Mutual Aid Committee
Policy Committee	Emergency Policy Committee

Term/Acronym	Definition
PPE	Personal Protective Equipment
Protection Report	Registered Professional Protection of Adjacent Buildings Report
RAP	Resource Allocation Protocol
RIT	Rapid Intervention Team
Safety Plan	Construction Fire Safety Plan
SCBA	Self-Contained Breathing Apparatus
WCA	*Workers Compensation Act* (B.C.)
VFRS	Vancouver Fire/Rescue

Appendix 2:   NFPA Deployment Model

NFPA 1710:   *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*

This edition of NFPA 1710 was approved as an American National Standard on May 18, 2019.

The following is excerpted from NFPA 1710 with the running totals added for reference.

5.2.4.1 **Single-Family Dwelling Initial Full Alarm Assignment Capability**.

5.2.4.1.1*The initial full alarm assignment to a structure fire in a typical 2,000 ft^2 (186 m^2), two-story single-family dwelling without basement and with no exposures shall provide for the following:

(1)   Establishment of incident command outside of the hazard area for the overall coordination and direction of the initial full alarm assignment with a minimum of one member dedicated to this task (1)

Running total: 1

(2)   Establishment of an uninterrupted water supply of a minimum of 400 gpm (1,520 L/min) for 30 minutes with supply line(s) maintained by an operator (1)

Running total: 2

(3)   Establishment of an effective water flow application rate of 300 gpm (1,140 L/min) from two handlines, each of which has a minimum flow rate of 100 gpm (380 L/min) with each handline operated by a minimum of two members to effectively and safely maintain the line (4)

Running total: 6

(4)   Provision of one support member for each attack and backup line deployed to provide hydrant hookup and to assist in laying of hose lines, utility control, and forcible entry (2)

Running total: 8

(5)   Provision of at least one victim search and rescue team with each such team consisting of a minimum of two members (2)

Running total: 10

(6)   Provision of at least one team, consisting of a minimum of two members, to raise ground ladders and perform ventilation (2)

Running total: 12

(7)   If an aerial device is used in operations, one member to function as an aerial operator to maintain primary control of the aerial device at all times (1)

Running total: 13

(8)   At a minimum, an initial rapid intervention crew (IRIC) assembled from the initial attack crew and, as the initial alarm response arrives, a full and sustained rapid intervention crew (RIC) established (4)

Running total: 17

(9)   Total effective response force with a minimum of 16 (17 if an aerial device is used)

5.2.4.2 **Open-Air Strip Shopping Center Initial Full Alarm Assignment Capability**.

5.2.4.2.1*The initial full alarm assignment to a structure fire in a typical open-air strip shopping center ranging from 13,000 ft^2 to 196,000 ft^2 (1,203 m^2 to 18,209 m^2) in size shall provide for the following:

(1)   Establishment of incident command outside the hazard area for the overall coordination, direction, and safety of the initial full alarm assignment with a minimum of two members dedicated to managing this task (2)

Running Total: 2

(2)   Establishment of two uninterrupted water supplies at a minimum of 500 gpm (1,892 L/min), with each supply line maintained by an operator (2)

Running Total: 4

(3)   Establishment of an effective water flow application rate of 500 gpm (,1892 L/min) from three handlines, each of which has a minimum flow rate of 150 gpm (568 L/ min), with each handline operated by a minimum of two members to effectively and safely maintain each hand- line (6)

Running Total: 10

(4)   Provision of one support member for each attack, backup, and exposure line deployed to provide hydrant hookup and to assist in laying of hose lines, utility control, and forcible entry (3)

Running Total: 13

(5)   Provision of at least two victim search-and-rescue teams, each team consisting of a minimum of two members (4)

Running Total: 17

(6) Provision of at least two teams, each team consisting of a minimum of two members, to raise ground ladders and perform ventilation (4)

Running Total: 21

(7) If an aerial device(s) is used in operations, one member to function as an aerial operator and maintain primary control of the aerial device at all times (1)

Running Total: 22

(8) At a minimum, an initial rapid intervention crew (IRIC) assembled from the initial attack crew and, as the initial alarm response arrives, a full and sustained rapid intervention crew (RIC) established (4)

Running Total: 26

(9) The establishment of an initial medical care component consisting of at least two members capable of providing immediate on-scene emergency medical support and transport that provides rapid access to civilians or members potentially needing medical treatment (2)

Running Total: 28

(10) Total effective response force a minimum of 27 (28 if an aerial device is used)

5.2.4.3 **Apartment Initial Full Alarm Assignment Capability.**

5.2.4.3.1 The initial full alarm assignment to a structure fire in a typical 1,200 ft^2 (111 m^2) apartment within a three-story, garden-style apartment building shall provide for the following:

(1) Establishment of incident command outside the hazard area for the overall coordination, direction, and safety of the initial full alarm assignment with a minimum of two members dedicated to managing this task (2)

Running Total: 2

(2) Establishment of two uninterrupted water supplies at a minimum of 400 gpm (1,520 L/min), with each supply line maintained by an operator (2)

Running Total: 4

(3) Establishment of an effective water flow application rate of 300 gpm (1,140 L/min) from three handlines, each of which has a minimum flow rate of 100 gpm (380 L/ min), with each handline operated by a minimum of two members to effectively and safely maintain each hand- line (6)

Running Total: 10

(4)   Provision of one support member for each attack, backup, and exposure line deployed to provide hydrant hookup and to assist in laying of hose lines, utility control, and forcible entry (3)

Running Total: 13

(5)   Provision of at least two victim search-and-rescue teams, each team consisting of a minimum of two members (4)

Running Total: 17

(6)   Provision of at least two teams, each team consisting of a minimum of two members, to raise ground ladders and perform ventilation (4)

Running Total: 21

(7)   If an aerial device is used in operations, one member to function as an aerial operator and maintain primary control of the aerial device at all times (1)

Running Total: 22

(8)   At a minimum, an initial rapid intervention crew (IRIC) assembled from the initial attack crew and, as the initial alarm response arrives, a full and sustained rapid intervention crew (RIC) established (4).

Running Total: 26

(9)   The establishment of an initial medical care component consisting of at least two members capable of providing immediate on-scene emergency medical support, and transport that provides rapid access to civilians or members potentially needing medical treatment (2)

Running Total: 28

(10)   Total effective response force a minimum of 27 (28 if an aerial device is used)

5.2.4.4 *High-Rise Initial Full Alarm Assignment Capability*.

5.2.4.4.1 Initial full alarm assignment to a fire in a building with the highest floor greater than 75 ft (23 m) above the lowest level of fire department vehicle access shall provide for the following:

(1)   Establishment of a stationary incident command post outside the hazard area for overall coordination and direction of the initial full alarm assignment with a minimum of one officer with an aide dedicated to these task- sand all operations are to be conducted in compliance with the incident command system. (2)

Running Total: 2

(2)   Establishment of an uninterrupted water supply to the building standpipe/sprinkler connection sufficient to support fire attack operations maintained by an operator and if the building is equipped with a fire pump, one additional member with a radio to be sent to the fire pump location to monitor and maintain operation. (1/1)

Running Total: 3

(3)   Establishment of an effective water flow application rate on the fire floor at a minimum of 500 gpm (1,892 L/m) from two handlines, each operated by a minimum of two members to safely and effectively handle the line. (4)

Running Total: 7

(4)   Establishment of an effective water flow application rate on the floor above the fire floor at a minimum of 250 gpm (946 L/m) from at least one handline, with each deployed handline operated by a minimum of two members to safely and effectively handle the line. (2)

Running Total: 9

(5)   At a minimum, an initial rapid intervention crew (IRIC) assembled from the initial attack crew and, as the initial alarm response arrives, a full and sustained rapid intervention crew (RIC) established. (4)

Running Total: 13

(6)   Provision of two or more search-and-rescue teams consisting of a minimum of two members each. (4)

Running Total: 17

(7)   Provision of one officer, with an aide, dedicated to establishing an oversight at or near the entry point on the fire floor(s). (2)

Running Total: 19

(8)   Provision of one officer, with an aide, dedicated to establishing an oversight at or near the point of entry on the floor above the fire. (2)

Running Total: 21

(9)   Provision of two or more evacuation management teams to assist and direct building occupants with evacuation or sheltering actions, with each team consisting of a minimum of two members. (4)

Running Total: 25

(10)   Provision of one or more members to account for and manage elevator operations. (1)

Running Total: 26

(11)   Provision of a minimum of one trained incident safety officer. (1)

Running Total: 27

(12)   Provision of a minimum of one officer two floors below the fire floor to manage the interior staging area. (1)

Running Total: 28

(13)   Provision of a minimum of two members to manage member rehabilitation and at least one of the members to be trained to the ALS level. (2)

Running Total: 30

(14)   Provision of an officer and a minimum of three members to conduct vertical ventilation operations. (4)

Running Total: 34

(15)   Provision of a minimum of one officer to manage the building lobby operations. (1)

Running Total: 35

(16)   Provision of a minimum of two members to transport equipment to a location below the fire floor. (2)

Running Total: 37

(17)   Provision of one officer to manage external base operations. (1)

Running Total: 38

(18)   The establishment of an initial medical care component consisting of a minimum of two crews with a minimum of two members each with one member trained to the ALS level capable of providing immediate on-scene emergency medical support, and transport that provides rapid access to civilians or members potentially needing medical treatment. (4)

Running Total: 42

(19)   Total effective response force a minimum of 42 (43 if the building is equipped with a fire pump).

Appendix 3:   Other Fire Training Sites

The four training sites in Metro Vancouver were identified for a detailed onsite visit and included Vancouver, Delta, Port Coquitlam and the Justice Institute of British Columbia (the "JIBC") at Maple Ridge. The site visits were hosted by the three fire departments as well as the JIBC in the first week of June 2022. Fire Chief Cliff Warner and Deputy Chief of Operations Bryan Burleigh were accompanied by the Consultants, Dave Mitchell, Wayne Humphry and Jim Cook.

Vancouver Fire/Chess Street

The training site for Vancouver Fire/Rescue ("VFRS") is at 1300 Chess Street with the closest fire hall approximately four blocks away. The training site includes classrooms as well as an engineered burn building and other props as well as space to train auto extrication. The site is approximately 11,600 square metres in size and is located in an area that is zoned as industrial and is adjacent to rail lines.[79]
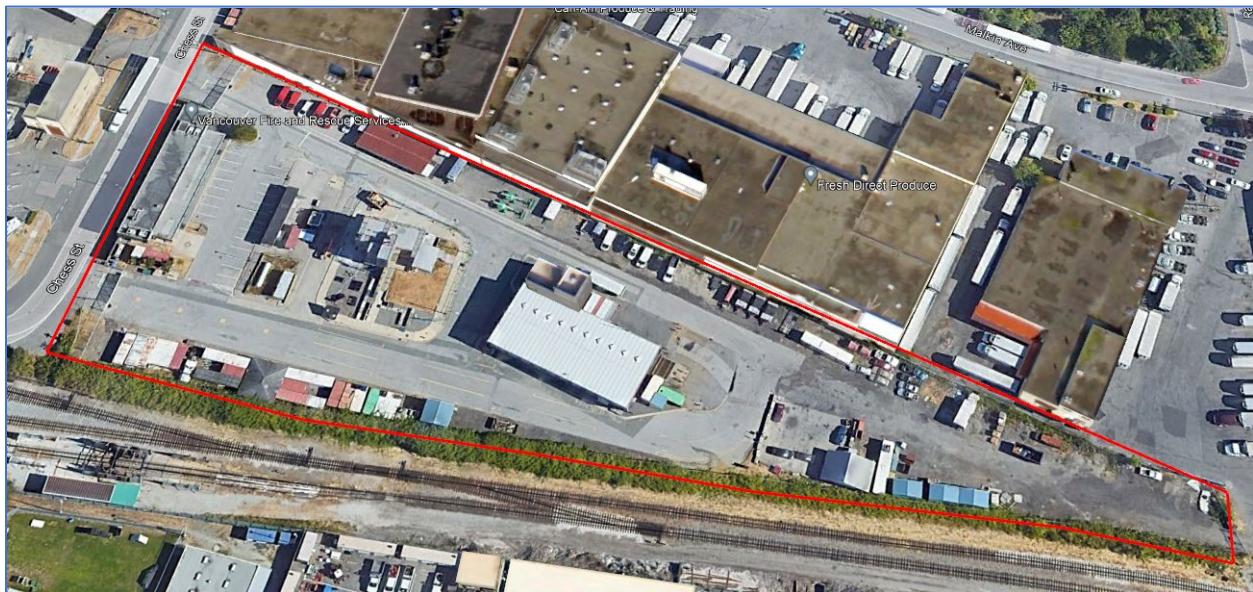
Figure 32: Vancouver Fire Training Site at Chess Street, approximately 11,600 square metres.

VFRS staff commented that the site worked well but the total scope of the training requirements may not have been fully described at the time it was built. Their comments included how the site lacks appropriate storage space which is compensated for by using a large number of containers.

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[79] The size of each training site was estimated using Google Earth Pro.

Delta Hall 4

The training site for the Delta Fire Department is located on Churchill Street on the east side of the Delta Airport. The site is zoned as industrial and contains an active fire hall with the primary response with a fully staffed engine.

The site is modern and contains a burn facility and other props as well as an area for training auto extrication. The fire hall is built to post-disaster standards and also contains the training department. This was noted by their staff as a distinct advantage. The premises also contain the City of Delta's primary Emergency Operations Centre and the municipal servers.
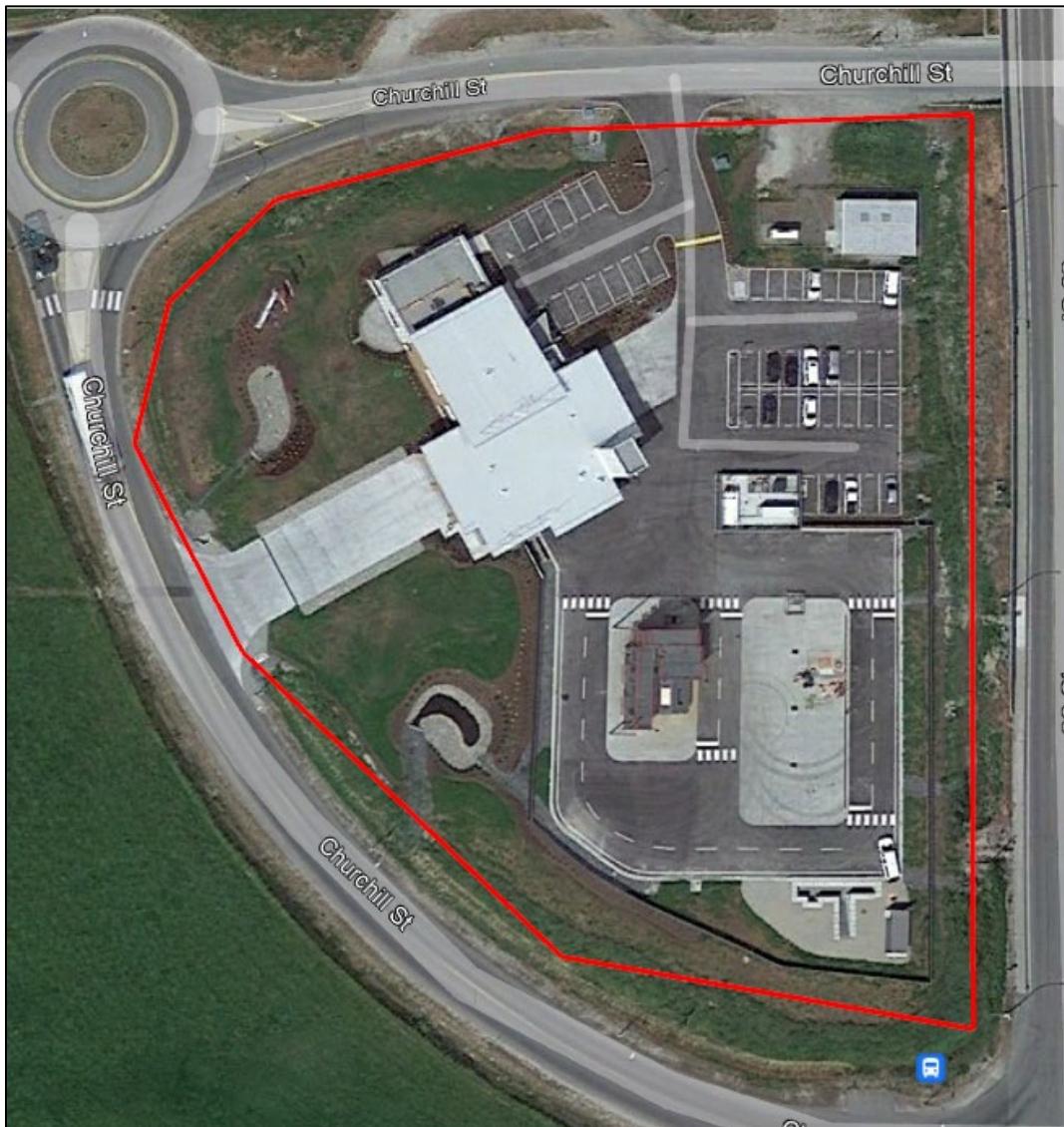
Figure 33: Delta Fire Training Site at Hall 4, approximately 13,000 square metres.

Port Coquitlam Hall 1

The training site for Port Coquitlam Fire & Emergency Services is located at Hall 1 at 1725 Broadway. Like Delta the training facility is part of an active staffed hall which also contains the staff of the training department. As with the previous two, the training facility includes a live burn building, various training props including an engineered tower and a space for auto extrication.
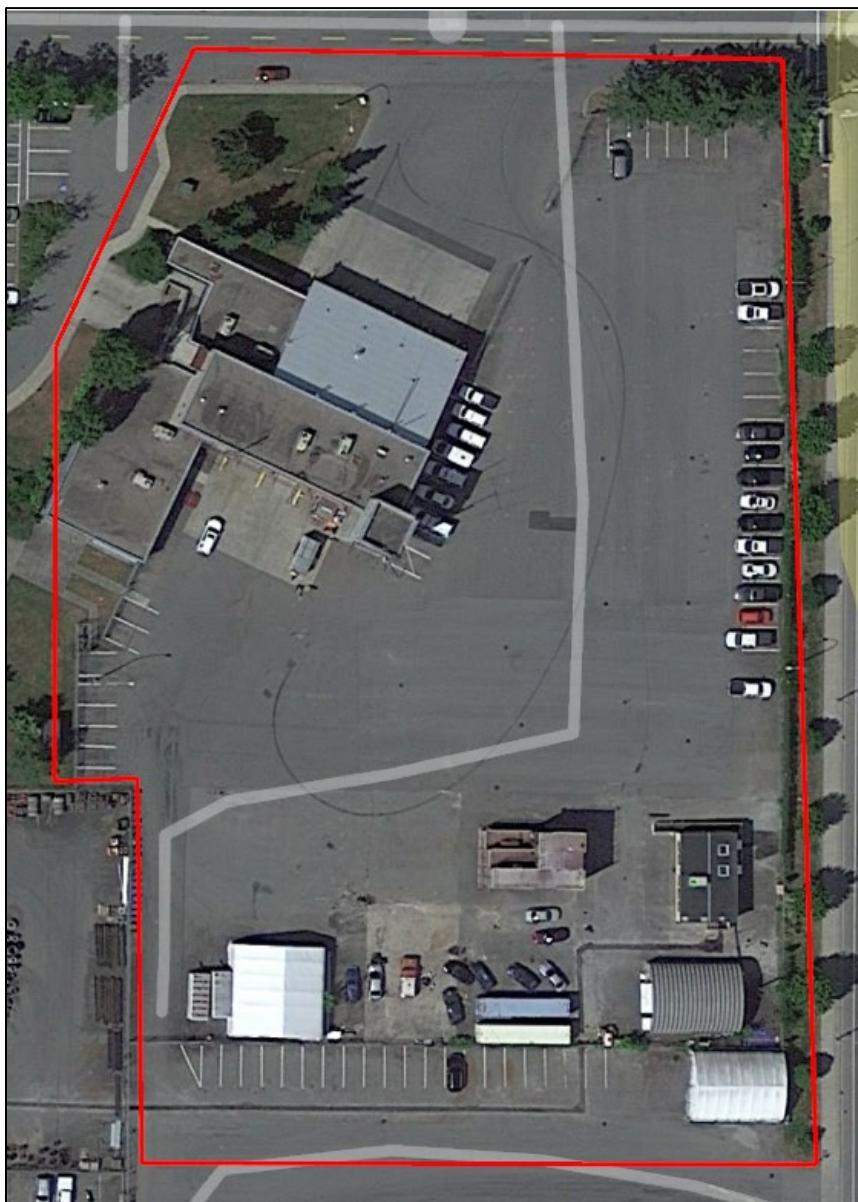
Figure 34: Port Coquitlam Fire Training Site at Hall 1, approximately 13,500 square metres.

JIBC Fire Academy - Maple Ridge

The JIBC Fire Academy training site is located in Maple Ridge at 13500 256 Street. This is a large site, shown in Figure 35, that contains an engineered live fire training structure as well as a number of training props and space for auto extrication.

Figure 35: JIBC Fire Academy Fire Training Site, approximately 43,000 square metres.

At the south end of the property there is a space dedicated to training for rail incidents, shown in Figure 36 below. This area was examined in detail and discussed as an option for the Prince George training site. Options 1 and 2 identified above are immediately adjacent to the CN

railroad and given the degree to which Prince George is bifurcated by heavily used rail lines one suggestion would be to include space for rail incident training by the Department.

Figure 36: JIBC Fire Academy Fire Training Site – Rail Incident Props in Detail.

The JIBC site was discussed with their management who noted this training facility is well used but being some distance from rail service it is difficult to have the most current rail cars available for training. This is important as rail cars are regularly upgraded with different valve assemblies and other features. A clear option for the Department would be locate their training site adjacent to a rail spur line so that tank car training would be done with the most current designs.

The possibility of developing a partnership with the JIBC were generally discussed and should be explored as a modern training site in Prince George could be used to train a larger number of departments. Such a partnership could include additional capital and operational funding. If this occurred the site would need appropriate classroom and office space to support all potential users.

A second partnership option could include First Nations and a preliminary discussion with FNESS was held in June. Such a partnership could provide a modern site tailored also to training firefighters from First Nations throughout the province. The immediate presence of the Prince George airport and abundant accommodations in the City could make this an important public safety training site for Central and Northern BC.

Appendix 4:   NFPA Standards

The following is a list of the referenced NFPA Standards, the date of the current edition, and a brief description of the standard. [80]

NFPA 472:   *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents*, 2018

This standard shall identify the minimum levels of competence required by responders to emergencies involving hazardous materials/weapons of mass destruction (WMD).

NFPA 1001:   *Standard for Fire Fighter Professional Qualifications*, 2019

This standard identifies the minimum job performance requirements (JPRs) for career and volunteer fire fighters whose duties are primarily structural in nature.

NFPA 1002:   *Standard for Fire Apparatus Driver/Operator Professional Qualifications*, 2017

This standard identifies the minimum job performance requirements (JPRs) for career and volunteer fire fighters and fire brigade personnel who drive and operate fire apparatus.

NFPA 1006:   *Standard for Technical Rescue Personnel Professional Qualifications*, 2021

This standard identifies the minimum job performance requirements (JPRs) for fire service and other emergency response personnel who perform technical rescue operations.

NFPA 1021:   *Standard for Fire Officer Professional Qualifications*, 2020

This standard identifies the minimum job performance requirements (JPRs) for fire officer.

NFPA 1031:   *Standard for Professional Qualifications for Fire Inspector and Plan Examiner*, 2014

This standard identifies the minimum job performance requirements (JPRs) for fire inspectors and plan examiners.

NFPA 1033:   *Standard for Professional Qualifications for Fire Investigator*, 2014

This standard facilitates safe, accurate investigations by specifying the job performance requirements (JPRs) necessary to perform as a fire investigator in both the private and public sectors.

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[80] Source: https://www.nfpa.org/

NFPA 1035: *Standard on Fire and Life Safety Educator, Public Information Officer, Youth Firesetter Intervention Specialist and Youth Firesetter Program Manager Professional Qualifications*, 2015

> This standard identifies the minimum job performance requirements (JPRs) for public fire and life safety educators, public information officers, youth firesetter intervention specialists, and youth firesetter program managers.

NFPA 1041: *Standard for Fire and Emergency Services Instructor Professional Qualifications*, 2019

> This standard identifies the minimum job performance requirements (JPRs) for fire service instructors.

NFPA 1072: *Standard for Hazardous Materials/Weapons of Mass Destruction Emergency Response Personnel Professional Qualifications*, 2017

> This Standard identifies the minimum job performance requirements (JPRs) for Hazardous Materials/Weapons of Mass Destruction emergency response personnel.

NFPA 1407: *Standard for Training Fire Service Rapid Intervention Crews*, 2020

> This standard specifies the basic training procedures for fire service personnel to conduct fire fighter rapid intervention operations so as to promote fire fighter safety and survival.

NFPA 1500: *Standard on Fire Department Occupational Safety, Health, and Wellness Program*, 2021

> This standard specifies the minimum requirements for an occupational safety and health program for fire departments or organizations that provide rescue, fire suppression, emergency medical services, hazardous materials mitigation, special operations, and other emergency services.

NFPA 1521: *Standard for Fire Department Safety Officer Professional Qualifications*, 2020

> This standard identifies the minimum job performance requirements (JPRs) necessary to perform the duties as a fire department health and safety officer and a fire department incident safety officer.

NFPA 1710: *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Career Fire Departments*, 2020

> This standard specifies requirements for effective and efficient organization and deployment of fire suppression operations, emergency medical operations, and special operations to the public by career fire departments to protect citizens and the occupational safety and health of fire department employees.

NFPA 1901: *Standard for Automotive Fire Apparatus*, 2016

This standard defines the requirements for new automotive fire apparatus and trailers designed to be used under emergency conditions to transport personnel and equipment and to support the suppression of fires and mitigation of other hazardous situations.

Appendix 5:   Consultant Backgrounds

Dave Mitchell

Dave Mitchell retired as Division Chief, Communications in 1998 from Vancouver Fire & Rescue Services following a career spanning 32 years. During this time, he was responsible for managing the emergency call taking and dispatch for the Vancouver and Whistler Fire Departments. In 1998, Dave was hired by E-Comm, Emergency Communications BC as its first Director of Operations. In this role he was a member of the founding senior management team and was responsible for the transition of the Regional 9-1-1 Control Centre staff from the Vancouver Police Department to its current location at 3301 East Pender in June 1999.

He left E-Comm in June 2000 to work as a consultant, and since that time has managed the development of corporate, strategic and operational plans for a number of clients. As principal of DMA, Dave participates on all projects undertaken by the company either as the lead consultant or by providing his expertise at an advisory or support level.

Dave holds a Bachelor of Arts Degree (Geography) from Simon Fraser University in addition to a diploma from their Executive Management Development Program. He is past Chair of the Board of Directors of the Vancouver General Hospital and University of British Columbia Hospital Foundation, past Chair of the Justice Institute of British Columbia Foundation, and a member of the Fire Chiefs' Association of British Columbia, and the Canadian Association of Management Consultants.

Jim Cook

Jim Cook is an experienced professional with over 38 years of experience in the fire service. He has extensive knowledge and experience with budgets, labour relations, fire operations, strategic planning, executive leadership, project management, community engagement, and organizational change. Jim began his career in the New Westminster Fire Department. He was promoted to the position of Deputy Chief in 2001. In 2008, Jim was appointed to the position of Fire Chief in West Vancouver where he worked to improve the mutual and automatic aid agreements in the region including with Lions Bay. His work there also included transitioning the department to the E-Comm Wide Area Radio System. During his career, Jim has worked on several committees and boards including the BC Municipal Pension Plan, BC Investment Management Corporation, Vancouver Hospital Foundation, BC Fire & Life Safety Education Program, First Responder Program and the BC Fire Chiefs Association. He is also a past-President of the Greater Vancouver Fire Chiefs Association.

Wayne Humphry

Wayne has over 40 years' experience with the BC fire service. He retired in 2009 from Vancouver Fire/Rescue after a career spanning 31 years. During this time, Wayne served in fire suppression, rising to the rank of Battalion Chief. He also worked extensively with Vancouver Fire's training division as an instructor and Division Chief between 1996 and 2009.

Based on his work in both roles he has extensive experience in fire rescue emergency operations, specialty teams, logistical planning and budgeting, training and development, facilitation, and project creation and management. In addition to his work with Vancouver Fire he has been an instructor at the Justice Institute of BC, at UBC's Sauder School of Business as well as for Capilano University.

Wayne has developed and delivered in-house Firefighter and Fire Officer Development seminars, including ProBoard certified programs, for various career and volunteer/paid-on-call fire departments throughout BC, Alberta, Manitoba, and the Northwest Territories. His training expertise includes Firefighter I & II, Fire Officer Level 1, 2 and 3 programs – Emergency Incident Management (BCEMS/ICS, Command Post and EOC operations, fire behavior, strategies and tactics); Incident Safety Officer; Rapid Intervention Teams; Fire Service Instructor; and Live Fire Exercises Levels 1, 2 & 3. Wayne was also a Fire and Rescue Services Subject Matter Expert for the JI's Critical Incident Simulation Centre's program development for multi-agency, multi-jurisdictional incident management training.

Ian MacDonald

Ian MacDonald is a retired corporate securities lawyer who practiced international corporate law in Canada and the United Kingdom. Ian was a partner with a major Toronto firm in the 1990s, and moved to England in 1997, where he became the managing partner of a specialist litigation and intellectual property practice. He retired from active practice in 2004.

Ian has worked with Dave Mitchell & Associates since 2007 and has participated in almost all the major fire and emergency service projects since that time. He assists with the analysis of the legal and governance structures affecting fire and emergency services, ranging from establishment and operational bylaws to WorkSafe issues.

Peter Wunder

Peter Wunder is a B.C. registered Professional Engineer with over 35 years' experience in the design, development, implementation, commissioning, operation and maintenance of complex mechanical, electrical, and control systems. He has extensive experience in alternate energy solutions in the automotive and transportation industry including integration of hydrogen fuel cells and diesel to natural gas conversions. He has managed many challenging programs and has worked closely with regulatory bodies to ensure the successful certification and commercial introduction of products using these new technologies. Additionally, he is an experienced marine systems engineer and served on ships in the Royal Canadian Navy as Head of the Marine Systems Engineering Department, responsible for the safe operation and maintenance of all marine systems on board. In this capacity he was also Head of the shipboard Damage Control and Firefighting organization with experience in the operation and maintenance of fire suppression equipment and systems including Dry Chemical (Purple-K), Aqueous Film Forming Foam, CO2 Flood, High Velocity Nozzles and Low Velocity Fog Applicators, and Galley Fire Suppression Systems (Range Guard). He also has direct experience in training fighting personnel onboard ship in many emergency scenarios including helicopter crashes.

Prince George Fire/Rescue

Standards of Cover 2022 Refresh – Final Report

Fire Services in a Time of Change

Agenda

- Standards of Cover Refresh of 2016 Project Final Report

- Project Completion to Date

- Major Fire Service Change Drivers
  - Regulatory Issues
  - Impact of Fires and Flooding, Heat Dome, Opioid Crisis
  - Rising Call Volumes
  - Assess Risk
  - Pending Changes

- Recommendations for Consideration

Our Company: DMA

- Independent Fire Service Consultants from 2000

- Our Projects with Prince George
  - 2002 FOCC Review, 2016 Standards of Cover, 2017 PGIMAC Tabletop
  - + Executive Recruitment

- Similar Standards of Cover
  - Oak Bay, Port Moody, Fort St John, Saanich, Sooke, Dawson Creek, Delta, West Vancouver, New Westminster, North Vancouver City & District

- 2003 Firestorm Report, UBCM, Office of the Fire Commissioner, EMBC, E-Comm

2016 Standards of Cover Recommendations

- Final Report to Council was in 2016
- 24 Major Recommendations
- 18 Completed
- Four are Ongoing
  - Two regarding training
  - One regarding turnout times
  - One to address fire prevention inspection access
- Two Still to be Addressed
  - Additional Staffed Unit at Hall 1
  - Development of a Dedicated Training Site

Prince George – Current Issues

- Number of Incidents is Rising Significantly
- Fire Losses and Reportable Fires are Increasing
- Population is Increasing
- Mandatory Training Requirements will be Changing and more Complex
- Fire Safety Act will Change Fire Safety Inspections, Investigations
- Emergency Program Act being Rewritten
- Opioid Crisis, Homelessness
- Climate Change: Heat Dome, Forest Fires, Flooding

**Extreme Heat and Human Mortality:
A Review of Heat-Related Deaths in B.C.
in Summer 2021**

2021 Heat Dome

- June 25 to July 1
- Temperatures over 40 Celsius
- 619 heat related deaths
- 911 calls doubled during the peak of the heat dome
- In 17 instances, 911 callers were placed on hold for an extended period of time
- In 6 instances, callers were told that there was no ambulance available

Dave Mitchell & Associates Ltd.

OFC Annual Report

- Between 2019 and 2021, fire-related deaths in British Columbia rose from 27 to 56—a 107 percent increase.

- Over the last two reporting years, there has been a 119 PERCENT INCREASE IN FIRE-RELATED DEATHS

B.C. Fire Service Context

- OFC Mandatory Training Standards
- Fire Safety Act, replacing the Fire Services Act
- Emergency Program Act
  - Sendai Model, U.N.D.R.I.P.
- WorkSafe BC, including Part 31
- Fire Underwriters
- Firefighter Health and Safety
  - Occupational Cancer, PTSD, Heart Disease

Rising Call Volume

Year	Count
2014	5,481
2015	5,530
2016	5,805
2017	6,500
2018	5,873
2019	5,496
2020	4,475
2021	7,569
2022	9,208
Total	**55,937**
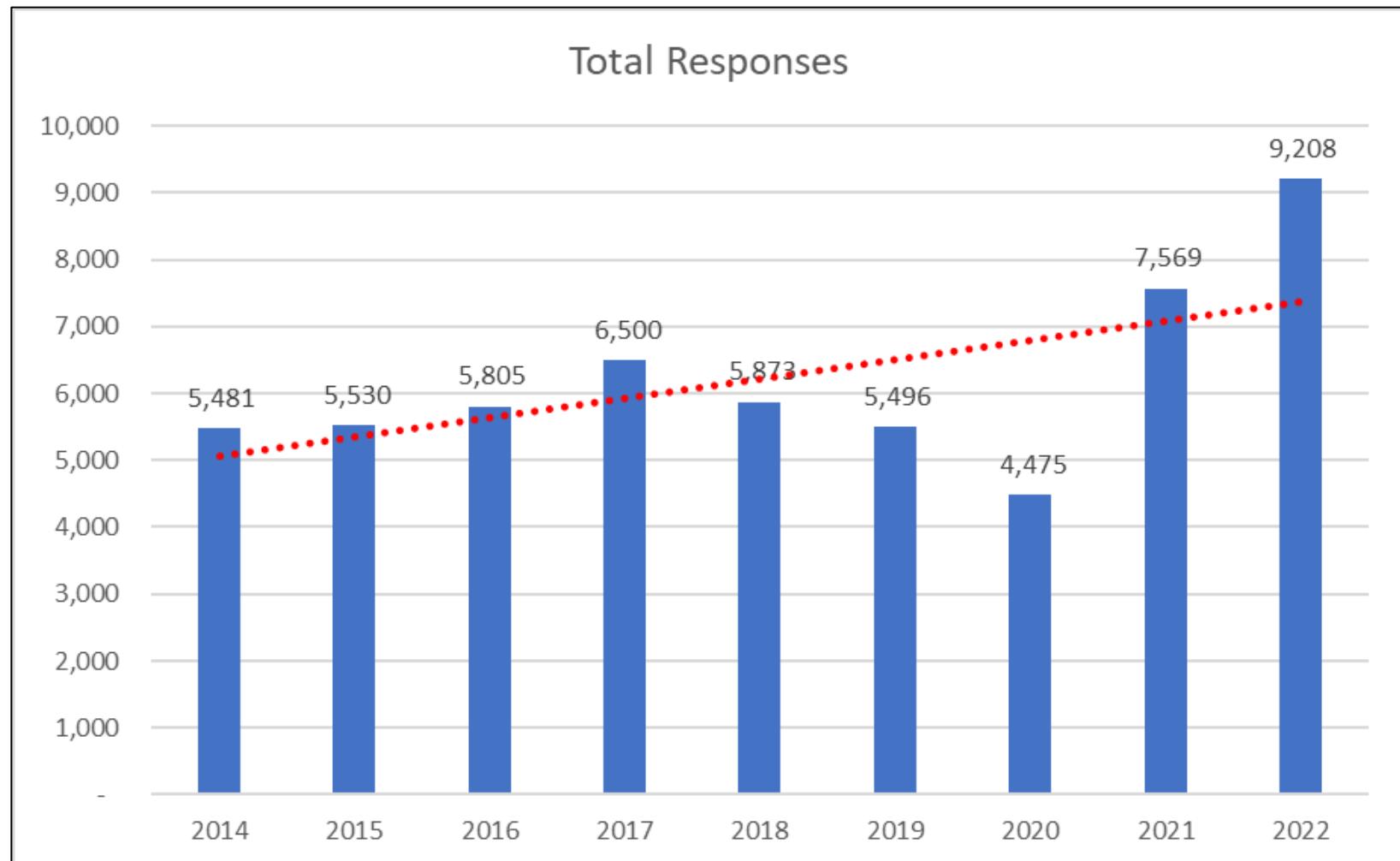
Emergency Medical Responses 2019 to 2022

FMR Responses
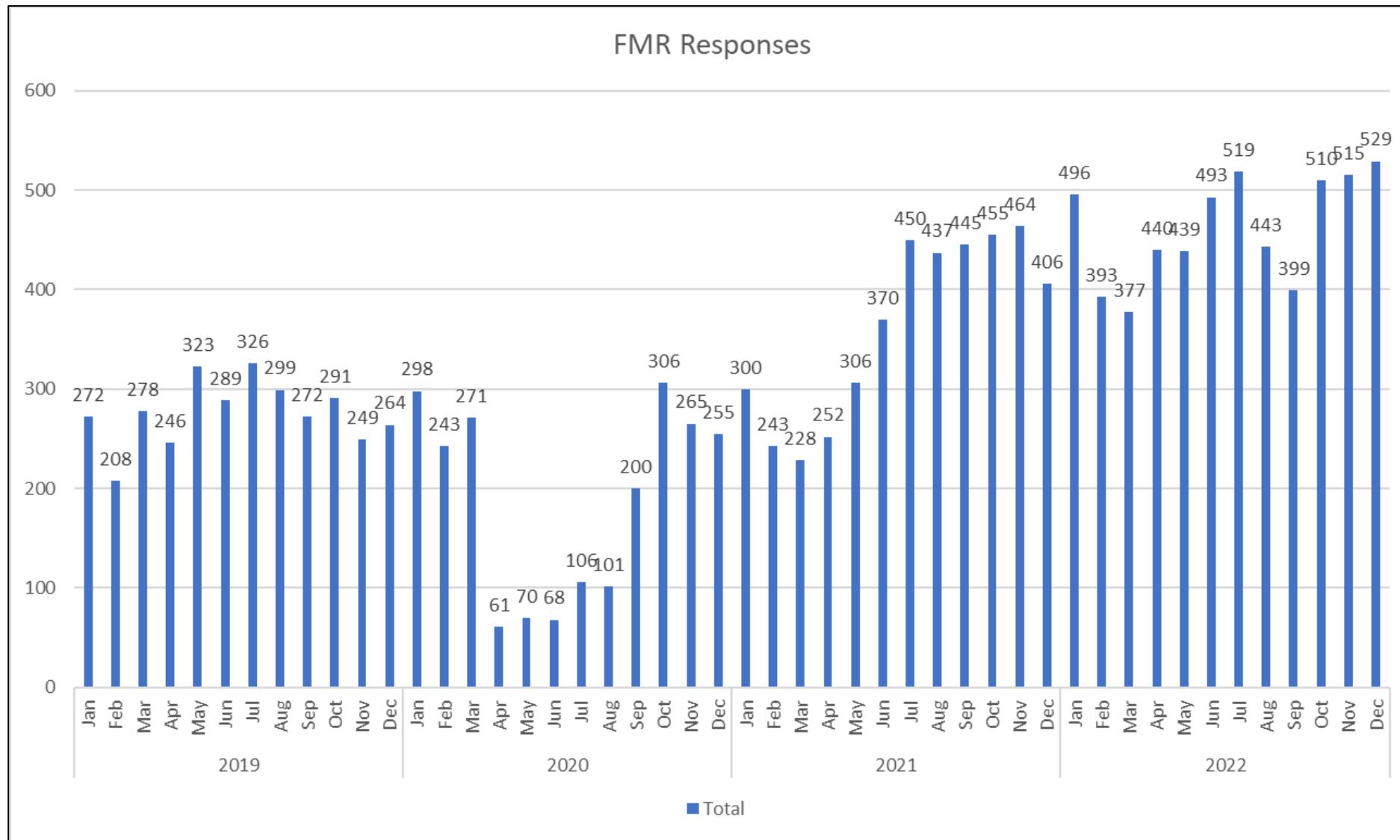
Response by Hour
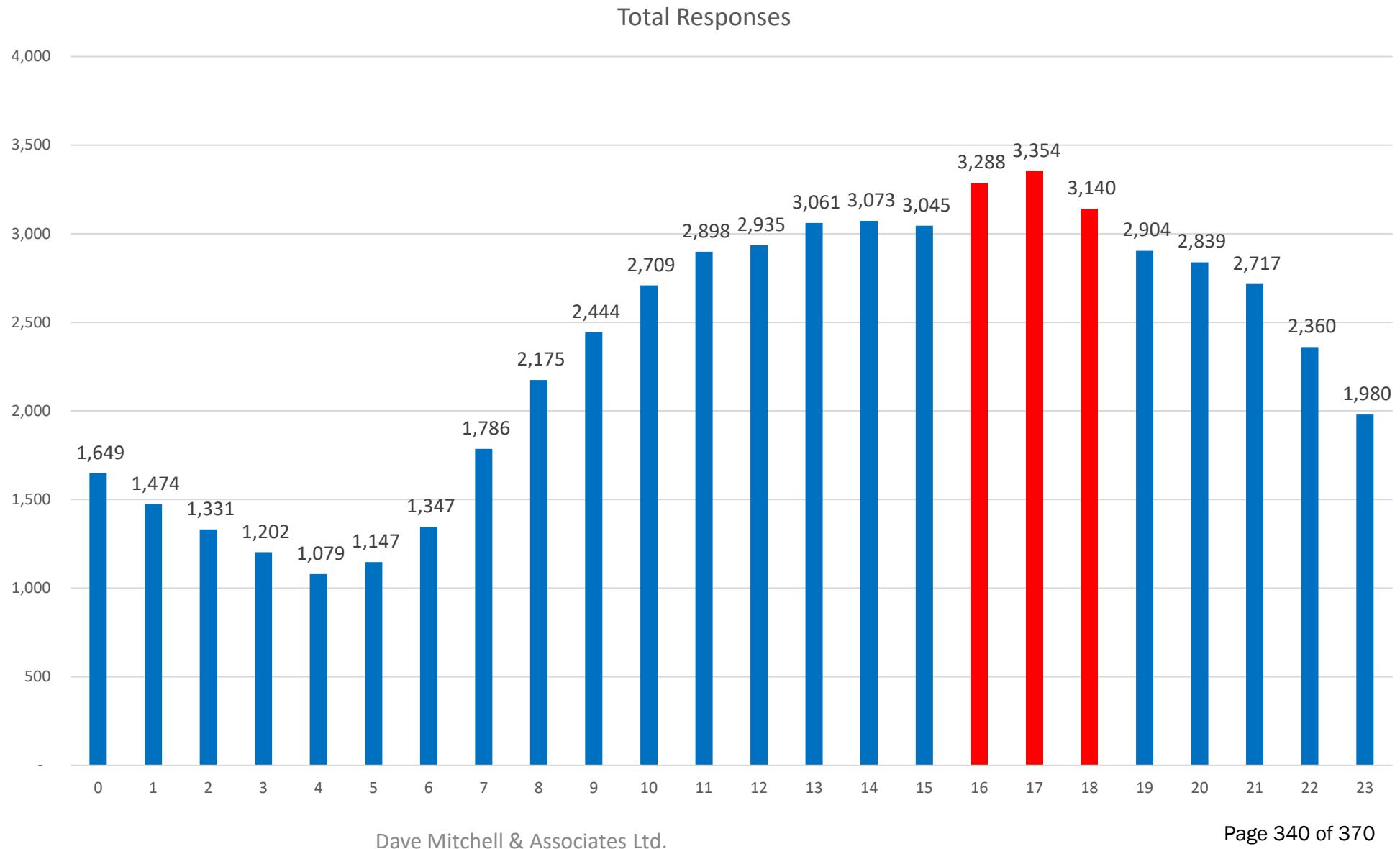
Total Responses

Surge Capacity: June 2020 vs. June 2021

Total Responses June 2020 (230) and June 2021 (636)
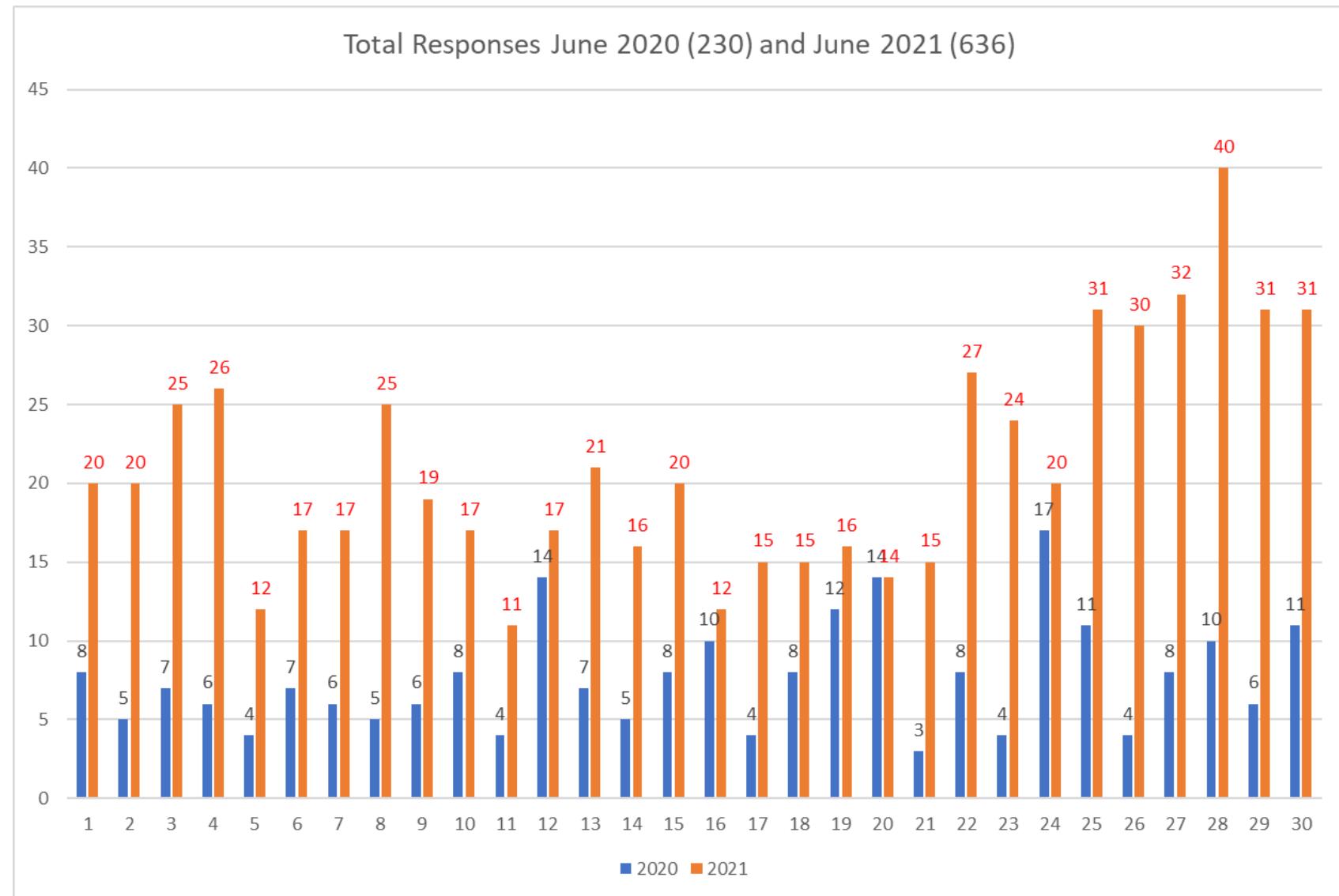
Responses by Year and by Month

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
2014	450	370	373	437	522	472	553	473	491	450	407	483	5,481
2015	460	392	448	471	535	425	511	437	429	503	419	500	5,530
2016	528	433	471	524	504	456	497	442	444	473	490	543	5,805
2017	500	493	486	508	595	541	634	655	499	503	527	559	6,500
2018	605	551	531	546	631	399	421	484	410	457	380	458	5,873
2019	420	376	475	437	547	467	545	467	439	485	425	413	5,496
2020	482	369	408	247	265	230	321	275	409	522	482	465	4,475
2021	522	449	413	500	557	636	745	719	762	786	771	709	7,569
2022	744	628	645	754	731	748	804	738	741	884	898	893	9,208
Total	4,711	4,061	4,250	4,424	4,887	4,374	5,032	4,689	4,624	5,063	4,799	5,023	55,937

Responses by Fire Hall Area

| Year	Hall 1	Hall 2	Hall 3	Hall 4	Total
2014	2,870	1,530	567	514	5,481
2015	2,800	1,575	602	553	5,530
2016	2,903	1,723	600	579	5,805
2017	3,556	1,711	675	558	6,500
2018	3,182	1,488	637	566	5,873
2019	2,974	1,375	630	517	5,496
2020	2,513	1,046	491	425	4,475
2021	4,536	1,694	733	606	7,569
2022	5,409	2,171	914	714	9,208
Total	**30,743**	**14,313**	**5,849**	**5,032**	**55,937**

# Structure Fires by Location
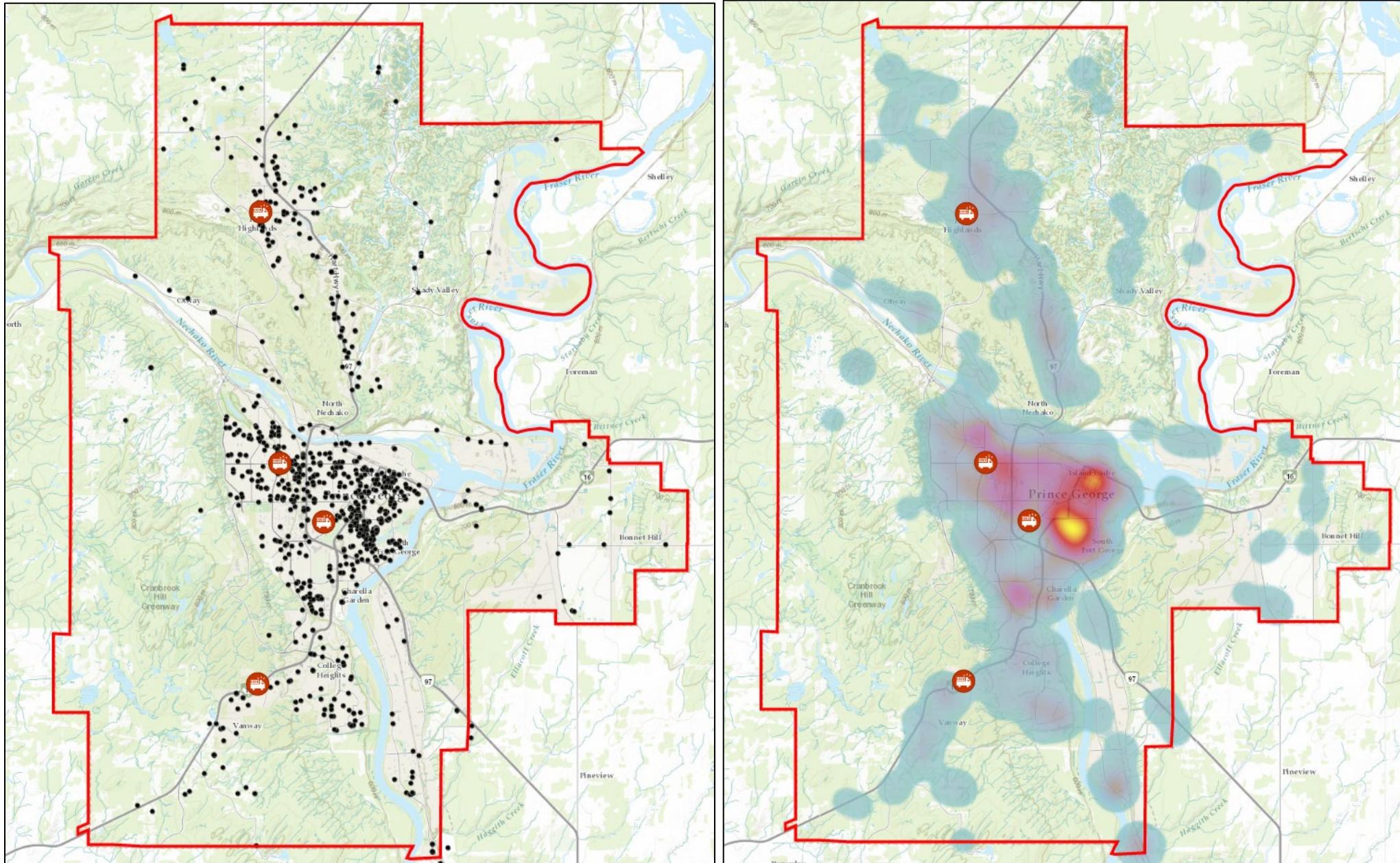
Hazmat Response by Location
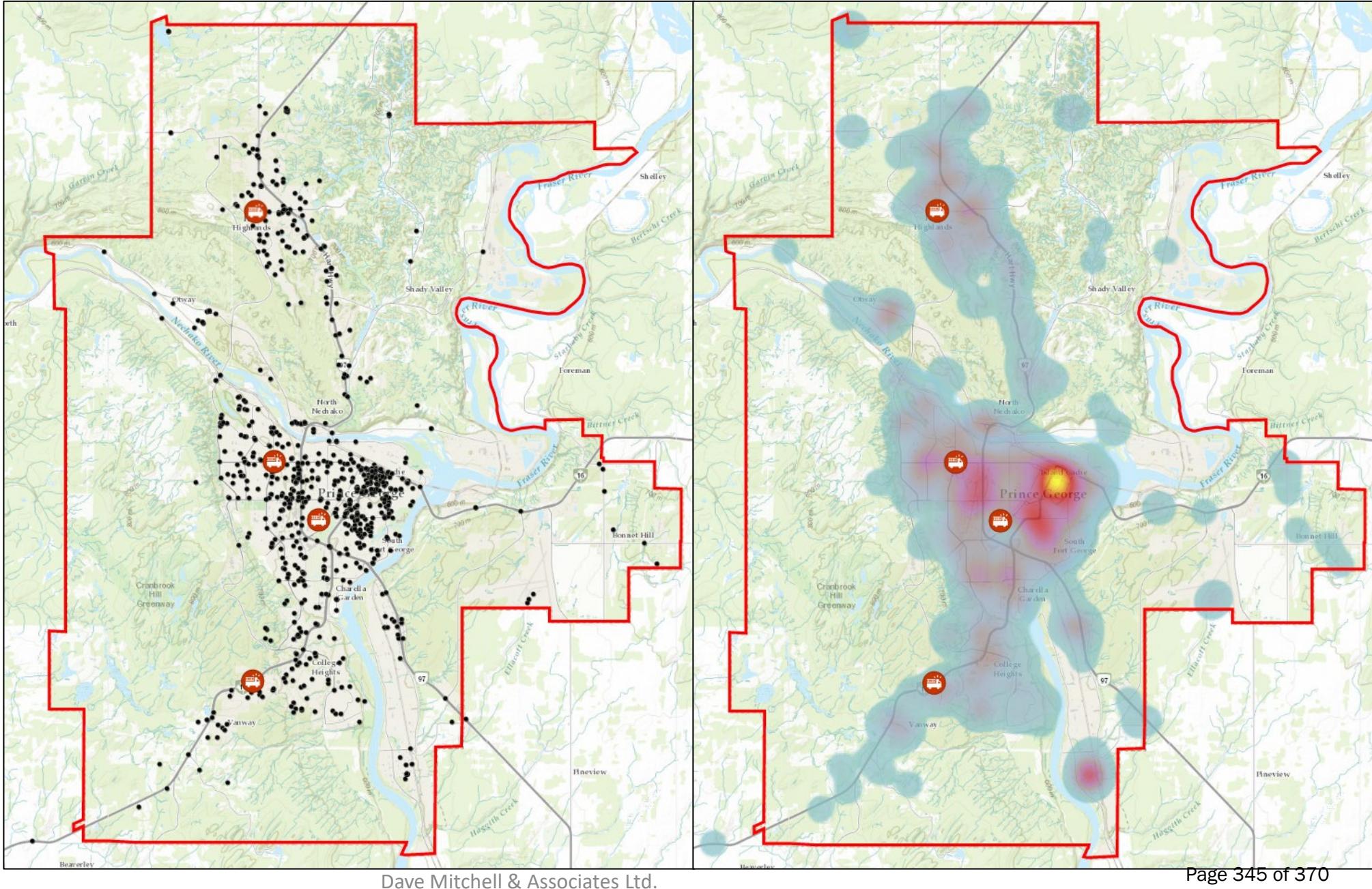
Fire Hall Locations
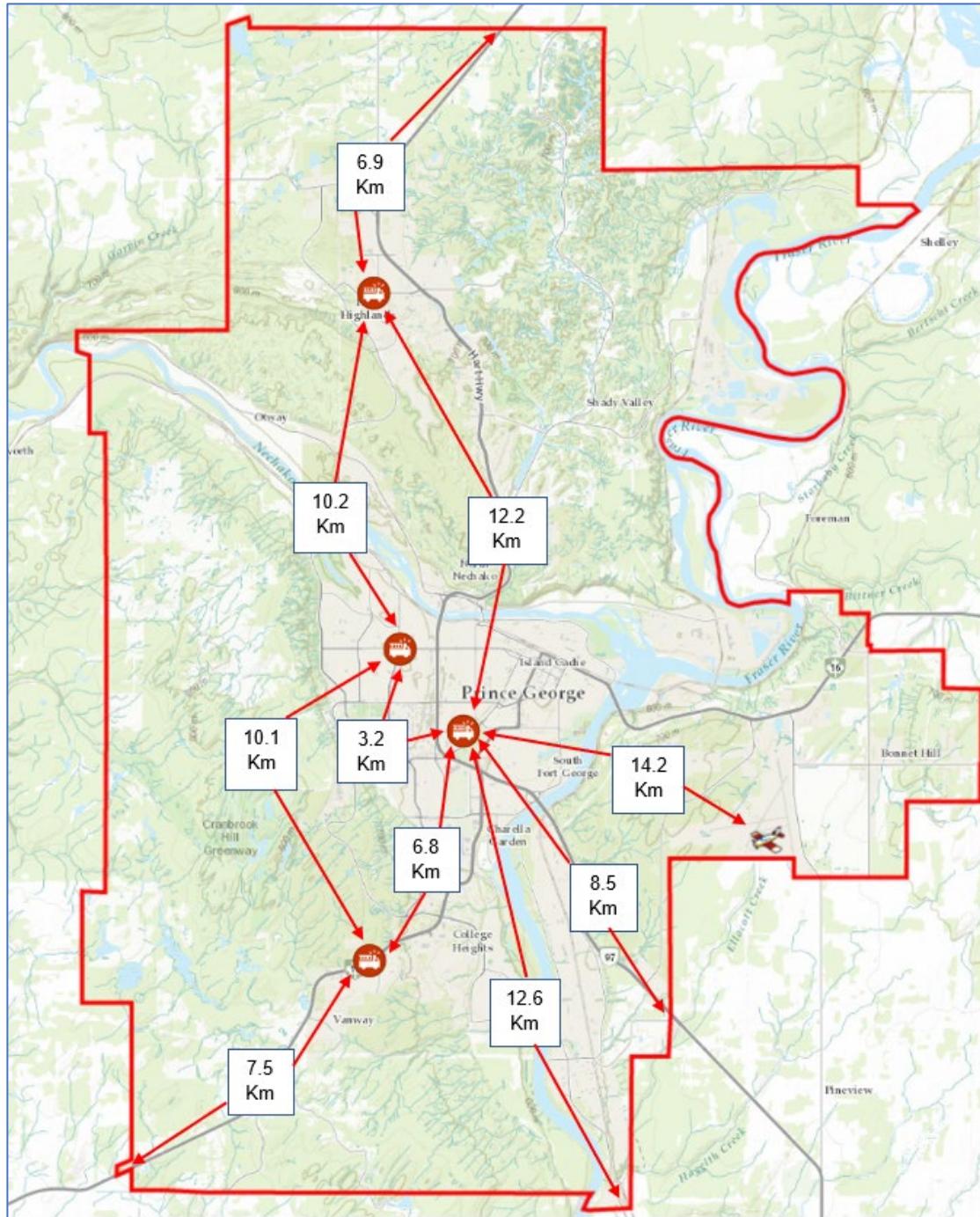
Fire Underwriters Coverage Concern for BC Rail Area
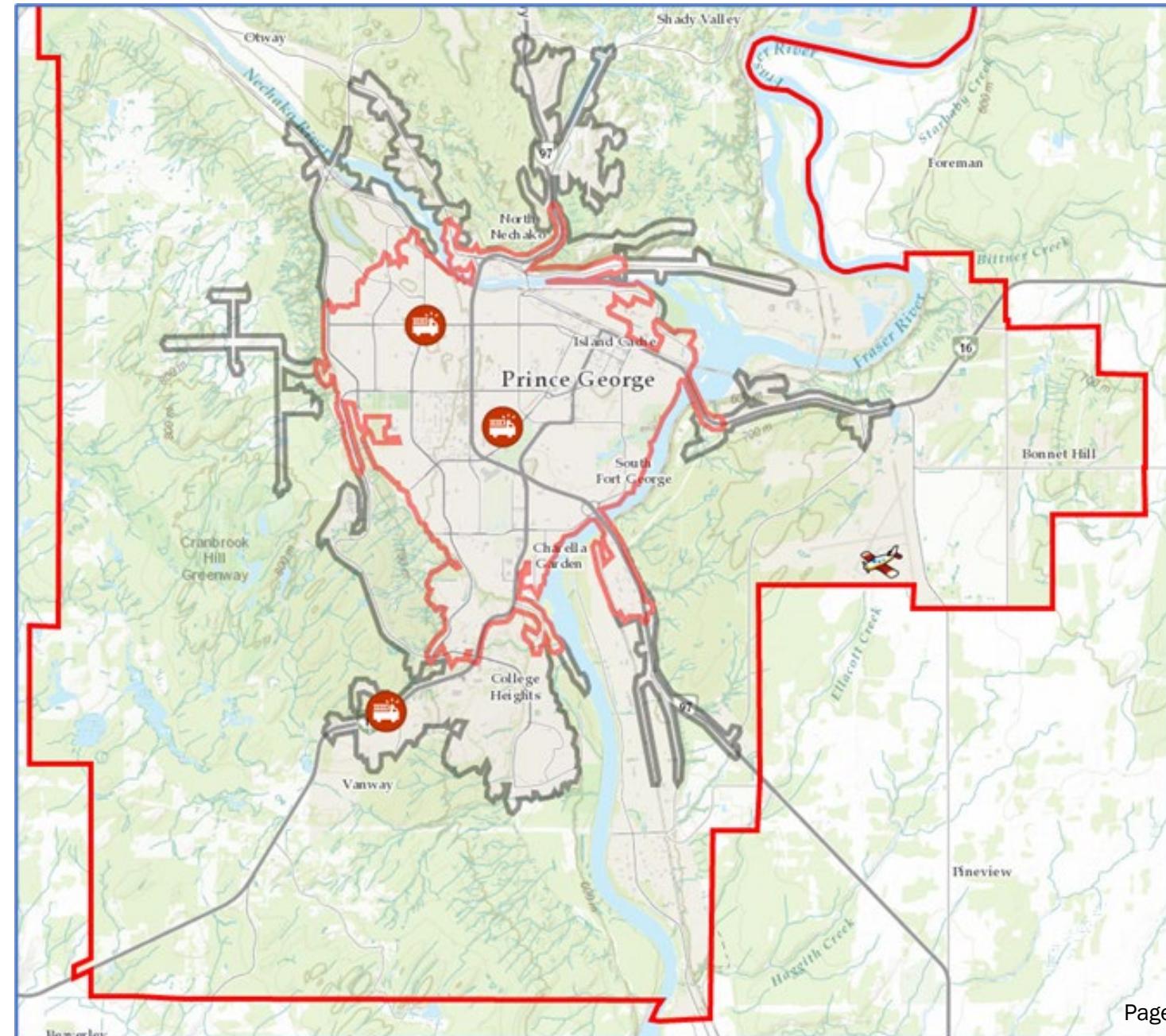
Fire Underwriters Coverage Concern for BC Rail Area Addressed with Hall 5

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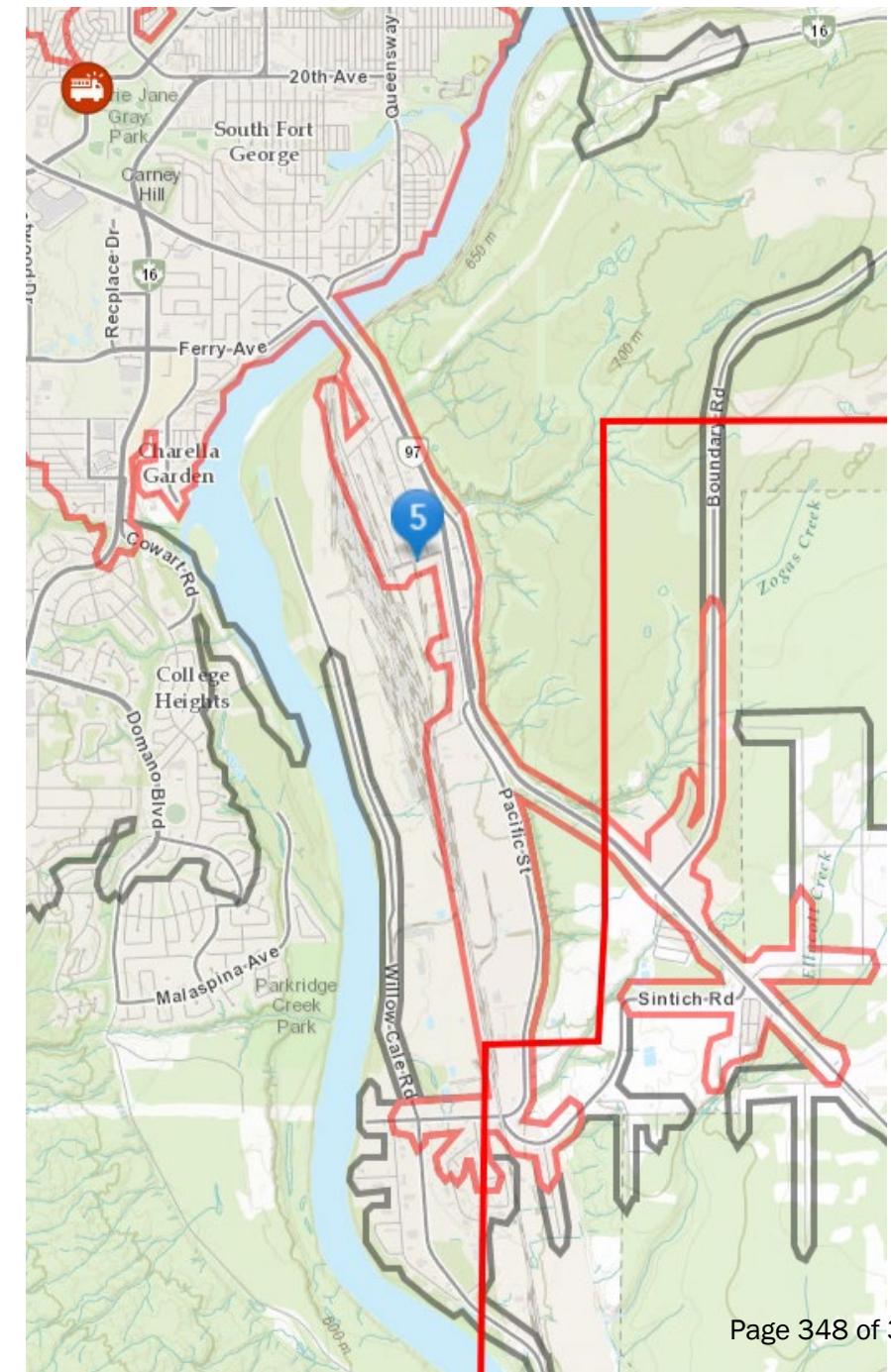
Training Site

- Recommendation from 2016 Standards of Cover
- June 2022 Chief Warner, Deputy Chief Burleigh Reviewed Four Sites:
  - Delta Fire Department
  - Vancouver Fire Department
  - Port Coquitlam Fire Department
  - Fire Academy in Maple Ridge
- Stressed Need to Plan for Usage and Growth
- Burn Facility Options
- Partnership Opportunities
  - Justice Institute Fire Academy
 - First Nations Emergency Services Society

Vancouver Fire Chess Street Training Site
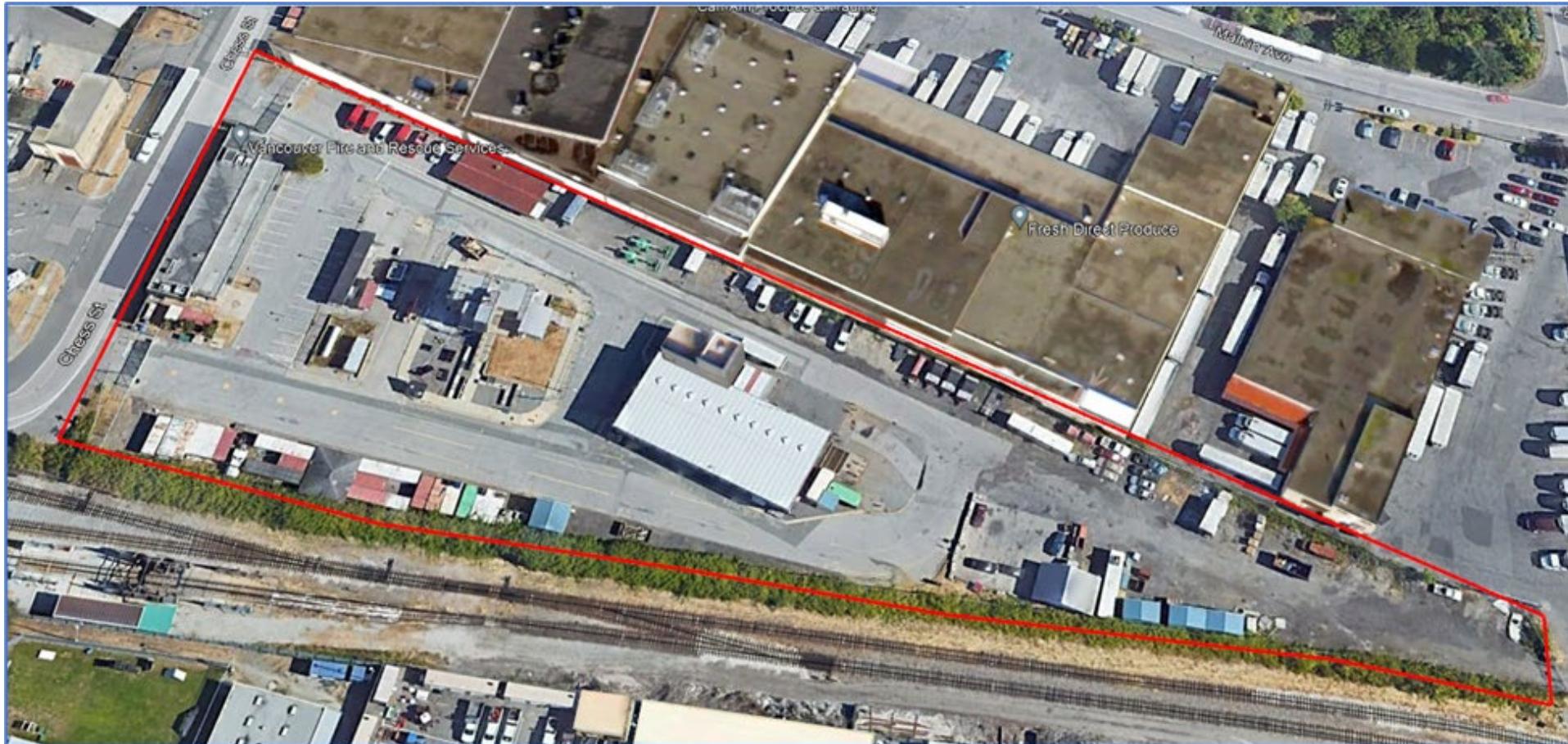
Delta Fire: Hall 4 Training Site
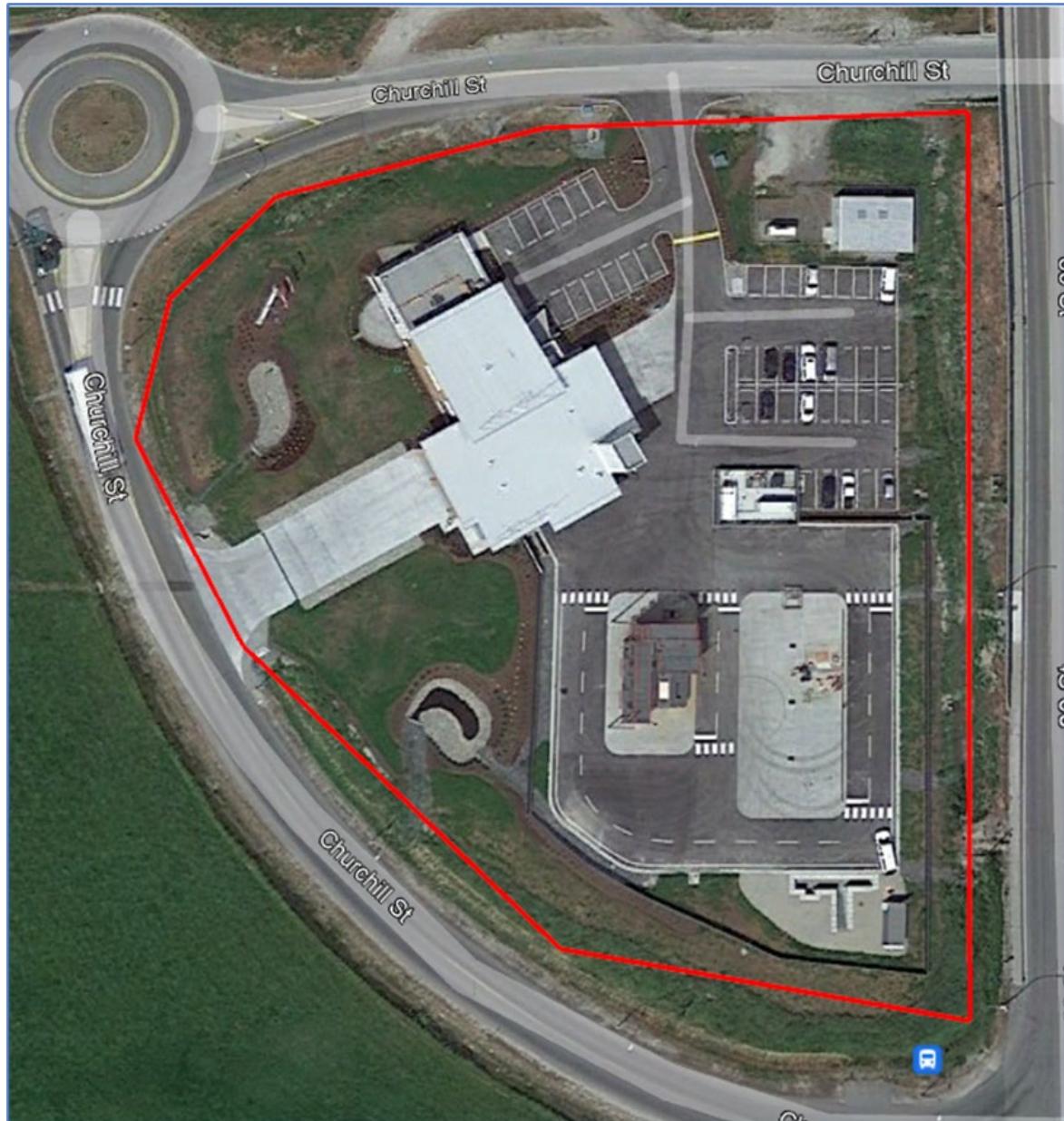
Port Coquitlam Hall1 Training Site
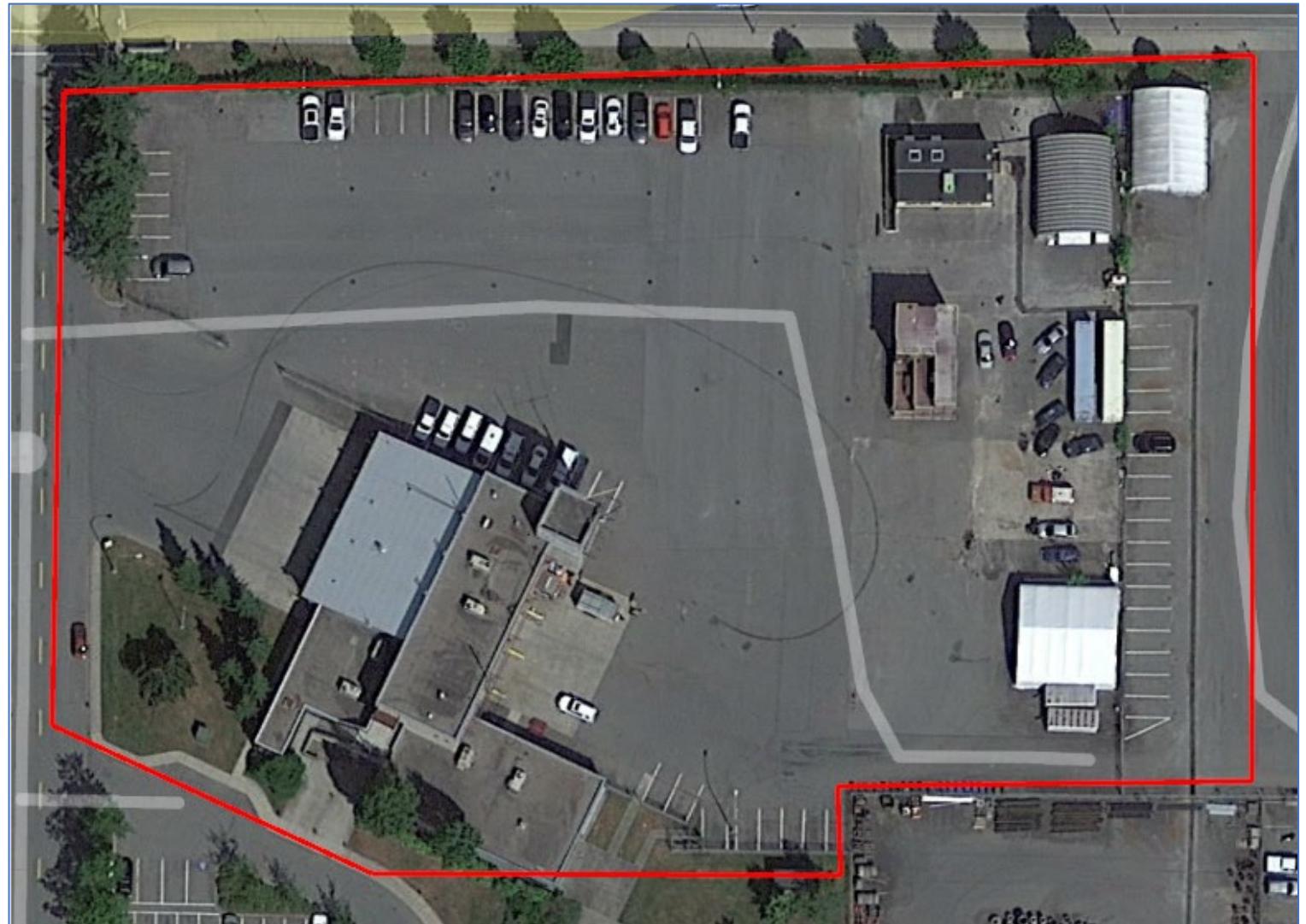
JIBC Fire Academy at Maple Ridge

Next Steps

- Training Site
  - Explore Several Partnership Opportunities
  - Consider Space Plan
- Staffing Levels
  - Review / Consider Staffing Level Adjustment to Address Growth in Demand
- Fire Undewriters re BC Rail
  - Review Locations
  - Consider Industrial Partners

Discussion

City Of Prince George Fire Services

The Future Looks Bright

Agenda

- New hall location/response review
- Provincial Training Standards
  - Fire Bylaw update
- Feasibility Study
  - Training facility
- Staffing Plan
  - PG Fire Needs Assessment
- Budget Forecasting
  - Capital budget planning

Response Zones 2022 — City of Prince George
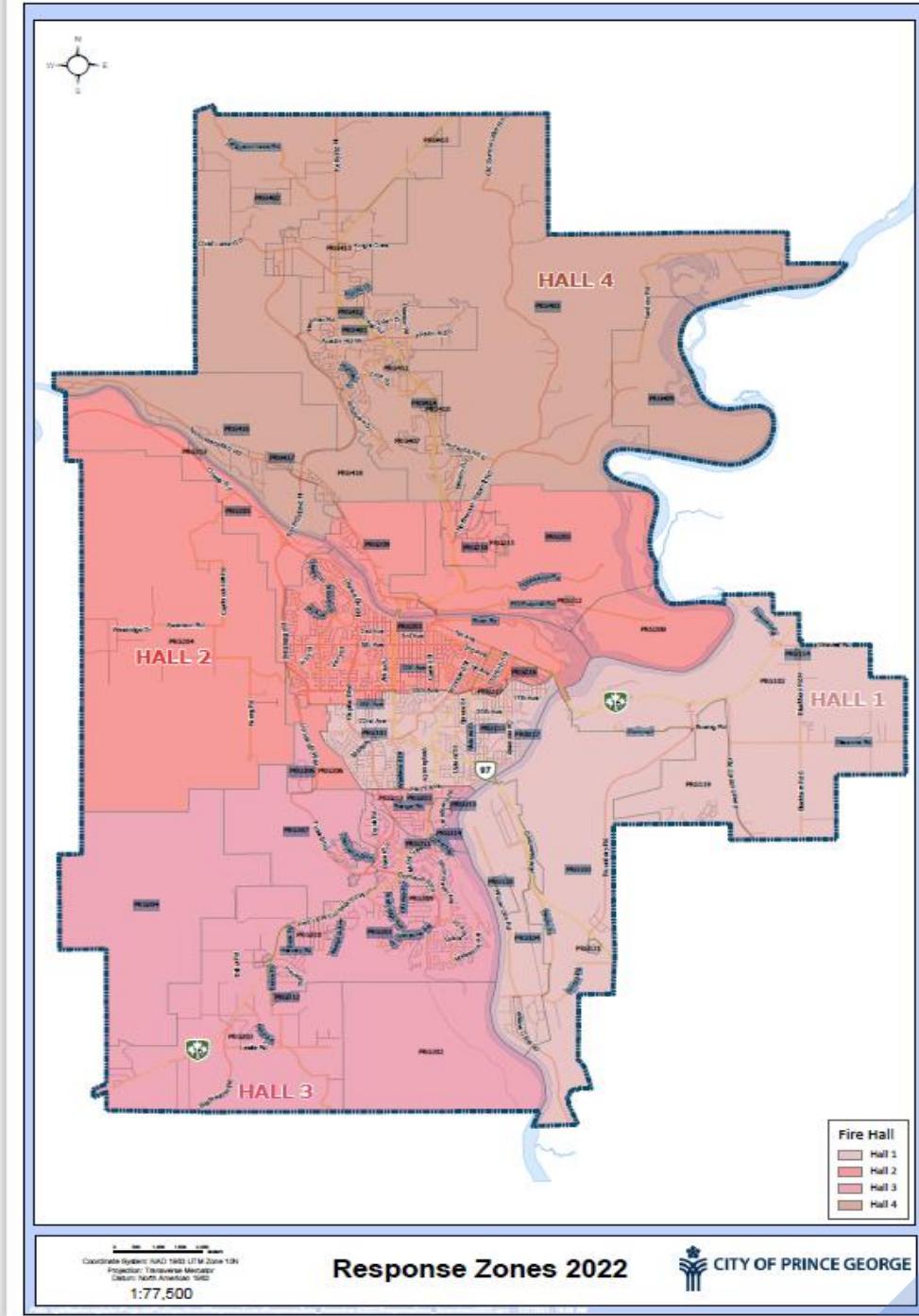
Provincial Training Standards

- September 2022 – Office of the Fire Commissioner (OFC) releases 'BC Structure Firefighter Minimum Training Standards'
  - Legislatively mandated minimum standards
- What does this mean to the City of PG/PG Fire
  - AHJ will define, determine, and establish the community's service level of fire department – Fire Bylaw
  - Service level declaration determines minimum training competencies to be followed within standards – Currently 80 - 90% compliant with operational job performance requirements

- Recommendation – Update Fire Bylaw 8272, 2013

CITY OF
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Bylaw

Establishment

- Provincial Fire Services Act –legislates Fire Prevention Public Safety
- Fire Bylaw - primary authority for the Fire Department
- Fire Bylaw 8272, 2013 – Fire Dept and Fire Prevention

Fire Bylaw

- Establish Community's service level - Full Service

Fire Prevention Bylaw

- Outlines community specific Fire Prevention and Public Safety initiatives tied to the Fire Services Act
- Separates local authority of Fire Bylaw and Provincial Authority of Fire Prevention and Public Safety

Recommendations

- Update Fire bylaw to include Service Level – Training Standard
- Separate Fire Bylaw and Prevention Bylaw – clean linkage to authority

Training Site Feasibility Study

- Consultant led study reporting Fire Training Site recommendations to Council

- Scope
  - Stakeholder engagement – how facility will be used and by whom
  - Identify facility location options
  - Identify space requirements to accommodate activities
  - Prepare concept drawing
  - Recommend project phasing
  - Capital Cost estimates
  - Concept fire hall #2 renovation and 5th fire hall drawings and capital budget estimation
  - **Saskatoon Fire Department Training Facility**

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Staffing History

1995 — last significant staffing enhancement
- Fire Halls 2, 3 and 4 increased from 3 members to 4 members

2003 — Relief Firefighters – 7 members

2016 — Standards of Coverage – Staffing recommendation to meet NFPA 1710 structure fire response

2019 — Add Lieutenant rank to senior member on Rescue Apparatus.

2022 — Strategic Plan Update – reconfirm staffing recommendation to meet NFPA 1710 and further support incident response increase

Staffing Historical Recommendations

- 2016 Standards of Coverage report to Council
  - NFPA 1710 – 16 Firefighters on scene within 8 minutes
  - Current staffing prohibits NFPA compliance
  - Add staffing of 4 members to additional apparatus at new hall #1
  - Achieving report compliance would result in 15 members on scene within 8 minutes
  - Increase Multifamily structure response from 19 – 21 – approaching NFPA 1710 recommendation of 27

Provincial Staffing comparators

- Nanaimo Fire – 40 Firefighters over 2 years; increase 2 fully staffed apparatus

- Township of Langley – 44 Firefighters over 4 years; exploring addition of 2 fire stations

- Pitt Meadows – 8 Firefighters 2023

- Saanich – 10 Firefighters

- Prince Rupert – 2 Firefighters 2021; 4 Firefighters 2022

- Burnaby Fire – 20 Firefighters 2023; $50M 2 New Fire Halls

- Vancouver Fire – 55 Firefighters 2023

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2024 – 2028 Fire Services Staffing Plan

- 2024 Operating Enhancement - Staffing
  - Hire 1 Fire Admin Clerk
  - Hire 7 Firefighters
    - One position expands Fire Training Branch to support future recruit and Firefighter training
    - One position expands Fire Prevention Branch to support Year over year record Development Service permits – resulting in significant increase in multifamily/high hazard inspectable properties
    - 5 Firefighters to increase Rescue apparatus from 2 to 3 members
      - Increase crew safety and officer oversight of incident scene

- 2024 Capital Submission – Fleet
  - Ford F350 Crew Cab Pickup medic unit – Estimated $100,000.00

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2024 – 2028 Fire Services Staffing Plan

- 2025 Operating Enhancement - Staffing
  - Hire 10 Firefighters
    - Increase each shift by 2 members to staff Platform Ladder Apparatus/Medic Unit at Hall #1 – 8 Firefighters
    - Vacation, sick, long term leave coverage – 2 Firefighters

- 2025 Capital Submission – Fleet
  - Additional Pumper/Tender/Rural Apparatus – Estimated $1M
    - Support back-up apparatus
    - Support Superior Tanker Shuttle Service
    - Support Provincial Wildfire deployments

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2024 – 2028 Fire Services Staffing Plan

- 2026 Operating Enhancement - Staffing
  - Hire 10 Firefighters
    - Increase each shift by 2 members to bring Platform Ladder Apparatus at Hall #1 to 4 member crew – 8 Firefighters
    - Vacation, sick, long term leave coverage – 2 Firefighters
  - Hire 1 Emergency Vehicle Technician (EVT)
    - 2025 Capital submission for additional apparatus extends fleet beyond scope of 1 EVT

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2024 – 2028 Fire Services Staffing Plan

- 2027/2028 Operating Enhancement – Staffing

  - Hire 5 Firefighters

    - Increase each shift by 1 firefighter to staff Water Tender at Hall 3/4 – 4 Firefighters

    - Vacation, Sick, long term leave coverage – 1 Firefighter

- **This staffing plan has been presented based on the hiring frequency Fire Services could accommodate each year. The order of these hiring strategies could be adjusted, and or the number of firefighters hired each year could be adjusted**

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Budget Forecasting

- Fire Services to partner with Capital Program Management Division

- Lay out future Capital planning

- F&A and Mayor/Council informed on up coming and future Fire Service Capital needs
  - Breathing Apparatus replacement
  - Auto Extraction Tool replacement
  - Automatic external defibrillator replacement
  - Thermal Camera replacement

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Questions?

- Open and available for any questions, comments or assist with clarification