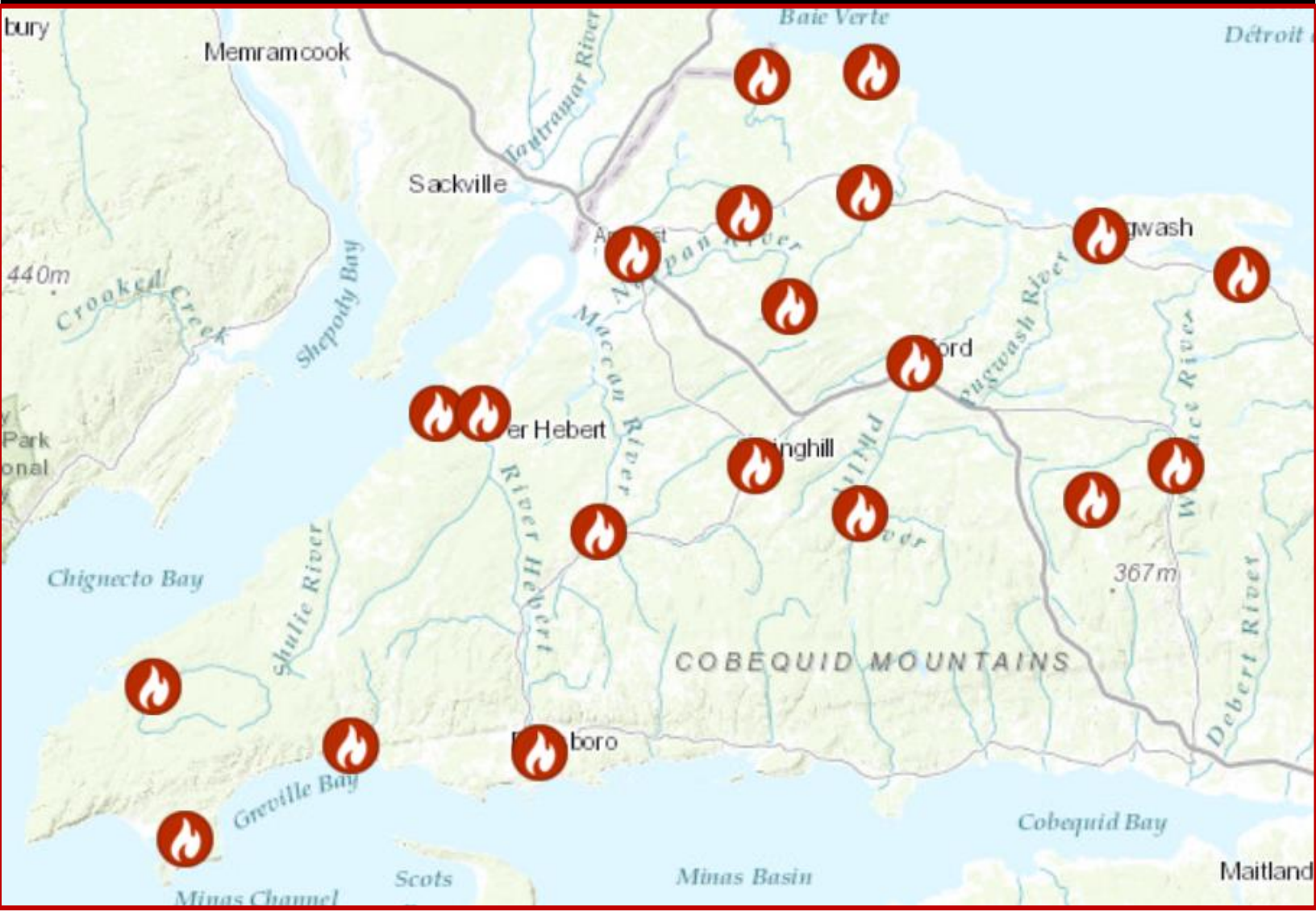
MUNICIPALITY OF THE COUNTY OF CUMBERLAND

FIRE SERVICES REVIEW



Prepared by: Goudreault Associates

May 16, 2022

FINAL REPORT

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INTRODUCTION

On November 2, 2021, the Municipality of Cumberland County issued a Request for Proposals (RFP) for a Fire Services Review;

> *"to carry out a complete review of the current fire services in Cumberland County and provide recommendations with respect to what is required to optimize the organization of the fire service."*

Goudreault and Associates prepared and presented a proposal for this project and on the 30th of November, was notified of contract award.

The following *Report* and recommendations are a result of extensive review and research arising from the scope of work. This was made possible, in part, due to the efforts and guidance of numerous municipal staff, and fire service personnel, as well as other agencies and stakeholders.

Goudreault Associates would like to recognize and thank the following persons for their assistance.

Municipality of Cumberland County; Members of Council

- Murray Scott, Mayor
- Deputy Mayor Jennifer Houghtailing, District 3
- Councillor Fred Gould, District 1
- Rod Gilroy, District 2
- Kathy Redmond, District 4
- Angela McCormick, District 5
- Mark Joseph, District 6
- Dale Porter, District 7
- Carrie Goodwin, District 8

Municipality of Cumberland County

- Greg Herrett, CAO
- Justin Waugh-Cress, Director of Engineering and Operations
- Andrew MacDonald, Director of Finance

- Bill Ireland, Director of Protective Services
- Allie McCormack, Director of Human Resources
- Maggie Pitts, GIS Analyst
- Steve Ferguson, Director of Development
- Mike Johnston, Former Regional Emergency Planning Coordinator
- Cavin Hatcher, Fleet Mechanic

Municipality of Cumberland County Fire Chiefs and Fire Department Members

Thirty-two meetings were held with all of the fire departments and with the Fire Chiefs. Subsequent to that, an online training session was held to assist the fire chiefs in providing requested department information using Goudreault Associates (*GA*) data workbooks. The information and data requested was significant, and *GA* greatly appreciated the effort and the information that was provided. Further, a number of telephone calls and emails corresponding with the Fire Chiefs were required. If it were not for the effort of the departments who participated in the process, the resulting *Report* and recommendations would not have been possible.

The Fire Services Review required the following;

Phase 1: Stakeholder Engagement

This phase included a total of fifty-two meetings with various stakeholders, which included, Mayor and Council, Municipal staff, Fire Chiefs and fire department membership.

Phase 2: Current Fire Protection Services Review

This phase required an examination/review of both the physical services offered and also the levels and standards to which they are being provided; as with respect to accepted industry standards, legislated mandates and best-practices for similarly situated fire services.

The Fire Services Review included the review of all of the following;

- By-laws
- Policies of the Municipality of Cumberland County, (MCC)

- Registered Service Provider agreements
- Contractual agreements for the provision of fire services
- Standard operating procedures of MCC
- Standard operating procedures of the individual fire departments
- Fire departments codes of conducts, rules, and regulations
- Current service boundaries
- Responses to incidents, service demand, and statistics
- Existing standards for operations, facilities, apparatus, equipment and training.
- Communications and Emergency Dispatch
- Current funding arrangements
- The need for firefighter honouraria
- Conduct a Jurisdictional scan on above issues.

Phase 3: Fire Station Facilities Apparatus and Equipment

Phase three included assessment of the utilization and utility of the fire stations, and fire apparatus including the current state of the various fire department vehicles, dispositions, types, capabilities and determining future capital replacement needs.

Data

During the Review, data validity and gaps were a concern. Fact checking was a major component of ensuring that conclusions and recommendations were based on correct information.

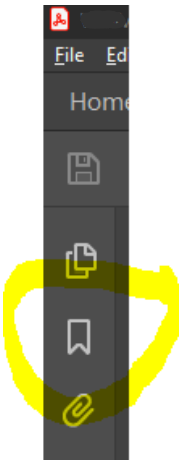
Data was provided by the Client, through a stakeholder process, and through solicited data queries. The Client was responsible under the terms of the contract to provide the needed data. It became apparent fairly early on, and as the study progressed that not all requested data existed or could be made available. Conclusions were therefore reached that acknowledged some gaps in understanding.

The following *Report* includes a large volume of information, data, and statistics. The norms in the collected information were compared with local and national information and were measured against current legislation, best-practices, industry recognized standards and guidelines.

The *Report* contains over 200 recommendations, some of which would be relatively easy to implement, but others will take a major effort to implement, even with a will and the required resources applied; to embrace the concept of a more unified and effective fire service in Cumberland County. Job one will be to set priorities based on the recommendations, (they all cannot be done at once). The authors recommend that the governance issues should be near the front of the line, as well as firefighter health and safety issues.

The authors believe that adoption of the *Report*, understanding/believing in its concepts, and following the recommendations will achieve the overall objective of meeting the needs of the tasks outlined in the Request for Proposal, and produce a better fire service. One that Council, administration, and firefighters will be proud to own.

NAVIGATING THIS REPORT DOCUMENT



Active bookmarks are a feature of this .pdf document. These are revealed in the left margin of your screen, after selecting the "ribbon" icon (highlighted in the snapshot, here at left). These bookmarks show the structure of the *Report*, and allow a reader to easily navigate backward or forward to any location when reading electronically.

There are also hyperlinks in the document and in the Table of Contents. They look like the following: *Executive Summary*. In the text they are highlighted in this electric blue colour, and are sometimes underlined in footnotes. If you use the mouse button to select the blue text, the screen will jump to the location that is indicated. The purpose is to allow the reader to quickly look up a reference that is relevant to the current topic.

This example link shown above takes you to the Executive Summary on the next page, not very far, but Try It to see how it works.

Pressing two keys together, ALT [left arrow], reverses the hyperlink, taking you right back to where you were when you selected it.

EXECUTIVE SUMMARY

This *Report* arises from the *Review* of the Cumberland County fire services that occurred over the weeks between early December 2021 and March 2022. This *Report* is significant in content, and depth, encompassing over 1,000 pages in length, including extensive appendices of reference materials and data. This *Report* presents more than 200 recommendations, some relatively minor but some others are of far reaching significance, if undertaken. The last appendix contains a tabular compilation of the recommendations.

Summarizing the contents of a comprehensive report in an executive summary is challenging and by nature somewhat superficial. The *Report* is organized into 10 chapters, and for the most part this executive summary will generally follow in the same order.

Going into this *Review*, municipal concern appeared to center mainly around a few issues; accountability/transparency for the use of municipal funds, meeting municipal policies and practices, fiscal economy and funding sustainability, addressing standards for service, and County-wide cooperation to improve effectiveness, efficiency and safety. The overarching concern, encompassing many of the aforementioned issues, is governance; how can the fire service be structure going forward to meet all these needs.

Fire department concerns include sustainability of funding, recruiting/turnout challenges, training standards and methods, logistics, and adequate equipment. Governance is also a concern for some fire departments with some past conflicts between the County and the fire departments.

The backbone of the current fire services is the almost 300 volunteer fire department members who are the first responders in their communities. Their enthusiasm, energy, and dedication are essential to the continued success of the service. Traditionally, the local fire department has been, and continues to be a focal point for local activities.

The risk is the gradual diminution of the volunteer fire department status, as different interests compete for membership and dollars. Funds are not raised as much locally as they once were. The County provides the bulk of funding needs from general revenues, and without this many

local fire departments would cease to exist. Supporting the continuation of local interest in the fire department, and in volunteering to be a firefighter, is a priority if there is not to be a loss of this precious resource.

The following few pages captures some of the highlights of the *Report*. It is not all inclusive. A careful reading of the *Report* is necessary for full understanding of all points.

Chapter 1 of the *Report* summarizes the available response data; from January 2016 through to the first week of December 2021. Pre-Covid, the fire departments averaged about 845 incidents annually. During 2020-2021, there were an average of 610 annual incidents. About 29% of all incidents included responses from more than one fire department.

For all years, responses included a mix of incidents; fires (27%), pre-fire conditions (12%), rescues (17%), hazardous conditions (3%), and medical first response (MFR) (40%).

Cumberland County is protected by 19 fire departments. Three of these fire departments (Amherst, Oxford, Five Islands) are under contract to protect adjacent areas of the County, while the other 16 are within Cumberland, and operate 18 fire stations. Except for Amherst which has a small career staff, all fire departments are completely staffed by volunteer firefighters.

There are challenges associated with large geographical distances in the County, and with the volunteer basis of the fire departments. These challenges are related to response-times and available manpower. The average response-time to a fire incident is approximately 11 minutes, and to a MFR incident is approximately 9 minutes. At 90% of incidents, 5 or more volunteer firefighters responded.

Chapter 2 discusses best practice Standards for the delivery of services, and how County fire departments compare. The relevant response-time and minimum staffing Standard is NFPA-1720, which is appropriate for volunteer operated services. The Standard segregates response performances into urban, suburban, rural, and remote "*demand zones*" that are discriminated mainly on population densities. Population density is a good representation of building density,

and the potential for buildings to be larger and closer together in high population areas, like urban demand zones, with correspondingly larger firefighting challenges.

Fire department response districts can have more than one demand zone, for example; partly suburban and partly rural. There are different time and staff benchmarks for each demand zone, with urban being the most demanding. The Standard is based on performance at 9 out of 10 incidents, called the 90th percentile.

Six of the 19 fire departments (i.e., 32%) meet the response-time Standard for some of their demand zones. However, only 4 of the 19 fire departments (i.e., 21%) meet both the staffing and response-time standards for all of their demand zones. Some meet the Standard in some zones, and not in others. Turnout-time is an issue for some, and manpower for others.

Cumberland County has an opportunity to achieve Accredited Superior Water Shuttle Service, which, when acquired, is an acknowledgement by the insurance industry that rural water supply delivery for firefighting meets minimum requirements for a home fire. Achieving this can affect insurance rates for some residents, and improves firefighting capabilities for all.

Chapter 3 looks at the current and future fleet of fire vehicles in the 16 Cumberland fire departments, and at the applicable Standards and best practices. Cumberland has a large fire fleet of 92 vehicles, including 24 pumpers, 11 pumper/tankers, 8 tankers, 1 quint, 3 initial attack, 1 wildland fire attack, 16 rescues, a few utility trucks, 6 boats, 8 UTVs, and associated trailers.

The fleet is aging, with 27 major vehicles that are 20 years old or older. The oldest in service vehicle is a seasonal wildland truck that is 54 years old. The table below summarizes the status for the major fire apparatus (vehicles) by type.

	All Major Fleet Apparatus	Firefighting Units	Quint	Pumper	Pumper /Tanker	Tanker	Initial Attack	Rescue
Average Age (years):	18.6	18.7	10	19.5	13.8	18.5	33.3	18.4
Oldest Apparatus (years):	46	46	10	35	33	37	46	30
How many ≥ 20 years:	27	19	0	9	3	4	3	8

The applicable Standards from the National Fire Protection Association (NFPA) and the Fire Underwriters Surveys (FUS) establish a maximum service age of 15 years in front-line service

for firefighting vehicles, with a process to extend it; for sound vehicles in fire departments with low incident volumes, like in Cumberland. These procedures are recommended and could extend service life to approximately 25 years for firefighting units.

Specified maintenance, inspections, and testing is required by the Standards, and in some cases by provincial Regulation. Cumberland needs to adhere to these Standards in order to extend the life, reliability, and safety of firefighting units. Some firefighting units are not adequately equipped with tools and equipment, and attention is needed in this area also.

There is a variety of capabilities and designs in the fleet. Most were purchased new, but also many were purchased used. There has been efforts to standardize major vehicle purchases and there is a need to be more proactive in this regard. A strategic vehicle replacement and financing plan is needed; providing vehicles that meet Standards. Independent purchases of vehicles outside of this plan should be curtailed.

Chapter 4 looks at *what* resources are needed, and *where* the firefighting apparatus and staffing are needed, in order to effectively respond to structure fires. Structure fires are the most demanding type of incident and are therefore the foundational benchmark for fire department capabilities. Several best practices are used to determine apparatus and staffing needs, including NFPA-1720 and task based calculations of resources needed to meet specified risks; which for Cumberland is typically a fire in a detached single-family residence.

For structure fires that occur in rural demand zones, three pumpers and three tankers should respond initially. These would be based from three fire stations, and would need to be staffed by a minimum total of 10-12 firefighters. For urban/suburban fires with fire hydrants, two pumpers and a minimum of 14-15 firefighters would need to initially respond. Some of these firefighters would respond directly in personal vehicles or in other fire department support vehicles.

Firefighters with appropriate capabilities are needed in each fire station, and total fire department numbers will depend on what percentage of them can be available for an *initial* response. Rural fire stations need to turnout at least 6 firefighters each. For urban/suburban stations, at least 15

firefighters are needed to turnout for the *initial* response. These numbers are challenging to achieve for some fire departments.

With some changes, fire departments can better support each other at long incidents. Certain large rescue trucks should be outfitted to provide county-wide support for; firefighter rehabilitation, respirator supplies, incident command, and wildland fires. Other recommendations address fleet reduction, private lane access, improved capabilities, and additional quint apparatus.

Chapter 5 examines multiple aspects of current operations. A major review was conducted of fire stations utilization, where there were a number of themes discovered. Space is at a premium in most if not all fire stations, almost all not meeting *current* best-practice requirements. This is hampered by housekeeping issues in many.

There is a general lack of safety provisions, including safety showers/eye-wash, regular showers, decontamination equipment, and appropriate facilities to segregate contaminated equipment and protective clothing. With current knowledge on cancer and illness arising from contact with contaminates, this needs immediate improvement. In addition to the need for some local provisions, there is a need to establish three centres in the County where firefighter protective clothing can be safely and effectively laundered immediately after a fire.

Of the 14 fire stations that utilize well water, 10 do not have any water treatment system, and 11 do not test their water for bacteria and contaminants as the NS Department of Health recommends. Some of these facilities include community halls, and all are designated emergency shelters for their community. The two substations (Lorneville, Apple River) have no provisions for a water supply at all, other than bottles, so a contaminated firefighter could not shower to get clean, and there are no washrooms. Safe water challenges are also linked to the previous paragraph on dealing with contamination concerns.

There is insufficient provisions for stand-by generator capacity at 14 of the 18 fire stations. These 14 use undersized portable generators that cannot maintain station full operational

capability through a modest to prolonged power outage, or while in use as a community shelter, and they need constant attendance.

Logistics is a major challenge with 18 fire stations and a large geographical area. It is recommended that four service zones be established to facilitate distribution of consumables and equipment. These should be located in Springhill, Pugwash, Shinimicas, and Parrsboro.

Currently the fire departments utilize two separate radio systems. This has a strong potential to create confusion at emergencies, and is duplicative. The fire departments should completely transition to the provincial TMR radio system for improved safety and effectiveness.

The dispatch contract with Valley Communications Inc. (VCI) expired a year ago, and the temporary extension expired in April 2022. VCI does a good job, and could do better by collecting more data if the firefighters provided it while at incidents. Any new dispatch contract should also include performance provisions in accordance with accepted Standards for dispatching services. The County should be the sole coordinator of dispatch services and response protocols.

Certain firefighting equipment, including hoses, ladders, SCBA, bunker gear, and firefighting appliances are required by provincial Regulation to be tested annually. There is a need to establish an inspection and testing program for this equipment in order to meet requirements and protect firefighters. Some of this is currently being done, while others are not. Regulation also requires that all firefighters who wear respirators (SCBA, N95) be fit-tested to ensure that face masks will protect them. An established program is needed to start this testing as soon as possible.

There are five different manufacturers of SCBA in use in Cumberland, and within those are eight different models. Components like masks and air cylinders are not interchangeable. There is a need to standardize on a single manufacturer and compatible models; to facilitate inter-operability of fire departments at fires and for firefighter safety.

Medical first response (MFR) represents 40% of all fire departments incidents in the years reviewed for the County. Every fire department participates in this optional program. For some fire departments it is mostly what they do, while for others its very little of what they do. Fire departments get to choose what level of participation and activity they desire; ranging from responding to life-threatening patient conditions only, to responding to virtually every ambulance incident in their district. Cumberland needs to start collecting and analysing data associated with MFR responses to find the best balance for this service; the point where the costs and risks are rewarded with positive results most of the time.

Chapter 6 addresses issues of governance and management. The *Municipal Government Act* (MGA) provides the municipality with powers and responsibilities. One of these responsibilities is to conditionally accept for registration a "body corporate" which includes organizations incorporated under the *Societies Act*. The County has alternative options including the provision of the services municipally. The County also has the powers through the MGA to enact policy and bylaws with conditions on the provision of the services, including requirements for data collection, reporting, funding, and accountability; to satisfy the desired standard and method of service delivery. The County may also terminate registrations for cause. All Cumberland fire departments are registered Society Act corporations.

Considered for recommendation were three models for future governance of fire protection services in Cumberland.

Status Quo: The *status quo* would see a continuation of funding and limited participation by the County in providing direction and support for service delivery. With the recent appointment of a Director of Protective Services, and the elimination of the Fire Coordinator position, this model is already changing. Past experience has shown that the current approach has not been truly effective in addressing either County or fire department interests and needs. It has led to this *Review*.

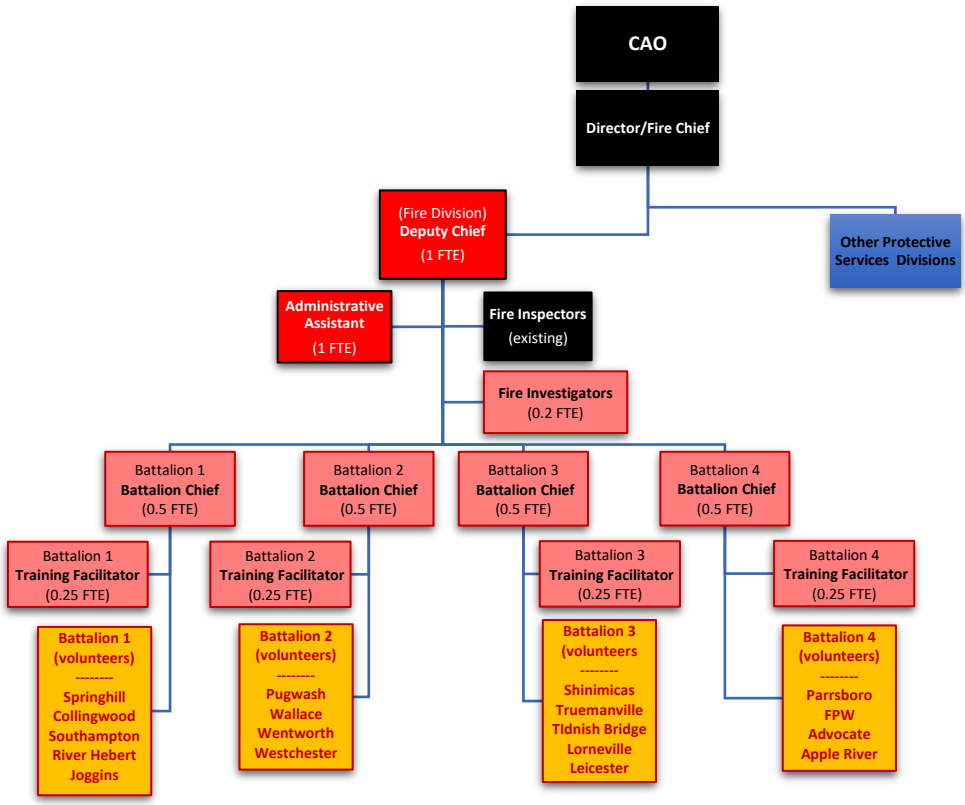
Municipal: Converting the delivery of fire services to a *municipally* operated department is another model option. This model would establish high levels of accountability and control over all aspects of the service, but very likely at a cost to the local volunteer character and function of

the fire department. It would require eliminating the society fire departments from any role in managing or operating the fire departments, replacing them with direct municipal control of the volunteer firefighters. From a municipal government perspective, this is perhaps an ideal model. However, the volunteer foundation of the delivery of fire services in Cumberland is essential to affordability, and a very important focus to many of the smaller communities in which there are fire stations. There is a risk that those benefits will be lost, both near and longer term.

There is a cost to this model, estimated at 5.4 FTE initially required to fill 12 positions, with assumed costs of approximately $356k annually in salaries and benefits.

The *municipal* model will need a defined organizational structure that integrates both full-time, part-time, and volunteer staff. The following is proposed, and is the basis for the estimate of costs.

Municipal Organizational Chart

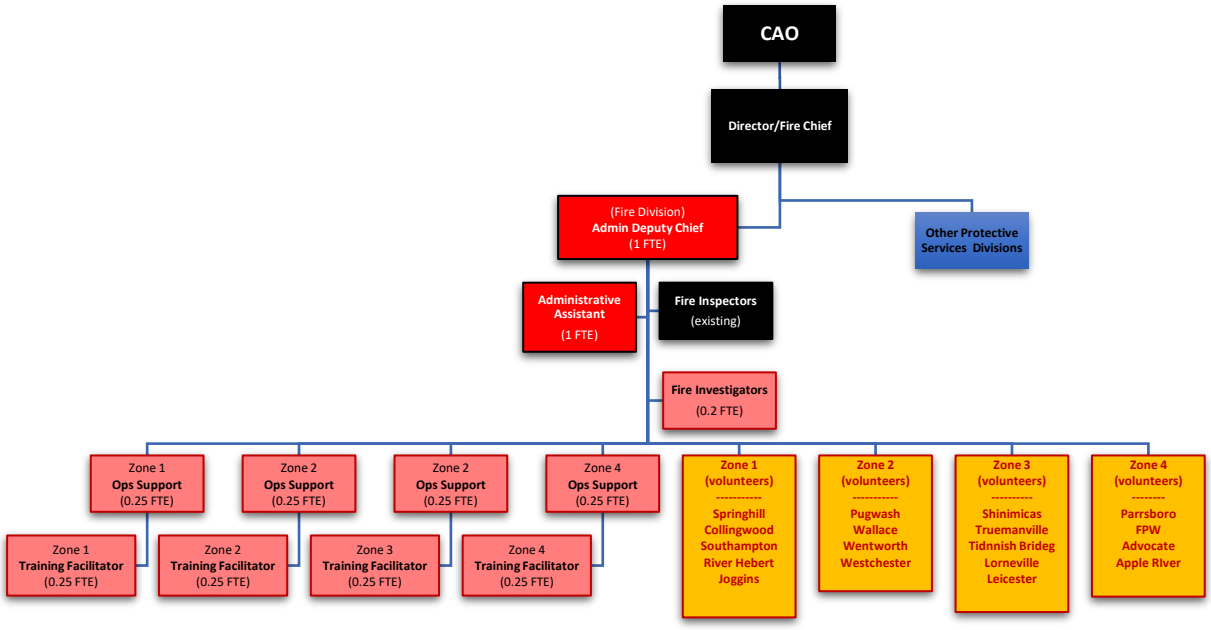


Hybrid: The recommended option is a *hybrid* of the above two possibilities. It includes a focus on promoting and supporting the delivery of fire services by local society run volunteer fire departments. It includes a focus on providing strong leadership, clear direction, and a cooperative approach to the delivery of services. It will provide effective support to the volunteer officers in carrying the burden of administrating and managing all aspects. The County will fund the service as needed, but will also exercise its responsibilities and abilities under the MGA to ensure that the service meets legislated and best practices standards. That it meets the expectations of municipal government, and that of the public.

There is a cost to this model, estimated at 4.4 FTE required to fill 12 positions, with an assumed annual costs of approximately $293k annually in salaries and benefits.

The *hybrid* model will need a defined organizational structure that integrates both full-time, part-time, and volunteer staff. The following is proposed, and is the basis for the estimate of costs.

Proposed Hybrid Organizational Chart



In the future, the County should exercise its authority to establish service standards and policies, and to accomplish costs efficiencies through standardization and coordination of resources. Clear

expectations, between the County and the corporate fire departments, should be established through service agreements that accompany the fire department registration process.

About half of the existing fire department corporate bylaws overstep into areas where the County has exclusive authority. There needs to be a clear distinction on the boundaries between the two authorities, to ensure clarity of responsibilities and to avoid ongoing conflicts.

The MGA provides liability protections for fire departments and municipalities assisting each other, through the establishment of mutual-aid agreements. Cumberland should initiate the establishment of a multi-party mutual-aid agreement between the fire departments and with nearby jurisdictions, both inside the County boundaries and within other counties.

Some minor adjustments are recommended to fire district boundaries affecting Parrsboro with respect to the FPW fire department and the Southampton fire department. These adjustments should slightly improve response-times to the affected areas. There is a similar recommendation for the boundary between Shinimicas fire department and the Lorneville sub-station.

The River Hebert fire station should be replaced, relocated to the east side of the river. This move puts the station in a more effective position, providing faster response-times to the Maccan area than currently provided by Amherst, without any negative impact on the River Hebert fire district.

A jurisdictional scan of seven municipalities was conducted, addressing 18 comparator measures, including; fire department and municipal metrics, purchasing, funding, governance, training, and benefits. The results showed that there are some similarities, but no common approach to shared challenges, and differing opinions on what could be accomplished. Most felt that there was little that municipalities could, or would, do to direct volunteer fire departments.

Chapter 7 deals with human resource (HR) issues. Recruiting firefighters is a challenge, especially for the more rural fire departments with a smaller local population. Recruiting is a need because the current volunteer firefighters are aging, with 46% age 50 or older. Some

recruiting is occurring and 37% have less than 5 years as firefighters, and are still learning the basic skills.

Not all fire department members need to be structural firefighters, but there is a need for a substantial core to ensure a sufficient number are available when there is a structure fire. Cumberland needs to partner with the fire departments to assess the current needs in each jurisdiction, develop recruiting strategies, and leverage resources to attract recruits.

The parallel of recruiting is retaining current firefighters. Only 37% of volunteer firefighters are in the golden 6-24 years of service range; when they are knowledgeable and still physically capable of doing demanding firefighting work. This corresponds with the ages where many are also actively raising young families, and establishing financial security; there is a lot of competition for their time and attention.

To retain these members their needs must be addressed, including keeping them engaged, appreciating them, and looking out for their concerns. Good management is needed at the local level to provide continuous opportunity to grow and to ensure they are listened to. The County can contribute by assisting local officers to be better managers, sensitive to the needs and rights of individuals. Benefit programs that address health and safety, and provide support in the case of possible serious injury, can also alleviate concerns.

Many firefighters are not well familiar with training standards. Clarity is needed on skill requirements and the need for bench-strength in certain areas. Some fire departments offer as little as 15-20 hours of training annually, for which there is much less than 100% attendance required. Some offer considerably more. The delivery of training has been variable across the County, and there is a palpable need to establish a structured, consistent, flexible, reliable, resourced, and appropriate training program that address the need for basic competence; to facilitate the provision of what is a County-wide service. The primary focus needs to be on fire department core skills, and some firefighters have been advocating for improvement.

Chapter 8 examines the origins and causes of past fires in Cumberland, as a means to identify risks in the communities that should be understood and addressed. For the years in the *Review*, there were records for 1,264 fires in the dispatch data.

All fires that include loss of property or injury to persons must be reported to the province. Only about 50% of fires in Cumberland are being so reported. These reports are required within a week after a fire is investigated to determine origin, cause, and circumstances of the fire. Less than 50% of fires are being formally investigated, which must be done within 24 hours of the fire. There is a need to provide the necessary resources and investigation training and certification, if the County is to facilitate compliance with provincial requirements. Competent and effective fire investigation will allow analysis and planning for fire prevention (public education and programs), training focus, and other measures.

Cumberland statistics show that 44% of fires are outside fires, including garbage, woodlands and fields. A further 34% of fires occur in structures, the majority are single family homes. Vehicle fires account for about 12% of fires. The leading causes of residential fires is; chimneys at 39%, arson at 13%, electrical problems at 9% and undetermined at 8%.

Firefighter gathered statistics show that only about 38% of Cumberland homes have working smoke alarms. There is a need for a focused program to improve these numbers. Losses from fires are only partly insured as to the structure and/or contents, with about 34% of these losses being uninsured.

Chapter 9 examines community data as it relates to fire protection. Census Canada divides Cumberland into four sub-divisions (A-D), and for the last time includes Springhill and Parrsboro information separately.

The population in Cumberland appears to have stabilized in the 2021 Census (19,964, up 262 since 2016); with modest growth for the first time in several census periods. Although the centre subdivision that includes Springhill slightly declined. There are signs of growth in the north of the County; especially in the Amherst suburbs and along the Northumberland shore. Demand for

fire emergency services is expected to slowly grow in these areas in the long term, if these trends continue.

Census data from 2016 shows that approximately 30% of the 13k dwellings in Cumberland are not permanently occupied. These are presumably largely seasonal residences. In Cumberland, about 89% of residences are single-family detached homes. About 42% of occupied residences were built on or before 1960, and by decade construction statistics are declining. More than 12% of dwellings were reported being in need of major repairs.

More than 40% of attached or semi-detached homes are in Springhill, and about 33% of Springhill residents are tenants. Springhill is the only Urban density community in Cumberland. In those aspects, Springhill's fire risks are somewhat differentiated from the rest of the County.

The average age in Cumberland exceeds both the Nova Scotia average and the Canadian average. More than 25% of residents are age 65 or more. Many residents commute to work outside of their communities, with only 35% working within their Census sub-division. These statistics emphasis the relatively small size of the volunteer firefighter recruiting pool.

Chapter 10 develops cost estimates and recommendations on annual operational cost changes, annual minor-capital needs, and major-capital estimates to sustain the provision of fire services.

The current Cumberland annual operational budget for the provision of fire services includes 17 fire service related cost centres and more than 80 cost elements (codes). Some program costs related to recommendations in this *Review* are already occurring and are distributed in the existing budgets. Estimates of annual operational costs were developed on a program basis. There is no overall estimate in this *Report* of any increase to the operational budget.

Cost estimates are provided for the following programs. Some are already partially funded since there are some existing components already being undertaken. The last four items are substantially new programs.

- Inspection, testing, repairs, and maintenance of fire apparatus,
- Inspection, testing, repairs, and maintenance of SCBA and related equipment,

- Inspection, testing, repairs, cleaning, and maintenance of firefighters personal protective equipment,
- Testing, repairs, and licensing of radio communications equipment,
- Benefits and recognition for volunteer firefighters,
- Computers and software for reporting by firefighters,
- Fire prevention initiatives,
- ♦ Inspection, testing, repairs, and maintenance of ladders, hoses, appliances, powered equipment,
- ♦ Fit-testing of all firefighters who need to wear respiratory protection,
- ♦ A computer based records management system (RMS) that addresses all areas of fire protection,
- ♦ Staffing for the recommended *hybrid* governance model (4.4 FTE).

A computer based records management system (RMS) is being recommended to facilitate the collection of data on all aspects of the provision of fire services. Data that will facilitate the establishment of metrics from which analytics can provide insight into strategic needs and will provide the ability to properly measure and report service delivery results to Council and the public.

The concept of minor-capital expenditures is introduced. Minor Capital includes the purchase of smaller cost, semi-durable items used in firefighting and rescue; such as fire hose, firefighter protective clothing (bunker gear), self-contained breathing apparatus (SCBA) components, rescue rope, axes, tools, saws, radios, pagers, batteries, and many other similar items. There are approximately 130 items on the list of minor-capital needs. Some of these items are purchased annually and some are needed every 10-15 years, and everything in between.

A 20-year estimate of minor-capital needs and cost is provided. Planning strategically over this long period allows a reduction in annual budget fluctuations through a known fixed contribution. It also reduces the accumulation of unfulfilled and unbudgeted needs, which inevitably results in a significant capital project urgently requested to prevent a service downgrade. It encourages bulk, group, purchasing resulting in standardization and reduced overall costs when properly managed.

The estimated annual contribution need is approximately $378k in 2022 dollars. Some monies are already being expended on the purchase of what would be considered minor-capital items.

These currently occurring purchases are distributed in half a dozen cost elements in the 17 cost centres, and some are showing up as capital projects. This proposal would consolidate all these.

A 20-year projection of identifiable Major Capital projects was developed that includes replacements for fire vehicles, fire stations, and major equipment. The estimate is front-end loaded due to a backlog of needs.

Firefighting vehicles (fire apparatus) are projected for replacement basis a 25 year lifespan. Included in the estimate is 58 vehicles scheduled for replacement, upgrade, or refurbishment over 20 years. Ten fire apparatus are not recommended for replacement, as surplus to needs. Some new capabilities are also included.

Six fire stations are projected for replacement in the first ten years; River Hebert, Westchester, Parrsboro, Joggins, Wentworth, and Advocate. Also related is projects associated with installing water treatment facilities and automated emergency power in stations that are not equipped already.

A high priority project is the need to standardize firefighter respiratory equipment; i.e., SCBA. In all, 100 SCBA and a further 100 spare air cylinders, of the current total of 140 SCBA and 140 spare cylinders, are projected as needing replacement as soon as possible to eliminate a risk for firefighters and to improve interoperability between fire departments.

The projected capital costs are substantial, if all recommendations are undertaken. For the first ten years (2022-2031) an estimated total capital expenditure of $27.2M is projected. The next ten years (2032-2041) includes a projection of $12.3M. The primary budget drivers in the first-half are fire vehicles and fire station replacements.

For the past 20 years or so, fire protection has been funded through County general tax revenues, which replaced the older system of local area fire tax rates. These old fire levies were based on assessment values within fire district boundaries, and as such were highly variable in their impact on individual taxpayers, and in the overall ability to properly fund fire departments. In order to improve the ability to deliver a more uniform level of services county-wide, a standard

level of funding was achieved for all fire departments, funded in a uniform manner across the County. This *Review* of the fire services indicates that a stronger approach to standardization and integration of fire services is highly recommended. As such, the only realistic means to achieve that is to continue funding the fire departments uniformly, according to need, and through general tax revenues.

Summary

Overall, the goal of the fire service must be to safely provide an appropriate and sustainable level of service to the community. It is critical that the community knows and understands the level and standard of services being provided, and also knows and understands the limitations to the service being provided. Public dialogue is an important part of the process.

The main limitations on service delivery are funds, manpower, and travel-distances. Although the level and standard of service is based on several factors, overall it is determined by public decisions; decisions based on the *needs* and *circumstances* of the community.

The *circumstances* are, in simple terms, what the community can afford. In Cumberland County, the size of the County and its relatively small population and tax base forces many hard decisions. The main one is that the fire service in Cumberland is likely to remain a volunteer based service as long as that model can be sustained. Economies of scale and teamwork need to be found wherever they can be found, and that will require imagination, deep levels of cooperation, attention to detail, clear direction, and strong leadership at the local and County level.

The biggest threat to the sustainability of the volunteer fire service, in our opinion, is the recruiting, training, retaining, qualification, and ageing out of the volunteer firefighters. There is great difficulty in many of the fire departments in fielding enough qualified firefighters to perform interior structural firefighting and rescue; which are the primary functions of the fire department. This is a priority that requires addressing as soon as possible and suggestions are contained in the *Report*.

The *needs* are a mixture of what the community expects and the risks in the community. Cumberland is very rural for the most part, and it should not be surprising that wildland and single detached homes are the largest proportion of fires. Fires, rescues, and dealing with hazards are still the main business of Cumberland fire services. Cumberland provides services both to its residents and to visitors and to those *just passing through*. Highway-104, the main highway connecting Nova Scotia and Newfoundland to the rest of Canada, runs right through the middle of Cumberland. And so does the main rail corridor.

What should not be surprising is that medical assistance calls are a major driver of demand on fire department manpower and other resources. There are some concerns about the current delivery of this service that are discussed in the *Report* and recommendations.

A general finding from the review of the current fire services is that there are substantial silos with some of the fire departments in Cumberland County. Standardization of major or minor equipment purchases is largely ineffective. Standards and service levels are not the same. Procedures differ. Each fire department operates at arm's length from the County and substantially independently from each other.

As part of governance concerns, Goudreault Associates has recommended centralized coordination of the fire departments and improved support to the fire chiefs; with the mandate of meeting fire service best-practices, legislated mandates, transparency and accountability to Council and to the public in the expenditure of taxpayer funds. The County has recently appointed a Director of Protective Services; a good move which will hopefully bring fire service issues to the big table and garner the needed understanding, and support of Council and senior staff, in order to move forward. The Director will need good people in key places to make this possible.

There are many more recommendations and details in the accompanying *Report*. If all recommendations are accepted and implemented, it is our opinion that the outcomes will be a more robust fire service; one that provides improved fire-emergency response services, that meets municipal mandates for accountability and transparency, and one that meets legislative mandates and fire industry best-practices.

DEFINITIONS

Aerial-Apparatus	A vehicle with a mounted hydraulically operated aerial device (ladder).
Automatic-Aid	Apparatus and man-power from another fire department always immediately responds (by written agreement) to structure fires or other specified types of incidents, to support the responsible fire department, without being specifically requested for that particular incident.
Fire Apparatus	As per NFPA-1901 *Standard for Automotive Fire Apparatus*; A vehicle designed to be used under emergency conditions to transport personnel and equipment or to support the suppression of fires or mitigation of other hazardous situations.
First-Line Apparatus	Fire vehicles that are ready to respond to any emergency either as a primary assignment or for a subsequent assignment. Opposite of Reserve Apparatus.
FUS	Fire Underwriters Surveys.
GPM or IGPM	Water flow rate measured in Imperial gallons per minute.
Rescue	Is a type of specialty firefighting apparatus. Where needed by community risks, they are primarily designed to carry the equipment necessary for technical rescue situations such as traffic collisions requiring vehicle extrication, building collapses, confined space rescue, rope rescues and swift water rescues. They carry an array of equipment such as the Jaws of life, wooden cribbing, generators, winches, hi-lift jacks, cutting torches, circular saws and other forms of heavy equipment that pumpers do not have space to carry.

USgpm	Water flow rate measured in USA gallons per minute (83.3% of IGPM).
IDLH	Immediately Dangerous to Life or Health; Occupational exposure to atmospheres that have long been recognized as having the potential to adversely affect the lives and health of workers. For firefighters, smoke from a fire is an IDLH atmosphere, as well is exposure to chemicals.
Initial Attack Apparatus	(aka Quick Attack) Fire apparatus with a fire pump of at least 250 gpm (1000 L/min) capacity, small water tank, and hose body whose primary purpose is to initiate a fire suppression attack on structural, vehicular, or vegetation fires, and to support associated fire department operations. Useful for accessing narrow lanes.
MFR	Medical First Responder program sponsored by the Province of Nova Scotia's Emergency Health Services, provided by trained local firefighters.
Mutual-aid	Fire Underwriters define Mutual-aid as anything requested after a unit arrives on scene, that is needed during the fire and is not part of the first alarm assignment.
NFPA-1201	Standard for Providing Fire and Emergency Services to the Public, 2015 Edition defines mutual-aid as a reciprocal assistance by emergency services under a prearranged plan.
NFPA	National Fire Protection Association
Pumper	Is a vehicle that is primarily designed to carry hose, a water tank, some cases a foam tank, a chassis mounted fire pump, some cases a foam pump, miscellaneous tools, ladders, and manpower. Primary role is fire attack and extinguishment.

Pumper-Tanker	Similar in capability to a pumper other than the water tank capacity is larger than 800 imperial gallons of water, typically 1,500-3,000 gallons.
Relay	The method of moving fire water over long distances employing fire pumpers and large diameter hose.
Reserve Apparatus	A fire apparatus retained as a backup apparatus and used to replace a primary (front-line) apparatus when the primary apparatus is out of service.
Second Line Apparatus	Fire vehicles that are ready to respond to any emergency in support of a first line apparatus, or to a simultaneous incident. Generally senior vehicles.
Shuttle	A method of transporting water to a fire scene from a water source, employing pumps and mobile water supply fire apparatus.
Special Services Vehicles	Provides support services at emergency scenes; could be rescue, command, hazardous material, air supply, electrical generation, floodlighting, support equipment, and personnel. Rescue vehicles may be classified as such if they meet NFPA-1901 requirements.
Tanker	Mobile Water Supply; similar water carrying capability as a pumper-tanker but without chassis mounted main firefighting pump (but might have a small “booster pump”) does not carry the range or amount of equipment that a pumper must carry.
ULC	Underwriters Laboratory of Canada

CH 1: CURRENT PROVISION OF FIRE PROTECTION SERVICES

The Request for Proposal asked that a "*clear understanding of the current fire protection services be provided*." One major aspect of this includes a review of the incident response records, including the number and character of incidents.

A second aspect is the understanding of the service levels associated with these response records. In part, determining service levels requires a review of performance associated with the incident responses. Such performance is then compared with industry standards to better understand any potential gaps.

This chapter of the *Report* looks at the analysed data that was provided to *GA*. Although the data was incomplete, a number of analytical tools have revealed a view of past performance. More information, especially foundational data, is included in *Appendix 1: Response Data*.

The chapter following this one, *Ch 2: Standards for Fire Service Delivery,* starting on page *120,* reviews the current applicable industry standards, and draws some conclusions about how Cumberland fire services compares to the standards.

RESPONSE DATA

GA was provided incident response data from Valley Communications Inc. (*VCI*) for January 2016 through December 2021 inclusive. The records for the year 2021 are complete up to December 8, and are included in this *Review* because they represent the most recent data and are virtually a complete year of information.

Data for incidents in MCC where Amherst was under contract to respond, were provided by Amherst dispatch services, and not through *VCI*. The Amherst data does not include 2016.

GA correlated the *VCI* and Amherst data, which included correcting errors and inconsistencies in the data. Some of these errors included street names and community designations. Consistent

spellings and accurate community attribution for each incident is important for determining accurate incident distribution and service demands.

The data includes fire/emergency services to the 173 designated communities in MCC; provided by the 16 MCC fire departments and the 3 contract[1] fire departments. The data for responses outside of MCC are not included in *GA*'s analysis, except where one of the 16 MCC fire departments has provided aid outside of MCC; i.e., into Colchester, Amherst, Oxford, or New Brunswick.

Incidents are dispatched to the fire departments by *VCI* using one of 68 incident descriptions that *VCI* terms "*Response Type Called In*." To facilitate analysis and subsequent reporting, these 68 Types were grouped by *GA* into basic incident Categories, as follows; Fire, Pre-Fire Conditions, Rescue, Hazard, Assist, and MFR (medical first response). Amherst data was converted into this categorization scheme as well. The Type to Category cross-reference table is included in *Table 83* in *Appendix 1*.

Incident vs Call

It is important to distinguish between the terms *calls* and *incidents*. The fire departments typically identify being dispatched as being called-out or paged-out, or more simply as a "call." They will often report their activity levels as a certain number of calls per month or per year. This is generally an accurate indication of the number of times that they have been requested to provide services. It reflects how many times that *VCI* has notified them of a need for service.

However, when it comes to examining the demand for fire/emergency services in a particular community the counting of calls is not always a good or a consistent indicator. Often, and for some fire departments, very often, more than one fire department is assigned to participate in responding to an incident that has occurred in a particular community. This additional participation may even involve multiple fire departments assisting the primary fire department.

[1] Data for responses in the contract fire departments home districts is not included. Only responses in MCC areas is included.

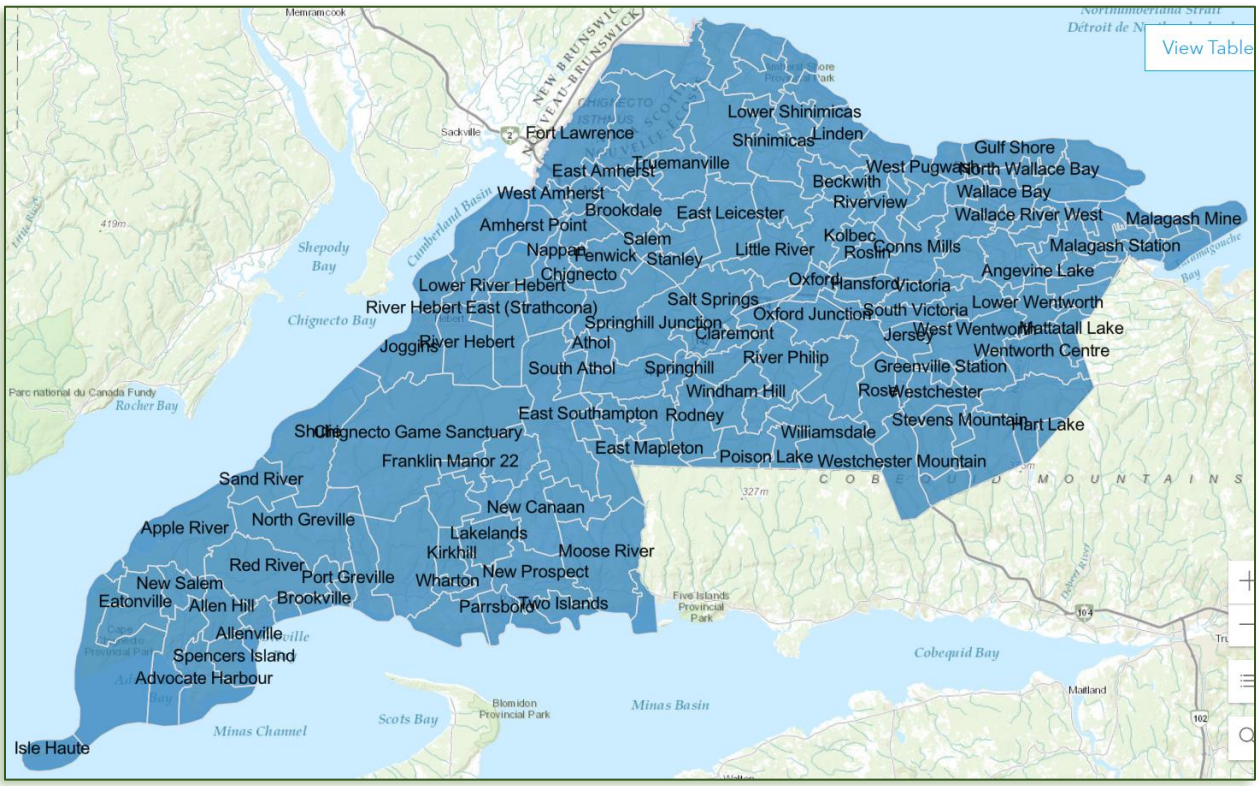
This multiple response is called mutual aid, or sometimes automatic aid if it has been predetermined. With multiple responses, a single incident could generate 2 or even more calls; one for the primary fire department and one call credited to each of the assisting fire departments. However, there is still only the one incident in the community, no matter how many fire departments participate.[2]

For that reason, throughout this *Report* the term incident will be used or understood when discussing community risk and service demands. When appropriate, and pertinent to the discussion, the terms *mutual/automatic-aid* and *calls* will be used. A more in-depth discussion on mutual-aid is included at *Mutual-Aid & Automatic-Aid Agreements* starting on page *428*.

[2] In the data, about 29% of incidents resulted in more than one fire department responding.

Communities

MAP 1: CUMBERLAND DESIGNATED COMMUNITIES



MCC has 173 designated communities, many of which are composed of numerous hamlets, unincorporated villages or towns, and cross-roads settlements that each have names, or at least a local identity. MCC has an online mapping portal[3] that facilitates viewing these community names and boundaries. The community boundaries can also be projected on *Google Earth* by downloading the **.kml** file found through the download button on the mapping site that is accessed through the footnote link in this paragraph.

[3] https://data-cumberlandns.opendata.arcgis.com/datasets/4e740d0ef6aa43c187883ace9f36758f_0/explore?location=45.621046%2C-64.140187%2C9.44

GA has conducted its analysis of historical fire services delivery at the designated community level. Community based analysis will reveal specifics about a particular community service demand, and provides insight into risks. See *Appendix 2: Community Risk Data* for details.

GA recognizes that not every community is homogeneous in itself, but for the purposes of this analysis such an assumption was necessary.

Fire Departments

Each of the 19 fire departments provide service primarily to the communities in its own designated Fire District.[4] Each fire district contains multiple communities, ranging in number from as few as 2 to as many as 21. Therefore, each fire department services more than one of the designated communities.

GA has conducted an analysis of historical fire services delivery at the fire department level as well as at the community level. The community boundaries and fire district boundaries do not always coincide exactly. Fire districts are largely based on shortest travel times from each fire station. Community boundaries are based on different criteria. The result is that some communities are serviced by more than one fire department, depending on which part of the community is closest to what fire station.

[4] Interactive map: htt17ps://data-cumberlandns.opendata.arcgis.com/apps/b2b1835a393e4bb4bcfeae157d7df630/explore Image on this page from *Cumberland County Fire District Analysis* by Angharad Wylie, 2016.

MAP 2: FIRE DEPARTMENT STATIONS AND PRIMARY RESPONSE BOUNDARIES

Taking the Longer View

Incident statistics can vary significantly from one year to another for a fire department. Examining only one or even a couple years of data can distort what is actually occurring in the longer term. There is sometimes a tendency to extrapolate "trends" from limited data, and that tendency can lead to significant errors in conclusions and decision making.

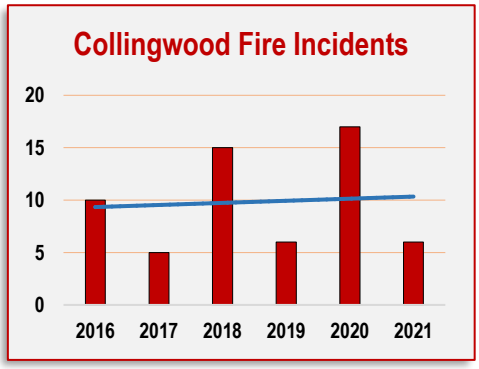
The following is a specific demonstration where using short term data can lead to inaccurate conclusions. Between the years 2016 and 2021 inclusive, the Collingwood fire department responded to annual total numbers of Fire incidents, as shown on the accompanying small table. However, if an analysis only compared the data on a limited year over year basis, say 2017 as compared to 2016, it might be concluded that fire incidents are

Year	Number of Fire Incidents	Change from Prior Year
2016	10	
2017	5	-50%
2018	15	+300%
2019	6	-60%
2020	17	+283%
2021	6	-65%

dramatically down by 50% in Collingwood's fire district, and annual budget and management decisions could be made on that information.

However, in the subsequent year (2018) the conclusion might then be that since incident numbers are now dramatically up over 2017 by 300%, that management/budget decisions made in the prior year (based on the prior year conclusions on fire incident frequencies) were the cause of the big change in incident numbers.

Although the above examples are not strictly speaking inaccurate, number wise, too close a view at the data can obscure the longer-term trend and can mask underlying causes, leading to erroneous conclusions. Analysing a longer time span of data, say a 6-year span of data (i.e., 2016-2021 in the case of this *Review*), reveals that actually the trend for fires in the Collingwood district is not dramatically down, or up, but is slightly trending upwards over the data years. The accompanying chart on the left shows this with the blue trend line. Different management/budget decisions might arise out of this longer-term view.



These simple examples demonstrate the dangers of analysis that is not based on adequate time spans and data depth, and emphasizes the value of collecting comprehensive and consistent data, year over year. This is particularly so where individual fire departments do not respond to a large number of incidents annually, and it consequently takes years of data to reveal what is actually occurring there.

GA prefers to use multiyear data in its analysis, at least 5 years, to better identify service demand trends. In the case of this *Review*, 6 years of incident dispatch data were used in the analysis.[5]

[5] 2016 data for Amherst fire department, servicing portions of MCC, was not available for analysis and is not included.

HISTORICAL INCIDENT DATA, BY FIRE DEPARTMENT

Dispatch Data From Valley Communications (VCI)

GA was provided incident dispatch data from *VCI* for the years 2016-2021 inclusive. This data included the response type of incidents, the date, and time of day an incident was paged out to the fire department, and some timestamps associated with fire department activities, including; when the first truck left the fire station, when the first truck arrived at the incident location, when incident management was concluded, and when the firefighters were back at the station.

As previously mentioned, dispatch data was separately obtained from Amherst and included the years 2017-2021.

The combined dispatch data from *VCI* and Amherst included information on 6,618 *calls*, representing 4,594 individual fire service *incidents* that occurred in MCC over the 2016-2021 time period. The difference between the number of incidents and the number of calls is the mutual-aid (assist) calls, where one or more other fire departments also responded to a single incident. Over the 6 years of data there were 2,024 mutual-aid calls, representing 31% of all recorded calls, and including responses by more than one fire department to 29% of incidents.

GA imported the *VCI*-Amherst data into our own developed spreadsheet that provided additional worksheet columns for the inclusion of information related to post-fire investigations (origin, cause, circumstances), smoke alarm status, manpower availability and usage, mutual-aid contributions, injuries and deaths, dollar values protected and lost, and insurance status.

The *GA* spreadsheet was distributed to the individual fire departments with a request that missing information be provided relating to *Fire Category* incidents[6] between 2016 and 2021. Fire departments were requested to correct any errors noticed in pre-populated data and to contribute their own held data in the additional worksheet columns, for their fire incidents.

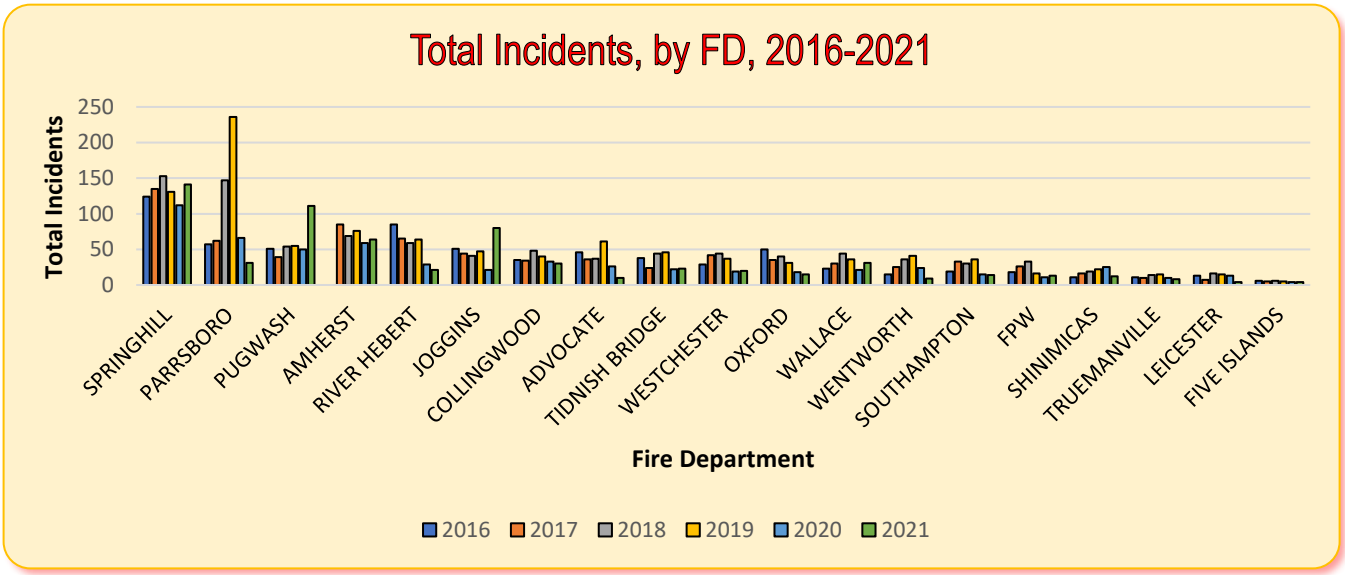
[6] There were 1,264 fire incidents in the data during this period.

In general, the additional information *GA* requested was the same information that should normally be collected by the fire departments in order for them to be able to complete the Nova Scotia Fire Marshal's Fire Incident Report Form.[7] The Fire Marshal *requires* that the "*primary fire department*" file a report "*for any fire that takes place within their jurisdiction*" within 7 days of completing the investigation of that fire. *GA* did not request the provision of personal information such as names of owners or casualties, and none are included in this *Review*.

Total Annual Incidents

As mentioned earlier in this chapter, *call* numbers includes the provision of mutual-aid between fire departments, as well as including unique incidents. Incident numbers provide a true picture of fire services demand numbers in the communities since they show what happened, regardless of what resources were called to assist with remediation. *Chart* 1, that follows, shows the *incident* number totals, by fire department, over the years 2016-2021 inclusive. Each incident is a unique occurrence of a demand for fire services.

CHART 1: TOTAL INCIDENTS BY FIRE DEPARTMENT, 2016-2021



[7] https://beta.novascotia.ca/fire-incident-reporting-fire-services

The following *Table 1* shows the corresponding data from the above graph. It is sorted on the last column (Incident Totals).

TABLE 1: TOTAL INCIDENT NUMBERS, BY YEAR, BY FIRE DEPARTMENT

Fire Departments	2016	2017	2018	2019	2020	2021	Incident Totals
SPRINGHILL	124	135	152	131	112	141	**795**
PARRSBORO	57	62	147	236	66	31	**599**
PUGWASH	51	39	54	55	50	111	**360**
AMHERST	0	85	69	76	59	64	**353**
RIVER HEBERT	84	64	59	63	29	21	**320**
JOGGINS	51	44	41	48	21	80	**285**
COLLINGWOOD	35	34	48	40	33	30	**220**
ADVOCATE	46	36	37	61	26	10	**216**
TIDNISH BRIDGE	38	24	44	46	22	23	**197**
WESTCHESTER	29	42	44	37	19	20	**191**
OXFORD	50	35	40	31	18	15	**189**
WALLACE	23	30	44	36	21	31	**185**
WENTWORTH	15	25	36	41	24	9	**150**
SOUTHAMPTON	19	33	30	36	15	14	**147**
FPW	18	26	33	16	11	13	**117**
SHINIMICAS	10	16	19	22	25	12	**104**
TRUEMANVILLE	11	10	14	15	10	8	**68**
LEICESTER	13	7	16	15	13	4	**68**
FIVE ISLANDS	6	5	6	5	4	4	**30**
Column Totals:	**680**	**752**	**933**	**1010**	**578**	**641**	**4,594**
Annual Average:	**844**				**610**		**766**

Total Annual Calls

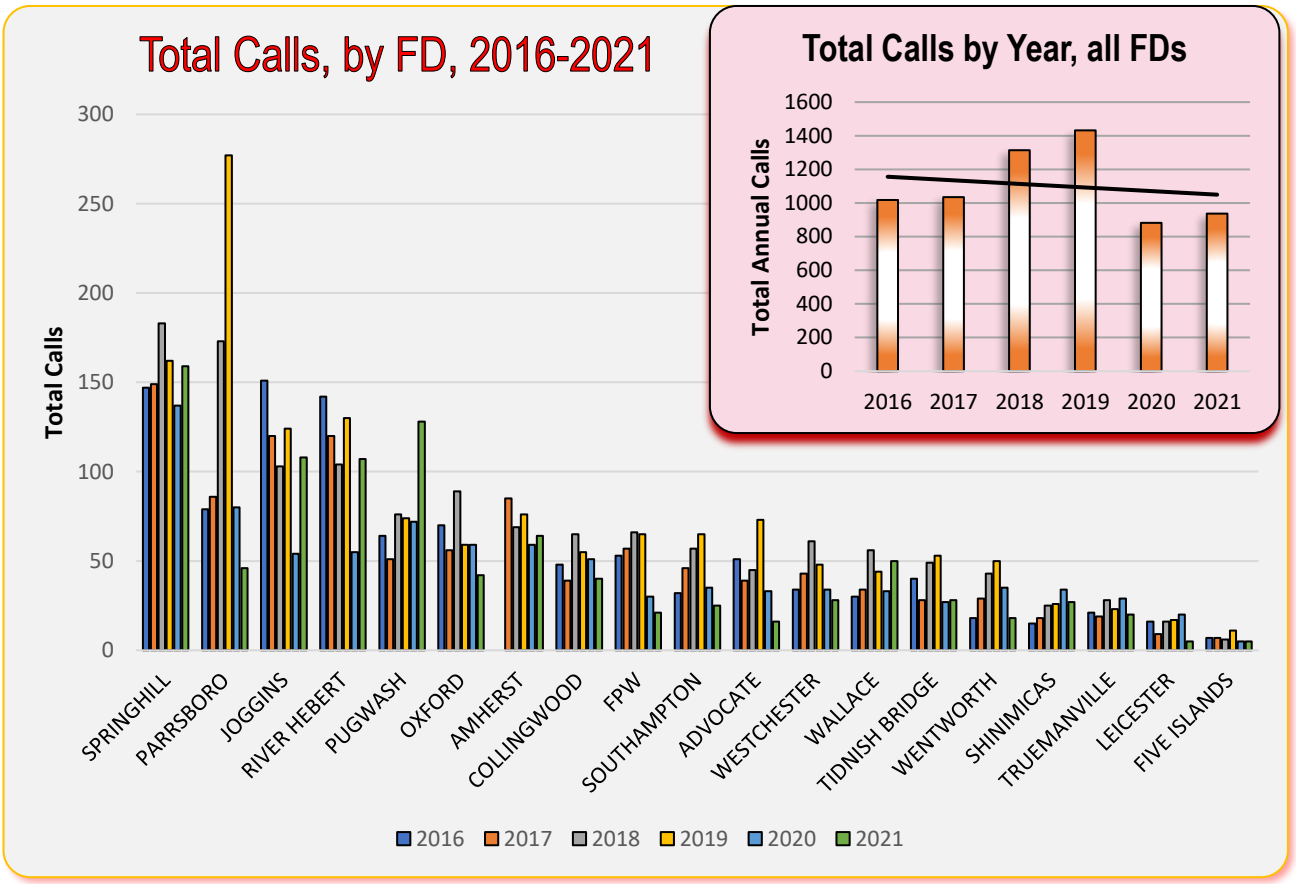
Incident numbers show what is occurring in the community, but do not clearly show the entire level of activity for individual fire departments. Mutual-aid is often provided between fire departments and these activities are better reflected when looking at *Call* numbers.

Including all call-outs (*calls*) the fire departments servicing MCC[8] responded to the total annual numbers shown in the following charts in the years 2016-2021. The annual trend of *Call*

[8] Excluding 2016 for Amherst for which dada was not provided.

numbers is currently downward. There is pretty good indication based on *GA* stakeholder interviews with fire department personnel that the past two years of COVID restrictions have impacted call numbers. Up in some cases and down in others.

CHART 2: TOTAL ANNUAL CALLS BY FIRE DEPARTMENT



Data detail is shown in *Table 2*, below. The data is sorted on the last (Call Totals) column.

TABLE 2: TOTAL ANNUAL CALLS BY FIRE DEPARTMENT

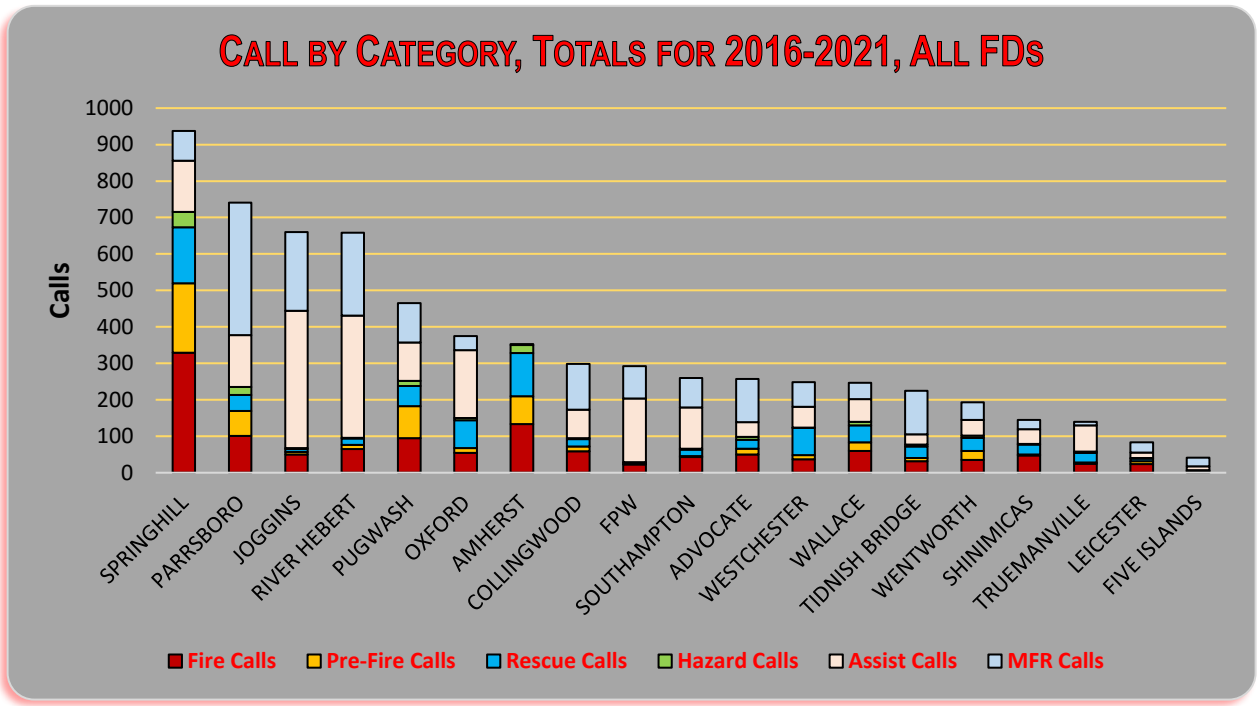
FIRE DEPARTMENT	2016	2017	2018	2019	2020	2021	Call Totals
SPRINGHILL	147	149	183	162	137	159	**937**
PARRSBORO	79	86	173	277	80	46	**741**
JOGGINS	151	120	103	124	54	108	**660**
RIVER HEBERT	142	120	104	130	55	107	**658**
PUGWASH	64	51	76	74	72	128	**465**
OXFORD	70	56	89	59	59	42	**375**
AMHERST	0	85	69	76	59	64	**353**
COLLINGWOOD	48	39	65	55	51	40	**298**
FPW	53	57	66	65	30	21	**292**
SOUTHAMPTON	32	46	57	65	35	25	**260**
ADVOCATE	51	39	45	73	33	16	**257**
WESTCHESTER	34	43	61	48	34	28	**248**
WALLACE	30	34	56	44	33	50	**247**
TIDNISH BRIDGE	40	28	49	53	27	28	**225**
WENTWORTH	18	29	43	50	35	18	**193**
SHINIMICAS	15	18	25	26	34	27	**145**
TRUEMANVILLE	21	19	28	23	29	20	**140**
LEICESTER	16	9	16	17	20	5	**83**
FIVE ISLANDS	7	7	6	11	5	5	**41**
Column Totals:	**1,018**	**1,035**	**1,314**	**1,432**	**882**	**937**	**6,618**
Annual Average:	**1,200**				**910**		**1,103**

Summary of all Calls

As mentioned before, *GA* has categorized all *Calls* into one of six *Categories*; Fire incidents, Pre-Fire Conditions incidents, Rescue incidents, Hazard incidents, Assist calls, and MFR (medical first response) incidents. *Chart* 3 below shows how the various categories contribute to overall service demand numbers, for each fire department[9] responding to incidents in MCC.

[9] Data does not include Amherst *Calls* for 2016.

CHART 3: CALLS BY CATEGORY, ALL FIRE DEPARTMENTS,, 2016-2021



It is clear from the chart that the makeup of fire department *call* numbers is not consistent from one fire department to another. Springhill numbers, for example, are driven in large part by fire *incidents*. Whereas, others are driven by Assist *calls*, or MFR *incidents*.

GA can speculate that there are some significant reasons for these differences; including likely the post-industrial urban characteristics of Springhill, the distance to EHS bases in many communities, and the mutual-aid driven interdependence between the more rural fire departments, probably as a response to staffing challenges.

Fire Incidents

Responding to fire *incidents* forms the core of all fire department emergency services. All fire departments handle different volumes of fire *incidents* but for each, being prepared to respond to a fire *incident* drives many decisions on how to provide services by that fire department, and consequently many decisions on budgets, manning, and management.

Fire *incidents* include *Response Type Dispatched* as taken from *VCI* data, as follows;

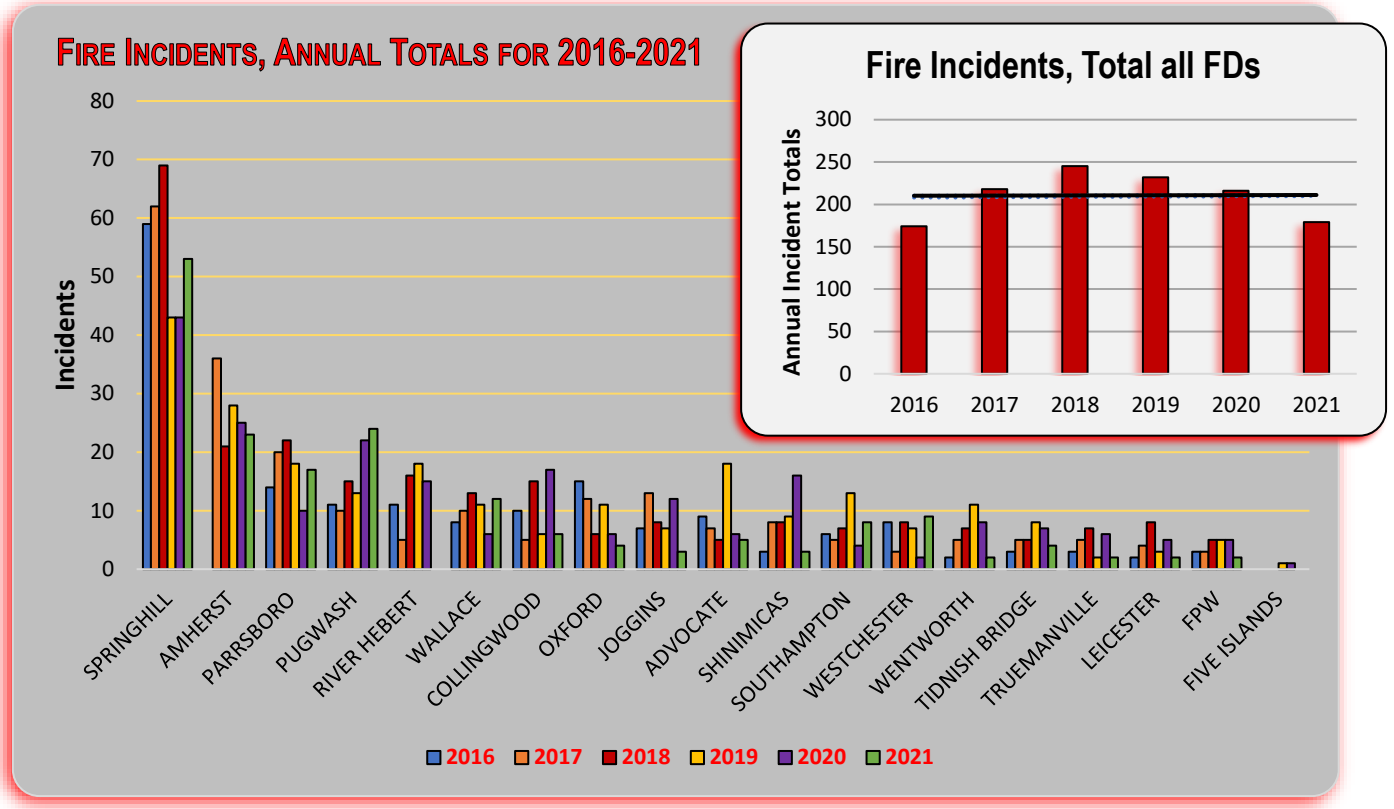
- Bales of Hay Fire
- Chimney Fire
- Commercial vehicle Fire
- Flammable liquid Fire
- Grass / Brush Fire
- Passenger vehicle fire – car, van
- Power lines down, arcing
- Tree on lines on Fire / Arcing
- Power pole on fire
- Structure Fire - Barn / Warehouse
- Structure Fire - Commercial
- Structure Fire - industrial / factory
- Electrical Appliance Fire
- Electrical Fire
- Heating Equipment Fire
- Structure Fire - Other
- Structure Fire - Residential; house / garage /shed
- Transformer on fire
- Trash/Debris Fire
- Trash/Garbage/Debris Fire
- Vehicle fire - Other
- Woods / Trees Fire

Ch 8: Historical Fires; Occupancy, Origin, Cause, Save/Loss, starting on page *547,* provides detailed breakdowns of the various factors associated with fire incidents; as far as was contained in the data received.

The following two charts show the distribution of total fire *incidents* over the *Review* years.[10]

[10] Data does not include Amherst *incidents* for 2016.

CHART 4: FIRE INCIDENT TOTALS, BY FIRE DEPARTMENT, 2016-2021



Summing the fire *incident* numbers from all fire departments shows the annual totals on the smaller inset chart. The black line in the chart is the linear trend line for fire *incidents* over the 6-year period. The trend shows a consistent number of annual fire *incidents*; i.e., a flat trend.

However, looking at the pre-COVID years of 2016-19 only, *incident* numbers appear to show an upward trend. That upward trend might better represent where the future numbers for annual fire *incidents* is going in the longer term.

Pre-Fire Conditions

Just as important as Fire *incidents* are, Pre-Fire Conditions are *incidents* where a fire was narrowly averted or where, had a situation not been discovered, a fire might have ensued. Pre-fire incidents include *Response Type Dispatched* as taken from *VCI* data, as follows;

- Commercial Fire Alarm

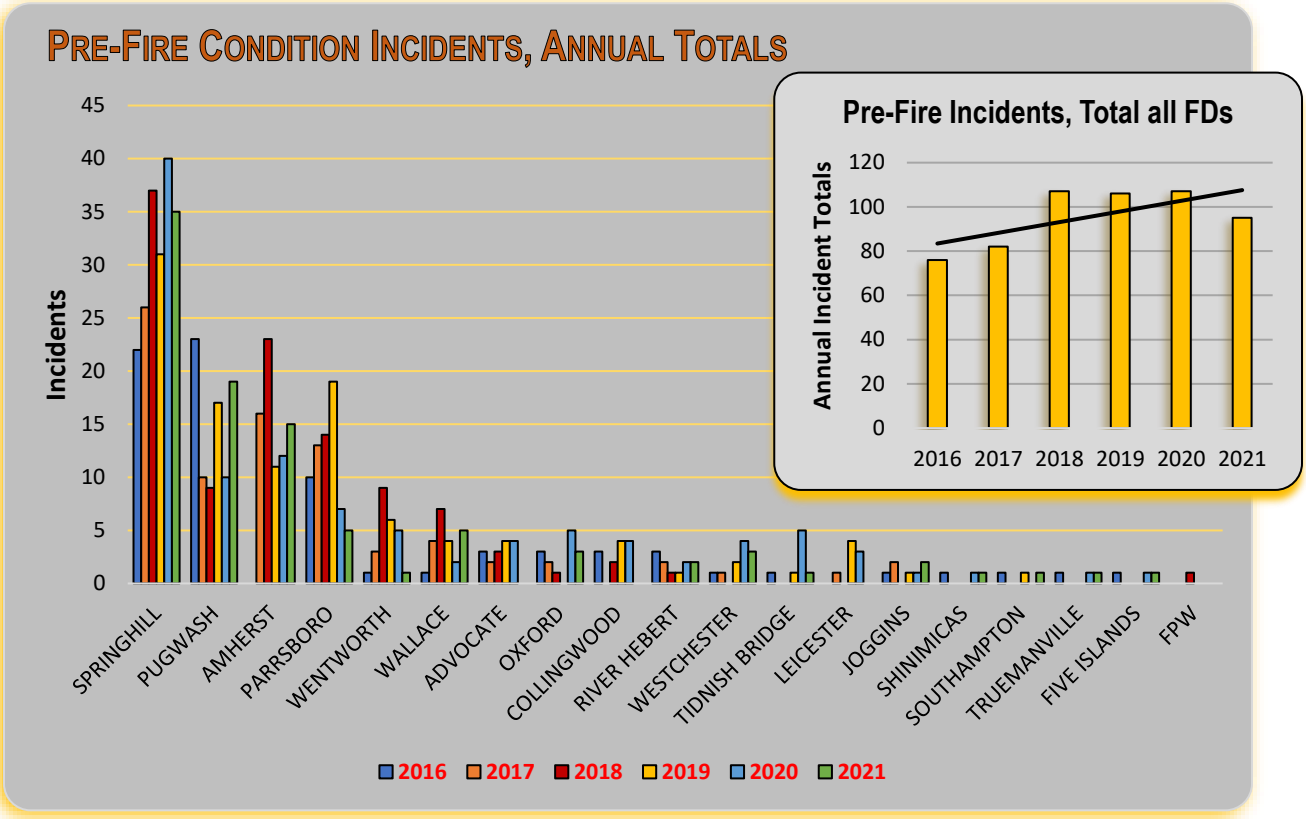
- Electrical
- Electrical appliance
- Heating Equipment
- Investigation
- Other alarms
- Residential Fire Alarm
- Smoke Condition (contained within a structure)
- Smoke Sighted / Unknown Fire

Certainly, some of these incidents can become Fire *incidents* after they are dispatched, depending on what develops or what fire crews discover upon investigation. However in the incident data, this is how they are identified.

Chart 5, that follows, shows the distribution of these *incidents*. [11]

[11] Data does not include Amherst *incidents* for 2016.

CHART 5: PRE-FIRE CONDITION INCIDENT ANNUAL TOTALS, ALL FIRE DEPARTMENTS



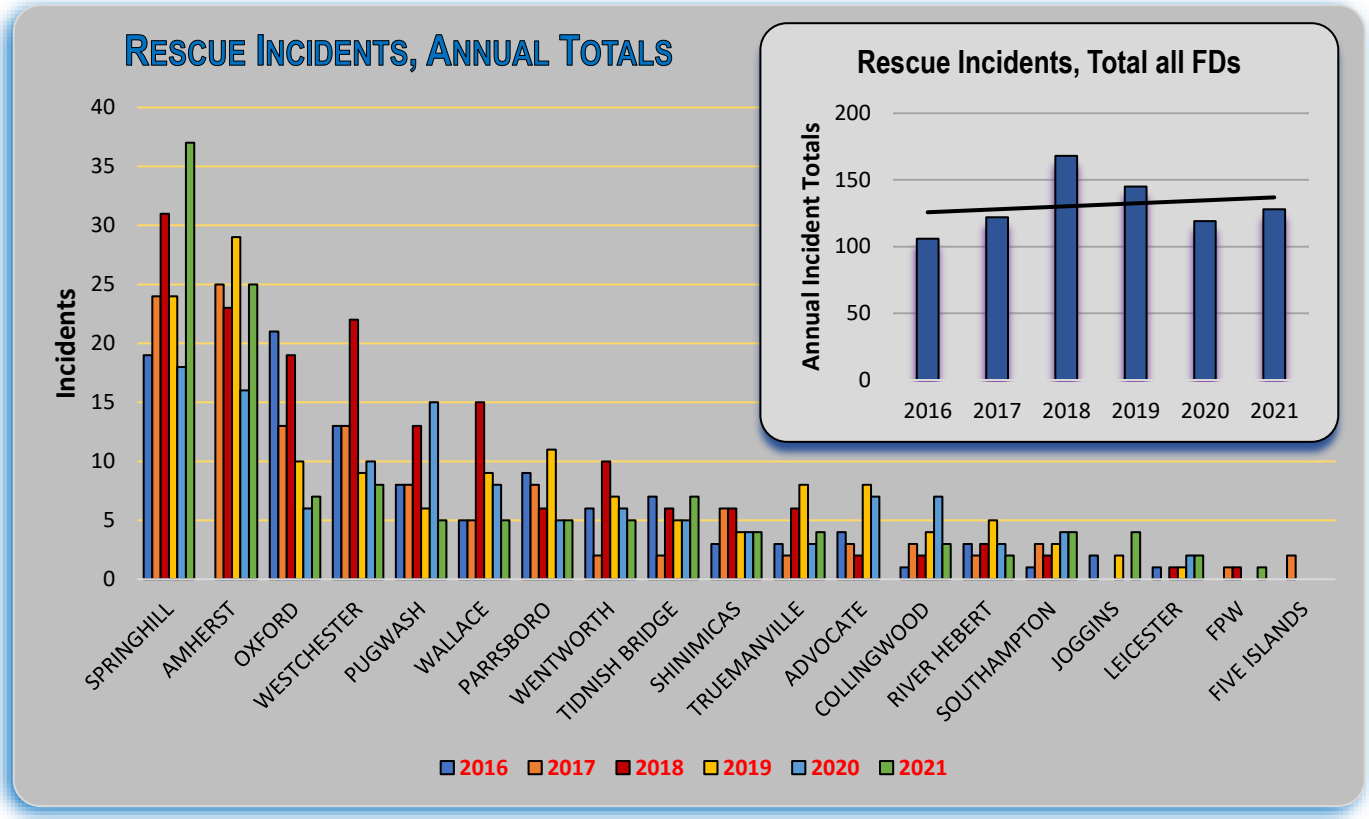
The smaller inset chart shows the annual trend across MCC. The clear indication both pre-COVID and currently, is an upwards trend in this category of *incident*.

Rescue Incidents

Rescue *incidents* include responding to; motor vehicle collisions for extrication purposes, building collapse, water or ice rescue, persons trapped, commercial, industrial or agricultural entrapment, or wilderness incidents. Often there is a medical component to rescue *incidents* and for motor vehicle incidents on the road there can be an environmental aspect as well. Rescue incidents are seldom straight forward.

In *Chart* 6, the inset chart shows the annual trend line across MCC, representing the total of all Rescue *incidents* for all fire departments. The clear indication both pre-COVID and currently, is that there is an upwards trend in this category of *incident*.

CHART 6: RESCUE INCIDENTS ANNUAL TOTALS, ALL FIRE DEPARTMENTS



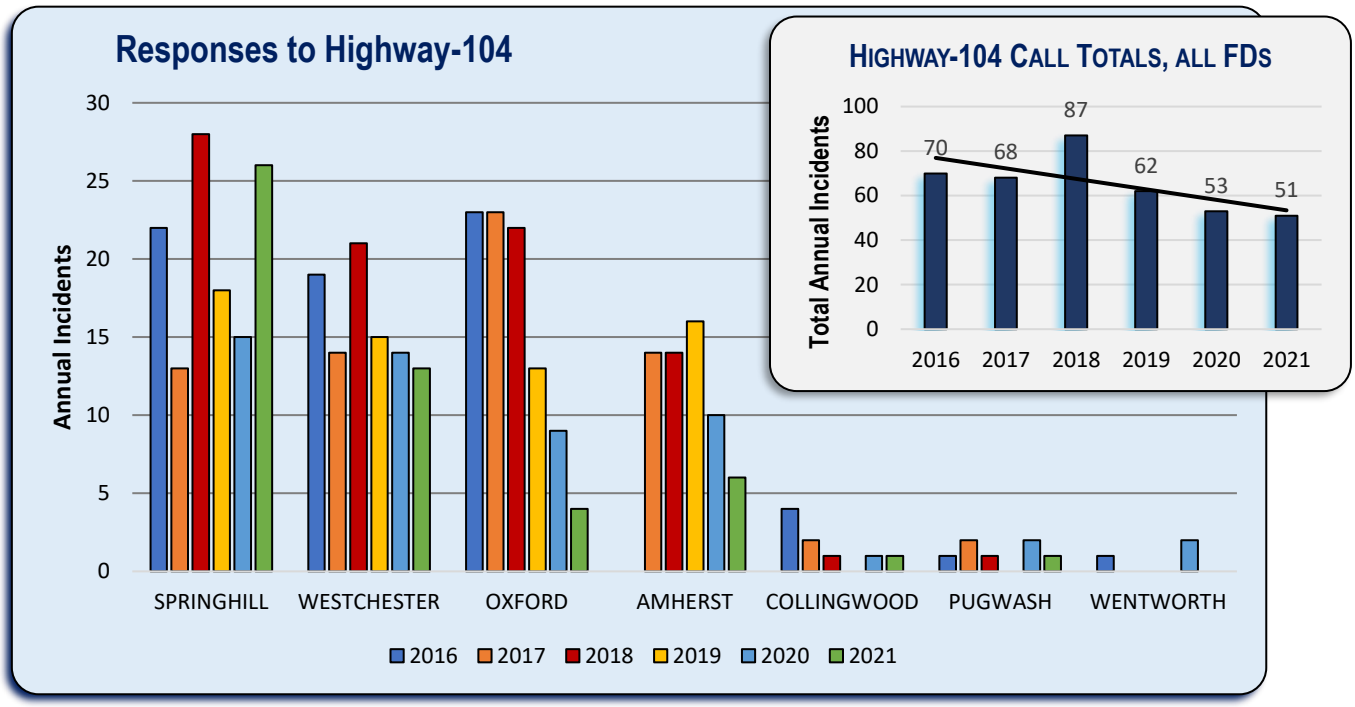
Highway-104 Incidents

Rescue *incidents* can be a significant number for some fire departments, especially those who respond to Provincial highways, most notably the Highway-104 corridor. Amherst,[12] Springhill, Oxford, and Westchester service the Hwy-104 corridor and, as a consequence, all have the highest annual numbers of Rescue *incidents*. On occasion, mutual-aid has also required participation from Pugwash, Collingwood, and Wentworth.

Over the six-year period of this *Review*, of the 313 *incidents* on Highway-104; 76% were Rescue, 16% Fire, 4% Hazard, 2% MFR, and 2% Pre-Fire Conditions. Mutual-aid was dispatched at 25% of the *incidents*. Rescue *incidents* on Highway-104 are in the clear predominance.

[12] Data does not include Amherst *incidents* for 2016.

CHART 7: HIGHWAY-104 INCIDENTS, 6-YEARS OF DATA



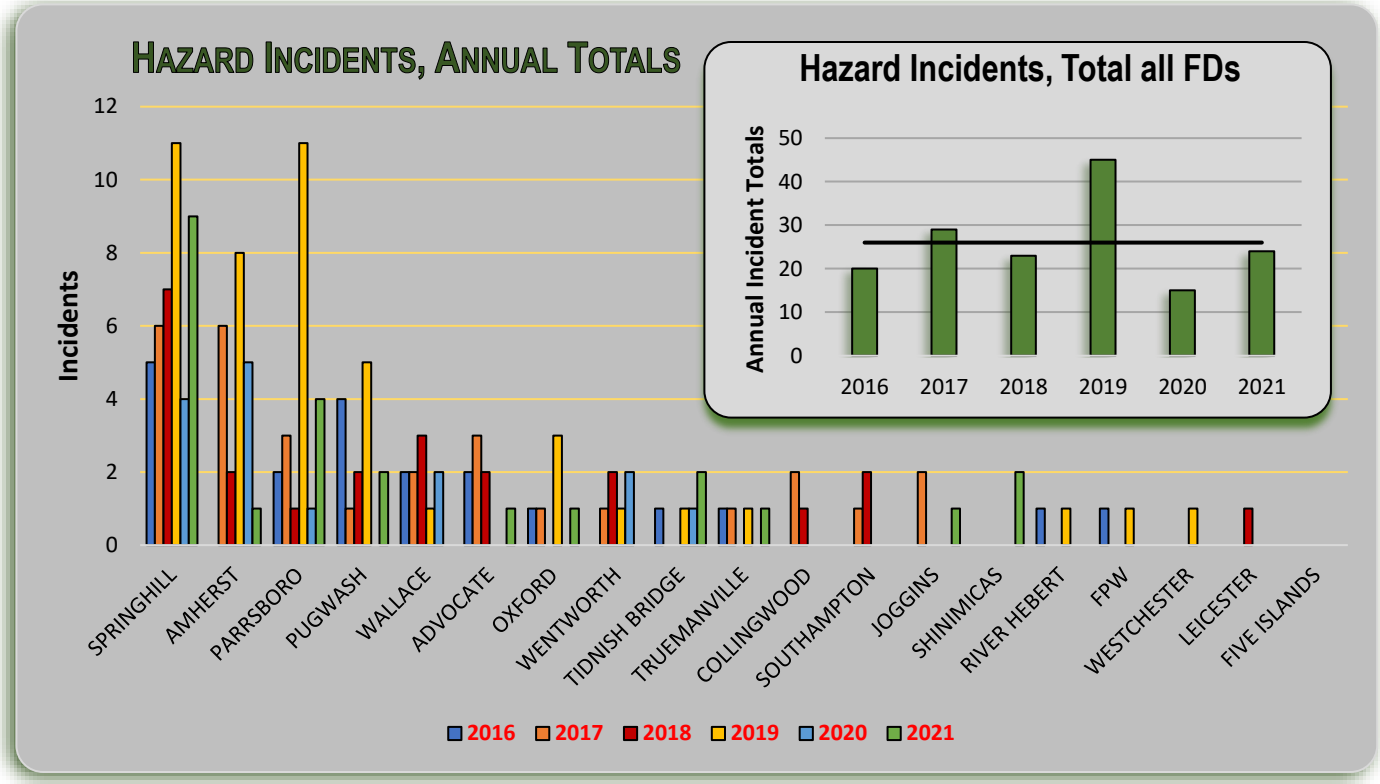
The current trend in Highway-104 *incidents* appears to be showing as declining, but a careful look at the total annual numbers suggests that this may just be an artifact of COVID restrictions over the years 2020/2021. The trend before that period appears to be trending slightly upwards or at least stable. It is likely that the annual numbers will bounce back up once the economy is fully opened.

Hazard Incidents

Hazard *incidents* include responding to; environmental concerns such as oil spilled, spills of flammable liquids, leaking gasses, carbon monoxide in a building, a safety concern to the public such as an unidentified odour, and floods. Hazard *incidents* can be complex and long duration, often involving other specialized resources such as hazardous materials response teams.

The following *Chart* 8 show the distribution of Hazard *incidents*.

CHART 8: HAZARD INCIDENTS ANNUAL TOTALS, ALL FIRE DEPARTMENTS



The trend for Hazard *incidents* is flat over the *Review* period.

Mutual Aid Calls

As a large component of annual *Calls*, it is worth examining mutual-aid (M/A) activities in some depth. *M/A* is used by all fire departments as a means of ensuring that adequate manpower and equipment resources are responding to incidents. *M/A* has its roots in fire incidents where manpower and equipment needs are typically at their highest demand; where no individual fire department can reasonably be expected to solely handle every incident that comes its way.

In MCC, *M/A* has been extensively used by some fire departments for a high percentage of incidents for which they are the primary responder. Some fire departments have gone to the extent of providing *VCI* with "*protocols*" to automatically page certain other fire departments when an incident is paged to them. *GA* speculates that the high use of M/A by some fire

departments is a symptom of primarily two things; the fire department's number[13] of volunteer firefighters, and the percentage of adequately qualified[14] firefighters in that fire department.

Mutual-aid is collectively several *Response Type Dispatched* in the *VCI* data, according to whether or not the assisting fire department attends to the incident location or it performs some other function related to stand-by. Collectively, *GA* terms all of these *Response Types* as ***Assist*** calls. The following *Chart* 9 demonstrates the extent that M/A interdependence generates *Assist call* volumes.[15]

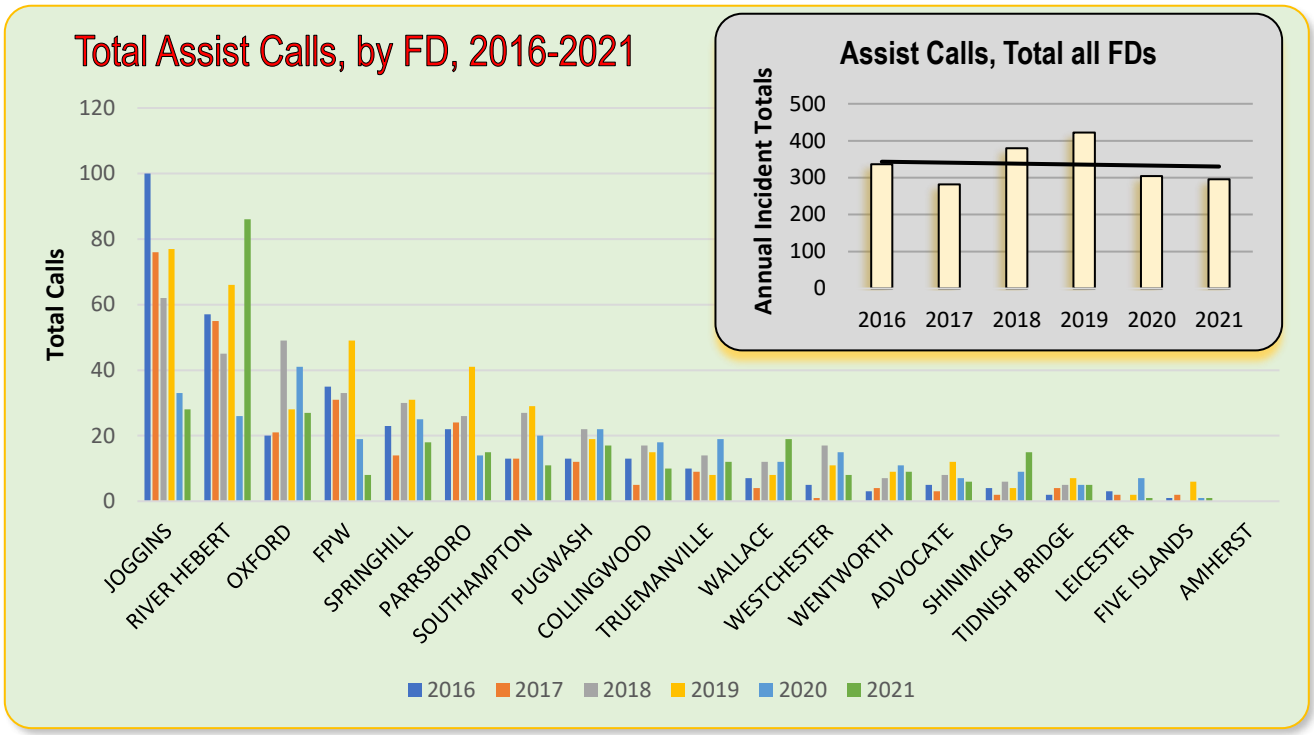
It should be noted that although Amherst does *receive M/A* on occasion for incidents in Amherst itself, as well as in the MCC communities for which Amherst provides contract fire services; Amherst fire services has not reported *providing* any *M/A* assistance outside of Amherst to any MCC fire department over the period of the provided data. For that reason, on the accompanying chart Amherst shows zero *Assist* calls.

[13] The number of firefighters available for an incident is a function of both the total fire department membership, and the percentage of that total that can respond for a given incident.

[14] Fire incidents, and other incident types as well, need firefighters with specific qualifications for successful mitigation of the incident, and an adequate number of firefighters with those qualifications to attend the incident. Qualified structural firefighters are, in particular, in short supply in many fire departments and an adequate number may not be available to respond from a single fire department.

[15] Data does not include Amherst *incidents* for 2016.

CHART 9: ASSIST CALLS ANNUAL TOTALS, ALL FIRE DEPARTMENTS



The trend for Assist Calls appears to be substantially flat.

Table 3 that follows is sorted on the last column (Assist Totals) and shows the numbers behind the previous charts.

TABLE 3: ASSIST CALLS TOTAL ANNUAL NUMBERS, BY FIRE DEPARTMENT

FIRE DEPARTMENTS	2016	2017	2018	2019	2020	2021	ASSIST TOTALS
JOGGINS	100	76	62	77	33	28	**376**
RIVER HEBERT	57	55	45	66	26	86	**335**
OXFORD	20	21	49	28	41	27	**186**
FPW	35	31	33	49	19	8	**175**
SPRINGHILL	23	14	30	31	25	18	**141**
PARRSBORO	22	24	26	41	14	15	**142**
SOUTHAMPTON	13	13	27	29	20	11	**113**
PUGWASH	13	12	22	19	22	17	**105**
COLLINGWOOD	13	5	17	15	18	10	**78**
TRUEMANVILLE	10	9	14	8	19	12	**72**
WALLACE	7	4	12	8	12	19	**62**

FIRE DEPARTMENTS	2016	2017	2018	2019	2020	2021	ASSIST TOTALS
WESTCHESTER	5	1	17	11	15	8	**57**
WENTWORTH	3	4	7	9	11	9	**43**
ADVOCATE	5	3	8	12	7	6	**41**
SHINIMICAS	4	2	6	4	9	15	**40**
TIDNISH BRIDGE	2	4	5	7	5	5	**28**
LEICESTER	3	2	0	2	7	1	**15**
FIVE ISLANDS	1	2	0	6	1	1	**11**
AMHERST	N/A	0	0	0	0	0	**0**
Totals:	**336**	**282**	**380**	**422**	**304**	**296**	**2020**

As can be seen from the above chart and table, Joggins and River Hebert are the two largest providers of mutual-aid, and are incidentally also the largest recipients of mutual-aid. An examination of the data helps to explain this relationship.

In the years 2016 to 2021 Joggins responded mutual-aid to assist River Hebert 284 times. In return River Hebert assisted Joggins 276 times. Thus totalling 560 *Assist* calls between each other. Collectively, Joggins and River Hebert had 607 incidents in the same period, suggesting that they responded mutual aid to each other for 92% of all their *incidents*.

In that same time period, Joggins assisted other fire departments 91 times, and River Hebert assisted other fire departments 62 times. These mutual-aid *calls* are not part of their *incident* totals.

During the same time period, Joggins also received mutual aid, from other than River Hebert, 29 times. River Hebert received mutual-aid, from other than Joggins, 38 times.

Westchester and Wentworth have a similar relationship with each other, although the call volumes are much smaller. There are other pairings as well. The mutual-aid (Assistance) *Calls* matrix in *Table 4* on page *100* helps explain in more detail where mutual-aid has been utilized over the 6 years of dispatch data analysed for this *Review*; who provided it and who received it.

Referring to *Table 4*, the left side column (in green shading) is the fire departments that delivered mutual-aid, and consequently have recorded *calls* for each of these occasions. The top row of the

table (in salmon shading) shows the receiving fire departments, and they are the primary fire departments of record for the *incidents* to which mutual aid was received.

It should be noted that over the 6-year time period, 111 mutual-aid calls were provided to jurisdictions outside of MCC; provided by the 16 MCC fire departments. The largest recipient is Colchester County.

Any of the contract fire departments that provided mutual-aid outside of MCC do not have those transactions included in *Table 4*. Such provision would be outside the provision of services to MCC. The contract departments are Amherst, Oxford, and Five Islands. This *Review* did not concern itself with examining the provision of fire services in locations other than in MCC.

TABLE 4: MUTUAL-AID MATRIX: 2016-2021[16]

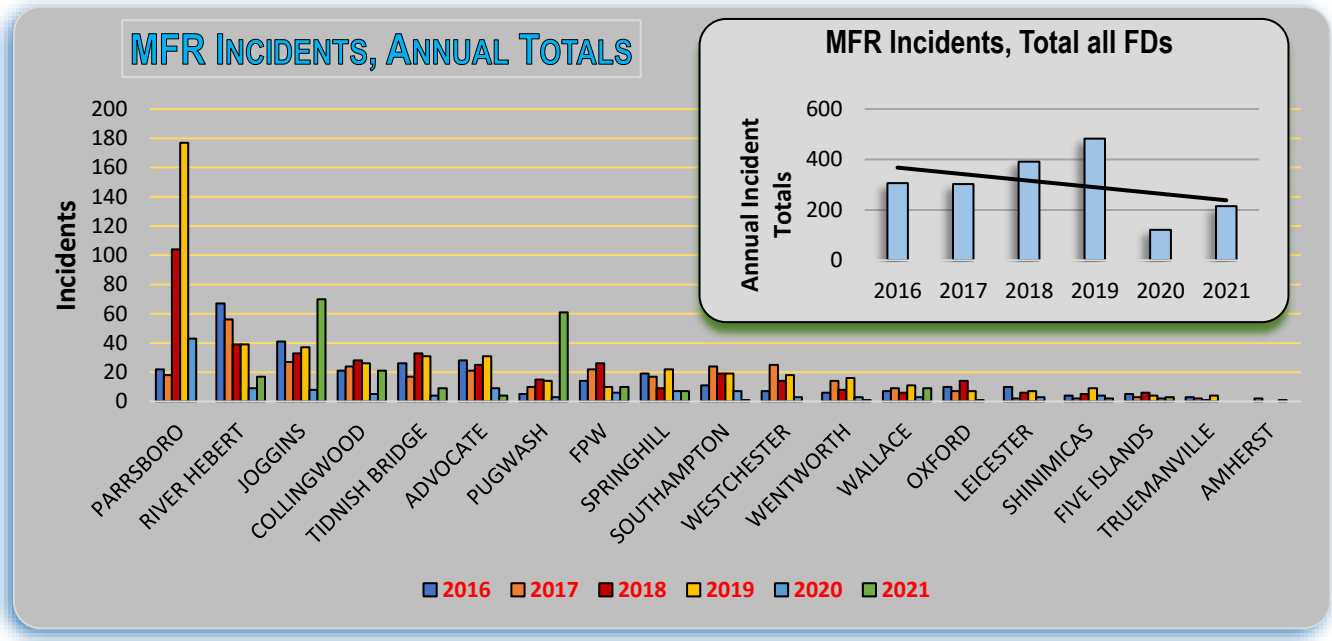
Receiving / Providing	ADVOCATE	AMHERST	COLLINGWOOD	FIVE ISLANDS	FPW	JOGGINS	LEICESTER	OXFORD	PARRSBORO	PUGWASH	RIVER HEBERT	SHINIMICAS	SOUTHAMPTON	SPRINGHILL	TIDNISH BRIDGE	TRUEMANVILLE	WALLACE	WENTWORTH	WESTCHESTER	Outside MCC	Total Mutual Aid PROVIDED
ADVOCATE		1			7	10			3		10		9	1							**41**
AMHERST																					**0**
COLLINGWOOD								17		8		2		19	1			1	12	18	**78**
FIVE ISLANDS									11												**11**
FPW	145					3			16		7		3	1							**175**
JOGGINS	27	38			4				9		285	1	9	3							**376**
LEICESTER		4	2					1		1		3		1					1	2	**15**
OXFORD		2	40				7		1	23		3	6	64	1			2	36	1	**186**
PARRSBORO	24	1		5	67	8					10		21	2						4	**142**
PUGWASH			5				3	23				15		10			24		2	23	**105**
RIVER HEBERT	20	7			4	274			18				9	2						1	**335**
SHINIMICAS		1						2		18					14	5					**40**
SOUTHAMPTON	15	2	13		4	9		1	20		9	1		37						2	**113**
SPRINGHILL		5	29					20	3	1	2	1	64						2	14	**141**
TIDNISH BRIDGE		1										25		1						1	**28**
TRUEMANVILLE		9								3		47		1	3					9	**72**
WALLACE										37		1						1	1	22	**62**
WENTWORTH			3					2		1				1			2		24	10	**43**
WESTCHESTER			20					7		1				7				18		4	**57**
Total Mutual Aid **RECEIVED**	**231**	**71**	**112**	**5**	**86**	**304**	**10**	**73**	**81**	**93**	**323**	**99**	**121**	**150**	**19**	**5**	**26**	**22**	**78**	**111**	**2,020**

[16] Data does not include Amherst *incidents* for 2016.

MFR Incidents

A big component of annual *incidents* for many fire departments is the response to medical (**MFR**) *incidents*. For some fire departments MFR *incidents* comprises the biggest component of their annual *incident* numbers. The following *Chart* 10 illustrates MFR volumes.

CHART 10: MFR INCIDENT ANNUAL TOTALS, ALL FIRE DEPARTMENTS



COVID restrictions in 2020 and 2021 have affected the previously established protocols for calling the fire departments to respond to MFR *incidents*.

Some fire departments reported in their stakeholder interviews that almost all MFR call-outs had stopped in 2020-2021. This clearly shows in the data in the above chart; and is obvious for fire departments like Wentworth, Westchester, Parrsboro (and others) where 2020 and 2021 MFR numbers have dropped substantially or even totally.

For two fire departments, MFR numbers had actually increased significantly in 2020-2021. These increases can also be seen in the above chart. The two fire departments are Joggins and Pugwash. Joggins' increase is almost entirely explained by 56 repeated responses to the same

person/address in 2021 alone (99 times over the six-year period). Pugwash's increase is not explained, but EHS protocols[17] in 2021 are still directing MFR calls to Pugwash, and the numbers may be an artifact of people being more at home. There is no other obvious pattern change in the response data except for volume.

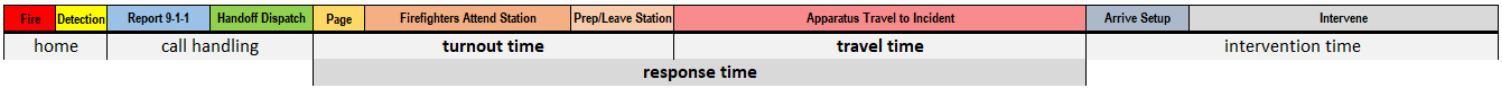
Response Timeline Components

Part of assessing the effectiveness of a fire department involves comparing its performance against accepted reference standards with regards to turnout and response to an incident. This section of the report looks at the provided and missing data associated with this *Review*.

Discussion on the reference standards is not included here. Please see the discussion on these standards in *Ch 2: Standards for Fire Service Delivery*, starting on page *120*.

Incident Timeline

The process of responding to an incident is made up of many components. Some of these components can be represented on an *Incident Timeline*, as shown in the following graphic, and described in brief below. Timeline colours correspond to the description highlights.



1. The incident (a fire at home in this timeline example) starts with someone noticing/detecting the fire and calling 9-1-1.
2. The 9-1-1 centre receives the telephone call and hands it off to the fire dispatch centre, usually Valley Communications Inc. (*VCI*) in the case of MCC. Amherst dispatch services handles *incidents* directed to the Amherst fire department.
3. *VCI* collects the required information from the caller deciding on what response is needed, and where to send it.
4. *VCI* commences paging the appropriate fire station(s). They relay some basic information and the location of the incident.

[17] In 2021 EHS started directing cardiac arrest incidents to MFR providers, after improved PPE was provided and MFR responders were fit-tested on N95 respirators. But this addition still does not explain Pugwash greatly exceeding historical incident volumes for MFR in 2021.

5. Firefighters hear the page and stop what they are doing, get in their personal vehicles, and drive to attend at the fire station. Some may go directly to the incident scene if that is the better option, but someone must always pick up the trucks.
6. At the fire station some preparation is needed before the fire truck leaves the station, including starting the truck, verifying the location, putting on protective equipment, opening the door, etc.
7. The fire truck leaves the station and drives/travels to the incident scene using the best, usually shortest time route.
8. After arrival at the scene, firefighters assess the situation, decide on a course of action, organize their personnel, take the needed equipment off the truck, and advance towards, in this scenario, the fire.
9. Firefighters commence intervening and mitigating the incident. If there are sufficient personnel on scene early on, multiple tasks may be accomplished at the same time.

Certain portions of the Incident Timeline are controllable by the fire department; not absolutely, but within limits.

1. Fire prevention is outside the scope of this *Review*; however, effective fire prevention activities can reduce the number of home fires, improve detection times by ensuring people install and maintain smoke and carbon monoxide alarms, and have developed and practiced their home escape/emergency plans.
2. 9-1-1 services are provincially managed and operated, and follow international protocols and local procedures. Municipalities have influence on how this provincial service is delivered.
3. *VCI* handles the bulk of the fire service calls in MCC, with Amherst dispatch handling those areas that Amherst fire services under contract. Dispatch centres should follow standards for the operations of their services that include effective protocols and use modern equipment that both speeds their activities and improves accuracy and data collection. Dispatch services are under contract to MCC and performance conditions can be included in such contracts. Dispatching is covered more fully in the section *Appendix 6: Communications* starting on page *891*.
4. Paging is handled over a network of municipal and provincial resources, and originates with equipment owned and operated by the fire dispatching agency, and terminates on the firefighters belt. Paging can be shortened in duration by the use of modern digital technology as well as by procedural innovations that shorten analog paging strings. MCC has the ability to assess and affect improvements all along the paging chain, although gains might amount to only several 10's seconds at best. Another aspect is the ability to reach all of the target audience of firefighters. Paging "black holes" should be assessed and alternatives explored.
5. Decisions as to whether firefighters attending to the scene directly, or to the fire station are, properly, decided locally; based on best outcomes for each fire station. Recruiting of firefighters who are available at times of highest incident demand is a priority, as well is having sufficient numbers of firefighters who live and work close to the fire district. MCC and the fire departments can have an influence in these areas but there are considerable challenges that are discussed in more detail in *Ch 7: Human Resources* starting on page *483*.
6. Station design and space availability to house the fire apparatus (trucks and other equipment) can have a major impact on the time it takes to clear out of the fire station. More is discussed on this aspect in *Fire Station Assessments* starting on page *215*. There is also a role for procedures in shortening times. Equipment maintenance and operability, training, and having adequate trained staff all affect this component of the timeline.

7. Driving time is largely controlled by distance and road conditions. In cities/suburbs, traffic control devices can affect these times. Road design and maintenance can lower possible speeds. Properly specified trucks also have an impact, as well as having available vehicles appropriate to usage. Generally the larger the vehicle the slower it is. Proper training and availability of drivers plays a large roles as well.
8. This component and the next one are driven in large measure by staffing availability and access to suitably trained staff. Properly equipping fire trucks also impacts time needed as does effective procedures.
9. This component varies by situation, but has the same caveats as does point 8. Access to rarely used equipment can also have an impact. Pre-planning is an essential component of preparedness and effectiveness.

Timeline Record Keeping

Ideally, fire departments and municipalities should be gathering data on as many of the above timeline components as possible, at every single incident. Contractors (dispatch) should be providing their performance statistics for evaluation and subsequent remedial action if necessary.

Fire prevention activities should be developed, planned, delivered, and records kept. Programs should be targeted to areas in the community where the biggest return can be expected. This requires data to determine. Effectiveness should be later assessed, analysed, and programs modified as needed.

Turnout-Times Description

Elapsed times associated with paging, attending to the fire station and preparing to leave the station are collectively called **Turnout-Times**. These times must be effectively determined and recorded for every incident. The dispatching contractor is an essential partner in this activity.

Travel-Times Description

Elapsed times associated with driving to the incident scene are called **Travel-Times**. These times must be reported and recorded for every incident. Again, the dispatch contractor is a key partner.

Setup times and various times-stamps associated with incident management progress/effectiveness and with personnel safety must be reported by firefighters and recorded by the dispatcher for every incident, as the incident progresses. Dispatching services needs to be a continuum, throughout the incident. These include key time-stamp benchmarks, for example;

arrival on scene for every vehicle, command established, arrival report, action being taken, water/agent applied, regular accountability reports, fire under/not control, patient contact, tactics, ambulance arrival, command terminated, transfers of command, return to station for every vehicle, and others timestamps that should be established in procedures, and practiced at every incident, reliably and consistently.

For volunteer fire departments in particular, tracking when personnel arrive on scene can be challenging unless there is an effective accountability system established and procedures that require everyone to check-in on arrival. It is necessary to establish such a system and to extract records of attendance, and when they attended, in order to develop a picture of how incident scenes are being resourced; successfully, or otherwise, and plan changes for the next incidents if necessary.

Time Data Provided for Review

Data was made available for *GA* to analyse regarding the time performance of the fire departments servicing MCC. *GA* was provided with dispatch data for the years 2016-2021 inclusive that included **6,618** records (*calls*). Amherst did not provided data for 2016. The following details the completeness of the data provided.

1. All but 11 of the 6,618 records contained the time of page-out.
2. 77% of records included the time of the first fire truck *leaving the fire station*. In a few cases this lack of higher record completion could be occurring because no vehicle actually left the station (e.g., a standby at the fire station, cancellation of the call). More often it appears to be a breakdown, or lack, of protocol by firefighters or dispatching services. Technological failure can be expected in a very small percentage of records.
3. 71% of records included the time the first fire truck *arrived at the scene* of the incident. In a few cases this this lack of higher record completion could be occurring because no vehicle actually arrived at an incident (e.g., cancellation of the call). More often it appears to be a breakdown, or lack, of protocol by firefighters or dispatching services. Technological failure can be expected in a very small percentage of records.
4. 67% of records included the *command terminated* time, signalling an end to management of the incident. In a few cases this this lack of higher record completion could be occurring because no command was ever initiated (e.g., cancellation of the call). More often it appears to be a breakdown, or lack, of protocol by firefighters or dispatching services. Technological failure can be expected in a very small percentage of records.

5. 60% of records included a time for the fire trucks *being back in the station*. In a few cases this this lack of complete records could be occurring because no vehicle actually left the station (e.g., a standby at the fire station, cancellation of the call). More often it appears to be a breakdown, or lack, of protocol by firefighters or dispatching services.
6. 72% of records included a time for when the fire station was considered to be *back in service*, and able to accept another incident.

Overall the record keeping is fairly complete. Times-stamps can be missed in the heat of the moment either by firefighters or dispatchers. However, an attempt should be made later to complete the records as much as possible. The number of missing time stamps exceeds what *GA* normally expects arising solely for time pressure reasons.

Also concerning is the many expected benchmarks[18] that are not recorded in the provided data at all. With regards to the time-stamps not recorded at all, they should be included in the fire department protocols and General Operating Guidelines (GOGs) and required to be recorded by fire dispatching services.

Analysis of Timestamp Data

GA has completed an analysis on the time-stamps in the received dispatch data. This analysis was for the purposes of calculating response performance for the fire departments, i.e., benchmarks. Benchmark values were obtained where available timestamps permitted; including turnout-times, travel-times, response-times, and in-service-times.

Benchmark Time Definitions

Calculations for each of the benchmark times were fundamentally based on the following timestamps.

[18] See *Fire Services Communication and Issues* starting on page *250*.

TABLE 5: CALCULATION METHOD, BENCHMARK TIMES

Benchmark	Start Timestamp (ST)	End Timestamp (ET)	Calculation
Turnout-Time	Time paged	Responding time (first truck leaving station)	ET – ST
Travel-Time	Responding time (first truck leaving station)	Arrival on scene (first truck)	ET – ST
Response-Time	Time paged	Arrival on scene (first truck)	ET – ST
In-Service-Time	Time paged	Back in Station Time	ET – ST

There are three calculations made for each one of the benchmarks shown in the above table. They are as described below.

90th percentile (90th%) time	The 90th% time is that elapsed time that occurs in 90% or fewer incidents. In other words, if in 9 out of 10 incidents the turnout time is no more than 8 minutes, then 8 minutes is the 90th% time. 90% of incidents will have a time equal to or less than this time.
Average (mean) time	Is the arithmetic mean time of a set of times (numbers). It is calculated by summing the elapsed times and dividing by the number of times in the sample. Half of incidents will have an elapsed time less than the average and half will be greater than the average. It is the 50th% elapsed time.
Maximum time	Is the most elapsed time that occurred, usually occurring for a single incident. Maximum elapsed times are usually outliers, and by definition are greater than the average, and usually much longer than the 90th% time.

Turnout Times, Fire Incidents

Turnout-time (more properly; turnout elapsed time) was calculated for individual fire departments as well as for MCC as a whole (i.e., for all fire departments collectively). One difficulty with making determinations of turnout-times is that not all incident categories demand the same urgency in response; in other words some are an emergency and others are not as much. Also, some incident categories require more preparation by firefighters before a truck can roll out of the fire station, for example; a water rescue might require hooking up the boat trailer to a tow vehicle.

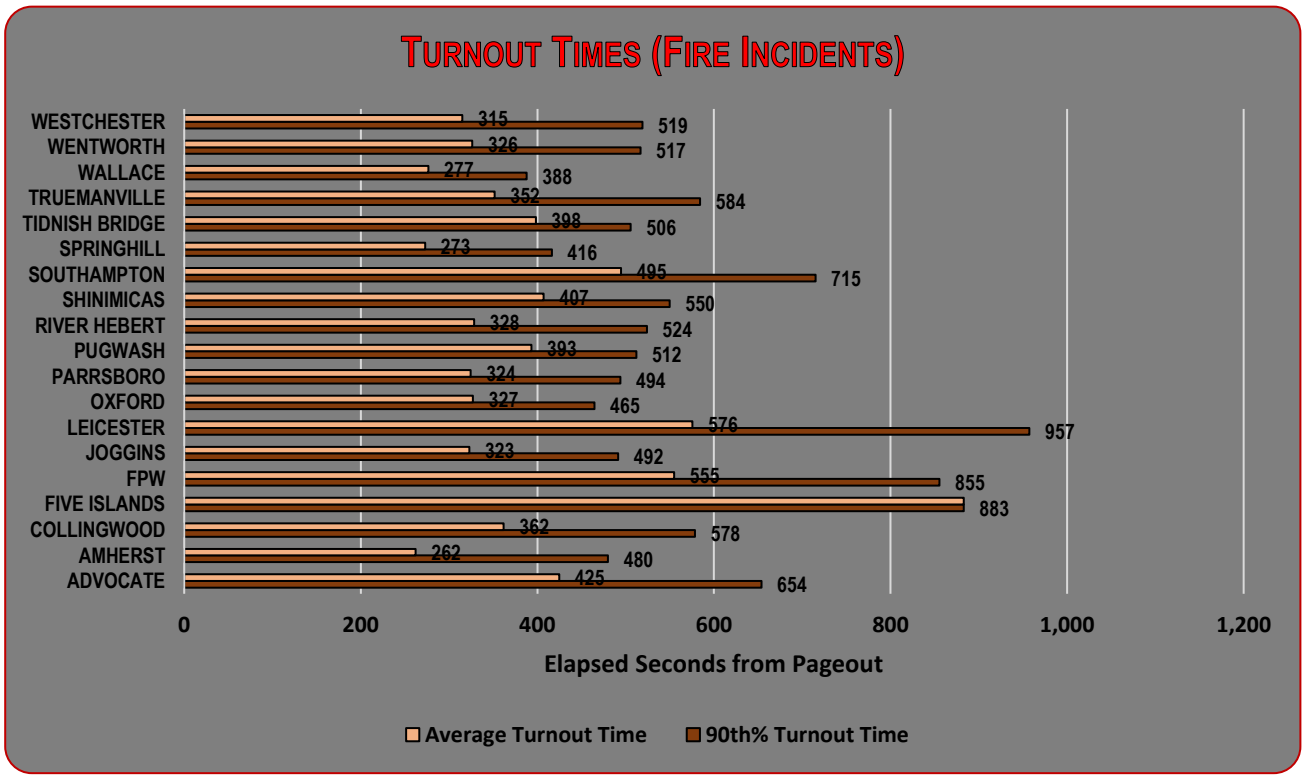
For the above reasons, benchmark times were calculated for two categories of incidents, both of which are considered urgent type incidents, where every second counts. These types were fire *incidents* and MFR *incidents*. Non-emergency incidents are not included in these calculations as they are not useful for calculating best time benchmarks.

Chart 11 below shows turnout-times by fire department for fire *incidents*. It is based on provided dispatch data for the years[19] 2016-2021. The data includes 1,264 fire *incidents*, of which calculations were possible for 1,103 *incidents*.

[19] Data for Amherst in 2016 is not included.

The chart shows the average and the 90th% times. Times are expressed in seconds.

CHART 11: TURNOUT TIMES, AVERAGE AND 90TH PERCENTILE, FIRE INCIDENTS

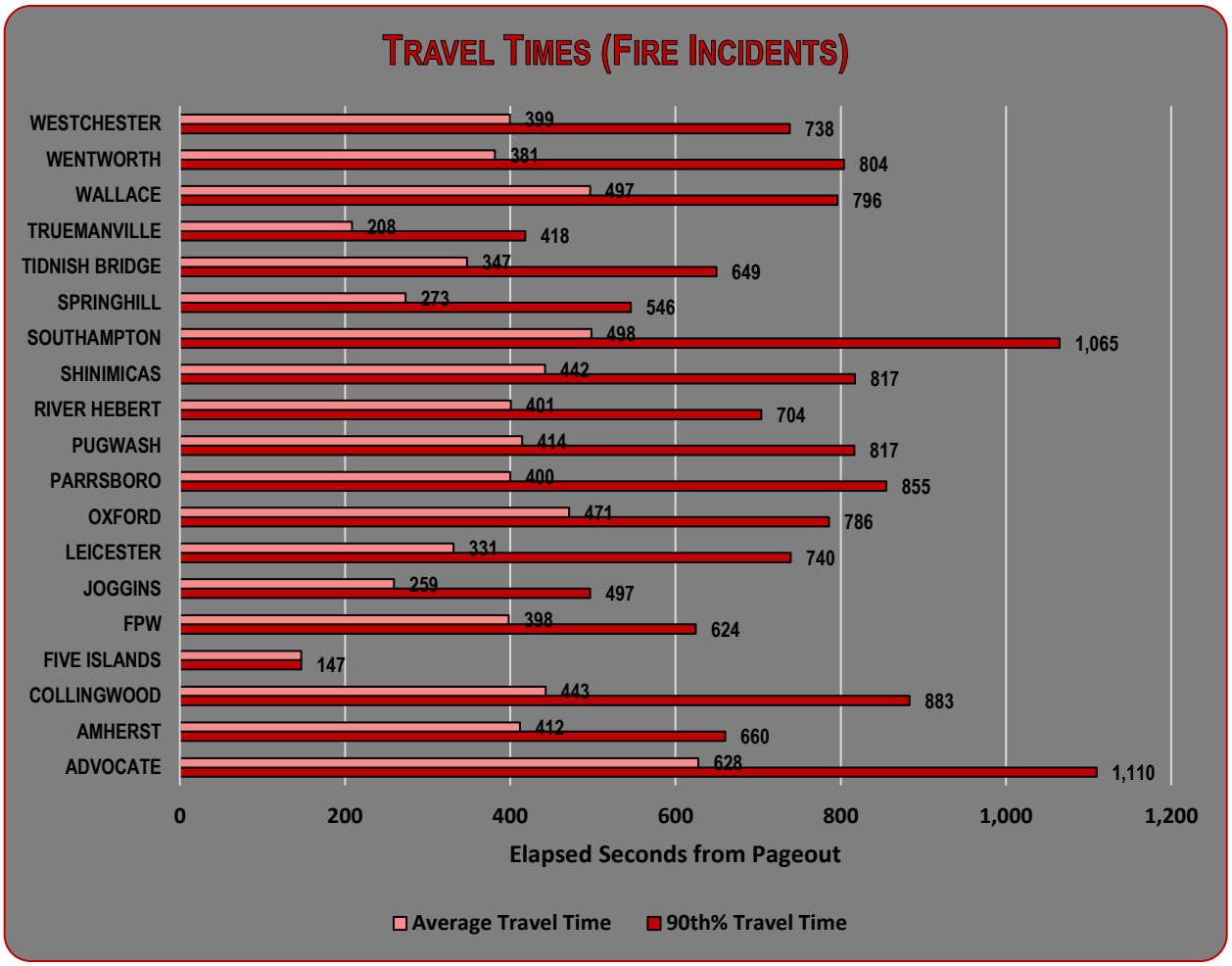


The times for Five Islands are the same since they are based on only a single fire that had the required time data.

Travel Times, Fire Incidents

Calculations were done on the same set of data as for the turnout-times. Of the 1,264 fire incidents, 916 incidents had data available for these calculations.

CHART 12: TRAVEL-TIMES, AVERAGE AND 90TH PERCENTILE, FIRE INCIDENTS



The take-away on this chart is that travel times are influenced by several factors.

The obvious factor is distance travelled. Larger fire districts should expect to see longer travel times that will push up both the 90th% and the average. Road conditions and design are also factors. Long straight well travelled roads are faster over the same distance than are narrow, windy, steep up/down roads. The second mentioned roads also tend to be the poorest in bad weather as well, further slowing responses. Daytime vs night responses will also have an impact.

The character of the fire district may also be showing in travel-time. The fire districts where there is a larger proportional difference between the 90th% and the average suggest that there may be a population centre relatively near the fire station contributing to proportionally low

averages, but there is also a significant number of incidents at longer travel time from the station, perhaps a second population centre or a disbursed population that is at a longer distance that increases proportionally the 90th% times.

Response Times, Fire *Incidents*

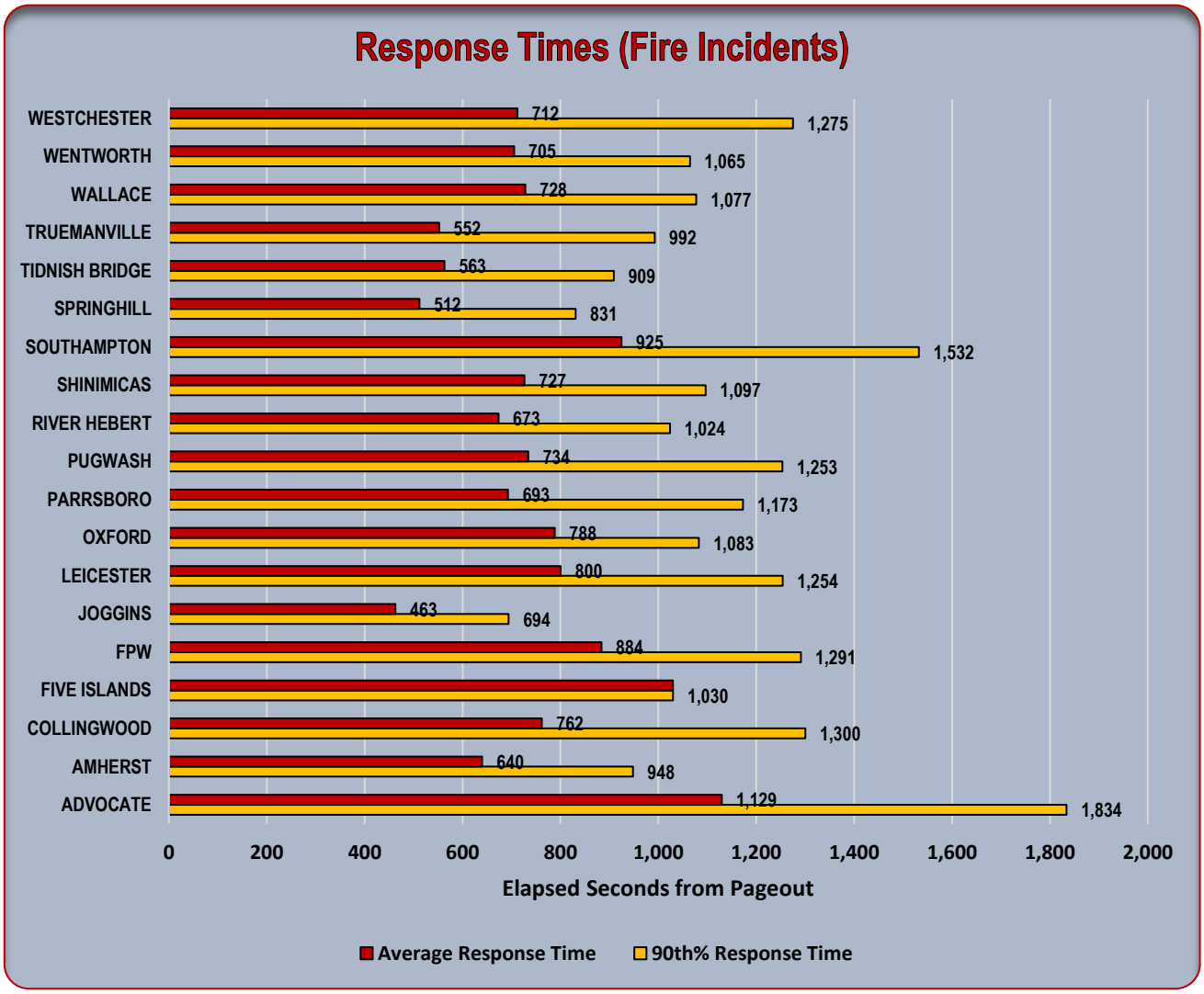
The combination of turnout-time plus travel-time is called response-time. It is what the public most notices from the perspective of how long it takes to receive aid after they hang up the telephone. Although that characterization is not strictly correct, because there is also call handling time at the 9-1-1 answering centre and at the fire dispatch centre that is not included in response-time. However, measuring and tracking response-time is an important indicator of fire department performance.

Response-time is also subject to scrutiny in comparison to established standards, most particularly to NFPA-1720.[20] A discussion on performance related to this standard is presented starting at page *129* of this *Report*.

The following *Chart* 13 shows calculated response-times for each fire department responding to fire-incidents in MCC. Of the 1,264 fire incidents, 1,060 records had available data for these calculations. Times shown are in seconds.

[20] NFPA-1720; National Fire Protection Association, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments.*

CHART 13: RESPONSE TIMES, AVERAGE AND 90TH PERCENTILE, FIRE INCIDENTS

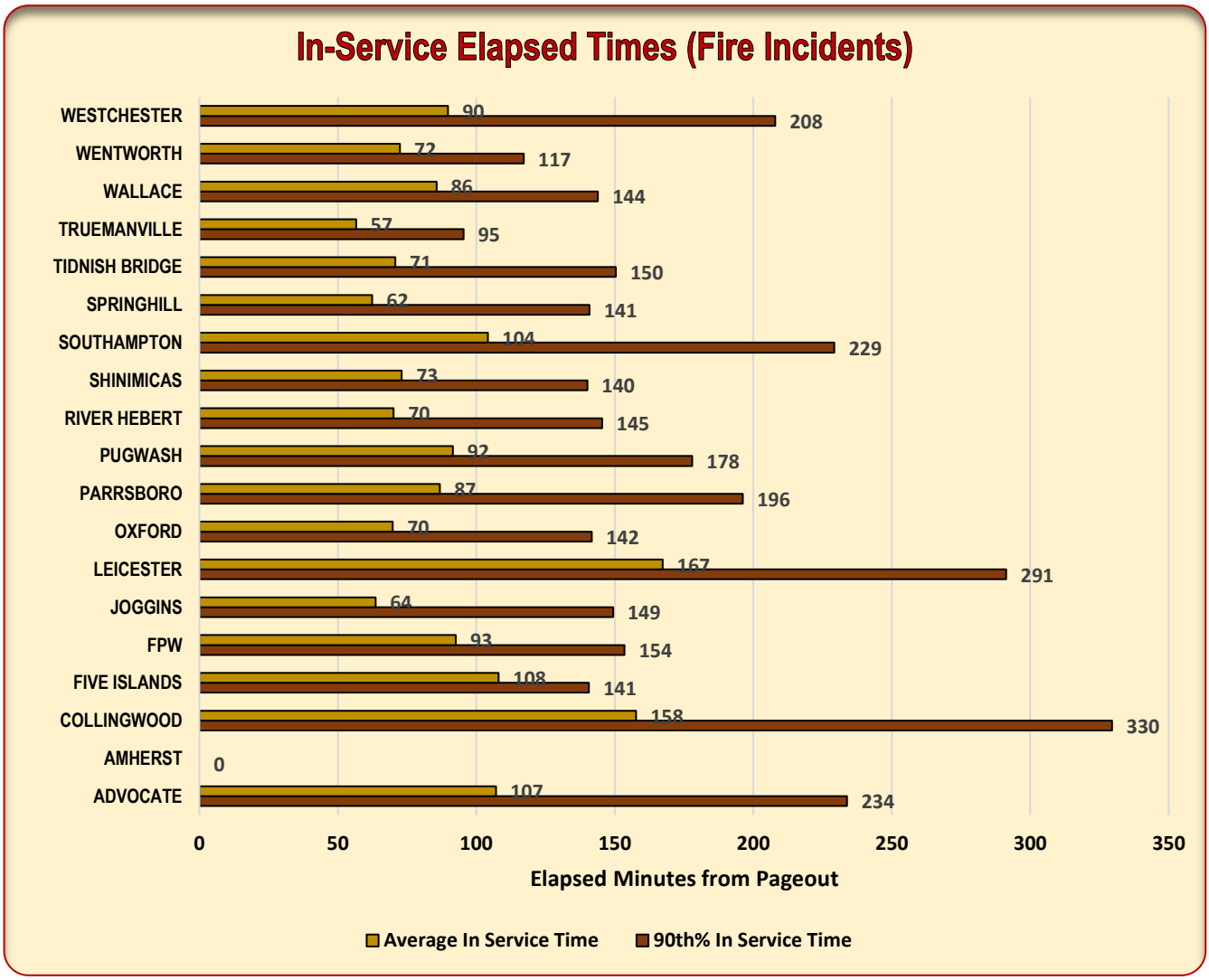


In-Service Elapsed Times, Fire Incidents

An analysis of in-service times was also conducted. These times are the time elapsed between the page-out for an incident and the time when the firefighters are back at the station. Often there is additional work at the station required to return fire trucks and equipment to serviceable condition for the next incident, especially after fires. That additional time is not included in the calculated in-service times.

Of the 1,264 fire incidents, 1,069 had sufficient data to do the calculations. In the following chart, elapsed times are shown in minutes. Amherst did not report their back at station times so no calculations were possible for them and the chart shows 0.

CHART 14: IN-SERVICE ELAPSED TIMES FOR FIRE INCIDENTS, 2016-2021

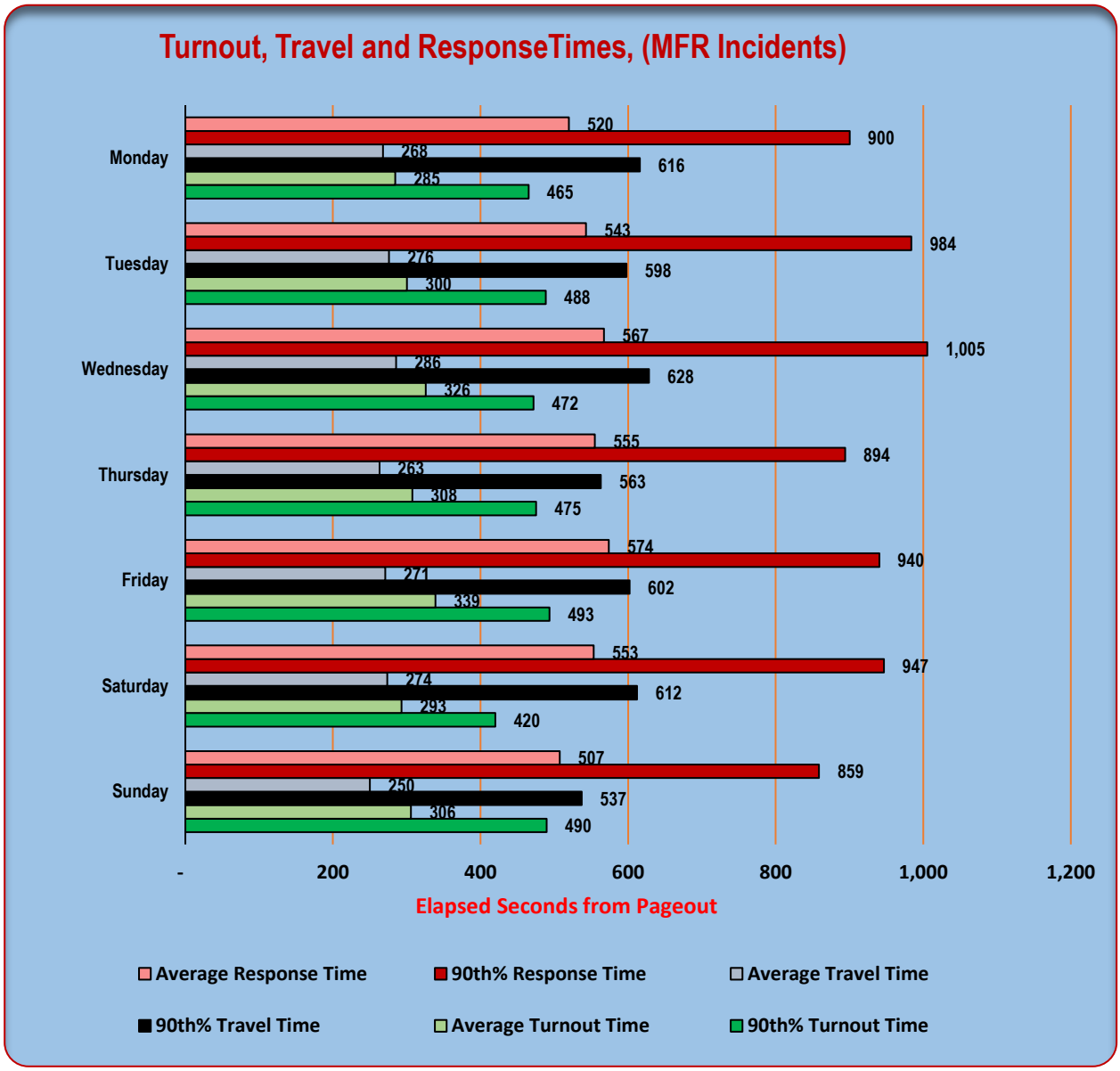


Times for MFR Incidents

Turnout, travel and response-time calculations were also completed for MFR *incidents*. This was done for the purpose of comparing with the same time calculations for fire *incidents*. Two combination charts follow presenting the fire and MFR data in the same format. The first chart, *Chart 21*, is for MFR *incidents* and the second one, *Chart 16*, for fire *incidents*.

The data presented for this comparison shows day of the week distributions, representing calculations based on times from all fire departments.

CHART 15: TURNOUT, TRAVEL, AND RESPONSE TIMES, MFR INCIDENTS, 2016-2021

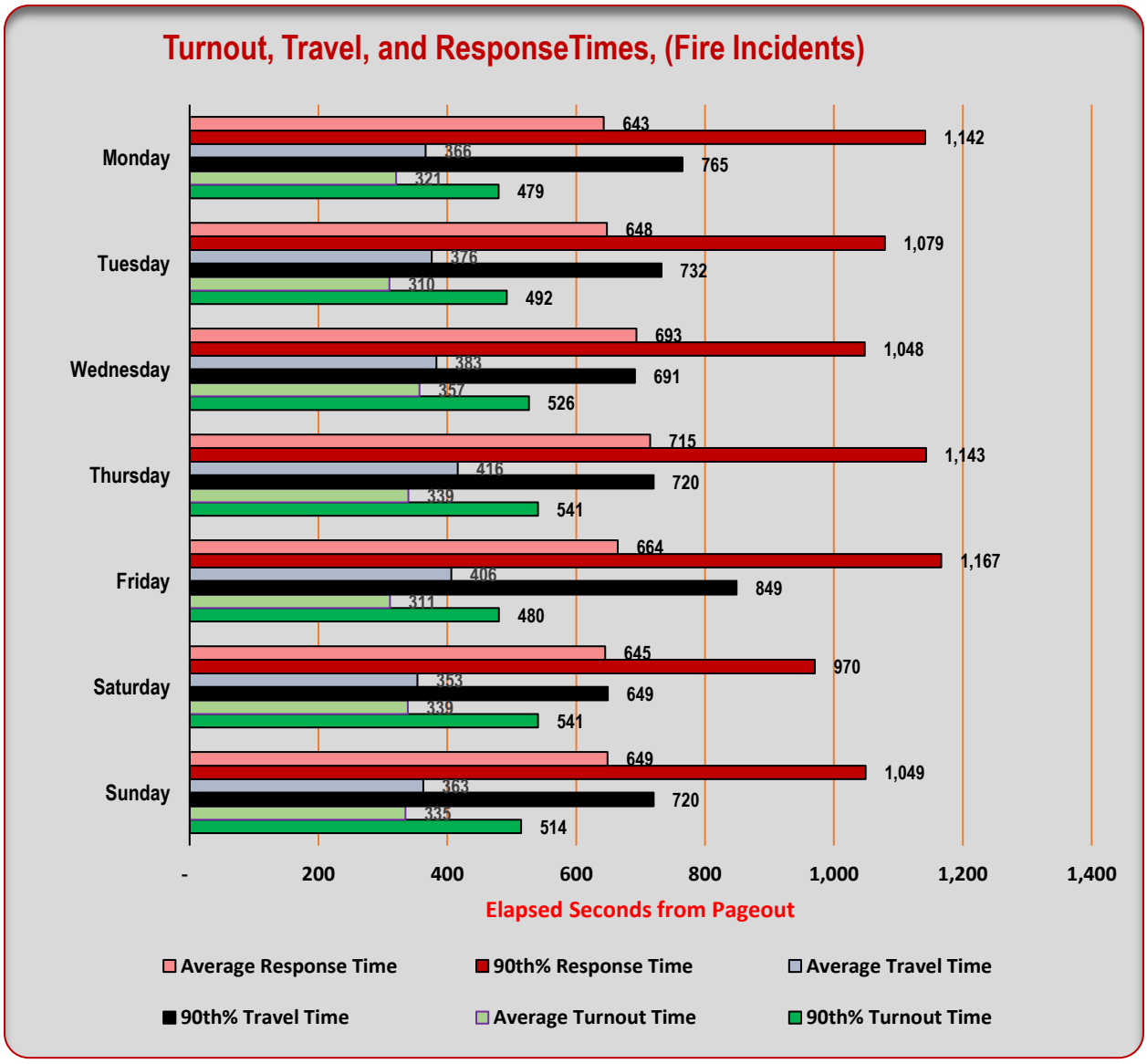


GA analysed data related to 1,817 MFR incidents that occurred over the years[21] from 2016-2021 inclusive. For turnout-time there where 1,347 records available for calculation. For travel-time

[21] Incident data for Amherst for 2016 was not included.

there were 1,088 records available. For response-time there were 1,384 records available. Times on the chart are in seconds.

CHART 16: TURNOUT, TRAVEL, AND RESPONSE TIMES FOR FIRE INCIDENTS



A comparison of the MFR and the fire incident charts generally shows that times for MFR *incidents* are faster than for fire *incidents*. This is perhaps not too surprising, and has several possible explanations.

Turnout time is partly composed of, and thereby affected by, time spent in the fire station getting ready to respond. There is less preparation for responding to an MFR *incident* than there is to a fire *incident*. For an MFR *incident* there is less protective equipment (PPE) to don, so the personnel will board the vehicle more quickly. MFR *incidents* also do not need the same manpower as fires, so there is less waiting for additional personnel to arrive at the station before the vehicle is ready to respond.

Travel time is affected by distance from the fire station to the incident scene. MFR responses generally utilize a smaller, and therefore quicker vehicle (if the station is so equipped) that will tend to make better average speeds over the same distance than does a large heavy fire truck, so travel times are typically reduced.

The following table summarizes the differences in benchmark performance for MFR incidents with respect to Fire *incidents*. Data is for all *incidents* (all fire departments, all years) of the respective Categories. The data is presented in hours:minutes:seconds as well as only seconds formats.

TABLE 6: SUMMARY OF TIMES, MFR VS FIRE INCIDENTS

Benchmark	Category Fire Incident	Category MFR Incident	Difference	% difference wrt Fire Incident
	hh:mm:ss	*hh:mm:ss*	*hh:mm:ss*	
Turnout-Time 90th%	00:08:39	00:07:57	00:00:42	8.1%
Travel-Time 90th%	00:12:00	00:09:58	00:02:02	16.9%
Response-Time 90th%	00:18:03	00:15:50	00:02:13	12.3%
Turnout-Time Average	00:05:30	00:05:07	00:00:23	7.0%
Travel-Time Average	00:06:21	00:04:29	00:01:51	29.3%
Response-Time Avg	00:11:06	00:09:05	00:02:01	18.2%
	Seconds	*Seconds*	*Seconds*	
Turnout-Time 90th%	519	477	42	8.1%
Travel-Time 90th%	720	598	122	16.9%
Response-Time 90th%	1,083	950	133	12.3%
Turnout-Time Average	330	307	23	7.0%
Travel-Time Average	381	269	111	29.3%
Response-Time Average	666	545	121	18.2%

Historic Staffing at Fires

Nine fire departments contributed information on staffing at fires for the years 2016-2021, except for Amherst where their data covered 2017-2021. Only fire incidents are examined here because fire incidents are the most demanding of staffing resources, and therefore the most challenging to achieve the required numbers. The data available to *GA* should be interpreted as the total staffing that attended as reported by the primary fire department, and is not usually even the peak staffing, because staff is often relieved at longer incidents.

Also of critical importance for fire incidents, is how quickly the required staffing can arrive on-scene of the incident (i.e., resource availability and arrival-rate) where it may be utilized to achieve the overall strategic objective, by being assigned to tasks. Time is usually of the utmost importance in fire incidents, especially where property and lives at in jeopardy. Unfortunately, the MCC data does not include information related to details of staffing arrival times at the incident scene; that would enable an evaluation of how quickly the needed staffing could have been applied to mitigate the incident by being assigned to critical tasks.

For further clarity, by way of an example.[22] *Figure 1*, below, shows manning and resource arrival data as applied to an incident at a specific location. Shown in the example is a combination of fire vehicles responding (with known staff) as well as the ramping up of firefighter arrivals at the scene of the incident in personal vehicles.

The graph is based on real data and known response times, all originating from a comprehensive data collection and accountability process that was established for every incident that occurs in this jurisdiction.

[22] https://www.welland.ca/Fire/FacilityNeedsReports/CityofWelland-FacilitiesNeedsAssessmentPart1.pdf, 2013, City of Welland Fire & Emergency Services *Facility Needs Study*, Part 1 Report, MMM Group

FIGURE 1: EXAMPLE OF VEHICLE AND STAFFING RESOURCE RAMP-UP, FIRE INCIDENT

Benchmark times are noted on the graph, and the estimated capabilities are noted at various elapsed times into the incident (e.g., "*minimum staffing for moderate-risk fires*"). These capability benchmarks are important for the incident commander in determining strategies going forward.

This data, exercise, and projections are even more significantly key for planning purposes; for in this specific scenario it was demonstrated that a high-risk fire would only achieve critical staffing after an elapsed time of 1830 seconds (30+ minutes). Mutual-aid was an indicated need.

The character of the arriving staffing is also important. There needs to be a good ratio of supervision (officers) to firefighters in order for there to be an effective span of control. *GA* requested the Cumberland fire departments to provide their data broken down by rank, as an attempt to provide insight into this area. Amherst data is not so broken down.

Staffing at Fires in MCC

The following table shows staffing attendance for fires according to the submitted records of the 9 contributing fire departments. These are the firefighters who were, at some point, reported by the primary fire department to have been at the incident location. The total column (in gray) is larger than the sum of the component columns because Amherst numbers are in the total column only.

In the leftmost column, *Largest* is the peak or maximum number that attended to any incident in the data, and that happened usually only at one *incident*. *Average* is the number that could be

expected at any given fire *incident*; i.e., more or less. The 10th% is the 10th percentile, meaning at 90% of the incidents, that number, or more, firefighters were on scene; i.e., fewer numbers than shown of firefighters on-scene only occurred at less than 10 % of incidents.

Record counts on the last row of the table are the number of incidents represented by the columns above. For example; at 253 fire *incidents* there was at least one fire chief in attendance.

It should be noted that the numbers in the "*Largest"* row are not all extracted from the same incident.

TABLE 7: CUMBERLAND STAFFING STATS FOR FIRE INCIDENTS, 2016-2021

FIRE Incidents ONLY	Fire Chiefs	Deputy Fire Chiefs	Assistant Chiefs	Fire Captain	Fire Lieutenants	Safety Officers	Pump Operators	Drivers	Other Firefighters	TOTAL at the Scene	Fire investigators	Firefighters Reserve at Fire Station
Largest:	4	4	3	6	10	2	10	10	20	58	3	14
Average:	1.04	1.14	1.04	1.69	1.97	1.08	1.75	2.73	5.16	10.66	1.18	2.83
10th%:	1	1	1	1	1	1	1	1	2	5	1	1
Total reported:	264	268	114	441	331	150	416	608	1,771	5,392	85	422
Record counts:	253	236	110	261	168	139	238	223	343	506	72	149

The need for minimum staffing numbers is discussed in greater detail in *Standards for Apparatus, Staffing and Response-Times* starting on page *129*.

CH 2: STANDARDS FOR FIRE SERVICE DELIVERY

CUMBERLAND RESPONSE TIME PERFORMANCE

Ch 1: Current Provision of Fire Protection Services provided data analysis on six years of response performance of the 16 MCC fire departments and the 3 contract fire departments. That analysis is fairly extensive, to the extent the available data allowed. It included what services the fire departments deliver, and how they deliver their services.

In part, that analysis discussed time performance; which was analyzed in *Ch 1*, *Response Timeline Components* that started on page *102* of this *Report*.

The following *Chart 17* shows two different measure of fire department performance when responding to Structure Fire[23] *incidents*; times and manning. Time response numbers are the 90th% numbers; i.e., 90% of fire *incidents* were within these times; i.e., or better. For manning, they are the 10th% numbers meaning that at 90% of incidents at least that many firefighters were on-scene.

These performances will be compared, in the rest of this chapter, with recognized standards and other tools useful for measuring/benchmarking fire department performances. These comparisons will be quantitative in determination, based on existing response data extracted from incident records and fire department contributions.

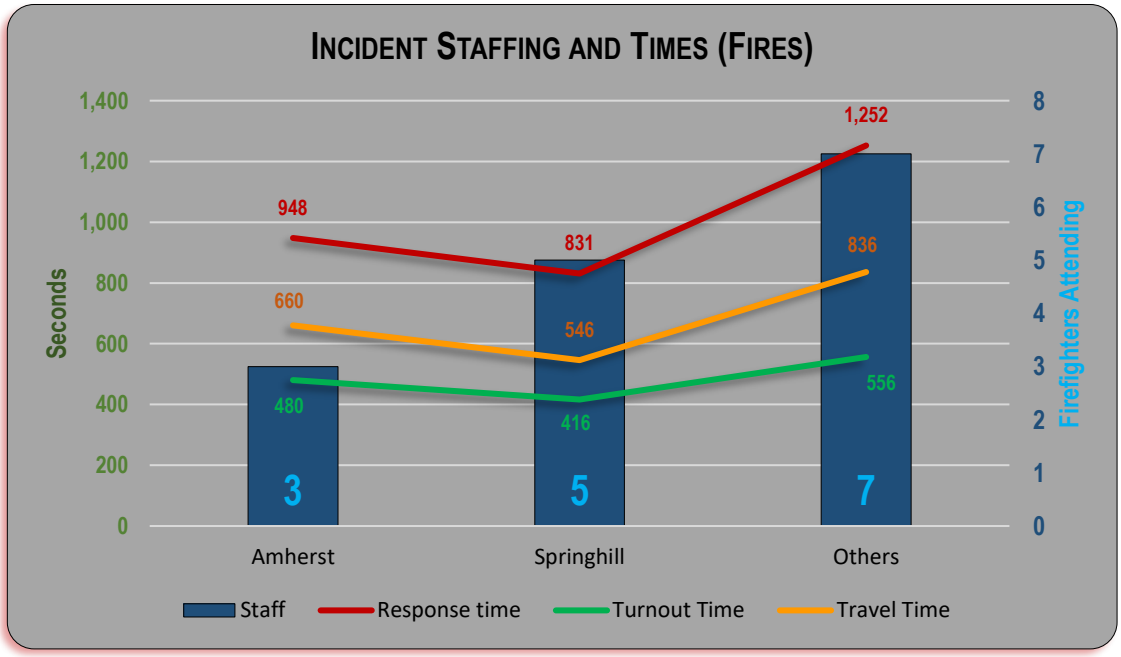
Springhill and Amherst are singled out in the following chart because they are substantially different from the Other fire departments, in that they service primarily what can be characterized as *Urban* and *Suburban* areas. The *Other* fire department service areas are proportionally more *Rural* to *Remote* in character; excepting the small portions of Pugwash's and Parrsboro's response areas, which are town-like.

[23] Structure Fires are a sub-set of all Fire *incidents*. They represent the most demanding response in terms of staffing, and are the foundation of standards for fire department performance. The list of all fire incident types is on page **13** of this report.

Urban, *Suburban*, *Rural* and *Remote* areas are terms that will be explained in this Chapter; when the discussion includes the NFPA-1720 Standard, starting on page *129*.

Times are shown in seconds because the NFPA Standard uses seconds for its benchmarks. In the data, seconds do indeed count. As the Standards are discussed, keep in mind the times and staffing numbers shown on *Chart 17*.

CHART 17: FIRE DEPARTMENT TIME AND STAFFING PERFORMANCE



In the chart, the blue vertical bars are the 10th% manning numbers at fire incidents. The red, green, and yellow lines are the 90th% times corresponding to the fire departments.[24]

Manning numbers would include all staff that the primary fire department has reported being at structure fires, which would normally include mutual-aid manpower as well (if any). Not included in the data above is any other response type fires dispatched; structure fires only.

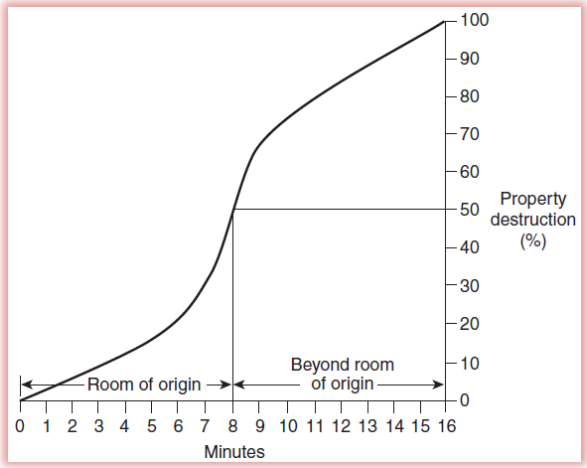
[24] Data includes; Springhill 73 structure fire *incidents*; Amherst 19 structure fire *incidents*; all Other fire departments 169 structure fire *incidents*. Responses are for the years 2016-2021, except for Amherst where the data includes responses into MCC for the years 2017-2021.

THE IMPORTANCE OF RESPONSE-TIME

In residential and small commercial structures, fire grows over time somewhat predictably. In an industrial or large commercial (big-box) structure, there are fewer compartments (i.e. walls), heavier fire loads (i.e. things that burn) and therefore fire growth rates can be much quicker than in a residence, and fire size can also be much greater.

It seems intuitive that it is desirable to achieve the shortest response-times possible to reports of emergency incidents. Fires are, in particular, one such incident type where response-time is often critical.

FIGURE 2: NFPA-1710 FIRE PROPAGATION CURVE[25]



Fire Growth

Almost all fires start small (i.e. incipient), and grow (if unchecked and unrestricted) until such time as they run out of fuel. Inside a structure, there are other factors involved as well. Particularly the availability of oxygen. This means that in a closed building, an unchecked fire can consume all the available oxygen, and thereby slow down its growth,[26] until such time as additional oxygen is introduced by opening doors/windows or by fire burning through part of the structure. Survivability of persons inside is unlikely due to lack of oxygen and buildup of toxic gasses.

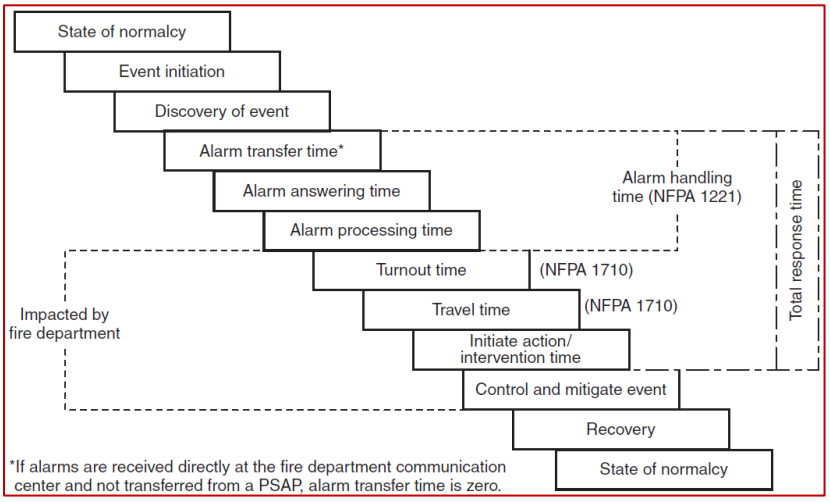
The time at which the fire department starts to respond to the fire is not at time zero in the life of the fire (i.e. 0 as is shown on the *Fire Propagation Curve* above). Neither is time zero the time at

[25] 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*, 2016 edition; ref A.5.2.2.2.1.

[26] In rare cases the fire can smother and go out.

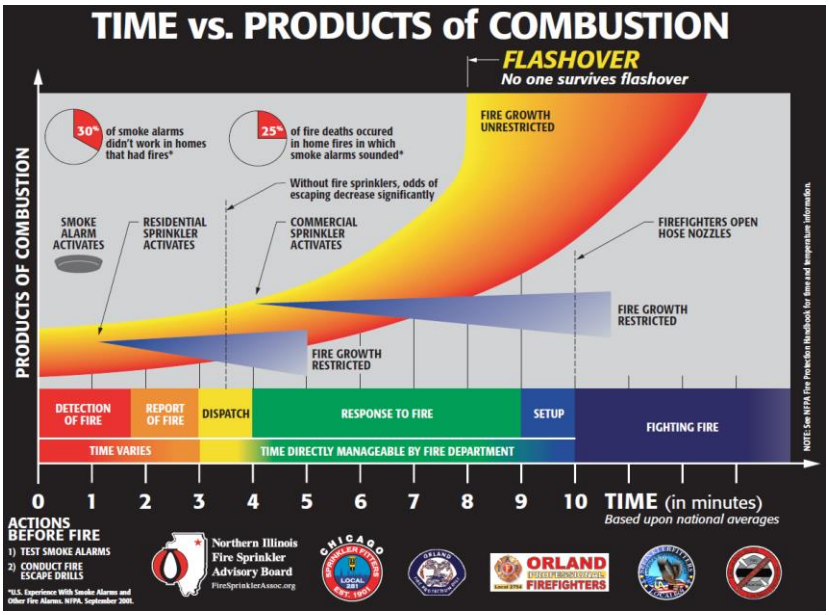
which the presence of the fire department can start to influence the progress of the fire. Several other processes must occur first as demonstrated by the following figure.

FIGURE 3: CASCADE OF EVENTS[27]



As *Figure 3* illustrates, there are many steps between when the fire ignites (i.e., event initiation) to the point where firefighter intervention begins to influence fire behaviour. All the while, after ignition and before intervention, the fire is usually growing.

FIGURE 4: TIME VS FIRE GROWTH RELATIONSHIP[28]



These processes can also be roughly illustrated by *Figure 4*, which shows what is going on with the fire while the above *Cascade of Events* are occurring.

This figure is really a relative timeline chart used here to illustrate the fire growth with elapsed time

[27] NFPA-1710, ref: Figure A.3.3.53.6; *Cascade of Events Chart*.

[28] https://www.usfa.fema.gov/downloads/pdf/coffee-break/time-vs-products-of-combustion.pdf

relationship. This figure also shows the potential intervention of sprinklers, which are valuable in limiting property damage and improving resident survivability. It also shows the value of smoke alarms.

Someone, or a detection system, must discover and report the fire. The fire discovery must be transmitted to a 9-1-1 call-centre, or alarm monitoring agency. The fire department dispatch centre must be informed. The dispatch centre must page the volunteer firefighters to respond to their fire station. The volunteers must prepare and respond to the station from where they are and get into their personal protective equipment. Sufficient personnel must be available to man the fire apparatus as appropriate, typically this is two - four firefighters, unless some firefighters are travelling to the incident location in personal vehicles.

The travel-time portion of the entire response-time sequence then begins. Firefighters travel to the incident location in the fire apparatus or personal vehicles. When they arrive, they must set-up by getting organized and understanding the situation by collecting information, make a plan, deploy equipment and staff to address the emergency, effect a rescue, suppress the fire, protect an exposure, etc...

Fire suppression means (in part and very simply), securing a water supply, deploying hoses and charging them with water, and gaining entry to the building. At that point, fire suppression/intervention starts. Thereafter, the fire is expected to be mitigated, i.e. the curve levels off and diminishes. Sometimes, if sufficient resources or tactics are not applied in a timely manner, the fire continues to grow. Firefighters need to, quite literally, get ahead of the fire growth curve.

However, firefighters might not start fire suppression right away. The first arriving crew may be committed to a higher priority goal, for example; victim search and rescue instead, in which case the fire continues to grow. Sufficient staff might not yet have arrived to do both tasks.

Affect on Survivability

As shown in *Figure 4*, travel-time can be a big component of the overall response-time component. In Cumberland County, as we have seen in the Section *Response Times, Fire Incidents* starting on page *110* of this *Report*, this may be particularly so as many parts of the County are at a distance from fire stations. Distance from fire station to incident locations can be significant. Combined with road dimensions, design, condition, and weather; travel-time can be in excess of what is required to catch a fire while still in its growth stage, so as to be best able save property.

Saving lives is a more challenging proposition. Persons trapped inside a structure that is on fire are at risk due to smoke and heat, but much more so to toxic gasses that are generated by the fire. Up to 75% of civilian fire deaths[29] are, at least in part, attributable to smoke inhalation, while 80% of civilian fire injuries[30] are due to exposure to fire products. Survivability for victims becomes less likely as the fire progresses, even before the building is substantially compromised by the fire.

CHART 18: LIVING-ROOM FIRE TEMPERATURE-TIME CURVE, 2-BEDROOM APARTMENT[31]

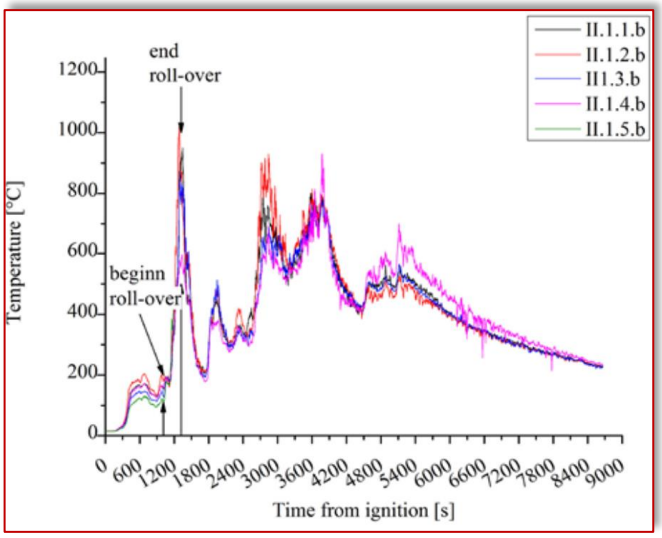


Chart 18 shows how quickly temperatures in an apartment will increase, without ventilation to release the heat and toxic gases, and without the cooling effects of sprinklers or firefighter hose-streams.

The chart shows the results of a real fire test in a two bedroom apartment in an apartment building. Temperatures (five probes) are measured at approximately face height. Roll-

[29] https://www.usfa.fema.gov/downloads/pdf/statistics/v21i3.pdf, pg. 5, 2021, US Fire Administration.

[30] https://www.usfa.fema.gov/downloads/pdf/statistics/v21i4.pdf, pg. 6, 2021, US Fire Administration.

[31] https://www.scirp.org/journal/paperinformation.aspx?paperid=97573

over is the point in time, just before when heat feedback causes everything ignitable in the room to commence burning at the same time, which causes a run-away temperature rise as the entire room fills with flame.

To save lives and reduce property loss, responders must be able to quickly reduce the room/dwelling temperature and interdict the heat generation of the fire by ventilating and by applying water. The temperature-time curve in *Chart 18* exemplifies a structural fire in ordinary residential and small commercial type buildings. It shows a typically oxygen limited fire, illustrated by the sudden dip in temperature after rollover where the fire is starved for oxygen; i.e., the compartment is closed.

FIGURE 5: TYPICAL FIRE BEHAVIOR WITH FIREFIGHTER INTERVENTION

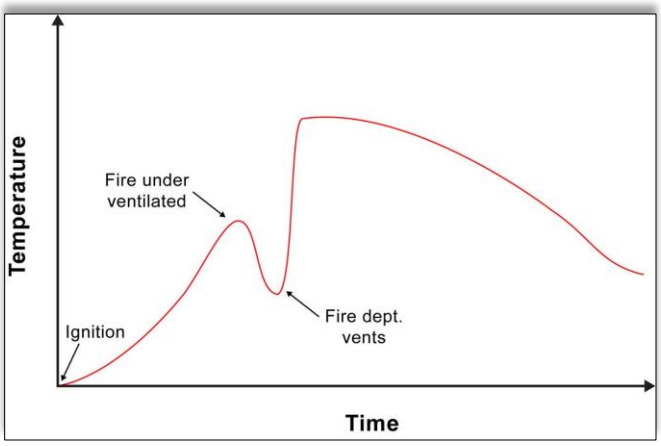


Figure 5 shows how intervention by firefighters with ventilation tactics and fire-attack hose-streams can affect the oxygen limited fire growth curve by ventilating the fire compartment. Ventilation action releases hot combustible gasses from the compartment but also introduces fresh oxygen, leading to renewed fire growth, but also an opportunity to get inside and search, and to reach the seat of the fire. This ventilation needs to be immediately followed up with cooling water applied by hose streams, and by putting water directly on the burning materials.

Cumberland Firefighter Intervention Challenge

With regards to MCC and the probability of rescue of a savable fire victim in a residential fire; the historical[32] response-times of between 14 and 21 minutes after page-out are problematic. At those response-times, compartment temperatures can be in the rapid growth part of the curve,

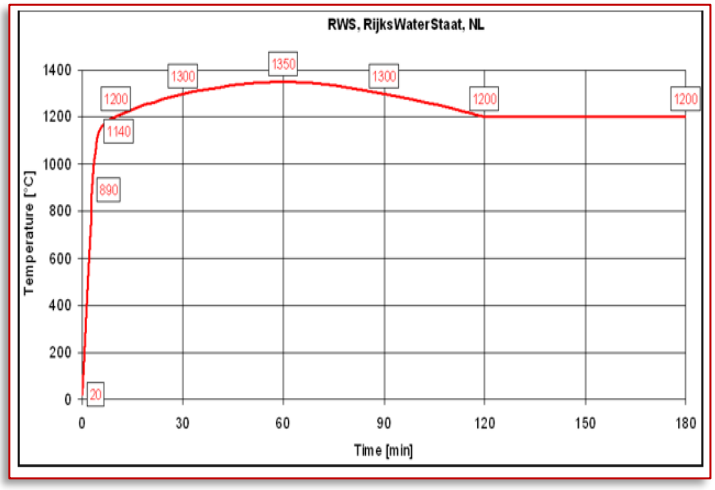
[32] As shown on *Chart 17: Fire Department Time and Staffing Performance* on page 39 of this Report.

rising from 200ºC (survivable) to potentially as high as 1,200ºC (fatal). Prospects for survivability are nil after flash-over, including for firefighters caught inside if they fail to prevent that event from happening.

Not all fire growth curve shapes (i.e., times/temps) are exactly the same. Also, fire victims in another room of the residence might be still rescuable; depending on their physical condition and their degree of exposure to heat, lack of oxygen, and toxic fire products.

The danger to firefighters is also much higher as the fire progresses into rapid growth, due to heat, toxins, and structural stability issues.

CHART 19: INDUSTRIAL TEMPERATURE TIME CURVE[33]



The challenge gets bigger with industrial sized buildings. In industrial or agricultural fires, increased amounts of available fuel and the degree of its combustibility/flammability, associated with wide-open areas (lots of oxygen) can produce a temperature-time curve that is much different to that shown above for residential/commercial.

The industrial chart above shows a flammable liquids fire. A quick comparison with the residential charts, discussed previously, shows the decreased time to produce the higher temperatures in this industrial setting.

Thus, quicker response times and much higher rate of cooling water flows are required to stop the loss. Industrial risk insurance carriers and owners understand this risk and often require fixed

[33] The RWS curve was developed by the Rijkswaterstaat, Ministry of Transport in the Netherlands. This curve is based on the assumption that in a worst-case scenario, a 50 m³ fuel, oil or petrol tanker fire with a fire load of 300MW could occur, lasting up to 120 minutes. The RWS curve was based on the results of testing carried out by TNO in the Netherlands in 1979.

protection systems be installed; i.e. sprinkler and deluge systems. As well, most industrial properties have provided their staff with firefighting training and appropriate equipment.

Although MCC does not have a large number of industrial properties, it does have over 500 farms.[34] Farm related structures can be significant is size and contain large amounts of combustible contents. In a fire they can behave similarly to industrial buildings, and can be very challenging for the fire department to mitigate. Adequate firefighting water supply is an associated challenge, particularly in the rural areas.

FIRE SERVICE-RELATED STANDARDS

There are two principal standards that have influence on decision making in the provision of fire responses in Cumberland County (MCC);

- NFPA-1720[35] and
- Fire Underwriter Surveys (FUS).[36]

NFPA-1720 provides best-practice benchmarks for volunteer fire services. The processes described by that standard are also benchmarks[37] used by complainants in liability lawsuits against volunteer fire departments and municipalities in the USA; so, it is a benchmark for the legal profession also.

The FUS standard(s) are used by the insurance industry for the determination of risk and the setting of fire insurance rates. They are a handy tool for fire service managers to better understand the risks in their fire district(s).

[34] https://nsfa-fane.ca/wp-content/uploads/2017/07/Statistical-Profile-of-Cumberland-County.pdf

[35] National Fire Protection Association; NFPA-1720, *Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments*.

[36] https://fireunderwriters.ca/

[37] https://www.lexipol.com/resources/blog/can-a-fire-department-be-sued-for-not-meeting-nfpa-standards/

Standards for Apparatus, Staffing and Response-Times

NFPA-1720

NFPA-1720 is the recognized standard for volunteer fire departments providing fire-emergency services. The standard recommends staffing and response-time objectives. This standard is the benchmark for responses to the common types of incidents experienced by volunteer fire departments, particularly in rural environments, but also in small urban/suburban areas as exist in MCC.

This standard is not as useful for developing the appropriate plans for deployment of resources for fires in higher hazard occupancies or to more complex incidents; incidents that might occur in heavy-industries. As such, the standard does not directly provide a benchmark for industrial responses. Special response plans need developing for such high hazard occupancies. For that purpose, several FUS tools are of assistance.

NFPA-1720 is not proclaimed by any Nova Scotia legislation, but has been successfully accepted as a recognized standard in a hearing before the NS Occupational Health and Safety Appeal Panel[38] and similarly as far back as 1996 by Quebec.[39] However, the main function of NFPA-1720 in Canada is as a best practices benchmark[40] used by municipalities.

The following table was adapted from NFPA-1720 by *GA* to express measurements in kms instead of miles. It captures, in summary format, the heart of the recommendations in NFPA-1720. It describes the response-time and manning objectives, according to the basic nature of the community being served (aka demand zones).

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[38] https://www.canlii.org/en/ns/nsohsap/doc/2008/2008canlii93010/2008canlii93010.html?searchUrlHash=AAAAAQAETkZQQQAAAAAB&resultIndex=1

[39] https://www.canlii.org/en/qc/laws/regu/cqlr-c-s-3.4-r-2/102264/cqlr-c-s-3.4-r-2.html?searchUrlHash=AAAAAQALIk5GUEEgMTcyMCIAAAAAAQ&resultIndex=3

[40] NFPA-1720 "*1.3.2 The standard is a benchmark for a common response and a platform for developing the appropriate plans for deployment of resources for fires in higher hazard occupancies or more complex incidents.*"

It is important to note that fire response-time and manning objectives do not need to be, and should not necessarily be the same for every area of the community. Accommodation for various degrees of urbanization or ruralization, or for target occupancies is allowed, and necessary.

For clarity, a fire district and/or community may be divvied up into areas (demand zones) that are fairly consistent in character and that better represent each *Reference Objective* row in the following table. Fire service objectives should then be designed around those zones.

TABLE 8: NFPA-1720 STAFFING AND RESPONSE-TIME STANDARD[41]

Ref. Obj.	Demand Zone	Demographics	Minimum Staff to Respond	Response-Time (minutes)	Staffed Station[42] Turnout-Time (sec)	Meets Objective (%)
A	Urban area	>386 people/km^2	15	9	90	**90**% of responses
B	Suburban area	193-386 people/km^2	10	10	90	**80**% of responses
C	Rural area	<193 people/km^2	6	14	90	**80**% of responses
D	Remote area[43]	Travel distance ≥ 12.9 km	4	Distance determined	90	**90**% of responses
E	Special risks	As determined by AHJ[44] policy	Based on risk	AHJ determined	90	**90**% of responses

Comparing NFPA-1720 Standards to Cumberland County Data

Referring to the population density data presented in *Ch 9: Community Data*, starting on page *570*; in *Table 74: Census Population* Characteristics (page *575*) it can be seen on line 6 that the population densities per square kilometer for the various parts of MCC are not uniform, and identification of goals for different demand zones is desired.

Referring to *Table 8* above, Springhill at a population density of 566.5 persons/km^2 falls on *Reference Objective* row A as an *Urban* area.

Parrsboro at 81.4 persons/km^2 falls on *Reference Objective* row C as a *Rural* area, despite the relatively urban nature of its small downtown. Parrsboro should more properly be considered a two-demand zone response department, *Suburban-Rural*, and possibly even *Remote* for some

[41] Adapted from NFPA-1720 by *GA*. Mile based population densities and distances were converted to equivalent kilometer based.

[42] This column could apply to Amherst who has a staffed station.

[43] With relative accuracy, these areas can be quickly identified in the *Cumberland GIS Travel-Time Map* on page *122* of this Report as areas which are beyond the 10-minute travel-times from rural fire stations. Google Maps is also a useful tool for quick estimating.

[44] AHJ = authority having jurisdiction.

corners of the district. A similar look is required at Pugwash where there is also a small *Suburban* demand zone in what is otherwise predominantly Rural/Remote demand zones.

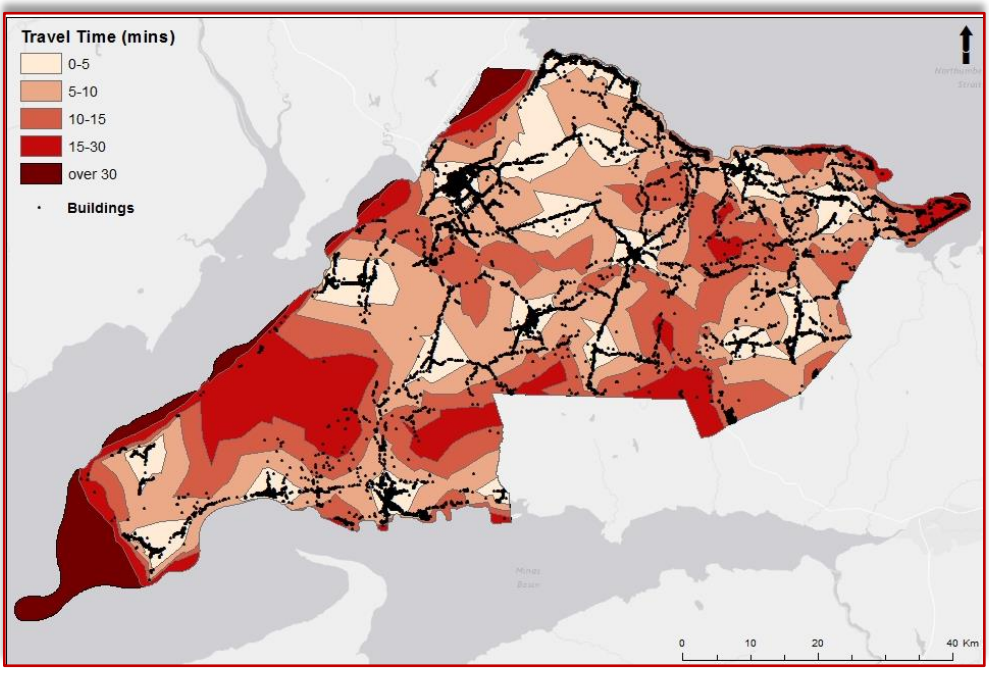
Parts of the immediate suburbs around Amherst likely fall on *Reference Objective* row B as a *Suburban* demand zone, transitioning to C *Rural* demand zone as the distance from Amherst increases; although population density data is not available to confirm that.

Much of the rest of MCC falls on *Reference Objective* rows C or D (*Rural* and *Remote*) the differentiation depending on travel distances from the nearest fire station.

Cumberland GIS Travel-Time Map

The following map[45] of MCC provides some insight into expected travel-times from the fire stations servicing the County. It was generated with computer modelling taking into account road design, speed limits, and slopes.

MAP 3: ESTIMATED TRAVEL-TIMES FROM FIRE STATIONS



The accuracy of the travel-times estimated by this map has not been extensively verified by *GA*. However, checking with some actual travel-times for *Remote* incidents that are in the records from *VCI*, and also comparing with Google Maps estimates, the map appears to overstate travel-times for smaller fire apparatus

[45] *Cumberland County Fire District Analysis*, Cumberland County Fire Service and Nova Scotia Geomatics Centre, 2016, Angharad Wylie.

when responding with emergency warning equipment (e.g., MFR *incidents*), but may well reasonably represent large fire apparatus.

Cumberland Fire Department Times and Staffing

The *VCI* incident data is not straight forward with regards to times at incidents. Arrival at the incident scene by a radio equipped fire officer, who appears to be closer to the incident than the fire station, may be "stopping the clock" for some incidents. What is clear from the map is that there are significant portions of MCC that would qualify as *Remote* demand zones where response-times (i.e., turnout-time + travel-time) would clearly exceed the 14 minutes of a *Rural* demand zone designation.

Table 9 shows the historic staffing and response-time numbers for each fire department, as well as comments on their performance vs NFPA-1720.[46] Note that response-time is the sum of turn-out and travel-times. All numbers represent 90th% of structural fire incidents in the years 2016-2021, except Amherst which is 2017-2021. Where N/A is shown, the fire departments did not provide staffing data. The incident sample size is also shown for each fire department, representing 261 incidents with data. Over this period of time there were 467 structure fires.

The column Demand Zone is the character of the service area, and is based on the NFPA-1720 population density numbers. Where more than one demand zone is likely, they are listed. As mentioned earlier, fire districts are not necessarilly homogeneous. A perfect example is Springhill, where in the town proper it has an *Urban* population density, but the entire fire district has a *Rural* population density.

TABLE 9: CUMBERLAND MEETING NFPA-1720 STANDARDS, 2016-2021 DATA

Fire Dept	Turnout Time	Travel Time	Response time	Staff	Comment re NFPA-1720 Performance	Demand Zone	Incidents with Data
ADVOCATE	00:12:02	00:15:19	00:31:10	N/A	- 90th% response-times doesn't meet *Rural* standard. - Staffing was not reported. - No determination if staffing meets Rural/*Remote* standard	Rural, Remote	17
AMHERST	00:03:24	00:11:12	00:14:12	4	- 90th% response-times doesn't meet *Rural* standard due to long turnout-times. - Staffing meets *Remote* standard *only* for this likely *Suburban/Rural* area.	Suburban, Rural	19
COLLINGWOOD	00:10:05	00:12:07	00:18:08	N/A	- 90th% response-times doesn't meet *Rural* standard. - Staffing was not reported. - No determination if staffing meets *Remote* standard	Rural, Remote	19

[46] See *Table 8: NFPA-1720 Staffing and Response-Time* Standard on page *47*.

Fire Dept	Turnout Time	Travel Time	Response time	Staff	Comment re NFPA-1720 Performance	Demand Zone	Incidents with Data
FIVE ISLANDS	00:14:43	00:02:27	00:17:10	N/A	- 90th% response-times doesn't meet *Rural* standard due to long turnout-times. - Staffing was not reported. - No determination if staffing meets *Remote* standard	Rural	1
FPW	00:14:15	00:09:14	00:23:29	N/A	- 90th% response-times doesn't meet *Rural* standard due to long turnout-times. - Staffing was not reported. - No determination if staffing meets *Remote* standard.	Rural	4
JOGGINS	00:09:21	00:02:03	00:10:46	N/A	- 90th% response-times meets *Rural* standard despite long turnout-times. - Staffing was not reported. - No determination if staffing meets *Rural* standard	Rural	9
LEICESTER	00:10:42	00:04:02	00:13:57	9	- 90th% response-times meets *Rural* standard despite long turnout-times. - Staffing meets *Rural* standard. - Meets *Rural* standard overall.	Rural	6
OXFORD	00:06:39	00:10:29	00:15:04	N/A	- 90th% response-times doesn't meet *Rural* standard due to long travel-times. - Staffing was not reported. - No determination if staffing meets any standard	Rural	5
PARRSBORO	00:10:34	00:07:31	00:15:43	N/A	- 90th% response-times doesn't meet *Rural* and *Suburban* standards due to long turnout-times. - Staffing was not reported. - No determination if staffing meets any standard.	Suburban, Rural, Remote	17
PUGWASH	00:10:36	00:11:38	00:25:48	15	- 90th% response-times greatly doesn't meet *Rural* and *Suburban* standards - Staffing meets *Rural* area standard. - Meets *Remote* standard overall.	Suburban, Rural, Remote	17
RIVER HEBERT	00:14:15	00:08:31	00:12:55	8	- 90th% response-times doesn't meet *Rural* standard due to long turnout-times. - Staffing meets *Rural* area standard. - Meets *Remote* standard overall, but doesn't meet Rural standard	Rural	12
SHINIMICAS	00:07:17	00:10:54	00:17:28	N/A	- 90th% response-times doesn't meet *Rural* standard. - Staffing not reported. - No determination if staffing meets *Remote* standard	Rural, Remote	11
SOUTHAMPTON	00:09:58	00:08:51	00:17:00	10	- 90th% response-times doesn't meet *Rural* standard. - Staffing meets *Rural* area standard. - Meets *Remote* standard overall, but doesn't meet Rural standard	Rural	10
SPRINGHILL	00:07:49	00:09:31	00:13:34	10	- 90th% response-times doesn't meet *Urban and Suburban* standards. - Staffing just meets *Suburban* area standard. - Meets *Rural* standard overall.	Urban, Rural	73
TIDNISH BRIDGE	00:05:44	00:09:47	00:13:53	N/A	- 90th% response-times meets *Rural* standard. - Staffing was not reported. - No determination if staffing meets *Rural* standard	Rural	8
TRUEMANVILLE	00:09:34	00:02:35	00:11:38	16	- 90th% response-times meets *Rural* standard. - Staffing meets *Rural* standard . - Meets *Rural* standard overall.	Rural	5
WALLACE	00:05:39	00:09:59	00:13:28	12	- 90th% response-times meets *Rural* standard. - Staffing meets *Rural* standard . - Meets *Rural* standard overall.	Rural	16
WENTWORTH	00:06:41	00:13:20	00:18:41	N/A	- 90th% response-times doesn't meet *Rural* standard. - Staffing not reported. - No determination if staffing meets *Remote* standard	Rural Remote	3
WESTCHESTER	00:09:04	00:09:26	00:18:05	10	- 90th% response-times meets *Rural* standard. - Staffing meets *Rural* standard . - Meets *Rural* standard overall.	Rural	9
							261

Fire departments who are responding to areas in their fire districts that would be classified as *Remote*, are only required to respond 4 firefighters; i.e., this would be defensive firefighting, with not enough staffing to mount more than a brief fire-attack or quick rescue if safe to do so. At the response-times and staffing levels for this level of response, demanding rescue or interior firefighting is unlikely to occur for any serious structure fire. Insufficient staff and strong

likelihood of fire progression, that has destroyed a significant amount of the property prior to arrival, precludes a high level of effectiveness.

Fire Underwriters Surveys (FUS)[47]

Dwelling Protection Grade (DPG)

Fire Underwriters Surveys *"Dwelling Protection Grade"* (DPG)[48] is a tool used by the insurance industry to assist in establishing fire insurance coverage rates for underwriters who subscribe to the rating service. Although the DPG does not have application in regards to industrial or commercial occupancies, it is a useful tool to apply to MCC's residential and rural character.

Periodically the FUS will undertake surveys in municipalities to determine where the municipality ranks in its ability to deal with expected fires in its jurisdiction. These determinations can affect insurance rates for some policy holders. Surveys look at many aspects of fire protection, including but not limited to; fire apparatus design and condition, water tanker shuttle capability, firefighter training and equipment, personal protective equipment, firefighting water supply availability, community risks, fire station design, communications systems, service boundaries, response distances and times, and financing.

Based on a determination of the factors found during their detailed survey, FUS assigns a DPG to the community. The report will contain a grade summary chart,[49] similar to the following.

Table 10 shows the various requirements to meet each DPG level. Many areas of Cumberland would currently struggle to do better than DPG 5. Major needs include; achieving Accredited Superior Water Shuttle Service[50] and having adequate numbers of active volunteer firefighters

[47] https://mboa.mb.ca/uploads/files/Underwriting%20%26%20Rating%20of%20Fire%20Risk%20in%20Municipalities%20-%20Michael%20King.pdf

[48] https://fireunderwriters.ca/Grading/Dwelling-Protection-Grade

[49] *Report to Owen Sound*, 2018, Fire Underwriters Survey

[50] See *Accredited Superior Tanker Shuttle Service* on page *113*.

(aka "auxiliary") assigned to fire stations. Achieving these two could move gradings up from DPG 5 to DPG 3.

TABLE 10: DWELLING PROTECTION GRADE SUMMARY CHART

Dwelling Protection Grade Summary of Basic Requirements per Fire Station[1]				
DWELLING PROTECTION GRADE	WATER WORKS SYSTEM	FIRE DEPARTMENT		CORRELATION WITH PFPC[2] *Public Fire Protection Classification*
		EQUIPMENT	FIREFIGHTERS	
1	Water supply system designed in accordance with Fire Underwriters Survey standard "Water Supply for Public Fire Protection" with a relative classification of 5 or better	Response from within 8 km by road of a triple combination pumper	Minimum Response: - On-duty: 3 career fire fighters, plus - Off-duty: fire chief or other officer	Water Supply and Fire Department must grade PFPC Relative Class 5 or better
2	Water supply system designed in accordance with Fire Underwriters Survey standard "Water Supply for Public Fire Protection" with a relative classification of 6 or better	Response from within 8 km by road of a triple combination pumper	Minimum Response: - On-duty: 1 career fire fighters, plus - On-call: 15 auxiliary fire fighters	Water Supply and Fire Department must grade PFPC Relative Class 6 or better
3A	Water supply system designed in accordance with, and meeting the minimum requirements of, Fire Underwriters Survey standard "Water Supply for Public Fire Protection"	Response from within 8 km by road of a triple combination pumper	15 auxiliary fire fighters	No Public Fire Protection Classification required
3B	Not required – however fire department must have adequate equipment, training and access to approved water supplies to deliver standard shuttle service in accordance with NFPA 1142, Standard on Water Supplies for Suburban and Rural Fire Fighting	2 units required. Triple combination pumper plus a mobile water supply with a combined water carrying capacity of not less than 6820 L (1500 IG)	15 auxiliary fire fighters	No Public Fire Protection Classification required
4[3]	Not required – however fire department must have adequate equipment, training and access to approved water supplies to deliver shuttle service in accordance with NFPA 1142, Standard on Water Supplies for Suburban and Rural Fire Fighting	2 units required. Triple combination pumper plus a mobile water supply with a combined water carrying capacity of not less than 6820 L (1500 IG)	15 auxiliary fire fighters	No Public Fire Protection Classification required
5	Unprotected communities or communities not qualifying for Grades 1, 2, 3A, 3B, or 4 above	Unprotected communities or communities not qualifying for Grades 1, 2, 3A, 3B, or 4 above	Unprotected communities or communities not qualifying for Grades 1, 2, 3A, 3B, or 4 above	No Public Fire Protection Classification required

[1] Refer to additional notes and requirements for interpretation
[2] The P.F.P.C. is a sophisticated municipal fire protection grading system utilized for Commercial Lines insurance. PFPC fire insurance grades are scaled from 1 to 10. One (1) represents a high level of fire protection and 10 indicates little or no recognized fire protection. This system evaluates the ability of a community's fire defenses to prevent and control major fires that may occur in commercial, industrial and institutional buildings and/or districts.
[3] Dwelling Protection Grade 4 is reserved for communities that contract for fire protection services from fire service agencies with a Dwelling Protection Grade of 3B.
Requirements for Dwelling Protection Grade 4 are the same as for Dwelling Protection Grade 3B, however in some cases, an allowance may be considered for Dwelling Protection Grade 4 where all of the criteria for Dwelling Protection Grade 3B have been met with one exception. If more than one criteria has not been met (ex. less than 15 auxiliary fire fighters and a single pumper apparatus) Dwelling Protection Grade 5 is applied. Where Dwelling Protection Grade 4 is applied, a signed letter of intent from the community is to be sent to Fire Underwriters Survey indicating that improvements will be made, within an agreed timeframe, to meet the criteria of Dwelling Protection Grade 3B.
It is important to note that the absolute minimum number of auxiliary fire fighters considered within the fire insurance grading is 10 and that maximum age of apparatus that can be considered is 30 year

Public Fire Protection Classification (PFPC)

Fire Underwriters Surveys has another measuring tool that they use, called the *"Public Fire Protection Classification"* (PFPC). The PFPC is for commercial, industrial, institutional, and multi-family residential (i.e., apartment building) properties. The PFPC is expressed on a scale of 1 to 10. The following[51] describes the PFSG grading system.

> *"Commercial Lines property underwriters and risk managers more easily recognize these as "town grades." Class 1 represents the "ideal" or highest level of pubic fire protection while class 10 reflects the absence of any effective public fire protection. Many insurers will subsequently group these "town grades" into Protected, Semi Protected and Unprotected categories, to be used when calculating underwriting*

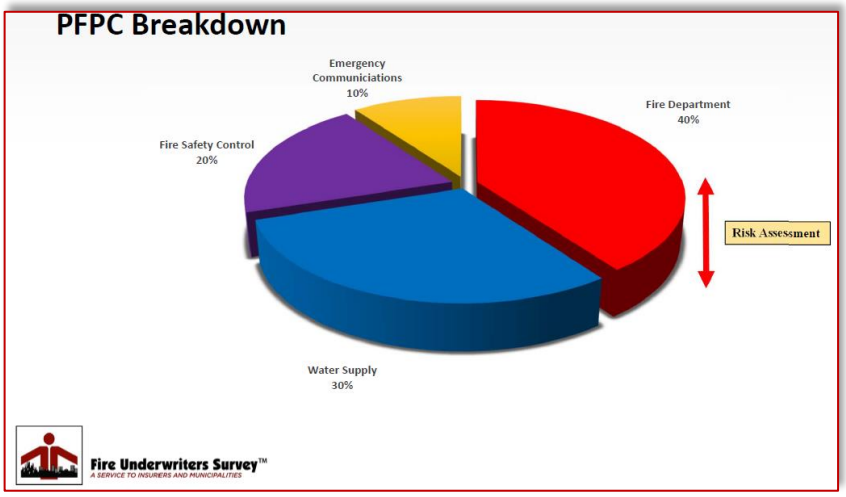
[51] OPTA: https://fireunderwriters.ca/Grading/Public-Fire-Protection-Classification

> *capacity. The gradings indicate how well communities are equipped to combat major fires that may be expected to occur in commercial, industrial, institutional and multi-family residential properties and are developed from a comprehensive review of all facets of the fire defense system as it relates to the level of risk present within the community."*
>
> *"The PFPC program provides incentives and rewards for communities that choose to improve their fire protection levels and thereby their PFPC classification. … In general, the price of insurance in a community with a good PFPC is substantially lower than in a community with a poor PFPC assuming all other factors are equal."*

A community's PFPC is calculated utilizing classifications and benchmarks in the following major areas:

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 as a whole.
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 capacity.
4. **Fire Prevention and Fire Safety Control Programs**, including public education, codes/bylaws implementation and use of codes/bylaws in managing the level of risk throughout communities.
5. **Emergency Communication Systems**, including telephone systems, telephone lines, staffing and emergency dispatch system.

FIGURE 6: PFPC BREAKDOWN[52]



The PFPC program also provides measurable benchmarks for fire departments and public officials to consider as they plan for, budget, and justify improvements. FUS describes the rating values determined as based on assessments in each of the above areas, with community risk being the intensity of each areas demand. *Figure 6* shows this relationship.

[52] https://mboa.mb.ca/uploads/files/Underwriting%20%26%20Rating%20of%20Fire%20Risk%20in%20Municipalities%20-%20Michael%20King.pdf

It is important to stress that insurance rates/premiums are determined by *each* insurance company's underwriting plans. Note that insurers also take into consideration a number of factors such as the following (not limited to, or in particular order of importance):

- Location of the Risk with respect to;
  - distance from recognized water supplies (hydrants etc.) and
  - distance from the responding fire station.
- Types of occupancies, contents, etc.
- Type of construction, exposures etc.
- Age of risk building and code compliance with respect to building, fire and electrical codes
- Alarm systems
- Exposures to natural hazards such as earthquake, wind, snow and flood etc.

In summary, improvement in fire service delivery within a community that improves its Public Fire Protection Classification has a positive impact not only on the fire protection for the community but may assist in lowering insurance rates/premiums for some. This classification has only general application to industry, and is focused on *overall* fire services delivery.

FUS Table of Effective Response

FUS has developed a tool for determining the level of fire-emergency response (that the insurance industry considers adequate) to specific hazards in the community. The tool is expressed in a table, and shows water flow rates, fire engine (pumper) numbers, ladder (i.e., aerial apparatus) company numbers, and by implication the number of personnel needed, and response-times.

Table 11 on the next page is this FUS tool, converted to Imperial gallons.

TABLE 11: FUS TABLE OF EFFECTIVE RESPONSE[53]

The following Table aids in the understanding of Engine (i.e., pumper) and Ladder (i.e., aerial) Company distribution and total members (i.e., firefighters) needed. It is based on availability within specified response travel times (i.e., travel-time) in accordance with the fire potential as determined by calculation of required fire flows (RFF), but requiring increases in availability for severe life hazards.

RISK RATING	BUILDING DISTRICT EXAMPLES	REQUIRED FIRE FLOW (RFF)		INITIAL RESPONSE TO ALARMS		1st DUE	2nd DUE	1st DUE	TOTAL AVAILABILITY NEEDED			
									Engine Companies		Ladder Companies	
		L/min x1000	Approx. lgpm Range	Engine Companies	Ladder Companies	Engine Company, Minutes	Engine Company, Minutes	Ladder Company, Minutes	No.	Minute	No.	Minute
1 (a)	Very small buildings, widely detached buildings	2	400	1	0	7.5	-	*9	1	7.5	*1	9
1 (b)	Scattered development (except where wood roof coverings)	3	600	1	0	6	-	*7.5	1	6	*1	7.5
2	Typical modern, 1-2 storey residential subdivision 3-6 m (10-12 ft,) detached	4-5	800-1,000	2	0	4	6	*6	2	6	*1	6
3 (a)	Close 3-4 storey residential and row housing, small mercantile and industrial	6-9 10-13	1,200-2,000 2,200-2,800	2 2	1 (if required by Hazards)	3.5 3.5	5 5	*4 *4	2 3	5 6	*1 *1	4 4
3 (b)	Seriously exposed tenements, Institutional. Shopping Centres, Fairly large areas & fire loads, exposures	14-16 17-19	3,000-3,600 3,800-4,200	2 2	1 1	3.5 3.5	5 5	4 4	4 5	7 7	1 **1	4 4
4 (a)	Large combustible institutions, commercial buildings, multi-storey and with exposures	20-23 24-27	4,400-5,000 5,200-6,000	2	1	2.5 2.5	4 4	3.5 3.5	6 7	7.5 7.5	2 2	5 5
4 (b)	High fire load warehouses and buildings like 4(a)	28-31 32-35	6,200-6,800 7,000-7,600	3	1	2.5 2.5	3.5 3.5	3.5 3.5	8 9	8 8	3 3	7 7
5	Severe hazards in large buildings usually with major exposures. Large congested frame districts	36-38 39-42 43-46	7,800-8,400 8,600-9,200 9,400-10,000	3	3	2 2 2	3.5 3.5 3.5	2.5 2.5 2.5	10 12 14	8 9 9	4 5 6	7.5 8 9

*** Where there are fewer than 5 buildings of a height corresponding to 3 stories or more, a ladder company may not be needed to provide ladder service.**

**** For numerous or large single buildings over three stories use two ladder companies in 5 minutes.**

- **Staffing is typically based on a minimum of 4 firefighters per each engine company and each ladder company.**
- **When un-sprinklered buildings over six stories have fire flow requirements less than Group 4, the number of Pumper and Ladder Companies under "Total Availability Needed" should be increased at least to the next group to provide the additional manpower required except where this additional manpower regularly responds in the time allotted, as occurs in some volunteer or composite fire departments.**

[53] Adapted from FUS.

In *Table 11* above, institutional occupancies (i.e., schools, hospitals) and multi-unit residential occupancies (i.e., apartment buildings), big-box stores, large agricultural buildings, and etc.; likely fall within the 3(b) and possibly 4(a) Risk Rating groups.

Employing the above table for a 3(b) occupancy, the table recommends a fire department response of initially 2 engine companies (i.e., 2 pumpers and 8 staff) and a ladder company (i.e., an aerial apparatus with 4 staff); all on the initial alarm (page-out). All are to arrive within the first 4 minutes of leaving the fire station.

A further 2 – 3 engine companies must be available to respond for a confirmed fire, with an additional 8-12 staff, and possibly a second ladder truck. Required water flow capabilities (RFF) are from 3,000 Igpm – 4,200 Igpm.

To use this table effectively it is necessary to correlate occupancies (buildings) with their level of risk. FUS does that through calculating required fire flows (RFF). However, that is not the whole story, and does not speak to total manpower needs for mitigation. For that we will need to consider another tool. This tool is called Matching Resource Deployment with Risk and is provided *Appendix 3: Matching Resource Deployment and Risk (MRDR)*.

In that appendix are a number of worked examples for hydrant protected and rural non-hydrant protected fire scenarios. These examples demonstrate how reasonable estimates of fire apparatus and manpower are developed for different levels of risk; i.e., for increasing size fire and rescue challenges for each risk group.

Cumberland County Water Delivery Capability

Pumper Operations Simplified

The *Table 11: FUS Table of Effective Response* that we see on page *138* explicitly says how many fire apparatus (pumpers and aerials) should be able to attend to an incident in each one of the Risk Groups. The table also says how much water flow (RFF) is expected for that Risk Group. The RFF is listed in both Imperial gallons per minute (Igpm) and liters per minute (L/min). Cumberland fire departments, as does most of NS, uses Igpm.

The water needed to develop the RFF can come from several sources, principally including;

- municipal pressurized water systems,
- water tanker shuttle, or
- onsite water resources at the facility.

The source of the water actually has an impact on how many pumpers will be required to deliver the water. Therefore, when preplanning a response to a specific occupancy, or into a particular fire district that is basically homogenous, firefighting water supply identification is a key prior activity.

A municipal pressurized source requires the least number of pumpers, because the water is usually delivered to the vicinity of the fire *incident*. If a pumper can connect to a municipal fire hydrant and apply the water directly into the fire, that is the most efficient mode.

Often however, conditions[54] dictate that one pumper is required to connect to the fire hydrant and relay water through hoses to another pumper. This second pumper is positioned adjacent to the fire and applies the water. This is called relaying, and effectively it takes two pumpers to develop the flow rate of one pumper. In extreme circumstances even this is not enough, and a third

[54] Some municipal water system may not be fully gridded, such that water can flow to a fire hydrant from 2 or more directions. Others are based on a few large mains feeding smaller grids, and major fires require tapping into the large mains, and moving the water through relays to where it is needed. Old systems tend to have low flow rate capabilities in corroded piping; to satisfy needs at major fires.

pumper is needed in the relay. The water delivery rate is limited by the capabilities of the least capable pumper.

In the case of a water supply at particular occupancy, this could also be pressurized in a private water system and is therefore similar to a municipal system. Or it can be static (e.g., a pond) and in that case a pumper will be required to draft the water from the pond, and relay water through hoses to another pumper which might apply the water to the fire. Sometimes there is a third intermediary (i.e., relay) pumper required if the distances between the other two pumpers is excessive. There might even be several relay pumpers, in extreme distance situations. The flow rates achieved are only as great as the smallest capacity pumper in the relay.

Water Shuttle Operations Simplified

The third method, water tanker shuttle, is similar to the pond method mentioned above, with one major exception; it is two separate but connected operations. It's really three operations if you include the fire attack itself.

The first operation is securing and transporting the water. This most often comes from a static water source and firefighting water is acquired by a pumper drafting from the pond/river. This pumper fills mobile water supply apparatus (aka Tankers), who then drive to the fire incident location where the second operation takes place.

At the incident (dump-site) the tankers dump their water into portable ponds. From these port-a-ponds (aka port-a-tanks, dump-tanks) another pumper withdraws the water and either applies it onto the fire (unusually), or more commonly relays it through hoses (preferable large diameter) to another pumper which applies the water onto the fire.

In a tanker shuttle operation it takes two and more usually three pumpers and several tankers to achieve what amounts to a limited flow rate of water, usually significantly less than can be achieved from a single pumper on a municipal fire hydrant.

The key factors to address in optimizing this scenario are as follows;

- good access to a water source for direct drafting, which requires establishing numerous sources around the municipality,
- handling time at the tanker fill and dump sites, and this is affected by the layout at each being such that facilitates speedy movements; the best being drive-by sites,
- distance from the water source to the incident dump-site location (average travel-time impact),
- the size (volume) and design (engines, brakes, stability, loading, and dumping setup) of the tankers,
- similarity of tankers in the shuttle such that slow/inefficient tankers do not hold up better design tankers,
- tanker roadability which is affected by tanker design, road design, and conditions at the time,
- the size of the port-a-tanks at the dump-site (large enough to accommodate entire tanker capacity at once), and
- the efficiency of the design (and practice) of a standard water shuttle operation which means procedures and training must be effective.

In *Appendix 4: Tanker Shuttles* are some examples of water shuttle delivery rates that can be expected with variations in some of the above key factors.

Accredited Superior Tanker Shuttle Service

The Fire Underwriters Survey (FUS) recognizes a performance standard for the delivery of firefighting water in rural areas that is based on NFPA-1142.[55] FUS is the grading agency that determines, through municipal and fire department audits, the capabilities of fire protection methods, equipment, services, and systems, to protect commercial and residential properties. Post audit, FUS will set a grade for fire protection. This grade is used by many insurance underwriters to set fire insurance rates for property owners. For rural properties without municipal water systems that are equipped with fire hydrants, the grade achieved is equivalent to having no fire protection services.

However, FUS does recognize the ability of the local fire departments to deliver water via water shuttle operations; if such operations can reliably and 24/7 deliver benchmark sustained amounts of water within benchmark time frames. Such recognition is called Accredited Superior Tanker

[55] NFPA-1142; *Standard on Water Supplies for Suburban and Rural Firefighting.* This standard can be viewed for free at https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=1142

Shuttle Service[56] (ASTSS). FUS also uses the appellation of Accredited Superior Water Shuttle Service (ASWSS) for the same program. Regardless, the impact on the FUS fire protection grading is significant, if achieved;

> *"Accredited Superior Tanker Shuttle Service is a recognized equivalency to hydrant protection."*

For a predominantly rural fire service that is not serviced by fire hydrants, achieving ASTSS might[57] positively impact insurance rates for some subscribers across Cumberland County, potentially saving some individual taxpayers significant amounts on their annual fire insurance rates. Achieving ASTSS is one of the few truly effective things that the fire service can achieve to improve loss/save records in the community.

GA has contacted FUS to determine what areas of Cumberland County currently have been certified to ASTSS. The response from FUS is that they have no record of any certification in Cumberland County.

Cumberland Current Fire Apparatus Fleet Capability

Water delivery to meet RFF in the FUS Table of Effective Responses on page *138* requires pumpers, and in rural areas, lots of tankers. *Table 12* following, summarizes the 16 Cumberland County fire departments' major apparatus fleet, with regards to apparatus used for getting firefighting water to the scene of a fire and applying it. Also shown is the 3 contract fire department capabilities (Amherst, Oxford, Five Islands).

[56] https://fireunderwriters.ca/Grading/Superior-Tanker-Shuttle-Service

[57] Not all fire insurance underwriters subscribe to the FUS rating program, and only those carriers who do are likely to directly acknowledge the improvement in water shuttle capability through reduced premiums for their subscribers. Ergo, only subscribers with those particular underwriters will potentially see an immediate benefit. Other underwriters base their premiums on other factors, including the fire loss experience of the community. Subscribers to those underwriters may see a relative premium improvement over time if better water shuttle capabilities reduce loss records in the community.

TABLE 12: INVENTORY OF CUMBERLAND AND CONTRACT APPARATUS CAPACITIES

Fire Apparatus	Pumper Number and Capacity	Tanker Number and Capacity	Total Number	Aggregate Capacity
Pumpers	5 @ 1,250 Igpm 16 @ 1,050 Igpm 2 @ 840 Igpm 1 @ 625 Igpm		24 Pumpers	25,355 Igpm
Pumper/Tankers	3 @ 1,050 Igpm 7 @ 840 Igpm 1 @ 625 Igpm	2 @ 2,500 Igal 1 @ 1,800 Igal 8 @ 1,500 Igal	11 Pumper/Tankers	9,754 Igpm 18,800 Igal
Tankers		1 @ 2,800 Igal 7 @ 1,500 Igal	8 Tankers	13,300 Igal
Aerial Platform	1 @ 1,500 Igpm		1 Aerial Platform	1,500 Igpm
Contract Depts	6 @ 1,250 Igpm 2 @ 1,050 Igpm 2 @ 840 Igpm	1 @ 1,800 Igal 1 @ 1,600 Igal 1 @ 1,500 Igal	7 pumpers 1 Aerial Platform 1 Pumper/Tanker 2 Tankers	8,790 Igpm 4,900 Igal

The average capacity of the Cumberland's fleet of 24 pumper apparatus is 1,018 Igpm. A further set of pumpers is available through the pumper/tanker group of fire apparatus, and they have an average pumping capacity of 890 Imperial gallons per minute (Igpm).

In the above table. Pumpers and pumper/tankers are noted separately for the simple reason that in a rural fire incident, the pumper/tankers are primarily needed for tanker operations and cannot be dedicated to any degree to pumper operations; without seriously diminishing the ability to shuttle water effectively and thereby sustain RFF rates.

Cumberland has more than adequate total pumping capacity to meet required fire flows (RFF) in the FUS table. However, it is necessary to get the pumpers to the location of the fire incident in a timely manner. This is the major challenge in Cumberland; and to meet that challenge it is necessary to position these resources strategically across the County.

The following table and map shows the current positioning of these resources.

TABLE 13: CURRENT DEPLOYMENT OF MAJOR FIRE FLEET RESOURCES

Fire Department	Pumpers	Tankers	Pumper/Tankers	Quint	Initial Attack	Rescues Medium/Heavy (modular)
ADVOCATE	1		1			1
Apple-River sub	1					
COLLINGWOOD	1	2				1
FPW	1		1			
JOGGINS	1		1			
LEICESTER	1	1				1
PARRSBORO	4					1
PUGWASH	2		1			1
RIVER HEBERT	2	2				
SHINIMICAS	2		1			1
SOUTHAMPTON	1	1	1			
SPRINGHILL	1		1	1	1	1
TIDNISH BRIDGE	1		1			1
Lorneville Sub			1		1	
TRUEMANVILLE	1	1				
WALLACE	2		1			1
WENTWORTH	1	1			1	
WESTCHESTER	1		1			
Totals:	**24**	**8**	**11**	**1**	**3**	**9**
AMHERST	3	1				1
OXFORD	3	1				
FIVE ISLANDS	1		1			

Run-Cards

The key to getting adequate resources to the scene of a fire is to ensure that the required resources are initiated simultaneously through a system of protocols that use "run-cards." These run-cards need to be pre-developed and tailored to the particular fire situation (e.g., house fire, barn fire). The appropriate run-card is then pulled and the appropriate fire apparatus dispatched,

as far as it is known at the time of dispatching from information the 9-1-1 caller provides and from what the Dispatcher knows based on the address in CAD.[58] Such run-cards would normally have levels attached (i.e., alarm levels) and would be developed for each homogeneous area within each fire district, and additionally, specifically for each high-risk occupancy in the County (e.g., hospital, seafood processing plant).

MAP 4: CUMBERLAND FIRE DISTRICTS

Current practice in Cumberland is a mixture of mutual-aid and automatic-aid that is managed by the individual fire departments, without any obvious coordination from the County. This is a good start, but needs to be further developed as described above. Pre-selecting resources should be based on potential scenarios using a philosophy of incremental response above a suitable first alarm level of resourcing. In addition, stripping resources from the entire area nearest to the incident location needs to be avoided, so a move-up/cover system needs to be integral with the run-card system, including the notification of key personnel.

The entire process needs to be cooperatively developed, coordinated County-wide, and tested before it is truly effective. A run-card system effectively codifies automatic-aid.

[58] CAD, computer aided dispatching is a system of software and hardware that assists the Dispatcher identify and manage locations and resources, in order to increase precision, send appropriate resources, and to reduce elapsed time in dispatching. Ideally, CAD is loaded with instructions and protocols appropriate for each situation.

Automatic-Aid Response

Automatic-aid is an arrangement where apparatus and man-power from another fire department always immediately responds (by written agreement) to structure fires or other specified types of incidents, to support the responsible fire department, without being specifically requested.[59] Essentially, the fire departments respond simultaneously.

Automatic-aid agreements enable individual emergency service providers to respond simultaneously, and to work together seamlessly, on selected preplanned types of incidents; regardless of jurisdictional boundaries.

These agreements can improve response-times, facilitate service delivery and potentially lead to cost-sharing efficiencies. Earlier[60] in the *Report, GA* illustrated the resource requirements for higher-risk events; i.e. for the numbers and types of apparatus as well as staffing requirements. No one fire department can supply all that is required. High-risk emergencies require prompt initial response with additional support simultaneously responding; i.e. automatic-aid.

There is the potential of a significant event that could overwhelm the primary fire department. However the nature of the volunteer fire service and the other responsibilities of the fire department sometimes make resourcing an incident a challenge. With volunteer firefighters there is their unknown availability because they do not work at the fire station, they respond only when requested, and their net availability is dictated by personal factors like seasonal events such as; summer vacations, individual work schedules, weather events, and family commitments, and etc. There is also the consideration that there might be another simultaneous incident within the community itself.

Automatic-aid is an essential component of covering the limitations that are endemic to the provision of affordable fire protection services.

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[59] Automatic Aid is different from Mutual-Aid. Mutual-Aid is the provision of specific assistance from another fire department, by the making of a request on the part of incident commander or senior officer, after sufficient information is known to justify the request. Both mechanisms are key to getting resources to the scene of an emergency. Automatic aid is quicker since time is not lost to decision making.

[60] See *FUS Table of Effective Response* starting on page 56.

CH 3: FIRE APPARATUS AND EQUIPMENT

The Request for Proposal asked for a review of the existing standards for fire apparatus and ancillary firefighting equipment. To accomplish this task *GA* submitted to all fire departments an Excel workbook, requesting detailed information in key areas. The worksheet asked a number of questions relating to year of truck (fire apparatus), pump size, water tank size, etc.

In addition, the workbook requested information on minor capital equipment such as; amount and size of fire hose, self-contained breathing apparatus, ladders, portable pumps, suction hoses, firefighting nozzles, ladders, etc. *GA* received responses from 12 of the 16 fire departments in MCC, and from 2 of the 3 contract departments.

Missing, and in some cases inaccurate, information required *GA* to conduct extensive searching with other sources in an attempt to collect/verify some of the required but missing data. MCC staff was also able to augment with some data in the areas of vehicle maintenance and testing records. Service contractors who inspect and test some of the fire department equipment were also able to fill in some missing pieces. However, there are still some gaps in the data and *GA* has had to resorted to making recommendations in some cases without full knowledge of specific fire department conditions. Such recommendations are however pertinent and may already be being followed by some fire departments.

CUMBERLAND FIRE APPARATUS

In *Table 15* on page *151* is a list of the current apparatus and support vehicles in Cumberland County, which are operated by the 16 fire departments. The information in the table was obtained or deduced from multiple sources. It is believed to be accurate, although *GA* can express no warranty that that is completely so as it was not extensively physically verified by *GA*.

In *Table 15* there are 92 vehicles of various classifications, which are summarized in *Table 14* as follows.

TABLE 14: SUMMARY OF CUMBERLAND APPARATUS FLEET

Fire Apparatus	Number and Pump Capacity	Number and Tank Capacity	Total Number	Aggregate Capacity
Pumpers	5 @ 1,250 lgpm 16 @ 1,050 lgpm 2 @ 840 lgpm 1 @ 625 lgpm	2 @ 1,200 lgal 18 @ 1,000 lgal 1 @ 950 lgal 2 @ 800 lgal 1 @ 500 lgal	24 Pumpers	25,355 lgpm 23,450 lgal
Pumper/Tankers	3 @ 1,050 lgpm 7 @ 840 lgpm 1 @ 625 lgpm	2 @ 2,500 lgal 1 @ 1,800 lgal 8 @ 1,500 lgal	11 Pumper/Tankers	9,754 lgpm 18,800 lgal
Mobile Water Supply (aka Tankers)	6 have small "booster" pumps <500 lgpm capacity	1 @ 2,800 lgal 7 @ 1,500 lgal	8 Tankers	13,300 lgal
Quint	1 @ 1,500 lgpm	1 @ 420 lgal	1 Aerial Platform	1,500 lgpm
Initial Attack	2 @ 250 lgpm 1 @ UNK lgpm	2 @ 250 lgal 1 @ UNK lgal	3 Initial Attack	
Wildland Fire	1 @ UNK lgpm	UNK lgal	1 Wildland Fire	
Rescue Trucks	1 @ 400 lgpm	1 @ 300 lgal	16 Rescues Trucks	
Utility Trucks			6 Utility Trucks	
UTV (off-road)			8 UTV	
Boats			6 Boats	
Roadable Trailers			11 Trailers	
			92 Vehicles	

It is useful to include here the definitions of each category of apparatus. There are in some cases subtle differences, but all are actually based on capabilities as well as primary purpose. Definitions are taken from NFPA[61] unless noted otherwise. Vehicles without definitions are operated in accordance with individual fire department needs, without conformity to any fire apparatus standard.

NFPA Fire Apparatus Definitions

> *"3.3.66 Fire Apparatus. A vehicle designed to be used under emergency conditions to transport personnel and equipment or to support the suppression of fires or mitigation of other hazardous situations."*

[61] NFPA-1901; *Standard for Automotive Fire Apparatus* and NFPA-1906; *Standard for Wildland Fire Apparatus*. Free access to these standards is available here: https://www.nfpa.org/codes-and-standards/all-codes-and-standards/free-access

> *"3.3.67 Fire Pump. A water pump with a rated capacity of at least 250 gpm (1000 L/min) but less than 3000 gpm (12,000 L/min) at 150 psi (1000 kPa) net pump pressure…"* Note: Capacities are in USA gallons
>
> *"3.3.93 Initial Attack Apparatus. Fire apparatus with a fire pump of at least 250 gpm (1000 L/min) capacity, water tank, and hose body whose primary purpose is to initiate a fire suppression attack on structural, vehicular, or vegetation fires, and to support associated fire department operations." Note: 250 USgpm = 208 Igal*
>
> *"3.3.116 Mobile Water Supply Apparatus (Tanker, Tender). A vehicle designed primarily for transporting (pickup, transporting, and delivering) water to fire emergency scenes to be applied by other vehicles or pumping equipment." Note: water tank must exceed 833 Igal.*
>
> *"3.3.146 Pumper. Fire apparatus with a permanently mounted fire pump of at least 750 gpm (3000 L/min) capacity, water tank, and hose body whose primary purpose is to combat structural and associated fires." Note: 750 USgpm = 625 Igpm.*
>
> *"3.3.151* Quint. Fire apparatus with a permanently mounted fire pump, a water tank, a hose storage area, an aerial ladder or elevating platform with a permanently mounted waterway, and a complement of ground ladders." Note: requirements are very similar to a pumper in most respects.*
>
> *"3.3.164* Special Services Fire Apparatus. A multipurpose vehicle that primarily provides support services at emergency scenes."*

From NFPA-1906

> *"3.3.126 Wildland Fire Suppression Apparatus. A fire apparatus designed for fighting wildland fires that is equipped with a pump, a water tank, limited hose and equipment, and pump-and-roll capability.*

Notes on Definitions:

A Pumper/Tanker is not defined by NFPA but, for practical purposes and in common usage, it is a multi-purpose fire apparatus that combines the fundamental capabilities of a Pumper and also those of a Tanker (Mobile Water Supply), without serious compromise. It needs to be able to function in either role as necessary. It also needs to accommodate the basic minimum equipment of both categories of fire apparatus to be able to function in both roles. It is necessarily bigger and more expensive than either equivalently capable individual apparatus, but cheaper than two apparatus.

Some of the Cumberland Pumper/Tankers are better equipped for fire attack and embody that concept better than some others which lean more towards Tanker usage. However, in *GA's* evaluations of fire apparatus, both roles are the yardstick by which they are measured.

A Quint is a multi-purpose fire apparatus that combines the fundamental capabilities of a Pumper and those of an Aerial apparatus without serious compromise. It needs to be able to function in either role as necessary. In practical terms, however, Quints have some shortcomings in either role. A Quint needs to accommodate the basic minimum equipment of both categories of fire apparatus to be able to function in both roles. It is necessarily bigger and more expensive than an equivalent pumper, but cheaper than a more capable aerial apparatus and cheaper than two apparatus.

Rescue trucks do not necessarily come under the NFPA-1901 standard, but they could be ordered as conforming to the standard insofar as the standard has provision that address fundamental chassis performance and crew safety objectives. Rescue trucks could also be NFPA compliant if purchased and operated as Special Service Fire Apparatus for which their role matches very well; thereby providing guidance on best practices for specifying and equipping the vehicle. *GA* does not believe the current Cumberland rescue trucks intentionally meet NFPA standards.

TABLE 15: CUMBERLAND FIRE DEPARTMENT FIRE AND RESCUE APPARATUS INDIVIDUAL DETAILS

FD	MCC Fleet Mtce. #	Apparatus Type	Ownership	Chassis/Body Manufacturer	Capacities Pump/Tank Imperial Gals	New or Used	Remarks	YEAR	AGE	Crew Cap'y Cab	Crew Cap'y Body
Advocate	3	Pumper	Municipality	Pierce/Pierce	1250/1250	USED	EX: Middletown DE	1992	30	UNK	UNK
Advocate	4	Pumper /Tanker	Municipality	Freightliner /Fort Garry	840/1500	NEW		2012	10	UNK	UNK
Advocate	5	Rescue (non-NFPA)	Municipality	International /Almonte		USED	EX: Cornwall ON. Large Medium Duty modular rescue	1994	28	UNK	UNK
Advocate	1	Utility (non-NFPA)	Fire Society	GMC Yukon XL		USED	EX: ?, SUV	1997	25	UNK	
Advocate	6	UTV	Fire Society				Wildland firefighting support and rescue With off-road only trailer				
Advocate/ Apple River		Pumper	Municipality	Freightliner /UNK	1250/800	USED	EX: Saint-Phillip-Saint-Mathieu PQ	2003	19	UNK	UNK
Collingwood	9	Pumper	Municipality	Freightliner /Metalfab	1050/1000	NEW		2006	16	5	
Collingwood	8	Mobile water supply	Fire Society	GMC/Metalfab	420/1500	UNK		1998	24	3	
Collingwood	11	Mobile water supply	Fire Society	International /Local Fab	400/2800	USED	EX: Ingonish Beach	1990	32	2	
Collingwood	10	Rescue (non-NFPA)	Municipality	Freightliner /Wheeled Coach		USED	EX: USA Type I Medium Duty ambulance.	2001	21	3	1

FD	MCC Fleet Mtce. #	Apparatus Type	Ownership	Chassis/Body Manufacturer	Capacities Pump/Tank Imperial Gals	New or Used	Remarks	YEAR	AGE	Crew Cap'y Cab	Crew Cap'y Body
FPW	25	Pumper	Municipality	Freightliner /Metalfab	1050/1000	NEW		2007	15	UNK	
FPW	27	Pumper /Tanker	Municipality	Freightliner/Fort Garry	840/1500	NEW		2012	10	UNK	
FPW	26	Rescue (non-NFPA)	Fire Society	Ford Excursion		USED	EX: ?, SUV	2010	12	UNK	
FPW	28	UTV	Fire Society				Wildland firefighting support and rescue				
FPW	29	Trailer	Fire Society				Transporting the K. Mule				
Joggins	12	Pumper	Municipality	Freightliner /Metalfab	1050/1000	NEW		2007	15	UNK	
Joggins	13	Pumper /Tanker	Municipality	Freightliner /Fort Garry	880/1500	NEW		2013	9	UNK	
Joggins	15	Rescue (non-NFPA)	Fire Society	Jeep Patriot		USED	EX: ?, SUV	2009	13	4	
Joggins		UTV	Fire Society				Wildland firefighting support and rescue				
Joggins		Boat	Fire Society								
Joggins		Trailer	Fire Society				Transporting the boat				
Leicester	16	Pumper	Municipality	Freightliner /Metalfab	1050/1000	NEW		2009	13	5	
Leicester	17	Mobile water supply	Municipality	Freightliner /Metalfab	420/1500	NEW	Equipped similarly to a Pumper	2013	9	2	
Leicester		Rescue (non-NFPA)	Municipality	Freightliner /Almonte		USED	EX: River Hebert. Large medium duty modular rescue	2000	22	2	
Parrsboro	24	Pumper	Municipality	Freightliner /Metalfab	1050/1000	USED	EX: River Hebert	2006	16	4	
Parrsboro	19	Pumper	Municipality	Freightliner /Metalfab	1050/1000	NEW		2008	14	4	
Parrsboro	18	Pumper	Municipality	Ford /Superior	840/1000	NEW	Stored outside	1987	35	2	
Parrsboro		Pumper	Municipality	Ford/UNK	840/1000	USED	EX: ??? Stored offsite. Used for wildland fires	1997	25	2	
Parrsboro	20	Rescue (non-NFPA)	Municipality	Freightliner /Bridgewater Metals	400/300	USED	EX: ? Undated body, newer chassis. Large Medium Duty modular rescue Equipped with booster pump and tank.	2004	18	2	2
Parrsboro	22	UTV	Fire Society				Wildland firefighting support and rescue				
Parrsboro		Boat	Fire Society								
Parrsboro	23	Trailer	Fire Society				Transport the UTV				

FD	MCC Fleet Mtce. #	Apparatus Type	Ownership	Chassis/Body Manufacturer	Capacities Pump/Tank Imperial Gals	New or Used	Remarks	YEAR	AGE	Crew Cap'y Cab	Crew Cap'y Body
Parrsboro	21	Trailer	Fire Society				Transport the boat				
Pugwash	31	Pumper	Fire Society	Freightliner /Lantz	1050/800	NEW	Truck refurbished 2009	1995	27	2	
Pugwash	32	Pumper	Fire Society	Freightliner /Metalfab	1050/1200	NEW		1999	23	5	
Pugwash	30	Pumper /Tanker	Municipality	Chev/4Guys	1050/1800	USED	EX: Springfield PA	1989	33	3	
Pugwash	34	Rescue (non-NFPA)	Municipality	Spartan /Saulsbury		USED	EX: Chester NY. Large Heavy Duty modular rescue	1992	30	2	6
Pugwash	33	Utility (non-NFPA)	Fire Society	Ford F-250		USED	Fabricated utility cap with compartments, local built	2004	18	3	
Pugwash		Boat	Fire Society								
Pugwash	35	Trailer	Fire Society				Transport the boat				
River Hebert	36	Pumper	Municipality	E-One/E-One	1250/1000	USED	EX: Upper Burrell Township PA, EX: Parrsboro	1997	25	2	6
River Hebert	42	Pumper	Municipality	Freightliner /Metalfab	1050/950	USED	EX: Lunenburg NS, Pump refurbished in 2020	1998	24	5	
River Hebert	40	Mobile water supply	Municipality	Freightliner /Metalfab	0/1500	NEW		2016	6	2	
River Hebert	37	Mobile water supply	Fire Society	GMC /Local Fab	250/1500	USED	Homebuilt, new tank in 2013/2014. Small pump and limited equipment for fire attack.	1995	27	2	
River Hebert	38	Rescue (non-NFPA)	Fire Society	Ford /SpaceKap		NEW	F-250 pickup with slide in trades body	2011	11	2	
River Hebert		UTV	Fire Society				Wildland firefighting support and rescue Argo with Tow behind off road trailer with water tank				
River Hebert		Trailer	Fire Society				Transport the UTV				
Shinimicas		Pumper	Municipality	Freightliner /C.Thibault	1250/1100	NEW		2022	0	2	
Shinimicas	43	Pumper	Fire Society	HME /Fort Garry	1250/500	USED	EX: Ottawa, EX: West Point PEI	2003	19	5	
Shinimicas		Pumper /Tanker	Fire Society	Freightliner /C.Thibault	1050/2500	NEW		2022	0	2	
Shinimicas		Rescue (non-NFPA)	Municipality	International /Dependable		USED	EX: Pickering, refurb 2021. Large Medium Duty modular rescue.	2014	8	2	4
Shinimicas		Boat	Fire Society								
Shinimicas	44	Trailer	Fire Society				EX: ?				
Southampton	45	Pumper	Municipality	Freightliner /Metalfab	1050/1000	NEW		2006	16	3	

FD	MCC Fleet Mtce. #	Apparatus Type	Ownership	Chassis/Body Manufacturer	Capacities Pump/Tank Imperial Gals	New or Used	Remarks	YEAR	AGE	Crew Cap'y Cab	Crew Cap'y Body
Southampton	47	Pumper /Tanker	Municipality	Freightliner /Fort Garry	860/1500	NEW		2012	10	2	
Southampton	51	Mobile water supply	Fire Society	Ford/UNK	UNK/1500	USED	EX: Wentworth NS	1985	37	3	
Southampton	46	Rescue (non-NFPA)	Fire Society	GMC/UNK		NEW	Cube van, FD upfitted	2007	15	2	
Southampton	48	Wildland fire suppression	Fire Society	Dodge /Smith Bros	250/250	USED	EX: Thorburn NS	1968	54	3	
Southampton	49	UTV	Fire Society				Wildland firefighting support and rescue				
Southampton	50	Trailer	Fire Society				Transport the UTV				
Springhill	57	Quint	Municipality	Sutphen /Sutphen	1500/420	NEW	EX: ?	2012	10	6	
Springhill		Pumper	Municipality	Freightliner /Allain	1050/1000	NEW		2007	15	2	
Springhill	53	Pumper /Tanker	Municipality	Sterling /Allain	1050/2500	NEW	Tank separated from body approximately 2015, repaired	2001	21	2	
Springhill	56	Initial attack	Fire Society	Ford F-350/UNK	250/250	USED	EX: White Sand Lake NY Purchased in 2020	2002	20	4	
Springhill	52	Rescue (non-NFPA)	Municipality	Freightliner /Allain		NEW	Large Medium Duty modular rescue	1997	25	2	5
Springhill	54	UTV	Fire Society				Wildland firefighting support and rescue With little tow behind off-road trailer				
Tidnish Bridge	59	Pumper	Municipality	Freightliner /Metalfab	1050/1000	NEW		2006	16	UNK	
Tidnish Bridge	60	Pumper /Tanker	Society	GMC/UNK	625/1500	NEW		1992	30	UNK	
Tidnish Bridge	62	Rescue (non-NFPA)	Fire Society	Freightliner /Wheeled Coach		USED	EX: USA Type I Medium Duty. Ambulance. Purchased in 2012	2001	21	UNK	
Tidnish Bridge		Boat	Fire Society								
Tidnish Bridge	64	Trailer	Fire Society				Transport boat				
Tidnish Bridge /Lorneville	63	Pumper /Tanker	Municipality	Freightliner /Fort Garry	840/1500	NEW		2013	9	UNK	
Tidnish Bridge /Lorneville	61	Initial Attack	Fire Society	Dodge /Local Fab	UNK/UNK	USED	EX: ? home built?	1976	46	UNK	
Truemanville	65	Pumper	Municipality	Freightliner /Metalfab	1050/1000	NEW		2007	15	5	
Truemanville	67	Mobile water supply	Municipality	Freightliner /Metalfab	424/1500	NEW		2014	8	2	
Truemanville	66	Rescue (non-NFPA)	Fire Society	GMC /SpaceKap		USED	EX: ? Pickup with slide-in. Purchased in 2006	2001	21	5	
Wallace	69	Pumper	Fire Society	Sterling /Metalfab	1050/1000	NEW		1999	23	3	

FD	MCC Fleet Mtce. #	Apparatus Type	Ownership	Chassis/Body Manufacturer	Capacities Pump/Tank Imperial Gals	New or Used	Remarks	YEAR	AGE	Crew Cap'y Cab	Crew Cap'y Body
Wallace		Pumper	Fire Society	Ford /Metalfab	625/1000	NEW		1988	34	3	
Wallace	70	Pumper /Tanker	Municipality	Freightliner /Fort Garry	880/1500	NEW		2012	10	2	
Wallace	73	Rescue (non-NFPA)	Municipality	Ford/Lantz		NEW	Original body circ.1992, refurb in 2018 new F-550 chassis with body mods. Medium Duty Modular rescue.	2017	5	2	2
Wallace	68	Utility (non-NFPA)	Fire Society	Ford F-250		NEW	Pickup with slide-in trades box	2011	11	6	
Wallace	72	UTV	Fire Society				Wildland firefighting support and rescue	2016	6		
Wallace		Boat	Fire Society					2018	4		
Wallace	71	Trailer	Fire Society				Transport the UTV				
Wallace	74	Trailer	Fire Society				Transport the Boat				
Wentworth	78	Pumper	Municipality	Freightliner /Metalfab	1050/1000	NEW		2006	16	2	
Wentworth	76	Initial attack	Fire Society	Ford F-350/UNK	250/250	NEW	Professional body	1988	34	2	
Wentworth	79	Mobile water supply	Municipality	Freightliner /Metalfab	0/1500	NEW		2017	5	2	
Wentworth	77	Rescue (non-NFPA)	Fire Society	Ford E-350 /Unicell		NEW	FD upfitted	1996	26	3	
Westchester	81	Pumper	Municipality	Sterling /Metalfab	1050/1000	USED	EX: Sales Demonstrator	2004	18	3	
Westchester	82	Pumper /Tanker	Municipality	Freightliner /Fort Garry	880/1500	NEW		2012	10	2	
Westchester	80	Rescue (non-NFPA)	Fire Society	Ford F-350 /Tristar		USED	EX: EHS Type III Light Duty modular ambulance	2003	19	2	1

The next section of this *Report* (*Fire Underwriter Surveys (FUS) Apparatus Replacement Guide*) addresses fire apparatus ages, condition, and standards/needs for testing and what level of testing and maintenance is needed.

FIRE UNDERWRITER SURVEYS (FUS) APPARATUS REPLACEMENT GUIDE

To assist fire services and municipalities in determining when to replace fire apparatus, FUS developed a guide as to when fire apparatus of a certain age should be replaced with new. This guide is based upon the assumption that all apparatus is purchased new and was fully compliant with the applicable fire apparatus standards CAN/ULC-S515, *Standard for Automobile Fire Fighting Apparatus* and NFPA-1901 *Standard for Automotive Fire Apparatus*. It also makes assumptions that the fire apparatus is being appropriately maintained.

FUS Fire Apparatus Service Schedules

As part of their Insurance Grading Schedule FUS has a number of recommendations for fire apparatus replacement based upon community size and community makeup. *Table 16* on the following page shows their various service schedules; on the basis of the community make up.

By service, FUS means how many years fire apparatus is suitable to be in service. The underlaying assumption is that smaller communities utilize their fire apparatus less, and therefore the apparatus stays fundamentally sound (serviceable) for more years.

Community population and population density are the two main factors that drive FUS's Service Schedules. Looking at *Table 74: Census Population Characteristics* on page *575* of this *Report*, on line 6; the various population densities and on line 1; the total populations of the Cumberland census sub-divisions are shown.

FUS does not consider formal municipal boundaries in its determination of community. As the table clarifies in note 4, its "a populated area (or multiple areas)…" that meet the criteria within an overall population envelope.

On the basis of the notes in the FUS table, Springhill would likely fall under the definition of a "*medium community*" with its total population of 2,743 (2016) and its density of 566.5

persons/km^2. Parrsboro's total population of 1,205 (2016) and higher density in the town area than its envelop density of 81.4 would suggest, might also partially fall in the same category.

The balance of MCC, with the possible exceptions of some of the suburban areas around Amherst and Pugwash, for which *GA* has no specific data, is likely to fall in FUS's definition of "*Small communities and rural Centres.*"

On the face of it, FUS is indicating that the maximum service life expectancy for pumpers, tankers, and aerials in first-line duty is no more than 20 years in Cumberland. FUS does sanction a service life extension process, based on testing and on apparatus loss-of-service events and records. This process is discussed in the next two sub-sections and is very pertinent to MCC.

TABLE 16: FUS SERVICE SCHEDULE FOR FIRE APPARATUS

Table 1 Service Schedule for Fire Apparatus for Fire Insurance Grading Purposes

Apparatus Age	Major Cities [3]	Medium Sized Cities [4]	Small Communities [5] and Rural Centres
0 – 15 Years	First Line Duty	First Line Duty	First Line Duty
16 – 20 Years	Reserve	2nd Line Duty	First Line Duty
20 – 25 Years [1]	No Credit in Grading	No Credit in Grading *or* *Reserve [2]*	No Credit in Grading *or* *2nd Line Duty [2]*
26 – 29 Years [1]	No Credit in Grading	No Credit in Grading *or* *Reserve [2]*	No Credit in Grading *or* *Reserve [2]*
30 Years +	No Credit in Grading	No Credit in Grading	No Credit in Grading

[1] All listed fire apparatus 20 years of age and older are required to be service tested by recognized testing agency on an annual basis to be eligible for grading recognition. (NFPA 1071)

[2] Exceptions to age status may be considered in a small to medium sized communities and rural centres conditionally, when apparatus condition is acceptable and apparatus successfully passes required testing.

[3] Major Cities are defined as an incorporated or unincorporated community that has:
- *a populated area (or multiple areas) with a density of at least 400 people per square kilometre; AND*
- *a total population of 100,000 or greater.*

[4] Medium Communities are defined as an incorporated or unincorporated community that has:
- *a populated area (or multiple areas) with a density of at least 200 people per square kilometre; AND/OR*
- *a total population of 1,000 or greater.*

[5] Small Communities are defined as an incorporated or unincorporated community that has:
- *no populated areas with densities that exceed 200 people per square kilometre; AND*
- *does not have a total population in excess of 1,000.*

In the FUS table, "*First-Line Duty*" refers to the main fire apparatus that the fire department sends on the first alarm; i.e., what is relied on for immediate response and therefore gets the most usage. The terminology "*2nd Line Duty*" refers to apparatus that would be sent to higher level incidents; i.e., for second alarms[62] and higher. The term "*Reserve*" refers to apparatus that is not

[62] It is important to note that 2nd alarms do not refer to automatic-aid activation. Automatic-aid is an extension of the first-alarm assignment of resources for a specific occupancy response. Mutual-aid might be considered a request for 2nd or higher level of alarm response, or might be the completion of the first-alarm assignment, depending on the pre-planned level of resources needed for a particular occupancy. Pre-planning is an essential component of correct resource assignment.

normally in service as first or second line apparatus. Reserve apparatus is used to replace first or second line apparatus that are in need of removal from service for maintenance or repair.

FUS Apparatus Acceptance and in-Service Testing Requirements

Note 1 in *Table 16* references "*...service tested by a recognized testing agency on an annual basis.*." This should be understood as the testing being conducted by an accredited[63] third party; other than the normal maintenance facilities of the municipality. *Table 17* expands with details of this need for testing. It need changes, is in stages as the fire apparatus ages.

TABLE 17: FUS FREQUENCY OF FIRE APPARATUS TESTS

Table 2 Frequency of Listed Fire Apparatus Acceptance and Service Tests

	Frequency of Test					
	@ Time of Purchase New or Used	**Annual Basis**	**@ 15 Years**	**@ 20 Years** ***See Note 4***	**20 to 25 Years (annually)**	**After Extensive Repairs** ***See Note 5***
Recommended For Fire Insurance Purposes	Acceptance Test if new; Service Test if used & < 20 Years	Service Test	Acceptance Test	Acceptance Test	Acceptance Test	Acceptance or Service Test depending on extent of repair
Required For Fire Insurance Purposes	Acceptance Test if new; Service Test if used & < 20 Years	No Test Required	No Test Required	Acceptance Test	Acceptance Test	Acceptance or Service Test depending on extent of repair
Factor in FUS Grading	Yes	Yes	Yes	Yes	Yes	Yes
Required By Listing Agency	Acceptance Test	No	No	No	N/A	Acceptance Test
Required By NFPA ***See Note 6***	Acceptance Test	Annual Service Test	Annual Service Test	Annual Service Test	Annual Service Test	Service Test

Note 1: See: 'Service Tests for Used or Rebuilt Fire Apparatus' for description of applicable tests
Note 2: Acceptance Tests consist of 60 minute capacity and 30 minute pressure tests
Note 3: Service Tests consist of 20 minute capacity test and 10 minute pressure test in addition to other listed tests
Note 4: Apparatus exceeding 20 years of age may not be considered to be eligible for insurance grading purposes regardless of testing. Application must be made in writing to Fire Underwriters Survey for an extension of the grade-able life of the apparatus.
Note 5: Testing after extensive repairs should occur regardless of apparatus age within reason.
Note 6: Acceptance Tests: See NFPA 1901, Standard for Automotive Fire Apparatus
Service Tests: See NFPA 1911, Standard for Service Tests of Fire Pump Systems on Fire Apparatus, Article 5.1

Table 17 makes it clear that annual testing requirements for fire apparatus is one of the foundations for reliable fire services. FUS supports fire departments doing annual testing for *all* fire apparatus that is equipped with a fire pump. Such testing, even on younger fire apparatus, establishes baseline data that greatly facilitates preventative maintenance programs, helps to avoid unexpected service outages, and is evidence

[63] https://fireunderwriters.ca/Downloads *Apparatus Listing Requirements*

of due diligence. It also contributes to achieving a better grade in a community's fire protection classification by FUS. Well executed, and complete records of all testing and inspection is necessary to achieve this value.

As was shown in *Table 15* on page *151*, a significant number of fire apparatus in MCC were purchased used, including pumpers, tankers, and pumper/tankers. *GA* received no information that these vehicles on arrival in MCC received testing and acceptance in accordance with the FUS' acceptance and service testing schedules in *Table 17*. *GA* did receive several anecdotal reports that such testing did not occur for at least some vehicles. Some vehicles with pumps and that were manufactured and previously in service in the USA did not receive a subsequent ULC certification when purchased for Cumberland fire departments. ULC certification is a fire department grading area for FUS.

As mentioned previously, FUS does provide a method for Insurance Grading Recognition of used or modified, or rebuilt/refitted fire apparatus. FUS states in their information sheet[64] and associated form that; "*Full adherence with the following specified tests is recommended when purchasing used apparatus.*" In short summary, testing is multilevel and includes the following areas:

- Weight and Load Balance Test
- Road Tests
  - Acceleration Test
  - Braking Test
- Pump Performance Test
  - Hydrostatic Test
  - Priming and Suction Capability Test
    - Vacuum Test
    - Suction Capability Test
- Pump Performance
  - Capacity Test
  - Pressure Test

[64] *Service Tests for Used of Modified Fire Apparatus*, Fire Underwriters Survey c/o SCM Opta Information Intelligence. http://www.scm-rms.ca/docs/FUS%20Apparatus%20Service%20Test%20forms.pdf

FUS requires the results of the testing to be submitted as part of a consideration for service life extension.

FUS Acceptance Program for Older Fire Apparatus

FUS states that apparatus exceeding twenty (20) years may not be considered to be eligible for insurance grading purposes, regardless of testing. Application must be made in writing to the FUS for a service life extension to extend the gradable-life of the apparatus.[65]

TABLE 18: CUMBERLAND COUNTY FIRE DEPARTMENTS FLEET AGE SUMMARY

Utilities, boats, UTVs, trailers, seasonals not included	All Major Fleet Apparatus	Firefighting Units	Quint	Pumper	Pumper /Tanker	Tanker	Initial Attack	Rescue
Average Age (years):	18.6	18.7	10	19.5	13.8	18.5	33.3	18.4
Oldest Apparatus (years):	46	46	10	35	33	37	46	30
How many ≥ 20 years:	27	19	0	9	3	4	3	8

Table 18 shows that Cumberland County's fire apparatus fleet is getting older and there are 27 units that are at or exceed 20 years old this year. Of these, 19 are front-line firefighting units including pumpers, tankers, pumper/tankers and initial attack apparatus. Actually, the oldest apparatus in the fire fleet is a seasonal wildland fire suppression truck that is 54 years old.

The application to FUS to request acceptance of older fire apparatus requires a response to all the questions in the following *Table 19*. Record keeping is a vital part of this program.

[65] FUS do not assess Rescues or Utility vehicles in their grading evaluation

Why Cumberland County Fire Apparatus Needs ULC Acceptance

In Canada, all firefighting apparatus are required to be ULC listed if they are to receive credit in FUS insurance grading. In addition, the ULC listing guarantees the purchaser that the acquired fire apparatus meets all of the performance criteria of CAN/ULC-S515.[66] In that sense, it is an assurance for the purchaser that the vehicle meets at least minimum standards.

TABLE 19: FUS INDICATORS OF APPARATUS RELIABILITY

Part A – Indicators of Apparatus Reliability	
Please provide the following information on the apparatus history.	
1.	*Has the apparatus ever been out of service for mechanical failure reasons?*
2.	*If yes, how many days has the apparatus been out of service in the last 3 years? (provide documentation)*
3.	*Is regular preventive maintenance performed on the apparatus?*
4.	*If yes, please provide the maintenance history with the completed form submission.*
5.	*Is preventative maintenance conducted in the community?*
6.	*How many days has the apparatus been out of service for preventative maintenance in the last 3 years? (provide documentation)*
7.	*Is the apparatus maintained by a certified Emergency Vehicle Technician? (provide maintenance history for last 3 years).*
8.	*Is the apparatus maintained in accordance with all manufacturer specifications?*
9.	*Is the apparatus maintained in accordance with NFPA 1911?*
10.	*Are annual Service Tests performed on the apparatus?*
11.	*If yes, please provide the last 3 Service Tests results with the completed form submission.*
12.	*Are full Pump Acceptance Tests performed on the apparatus at least every 5 years?*
13.	*If yes, please provide the last full Pump Acceptance Test results with the completed form submission.*
14.	*Is the apparatus thoroughly reviewed for criteria which may render the apparatus (or parts) "out of service" as per NFPA 1911, Chapter 6?*
15.	*If yes, please provide the results of the last full review of "out of service" criteria completed form submission.*
16.	*In what year will this apparatus be replaced?*
17.	*For Mobile Water Supply Apparatus please submit signed documentation that the apparatus meets the requirements of a Mobile Water Supply Apparatus (including Water Tank) as defined by ULC-S515.*

It is normal practice for fire departments in Canada to specify and purchase fire trucks that meet both CAN/ULC-S515 and NFPA-1901.[67] The NFPA standard is reviewed and updated more frequently than the ULC standard so tends to be more current in terms of evolving issues.

CAN/ULC S515 does not apply to so called rescue or utility vehicles. However, NFPA-1901 does contain requirements for Special Service vehicles (i.e. rescues and utility vehicles). To be considered compliant, all applicable sections of Chapter 10 and applicable sections of Chapter 15 of the Standard must be met. These requirements address fundamental personnel safety and performance aspects of these vehicles.

In Cumberland County, seven fire apparatus were noted by the fire departments on their surveys as possibly not having ULC certification. Four other apparatus belonging to fire departments

[66] CAN/ULC-S515, *Standard for Automobile Fire Fighting Apparatus*, Canadian-Underwriters Laboratories of Canada.

[67] National Fire Protection Association, NFPA-1901, *Standard for Automobile Fire Apparatus*.

who did not respond to *GA*'s request for information are also suspected of not being ULC certified.

Whereas the current fleet contains a fair number of used apparatus, it is important for fire departments, and MCC, who purchase used and/or refurbished fire apparatus to be aware of the need to upgrade fire apparatus they acquired. Most importantly, any fire apparatus (used or otherwise) should be CAN/ULC-S515 certified if it is to be recognized for insurance rating purposes.

In *GA's* opinion, it is likely not good value to purchase fire apparatus that cannot be certified. Such apparatus is less likely to be adequate, safe, or reliable. Uncertified fire apparatus also may not be accepted for contribution to the community's fire protection grade by FUS, and can therefore impact on residential and commercial fire insurance rates.

Used fire apparatus should also come with a complete inspection, testing, and maintenance record. Only then can the purchaser have an informed idea of what problems they are purchasing, and can make an accurate assessment of remaining economical life.

NFPA STANDARDS FOR AUTOMOTIVE FIRE APPARATUS

NFPA standards are the de-facto standards for all aspects of establishing and operating fire service departments and providing fire protection services in the community. NFPA standards that apply specifically to fire apparatus are not enshrined in law in Nova Scotia, except as they apply to aerial[68] fire apparatus. However, they are the foundation of the Canadian standard CAN/ULC-S515, of the ULC certification of apparatus, and of FUS insurance gradings. They are also the recognized benchmarks by all aspects of the fire protection industry.

Regardless of their status in legislation, all NFPA standards are considered by peers and the courts as best-practices. Indeed, many NFPA standards that are pertinent in the field of fire protection are incorporated into legislation, for example in the Building and Fire Codes, but also some that are particularly related to personal protective equipment[69] for the fire services.

This section discusses the importance of using NFPA standards for fire apparatus specification, purchasing, modifying, and maintenance.

There are a number of NFPA standards that apply to fire apparatus, as follows;

- For purchasing of new fire apparatus, and as an upgrade best practice reference standard; NFPA-1901, *Standard for Automobile Fire Apparatus*,
- For the maintenance of in-service fire apparatus; NFPA-1911, *Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Emergency Vehicles*,
- For major maintenance on in-service fire apparatus, to the point where the serviceable life is increased; NFPA-1912, *Standard for Fire Apparatus Refurbishing*.

NFPA-1901

NFPA-1901[70] is the main standard for the specification and purchasing of new fire apparatus. It is a performance standard which covers all aspects of fire apparatus, including the chassis,

[68] Workplace Health and Safety Regulations, N.S. Reg. 143/2014, §23.13

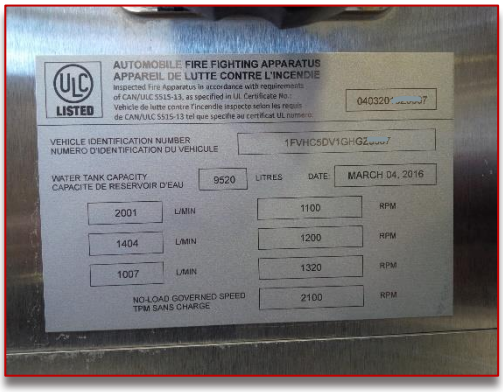
[69] For example; *Occupational Safety General Regulations*, N.S. Reg. 53/2013, Part 16.

[70] NFPA-1901 *Standard for Automotive Fire Apparatus*. This standard can be viewed for free at: https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=1901

firefighter safety, public safety, systems, and minimum capabilities. The standard also assigns categories of fire apparatus according to set performance criteria; e.g., pumper apparatus.

The NFPA-1901 standard is mirrored by its Canadianized version; CAN/ULC S515.[71] This ULC standard has not been updated since 2013. Probably in recognition of the supremacy of NFPA, Underwriters Laboratories of Canada (ULC) harmonized their certification processes[72] in 2014 to better coordinate with USA based manufacturers that are meeting NFPA-1901, and with purchasing trends.

FIGURE 7: ULC LABEL EXAMPLE



ULC is the independent third-party inspection and testing agency that certifies that manufacturers and fire apparatus meet the requirements of both NFPA and CAN/ULC S515. If a new or refurbished fire apparatus meets the requirements of the NFPA/CAN standard then ULC will place its label on the apparatus and issue a certification document. The apparatus is then ULC certified.

NFPA-1911

NFPA-1911[73] is the comprehensive standard that is essential for the proper and defensible management of the fire apparatus fleet to ensure reliability, safety, and to reduce liability. Among other aspects, it includes criteria for removing apparatus from service as well as schedules and methods for preventative maintenance. It provides detailed information on inspection and maintenance practices for all major components and systems. It also includes

[71] https://standardscatalog.ul.com/ProductDetail.aspx?UniqueKey=25706

[72] https://canada.ul.com/wp-content/uploads/sites/11/2014/06/Certification-Bulletin-2013-08ENG-ULC-S515.pdf

[73] National Fire Protection Association; NFPA-1911, *Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Emergency Vehicles*. This standard can be viewed for free at: https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=1911

performance testing criteria and goals, which are the basis for *Table 17: FUS Frequency of Fire Apparatus Tests* shown on page *158* of this *Report*.

Table 20 that follows, summarizes the major requirements of an inspection-maintenance (I&M) and testing program that is the benchmark for fire apparatus fleets.

TABLE 20: NFPA-1911 INSPECTION, MAINTENANCE, AND PERFORMANCE VERIFICATION REQUIREMENTS

AREA/SYSTEM	Frequency	After Specified Repairs, Modifications?	Manufacturer Schedules & Requirements	Procedure Specified	Authorized to Perform Work	Third Party
Visual Checks (i.e., firefighter truck checks)	Weekly or after use			33 specified areas	Designated qualified driver/operators of the apparatus	
Operational Checks (i.e., firefighter truck checks)	Weekly or after use			37 specified areas	Designated qualified driver/operators of the apparatus	
Water pumping systems and tanks I&M	Minimum annually (§4.5.5)	Required in addition		Stipulated items	Personnel meeting NFPA-1071 (EVT) [74]	
Fire pump performance testing	Required annually	Required in addition		Detailed requirements	Personnel meeting NFPA-1071 (EVT)	Permitted if accredited
Chassis, cab, body I&M	Minimum annually (§4.5.5)		Required in addition	Detailed inspection areas	Personnel meeting NFPA-1071 (EVT)	
Low-Voltage electrical systems I&M	Minimum annually (§4.5.5)			Stipulated items	Personnel meeting NFPA-1071 (EVT)	
Low-Voltage electrical system performance testing	Required annually	Required in addition		Detailed requirements	Personnel meeting NFPA-1071 (EVT)	
Aerial devices I&M	Minimum annually (§4.5.5)	Required in addition	Required in addition		Personnel meeting NFPA-1071 (EVT)	
Aerial devices Performance testing	Required annually, with NDT every 5 years	Yes, in addition, and after hard usage	Required in addition	Very Detailed requirements	Personnel meeting NFPA-1071 (EVT)	Required and accredited
Foam proportioning systems I&M	Minimum annually (§4.5.5)		Required in addition	Stipulated items	Personnel meeting NFPA-1071 (EVT)	
Foam proportioning systems performance testing	Required annually			Stipulated items	Personnel meeting NFPA-1071 (EVT)	
Compressed air-foam systems I&M	Minimum annually (§4.5.5)		Required in addition	Stipulated items	Personnel meeting NFPA-1071 (EVT)	
Compressed air-foam systems performance testing	Required annually			Stipulated items	Personnel meeting NFPA-1071 (EVT)	
Line Voltage electrical systems I&M	Minimum annually (§4.5.5)		Required in addition	Stipulated items	Personnel meeting NFPA-1071 (EVT)	
Line-Voltage systems performance testing	Required annually			Stipulated items	Personnel meeting NFPA-1071 (EVT)	
Utility air and breathing air systems I&M	Required annually		Required in addition	Stipulated items	Personnel meeting NFPA-1071 (EVT)	Manufacturers authorized representative for breathing air
Breathing air compressor systems performance testing	Required annually				Manufacturer	Manufacturers authorized representative
Trailers I&M (emergency response use)	Minimum annually (§4.5.5)			Stipulated items	Personnel meeting NFPA-1071 (EVT)	
Winch systems I&M	Minimum annually (§4.5.5)			Stipulated items	Personnel meeting NFPA-1071 (EVT)	
Road tests and annual weight verification	Required annually			Detailed requirements	Personnel meeting NFPA-1071 (EVT)	

[74] NFPA-1071; *Standard for Emergency Vehicle Technician Professional Qualifications*, National Fire protection Association. This standard can be viewed for free at: https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=1071

NFPA-1911, 2017 edition (the most current), has, in part, the following to say in Annex D *Guideline for First-Line and Reserve Fire Apparatus*;

> *"**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 more than 15 years old might include 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 have been truly significant, especially in the area of fire safety, fire departments should seriously consider the value (or risk) to fire fighters of keeping fire apparatus more than 15 years old in front-line service.*
>
> *It is recommended that apparatus more than 15 years old that have been properly maintained and that are still in serviceable condition be placed in reserve status; be upgraded in accordance with NFPA-1912; and 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 editions of the automotive fire apparatus standards, many of the improvements and upgrades required by the current editions of the standards are available to the fire fighters who use the apparatus."*

It needs to be acknowledged that the foregoing is a blanket guideline and that it is not specific to Cumberland County; primarily a low call volume rural fire service. The next part of the appendix makes it clearer that a busy city service with thousands of annual calls may wear out fire apparatus more quickly than Cumberland will and there are also other factors that affect potential service life.

> *"**D.2 Evaluating Fire Apparatus.** 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."*

NFPA-1911 is at pains to state that the original purchase of good quality, with good ongoing maintenance, good operator training and periodic upgrading to keep pace with safety and function improvements, can extend apparatus serviceable life.

When purchasing fire apparatus, stipulating conformance with NFPA-1901, the crafting of appropriate specifications clearly laying out jurisdictional fire service needs, the selection of the appropriate fabricator, and a quality control system on the purchasing process are all key components to obtaining suitable and quality equipment.

The establishment of an excellent maintenance program based on the principals and guidance of NFPA-1911 is the second component of fire apparatus longevity. Life-cycle record keeping is a key component of this program.

The third component is covered by the NFPA-1912 standard.

NFPA-1912

NFPA-1912[75] is a companion standard to 1901 and 1911, and is directed at other than purchasing and routine maintenance.

> *"1.1 Scope. This standard specifies the minimum requirements for the refurbishing of automotive fire apparatus utilized for fire fighting and rescue operations, whether the refurbishing is done at the fire department or municipal maintenance facilities, or at the facilities of private contractors or apparatus manufacturers.*
>
> *1.2 Purpose. This standard specifies the minimum requirements for the refurbishing of automotive fire/rescue apparatus, to ensure that any apparatus refurbished in accordance with this standard meets applicable motor vehicle regulations and applicable portions of the appropriate edition of the NFPA automotive fire apparatus standard."*

In summary then, any fire apparatus that requires refurbishing due to serious breakdown, accident, used purchase, or desire to modernize should be upgraded in accordance with NFPA-1912.

[75] NFPA-1912; *Standard for Fire Apparatus Refurbishment*, National Fire Protection Association

The provisions of NFPA-1912 advise that a detailed specification for the refurbishment of fire apparatus be written to ensure that all components are addressed to meet the standard. There are two basic options in the standard. Refurbish the fire apparatus to completely meet current edition NFPA-1901 requirements (i.e. a Level I refurbishment) or ensure that all new or upgraded components meet the current edition NFPA-1901 requirements (i.e. a Level II refurbishment).

Appendix D of the NFPA-1912 standard provides an overview of fundamental aspects of fire apparatus upgrading refurbishment:

> *"**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 at a minimum:*
>
> *(1) Seat belts with seat belt warning systems are available for every seat and are new or in serviceable condition.*
>
> *(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 meet or exceed 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) Signs are present stating that no riding is allowed on open areas.*
>
> *(12) A pump shift indicator system is present and working properly for vehicles equipped with an automatic chassis transmission.*
>
> *(13) 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.*
>
> *(14) All loose equipment in the driving and crew areas is securely mounted in accordance with the current standard."*

Effectively then, NFPA-1912 is stating that in-service fire apparatus (whether purchased new or used) should be kept up-to-date for critical safety and performance features. In *GA's* opinion, with an aging fire apparatus fleet as is the case in Cumberland County, the fleet should be evaluated in detail by competent personnel to determine if upgrades are indicated for specific apparatus.

Making the Decision; Refurbish or Replace Fire Apparatus

It is good practice for Cumberland and the fire departments to carefully evaluate the relative cost/benefit of refurbishing/updating in-service fire apparatus vs the cost of purchasing used fire apparatus. Points to consider are the total life-cycle cost, functionality, suitability for service demands, safety, and expected service life of a new and/or refurbished fire apparatus. This evaluation should be applied to existing in-service fire apparatus, or fire apparatus that is being purchased used from another fire department or as a repurposed chassis and components like the body or the pump.

The County should also consider the potential impact on FUS assessment of insurance gradings on the basis of new vs used vs refurbished fire apparatus. Also to be considered is that new apparatus often have teething pains, but alternatively, used apparatus can come with maintenance, reliability and suitability baggage.

NFPA-1912, Annex D, probably sums up the issues best where it comments on the relative value of refurbishment vs purchasing, as follows;

> *"**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. 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 of the factors to evaluate when determining 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?*

(2) What advancements in design, safety, and technology have improved the efficiency and safety of personnel?

(3) 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 in the foreseeable future, or is it functionally obsolete? Can it carry everything that is needed to do the job without being overloaded?

(4) If the apparatus is refurbished, will it provide the level of safety and operational capability of a new fire apparatus? It should be kept in mind that 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 plan 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.

(5) 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? Insurance costs, downtime costs, maintenance costs, depreciation, reliability, and the safety of the users and the public all have to be considered. 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 can the fire department operate without the apparatus if it suddenly needed major repairs?

(6) Is there a current trade-in value that will not be there 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."

Compliance Status of Cumberland Fire Fleet

Table 21 that follows is a tabulation of the status of the fire apparatus fleet in MCC, with regards to compliance with FUS recommendations, ULC certifications, and NFPA standards.

TABLE 21: CUMBERLAND FIRE FLEET COMPLIANCE TO STANDARDS, INDIVIDUAL STATUS

FD	Apparatus Type	Chassis / Body Manufacturer	Capacities Pump/Tank Imperial Gals	Built to 1901	ULC Cert (at purchase)	1911 Pump Annual Performance Test	1911 Systems Annual I&M, PT	1911 Annual Road & Weight Tests	Equipped to meet 1901 Classification	Remarks
Advocate	Pumper	Pierce/Pierce	1250/1250	UNK	NO	07/**2021**	UNK	UNK	UNK	No information provided on equipment Pump tested, but not ULC Certified

FD	Apparatus Type	Chassis / Body Manufacturer	Capacities Pump/Tank Imperial Gals	Built to 1901	ULC Cert (at purchase)	1911 Pump Annual Performance Test	1911 Systems Annual I&M, PT	1911 Annual Road & Weight Tests	Equipped to meet 1901 Classification	Remarks
Advocate	Pumper /Tanker	Freightliner /Fort Garry	840/1500	YES	YES	07/**2021**	UNK	UNK	UNK	No information provided on equipment
Advocate/ Apple River	Pumper	Freightliner /UNK	1250/800	UNK	UNK	UNK	UNK	UNK	UNK	No information provided on equipment
Collingwood	Pumper	Freightliner /Metalfab	1050/1000	YES	YES	UNK	UNK	UNK	NO	
Collingwood	Mobile water supply	GMC/Metalfab	420/1500	YES	YES	UNK	UNK	UNK	NO	
Collingwood	Mobile water supply	International /Local Fab	400/2800	UNK	NO	UNK	UNK	UNK	NO	Does not meet side dumping capability required for Mobile Water Supply
FPW	Pumper	Freightliner /Metalfab	1050/1000	YES	YES	06/**2021**	UNK	UNK	UNK	No information provided on equipment
FPW	Pumper /Tanker	Freightliner/Fort Garry	840/1500	YES	YES	06/**2021**	UNK	UNK	UNK	No information provided on equipment
Joggins	Pumper	Freightliner /Metalfab	1050/1000	YES	YES	UNK	UNK	UNK	UNK	No information provided on equipment
Joggins	Pumper /Tanker	Freightliner /Fort Garry	880/1500	YES	YES	07/**2020**	UNK	UNK	UNK	No information provided on equipment Pump performance test more than one year overdue
Leicester	Pumper	Freightliner /Metalfab	1050/1000	YES	YES	09/**2021**	UNK	UNK	NO	
Leicester	Mobile water supply	Freightliner /Metalfab	420/1500	YES	YES	09/**2021**	UNK	UNK	NO	
Parrsboro	Pumper	Freightliner /Metalfab	1050/1000	YES	YES	09/**2021**	UNK	UNK	NO	Missing significant equipment as reported
Parrsboro	Pumper	Freightliner /Metalfab	1050/1000	YES	YES	09/**2021**	UNK	UNK	NO	Missing significant equipment as reported
Parrsboro	Pumper	Ford /Superior	840/1000	UNK	UNK	UNK	UNK	UNK	NO	Unequipped, planned support for wildland fires
Parrsboro	Pumper	Ford/UNK	840/1000	UNK	NO	UNK	UNK	UNK	NO	Unequipped, planned use for wildland fires
Pugwash	Pumper	Freightliner /Lantz	1050/800	YES	YES	08/**2021**	UNK	UNK	UNK	
Pugwash	Pumper	Freightliner /Metalfab	1050/1200	YES	YES	08/**2021**	UNK	UNK	UNK	
Pugwash	Pumper /Tanker	Chev/4Guys	1050/1800	UNK	NO	08/**2021**	UNK	UNK	NO	Does not meet side dumping capability required for Mobile Water Supply
River Hebert	Pumper	E-One/E-One	1250/1000	YES	NO	09/**2020**	UNK	UNK	NO	Missing significant equipment as reported Pump performance test more than one year overdue
River Hebert	Pumper	Freightliner /Metalfab	1050/950	YES	YES	09/**2020**	UNK	UNK	NO	Missing significant equipment as reported Pump performance test more than one year overdue
River Hebert	Mobile water supply	Freightliner /Metalfab	0/1500	YES	UNK	N/A	UNK	UNK	NO	
River Hebert	Mobile water supply	GMC /Local Fab	250/1500	UNK	UNK	UNK	UNK	UNK	NO	Missing significant equipment as reported Does not meet side dumping or direct fill capability required for Mobile Water Supply
Shinimicas	Pumper	Freightliner /C.Thibault	1250/1100	YES	YES	N/A	UNK	UNK	N/A	Delivery scheduled for 2022. Current inventory plan is not compliant
Shinimicas	Pumper	HME /Fort Garry	1250/500	YES	YES	UNK	UNK	UNK	NO	

FD	Apparatus Type	Chassis / Body Manufacturer	Capacities Pump/Tank Imperial Gals	Built to 1901	ULC Cert (at purchase)	1911 Pump Annual Performance Test	1911 Systems Annual I&M, PT	1911 Annual Road & Weight Tests	Equipped to meet 1901 Classification	Remarks
Shinimicas	Pumper /Tanker	Freightliner /C.Thibault	1050/2500	YES	YES	N/A	UNK	UNK	N/A	Delivery scheduled for 2022. Current inventory plan is not compliant
Southampton	Pumper	Freightliner /Metalfab	1050/1000	YES	YES	09/**2021**	UNK	UNK	NO	Missing significant equipment as reported
Southampton	Pumper /Tanker	Freightliner /Fort Garry	860/1500	YES	YES	09/**2021**	UNK	UNK	NO	Missing significant equipment as reported
Southampton	Mobile water supply	Ford/UNK	UNK/1500	UNK	UNK	UNK	UNK	UNK	NO	Unequipped, apparently out of service
Southampton	Wildland fire suppression	Dodge /Smith Bros	UNK/UNK	UNK	UNK	UNK	UNK	UNK	NO	Unequipped, apparently out of service
Springhill	Quint	Sutphen /Sutphen	1500/420	YES	NO	UNK	UNK	UNK	NO	Missing significant equipment as reported Apparently never ULC certified
Springhill	Pumper	Freightliner /Allain	1050/1000	YES	YES	UNK	UNK	UNK	NO	Missing significant equipment as reported
Springhill	Pumper /Tanker	Sterling /Allain	1050/2500	YES	YES	UNK	UNK	UNK	NO	
Springhill	Initial attack	Ford/UNK	250/250	UNK	NO	UNK	UNK	UNK	NO	
Tidnish Bridge	Pumper	Freightliner /Metalfab	1050/1000	YES	YES	09/**2021**	UNK	UNK	UNK	No information provided on equipment
Tidnish Bridge	Pumper /Tanker	GMC/UNK	625/1500	UNK	UNK	UNK	UNK	UNK	UNK	No information provided on equipment
Tidnish Bridge /Lorneville	Pumper /Tanker	Freightliner /Fort Garry	840/1500	YES	YES	09/**2021**	UNK	UNK	UNK	No information provided on equipment
Tidnish Bridge /Lorneville	Initial Attack	Dodge /Local Fab	UNK/UNK	UNK	UNK	UNK	UNK	UNK	UNK	No information provided on equipment
Truemanville	Pumper	Freightliner /Metalfab	1050/1000	YES	YES	UNK	UNK	UNK	NO	
Truemanville	Mobile water supply	Freightliner /Metalfab	424/1500	YES	YES	UNK	UNK	UNK	NO	
Wallace	Pumper	Sterling /Metalfab	1050/1000	YES	YES	06/**2021**	UNK	UNK	NO	Missing significant equipment as reported
Wallace	Pumper	Ford /Metalfab	625/1000	YES	YES	06/**2020**	UNK	UNK	NO	Missing significant equipment as reported Pump performance test more than one year overdue
Wallace	Pumper /Tanker	Freightliner /Fort Garry	880/1500	YES	YES	06/**2021**	UNK	UNK	NO	
Wentworth	Pumper	Freightliner /Metalfab	1050/1000	YES	YES	07/**2021**	UNK	UNK	NO	Significantly underequipped as reported
Wentworth	Initial attack	Ford/UNK	250/250	UNK	UNK	UNK	UNK	UNK	NO	Significantly underequipped as reported
Wentworth	Mobile water supply	Freightliner /Metalfab	0/1500	YES	UNK	N/A	UNK	UNK	NO	Significantly underequipped as reported
Westchester	Pumper	Sterling /Metalfab	1050/1000	YES	YES	05/**2021**	UNK	UNK	NO	Significantly underequipped as reported
Westchester	Pumper /Tanker	Freightliner /Fort Garry	880/1500	YES	YES	05/**2021**	UNK	UNK	NO	Significantly underequipped as reported

Notes on Table 21:

The table contains information on all Pumper, Pumper/Tanker, Mobile Water Supply (Tankers), Quint, Wildland Fire Suppression, and Initial Attack fire apparatus located and operated by the 16 MCC fire departments. These apparatus are subject to NFPA Standards benchmarks, ULC certification, FUS review for insurance grading, and would be the focus of a comprehensive inspection, maintenance and testing program.

The apparatus in the table are core apparatus; i.e., essential for the provision of the core emergency fire services in MCC, namely; response to fire and associated rescue and environmental protection emergencies. Other vehicles that the fire departments operate are not included in the table because there is no equivalent standards under which they might fall and under which they might be evaluated. These other vehicles may also be important in their own right, in association with broader usage, often for the provision of non-core services.

The table presents the fire apparatus in the same order as *Table 15* for convenience of comparing the additional information. However, not all vehicles in that table are included here; only the ones meeting this tables criteria.

The following notes are presented under their *Table 21* column title:

Built to 1901: All apparatus in this table should have a YES in this column to be properly certified for use in Cumberland (i.e., in Canada). Some apparatus in the table were purchased second hand and their original specification and purchasing, and therefor compliance to NFPA-1901 requirements (that were in force at the time of their construction) are subsequently unknown. All such apparatus are noted as UNK (i.e., unknown status).

A few of the apparatus are repurposed from civilian purposes and almost certainly were not constructed to NFPA requirements. Repurposed trucks may be deficient[76] with respect to NFPA requirements and in *GA*'s opinion should not be utilized in an emergency role unless verified to

[76] Ontario Firefighter Guidance Notes; https://www.ontario.ca/document/firefighter-guidance-notes/1-8-safety-considerations-new-fire-apparatus Also see: https://www.firerescue1.com/fire-products/fire-apparatus/articles/second-life-fire-trucks-know-the-risks-cZnng73qbDnYLPA0/

be fit for emergency service use by a competent authority *thoroughly* familiar with *emergency* vehicle usage and requirements.

ULC Certification (at purchase)**:** ULC certification is required by FUS for consideration in their Insurance Grading evaluation as contributing to a better rating. Without it, the vehicle's existence is ignored as if it does not exist.

The majority of the apparatus with a NO in this column were either USA imported apparatus or locally/home fabricated by persons not certified to build to NFPA requirements.

The imported apparatus could potentially meet ULC requirements and be certified if that process was sought. In several instances the fire department reported that their imported apparatus was not certified, and/or they could not find a ULC label on the apparatus, which strongly suggests they were not certified after import.

Locally/home fabricated apparatus almost certainly do not meet the requirements for ULC certification. Obtaining ULC recognition of the shop is required, and is probably cost prohibitive for a small shop. Such requirement would circumvent the major objective of local builds; obtaining apparatus at the lowest possible cost.

1911 Pump Annual Performance Test: MCC does not use an accredited 3rd party testing agency as required by FUS. Pump performance testing is done in-house by an MCC mechanic who does not meet NFPA-1071 requirements.[77] Of the 44 fire apparatus equipped with pumps requiring annual performance testing, test records from 21 pump performance tests were received by *GA*, of which 4 were more than a year out-of-date. *GA* does not know if that is the totality of records. All apparatus for which no test record was received are noted as UNK (i.e., unknown status).

1911 Systems Annual I&M, PT: Annual Inspection and Maintenance (I&M) and in most cases annual Performance Testing (PT) is required by NFPA-1911 on all major systems installed on

[77] NFPA-1911 §4.3.1.1; requires that "*Any person performing diagnostic checks, inspections, performance testing, or maintenance of the emergency vehicle shall meet the qualifications of NFPA 1071 or the equivalent.*"

fire apparatus. Such systemic I&M-PT is listed in *Table 20* on page *165*. *GA* received no records of these procedures being undertaken by MCC, although there were some handwritten notes on some of the pump test records that suggested some low-voltage system components were operated during the pump test. In the absence of records, apparatus were identified in this table as UNK status instead of as NO.

1911 Annual Road & Weight Tests: Annual road performance testing and verification of axle weights, to ensure no overloading of the vehicle or degradation in powertrain or braking systems in the past year has occurred, is required by NFPA-1911. As part of *GA's* request for information from the fire departments, actual in-service axle weights were requested for all fire apparatus. With only a few exceptions the fire departments did not know the weights of their vehicles and were unable to provide the requested information.

It is assumed that during regular maintenance of fire service vehicles that certain components are verified, such as brake and exhaust systems, but it is not known (UNK) if current maintenance practices meet NFPA-1911 standards.

Equipped to meet 1901 Classification: NFPA-1901 requires that fire apparatus in each classification (e.g., pumper, mobile water supply, etc.) carry certain equipment as a minimum. They may carry more. The intention of the minimum is to ensure that the fire apparatus are equipped to perform their function with at least basic equipment, which is essential to their capabilities. It also ensures that mutual-aid partners understand that the fire apparatus coming their way is equipped to at least a certain level, such that they can be deployed appropriately.

For example; if Springhill requires a mutual-aid pumper from a neighbouring department for use at a major fire, and that pumper is not equipped to operate using a fire hydrant, because they are a rural department and do not carry the required adapters and hydrant wrenches, it will cause delays and difficulties if they are assigned to operate at a hydrant and supply water for the fire attack. They would not even be effective at standby status.

Looking at this column in the table, some fire departments did not provide fire apparatus equipment inventory as requested by *GA*. These fire apparatus have UNK (unknown, no data) on their respective lines.

Fire departments that indicated their equipment carried exceeded the minimum equipment requirements in capability were given credit for meeting the standard. For example, a carried firefighting nozzle was capable of 120 gallons/minute instead of the required 95 gpm would be give credit for meeting that nozzle requirement, if they carried the correct number.

Other fire apparatus have a NO on their respective lines in the table. Looking in the Remarks column, adjacent, where a fire apparatus is close to meeting the equipment requirements; there is no comment made in relation to this. In these cases, there is relatively little equipment missing from the fire apparatus, or possibly, not all carried equipment was reported to *GA*.

Other fire apparatus where a NO is indicated, also have a remark commenting that there is *significant* equipment missing. Alternatively is the comment that they are *significantly under-equipped* meaning they currently have less than half the required equipment.

One last NO case is presented as well. It is for fire apparatus in the fleet that are virtually stripped of all equipment and are essentially out-of-service, as is.

There are common themes in the missing equipment. One was mentioned in the Springhill example above; many of the rural fire station pumpers, pumper/tankers and tankers do not carry the required equipment to operate from a fire hydrant.

Another theme is a failure to carry the minimum number and type of ground ladders. Ladders are essential for firefighter access to elevated places, like roofs. They are also essential for rescue of persons above the ground floor.

Many fire apparatus also do not carry, or carry sufficient numbers of, the required wrenches and adapters needed to connect and disconnect fire hose. Some fire apparatus do not carry the required firefighting nozzles. Instead they are missing some, and in some cases carry in lieu

more under-capacity nozzles (i.e., small gallons/minute) that are only suitable for brush fires and are not effective in a serious structure fire.

One common deficiency was the failure to provide adequate numbers of self-contained breathing apparatus (SCBA) on the fire apparatus. Basically, NFPA-1901 requires one SCBA and one *spare* SCBA air bottle per crew seat, with a minimum of 4 SCBA on pumpers, pumper/tankers, and the quint. At least 22 fire apparatus carried fewer than the number of SCBA, or in a few cases carried none. Four stations did not report their SCBA situation.

Two mobile water supply (aka tanker) apparatus and one pumper/tanker do not meet a basic requirement as tankers because they do not have side-dumping capability. One also does not have water tank direct-fill capability. These missing capabilities seriously restrict their utility as tankers and reduces the entire effectiveness of any water shuttle relay they are a part of.

Recommendation 1: GA recommends that all current fire apparatus be thoroughly reviewed by a competent person who is thoroughly familiar with the NFPA requirements for that Type of fire apparatus (i.e., pumpers, water supply, initial attack, special service, etc.). Equipment carried on all fire apparatus should be augmented as necessary to meet the minimum requirements for that Type of fire apparatus in order to ensure the proper tools are available for use and to ensure full credit as meeting that Type of fire apparatus.

Recommendation 2: GA recommends that complete inventories of all fire apparatus and auxiliary vehicles should be developed. Check-sheets should be developed for each apparatus; that include all carried equipment as well as including clear indication of which equipment is designated to meet minimum equipment requirements, for that Type. These check-sheets should be utilized for weekly visual and operational checks (aka truck-checks) in conformance to NFPA-1911 requirements. The results of these truck-checks should be filed weekly with the County. The County should consider supplementing the check-sheets with a computer database, county-wide, RMS system.

Not maintaining properly equipped fire apparatus is a downgrading of capabilities from what is expected.

THE VALUE OF FIRE APPARATUS STANDARDIZATION

The following is intended to provide some insight into areas where performance, safety, economy, and effectiveness can intersect in a standardized fire apparatus specification format; a format that can generate savings through bulk purchasing and streamlined maintenance, as well as improved operability for firefighters.

MCC has already made some forays into purchasing standardized apparatus, with the purchase of apparatus from Metalfab in 2006 and from Fort Garry more recently. However, this approach has not been consistent. Also, used fire apparatus are still being purchased by the fire societies, as late as 2021, and these do not follow any standardized configuration.

Major Components, Current Fleet

First, a review of the current fire fleet. Major components installed in the current fire apparatus fleet are as follows;

- Fire pumps; Hale is the most common fire pump manufacturer (26), Waterous is next (5), followed by UNK (4), Darley (2) and Gorman Rupp (1).
- Engines; Cummins is the most common diesel engine manufacturer (25), Mercedes (8) is next, followed by; CAT (6), Ford diesel (3), International (2), and Detroit (1). There are also a number of gasoline engines; Ford gasoline (8), Chev/GMC gasoline (3), Dodge gasoline (1). Finally there are UNK diesel (4) and UNK gasoline (1).
- Chassis custom; There are only a few custom chassis, and except for the Springhill Quint which is a Sutphen (1), all the remainder were purchased used. They are Pierce (1), HME (1), Spartan (1), E-One (1).
- Chassis commercial; Freightliner is the most common heavy/medium truck commercial cab/chassis manufacturer (32), then Ford (10), and followed by GMC/Chev (7), International (3), Sterling (3), and finally Dodge (1).

The significance of the above information is that there is a variety of pump, chassis, and engine manufacturers currently in the fire fleet. This strongly suggests that there is an opportunity for standardization of fire apparatus specification and purchasing between the existing fire departments and internally within each department as well.

Standardization will reduce inefficiencies in servicing and repair. Reducing the variety of apparatus specifications will facilitate consolidation of servicing for these vehicles, thereby gaining an advantage of economies of scale from commonality of parts and consolidated knowledge.

Recent purchases have reflected a commonality of chassis (Freightliner M2-106/112)[78], but not of powertrain which has fluctuated between Mercedes and Cummins. Currently, Freightliner offers in the M2-112 chassis the Detroit DD13 and Cummins L9 engines, and in the M2-106 chassis the Cummins L9 engine.

There are significant advantages in purchasing, serviceability, and costs, to say nothing of in-depth servicing knowledge accumulation, when a standardized chassis/cab, pump, and powertrain is used for all vehicles of a class in a fleet. Such advantages will surface in cost of ownership with lower parts stock costs and more efficient servicing; thereby reducing service time/cost, with consequent reduction in down-time, and better preventive maintenance knowledge.

Cost savings in purchasing can be achieved with a common specification across multiple vehicles. It then becomes possible to establish multi-year, multi-vehicle contracts, from multiple provider choices; contracts that can attract better pricing and reduce municipal administrative time.

Pumps

The standard apparatus specification should include a standard make and model of fire pump, which is a major component of most fire apparatus, and is a major maintenance cost component and cause of down-time. Based on the existing fleet, it is clear that Hale is the predominant pump manufacturer. Hale is a highly reputable pump manufacturer and makes an excellent and reliable product. Hale is probably the most widely specified fire pump in North America.

[78] The Freightliner M2-106 and M2-112 are essentially the same chassis. The M2-112 has a larger radiator capability for larger engines, and sits slightly higher, but to the uninformed, they look alike.

The Hale Qmax family of pumps[79] offers capacity scalability to suit various needs of the fire service. The recommended standardized version (for pumpers) is the Hale Qmax rated at 1250 Imp gpm. This pump will produce flows well in excess of its rating, provided there is adequate horsepower to drive the pump and adequate water supply. Horsepower will be addressed by our recommendation on engines.

For aerial devices, the ability to produce a maximum volume water stream from the top of the aerial ladder requires a larger pump due to friction and height losses. For that application, the Qmax in the 1750 Imp gpm rating is recommended.

Engines

The standard apparatus specification should also include a standard make and model of engine. Based on the existing fleet, it is clear that Cummins is the predominant engine manufacturer. Indeed, it is one of only a couple choices left in the truck market. Cummins is a highly reliable[80] and fuel-efficient engine manufacturer with excellent power availability, and a choice of power models.

The standard pumper and rescue truck specification should be the Cummins L9-450 (emergency service rating) which is very adequate for this service. The standard chassis should be the Freightliner M2-106 (2 door rescue chassis) or the Freightliner M2-112 (4-door pumper chassis).

However, for the heavier apparatus, i.e. the Pumper/Tankers, and Quint; the Cummins X12-500 in the Freightliner 122SD chassis is the stronger choice. A more powerful engine than the Cummins L9 engine is needed get all the available water flow from the recommended Quint pump, and to move these heavy vehicles down the road with good hill climbing and highway performance, and higher engine braking capability.

[79] This information is a presentation for facts only, and is not an endorsement of any brand or manufacturer of pump. Many manufacturers make high quality fire pumps.

[80] This information is a presentation for facts only, and is not an endorsement of any brand or manufacturer of engine, although there are limited choices in heavy trucks.

Aerial apparatus (which includes quints) and tankers are significantly heavier than pumpers and aerials also have larger auxiliary power demands from large hydraulic systems that operate the aerial device. The more powerful engine is needed to ensure adequate performance.

Chassis

It is desirable that the cab/chassis also be standardized. With the low annual response volumes and number of fleet vehicles it is recommended that a standardized commercial chassis be specified for all new and used purchases.

As mentioned above, commercial chassis could be standardized on the Freightliner M2 and SD series[81] of chassis. The M2 comes in a 2-door and a 4-door version. The 2-door version should be considered in the 132" BBC extended cab (20 inches longer) version which allows for the use of an SCBA seat for the passenger (officer). The 4-door M2 should be ordered with the raised roof option which greatly enhances the internal space in the cab, similar to that obtainable in a custom fire chassis. The SD cab is also available in extended and crew cab versions. *Table 22* that follows summarizes the above information.

TABLE 22: STANDARDIZED CHASSIS AND ENGINE RECOMMENDATIONS[82]

Purpose	Chassis	Configuration	Engine	Hp	Torque Ft-lb	Trans
Light Duty Rescue with walk-around body, Initial Attack Apparatus	Ford F550	4-door, diesel, 4X4	Ford 6.7L V8 turbo	330	825	Automatic
Medium/Heavy Rescue, modular body	Freightliner M2-106	2-door with extended cab (132" BBC)	Cummins L9-450	450	1250	Automatic
Pumper	Freightliner M2-112	4-door crew cab with raised roof (160" BBC)	Cummins L9-450	450	1250	Automatic
Pumper/Tanker	Freightliner 114SD, Tandem	2-door with extended cab (140" BBC)	Cummins X12-500	500	1750	Automatic
Tanker	Freightliner 114SD, Tandem	2-door with extended cab (140" BBC)	Cummins X12-500	500	1750	Automatic
Quint	Freightliner 114SD, Tandem	4-door crew cab (162" BBC)	Cummins X12-500	500	1750	Automatic

Builders, Bodies

In Canada the following well-known builders all build on commercial chassis;

[81] This information is a presentation for facts only, and is not an endorsement of any brand or manufacturer of chassis. Many manufacturers make high quality chassis from which to choose.

[82] Or equivalent performance, features, and ability to harmonize brand and model.

- **Lantz** (Port Williams, NS): Long noted for their very high-quality rescue trucks and tankers; they also build pumpers. Sells direct to municipalities (no dealer overheads).
- **Metalfab** (Centreville NB): Builds pumpers, tankers and rescue trucks. Sells through dealers.
- **Fort Gary** (Winnipeg, MB): Builds pumpers, tankers and rescue trucks. Sells through dealers.
- **Carl Thibault** (Pierreville, QC): Builds pumpers, tankers, aerials, and rescue trucks. Sells through dealers.
- **Maximetal** (Saint-Georges, QC): Builds pumpers, tankers and rescue trucks. Sells through dealers. Also has exclusive strategic access to Pierce chassis in Canada.
- **Dependable** (Brampton, ON): Builds pumpers, tankers and rescue trucks. Sells direct. Dealer for Spartan aerials.
- **Acres Emergency Vehicles** (Green Acres Colony, MB): Builds pumpers, tankers, wildland attack.
- **Hub** (Abbotsford, BC): Builds pumpers, tankers and rescue trucks. Sells through dealers.
- There are also across Canada a number of smaller firms (smaller than those mentioned above) who build fire apparatus for their regional market.

Other Benefits

Standardization helps to ensure that all assigned drivers are familiar with all fire apparatus in the fleet, not just the ones they normally operate. It reduces training time and effort. Skills learned on one apparatus are directly applicable to another. This reduces the risk of incidents and improves operator skill levels and performance outcomes. It also simplifies the ability to relieve the apparatus operator (at long duration incidents) by any trained operator, even one who is not familiar with that specific apparatus, but who is trained and experienced with other members of the apparatus family.

When apparatus are removed from service for repairs, the replacement spare apparatus will be highly similar to the one being repaired, which improves the effectiveness, efficiency, and safety of the use of the spare apparatus. Training will not be required before the *foreign* apparatus can be utilized safely; training and familiarity advantages that are often overlooked.

The integration of standardized apparatus will take upwards of 20 years to completely achieve as attrition drives the replacement of older apparatus. Some vehicles in the current fleet are only a few years old. However, there are also a significant number of apparatus in need of replacement

almost immediately; and that will get the process started. Failure to standardize will continue, and exacerbate, the uncoordinated nature of apparatus purchasing, with all its downsides.

There is yet another initiative possible and recommended that is associated with standardized apparatus. Training and effectiveness for all firefighters is further simplified and enhanced if along with standardized fire apparatus there is a move to standardized the configuration of equipment carried on the trucks, i.e. what and where.

Although this initiative is simplified when all apparatus are configured the same way, this process can start sooner, even with the current fleet. The benefit is that a firefighter from one station, working at an incident scene alongside a vehicle from another station, will know what and where to find the needed equipment on virtually any apparatus. This speeds operations in time-critical situations.

Although complete standardization of equipment placement is the panacea and cannot be 100% accomplished due to differences in current apparatus, there is much that can be accomplished since most apparatus have similar layouts.

There will always be the need to accommodate local needs based on specific risks in the community. Some adjustment in detailed specification may be needed from one standard apparatus to another, one fire district to another. However, these accommodations should not include the major components recommended, but may impact some more minor details.

Standard Specification Outlines

The following is offered as a standard specification outline for future purchasing of fire apparatus. It represents coordinated purchases and complements a standard operational approach, as has been consistently discussed in this *Report*.

Pumpers:

- Meets all requirements of NFPA-1901, latest or successor edition

- ULC certified and plated to meet CAN/ULC S515 latest edition
- Commercial chassis as per *Table 22*, with seating for 5 firefighters
- 4 seats fitted with SCBA holders in the seat-back, place for 1 more SCBA in the body
- Hale Q-Max pump, rated 1,250 Igpm at 150 psi differential
- Four 2½ inch side discharges, one 4 inch side discharge, one deck gun discharge, 2 rear discharges for pre-connects with both on left hand side, 2 cross-lay discharges
- Water tank of 1,000 Igal, polypropylene with life-time warranty
- Pump suction valve and piping minimum 4 inch full port size
- Aluminum fabricated body with 300 cubic-feet of enclosed compartment volume (exclusive of hose beds)
- Ladder rack to accept 14 foot roof ladder plus 35 foot 3-section extension ladder, OR 14 foot roof ladder plus 28 foot 2-section extension ladder (adjustable for either configuration)
- Storage tubes for 3 x 14 foot lengths of 6 inch, lightweight, clear, PVC hard suction hose
- Hose beds for 1500 ft of 5 inch hose, 1,000 ft of 2½ inch hose
- Two cross-lays at the pump house for 250 feet each of 2½ inch hose
- Two rear pre-connected beds for 300 feet each of 2½ inch hose
- All piping stainless steel, minimum 3 inch nominal diameter discharges
- 12 Volt LED scene lights on sides and back of body (e.g., FRC Spectra 900)
- NFPA-1901 compliant lighting and reflective striping

Mobile Water Supply Apparatus:

- Meets all requirements of NFPA-1901, latest or successor edition
- ULC certified and plated to meet CAN/ULC S515 latest edition
- Commercial chassis as per *Table 22*, with seating for 3 firefighters
- 2 seats fitted with SCBA holders in the seat-back, place for 2 more SCBA in the body
- Hale AP-50 pump, rated 420 Igpm at 150 psi differential
- Hydraulic PTO pump drive with pump-and-roll capability
- Two 2½ inch side discharges, one 4 inch side discharge, 2 cross-lay discharges
- Water tank of 2,200 Igal, polypropylene with life-time warranty
- 10 inch Newton dump valve (model # 1080/84-34) mounted on the left, the right and rear sides of body. Rear dump with swivel. All dumps automated from cab with powered extensions
- 6 inch rear tank direct fill connection, mounted at bumper height, with full port wafer-check valve at tank flange. Provide with 4 inch STORZ connect for filling hose
- Pump suction valve and piping minimum 4 inch full port size

- Aluminum fabricated body with 200 cubic feet of enclosed compartment volume (exclusive of hose beds)
- One side compartment large enough to store a CET PFP-20HPHND-1D portable pump with full frame, plus a 6.6 US gallon portable marine-style fuel tank (Scepter #03781)
- Ladder rack to accept 14 foot roof ladder plus 35 foot 3-section extension ladder, OR 14 foot roof ladder plus 28 foot 2-section extension ladder (adjustable for either configuration)
- Side rack to accept 2,500 Igal (3,000 USgal) porta-tank, (closed dims 16 ft x 8 in x 29 in: *Fol-da-Tank single lane tank type 1*)
- Storage tubes for 3 x 14 foot lengths of 4 inch, lightweight, clear, PVC hard suction hose
- Hose beds for 1000 ft of 5 inch hose, 600 ft of 2½ inch hose
- Two cross-lays at the pump house for 200 feet each of 2½ inch hose
- All piping stainless steel, minimum 3 inch nominal diameter discharges
- 12 Volt LED scene lights on sides and back of body (e.g., FRC Spectra 900)
- NFPA-1901 compliant lighting and reflective striping

Initial Attack Apparatus:

- Meets all requirements of NFPA-1901, latest or successor edition
- ULC certified and plated to meet CAN/ULC S515 latest edition
- Commercial chassis as per *Table 22*, with seating for 5 firefighters
- Place for 5 SCBA in the body
- Hale AP-50 pump, rated 420 Igpm at 150 psi differential
- Hydraulic PTO pump drive with pump-and-roll capability
- Two 2½ inch side discharges, one 4 inch side discharge, 2 cross-lay discharges
- Water tank of 250 Igal, polypropylene with life-time warranty
- Pump suction valve and piping minimum 4 inch full port size
- Aluminum fabricated body with minimum 80 cubic-feet of enclosed compartment volume (exclusive of hose beds)
- Ladder rack to accept a 22 foot 3-section extension ladder and a 10 foot folding ladder
- Storage tubes for 2 x 10 foot lengths of 4 inch, lightweight, clear, PVC hard suction hose
- Hose beds for 800 ft of 5 inch hose, 400 ft of 2½ inch hose
- Two cross-lays at the pump house for 200 feet each of 2½ inch hose
- All piping stainless steel, minimum 3 inch nominal diameter discharges
- 12 Volt LED scene lights on sides and back of body (e.g., FRC Spectra 900)
- NFPA-1901 compliant lighting and reflective striping

Light-Duty Walk-Around Rescue

- Meets all requirements of NFPA-1901, latest or successor edition as a Special Service Fire Apparatus
- ULC certified and plated to meet CAN/ULC S515 latest edition
- Commercial chassis as per *Table 22*, with seating for 5 firefighters
- Place for 5 SCBA in the body
- Aluminum fabricated walk-around rescue body, 12 feet long with cab height side compartment doors, and a rear compartment
- 12 Volt LED scene lights on sides and back of body (e.g., FRC Spectra 900)
- NFPA-1901 compliant lighting and reflective striping

Quint

- Meets all requirements of NFPA-1901, latest or successor edition
- ULC certified and plated to meet CAN/ULC S515 latest edition
- Commercial chassis as per *Table 22*, with seating for 5 firefighters
- 4 seats fitted with SCBA holders in the seat-back, place for 1 more SCBA in the body
- 75 foot, rear mount, straight aerial ladder device with pre-piped waterway, master stream near tip
- Hale Q-Max pump, rated 1,750 Igpm at 150 psi differential
- Four 2½ inch side discharges, one 4 inch side discharge, one aerial discharge, 2 cross-lay discharges
- Water tank of 250 Igal, polypropylene with life-time warranty
- Pump suction valve and piping minimum 4 inch full port size
- Aluminum fabricated body with minimum of 150 cubic feet of enclosed compartment volume (exclusive of hose beds)
- Ground ladder provisions to accept 16 foot roof ladder, 35 foot 2-section extension ladder, 40 foot 3-section extension ladder, 12-foot folding ladder
- Storage tubes for 2 x 14 foot lengths of 6 inch, lightweight, clear, PVC hard suction hose
- Hose beds for 800 ft of 5 inch hose, 800 ft of 2½ inch hose
- Two cross-lays at the pump house for 250 feet each of 2½ inch hose
- All piping stainless steel, minimum 3 inch nominal diameter discharges
- 12 Volt LED scene lights on sides and back of body (e.g., FRC Spectra 900)
- NFPA-1901 compliant lighting and reflective striping

FLEET RECOMMENDATIONS

Recommendations that are financial in implication are contained within *Ch 10: Financial* starting on page *584* of this *Report*.

Recommendation 3: GA recommends that all MCC purchased fire apparatus be standardized in specification in order to speed the acquisition process and obtain better pricing. This should include a standard chassis, standard pump size and make/model, standard features and capability, and a standard body configuration, details as recommended in this Report.

Recommendation 4: GA recommends that the provided Standard Specification Outlines on page 183 of the Report be utilized as the starting point for developing detailed standard specifications for the replacement of all fire apparatus.

Such standardizations will also reduce maintenance costs, improve interoperability between fire departments at incidents, and improve training efficiency across the County, and reduce liability for the Municipality.

Recommendation 5: GA recommends that all fire apparatus when purchased new should[83] be specified, constructed, tested, and accepted in conformance with the requirements of the latest edition of NFPA-1901.[84] And CAN/ULC-S515. All should have a ULC label displayed on them.

Recommendation 6: GA recommends that when the new consolidated Standard, NFPA-1900, comes into effect that all recommendations made referencing the following noted Standards will refer, mutatis mutandis, to NFPA-1900 when it comes into effect; NFPA standards 1901, 1906, 414, and 1917.

Recommendation 7: GA recommends that all fire apparatus placed in service in Cumberland County, whether new or used, should meet a relevant section of NFPA-1901; consistent with its performance and mission, and be provided with the Standard's minimum equipment load. Purchase of new or used apparatus should fall under one of the Standard's Types of fire apparatus, conforming to the requirements that are relevant at the time of purchase, as follows;

- ***Pumper (when equipped with a fire pump greater than 840 Igpm and a tank larger than 420 Igal)***
- ***Mobile Water Supply (when equipped with a water tank greater than 1,000 Igal and a fire pump smaller than 840 Igpm)***

[83] As required by NFPA-1500; *Standard on Fire Department Occupational Safety and Health Program*, which is the base document for "*The Nova Scotia Fire Services Occupational Health and Safety Reference Guide*," 2003. The guide states "This reference guide contains minimum requirements for a fire-service related occupational health and safety practice." It was developed through a committee of NS career and volunteer fire services, the Fire Marshal's office and Environment and Labour OH&S division.

[84] Fire apparatus that do not meet NFPA-1901 standards are inherently unsuitable for the purpose since they will not likely incorporate the necessary safety, reliability, and functionality, of design and components. Fire apparatus not meeting NFPA or ULC are not recognized by the insurance industry (FUS) as fire apparatus.

- ***Aerial** (or variety of; e.g., Quint)*
- ***Initial Attack** (when equipped with a fire pump larger than 210 Igpm and a water tank larger than 170 Igal)*
- ***Special Service** (rescue trucks with modular bodies intended to support fire service operations [as defined in the MGA])*

Recommendation 8: GA recommends that the County should introduce a plan, whereby existing fire apparatus serving in the County should be upgraded as far as practical to meet the fundamentals of the NFPA-1901 Standard and should be equipped appropriately. NFPA-1911 and 1912 should be used to make the determinations on needed changes. Vehicles where it is not practical or economic to upgrade should be removed from service.

Recommendation 9: GA recommends that all fire apparatus in Cumberland County be Inspected, Maintained, Tested, Repaired, Modified, Refurbished, or Removed from service in accordance with the best practices contained in NFPA-1911 and 1912. All used vehicles purchased by the County should be upgraded as necessary to meet the requirements of these standards before being placed into service. Apparatus that do not meet the standards, in any substantive way, should not serve in the County for delivering fire services.

Recommendation 10: GA recommends that fire apparatus that does not meet, or cannot be reasonably made to meet, the basic requirements of the NFPA Standards be removed from service as soon as practical. Such vehicles should not be funded or condoned in any way by the County. This recommendation does not apply to pickup like non-emergency utility vehicles intended to assist with moving supplies, manpower, or loose equipment in support of fire station operations. Nor does it apply to SUV style vehicles intended for delivering MFR services nor to UTV type vehicles.

The NFPA-1901 standard has stipulated a number of Types of fire apparatus that includes Pumper, Initial Attack, Mobile Water Supply (Tanker), Aerial, and Special Service (rescue trucks). Fire apparatus equipped with a fire pump must be tested and certified to the requirements of NFPA-1911/ULC-S515 to be recognized for insurance grading purposes (i.e. meeting FUS rating requirements). This was discussed in some detail elsewhere in this *Report*, starting on page **156**.

Recommendation 11: GA recommends that the County develop an Inspection, Maintenance, Testing, and Retirement program (Servicing Program) for all of its fire apparatus that is designed to meet the requirements contained in NFPA-1911 Standard, latest edition. Annex C of the Standard may be particularly helpful in establishing the program. Schedules for all required activities should be carefully developed and observed. Records of all activities should be diligently and consistently kept in a records management system (RMS) designed to support a compliant servicing program, and preferably computer based so it can be easily accessed from any fire station.

Recommendation 12: GA recommends that, unless the County chooses to undertake the fire apparatus servicing program, only one qualified and experienced fire apparatus maintenance service provider do all the fire apparatus component servicing on all fire fleet vehicles, in every fire department. This provider must have mobile servicing capability and should perform such services inside Cumberland County. Such servicing must meet the requirements of the County's fire apparatus servicing program.

Recommendation 13: GA recommends that only a certified Emergency Vehicle Technician meeting the requirements of NFPA-1071 should be servicing, inspecting, and testing all fire apparatus components. This includes the pump, pump transmission, all pump ancillary systems, emergency warning systems, electrical power systems, and all other components specified in NFPA-1901. This recommendation does not preclude the use of other skilled trades to work on vehicle components that are not specific to fire apparatus, for example; engines and power-trains, which can help ensure the EVT can focus on fire apparatus components.

Recommendation 14: GA recommends that Cumberland County investigate the provision of a suitable maintenance facility for undertaking the fire apparatus servicing program. Such a facility needs to simplify under frame access, as many components are only effectively serviced from below the vehicle. The testing and maintenance of speciality systems on the apparatus will require special provisions at the servicing facility.

Recommendation 15: GA recommends that mobile servicing capability be provided in order to speed minor routine servicing in the fire stations, and thus avoid taking the apparatus out of service for any extended period. Mobility also helps, where possible, to reduce the expenditure of significant amounts of the EVT's time in moving fire apparatus between service centre and fire station.

Recommendation 16: GA recommends that firefighters be trained to, and required to, do weekly/post trip visual and operational checks on all fire apparatus in accordance with Chapter 7 of NFPA-1911, and also in accordance with provincial pre-trip[85] safety inspection guidelines. Methods for such checks should be standardized across the County, and the results of such checks should be filed upon completion with the Director.

Recommendation 17: GA recommends that Cumberland County develop and implement a standardized equipping and layout plan for all carried equipment on pumpers, pumper-tankers, mobile water supply apparatus, and initial attack apparatus; such that each apparatus has the minimum equipment for its Type of apparatus as specified in NFPA-1901, and that equipment is carried in the same or similar location on all apparatus in that Type, excepting only where that is not possible without major renovations to apparatus scheduled for short-term retirement. Such recommendation is not intended to restrict the equipping or carrying of additional or specialized equipment necessary to address specific

[85] *Commercial Vehicle Trip Inspection and Records*, N.S. Reg. 223/90; exempts emergency vehicles from the requirements of a pre-trip inspection. However, best-practices require a form of this type of inspection be done. For volunteer fire departments a policy of doing such inspections at least once a week and after every trip will meet best-practices, and is a very wise policy.

Incidents with fire apparatus, particularly old fire apparatus, have a high ratio of causation due to mechanical failures, particularly brakes deficiency, that would be caught in a properly done pre-trip inspection regime.

requirements in a particular fire response district. Such additional equipment should be located so as not to unduly disrupt the standard layout plan.

Recommendation 18: GA recommends that complete servicing, inspection, testing, and maintenance records be securely kept, for every fire apparatus, for the life of the fire apparatus. Such records should be subject to regular evaluation to determine (in advance) trends and evidence of need for rebuilding, preventative maintenance, or possible predictable service failure.

Recommendation 19: GA recommends that MCC adopt through the Policy of Council process, a fire apparatus replacement schedule that meets best practices, and that helps to maintain fire insurance grading scores. The schedule in Table 23: Recommended Service Length for Fire Apparatus should be adopted for the purposes of determining fire apparatus suitability for continued service and as a budget planning tool for future fire apparatus replacement.

TABLE 23: RECOMMENDED SERVICE LENGTH FOR FIRE APPARATUS

Type	Condition	Max Age	Service
Pumper, Tanker, Initial Attack	Purchased to NFPA-1901 standard, certified and periodically tested in accordance with FUS/ULC	20 years	First-line duty
Pumper, Tanker, Initial Attack	Purchased to NFPA-1901 standard, certified and periodically tested in accordance with FUS/ULC	25 years	Reserve use
Aerial/Quint	Purchased to NFPA-1901 standard, certified and periodically tested in accordance with FUS/ULC	20 years	First-line duty
Aerial/Quint	Purchased to NFPA-1901 standard, certified and periodically tested in accordance with FUS/ULC	25 years	Reserve use
Rescue/Special Service	Purchased to appropriate portions of NFPA-1901 standard	25 years	First-line duty
Rescue/Special Service	Purchased to appropriate portions of NFPA-1901 standard	30 years	Reserve use
Service Life Extension[86]	Fire Apparatus in exceptional condition that has aged-out may be considered for life extension by making application to FUS. A cost/benefit analysis of required refurbishment should be undertaken basis the remaining life cycle costs and benefits vs replacement	TBD	TBD
Utility vehicles	Light duty chassis	15 years	First-line duty
Utility vehicles	Light duty chassis	20 years	Reserve use
All other	RTV, rescue boat, trailers, etc.	condition	First-line duty

Recommendation 20: GA recommends that two older (no longer first-line) pumpers or pumper-tankers be kept serviceable/operational as maintenance reserves. The purpose of reserves is to be able to, on short notice, temporarily replace apparatus that are out of service for a day or more due to breakdown or maintenance. Reserve apparatus will also remain available for use at major incidents. Reserve apparatus should be placed and maintained in suitable fire stations where there is space and where there is the ability to adopt them into the visual and operation checks program for that station. They should be fully equipped as pumpers, ready to be placed into service at a moment's notice.

[86] See *FUS Acceptance Program for Older Fire Apparatus* starting on page *142* of this report.

CH 4: RECOMMENDED DEPLOYMENT OF RESPONSE RESOURCES

The following discussions and arising recommendations are based on data about Cumberland County that were obtained through the process of this *Review*. They include historical incidents that have occurred, location of fire stations, apparatus and equipment at fire stations, training, staffing levels, and capabilities of fire departments, past response patterns, and fire risks of the communities, among other factors.

The objective of any recommendations in this *Report* is to achieve better fire protection, more consistent and reliable responses, and a predictable and sustainable cost for the municipality. In addition, reduction in fire insurance rates could also occur for some residents as a benefit with certain recommendations.

The fundamental concept for recommendations is to respond the appropriate and necessary resources (both equipment and appropriately trained staff), from the closest location, to every incident, in a sustainable and largely predictable manner. Reliance on well developed operating guidelines and associated training and drills will be required to ensure that consistent performance is achieved. Cooperation between fire departments, fire dispatch, and County administration and support, are all key factors in achieving success.

Responding appropriate resources in a timely manner requires planning. A significant part of this planning revolves around what type of incidents are occurring. In other words, what type of resources, and how much of them, will be required; which is dictated by the incidents that are most likely to occur.

Fire incidents are undoubtable the most resource intensive incidents. Serious fires and all structural fires require the response of multiple fire apparatus and large numbers of firefighters.

Chart 20: Breakdown of Fires in Occupancies on page *555* tells us that the most prevalent fire occurrence (34.2%) in MCC is a fire in agricultural fields or in wildland (grasses, brush, wooded areas). The second most common fire (33.5%) is a dwelling fire; i.e., in a residence. In the data there were also 54 Commercial/Barn/Warehouse/Other structural fires in MCC.

CALCULATING REQUIRED RESOURCES

Appendix 3: Matching Resource Deployment and Risk (MRDR), starting on page *658* of this *Report*, extends the FUS recommended resources contained in *Table 11* on page *138*. The method in the appendix converts the FUS table into numbers of firefighters and apparatus that is appropriate for Cumberland County.

Organizing to Obtain Required Resources

It is unreasonable to expect that manpower and equipment resources to address *every* fire incident possibility will be established in *each* fire station. This reality is recognized through the use of mutual-aid, where several fire departments will respond to an incident; where they combine their resources. Automatic-aid is becoming more common in Cumberland County, as certain fire departments have decided to establish protocols whereby they have partner fire departments that respond simultaneously, and don't have to wait (as in mutual-aid) for an arriving fire officer to then make such a decision.

Automatic-aid practices have value and should be formally established[87] across the County for all structure fires. The ability to always establish in a timely manner a sustainable water shuttle operation, or a hydrant relay operation, that delivers adequate water supplies is the driving factor.

In practice, a certain number of fire departments, associated with a certain level of resources, could be considered as part of the First Alarm response (assignment). Established run-cards that are based on response areas/districts for non-specific, as well as run-cards for specific preplanned occupancies,[88] would dictate how many stations are required to be included in the immediate

[87] As discussed in *Run-Cards* starting on page *136*.

[88] Most areas either in a rural community of in a suburban community tend to be homogeneous in character. The area, aka neighbourhood, may be 1960's era residential or it might be an 1890's era farm community. A structure fire in these similar areas becomes a baseline for expectations, and for preparedness, and for response protocols. There are also occupancies, structures, that are the exception in these neighbourhoods. These occupancies require additional consideration due to their size, occupants, construction materials/method, or any number of reasons. These specific occupancies should be specifically pre-planned and when an incident occurs there, the required additional or specialized resources are dispatched immediately, if necessary through auto-aid.

dispatch for a particular fire incident. Second Alarm upgrades, to add more resources through, for example, water supply task forces, should be included in the run-card system.

Apparatus Needed for Rural Fires

In Cumberland County the most likely structure fire incident will involve a detached single family home[89] (i.e., a residential occupancy). A fire in such a home in a rural area is not likely to have serious exposure concerns, as the home is most likely to be on a largish property with no other homes in proximity that would be exposures. Out-buildings, most typically a detached garage, are likely and are usually the only exposure concern. Extension to surrounding grass or brush is also a potential, but easily dealt with, if expected.

For a structure fire in a rural area, not protected by fire hydrants, there is a need to establish a sustained supply of water for firefighting. This supply must be sufficient for extinguishing and overhauling the fire. In a typical small bungalow style single family dwelling of less than 2,000 sqft in floor area, this can be accomplished by the water that is on the pumper, and through one or two tankers that carry a similar quantity of water as the pumper, or a little more.

In Cumberland, it is expected that these types of fires are traditionally handled by pumping from the tanker to the attack pumper in what is called a nursing operation. This type of operation may be sufficient for this scenario, generally. However, when faced with an escalating situation, or a fire in a more challenging structure, or more advanced fire[90] on arrival, it is important not to fall into the habit of resorting to a nursing operation. A sustainable water shuttle operation is required, and should be in progress immediately if there is any indication the fire is not of a trivial nature.

FUS offers improved community grading for insurance purposes if fire departments can properly establish a superior water shuttle operation that can be accredited,[91] and that is implemented at

[89] See *Chart 20: Breakdown of Fires in Occupancies* on page 89 of this report.

[90] For example, a vehicle in an attached garage of the home.

[91] See *Accredited Superior Tanker Shuttle Service* on page 71 for more details.

every structure fire. The Cumberland fire departments should be well versed in establishing a sustainable water supply through water shuttle operations.

Appendix 4: Tanker Shuttles, starting on page *667***,** works some examples of the resource needs to establish water shuttle operations that obtain sustained water flows adequate to various fire scenarios.

Target: Superior Water Shuttle

Logically, the yardstick for the fundamental version (i.e., the minimum response requirements) of a Initial Alarm assignment is meeting the FUS Accredited Superior Water Shuttle Service (ASWSS) requirements. As described in the section on the *Fire Underwriters Surveys (FUS)*, starting on page *134*, there are two goals for the FUS water shuttle operations. One is achieving sufficient rates of water supply to meet the requirements of the Dwelling Protection Grade (Personal Lines - DPG) and the second is to meet the requirements for the Public Fire Protection Classification (Commercial Lines - PFPC).

There are a number of requirements[92] for being Accredited for the ASWSS. For the purposes of this section, only the following is what is needed to develop the Initial Alarm run-cards.

- For Personal Lines; be able to deliver not less than 950 LPM (200 Igpm) of water within 5 minutes of arrival at the fire.
- Be able to shuttle water over a distance of 5 km between water source and the fire.

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- For Commercial Lines; be able to deliver not less than 1900 LPM (400 Igpm) of water within 10 minutes of arrival at the fire.
- Be able to shuttle water over a distance of 2-1/2 km between the water source and the fire.

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- Flows must be sustained for at least 2 hours, without interruption.

[92] https://fireunderwriters.ca/Grading/Superior-Tanker-Shuttle-Service Note: FUS variously calls this Superior Tanker Shuttle and Superior Water Shuttle. Both terms mean the identical process.

It should be noted that the least flow rate[93] in the FUS Table of Effective Response[94] is 400 Igpm; i.e., the ASWSS Commercial Lines requirement, which is twice the Personal Lines requirement. The reality is, the ASWSS requirement is not based on a fully developed fire in the target occupancy. It is effectively based on a single compartment fire (aka room), that if unchecked by sufficient water supply and staffing will likely progress beyond the compartment and consume the entire structure.

Consulting the example exercises conducted in *Appendix 4: Tanker Shuttles*, it is noted that the current Cumberland fire apparatus fleet tankers can likely[95] achieve a per tanker delivery rate of 87 Igpm. The conditions of the example exercise met the ASWSS criteria of a 10 km around trip driving distance from water to fire. The Commercial Lines example in *Table 98* of the appendix is based on a shorter 5 km round trip.

The Personal Lines requirement of 200 Igpm will require more than 2 tankers in a water shuttle. The Commercial Lines requirement of 400 Igpm will require more than 3 tankers.

To achieve those needed shuttle delivery rates, there is a requirement for supporting pumpers to refill tankers and to relay water to the attack pumper. At the level of capability of delivering 200 Igpm, and up to almost[96] 400 Igpm, in addition to the attack pumper, one refill pumper and one supply/relay pumper will suffice; for a total of 3 pumpers. For the commercial lines RFF of 400 Igpm one additional dump-site relay pumper might be needed due to the higher tanker cycle rates.

Additional firefighters will be needed at the fire scene, associated with accomplishing Fireground Critical Tasks.[97] Rescue trucks or other manpower transportation vehicles, as well as volunteer firefighters responding in their own private vehicles are all options in this regard.

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[93] This flow rate represents a well-developed fire in a *Low Risk LERL* demand fire incident, typical for a single family detached bungalow style dwelling of less than 2,000 sqft area. Ref: *Table 94* on page *167*.

[94] See *Table 11: FUS Table of Effective Response* on page *68*.

[95] These calculations contain a number of assumptions, as detailed in the worked-through examples.

[96] At the level of 400 Igpm, the example exercise predicts 5 tankers, which will force the establishment of a second fill-site, and the addition of a second refill tanker.

[97] See *Figure 41: Fireground Critical Tasks* on age *165*.

Recommendations; Response to Rural Fires

Recommendation 21: GA recommends that the Run-Card for deployment for any reported structure fire in a non-hydrant service area be; on the Initial Response (first alarm) a minimum of 3 Tankers and 3 Pumpers. Such resources are to be dispatched simultaneously from, typically, 3 fire stations that are closest to the fire incident location. One pumper is assigned as fire attack, one is assigned to a refill site, and one is assigned as a relay pumper at the drop-tank site.

Recommendation 22: GA recommends that Run-Cards for Second Alarm, and subsequent greater levels be developed. Each alarm level should include a task force of 3 additional tankers and 2 additional pumpers. Additional apparatus that the Incident Commander (IC) might require should be special called if not already provided for in the Run-Card for a specific pre-planned occupancy.

Recommendation 23: GA recommends that for every Rural Demand Zone fire that a sector officer, to be called the Water Supply Officer (WSO), be designated and assigned to coordinate water shuttle operations. Such coordination should be done on a dedicated operational radio channel or talk group that is not the same channel or talk group that fire attack is occurring on.

Recommendation 24: GA recommends that Accredited Superior Water Shuttle Service be accomplished for all Rural Demand Zones of Cumberland County, to accomplish at least the FUS Personal Lines level of 200 lgpm sustained water flow. This accreditation will require renewal every 5 years.

Recommendation 25: GA recommends that Cumberland County establish Policy, procedure, and guidelines for the required implementation of the basics of the Accredited Superior Water Shuttle Service (ASWSS) at all fire incidents in non-hydrant serviced areas, as is required to continue meeting the FUS requirements for the accreditation. This requirement ensures that the benefits of the ASWSS are delivered to fire incidents to help save lives and property.

Recommendation 26: GA recommends that in Rural Demand Zones where the standard (as recommended) Run-Card of three tankers and three pumpers on an Initial Response (first alarm) be modified as necessary for areas with long travel-times to water sources, or for other factors where all requirements for the Accredited Superior Water Shuttle Service criteria cannot be met.

Recommendation 27: GA recommends that for Remote Demand Zones that efforts be made to establish a best effective water shuttle program, that may not meet all the distance requirements of the Accredited Superior Water Shuttle test criteria.

Apparatus Needed for Suburban Fires

Fires in suburban areas (i.e., suburban demand zones) that are not provided with fire hydrants should be treated as rural area fires. For suburban/urban areas that have fire hydrant services, the following section discusses resource needs.

In Cumberland County, suburban fires are most likely to involve residential occupancies. In suburban areas there is a higher likelihood, than rural fires, of a residential fire having exposures on 2 or 3 sides of the dwelling. This will depend on the character of the specific neighbourhood, but housing and population[98] density is higher in suburban areas, and often homes are built in sub-divisions.

The basic response capability of the suburban fire station should reflect the need to address the original fire occupancy as well as direct exposures. *Appendix 3: Matching Resource Deployment and Risk (MRDR)*, starting on page *658*, discusses this in some detail, and offers an example of how staffing and apparatus resources change as the occupancy Risk Group increases.

In *Table 94: Required RFF, Pumpers, and Aerials*, a fire in a subdivision with houses spaced 3 to 6 meters apart would be classified as a *Low Risk UERL* scenario,[99] requiring a RFF of 1,000 Igpm. If semi-detached homes were involved, it would then be a *Moderate Risk LERL* fire with a RFF of 1,200 Igal.

Such RFF requirements would generally exceed the capability of a single attack pumper crew to achieve with handlines. It is also unlikely that such high flow rates will be achieved without a relay pumper established at the fire hydrant, unless the hydrant was very close to the fire location and was strong. A second, relay, pumper is likely needed. It is therefore reasonable to determine that the minimum response to any suburban fire is 2 pumpers. A confirmed fire would require

[98] See *Statistics Canada (StatsCan) Population Data*, starting on page *109*, for more information on the varying population densities between Urban/Suburban and Rural areas of Cumberland County.

[99] UERL = upper effective response level, LERL = lower effective response level, RFF = required fire flow. See *Appendix 3* for an explanation on the meaning of these terms.

additional pumpers and other support apparatus; often available through mutual-aid, or better yet through automatic-aid (run-cards) for preplanned occupancies.

Additional firefighters will be needed at the fire scene, associated with accomplishing Fireground Critical Tasks.[100] Rescue trucks or other manpower transportation vehicles, as well as volunteer firefighters responding in their own private vehicles are all options in this regard.

Recommendations; Response to Suburban Fires

Recommendation 28: GA recommends that the Run-Card for deployment for any reported structure fire in a hydrant service area be; on the First Alarm (initial response) a minimum of 2 Pumpers. Such resources are to be dispatched simultaneously from the suburban fire station but may include a pumper from another fire station that is the closest to the fire incident location. One pumper is assigned as fire attack and exposure protection, and the second pumper is assigned as a relay pumper at the fire hydrant.

Recommendation 29: GA recommends that Run-Cards for Second Alarm, and subsequent greater levels be developed. Each alarm level should include a task force of 2 additional pumpers. Additional apparatus that the Incident Commander (IC) might require should be special called if not already provided for in the Run-Card for a specific pre-planned occupancy.

Fire Station Resourcing

Rural Fire Stations

As noted above, First Alarm assignments in rural areas needs to include at least 3 pumpers and 3 tankers when a structural fire is reported. Associated manning is also needed to operate this equipment and to perform fireground critical tasks. Reviewing *Table 99: Example MRDR Manning Matrix; Current Fire Fleet Water Shuttle Service,* on page *673;* the manning totals required for the *Low Risk LERL* level of response is 13 firefighters as a minimum. Minimum is the operative word when we consider that the manning matrix is not calculating standby (on-deck) staffing at the fire scene, nor traffic control personnel, nor rehab staff for this level of incident, nor all water shuttle helpers needed. All of these additional staffing needs can be

[100] See *Figure 41: Fireground Critical Tasks* on age *165*.

injected into the matrix, but the calculation's purpose for the examples provided was to estimate the absolute minimums. In reality, additional staff may very well be desired and all are not expected to come from the primary fire station.

Minimum staffing required to man a pumper for interior fire attack is at least 4 firefighters, including the apparatus operator. This allows adherence to the 2-in 2-out "rule" that has long standing in the fire service, and was confirmed[101] in the 2008 ruling by the Nova Scotia Occupational Health and Safety Appeal Panel. It is however, a minimum and not a best practice objective.

Staffing required to man a tanker for participation in a water shuttle operation should be 2 firefighters, including the apparatus operator. The second person is needed as a spotter and is essential to assist in setting-up dump-tanks at the dump-site.

It is important to note that the above-mentioned staffing is not needed to actually arrive on the apparatus, but is required in the case of fire attack to assemble on scene. Despite this, good practice is that no vehicle should be operated with only the driver onboard in an emergency response. The second set of eyes and mind is an important safety component.

This means a minimum of 4 firefighters on the vehicles and another 2 firefighters responding directly to the scene by other means. In order to man a tanker and a pumper will require a minimum of 6 firefighters. If a rescue truck is needed because of specialty equipment, additional staff will be needed.

Comparing this staffing to that required to meet NFPA-1720[102] which requires 6 firefighters for *Rural* demand zone areas, and 4 firefighters for *Remote* demand zone areas, these numbers correspond well with the above discussion.

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[101] https://www.canlii.org/en/ns/nsohsap/doc/2008/2008canlii93010/2008canlii93010.html?searchUrlHash=AAAAAQASYm95bGUgZmlyZSBmaWdodGVyAAAAAAE&resultIndex=1

[102] See *Table 8* on page *60* of this report.

Consider that not every active member of the fire department will be available for every fire incident, due to the fact that they are volunteer firefighters. This means that the average turnout rate (i.e., percentage) for each rural fire station is critical; as well as the total number of members in that fire department. There must be a minimum number of active and qualified firefighters in each station in order to reliably, on average, turn-out enough staffing to man the apparatus on the First Alarm. As well, enough of the members that turn-out must be qualified driver/operators and qualified interior structural firefighters.

Most volunteer fire departments can manage to turnout additional firefighters and support persons, given enough time elapsed after the first apparatus has responded. However, as much as later arriving firefighters are valuable, that does not satisfy the need to respond adequate resources soon after page-out; i.e., on the First Alarm initial response.

The following *Table 24* helps calculate the total fire department membership numbers needed; basis the achievable[103] turnout-percentage for each particular fire department. The top-line is a fire department that turns-out 100% of its membership. This top-line shows the minimum qualified personnel needed, in each function, to respond to the incident on the initial response.

TABLE 24: FIRE DEPARTMENT STAFFING NUMBERS VS TURNOUT % FOR RURAL RESPONSE

Turn-out percentage	Pumper Driver/Operator	Tanker Driver/Operator	Interior firefighter	Active Membership Needed
100%	**1**	**1**	**4**	**6**
50%	2	2	8	**12**
33%	3	3	12	**18**
25%	4	4	16	**24**
20%	5	5	20	**30**
10%	10	10	40	**60**

In the table, the gold row is the required staff to respond, as a minimum, to man a pumper and a tanker with the limited expectation of possibly accomplishing some interior firefighting, but likely defensive firefighting. The need is to respond these apparatuses with associated manning on the First Alarm assignment.

[103] Clearly, effective and accurate record keeping is needed to understand this percentage for every fire station, and not just at one moment in time. Such records need to include names and qualifications as well as the time that personnel responded, in order to understand the percentage of qualified firefighters that turnout, on time, for the initial response needs. Such percentages may fluctuate seasonally and over time, and adjustments to such changes must be predicted and accommodated on an ongoing basis.

In *Table 24*, the next 5 *rows* show the required minimum total numbers of required fire department members in each category or skill/capability that must be active members in the fire department, corresponding to various average turn-out rates. Turnout rates will vary from department to department. They will also vary from day to day, and by time of day. The table presents overall average rates.

The pink *row* is below the level (20%) at which the Provincial government recognizes as minimum participation levels to be a volunteer firefighter. It is a very low bar.

The last *column* in the table is the total fire department active membership required to generate adequate numbers to meet the turnout percentage, all of which must qualify in one or more of the required skill columns. Retirees, auxiliary, exterior only/partially trained members, non-active members, recruits, and etc. who do not have the skill sets or a good attendance record will NOT be included in these numbers.

A small example will assist in understanding the table, as follows. A rural fire department needs to man a pumper and a tanker as part of their First Alarm commitment on automatic-aid. That is 6 personnel needed. They have 20 members of the department, with several trained in specialities such as interior firefighter, driver/operator, incident command, etc. Their average turnout percentage is 33%, but it does vary from day to day, as they are a volunteer fire department. On the example day, they receive a page-out to attend a structure fire in their primary fire district. With their average, they expect to turnout 20 x 0.33 = 6.6 firefighters; i.e., between 6 and 7 firefighters. As it happens, 7 firefighters respond to the page, and they know this through their IamResponding[104] application. This exceeds their need to turnout at least 6 firefighters. Because they have been diligent in cross-training their members, they have the required 2 trained driver/operators and 5 trained interior firefighters, one of whom is an officer who can take command. Four of the firefighters respond to the fire station and man the two trucks. The remainder respond directly to the fire scene in their personal vehicles.

[104] https://www.iamresponding.com/

Current membership numbers and skill levels for each fire department will fluctuate as recruits are brought on-board, as training progresses, and as other members leave or retire. In approximate terms, the current number of Cumberland firefighters appears to be in the range of high-teens to low-twenty total members for each rural fire department and more towards the high-twenties to low-thirties for the more suburban departments. Recruitment and retention are a challenge for the volunteer fire departments, and a further discussion on this challenge is in *Ch 7: Human Resources*.

Recommendation 30: GA recommends that each fire department that services a Rural/Remote demand zone fire district, as defined by NFPA-1720, should be equipped with one pumper and one tanker fire apparatus, only provided the fire department maintains a minimum level of appropriately trained staff to man the apparatus simultaneously. The determination of adequate trained staff should be based on the total active firefighter membership in the fire department, their skill levels, and the average turn-out percentage for the station.

Suburban/Urban Fire Stations

Springhill is the most densely[105] populated area in MCC, according to the StatsCan 2016 census, at 566.5 persons per km^2. NFPA-1720 classifies[106] that density as an Urban demand zone. This classification would properly apply to the old Town of Springhill census sub-division, with surrounding areas classified as a *Rural* demand zone.

The section just above, *Apparatus Needed for Suburban Fires*, recommends the response of at least 2 pumpers to urban/suburban fires, plus additional equipment and manning as required. The exercise presented in *Appendix 3: Matching Resource Deployment and Risk (MRDR)*, specifically *Table 95*, shows an estimated minimum manning demand of 14 firefighters but does not include the second pumper driver/operator, bringing the total up to 15. NFPA-1720 recommends a minimum response of 15 firefighters on a First Alarm in an *Urban* demand zone.

Utilizing this required First Alarm turnout requirement of 15 firefighters, again takes us to estimating the total fire department active and qualified membership needed to achieve it.

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[105] See *Table 74* on page *114*. This refers to the original town-site area, which is the Census sub-division.

[106] See *Table 8: NFPA-1720 Staffing and Response-Time* Standard on page *60*.

Needed active membership will vary depending on achievable average turnout percentages. The following *Table 25* helps plan total membership needs, basis achievable turn-out percentages.

TABLE 25: FIRE DEPARTMENT STAFFING NUMBERS VS TURNOUT % FOR URBAN/SUBURBAN RESPONSE

Turn-out percentage	Pumper Driver/Operator	Interior firefighter	Critical Fireground Tasks	Active Membership Needed
100%	**2**	**6**	**7**	**15**
50%	4	12	14	**30**
33%	6	18	21	**45**
25%	8	24	32	**60**
20%	10	30	45	**75**
10%	20	60	70	**150**

In the above table, the gold *row* is the required staff to respond, as a minimum, to man 2 pumpers with the expectation of accomplishing aggressive interior firefighting and rescue. The need is to respond these apparatuses with associated manning on the First Alarm assignment.

In the above table, the next *rows* show the required minimum total numbers of required fire department members in each category or skill/capability that must be active members in the fire department, corresponding to various average turn-out rates. Turnout rates will vary from department to department. They will also vary from day to day, and by time of day. The table presents overall average rates.

The last *column* in the above table is the total fire department membership required to generate adequate numbers to meet the turnout percentage, all of which must qualify in one or more of the required skill columns. Retirees, auxiliary, exterior only/partially trained members, non-active members, recruits, etc., who do not have the skill sets or a good attendance record will NOT be included in these numbers.

Aerial Apparatus, Springhill

Springhill contains downtown blocks where exposures are at zero distance from an adjacent occupancy that could be on fire. The predominant construction type is timber framed with combustible or brick veneer exterior. The risk of a conflagration is real in such an environment.

Springhill also includes multiple buildings taller or larger than the basic 2 story, 2000 sqft dwelling that NFPA-1720's First Alarm response recommendations are built on. Springhill has

the highest percentage[107] of tenant accommodations (1 in 3 residents rent), and tenements in multiple-occupancy[108] buildings are more common. Fires in such buildings can involve more residents in need of attention/assistance than in a single-family dwelling scenario.

There is a need for an aerial apparatus in this Urban response area to provide assistance with rescue and firefighter access. Aerials are useful where buildings are close to the street line and where ground-based ladders are at their limit due to building height. Long ground ladders require substantial manpower to erect and relocate, all in a timely manner. Exposure protection and extinguishment is improved by high elevation water streams where there is limited access due to zero clearance to other buildings. All these aspects are facilitated by aerial apparatus, and some cannot be done effectively without access to an aerial.

Springhill also has substantial *Rural* and some *Remote* demand zones areas in its fire district. Responses to these areas will need to meet the requirements of a Rural/Remote response, as discussed in the previous section of this *Report*.

Recommendation 31: GA recommends that the Springhill fire station, that services an Urban demand zone area, as defined by NFPA-1720, should be equipped with two pumpers, one of which is a combination Pumper/Aerial (Quint) fire apparatus. Providing this equipment should be dependant on the fire department maintaining a minimum level of appropriately trained staff to man the apparatus. The determination of adequate trained staff should be based on the total active firefighter membership in the fire department, their skill levels, and the average turn-out percentage for the station.

Recommendation 32: GA recommends that the Springhill fire station, that also services Rural/Remote demand zone areas, as defined by NFPA-1720, should be equipped with a tanker fire apparatus. Providing this equipment should be dependant on the fire department maintaining a minimum level of appropriately trained staff to man the apparatus. The determination of adequate trained staff should be based on the total active firefighter membership in the fire department, their skill levels, and the average turn-out percentage for the station.

[107] See *Table 76: Census Housing* Characteristics on page 120 of this report for details.

[108] For example, apartments above a retail store.

Aerial Apparatus, Parrsboro

Parrsboro's StatsCan 2016 census data[109] lists a population density of 81.4 persons per km^2, putting Parrsboro into NFPA-1720's Rural[110] demand zone. However, that is deceiving. Unlike Springhill, Parrsboro's StatsCan sub-division includes a fairly substantial *Rural* area, which waters down the population density of the "downtown" area of Parrsboro. Parrsboro also has a substantial number of frame structures with at risk of multiple loss due to exposure fires, similar to Springhill.

Parrsboro is the main mutual-aid partner[111] in the southwest corner of the County. As such it often supports the fire stations in FPW, Advocate, and Southampton; providing mutual-aid to other communities 142 times in the six years of data. In rural areas there are culturally significant large buildings (e.g., churches), and commercial buildings (e.g., saw mills, seafood and agricultural processing buildings) that would benefit from the timely response of an aerial apparatus.

The nearest aerial apparatus to Parrsboro is located in Springhill, which is more than a 40-minute travel-time from Parrsboro. Responses to Advocate or FPW, for example, are almost 30 minutes faster in travel-time from Parrsboro than from Springhill.

Providing a Quint fire apparatus in Parrsboro in the stead of a pumper would provide benefits in Parrsboro and more widely. It would also provide a backstop to the only other MCC aerial, in Springhill. It would also provide access to a second available aerial apparatus for those larger building fires that require additional exposure protection or aerial master stream application, anywhere in the County.

Recommendation 33: GA recommends that the Parrsboro fire station, that services, in part, a Suburban demand zone area, as defined by NFPA-1720, should be equipped with two pumpers, one of which is a combination Pumper/Aerial (Quint) fire apparatus. Providing this equipment should be dependant on the fire department maintaining a minimum level of appropriately trained personnel to man the apparatus.

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[109] See *Table 74* on page *116* of this report.

[110] See *Table 8* on page *60* of this report.

[111] See *Table 4: Mutual-Aid Matrix: 2016-2021* on page *33* of this report.

The determination of adequate trained staff should be based on the total active firefighter membership in the fire department, their skill levels, and the average turn-out percentage for the station.

Recommendation 34: GA recommends that the Parrsboro fire station that also services Rural/Remote demand zone areas, as defined by NFPA-1720, should be equipped with a tanker fire apparatus. Providing this equipment should be dependant on the fire department maintaining a minimum level of appropriately trained staff to man the apparatus. The determination of adequate trained staff should be based on the total active firefighter membership in the fire department, their skill levels, and the average turn-out percentage for the station.

Aerial Apparatus, Pugwash

Pugwash is the third busiest[112] fire department in MCC with respect to fire and pre-fire conditions incidents. It also has a substantial industry to protect with the salt mine and associated facilities. Pugwash has a small town-centre, the area hospital, and retirement facilities. It is also in the middle of the burgeoning development area along the Northumberland Strait coast. Some of this development includes some substantial residential mansions, semi-detached homes, and large recreational facilities. Not all of this growth is in Pugwash response district, but is nearby, in both east and west directions.

The nearest aerial apparatus to Pugwash is Springhill, although Amherst is only slightly further by about 4 km, 3-4 minutes. There is no aerial apparatus in Oxford, which is 20 km closer to Pugwash.

If an aerial apparatus was located in Pugwash, it would be well positioned to support firefighting operations on larger or taller buildings in the north half of the County. It would be an additional support to a major fire in Springhill, or in assistance to the Springhill Quint in fires in the north half of the County. In association with a Quint in Parrsboro, timely access to an aerial device equipped apparatus anywhere in the County would be a realistic option.

Currently, with only a single aerial apparatus, located in Springhill, maintenance outages and break-downs could remove this single resource from the County when it is most needed. Amherst does have an aerial, but Amherst will also have concerns over an extended absence of

[112] See *Chart* 1 on page *18*.

their apparatus at a significant distance from Amherst, and could refuse to provide it if it is perceived to be needed at home.

Recommendation 35: GA recommends that the Pugwash fire station, that services an Suburban demand zone area, as defined by NFPA-1720, should be equipped with two pumpers, one of which is a combination Pumper/Aerial (Quint) fire apparatus. Providing this equipment should be dependant on the fire department maintaining a minimum level of appropriately trained staff to man the apparatus. The determination of adequate trained staff should be based on the total active firefighter membership in the fire department, their skill levels, and the average turn-out percentage for the station.

Recommendation 36: GA recommends that the Pugwash fire station that also services Rural/Remote demand zone areas, as defined by NFPA-1720, should be equipped with a tanker fire apparatus. Providing this equipment should be dependant on the fire department maintaining a minimum level of appropriately trained staff to man the apparatus. The determination of adequate trained staff should be based on the total active firefighter membership in the fire department, their skill levels, and the average turn-out percentage for the station.

Speciality Apparatus

There is a need for specialty apparatus that can provide support across the County, without the need in every case to duplicate the resources in multiple fire stations. The needs are as follows;

- *Support for SCBA operations*. Carries 12 additional SCBA airpaks. Carries 36 spare air bottles. Equipped with an onboard breathing air compressor and cascade, and filling station. Carries additional SCBA masks and field repair parts.
- *Support for extended operations*. Rehabilitation facilities including cooling chairs, shade, warm-up facilities, food, drink, washroom facilities, decontamination facilities.
- *Incident Command*. Space for an incident management team to operate and hold meetings with fire and county staff and with other agency officials as needed. Communications equipment including radio bases, cell phone. Carries spare radios and batteries for large incidents. Facilities to support planning, including mapping of critical infrastructure and remote areas, emergency plans, extensive contact information, and etc. Facilities for briefing crews on Incident Action Plans (exterior whiteboard etc.). Required supports for IMS operations, logistics, planning, finance activities. Facilities for tracking operations, status, accountability, strategic objectives, tactics, risks, and etc. With a major highway and the national rail-line passing through MCC, there is the real potential for extended operations at a serious incident lasting multiple days, or more than a week.
- *Support for wildland fires*. As the predominant[113] type of fire occurring in MCC, proper equipment should be available to support all fire districts with extended and/or extensive wildland fires. There

[113] There were 432 wildland fires in MCC over the 6 years of data (more than one a week, and much more considering these fires generally occur in spring and late summer). The longest lasted almost 11 hours, with 90% being less than 2 hours and 14 minutes in length. DNR has the primary responsibility for wildland fires involving woods and brush, but generally leaves fires in grasses and crops to the local fire service. Local fire departments are first response to all fires, regardless of eventual responsibility. Local fire departments are sometimes requested to assist DNR.

is significant development occurring in the Wildland Urban Interface (WUI) in parts of the County, especially along the northern and southern shores, with the construction of recreational, seasonal, and retirement homes in the woods. The potential to lose multiple structures in a wildland conflagration exists, and will become more likely as climate change continues to challenge and stress the environment.

- Eight stations have some type of off-road vehicle (UTV) capability, some more specialized than others, including side-by-sides, ATVs and one ARGO. Some are equipped with tracks for beach access, snow access, and marsh access. All of the off-road vehicles should be organized by capability and those suitable for supporting wildland fire identified. One or two offroad trailers to be pulled behind capable UTVs could be provided that are equipped with small pumps and with tanks and the ability to refill from local water sources. Additional wildland pumps, weeping 1-1/2 inch hose, adapters, and ¾ inch wildland hose and nozzles should also be carried.

Recommendation 37: GA recommends that existing large format rescue trucks that exist in several of the fire departments be investigated for augmentation to support special operations County-wide, according to need. These services to include the following: SCBA Support, Rehabilitation and Decontamination, and Incident Command.

Recommendation 38: GA recommends that the County investigate coordinating the utilization of existing off-road vehicles that have wildland firefighting potential, and enhance them where possible by providing trailers and equipment, as determined, to be able to respond effectively County-wide to wildland fires, particularly in the wildland-urban interface. Appropriate training should be provided.

Initial Attack Apparatus

Through touring of the County it is noticeable that access to many of the developing areas along the north shore consist of private lanes that, in many cases, do not meet County or Provincial standards to qualify as public roads. Homes, recreational facilities, and in one case an airport, are being built with only access by these private roads. In some cases, these roads are better termed as lanes or extended driveways.

Some of these homes are seasonal occupancies, and unoccupied in winter time. Others are year-round use, some as retirement residences. Unoccupied homes can be subject to vandalism and arson. Occupied homes have life safety concerns due to fire, especially if occupied by retired seniors and also in the wildland urban interface (WUI).

It is doubtful that conventional fire apparatus could access many of these properties without risk of damage to the vehicles from trees, or of becoming lodged partway down the road, in a ditch, on a soft shoulder, or stuck on a narrow corner. In winter-time the challenge is higher.

The accompanying photos in *Figure 8* illustrate this challenge. This year-round occupied 3,000 sqft "cottage" is approximately half a kilometer from the public road, along a lane no wider than a typical driveway. There was no room for passing traffic and several sharp bends. This particular lane was plowed as it serviced a dozen or so similar cottages. Other lanes we saw were not plowed and would require 4-wheel drive to negotiate. Few were well marked as to verges and ditches. Local knowledge would be key, but not proof against mishap, especially at night or during inclement weather.

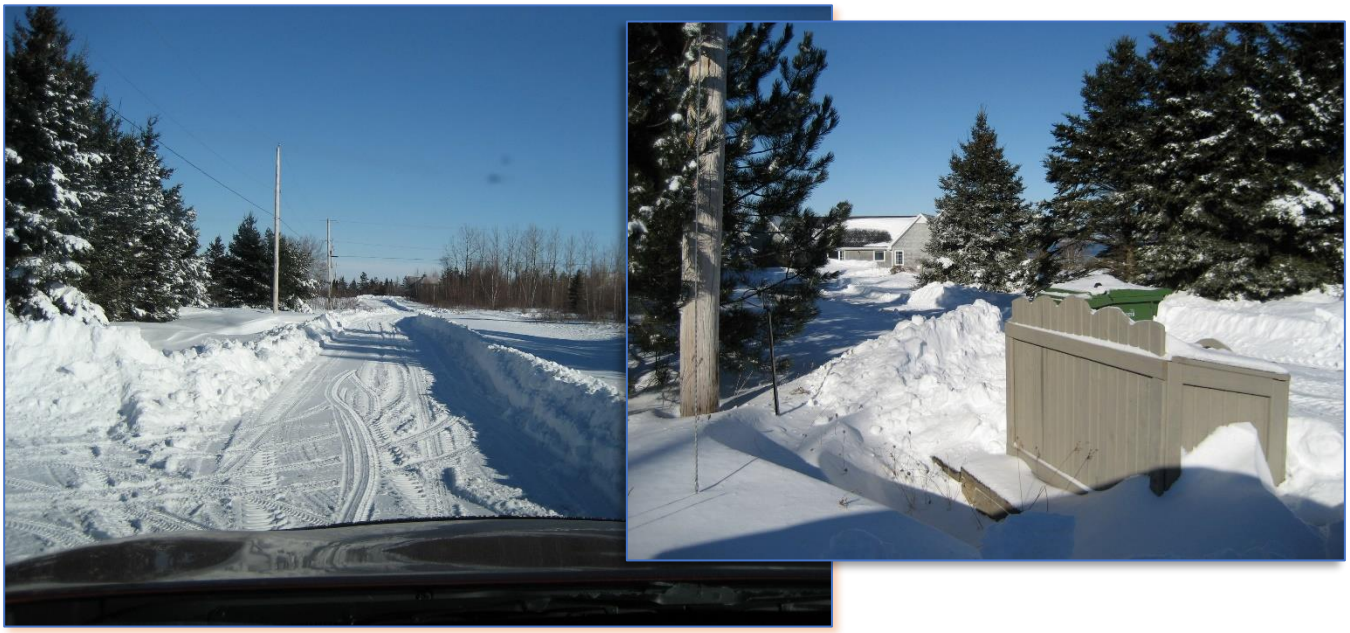


FIGURE 8: TYPICAL "COTTAGE" AND ACCESS LANE, NORTH SHORE AREA

Conventional fire apparatus are not suitable for accessing and firefighting in areas such as those described above. Several of the fire departments, that have similar challenges in their areas, have invested in what we have termed Initial Attack Apparatus, in conformance to NFPA-1901 terminology. Although the fire departments tend to call them wildland fire trucks, most of the existing trucks are currently equipped to handle structure fires, or could be with the addition of some specific equipment.

These vehicles could be dual purpose, and in this above WUI environment, that is a desirable feature. Ensuring that fire pumps are not excessive in capacity and are hydraulic PTO driven will

enable pump-and-roll capabilities. Ensuring steeper front approach and rear departure angles than NFPA-1901 minimums,[114] and that under body clearances are higher that a typical road apparatus, and the addition of four-wheel drive are all features that need serious consideration.

Recommendation 39: GA recommends that the County investigate the challenges of providing fire protection into areas in the response districts that have residents on private lanes in the Wildland Urban Interface; where conventional fire apparatus might not successfully operate. The County should develop operational pre-plans, and develop strategic plans to address budgeting and operational challenges discovered. Consideration for providing appropriate Initial Attack apparatus that can interface with existing structural fire apparatus and form an overall effective system for difficult access areas should be considered.

Recommendation 40: GA recommends that in the areas designated as Remote demand zone areas, where there are significant numbers of seasonal homes in the WUI, that the County investigate the practicality of establishing a small sub-station(s) that is seasonally equipped with an Initial Attack Apparatus and is manned in part by seasonal volunteer firefighters from the area.

All-Wheel Drive Vehicles

Westchester fire department is one of the four primary fire departments that respond to sections of Highway-104 that traverses Cumberland County. The other three responders are Oxford, Springhill, and Amherst. Unfortunately for Westchester, their section of the highway is very challenging in the winter-time due to severe weather conditions, as it is high in elevation, exposed to sea effect snow from the Northumberland Strait and rapid temperature fluctuations. Westchester is located in the highest and generally snowiest corners of Cumberland County.

In their stakeholder interviews, Westchester fire department indicated that they have challenges accessing and safely driving to incident scenes on the highway as well as to community incidents on local roads, particularly in the highlands. They mentioned their need for four-wheel drive vehicles.

The current pumper and the pumper/tanker fire apparatus are two-door cabs with seating limited to 2 or 3 firefighters. This is not sufficient staffing to address incidents on the Highway.

[114] It might be advisable to consult NFPA-1906, *Standard for Wildland Fire Apparatus* Chapter 12, for specification details that would improve rough road and winter snow access capabilities.

Therefore, the required additional manpower must travel in the 3-person rescue truck or in their personal vehicles. Additional personal vehicles on the highway at the time an emergency incident is not desirable and there are justified safety concerns with this practice. The pumper should be a 5-person cab.

Recommendation 41: GA recommends that the County investigate purchasing a four-wheel drive pumper with a 5-person cab when it comes time to replace the current pumper. The apparatus should be equipped with a traffic director warning light system on the rear of the apparatus and be fully safety marked with warning colours and format, especially on the front and rear, exceeding the minimum requirements of NFPA-1901.

Small Rescue Trucks

There are eight society owned SUV/pickup/cube van based vehicles, and another is a used cutaway van/ambulance. All these vehicles are serving in a limited capacity as a rescue truck, used in some cases primarily to attend MFR incidents. All are limited in function, some are old, and some don't offer optimal carrying capacity for transporting additional firefighters to/from an incident, safely. Most cannot carry much equipment, and what is carried in support of their role is inside the vehicle with the firefighters, which is potentially unsafe. Most are limited in carrying any significant amount or weight of equipment.

It would be beneficial to replace these vehicles with a light-duty rescue truck that incorporates a 12 foot walk-around body, a crew cab, medium-duty (Class-5) diesel chassis with all-wheel drive. Such a vehicle has a higher weight carrying capacity, ample storage space for equipment, will carry up to 5 personnel, and has the all-weather and all-conditions capability when that is needed.

Recommendation 42: GA recommends that the County consider replacing the Society owned miscellaneous vehicles currently being used as rescue character vehicles with a purpose designed and constructed rescue fire apparatus that includes substantial equipment carrying capacity, personnel capacity, and has good performance for all-weather response to any category of incident in a support role, and to MFR incidents in a primary role, and meets NFPA-1901 requirements as a Special Services Fire Apparatus.

Mobile Water Supply Apparatus (Tankers)

The current trend in Cumberland has been to purchase small capacity mobile water supply apparatus (aka Tankers) of 1500 Igal capacity, on a single rear-axle chassis. These Tankers are actually Pumper/Tankers, meaning they have been outfitted with major sized pumps, generally of 840 Igpm capacity. Many are not equipped for optimum use as tankers as discussed[115] in significant detail in the appendices of this *Report*.

Adding a major pump to a tanker adds considerable weight and cost. The opportunity to utilize that pump is limited and compromises the performance of the Tanker, as a Tanker. There is no need for the additional pumping capacity[116] in Cumberland that is offered by purchasing Pumper/Tankers.

The recommended replacement for all Tankers and Pumper/Tankers is a fire apparatus with a larger capacity tank and a much higher capability for delivery of water in a water shuttle. Such a vehicle will provide more value for dollars spent, and improve firefighting capabilities in rural areas.

This Tanker recommendation includes the provision of a smaller and lighter pump that has the ability to transfer water to a pumper for limited operations, has the ability to fight modest fires like wildland and single family home fires, and yet does not cost or weigh as much, allowing the apparatus to focus on its primary mission; i.e., shuttling water.

Recommendation 43: GA recommends that current mobile water supply apparatus and Tanker/Pumpers be replaced as they age with a standardized mobile water supply apparatus meeting the requirements of NFPA-1901, in accordance with the Standard Specification Outlines provided in this Report.

Recommendation 44: GA recommends that where there is only one fire apparatus in a fire station, because it operates as a sub-station, then that fire apparatus should be equipped with a chassis mounted water pump of 625 Igpm, and that that apparatus should be configured as a pumper/tanker. That apparatus should meet all the requirements stipulated in NFPA-1901 both for a pumper and for a mobile

[115] See *Appendix 4: Tanker Shuttles* starting on page *231*.

[116] See *Table 14: Summary of Cumberland Apparatus Fleet* on page *81*.

water supply apparatus, and it should be provided with suitable equipment to perform the roles of both a pumper and a mobile water supply apparatus (i.e. a pumper/tanker).

Summary of Fire Apparatus Disposition Recommendations

The following *Table 26* summarizes the recommendations discussed in this chapter on the assignment of firefighting apparatus, by type, for each fire station on Cumberland County.

Also included is the initial response (First Alarm) staffing requirements for each fire station. Total staffing of active and qualified members will substantially exceed these numbers.

Support vehicles, and speciality vehicles are not included in the table. The current fire apparatus dispositions are available in *Table 13* on page *145*.

TABLE 26: RECOMMENDED DISPOSITION OF MAJOR FIREFIGHTING APPARATUS, AND STAFFING NEEDS

Fire Department	Pumper	Tanker	Quint	Initial Attack	Medium/Heavy Rescue	Light Rescue	Initial Response Staff
ADVOCATE	1	1			1		6
Apple-River sub		1[117]					4
COLLINGWOOD	1	1			1		6
FPW	1	1				1	6
JOGGINS	1	1				1	6
LEICESTER	1	1			1		6
PARRSBORO	1	1	1	1	1		15
PUGWASH	1	1	1	1	1		15
RIVER HEBERT	1	1				1	6
SHINIMICAS	1	1			1		6
SOUTHAMPTON	1	1				1	6
SPRINGHILL	1	1	1		1	1	15
TIDNISH BRIDGE	1	1			1		6
Lorneville Sub		1		1			4
TRUEMANVILLE	1	1				1	6

[117] As per *Recommendation 44*, this fire apparatus should be equipped as a pumper/tanker and have a slightly larger pump.

Fire Department	Pumper	Tanker	Quint	Initial Attack	Medium/Heavy Rescue	Light Rescue	Initial Response Staff
WALLACE	1	1		1	1		6
WENTWORTH	1	1				1	6
WESTCHESTER	1[118]	1				1	6
Totals:	16	18	3	4	9	8	

[118] A 4-wheel drive is recommended

CH 5: OPERATIONAL COMPONENTS REVIEW

FIRE STATION ASSESSMENTS

One of the *Review* deliverables is to review standards for facilities and to provide recommendations for the application of best practice standards to the facilities in use by the 16 MCC fire departments. This section reflects only upon the fire stations. The current state of MCC fire training facilities and their associated standards will be reviewed in *Training Methodology/Programs* starting on page *532*.

To obtain a perspective on applicable standard recommendations it was necessary to visit all eighteen existing fire stations and thereby assess the current use of the fire station facilities. The fire station assessments focused on standards and best practices that typically are implemented as part of the station design process with respect how the facility is used. These standards are focussed on station optimal functionality/layout, firefighter health and safety, and business continuity.

Scope

One of the guiding documents, used in the review and the writing of this *Report*, deals with Occupational Health and Safety issues. This document is the *Nova Scotia Fire Services - Occupational Health & Safety Reference Guide*.

The Reference Guide[119] states that; "*The base document used for this guide is NFPA 1500 Standard on Fire Department Occupational Safety and Health Program.*" NFPA-1500[120] is the best-practice benchmark for fire station health and safety. It makes reference to multiple other

[119] *Nova Scotia Fire Services Occupational Health and Safety Reference Guide*, 25/04/2003, Developed and published by Nova Scotia Environment and Labour.

Preamble: "*This Occupational Health and Safety Reference Guide, developed for the fire service of Nova Scotia is recommended to be considered a minimum standard for safe operations. It in no way is intended to restrict authorities having jurisdiction or individual fire service providers from exceeding the requirements set out in this guide*."

[120] National Fire Protection Association, NFPA-1500, *Standard on Fire Department Occupational Safety and Health Program*.

standards, as appropriate, since it is a broad-spectrum document; for example, one key reference standard is NFPA-1581.[121]

Some of specific fire station requirements from NFPA-1500 include;

- ✓ The requirement for appropriate storage spaces in the fire station. For example; bunker gear should not be stored on the apparatus floor where it can be contaminated and exposed to UV light.
- ✓ There must be separation between contaminated and uncontaminated spaces.
- ✓ Facilities are required for disinfection, cleaning and storage.
- ✓ If bunker gear is cleaned in the station there must be a washer, dryer, and inspection/maintenance area.
- ✓ Fire stations must be sprinklered.
- ✓ Vehicle exhaust emissions must be captured to prevent exposure to personnel.

Fire station design requires the work of an architect with experience in this field. Fire stations are somewhat unique buildings.

Despite what the foregoing might suggest, the scope of this *Review* is specifically not a structural conditions nor is it an energy audit of fire station facilities. This *Review* does include a scan of existing facilities within the fire stations, and how they are being utilized.

This *Review* did cover the following areas in its assessments.

- Building Requirement/Post Disaster Readiness
- Apparatus Bays and Doors
- Storage
- House Keeping
- Potable Water Supply and Treatment
- Facilities
- Functions and Use Considerations
- Rooms and Room Considerations
- Showers
- Decontamination Showers
- Lockers PPE and Personal

[121] National Fire Protection Association, NFPA-1581, *Standard on Fire Department Infection Control Program*.

- Storage space for PPE and firefighting equipment
- SCBA compressor & Filling Station
- Equipment and PPE Cleaning facilities
- Exercise Room
- Life Safety Considerations
- Emergency Power
- Heating and Cooling scan
- Kitchens
- Size and Configuration of Property

Applicable Codes and Standards

The following is a partial list of standards employed in *GA's* fire station assessments.

- NS Occupational Safety General Regulations, §82 of the OH & Safety Act S.N.S. 1996, c.7
- National Building Code Division B Parts 3 and Part 4
- National Fire Code Division B Part 4
- Canadian Electrical Code and CSA C 282
- NFPA 30 Flammable and Combustible Liquids Code
- NFPA 96 Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations
- NFPA 1500 – 21 Standard on Fire Department Occupational Safety, Health, and Wellness Program
- NFPA 1581-2022 Standard on Fire Department Infection Control Program
- NFPA 1901-16 Standard for Automotive Fire Apparatus
- NFPA 1962: Standard for the Care, Use, Inspection, Service Testing, and Replacement of Fire Hose, Couplings, Nozzles, and Fire Hose Appliances, 2018 Edition
- NFPA 1989-19 Standard on Breathing Air Quality for Emergency Services Respiratory Program
- NFPA 1851: Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2020 Edition - Chapter 9 Storage
- NS Environment Regulations and Standards as it applies to water supplies.
- Fire Underwriter Services (FUS) - Apparatus Bay Space Requirements.
- Unified Facilities Criteria (UFC) -UFC 4-730-10 -2021
- Canadian Electric Code (CSA C22.1-18)
- CSA B376-M "Portable Containers for Gasoline and Other Petroleum Fuels"
- CSA B306-M "Portable Fuel Tanks for Marine Use"

- ULC/ORD-C30, "Safety Containers".
- ULC/ORD-C2175 Storage Cabinets for Flammable Liquid.
- UL 325 STANDARD for Door, Drapery, Gate, Louver and Window Operators and Systems.

Cost Estimate Basis

The Altus Group releases an annual Canadian Cost Guide.[122] This guide establishes a construction cost per square foot for a fire station meeting standards. The established cost for the Halifax area settles between $325 to $355 per square foot.[123] This is an approximate increase of 9% over 2021. It is understood that costs outside of Halifax metro might be lower or higher depending on local conditions.

The square footage costs are for the hard construction costs only and do not include development or soft costs. Soft costs are additional and could include some, or all, of the following;

- Land and related remediation or servicing costs
- Legal fees
- Site services outside the property
- Soil and environmental tests
- Contingencies
- Architectural and engineering fees
- Interest charges and lenders fees
- Permits and development charges
- Land surveys
- Special equipment and furnishings
- Property taxes
- Other Municipal fees
- Insurance and bond costs
- Levies
- Appraisals
- Rezoning costs if applicable

[122] https://www.altusgroup.com/services/reports/2021-canadian-cost-guide/

[123] The estimated per square foot cost excludes any costs associated with training buildings.

Fire Station Design Concepts

Fire stations are designed not only to meet the need of the community in which they serve, but to ensure functionality and efficiency of fire service operations, and its administration. Good design will also address issues of the health and safety for the firefighters using the building.

Two prime areas of concern in any fire station are dealing with contaminated equipment and vehicle exhaust. Many incidents that firefighters attend result in contamination of their clothing and equipment, including the trucks. From bio-hazards arising from medical calls, to toxic combustion products from fires; they all end up arriving back at the fire station. Carbon monoxide and diesel particulates are known carcinogens and inhalation hazard toxins that are always spewed from vehicle exhaust. They are extremely harmful in the confines of the fire station where they will linger in the air, and settle on surfaces of the station, and anything that is stored in the common space of the apparatus bays.

Sub-Stations

A fire substation helps improve emergency response capability to areas of the community in which acceptable response is not possible with a one fire station model. Fire apparatus and firefighters responding from a substation reduces response time for the first to arrive personnel, and is part of the service delivery model for the community. The balance of the required resources will subsequently arrive form the main station.

Although not the main fire station, fire substation should be more than simply a garage in which to park a vehicle. Requirements for the substation can depend in part upon distance from the main station vis a vis the support services the main station is capable of providing. It also depends on the activities anticipated to occur at the substation.

There are a number of non-emergency activities that substations are required to provide such as:

- routine vehicle and station maintenance
- equipment checks
- training

- clean-up after incidents
- administrative duties
- which will provide periodic staff presence.

Substation need to be designed and constructed to meet current needs as well as future growth.

Amenities

Substations require some basic amenities to address health and safety concerns and needs. These include washrooms that includes a toilet, sink and shower. Showers are important to facilitate a firefighter removing contaminants contacted at an incident, many extremely toxic and/or carcinogens, in order to reduce bringing these home to volunteer's personal residence and family. Beside the conventional shower, workplaces where gross contamination can occur to the worker also require a decontamination (aka safety) shower.

A modest area where a firefighter can hydrate or recharge with food and drink is also needed, usually with a sink, refrigerator, and a microwave oven.

Storage

NFPA-1581[124] requires separate clean storage room for Medical First Responder equipment and proper cleaning facilities for the cleaning of medical equipment.

Storage areas off of the apparatus floor are needed for fire hose and fire equipment. NFPA-1851 also requires, practically speaking, a storage room away from the apparatus bay for firefighters turn-out gear (PPE). As already mentioned, toxic and carcinogenic diesel exhaust precipitates out on all surfaces, including the surface of hose, equipment, and any PPE stored in the apparatus bay. The next time anyone touches the equipment or wears the PPE, their bare skin is in contact with these contaminants, and can easily gain access to the eyes and mouth, as well as permeate

[124] NFPA 1581: *Standard on Fire Department Infection Control Program*

the skin, contributing to the risk of long-term adverse health affects for an unsuspecting firefighter.

Storage room(s) off the apparatus bay floor is likewise needed for station cleaning supplies and tools. Equipment workshops and work benches should also be separate from the vehicle bays.

Other Rooms

The substation should have at least a combined meeting/training/communications room and a separate and suitably sized office for the use of the senior person in the substation who conducts the business affairs of the station and its assigned personnel.

Apparatus Bay Floor Area

This aspect will be covered in more detail in the section on the main fire stations.

Diesel Exhaust

The current Building Code[125] requires that a garage shall be provided with natural or mechanical ventilation in conformance with the requirements of Subsection 6.3.1 and Article 6.9.1.2 to prevent excessive accumulation of carbon monoxide exhaust fumes or flammable and toxic vapours. NFPA-1500[126] Section 10.1.5 is more explicit when it says "*The fire department shall prevent exposure to firefighters and contamination of living and sleeping areas from [vehicle] exhaust emissions through the use of direct or source capture systems.*"

Managing vehicle exhaust emissions will be discussed more fully in the section on the main fire station.

[125] National Research Council Canada - National Building Code of Canada, 2015, Sentence, 3.3.5.(4) Repair and Storage Garages

[126] NFPA-1500: *Fire Department Occupational Safety, Health, and Wellness Program*, 2021 edition

Parking

Parking areas should be of sufficient size to permit for full station compliment plus expected visiting such as management and/or training officers.

Safety Systems

Fire detection, and probably intrusion alert systems are advised as well for these stations. Fires and burglaries of vital equipment in fire stations do happen.

For example; one substation that *GA* visited had a very strong odour of gasoline due to a leaking portable pump. There was also an electric air-compressor that is kept energized to maintain the air brake pressure on one of the vehicles. The air pump is a competent ignition source and under the right circumstances could ignite gasoline vapours. With no detection system, the potential for a total structure and equipment loss fire was possible.

Remotely monitored detection systems are a good way to protect the community's valuable assets and to lessen the chances of an emergency service delivery failure from a small fire, that grows large, or from unscrupulous persons who only sees the value of equipment that they covet.

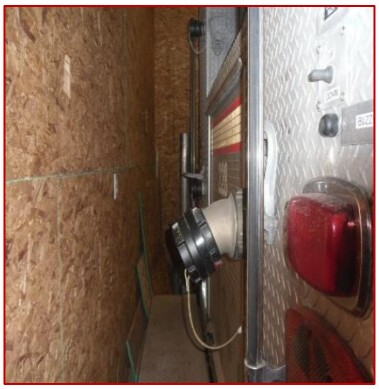
Existing Substations

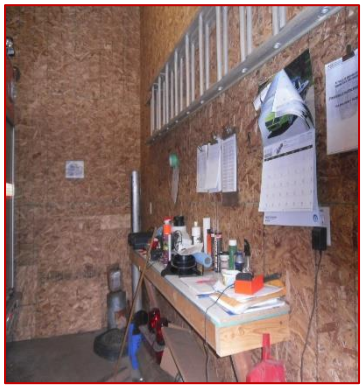
Cumberland County fire services currently has two substations; one at Apple River (main station is Advocate), and the second in Lorneville (main station is Tidnish Bridge).

Apple River

The distance between the Apple River substation and the Advocate Harbour main station is 19.3 kms; approximate 19–20 minutes of travel-time each way.

FIGURE 9: PICTURES OF APPLE RIVER SUBSTATION





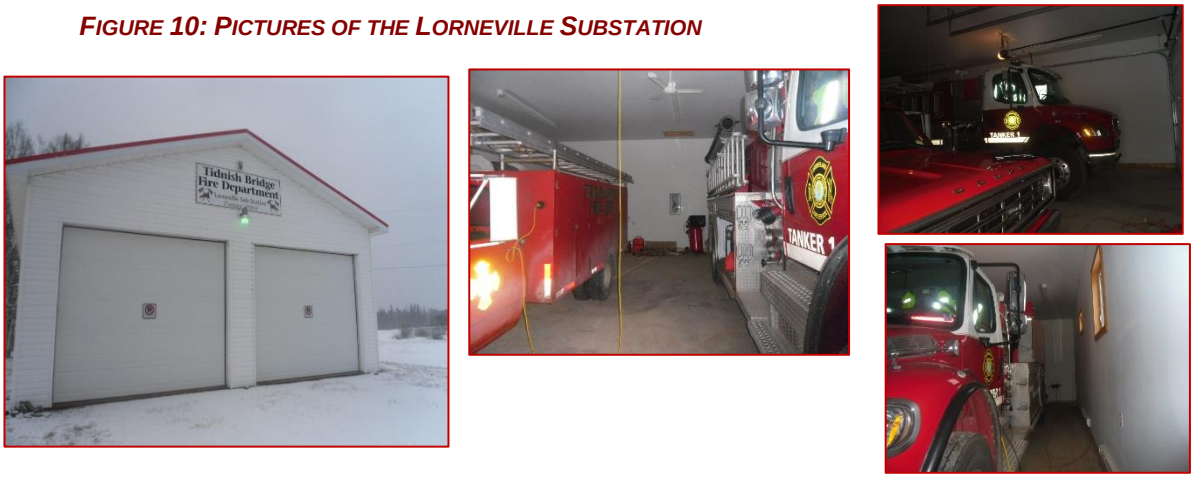
Due to the distance between the substation and the main station, it is probably not reasonable to expect on a training night that personnel and equipment would travel every week to the main station for training, or for operational activities that were described above. Time lost (¾ hour round-trip) is regretted when time is short for volunteer firefighters and opportunities to train and do other essential activities are limited. If there is a call to respond to an incident while the substation members and possibly truck are at the main station twenty minutes away, then the substation has not served its purpose.

The Apple River substation has no water supply. This results in there being no washroom facilities, and/or showers or kitchen. The outcome is that the fire department members cannot wash and clean apparatus, equipment, or their PPE, and do not have access to safety showers, basic sanitary facilities, or a continuous water supply. It is not possible to refill or top up the water tank on the fire truck. As a consequence, it is likely that considerable time is needed at the main station to fulfil these needs, away from their response district.

Lorneville

The distance between the Tidnish Bridge main station and the substation in Lorneville is 11.4 km; 9-10 minutes of travel-time.

FIGURE 10: PICTURES OF THE LORNEVILLE SUBSTATION



The Lorneville substation has no water supply. This results in there being no washroom facilities, and/or showers or kitchen. The outcome is that the fire department members cannot wash and clean apparatus, equipment, or their PPE, and do not have access to safety showers, basic sanitary facilities, or a continuous water supply. It is not possible to refill or top up the water tank on the fire truck. As a consequence, it is likely that considerable time is needed at the main station to fulfil these needs, away from their response district.

If the purpose of a substation is to reduce response times, and to engage the local population in participating in the volunteer fire service, then the need for substation personnel and/or their equipment to be at the main fire station for even relatively minor needs, undermines these objectives and negatively impacts on service level expectations of the public and firefighters.

Main Fire Station Assessments

In addition to the two substations, all sixteen fire stations were visited and assessed by *GA*. Some basic and approximate measurements were taken to assist with space evaluations. MCC arranged for the former Reginal Emergency Management Officer to accompany *GA* personnel on these tours.

Fairly detailed assessment forms were completed for each station and substation, and they capture the basic data associated with this section of the *Report*. The completed individual station assessment reports are included in *Appendix 5*.

General Overview

As mentioned in the *Scope* subsection, above, the *Nova Scotia Fire Services Occupational Health & Safety Reference Guide* was used as a baseline for assessment throughout this chapter. The Reference guide is based on NFPA 1500 Standard on Fire Department Occupational Safety and Health Program as its base document.

In the *Guide* at §7-1.5:

> *"All fire stations and fire department faculties shall comply with the Building Code and regulations of Nova Scotia."*

Relevant regulations[127] have adopted the National Building Code of Canada and the National Fire Code of Canada.

NFPA-1500[128] requires that;

> *"10.2.1 All fire department facilities shall be inspected at least annually to provide for compliance with Section 10.1.*
>
> *10.2.2 Inspections shall be documented and recorded.*
>
> *10.2.3 All fire department facilities shall be inspected at least monthly to identify and provide correction of any safety or health hazards."*

GA was informed that all fire stations were designated Community Reception Centers (refuge centres) in the event of a disaster or in the event of climate weather emergencies and loss of power emergencies.

The following areas were visually observed and notes taken:

- Station apparent or known age

[127] The Fire Code is adopted by N.S. Reg. 48/2003, as amended to N.S. Reg. 3/2020. The Building Code is adopted by N.S. Reg. 26/2017, as amended to N.S. Reg. 148/2020.

[128] NFPA-1500; Standard on Fire Department Occupational Safety, Health, and Wellness Program. This standard can be viewed for free at https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=1500

- Potable water supply and treatment
- Emergency electrical power supply arrangements
- Office space provisions
- Personnel showers
- Emergency safety showers and eye-wash stations
- General maintenance room/spaces
- Exercise/fitness room
- Apparatus bay sizing
- Apparatus bay door sizes
- Apparatus bay ceiling heights
- Apparatus vehicle exhaust capture and extraction
- SCBA air compressors arrangements
- SCBA cylinders storage and handling
- Housekeeping
- Kitchens
- Storage
- Fire equipment storage and handling
- PPE and cleaning equipment
- Medical equipment storage provisions
- Fire hose storage provisions
- Cleaning and janitorial
- Size and Configuration of the property

Building Requirements for Post-Disaster Readiness

The current edition of the Building Code (NBCC) requires[129] fire stations to be designed as *Post Disaster* readiness structures. The NBCC defines a post-disaster building as follows; {emphasis added}

> *"Post-disaster building means a building that is essential to the provision of services in the event of a disaster, and includes*
>
> *• hospitals, emergency treatment facilities and blood banks,*

[129] This requirement falls within Part 4 of the National Building Code (NBC).

> *• telephone exchanges,*
>
> *• power generating stations and electrical substations,*
>
> *• control centres for air, land and marine transportation,*
>
> *• public water treatment and storage facilities, and pumping stations,*
>
> *• sewage treatment facilities and buildings having critical national defence functions and*
>
> *• buildings of the following types, unless exempted from this designation by the authority having jurisdiction:*
>
> > *• emergency response facilities,*
> >
> > *• **fire**, rescue and police stations **and housing for vehicles**, aircraft or boats used for such purposes, and*
> >
> > *• **communications facilities**, including radio and television stations."*

The requirements for fire stations to be classified as post-disaster buildings is not new. It was introduced in 1999 and enacted in the NBCC in 2005.[130] There is no retroactive requirement for addressing existing fire stations that pre-date the introduction of the NBCC requirement. However, any major upgrades (e.g., adding an extension) to a station may trigger the requirement to meet post-disaster building requirements, depending upon the nature and extent of the work. Post-disaster building designation will add to the per-square-foot costs of fire stations, vis à vis other similar non-fire station buildings.

Despite the requirement in the NBCC to be post-disaster ready, the Code also provides an out, in that the Authority Having Jurisdiction (AHJ) may provide an exception to this requirement if so inclined to do so. The NBCC describes, in §A-1.4.1.2.(1), the conditions under which such an exception *might* be made;

> *"**Post-disaster Building***
>
> *There may be circumstances where the authority having jurisdiction would choose to exempt certain types of buildings or parts thereof from being designated as post-disaster buildings in order to permit them to be governed by Part 9[131] rather than by the rest of the Code. Such is the case in the following examples: an ambulance that is stored at a volunteer's residence or a police station that is housed in a small shopping*

[130] NBCC Part 4

[131] Part 9 of the NBCC includes the requirements for Housing and Small buildings. Part 9 buildings are defined as follows in the NBCC: "1.3.3.3. Application of Part 9 1) Part 9 of Division B applies to all buildings described in Article 1.1.1.1. of 3 storeys or less in building height, *having a building area not exceeding 600 m2*, and used for major occupancies classified as a) Group C, residential occupancies (see Note A-9.1.1.1.(1) of Division B), b) Group D, business and personal services occupancies, c) Group E, mercantile occupancies, or d) *Group F, Divisions 2 and 3, medium- and low-hazard industrial occupancies.* [italics added]

> *mall. The circumstances where such exemptions are permitted are intentionally limited by the definition of post-disaster building."*

GA believes that the current fire stations in Cumberland are not constructed as post-disaster buildings, although they fall under the requirements to be Part 3 buildings, and are listed as applicable post-disaster occupancies, and some were constructed after the introduction of the NBCC requirements. As such, it is uncertain who the AHJ might be that authorized the deviation from the NBCC and what were the justifications.

Cumberland County fire stations are not only twenty-four-hour operations, but are most likely to be additionally active during a disaster and or during severe storms. *GA* was informed that MCC fire departments could be designated 'Comfort Centres' under the County's Emergency Plan, and would therefor be expected to serve double duty as fire stations and as places of refuge for area residents; to be used during sever disruptions to power or infrastructure.

Given that the fire stations have a high probability of active service during severe storms, elongated power outages, etc., and whereas the fire stations are comfort/refuge centers for community citizens and visitors it would be reasonable to build newer stations to the Post Disaster Standard. Some of the post-disaster requirements include;

- Higher snow load (factor of 1.25)
- Higher wind load (factor of 1.25)
- Higher seismic – Earthquake loads (factor of 1.5)
- Mechanical and Electrical components must be restrained.

For a better understanding of how a post-disaster compliant building should perform, the following figure, which was part of a presentation[132] at the 12th Earthquake Conference in Quebec City, helps to clarify;

[132] Cost and Benefit of New Buildings Designed to Enhanced Post-Earthquake Performance Levels; John Sherstobitoff, Ari Wibowo, Wilma Leung; Vancouver, BC. https://www.caee.ca/12CCEEpdf/192-qTQ8-149.pdf

FIGURE 11: BUILDING CODE DESIGNATION AND PERFORMANCE LEVELS, POST-EARTHQUAKE

Table 1. Selection of Performance Levels Outline.

Designation	"Code – Normal"	"Code – Post Disaster"	"Refuge"	"Operational"
Building Area Designed to Post-EQ Operational Standards	None	Whole Building to Code Level, but may or may not be Operational	Main Floor & Basement Only (Common Area)	Whole Building
Code Design	I = 1.0 and any Rd	I = 1.5 and Rd ≥ 2.0	I = 1.5 and Rd ≤ 1.5 Common Area only and Rd* Elsewhere	I = 1.5 and Rd ≤ 1.5
Occupancy Objective – Post Earthquake	Life safety, but no guarantee of occupancy. Entire building can be safely evacuated (i.e. does not collapse on occupants).	Damage control, but no guarantee of being operational. Entire building should remain occupiable but will require inspections to confirm such.	A designated refuge area of the building (e.g. common lounge on first or ground floor, or parkade where climate permits) can be used as group lodging. The upper floors may not be immediately habitable; occupants move to designated refuge area post-earthquake. No displacement of occupants away from the building.	Building and suites within it can be occupied with no interruption. No occupants are displaced.
Structural Repair or Demolition Required	Repairs are anticipated and may be extensive. Demolition may be required.	Repairs are anticipated. Extent of repairs not defined; will vary based on structural systems selected.	Only minor repairs necessary to finishing anticipated for designated refuge area. Significant structural repairs and services anticipated for the upper floors and all suites. Demolition is not required.	Only minor repairs necessary to finishing. No structural repair or demolition is required.
HVAC Services	Functionality may not be available. May require repair or replacement. Equipment should remain restrained, if element it is connected to remains structurally sound.	Functionality may be available. May require repair. Equipment should remain restrained.	Regular or alternate HVAC in designated refuge area to remain operational. HVAC on upper floors and suites may not be operational and may require repair. Add standalone propane storage tank and piping. Convert heating boiler, kitchen range and fireplace to dual fired (propane).	Within the building, no repair is required to supply HVAC if lifeline services are operational. Add standalone propane storage tank and piping. Convert heating boiler, kitchen range and fireplace to dual fired (propane). Provide stand-by pumps for back-up heating and domestic water circulation.
Pipes, Ducts, Cable Trays, and Conduits Within Building	Equipment should remain restrained, if element it is connected to remains structurally sound.	Equipment should remain restrained.	Equipment to remain fully restrained in refuge area. Will enable services to continue in refuge area.	Equipment to remain fully restrained. Will enable services to continue.
Ceilings, Lights, and Other Ceiling Attachments	Items should remain restrained, if element it is connected to remains structurally sound.	Items should remain restrained.	Equipment to remain fully restrained in refuge area. Will enable services to continue in refuge area; in rest of building.	Equipment to remain fully restrained in refuge area. Will enable services to continue in refuge area; in rest of building.

Fire and Safety Systems

In addition to the NBCC requirements for life safety systems, such as emergency floodlighting and egress signage, exit door hardware, etc., NFPA-1500 states;

> *"10.1.4 New buildings housing emergency fire, rescue, or ambulance services shall be protected throughout by approved automatic sprinkler systems.*
>
> *10.1.3.4 All existing and new fire department facilities shall have carbon monoxide detectors installed in locations in sleeping and living areas, such that any source of carbon monoxide would be detected before endangering the members."*

Living areas are any normally occupiable space such as bathrooms, kitchens, closets, halls, lounges, meeting rooms, storage or utility spaces, and similar areas.

General Observations, Fire Stations

Some of the fire stations that *GA* assessed are aged and in need of upgrades and or replacement. Fire department facilities require effective and efficient functionality and also need to address firefighter health and safety. Most existing fire stations do not meet all these needs.

The following sections are general comments. For station specific information please refer to the individual fire station assessment forms in *Appendix 5*.

Station Age

Size and types of emergency vehicles and equipment are evolving, and the trend is towards larger, much larger, fire apparatus required to meet the multi-role reality of the fire services.

This places pressure on functionality and space in current stations. Even recent station constructions have not fully accommodated these current, and indeed, future needs. The current increased focus[133] on firefighter health and safety means attention is needed on station facilities that will lessen the occupational risk to the volunteers firefighters; to help preserve their, and their family's, health into the future.

The ability of upgrading of some of the current facilities may not be possible, or be cost effective, due to current size and lay out. The return on investment for upgrades may not be favorable in-lieu of new. In addition to feasibility, an good understanding of possible life extension should factor into the calculation of new vs recycled life-cycle costs.

Recommendation 45:GA recommends that full structural and energy assessments be conducted, by qualified professionals, of all fire stations; in preparation to developing strategic plans for improvements to current facilities, and for the design and construction of new facilities. Considerations of design

[133] As this report is being written, Nova Scotia announces new presumptive cancer types, in recognition that firefighters are exposed to above normal risks of carcinogens both at fires and in cleanup operations. https://novascotia.ca/news/release/?id=20220322001

characteristics contained in this Report should also be considered in conjunction with the results of these further assessments.

Potable Water Supply and Treatment

Nova Scotia Regulation requires[134] that;

> *"Drinking water*
>
> *18 (1) An employer shall, where reasonably practicable, make accessible sufficient potable water for drinking and hand-cleaning that*
>
> *(a) is close enough to the work area that neither drinking nor washing is inhibited;*
>
> *(b) is no further away than 200 m from the work place; and*
>
> *(c) meets the standards set out in the latest version of the Guidelines for Canadian Drinking Water Quality published by the federal Department of Health."*

Potable water is paramount for any fire station due to the need to properly clean and decontaminate personnel and equipment. This need acquires additional focus when the stations are designated refuge centres and could be occupied by the public, who would not necessarily know that there is no potable water available at a tap. Furthermore, eight of the stations have community halls attached or as part of their station structure.

Three of the fire departments' potable water supply is supplied by a municipal system. The remainder are supplied by wells. The Lorneville and Apple River substations have no water at all.

Water Filtration and Testing

Springhill, Pugwash and Parrsboro are on municipal water systems that are required to meet municipal water system quality standards. Fourteen of the fire stations are equipped with water wells. Some of these also provide water to attached community halls. Ten of these have no water treatment system, including no disinfection system. Eleven stations with wells do not do, or it is unknow if they do, any water quality and safety tests on a regular basis. The following table presents the above information.

[134] N.S. Reg.53/2013

TABLE 27: STATUS OF FIRE STATION WATER SUPPLIES

Department	Water Supply	Filtration / Treatment Systems	6 Month Bacteria Testing Being Done	2-year Contaminant Testing Being Done
Advocate	Well	NO	NO	Unknown
Apple River	NONE			
Collingwood	Well(s)	NO	NO	Unknown
FPW	Well(s)	NO	YES	Unknown
Joggins	Well(s)	NO	NO	Unknown
Leicester	Well(s)	YES	YES	Unknown
Lorneville	NONE			
Parrsboro	Municipal			
Pugwash	Municipal			
River Hebert	Well(s)	NO	NO	Unknown
Shinimicas	Well(s)	YES	Unknown♥	Unknown
Southampton	Well(s)	Unknown ♠	Unknown ♠	Unknown
Springhill	Municipal			
Tidnish Bridge	Well(s)	NO	NO	Unknown
Truemanville	Well(s)	NO	NO	Unknown
Wallace	Well(s)	YES	YES	Unknown
Wentworth	Well(s)	NO	NO	Unknown
Westchester	Well(s)	NO	NO	Unknown

Notes on the table:
♥ Shinimicas – Unknown at this time, building under construction
♠ Southampton – Unknown at time of visit. No filtration system was observed

NS Department of Environment Water Program

The Nova Scotia Department of Environment regulates public potable water supply systems. Organizations or businesses who meet the criteria of providing a public water system (e.g., a trailer park), must register with the province and adhere to quality and testing mandates. Individual residential wells and very small systems do not meet the definition as a public water supply. Consequently for fire stations, there is no requirement to register and testing is voluntary but highly recommend. The caveat for fire stations is the requirements for employers under the occupational health and safety regulations quoted on page *231* above.

Testing and Treating Fire Station Water Supply

The NS voluntary potable water program recommends testing every six months for bacteria and every two years for chemicals such as arsenic and iron. The potential harm that could arise from not testing of water is adverse health issues for its users. Firefighters, who drink, cook, make

coffee, wash hands, have eye-wash stations, or shower with unsafe water are at risk. Also at risk are other users of the facilities, and some fire stations have attached community halls, using the same unverified well water source.

If the fire station and or attached community halls are used as a refuge center during an emergency event, then there is high importance attached to a verified safe potable water source.

The NS Department of Environment (NS-DOE) provides two fact sheets, one for in the home and one for other establishments. There are two main means to disinfect well water as recommended by the NS-DOE:

- Disinfection by Chlorination
- Properly installed filtration and disinfection system, like a UV system

Recommendation 46: GA recommends that Cumberland County provide a potable water supply to all fire stations.

Recommendation 47: GA recommends that Cumberland County institute a program of testing for all well water or cistern sourced fire station water supplies in accordance with the Nova Scotia Department of the Environment guidelines.

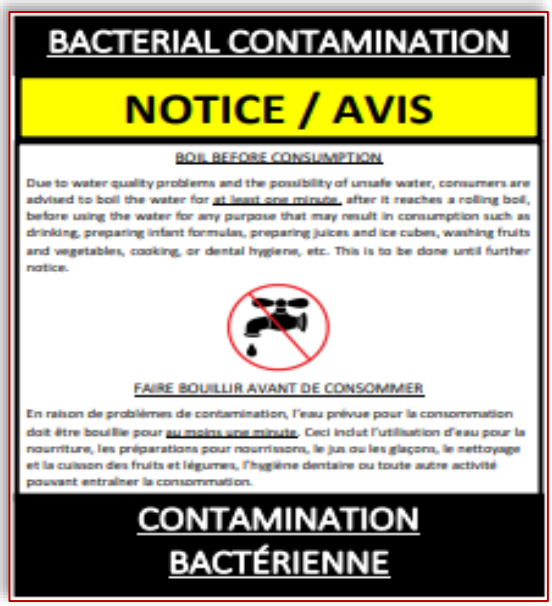
There is also something else to consider. Water that was deemed safe after testing may be contaminated by flooding or heavy rains, as excess surface water can carry contaminants into the aquifer below that feeds the well, or overflow the well casing. After severe weather events that could have impacted a well, the water from the well should be retested. Properly designed wells are less susceptible to contamination from surface water.

Recommendation 48: GA recommends that all fire station wells be evaluated by a competent authority as to their overall condition and susceptibility to infiltration by contaminated surface water.

Recommendation 49: GA recommends that until all well water systems can be proved safe that; all sources of water in the fire stations and attached community halls be labeled as unsafe for consumption. Such safe determination should be made through regular testing conducted in conformance with Nova Scotia Department of Environment recommendations. Testing that shows the water safe from bacteria, and has also shown the water is in compliance with federal drinking water guidelines for minerals and other contaminants.

Sample signage as per NS Environment is illustrated below.

FIGURE 12: SAMPLE CONTAMINATE WATER SIGNAGE



Recommendation 50: GA recommends that Cumberland County track and record water testing results for all fire stations and associated community halls.

Recommendation 51: GA recommends that where well water sources in fire stations do not meet federal and provincial standards as safe for consumption, that alternate safe sources of water be provided; in order to ensure that firefighters have safe water in adequate quantity and locations for consumption, cleaning, hand washing, and the decontamination of equipment and personnel, including a primary consideration of installing competent water treatment systems.

Emergency Power Supply

The Canadian Electrical Code and CSA[135] defines for what purpose emergency power may be needed for some buildings. Some of these included providing power to these life-safety systems:

- Fire alarm system
- Exit lights
- Emergency lights

[135] CSA C282:19 Emergency Electrical Power Supply for Buildings, 2019

- All other life safety systems (e.g., fire pumps)

In the Fire and Building Codes, battery powered exit signage and exit pathway lighting are designed for short duration, typically 30-60 minutes, long enough for building evacuation. If a building is expected to continue to be occupied, for example as a fire station or comfort centre, indefinite power to these safety requirements must be provided.

If the building is to be designated as a refuge area there are additional requirements not covered by the NBCC such as continued access to hot and cold water, heat, ventilation air, communications etc.

If the building is also to be designated as a refuge area there are additional considerations not covered by the above and that could be vital to the effectiveness of the structure both as a functioning fire station and as a comfort centre. Access to reliable power will help ensure that hot and cold water is available, the building will be heated, ventilation will continue, and communications equipment will operate, garage doors will open, lights will be on, and etc.

There are typically two types of auxiliary electrical power units; stationary and portable. Stationary generators (gensets) are not readily moved, and are sized to meet the anticipated emergency situation loads of the facility. Costs and maintenance requirements are similar to that of a vehicle.

Portable Generators

Portable generators can be moved from one location to another location with relative ease and are not meant for or designed for prolonged use. They are lightly built to facilitate portability. Different models are fueled by different sources; gasoline, diesel, or propane. These generators can provide power for up to 12 hours on a tank of fuel. Maximum available size is around is 17,500 Watts, but more common sizes are below 10,000 Watts. Their main advantage is relatively low cost.

The negative issues with portable generators are numerous. When used as an auxiliary power source for facilities such as fire stations and comfort/refuge facilities; the required power for

heating and cooling usually greatly exceeds the portable generator capability. There are other necessary loads as well that are mission critical, including well pumps, lighting, communications equipment, breathing air compressors, and etc.

The average home would require a minimum of 11,550 Watts of power the following items were to be used during a power outage:

- Refrigerator/Freezer
- Deep freezer
- Microwave
- Coffee maker
- Toaster
- Electric Range
- Well pump
- 6 - 60 w bulbs
- Television
- Computer
- WIFI router
- 1- semi split heating/cooling unit.

Currently, the axillary power available to the majority of the fire stations is not adequate to meet ordinary demands of operating a fire station for more than brief periods. This deficit is exacerbated when considering the additional demands required to operate as a comfort/refuge center. In one current situation, the auxiliary power generator powers a community center attached to the fire hall but not the fire hall itself.

Other issues that arise with portable generators, is that they require responders, who may or may not be available, as a result of their attending an emergency. Someone has to retrieve the unit from the fire station, start the unit and plug it into the exterior electrical receptacle and depending upon the panel configuration return to the station and manually engage the transfer switch. In addition, there is a requirement to ensure there is someone assigned to check up on the portable generator to ensure it remains running and refueled.

Most manufacturers recommend that you do not run the unit continuously beyond their standard run time which for most is between six to twelve hours depending upon size, brand and how much power is being drawn. Despite their ratings, for example 7kWatts. They are not designed to operate at full demand for more than brief periods. There is a different, and lower, steady state load capability than the advertised capacity.

Fuel Types

Sources of fuel for portable and stationary generators can be gasoline, diesel, propane and natural gas. For portable units there are dual fuel units that are capable of operating with either gasoline or propane. Some stationary gensets will use natural gas and diesel.

Portable gasoline operated generators typically have a five or ten-gallon fuel tank, depending upon the design of the unit. Even with a full tank of fuel, a portable generator has a time limit it will run without refuelling, sometimes as long as between 12 and 18 hours, but very much load dependant.

If you have a generator that runs on propane, you are in control of the fuel tank size. That offers some additional options for keeping your generator continuously fueled.

Most portable generators require maintenance every 100 hours (i.e. 4-days of running time), but this isn't a hard-and-fast rule. Instead, what will truly limit you is the amount of oil in your generator's engine. This typically runs low after 150-200 hours of use, and most modern generators will automatically shut off when the oil runs low in order to protect the engine.

Stationary Standby Generators (Gensets)

Stationary generators can be almost any size capacity. Typically, they are fueled by diesel or propane, some are natural gas where that is available.

The best feature is the ability to start automatically upon power failure, with newer units sending a text message to a cell phone or email to advise it's running and its current condition. The installation of stationary generators requires an automatic transfer switch that disconnects the mains and connects the generator to the building.

Properly, these stationary units are sized to meet the mission critical needs of the facility and will run continuously until they need fuel or servicing. Fuel sourcing is the biggest challenge for standby generators, as it is for portable generators. Diesel and gasoline are seasonal mixtures, changing several times a year in their chemistry. Utilizing diesel purchased in the summer in the winter runs the risk of the diesel gelling and not being useable. Similarly, in winter, summer gasoline will not adequately evapourate. The reverse is a problem, whereby winter gasoline will more likely vapour lock in a hot engine in summer time. These fuels are also prone to separating and oxidation if stored for a few months, and can cause serious maintenance issues and damage to engines.

Propane is the best fuel option. Propane is sealed in a pressure container and does not degrade, nor does it have seasonal variants. With a stationary generator, a propane tank of adequate size for the generator consumption, and expected endurance can be purchased or rented from the propane supplier. These tanks range in various size gradients; 360 liters, 1,500 liters, 3,100 liters, and 6,400 liters. Once filled, the fuel is available when needed, and will be available without searching for a gas station that has power, and fuel. Another benefit is cleaner burning that reduces maintenance requirements and environmental impacts.

Mobile Generators

There is one more option. Mobile generators are units of various capacities, typically ranging from 20 Kw to 256 Kw and usually with a diesel fueled engine. Average run time is the vicinity of 24 hours on a single tank of fuel. Sourcing seasonal fuel is still an issue.

With Mobile generators there are a couple of options that may be available to the municipality. One is to purchase a number of the units and have them readily available for use. Also needed is a plan to transport the units to the locations requiring them, and someone to service, refuel, and oversee their operation.

The issues with this option are many:

- How many should be acquired?
- What capacity is needed, not all facilities have the same power demands
- Where should they be stationed throughout the County?
- Where will they be stored?
- Where does the fuel come from?
- How and who will be responsible to transport them to the required location?
- Will weather and road conditions permit travel?
- Who is going to be responsible for their maintenance and regular run ups and testing?
- If there are more requests than units, who adjudicates the priorities?

The municipality could develop an agreement with generator providers (rental establishments), whereby in the event of need the supplier will guarantee that the County will receive priority to such equipment.

There are all the same issues as with owning these mobile units, as listed above, plus the additional issues of;

- How many generators will be available at the time of the request, and of needed capacities?
- Who will deliver them and hook them up?
- What is the time delay to retrieve generators from where they currently are located and reassign them?
- What is the cost of securing this option of first-refusal?
- Who is liable for damages?

When one considers the requirements for continued fire and emergency services operations and the fact that the stations are designated comfort/refuge centers, along with public perception of what comfort they will have when they report to such a facility, appropriate and right sized generators should be acquired. Small portable generators are not really meant to, or capable of operating a comfort center nor an emergency service building.

Considering the cost of an installed and suitable sized permanent generator, and their capabilities and automation, serious consideration should be given to this type of investment.

Recommendation 52: GA recommends that Cumberland County evaluate the needed capacity to provide stationary standby electrical power generators at all fire stations that currently do not have these systems; such that fire stations can continue substantially normal operations for at least 72 hours. GA

further recommends that a capital investment plan be developed to upgrade fire stations and attached community halls with stationary generators fueled by propane.

Current Stationary Gensets

There are four fire stations that currently have Gensets; Parrsboro, Springhill, Southampton, and Truemanville.

Parrsboro

Springhill

Southampton

Truemanville

TABLE 28: CURRENT EMERGENCY GENERATOR PROVISIONS

Fire Station	Alternate Power Type	Fuel Type	Wattage Kw
Advocate Hall 1	Portable	Gasoline	6.5
Advocate Hall 2			
Apple River	Portable	Gasoline	5.5
Collingwood	Portable	Gasoline	7.5
FPW	Portable	Gasoline	7.5
Joggins	Portable	Gasoline	9.0
Leicester	Portable	Gasoline	7.5
Lorneville			
Parrsboro	Fixed Gen Set	Diesel	50.0
Pugwash	Portable	Gasoline	12.0
River Hebert	Portable	Gasoline	7.5
Shinimicas	Portable	Not Determined	Not determined
Southampton	Portable	Propane	17.0
Springhill	Fixed Gen Set	Diesel	100.0
Tidnish Bridge	Portable	Gasoline	10.0
Truemanville	Fixed Gen Set	Diesel	100.0
Wallace	Portable	Gasoline	7.5
Wentworth	Portable	Gasoline	12.0
Westchester	Portable	Gasoline	7.5

Office Space & Other Rooms

As with any business operation there are requirements for non-operational office space. *GA*'s assessment discovered many stations lacked appropriate office space.

Even in a volunteer fire department, there are some very basic requirements for non operational rooms such as:

Fire Chief and Deputy Chief

At times there is a need for the senior officer to conduct business and or deal with sensitive HR issues in private. If appropriately sized, an office can be used as a small meeting room for senior officers.

File Room

A small room is needed to retain files. Files accumulate and if there is no available storage, the files become stored throughout the building, or off site, or lost.

Training, Public Fire Safety Education shared office

Training officers and public fire safety education persons require an office from which to plan their work and in which to prepare reports and keep record activities and participants in those activities. This space can be shared with both functions.

Training, Public Fire Safety Education Storage

Materials for training and public education require an appropriately sized storage room all of the required material to deliver these functions to both fire department personnel and the community.

Radio Communications Room

This space supports a critical operational function. This room needs to be close to the apparatus bay area. The radio room contains the station radio communications equipment and requires sufficient space, and a desk, for a person to operate as a communicator during operation, uninterrupted by other ongoing station business.

Training/Meeting/Dining Room

Mission critical to any fire and or emergency service is the requirement for training and team meetings. In a stand-alone station (not attached to a community hall), a room is needed that is

suitably sized to permit full departmental meetings and training sessions, fire service related public meetings, and anticipates future growth.

Audio visual Equipment Storage Room

A storage room directly off of the training room is required for the storage of audio-visual equipment and training materials such as lecterns.

Chair and Table Storage

To make full use of the multi-use room there should be a room to store tables and chairs.

Kitchen area

A kitchen is needed, or at least the facilities to make meals, and snacks, rehydrate, and store food in a refrigerator and shelves. Firefighters may need to operate from a fire station for extended periods of time, maybe days, and persons supporting these operations need space to prepare meals.

Coat Closet(s)

A place to put seasonal street clothes is needed when attending meetings or training sessions At least one coat closet should be provided.

TABLE 29: SPACE GUIDELINES FOR ROOMS[136]

Room	Recommended Minimum Size in Sq Ft
Administration (Fire Chief and Deputy Chief(s)) Number of Staff 1 to 5	150
File Room (based on 1 cabinet per staff ref above)	150
Training & Fire Safety/Public Education Office	150
Training & Public Education Storage	150
Radio Communications Room	56
Training/Meeting/Dining Room	603 sq ft 1 based upon 32 persons
Audio visual Equipment Storage Room	50
Chair and Table Storage	150
Kitchen area	Designed to need
Coat Closet(s)	18

[136] Public Works and Services Government of the Northwest Territories, Office Space Standards and Guidelines December 2012.

Washrooms, Showers and Gross Decontamination Showers

A typical fire station has for two types of showers. Typical washrooms with showers and for gross decontamination health and safety reasons, a safety shower and eye-wash.

Toilets

Unisex washrooms and showers are acceptable for low occupant loads. The ability to incorporate unisex showers is dependent upon the requirements of the Nova Scotia Building Code Requirements and the Occupancy Classification.

MCC Fire Inspectors have classed Fire Stations as F 2 Industrial Occupancies as per NBC Division B-2015.

NBC Division B Sentences 3.7.2.2(1) and (4): If occupancy is not more than 10 this permits a unisex washroom.

NBC Div. B Article 3.7.2.2 Water Closets: Except as permitted by sentence (4), water closets shall be provided for each sex assuming that the occupant load is equally divided between males and females, unless the proportion of each sex expected in the building can be determined with reasonable accuracy. (See Note A-37.2.2(1)).

4) Both sexes are permitted to be served by a single water closet if the *occupant load* in an *occupancy* referred to in Sentence (6), (10), (12), (13), (14) or (16) is not more than 10.

5) Urinals are permitted to be substituted for two thirds of the number of water closets required by this Article for males, except that if only 2 water closets are required for males, one urinal is permitted to be substituted for one of the water closets.

A-3.7.2.2.(1) Water Closets. Sentence 3.7.2.2.(1) assumes that there will be a sufficient number of persons in the building to justify the provision of separate water closet facilities for both males and females. In some circumstances overall low occupant loads would not require more than one water closet for males and one water closet for females and yet the building has more than one storey. It is deemed that rooms each containing a single water closet available for both males and females would satisfy the intent of the Code. The total number of water closets must be adequate for the total number of occupants. Requirements for barrier free accessibility also need to be considered. If the entrance storey is accessible and the upper storeys are not required to be accessible, a room in the accessible storey must meet the requirements of Section 3.8. and can serve both males and females. If provided, a nonaccessible room, designed to serve both males and females, in each nonaccessible upper storey would be acceptable. Sentence 3.7.2.2.(4) permits a single water closet to serve both males and females if the total occupant load is low.

With the male to female ratio in the fire departments not being 50% and whereas the fire departments' firefighters[137] being more than 10 males and with female firefighters being less than 11 per station, the number of water closets required for male members would be 2 per fire station, and one washroom for females. (Community halls are not factored in the determination as they are a separate occupancy classification)

Table 3.7.2.2.-C
Water Closets for an Industrial Occupancy
Forming Part of Sentence 3.7.2.2.(14)

Number of Persons of Each Sex	Minimum Number of Water Closets for Each Sex
1 - 10	1
11 - 25	2
26 - 50	3
51 - 75	4
76 - 100	5
Over 100	6, plus 1 for each additional increment of 30 persons of each sex in excess of 100

The question is when do the numbers of firefighters reach the aforementioned threshold. One assumes that on weekly training nights and weekend training, meeting nights, and emergency responses, minimum thresholds of the requirement to require the number of washrooms for male and female firefighters as outlined above are achieved.

Lavatories

In addition to water closets, lavatories are also required.

Sentence 3.7.2.3 (1) of the NBC Div. B-2015 states that at least one lavatory shall be provided in a room containing one or two water closets or urinals and at least one additional lavatory must be provided for each additional two water closets or urinals.

Showers

Of the eighteen fire stations in Cumberland County, only four are provided with showers.

- Collingwood, 1 – Unisex off of the apparatus floor,
- FPW – 1 Unisex located in basement,
- Shinimicas – 1 male and 1 female shower to be provided,

[137] Based upon fire department provided data, the average membership per department is 22.

- Wentworth – 1 Unisex 🚻.

There are also Accessibility Code requirements as per the NS Building Code Regulations (NSBCR). These amended regulations apply to new fire stations being built. There are some accessibility exemptions related to fire station operations.

Accessibility Nova Scotia Building Code Regulations Accessibility Exceptions

> *"3.8.2.1. Application and Exceptions,*
>
> *(1) The requirements of this Section apply to all buildings, except*
>
> *(f) fire, rescue, and emergency response facilities intended to house vehicles and their crews…"*

This exemption does not apply to the attached community hall and its facilities as per; Clause A-3.8.2.1. (1)(f). Emergency Facilities Exempt.

> *"The exemption is intended to include sleeping quarters and associated kitchen and washroom facilities, but does not extend to assembly occupancies, administration or call-centre type operations within fire, rescue, or emergency response facilities."*

Exercise Room

An exercise room, though not mandatory, is a good initiative to assist firefighters in maintaining their overall health and fitness and could be an attracting feature for volunteer recruitment.

The type of health and wellness program offered, the type of equipment to be employed, the number of simultaneous users and room availability, i.e., will it be available 24/7?... all drive the needs and size of the room. Room size for four people simultaneously working out would be approximately 437 square feet.

There are 2 stations out of 18 that have an exercise room; Parrsboro and Pugwash.

Gross Decontamination Showers (Safety Showers)

In addressing firefighter health and safety, and the prevention of cancer amongst firefighters, a number of studies have been conducted to ascertain the degree to which the disease is prevalent and what are the best recommended practices and equipment required to lessen the risk to firefighters.

A couple of Canadian studies relating to firefighter health follows:

> *"Health and safety are the primary issues facing firefighters.*
>
> *A 2006 -2015 study of firefighter fatalities, out of a total of 568 work-related firefighter deaths, 483, or 85 per cent, were attributed to occupational cancers, while only eight per cent were due to chronic illnesses like lung and heart disease, and six per cent from traumatic injury.*
>
> *When contrasted with the more modest plight of the standard Canadian citizen, who, by comparison, has "only" a 30 per cent lifetime chance of dying of cancer. Firefighters die of this illness at significantly higher rates than the public."*[138]

> *"A review of all firefighter WCB claims; whether volunteer, part-time, or career firefighters, Cancer is still the leading cause of fatalities. This study shows an increasing trend of firefighters' fatalities that have been caused by this disease which has contributed to nearly 90% of total deaths over the last 10 years.*
>
> *Example, if in 2019, the average Canadian has a 44% risk of developing cancer over their lifetime, the number increases to 53% for Canadian firefighters. If the average Canadian has a 30% of risk dying of Cancer, the mortality rate increases to 44% for a person with a career in firefighting…"* [139]

Fires generate volumes of carcinogenic carbon soot, fine/microscopic particulates that easily invade breathing passages and lodge in lungs where they spread disease, toxic gases that transfer through exposed skin with ease and into the blood stream, poisons breathed in or off-gassed from PPE like carbon-monoxide, nerve agents like hydrogen-cyanide, formaldehyde, and literally thousands of other highly toxic compounds; and the obvious choking smoke. All generated by burning, partial burning, heat degradation, and heat and catalytic action triggered forming of new compounds, that arise when there is a fire that involves the synthetic and natural materials and electronics that are in our homes, offices, and cars.

Exhaust fumes from diesel fire engines present a similar hazard, and for the similar reasons.

Standards and best practices applicable to firefighter decontamination can be found in NFPA-1851; *Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*.

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[138] *Cancer in Firefighters*, Dr. Kenneth Kunz trained medical internist, oncologist, chemist and cancer researcher; Firefighting in Canada, November 15, 2019

[139] *Canadian Firefighter Fatality and Injury Report 2006 -2018 Trend Analysis of Association of Workers Compensation Boards of Canada*. University of the Fraser Valley, School of Criminology & Criminal Justice.

One of the most important ways to keep firefighters free from deadly toxins is effective decontamination of PPE *immediately*, or soonest, after exposure.

The first phase of the decontamination process occurs when significant reduction of the amount of surface contamination takes place as soon as possible after contact. This now is recommended to take place by mechanical removal of the contaminant through initial rinsing with water and soap *at the scene* of the incident.

If as a result of climatic conditions and/or the lack of on scene decontamination resources the initial decontamination of personnel and equipment and control processes is lacking at scene, then other options are needed.

As an option, and as an adjunct to the preferred method of at-scene decontamination, it is a best practise to have a room for receiving contaminated PPE directly off the apparatus bays that are equipped with cleaning equipment and a suitable work areas. Contaminated PPE needs to be kept segregated from the rest of the facility as it will continue to off-gas toxins until such time as it is disassembled and laundered appropriately. Ideally the contaminated room design should incorporate separate heating and air handling systems. Shower rooms for personnel decontamination should be equipped with eye washes right in the showers.

Access to eye-wash stations right on the apparatus bay floor is also needed as well as safety showers. It is easy to spill firefighting foam on a firefighter while lifting and dumping it into the foam tank on top of the truck. Both safety showers and eye-wash stations must[140] have tempered water immediately available.

Recommendation 53: Ga recommends that all fire stations be provided with potable water supplied safety showers and eye-wash stations. The water to these devices must be tempered in accordance with Regulation.

[140] NS *Occupational Safety General Regulations* §23; also refers to ANSI/ISEA Z358.1 which has specific requirements including tepid water (also defined).

Equipment Maintenance Room

This room can be both a maintenance room and if of sufficient size an equipment storage room. There is always work that needs doing on equipment, and a proper set of tools and a well-lit work bench is essential if this work is to be done properly.

Storage is needed for items like spare fire extinguishers, spare self-contained breathing apparatus (SCBA) packs and spare personal protective clothing (PPE). Storage space for miscellaneous items like engines oils, saw chains, or rotary blades, batteries, battery chargers, and vehicle cleaning supplies are needed, and if not provided will just end up in a jury rigged system in a corner of the apparatus bay. Ideally storage and maintenance rooms are located adjacent to the apparatus floor.

SCBA Air Compressors, Filling Stations

SCBA breathing air compressing and filling station are comprised of a compressor with up to a 6,000 psi operating pressure, a storage bank of large cylinders, called a cascade, and a SCBA cylinder (bottle) filling station.

FIGURE 13: EXAMPLE SCBA CYLINDER FILLING STATION WITH DEFRAGMENTATION.

The filling station properly includes an control panel and a safety chamber in which the empty SCBA bottles are placed. This chamber is called a defrag chamber, and its function is to protect the operator from serious injury due to shrapnel in the event of a catastrophic cylinder failure during filling operations. The door opens to connect/exchange cylinders, and an interlock prevents filling unless the door is closed.

The installation of in station breathing air compressors is guided by two standards; NFPA-1989[141] and CAN/CSA Standard Z180.1[142] Both standards require that breathing air systems be installed in compliance with the manufacturer's instructions.

All compressors and the breathing air must also comply with Nova Scotia's *Occupational Safety General Regulations*[143] which refers in turn refers back to CSA Z180.1.

Current best practice is to locate breathing air compressor in a separate room. Manufacturers assume this when writing their instruction and requirements on installation. This makes good sense because the compressors are noisy enough that hearing protection is required in their vicinity. It is also important to keep dirt and other contaminants away from the compressor if possible, and a compressor room allows this to be controlled, and to control cooling ventilation which is very necessary. Sometimes compressors are installed on the floor of the apparatus bays, and this exposes them to dirt and dust, and exposes firefighters in the area to harmful noise. Compressors can also be easily damaged if exposed to being hit.

The filling station should not be in the compressor room, principally due to compressor noise when it is operating. It is recommend that the air cylinder refill station and defrag chamber be in a room separated from the actual compressor itself. Hearing protection should still be worn in this area also.

There are eight Cumberland fire stations that have breathing air compressors. None of the installations are in accordance with the above discussed best practices.

CSA Standard Z180.1 requires that air quality tests be conducted on each compressor system at six-month intervals. It appears that this is currently being done in Cumberland, in conjunction with the required six-month service intervals.

[141] NFPA-1989; *Standard on Breathing Air Quality for Emergency Services Respiratory Protection*, Chapter 7: Compressed Breathing Air Systems

[142] CSA Z180.1; National Standard of Canada, *Compressed Breathing Air and Systems*

[143] N.S. Reg. 53/2013 *Occupational Safety General Regulations*

There are a number of the fire departments that have cascade systems and SCBA cylinder filling stations installed in vehicles. *GA* was unable to confirm that any of these are being serviced to meet the Regulations.

Recommendation 54: GA recommends that Cumberland County engage a qualified person to examine and report on recommendations related to the current installations of breathing air compressors, cascade systems, and filling stations that are installed in vehicles and fire stations.

Breathing Apparatus (SCBA) Maintenance Room

The Self-Contained Breathing Apparatus (SCBA) maintenance room is used for the maintenance and minor repair of the SCBA equipment. It includes a work bench, ample task lighting, and shelving for storage of parts and equipment. One important aspect is that the room needs to be clean and should contain no other activities that might cause contamination and degradation of SCBA components, or impact the health of SCBA users.

FIGURE 14: EXAMPLES FOUND OF CUMBERLAND SCBA AIR COMPRESSORS AND FILLING STATIONS

Apparatus Bay Sizing

Apparatus bays are probably the most mission critical part of any fire station design. All other station rooms and requirements revolve around the apparatus bays. There are a number of standards and best practices for apparatus bay sizes. The most common are the Fire Underwriters Surveys (FUS) and the Unified Facilities Criteria UFC 4-730-10.[144]

FIGURE 15: EXAMPLES OF CRAMPED APPARATUS BAYS

The apparatus bays are more than just a storage garage for vehicles. They are an area for training on and maintaining the equipment assigned to an apparatus, minor servicing of the apparatus and cleaning of the apparatus and its equipment.

One of the challenges for firefighters operating in an undersized apparatus bay is loading and changing fire hose loads. Often this occurs during bad weather and must be completed indoors, requiring head-room and side-room to accomplish. In some cases, there is so little space that apparatus compartment doors cannot be opened. This begs the question, are firefighters regularly (at least weekly) checking the equipment behind those doors? In many stations, firefighter bunker gear is stored in the apparatus bay, and in some cases, firefighters are standing/leaning against trucks in a narrow alleyway to get dressed. If the truck moves, there could be serious consequences.

How is spacing requirements for apparatus bays determined? The Fire Service Underwriters and the Unified Facilities Criteria, determine the type of apparatus, its size and then apply the

[144] Unified Facilities Criteria, is a USA military standard https://www.wbdg.org/FFC/DOD/UFC/ufc_4_730_10_2019_c1.pdf. Although not mandatory in Canada, it is a good representation of a best practices approach, with clear articulation of requirements, and for that reason is used as one benchmark in this *Review*.

standard safe working space around each vehicle to determine a total square footage needed, for each vehicle. All vehicle space requirements are then totalled and this provides the total useable space required, for all emergency response vehicles for that station's apparatus bay.

GA applied the foregoing methods and assessed each station's *useable* apparatus bay area. Once assessed, the apparatus bay area was designated as either, "meets standards" or "does not meet standards."

GA refers to the *useable space*. It is the case in the many of the fire stations visited that due to a lack of dedicated, and/or adequate, station storage, utility, equipment spaces; equipment and materials are stored in the apparatus bays instead. This practice is taking apparatus bay space away from what it is intended for. It is also possible that additional equipment and/or vehicles not originally envisioned in the station design has been purchased and placed on the apparatus bay floor, further cramping conditions.

All current Cumberland County fire stations have issues with the utilization or size of their apparatus bay areas. For that reason they were all determined to not meet current standards. It needs to be acknowledged that many stations were established before current standards were determined. However, addressing potential health and safety issues should be considered in the utilization of apparatus bays of existing stations, and planned in the design and construction of future fire stations.

Apparatus Space Requirements

Table 30, below, provides the recommended space requirements for each type of response vehicle as per industry standards and best practices. The space allotments allow firefighters to safely work around and on the trucks, and facilitates safe truck movement within the apparatus bay. Complimentary door widths and heights are also required.

TABLE 30: STANDARD APPARATUS SPACE REQUIREMENTS

Apparatus Type	Area Required (sqft)
Engine/Pumper	1,000
Rescue-Pumper	1,000
Mini-Pumper	738
Pumper-Tanker, single-axle	1,000
Pumper-Tanker, tandem axle	1,100
Tanker, single-axle	1,000
Tanker, tandem-axle	1,100
Rescue (medium), single-axle	1,000
Rescue (heavy), tandem-axle	1,100
Aerial, single or tandem-axle	1,200
Utility truck, Light Rescue, 4x4, etc.	700
Utility Trailer, ATV, Boat, etc.	684

Table 31, below, summarizes the available *usable* apparatus bay space conditions found in Cumberland fire stations. The useable space is the gross size of the apparatus bay, minus that space utilized for other purposes. For example; if a firefighters' bunker gear rack is installed along each side wall of the apparatus bay, those installations remove approximately 3 feet from the useable width of the bay gross dimensions. If there is an SCBA compressor and fill station in the apparatus bays, that space is also subtracted plus the shadowed area that is no longer accessible to a fire truck due to the placement of the equipment, etc. It is the leftover and useable space that is recorded in the table.

TABLE 31: FIRE STATION APPARATUS SPACE CONDITIONS FOUND

Fire Station	Useable Apparatus Bay Area (sqft)	Area Required (sqft)	Net Area Excess (Deficit)
Advocate	1,645	2,700	1,055
Apple River	600	1,000	400
Collingwood	2,945	4,100	1,155
FPW	2,000	2,700	700
Joggins	1,291	2,700	1,409
Leicester	2,000	3,000	1,000
Lorneville	928	1,700	772
Parrsboro	1,377	3,000	1,623
Pugwash	3,788	5,400	1,812
River Hebert	1,918	5,000	3,082
Shinimicas	2,790	4,000	1,210
Southampton	4,189	5,400	1,211
Springhill	2,830	5,722	2,892
Tidnish Bridge	2,638	3,684	1,046
Truemanville	1,699	3,000	1,301
Wallace	3,647	6,068	2,421
Wentworth	1,748	3,700	1,952
Westchester	1,843	3,000	1,157

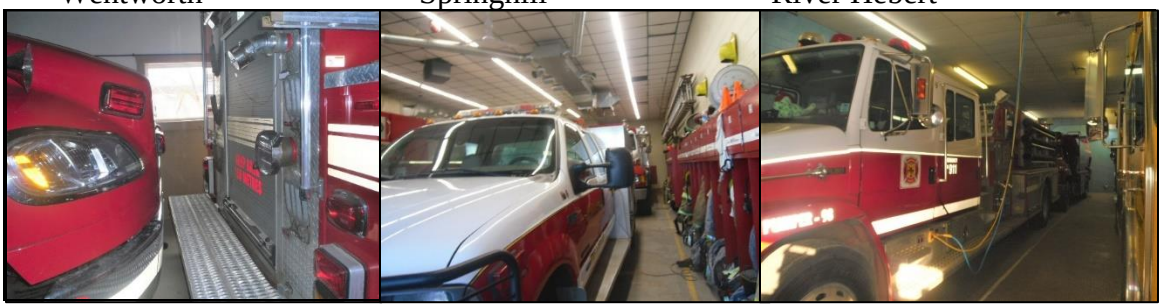
The above table uses the current apparatus assigned to the station as the basis for the area required. There are a couple of exceptions. In Parrsboro, two fire trucks are not stored inside the station, as there is no room. In River Hebert, one fire apparatus also sleeps outside.

Another issue that has a very probable negative impact on emergency response is apparatus bay configuration. Three of the fire stations visited are required to park their apparatus two deep, (one behind the other). If the lead apparatus fails to start then the rear unit is not able to respond as it is blocked by the front unit. In the best case scenario, the front apparatus must first be moved before the second one can respond. In wintertime, this also might result in one truck being left outside to freeze up while the other is out at the incident.

Where there is available land to add additional apparatus bays, or to convert stations to drive through bays, these options could be considered as possible solutions to double deep apparatus bays. The Wentworth, River Hebert and Springhill fire stations, have apparatus two-deep.

FIGURE 16: DOUBLE DEEP APPARATUS BAYS

Wentworth Springhill River Hebert



Individual fire station assessment forms are presented in full in *Appendix 5: Fire Station Assessment Forms*, and contain more pictures of the stations.

Apparatus Bay Doors

Apparatus are typically almost 11 feet wide, with their mirrors, and will require a 14-foot wide bay door to help avoid damage to the door frames and apparatus mirrors when moving the truck in and out of the station. Doors must also incorporate a safety device meant to prevent entrapment and injury by unexpected door movement when a person is in the door opening.

Apparatus Ceiling Heights

Apparatus are now almost 10 feet in height, and some can be taller, especially tankers and aerial devices. An aerial device can be as high as 13.5 feet depending upon make, model and type of aerial device.

Ceiling height is important. During inclement weather it might not be truly safe to climb onto the top of a fire truck that is wet or snow covered. With low ceiling heights, pulling the truck out of the station will be needed to allow firefighters access to the top of the truck to do equipment checks, change hose, load foam tanks, etc. Consequently, many activities are best completed indoors, especially during winter months. Failing adequate ceiling heights, these tasks may be done under adverse conditions, or neglected for better weather.

Therefore, if you have a truck that has an overall height of 10 feet and a firefighter who is six feet, the ceiling height *minimum* should be 16 feet clear.

Apparatus Vehicle Exhaust

Studies[145] have determined that in addition to firefighting, one of the major contributors to firefighter cancer rates is linked to exposure to vehicle diesel exhaust when vehicles are run in the station.

The exhaust from all internal combustion engines, including diesel and gasoline-powered engines, contains over 100 individual hazardous chemical components that, when combined, can result in as many as 10,000 chemical compounds. A large majority of these compounds are today listed by regulatory agencies as being cancer causing or suspected carcinogens.

As discussed previously in this *Report*, the issues surrounding the rise in cancer cases amongst firefighters including volunteers has ceaselessly increased over the years. The Nova Scotia

[145] A 2017 study performed for Ontario's Ministry of Labour: http://www.occupationalcancer.ca/wp-content/uploads/2018/06/DEE-Fire-Halls-Report.pdf

Workers Compensation Act now includes presumptive regulations concerning firefighter cancer. The presumptive regulations include volunteer firefighters.

NFPA 1500 Standard on Fire Department Occupational Safety, Health, and Wellness Program Chapter 10, sentence 10.1.5 states that "*the fire department shall prevent exposure to fire fighters and contamination of living and sleeping areas from exhaust emissions through the use of direct or source capture systems*."

One of the most effective means in controlling vehicle exhaust systems is the installation of a building ventilation exhaust systems in the apparatus bay area. This can be accomplished by a couple of means. There are typically two system designs:

A) The vehicle direct source capture system, that is comprised of overhead hoses and exhaust fans manufactured by companies, including *Magnegrip*, *Nederman* or *Plymovent* systems.[146]

B) The second most typical system a whole bay ventilations system, where CO and NO_2 detectors control an exhaust fan with sufficient capacity to meet the air changes requirement of the vehicle bay. This is accomplished without any hoses or fire apparatus attachments. The aforenoted study on the previous page found that most whole apparatus bay ventilations systems were underperforming by 50%.

The most effective means of addressing the diesel exhaust issue is by employing the direct source capture method; where hoses are attached directly to the vehicle tail-pipe. A Plymovent direct source capture system is installed in the Pugwash Station.

The direct capture method prevents a build up and lingering emissions of fumes inside the fire station; generated by the apparatus prior to departure or upon return. A South Korean study[147]

[146] *GA* does not endorse any manufacturers system, and there may be other manufacturers of similar or better systems.

[147] Graduate School of Public Health, Seoul University, the Department of Occupational and Environmental Medicine and the Fire Research Centre Seoul Metropolitan Fire Service Academy on the Effectiveness of Exhaust Reduction System (ERS) in Fire stations, published 12 November 2019

concluded that these direct capture systems effectively mitigated pollutant concentrations in the vehicle bays; and consequently the remainder of the fire station.

GA witnessed a response by one fire department that did not have a direct capture method. They had one vehicle idling inside the station while waiting for a sufficient number of firefighters to arrive, dress, and staff the vehicle before the apparatus left the station.

There are several stations that have a CO monitoring and a general (non-source capture) vehicle exhaust system that exhausts the air from the entire apparatus floor. The specifications for these units were not available and therefore it is not known how effective these systems are in reducing the vehicle exhaust.

Recommendation 55: GA recommends that all stations be provided with a direct source capture vehicle exhaust system to address the issue of harmful vehicle exhaust, especially diesel exhaust, in the fire stations.

Recommendation 56: GA recommends that that all stations that currently have detection operated exhaust fans be tested by an industrial hygienist familiar with vehicle diesel exhaust issues to ensure their effectiveness in removing vehicle exhaust and particulates, and that adjustment be made as necessary.

Storage/Housekeeping

Storage is an issue for all stations. The issues are not just storage space itself but what storage areas and rooms are required as per standards and best practices. Requirements include PPE storage rooms, medical storage rooms, fire hose storage rooms etc. Without the appropriate storage rooms then other areas that are not designed or purposed for storage do become storage areas, such as; apparatus bays, furnace rooms, electrical rooms, hallways, and offices.

Poor or lack of proper storage areas contributes to poor housekeeping. Improper use and storage of electrical cables and cords, which can lead to tripping hazards and injuries. Too much clutter prevents free and easy access to equipment and or vehicles.

Some observations during the visitations, included improper storage in electrical and furnace, rooms, improper storage of flammable and combustible liquids, service room fire separation closures (aka doors) left open.

FIGURE 17: EXAMPLES OF HOUSEKEEPING AND STORAGE ISSUES

There are a number of NFPA and other standards that address storage requirements, as follows;

- NFPA-30 Flammable and Combustible Liquids Code
- The National Fire Code of Canada (2020 edition), Division B, Part 4; Handling of Flammable and Combustible Liquids. Division B, §2.4; Fire Hazards, addressing use of service rooms for storage
- NFPA-1500; Standard on Fire Department Occupational Safety, Health, and Wellness Program
- NFPA-1581; Standard on Fire Department Infection Control Program
- NFPA-1851: Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, 2020 Edition - Chapter 9 Storage
- NFPA-1901; Standard for Automotive Fire Apparatus
- NFPA-1962: Standard for the Care, Use, Inspection, Service Testing, and Replacement of Fire Hose, Couplings, Nozzles, and Fire Hose Appliances

Combustible and Flammable Liquids Storage

The National Fire Code of Canada, Division B Part 4 prescribes the requirements for the handling of flammable and combustible liquids. In some of the stations there were numerous containers of flammable liquids in various locations throughout the station. Fire stations need proper storage for flammable liquids.

Recommendation 57: GA recommends that a review be conducted to determine the amount of flammable and combustible liquid stored in portable containers within the fire station and determine if a proper

flammable liquids storage cabinet is required. This survey should take into consideration the benefits to good housekeeping and safety, in lieu of a focus on quantity.

PPE Storage and Cleaning Equipment

During the station tours it was noted by *GA* that many fire stations provided facilities for the storage, ready-to-don, of bunker gear on apparatus bay floors. The accompanying picture is an MCC fire station, and typical of what was found.

FIGURE 18: EXAMPLE OF APPARATUS BAY BUNKER GEAR STORAGE

NFPA-1851[148] addresses the need for the proper storage and care of firefighter protective ensembles (aka bunker gear, aka PPE). The standard requires a well-ventilated room, gear protected from contamination, and protected from UV light exposure (i.e., sunlight, fluorescent lighting).

Although a dedicated room for bunker gear is not specifically required by any standard that *GA* is aware of, the exposure of PPE to known health risks such as diesel exhaust particulates which collect on all items in the apparatus bays, strongly suggests that storage of PPE in the apparatus bays should no longer be considered adequate. A separate room that is ventilated to the outside is now best practice.

Figure 19 is an example of what is intended by the standard and best practices that will protect bunker gear from contamination and degradation. Note also that there is adequate space provided for firefighters to don their gear, away from potentially moving vehicles.

[148] NFPA-1851; Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting.

FIGURE 19: A WELL DESIGNED BUNKER GEAR STORAGE ROOM EXAMPLE

As another note on the storage of bunker gear. Many firefighters respond directly to the scene in their personal vehicles, and their bunker gear is stored in that vehicle. NFPA-1851 addresses that also, with recommended practices on ventilation, contamination of the vehicle, and protection of the gear.

NFPA-1851, NFPA-1581,[149] and NFPA-1500[150] all address aspects of cleaning needs and methods for firefighter bunker gear and medical response equipment and PPE. NFPA-1500 refers to both 1581 and 1851 and, as reminder, NFPA-1500 is specifically cited in the *Nova Scotia Fire Services Occupational Health and Safety Reference Guide*.

As part of bunker gear handling and care, attention is needed with how contaminate gear is managed. A *gross decontamination* room is needed at *each* station since firefighters will be returning to their station after being contaminated at a fire or medical incident. Each such facility should containing appropriate equipment and supplies, as illustrated below.

Not every station fire station requires a laundry room for PPE that includes a washer and dryers for bunker gear. However, it is advisable that these heavy cleaning facilities be available locally in MCC for immediate use. This need is further discussed, including with recommendations, in the section *Structural Firefighters* PPE Cleaning starting on page *346*.

[149] NFPA-1581; Standard on Fire Department Infection Control Program

[150] NFPA-1500; Standard of Fire Department Occupational Safety and Health Program

FIGURE 20: EXAMPLE OF GROSS DECON ROOM AND PPE LAUNDERING FACILITIES

Recommendation 58: GA recommends that Cumberland County assess the possibility of designating, and properly equipping, adequate space at existing fire stations for the handling of and decontamination of equipment, in accordance with NFPA-1500, 1581, 1851, and best practices.

Recommendation 59:GA recommends that Cumberland County investigate the possibility of designating a suitable storage area for firefighter Bunker Gear off the apparatus bay floor in each fire station, and in accordance with NFPA-1851.

Contaminated Storage

NFPA-1581 addresses cleaning, storage and disposal needs for contaminated medical supplies and PPE.

> *"Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal be separated physically from members in facilities or on vehicles.*
>
> *Fire departments that provide emergency medical services shall provide or have access to disinfecting facilities for the cleaning and disinfecting of emergency medical equipment."*

Medical Equipment Storage Areas

As per NFPA-1581;

> *"Emergency medical supplies and equipment stored in fire department facilities, other than those stored on vehicles, shall be stored in a dedicated, enclosed area to protect them from temperature degradation, contamination, and other physical damage."*

Fire Hose Storage

NFPA-1962,[151] §4.7, states that fire hose needs to be stored in a well-ventilated area out of direct sunlight. Typically fire hose storage is in a lighted, ventilated room directly off of the apparatus floor, usually at the rear of the station since fire apparatus loads hose from the back.

FIGURE 21: EXAMPLE OF ACCEPTABLE FIRE HOSE STORAGE

If the decision is to store the fire hose in the apparatus bay, then the *useable* square footage of the bay area will be reduced, potentially negatively impacting on having adequate space around fire trucks.

Janitorial Closet and Supply Room

A lack of storage rooms for janitorial and facility cleaning supplies i.e., cleaning liquids, paper towels, etc., was observed in many of the visited fire stations. Each station should have at least one appropriately sized janitorial room to contain station cleaning equipment and supplies. Typical janitor closets are thirty square feet with shelving and without a slop sink, and sixty-four square feet when provided with a slop sink.

Kitchens

Not all visited fire stations had their own kitchen facility. Some relied upon the attached community centre kitchen. The National Building Code of Canada (NBCC) and NFPA-1500[152] both require that non-residential kitchen facilities meet NFPA-96[153] requirements for range hood fire protection systems. Such systems help protect the facility from kitchen grease fires, and could likely facilitate dealing with insurance adjusters if a fire does occur.

[151] NFPA-1962; Standard for the Care, Use, Inspection, Service Testing, and Replacement of Fire Hose, Couplings, Nozzles, and Fire Hose Appliances

[152] NFPA-1500; *Standard on Fire Department Occupational Safety, Health, and Wellness Program*

[153] NFPA-96; *Standard for Ventilation Control and Fire Protection of Commercial Cooking Operations*

From the NBCC; §3.3.1.2. Hazardous Substances, Equipment and Processes;

> *"3.3.1.2.(2) Systems for the ventilation of cooking equipment that is not within a dwelling unit and is used in processes producing grease-laden vapours shall be designed and installed in conformance with Articles 3.6.3.5., 6.3.1.6. … (See Note A-3.3.1.2.(2)."*

Note: the stipulated articles both require conformance to NFPA-96.

NBCC Note A-3.3.1.2(2), that is referenced in the article above, helps to clarify the requirement for a ventilation and grease removal system in an assembly occupancy (e.g., community hall, fire station) that is utilizing residential cooking equipment, such as were found by *GA*;

> *"Cooking equipment that is manufactured for use in dwelling units and other residential suites is often installed in buildings used for assembly and care, treatment or detention purposes……If the equipment is to be used in a manner that will produce grease-laden vapours that are substantially more than would be produced in a normal household environment, then it would be appropriate to apply the requirements of NFPA 96. If the equipment is used primarily for reheating food prepared elsewhere or is used occasionally for demonstration or educational purposes, there would be no expectation of applying the requirements of NFPA-96. In all cases the circumstances should be reviewed with the authority having jurisdiction."*

The National Fire Code of Canada (NFCC) requires in §2.6.1.9. that commercial cooking equipment be designed and installed in conformance with the NBCC, and be used, inspected and maintained in conformance with NFPA-96. The NFCC also requires "*frequent*" cleaning of the grease-laden exhaust system.

In *GA's* opinion, if fire stations and community halls are used to prepare food that carries grease-laden vapours (e.g., frying, etc.) for the purposes of feeding more than a family sized meal (e.g., for a fund raiser or for a larger fire crew meal), it seems clear that both the fire station and the community hall kitchens are required to be equipped with grease-laden vapour removal systems.

One alternative is to establish and enforce firm procedures that prevent the facilities being used in a manner that violates the NBCC and NFCC. However, such procedures may then create the situation where the purpose of having a kitchen is defeated, or alternatively where the procedures are violated, with consequences.

FIGURE 22: MODULAR KITCHEN EXHAUST FAN AND FIRE PROTECTION HOOD

There are ULC certified, self-contained, retrofit options available that meet requirements for grease-laden vapour control. They feature a built-in exhaust fan and fire protection system. *Figure 22* shows an image of one such system.

Recommendation 60: GA recommends that Cumberland County further investigate the need for kitchen exhaust hoods that meet Building Code (NBCC) requirements, and that the Authority Having Jurisdiction review, as is required and intended by the NBCC, the circumstances of each community hall and fire station that is not using commercial cooking equipment and associated grease-laden vapour ventilation system, for conformance to the Building Code and to the requirements of NFPA-96. GA recommends that non-conforming facilities be either retrofitted or that procedures be put in place to restrict their use, or that the facilities be removed, all as appropriate.

Size and Configuration of Property

Station property parcel sizes are a critical part of any station design and layout. Typically, fire station service life is expected to be at least fifty years. Over the fifty-year period, there would be many changes within the community such as growth that could spur the need for increased service delivery with additional response equipment and volunteer personnel.

Current fire station properties require a small area designated as a hands on training area. Nothing too big or elaborate, nut one in which certain training activities can be carried out without spending excessive time travelling to a central location, every week.

Parking is required, not only for the firefighters but also for those stations that are connected to a community hall, that would allow for safe and ample parking for simultaneous events.

A review of property lines indicate that some fire stations have more than enough property to meet any future need. Others have little or no extra space for any future growth or the ability to

have a small training area. It would be a challenge if two events happen simultaneously at the location such as a community hall event and a fire call.

Future land acquisitions should include a review of needs and location that best suit the community and possible growth considerations, as well as the functional needs of the fire department.

Fire Stations Summary and Recommendations

Over the years there have been accumulated pressures on existing fire stations, including; apparatus becoming larger in size, many changes to building regulations, codes, and standards, and space requirements. The majority of these changes were necessary to deal with the need to pack more functionality into the existing space, but also to address firefighter health and safety.

There are a couple of recommended priorities for addressing issues noted in existing fire stations, new or old. Not all will be easy to achieve.

Recommendation 61: GA recommends that Cumberland County conducted an audit to address station housekeeping and use practices by starting with a thorough fire code compliance inspection and health and safety inspection, of all stations. Areas of note should include; improper storage in furnace rooms, leaking furnace oil lines, improperly installed/maintained furnace room fire separation closures (aka doors), breaches in the fire separations, lack of automatic closing devices on the doors, doors tied open, improper storage in electrical and other service rooms. These areas and others found in the audit should all be considered for immediate corrective action. Such action will address many observed fire code issues, but will also reduce the risk of fire and protect the municipality's assets.

Recommendation 62: GA recommends that before any decision made vis-à-vis station upgrading or replacement; that a full structural condition assessment be conducted by a qualified structural engineer. This report along with the requirements outlined in this report will aid in determining priorities and establishing costs over a period of time and determine if upgrades such as expansions, modifications, or replacement are required; and which strategy is most cost effective based on extended or expected service-life and life-cycle total costs, that meets the needs of providing fire services over the longer term.

Station Costs

The Altus 2021 Canadian Construction Cost guide[154] establishes a cost per square foot for a fire station, meeting National Building Code of Canada requirements and other discussed standards, for the Halifax area at between $325 and $355 per square foot of building area. A fire station to accommodate four emergency vehicles and meeting the appropriate ancillary room requirements, as outlined in this chapter, is estimated at a build cost of approximately $1.95 million; basis a 6,000 square foot single-story structure (not including land and soft costs).

[154] Canadian Cost Guide Altus Group 2022

FIRE DEPARTMENT LOGISTICS

As with any organization, fire services require logistical support on a day to day basis. Unique for emergency services organizations, is the need to address logistical capabilities during and after emergency incidents. A well functioning logistical system may assist in reducing costs, provide for standardization of equipment and supplies, as well as improve organizational efficiency.

What is logistics?

Logistics is the overall process of managing how required resources are acquired, stored, and distributed. Typical fire service logistics is responsible for the provision of firefighting, rescue equipment and supplies, uniforms, protective equipment, station housekeeping supplies, stationery supplies, etc.

Logistics can also provide other services than just delivery of supplies, including arranging for cleaning of firefighter protective ensembles, refilling of breathing air cylinders, scheduled or unscheduled equipment servicing, required inspection and testing of equipment, firefighter respirator fit-testing, etc. In a volunteer fire department, a good logistics system can be very helpful in reducing overhead responsibilities for volunteer fire managers, allowing them to focus on other priorities.

Logistics also has a pre-planning component. One of the critical roles for logistics in the fire service is not only to track and provide supplies, equipment and services, but also to support emergency operations, or operations of extended duration that require on-scene logistics, for example refueling of fire trucks and feeding firefighters. A logistical system for the fire service needs flexibility and experience in preparing to deal with both routine and non-routine demands.

A good approach is to establish, contacts, contracts and partnerships with businesses which offer warehousing and short turn-around delivery of required materials and equipment. This is especially useful during emergencies for the supply of fuel and meals. It can also be very useful

for the normal supply of PPE components, for example boots and gloves, which could be required in as short a time frame as possible, and in sizes to fit. It is impractical for a fire department to stock all available sizes, but is practical for a large supplier to have these items within their supply chain, and to be able to provide them quickly when needed.

Standing contracts, aka bulk standing purchasing agreements, are the norm for establishing the above noted capabilities. For example, a contract to supply firefighter boots could be established that spans 3-years and stipulates prices, perhaps with an inflation clause, all based on estimated quantities needed. Renewal clauses could be part of the agreement. In such a contract, purchases are preapproved within estimated volume limits (upper/lower) and when a set of boots is required, a simple communications similar to a PO with tracking and billing number is quickly issued to the vendor by an authorized person(s), and the vendor supplies the item by return express within 24-hours, and direct from the warehouse facility. Such a system ensures standardization of equipment, bulk purchasing prices, and quick delivery of critical items, items that fit in the case of clothing. Several such contracts, addressing different needs, should be considered the norm to meet the needs of the fire services.

During the many stakeholders' sessions, logistics was one of the top issues raised and discussed. Related experiences with the past performance of the fire department logistics system in MCC was variable, some positive and some not. Logistics was previously assigned to the position of fire coordinator, one responsibility of several. Anecdotally, there was reliance on a broker to source many of the needed items for the fire department, but it is unknown how this was arranged. In addition, current mechanical service staff also provide some logistical support when needed. Some materials are reportedly held on-hand at Nappan, but *GA* does not know to what extent this is.

Who Provides Logistics

Challenges

A typical regional fire department may have large storage space to keep many items, service providers on retainer, management staff, and have dedicated delivery personnel to provide services on a 24/7 basis. Such a situation would be the ideal, but likely not affordable for MCC.

One alternative might be to have each fire department undertake their own logistics, independently. This approach is burdensome for the local fire chief (or other assigned volunteer), does require specific skills and experience to be efficient and effective, is unlikely to follow County purchasing policy, and is detrimental to the approach that *GA* is promoting in this *Report*; i.e., that of standardization and economies of scale. It is also, in some degree, the current Cumberland situation for consumable items and equipment.

Another approach might be to integrate logistics within other existing staff functions in another department within the municipality. This approach might be sensible if there are such available staff who can be assigned to address the 24/7 needs of the fire department, and with not just week-day availability. The volunteer fire department tends to work what are considered off-hours.

There is also a significant learning curve for fire department needs that municipal staff likely do not yet have. There would also be a need to set priorities very high, above other municipal needs, for servicing the fire department within emergency service expectations. This last tends to not be popular or sustainable to other municipal departments.

The real need is for a functional and cost effective system that addresses fire department needs. The significant distances involved in the County, and the need to supply 18 fire stations, makes the logistics function an organizational challenge if consideration is only from a single point of service. In *GA's* opinion, what is needed is a system that is centrally organized and managed, but more locally delivered; and staffed by part-time and volunteer personnel.

In the 32 stakeholder meetings that *GA* held with fire personnel, the effectiveness of the current logistical system seemed to be perceived by the fire departments as a measure of the County's concern for the fire service and its ability to support them. In many cases, it seemed to be a reflection of that overall relationship. In this sense, logistics will likely remain an important benchmark.

Service Zones

The arrangement shown in *Figure 23* proposes four logistical zones. The zones were selected based on department sizes and proximities, and serves to divide the logistical load into more manageable pieces, and thereby be responsive to fire departments needs.

FIGURE 23: PROPOSED LOGISTICAL ZONES

Zone 1: Logistics Station Springhill	Zone 2: Logistics Station Pugwash	Zone 3: Logistics Station Shinimicas	Zone 4: Logistics Station Parrsboro
Fire stations supported	Fire stations supported	Fire stations supported	Fire stations supported
Springhill Collingwood Southampton River Hebert Joggins	Pugwash Wallace Wentworth Westchester	Shinimicas Truemanville Tidnish Bridge Lorneville Leicester	Parrsboro Advocate Apple River FPW

Staffing for the zones is anticipated to be a combination of part-time staff at the logistical stations, or in the local community, and with cooperation from persons designated in each fire station.

Coordination centrally with MCC staff would ensure the logistical stations are supplied, and that requests from the zones are handled effectively. Regular meetings, i.e., a committee, to discuss issues, needs and process, should be considered as a means of ensuring that consensus is achieved and that the system functions as intended, and efficiently.

It is suggested that an on-line system could be developed to facilitate requests, and to track supplies, costs, deliveries, etc. Many vendors would be able to deliver supplies directly to the logistical centres where they could be further distributed, lessening the need for a central

repository and courier runs to resupply the zones; although, an element of that will still be needed.

Recommendation 63: GA recommends that Cumberland County establish four designated zones for logistical support, and that one station in each of the zones be equipped to support logistical operations for the fire stations associated with that zone. The recommended zones are as follows:

- ***Zone 1: Springhill; supporting also Collingwood, Southampton, River Hebert, and Joggins***
- ***Zone 2: Pugwash; supporting also Wallace, Wentworth, and Westchester***
- ***Zone 3: Shinimicas; supporting also Truemanville, Tidnish Bridge, Lorneville, and Leicester***
- ***Zone 4: Parrsboro; supporting also FPW, Advocate, and Apple River***

Recommendation 64: GA recommends that each fire department and/or station appoint an individual who would be the contact person and coordinator for fire station's logistical needs.

In the recommendation associated with Governance models, each zone would have an appointed part-time staff person who is, in part, responsible for logistics in that zone. See *Recommendation 136* on page *425* of this *Report*.

There will be limits as to what material each logistics station is physically capable of storing, or that is economical to hold on hand. Such decisions will need to be driven by perceived and historical needs for immediate access. Avoidable delays in fire department requests for supplies or equipment should not be a reason for holding extra materials on hand. An efficient system and procedures is likely necessary to facilitate these requests, hence the suggestion of an online system.

Large ticket items such as foam supplies or additional fire hose may not be reasonable to have on-hand in any significant quantity, above what is decided is normal stock. Quick delivery standing contracts (as mentioned above) should be considered for some items that are regularly/quickly needed, but not justified for having on hand. Procedures to support logistics are likely necessary, and should be decided with leadership from MCC, and based on fire service needs, and County policies.

In consideration of the cramped fire station facilities that currently exist, consideration for the use of external shipping containers might be a solution to providing adequate space, and allowing access by authorized personnel, and adequate security. This approach could be

integrated with *Recommendation 97,* on page *346,* addressing the need for PPE cleaning facilities.

In the capital budget projection, the provision of shipping containers is included in *Table 81* on page *612*.

Emergency Logistics

All organizations require and depend on a cost effective and efficient logistics program, especially during mission critical times which tend to be during major fires and other types of emergencies. A seemingly simple item such as supplying bottled drinking water or an energy restorative meal to the firefighters fighting a major fire are needs that should also be pre-identified and suitable arrangements prepared as part of the logistics planning and program delivery. These simple items are not that easy to acquire, ad hoc, at 2 am on a Sunday night.

Proper planning, setting up contacts, providing staff and transportation, providing emergency payment/credit systems, and many other aspects need consideration. Many of these needs are currently dependent on the local community and auxiliary groups to address. The local fire department, if it has access to foresight and adequate local resources, will be well prepared. Many currently are so blessed.

Other, less resourced, fire departments may not have that ability, especially when multiple fire departments in a mutual-aid incident are involved. To best ensure that emergency logistics are available when and where needed, a formal and effective program needs consideration, taking advantage of County-wide resources, such as large rescue trucks that are also[155] equipped for this purpose.

Looking after firefighters' needs is more than just effective for performance. It is also appreciated, reflects well on the organization as a whole, and is a morale booster.

[155] See *Recommendation 37*

DISPATCH SERVICES AND RADIO COMMUNICATIONS

Also see *Appendix 6: Communications* for background information and further discussion relating to this Chapter.

Valley Communications

Valley Communications Inc. (VCI) was established in 1959, then known as the Kentville Telephone Answering Service, to provide emergency call taking with dispatch service to the Kentville Volunteer Fire Department. Other areas of the business developed to provide service to other agencies that required around the clock coverage.

At present, VCI operates as one of four 911 PSAP's (Public Safety Answering Points) in the province of Nova Scotia. They act not only as a Primary PSAP for the town of Kentville and the surrounding area cellular towers, they are the first overflow PSAP for the provinces primary PSAP located in Dartmouth, N.S. and for the Cape Breton Regional Municipality, and act as a Secondary PSAP for the Municipality of Cumberland County.

VCI also provides fire dispatch for approximately 90 fire departments in the counties of Annapolis, Colchester, Cumberland, Hants, Kings, Lunenburg, Pictou, Queens, and Shelburne; and is a secondary 911 answering point for these areas. This translates to 8,000 fire calls per year or 20 to 30 calls per day. VCI also provides telephone answering services to over 100 clients and monitors over 2000 security alarms province wide.

The Municipality of Cumberland County has an active but expired service contract with VCI. The contract extension expired April 30, 2022.

The following are some observations related to the agreement between the municipality and the supplier that should be addressed to ensure an appropriate level of service is maintained.

Service Level Agreement

The current contract addresses service details in two paragraphs, as follows;

> *"2. TERM*
>
> *2.1 "Valley Communications shall provide emergency Dispatch Services for the Municipality twenty-four (24) hours a day, three hundred and sixty-five (365) days a year, during the term of the agreement, which will begin on May, 2016 and shall end April 30,2021 unless it is earlier terminated, cancelled or extended in a manner described in this Agreement".*
>
> *4. Termination Agreement*
>
> *4.1 This contract may be terminated prior to termination date set out in section 2.1 of the Agreement by the Municipality upon the happening of any of the following:*
>
> *(ii) a material breach of any term of this Agreement by Valley Communications.*
>
> *4.2 For clarity, a "material breach" as set out in section 4.1 (ii) of this contract includes but is not limited to failure to comply with any standards required by the Municipality. The Municipality shall provide Valley Communications with seven days written notice to rectify a problem. If the problem has not been rectified on or before the 7th day the Municipality shall at its option be able to terminate this agreement without further notice."*

There are a number of organizations that have established standards that address service issues and performance levels for PSAPs and for emergency services communications centres.

Service Level Performance Standards

The following internationally recognized organizations provide service, performance, and operator training standards for Public Answering Service Points (PSAP) and emergency dispatch services;

- NFPA-1221: Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems,
- NFPA-1225: Standard for Emergency Services Communications, 2022 Edition
- NFPA-1500: Standard on Fire Department Occupational Safety, Health, and Wellness Program, 2021 Edition - Chapter 8 Emergency Operations
- National Emergency Number Association, Inc (NENA)

In addition to the foregoing, the Fire Service Association of Nova Scotia (FSANS) has established standards for emergency dispatch and communication services, and these were accepted by the Provincial Fire Advisory Committee.

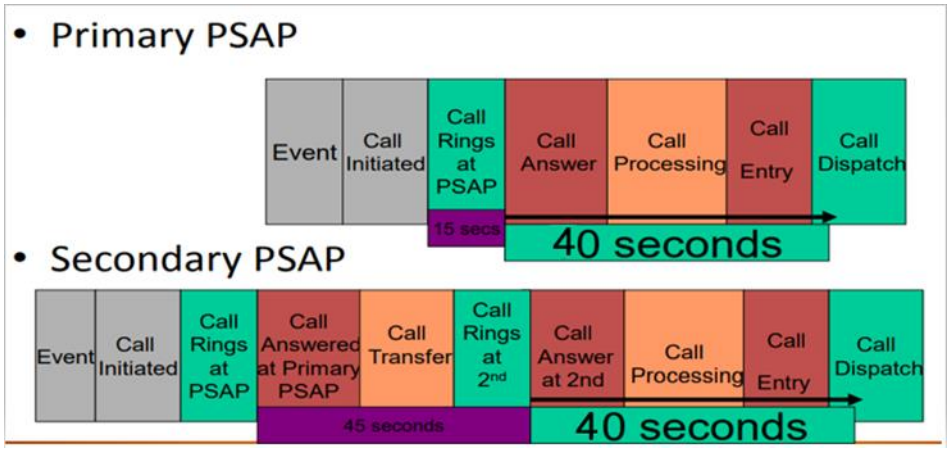
Call Taking and Emergency Dispatch process times

The aforementioned standards require the following PSAP/Dispatch Center performance requirements.

FIGURE 24: PERFORMANCE STANDARDS FOR PSAPS

Organization	Emergency Call Process Time	Emergency Dispatch Time
FSANS	95 - per cent of emergency calls answered within 15 seconds and 99 per cent of emergency calls shall be answered within 40 seconds	Ninety-five percent of emergency dispatching shall be completed with 60 seconds.
NFPA 1221	95 - per cent of emergency calls answered within 15 seconds and 99 per cent of emergency calls shall be answered within 40 seconds	Ninety- percent of emergency call processing and dispatching shall be completed within 60 seconds, and 99 percent of call processing and dispatching shall be completed within 90 seconds.
NFPA 1225	90 - percent of events received on emergency lines shall be answered within 15 seconds and 95 percent of events shall be answered within 20 seconds	
NENA	90 percent of all 9-1-1 calls be answered within 15 seconds and 95% answered within 20 seconds.	

FIGURE 25: PSAP TIME STANDARDS



Fire Dispatch Requirements

There are a number of mission critical service deliverables required of any Fire Dispatch Centre.

- Receiving 911 calls from the Primary PSAP
- Dispatching of the appropriate fire departments and equipment as per fire department protocols.

- Recording all radio and communication traffic
- Incident communications support by contacting additional resources and agencies requested by the on-scene incident commander, including the updating of incident elapsed times to the incident commander for his reference
- Reports: Provide copy of the incident call and dispatch report, with time of call, type of incident, fire departments, and other emergency agencies dispatched, timings for all benchmarks

Receiving: VCI serves as one of the province's primary PSAPs. However, all of the emergency 911 calls for fire services within MCC's jurisdictional boundaries are generally received by the province's main PSAP, operated by the RCMP in Dartmouth, and the call is then transferred to VCI for fire dispatching.

VCI appears to be receiving and processing the calls appropriately.

Dispatching: VCI, under contract with MCC, is providing fire dispatch and fire communications as per the protocols established between the individual fire departments and VCI. *GA* has not received any complaint from any MCC fire department relating to VCI performance with dispatching. *GA* does not know to what degree, if any, that MCC was involved in developing dispatch protocols between the fire departments and VCI. VCI reports that they have done coordination between fire departments for new protocols dealing with automatic-aid.

Recording: VCI is currently recording any and all 911 telephone call transfers from the Primary PSAP and all radio traffic between VCI and the fire departments.

Incident Support: VCI acts upon any requests received from incident commanders and other officers on scene of any emergency.

Note that NFPA-1802[156] has a requirement for the dispatch centre to notify the incident command at 10-minute elapsed time intervals during the progress of the incident. This service is not currently being provided by VCI. However, this is not a requirement of the current contract.

[156] NFPA-1802; *Standard on Two-Way, Portable RF Voice Communications Devices for Use by Emergency Services Personnel in the Hazard Zone*

Reports: Upon completion of the incident, VCI emails incident communication reports to the primary fire department that includes times, date, and caller information. No known other types of reports are provided. These reports could be provided in an electronic data format.

Contract Considerations

In *GA*'s opinion the current (expired) contract lacks service definitions and certain processes as follows:

- There is no definition that defines "Shall provide Emergency Dispatch Services"
- There is no reference to the provision of emergency communication services.
- There is no clarification on how they are to keep the records, who has access, who does the auditing of the records and who manages quality control related to records management.
- There are no service level performance requirements, such as time required to process receipt of a 911 call, to time of dispatching the appropriate services
- There is no requirement requiring level of training and or qualification of operators
- There is no record or copy of a signed non-disclosure agreement.
- No reference to the storage of copies of digital recordings, where are they to be kept for the duration of the Agreement.
- What is the process for by the Municipality to access the digital recordings and or incident reports?
- There should be a designated municipal person to be the liaison between VCI and the fire departments.
- There should be a designated municipal person to have access to and obtain copies of recordings and reports.
- The Municipality should have the ability to review VCI Standard Operating Guidelines and Procedures and updates, as a minimum, annually, or as a result of a relevant service issue.
- The contract does not identify what party supplies what equipment, software, etc. and who is responsible for maintenance.
- There are no clauses fixing limitations on liability or indemnifications.

Contract Recommendations

The following recommendations are based upon the appropriate industry recommendations and service needs. Recommendations relate to both parties; the parties will need to review and determine cost benefits in addressing the recommendations.

Recommendation 65: GA recommends that Cumberland County move towards a Fire Dispatch Service Level Agreement that addresses the missing elements noted in this section of the Report.

Radios Equipment Needs

Portable Radios (handhelds)

Currently there is a practice where a couple of departments assign portable radios to individual members, who then take them home with them. These departments do have pagers assigned to members. This practice could lead to radio shortages on the fire ground if all members do not respond to the incident, or they do not bring the radio when they respond.

Recommendation 66: GA recommends that only Chief officers should carry personally assigned radios. If the Chief officer(s) are not going to be available for a period of time then they should pass the radio off to another department officer during his/her absence.

All firefighters operating in the warm and hot zones are recommended by NFPA-1500[157] to have their own portable radio while working in those respective zones. This is for safety reasons.

One methodology to determine the number of portable radios needed for each department is to match the warm or hot zone staffing needs to actively manage the incident, while doing so safely as per NFPA-1500. In other words, an estimate of the numbers of firefighters needed to manage the incident, independently of specific fire department considerations. The incident effectively does not care which fire department is there, and staffing needs are independent of in which fire jurisdiction it occurs. This approach would develop a generalized measure of radio needs basis incident demands.

Portable Radio Needs for Firefighting

In any fire incident response, the most mission critical phase is the initial response (i.e., first alarm) of a primary fire department, which is followed-up, over time, by additional members of the fire department arriving, and also by supplemental apparatus and firefighters from other fire departments, whom will also have their department's radios with them. The focus then is what is

[157] NFPA-1500: *Standard on Fire Department Occupational Safety, Health, and Wellness Program, 8.2.2 Communications; 2021*

the required number of radios needed for each department for initial response and incident support. It is important to understand that not every staffed position within the response requires a portable radio at an incident; nor does every member of the fire department respond to any given incident.

Included in the consideration is the focus on safety, operational needs, communication efficiency and costs. The standard for volunteer fire department based services is NFPA-1720.[158] The following *Table 32* from that standard is repeated here for convenience. Please see the original discussion starting on page *129* for a better understanding.

TABLE 32: REPRISE, NFPA-1720 STAFFING AND RESPONSE-TIME[159]

Ref. Obj.	Demand Zone	Demographics	Minimum Staff to Respond	Response-Time (minutes)	Staffed Station160 Turnout-Time (sec)	Meets Objective (%)
A	Urban area	>386 people/km2	15	9	90	90% of responses
B	Suburban area	193-386 people/km2	10	10	90	80% of responses
C	Rural area	<193 people/km2	6	14	90	80% of responses
D	Remote area161	Travel distance ≥ 12.9 km	4	Distance determined	90	90% of responses
E	Special risks	As determined by AHJ162 policy	Based on risk	AHJ determined	90	90% of responses

Employing the above table and giving consideration to a *Rural* demand zone area single family dwelling unit, there is a requirement for a minimum number of staff to respond. This requirement is an initial response of a pumper, (with 1 driver/operator) and a tanker (1 driver/operator) and 4 other staff (e.g., firefighters). This totals 6 initial responders, from the primary fire department. As a minimum then, a *Rural* demand zone fire department needs to man a pumper and a tanker as part of their First Alarm commitment, for 80% of their responses.

The initial response of 6 fire department members, will provide for an incident commander, 2 driver/operators and 3 firefighters. Typically, 2 firefighters are needed for interior firefighting and 1 fire fighter, along with the incident commander, will form part of the required back up team.

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[158] NFPA-1720; Standard for the Organization and Deployment of Fire Suppression Operations, Emergency Medical Operations, and Special Operations to the Public by Volunteer Fire Departments.

[159] Adapted from NFPA-1720 by *GA*. Mile based population densities and distances were converted to equivalent kilometer based.

[160] This column could apply to Amherst who has a staffed station.

[161] With relative accuracy, these areas can be quickly identified in the *Cumberland GIS Travel-Time Map* on page *49* of this Report as areas which are beyond the 10-minute travel-times from rural fire stations. Google Maps is also a useful tool for quick estimating.

[162] AHJ = authority having jurisdiction.

This all only works if all responders are qualified for their tasks; for example, qualified to perform interior firefighting operations, pump operations, etc.

For the above scenario, 6 portable radios are needed by the first alarm crews of the primary fire department. Although most pumpers have mobile radio access at the pump-panel, many times it is advisable for the driver/operator to have access to a portable radio to allow them to move about the truck without loosing contact, especially if minimally staffed.

In addition to the above first alarm need of 6 portable radios, the fire department total number should also include 1 additional portable for each fire department chief officer (MCC fire department average is 3 chiefs), and a 30% additional number in reserve to use at the scene and/or to replace portables that are out of service or go out of service at the incident. That is a total of 12 portable radios, for the standard *Rural* demand zone fire department.

There are three departments that are classified as having *Urban*/*Suburban* demand zone areas; Springhill (urban), Parrsboro, and Pugwash. Looking again at *Table 32*, above, the NFPA-1720 table has increased first alarm response numbers for these demand zones. Using the same basis as for the rural fire station, these stations each need to be equipped with approximately 20 portable radios.

Mobile Radios, (Vehicles)

Each fire apparatus should be equipped with a mobile radio to facilitate communications with an incident commander or to coordinate with other apparatus. A fire apparatus designated as a command support unit (typically a rescue type vehicle) may have additional mobile radios installed to allow access to different frequencies for inter-operability needs; for example, marine radio. The TMR radio system does eliminate a lot of the interoperability concerns of the past, by facilitating connection between the usual different response organizations.

Base Stations, (Fire Stations)

Each fire station should be equipped with a base station. Depending upon the fire station configuration and the base radio model it is possible to have one base station with dual control heads and microphones, that would permit more than one location within the station to access a single base station. All fire stations appear to be equipped with VHF base stations, and a few with TMR base stations.

Spare Radios and Parts inventory

There should always be a supply of spare batteries, chargers, remote microphones, antennas, radio carrying cases and radio case carrying straps available. For cost efficiencies these should be in a centralized stores.

Marine Radios

There are 6 fire departments that have inshore rescue boats that require communications and coordination with the Canadian Coast Guard and other marine rescue organizations, who use VHF radio frequencies. It is imperative, that each inshore rescue boat has a Marine VHF mobile radio. The marine radio has numerous pre-programmed marine operating channels.

The fire department may need a Maritime Mobile Service Identity (MMSI), nine-digit ID number, that identifies the fire department boat. It's programmed into the marine radio. Requirements for this will vary with boat size. A portable radio is also recommended, associated with each boat, for on-shore coordination usage by an incident commander/officer.

Recommendation 67: GA recommends that Cumberland County equip each inshore rescue boat with a Marine VHF mobile radio with appropriate frequencies for their geographical area. In addition, one portable radio is also recommended per boat, for use by an officer coordinating from the shore, and equipped with the same frequencies as the boat marine radio.

Communication Standardization

Standardization is often the underappreciated key to success. Standardization doesn't just improve safety, it also boosts quality, productivity, and maybe surprisingly, it boosts morale when everyone is treated equally.

Communication standardization is not just about standardization of the radio equipment, but includes standardization of the operating system types; in the case of current MCC fire department practice, specifically TMR and VHF systems. Both are in current use in MCC fire departments, simultaneously. The next section explains the differences.

An important issue in deciding on a standardized system is interoperability. Having the ability to communicate directly with other fire departments and with other emergency response agencies[163] is mission critical and enhances firefighter and public safety. The need for interoperability can instigate the use of multiple systems to accomplish this, yet at the same time this also interferes with this objective by complicating things.

Standardization of equipment lessens the need for training on the radio use, as there are fewer aspects to learning and more standardized instructions. It minimizes the need maintain an inventory of unique parts for multiple radio makes and models. Standardization lowers costs and simplifies logistics, both organizationally, and at the scene of an incident when something as simple as a battery needs changing; which can become impossibly complicated when the proper battery is not there with you.

On May 21, 2008, Cumberland County Council approved a *Fire Service Standardized Equipment Policy - FS 08-02*. *GA* believes this policy has not been repealed, as no evidence of that was found. This policy appears to have started the requirement for the standardization of eight equipment types; one of which included fire department radios. Sentence 4 of the policy states,

[163] The primary need is the communications with other fire departments and with Natural Resources. Secondarily is the need to communicate with EHS, and then police. Direct communications between fire departments and police/EHS agencies is usually only done at the command officer level, but on occasions it is needed further down the commend chain. Interoperable radio equipment facilitates this capability.

> *"Item 4 - The municipality, when approving all Department annual Budgets, shall only approve Standard equipment acquisitions in accordance with this policy and the standard specifications."*

To date there is no apparent standardization of fire department radios, either in operating system, nor in make/model of equipment. Fire departments appear to be purchasing that they decide is best at that time, and not always with municipal funds.

VHF and TMR Fire Radio

The various fire departments in Cumberland use two different radio systems, (a) a VHF system where each fire department uses their own licensed frequencies (aka channel), and (b) the province-wide multiagency Trunked Mobile Radio (TMR) system.[164] They tend to use both systems at the same time, and to do this, different equipment is needed. In other words, two sets of radio equipment are needed, with officers and some firefighters carrying and using two radios.

If a fire service is switching back and forth between different operating systems during an incident, it is a potentially major safety issue. Switching systems can cause lapses in concentration, attention, and physically hearing messages, especially as a complex incident progresses. This can cause a lack of continuity between the Dispatcher, firefighters, and incident command. A missed conversation that results in a missed response to critical information, inadvertently, due to listening/focusing at that moment to the 'wrong' radio system/equipment can have tragic outcomes at worst, and confusion or delay at best.

GA's opinion on this issue is supported by a number of anecdotal recounting of times where miss-communications does occur, and it is not an infrequent occurrence. This has happened in other jurisdictions as well who have operated similarly to some MCC fire departments; employing two different radio systems on the fire ground at the same time. *GA* has heard fire officers and firefighters speak of trying to answer a radio call and using the wrong radio, of missing parts of transmissions because the incident commander or another officers is speaking on one system

[164] VHF is an acronym for very-high-frequency with fire department frequencies in the 140-160 kHz range. TMR frequencies are in the 700 mHz range. Generally, portable radio equipment cannot operate effectively in both frequency ranges, although very expensive dual-band fire department radios are starting to become available.

while another is attempting to call them on the another. It is apparent that this will inevitably happens where more than one system is used.

GA is recommending that only a single system be utilized.

IamResponding

Most/all MCC fire departments use the cell-phone based emergency alert system application called IamResponding. It is a fire service alerting system specifically designed for fire departments. There are a number of similar applications available, and they all work in conjunction with the dispatch contractor's computer aided dispatch (CAD) software or with a separate dashboard. Some vendor's software even permits the fire department to self-dispatch, which might be an acceptable back-up option.

The main function of these systems is to notify responders of an emergency and the location of the emergency. In that sense these systems are an adjunct to existing radio pager notification.

They also have the ability for the firefighter to report back on their availability, something that a pager cannot do. This could have value for an incident commander as well as others. For example; depending upon firefighters reporting their responding status, a fire apparatus at the fire station may decide to stay put for a few more moments and wait for additional responders, or it may recognize that responders will meet them at the scene, and the apparatus will roll immediately.

Accessed through a computer or mobile device app, the fire station, chiefs, officers and dispatchers can see who has indicated their response status, optionally linked to their level of certification/qualification, the time that they reported they were responding, and where they are headed (station or scene).

When utilized and available, such information facilitates decisions on whether or not there will be adequate resources enroute to the incident, or whether there is a need to request additional

assistance. In a volunteer fire department, these are up-front fundamental issues for every incident.

GA have been advised through the stakeholder meetings, and through the dispatch contractor, that currently most, or possibly all, MCC fire departments are not using the *Who is responding* feature described in the prior paragraphs. When *GA* questioned the fire department stakeholders on this point, there seemed a general lack of knowledge on this capability, for unspecified reasons.

These digital systems are internet accessed, and depend on cell-service, internet access, and the Vendor's remote cloud-based system; all having adequate up-time reliability, and with County-wide coverage for firefighters.

There appears to be three main options in North America that are currently being employed by firefighters;[165]

- IamResponding, - Dewitt, New York
- FireTextResponse (FTR) – Sumner, Illinois
- FireQ – Sydney, Nova Scotia

All three offer the basic standard emergency alerting system. And all three appear to offer information management tools and reports. The main variation between the competing systems seems to revolve around these additional features.

Digital vs Pager Alerting

Currently, firefighter alerting is executed via VHF radio paging, using a traditional 2-tone DTMF[166] encoder that triggers firefighters' pagers to alert them. This is a time-tested and proven system for alerting firefighters, and is generally very reliable and robust. There are numerous VHF towers in Cumberland that support this system, and generally the coverage is very good.

[165] *GA* does not endorse any product. Any reference to any product is for illustrative or information purposes only.

[166] DTMF; dual tone multi-frequency:

There are some reportedly some areas in Cumberland with coverage deficiency on this system, areas where the VHF signal does not penetrate well. That is the nature of radio waves and mountainous terrain that is prevalent in eastern Cumberland, as well as influence from some buildings that can shield radio penetration. *GA* does not know the extent of this issue.

There is the temptation to use a digital mobile phone based alerting system in lieu of paging. There are advantages, as already discussed in the previous section. However, this system also has coverage losses, possibly more so than the VHF paging system since the cell provider focuses[167] on population centres and major roads for coverage priority. *GA* noted a number of cell-coverage issues when doing stakeholder interview travels in Cumberland, but that is not a definitive yard-stick.

What might be of most value is consultation with the firefighters. Many do not own "smart" mobile phones, and in their occupations would not do so, or carry them with them. A typical iPhone is twice or three times the price of a Motorola Minitor pager that the firefighters use, and lasts about 1/3 as long. In addition, the County buys the pagers, and not the mobile phones.

Properly specified pagers are intrinsically safe, meaning they will not ignite hazardous vapours. Smart phones are not safe in dangerous atmospheres. A message can be relayed over a pager, with no intervention by the wearer, and with a button push the message will play back as many times as wanted. A mobile phone will require the wearer to answer the communications before they can be made aware of its content, leading more easily to delays and call screening, and is dangerous while driving. The current use of digital alerting is time consuming since the dispatcher needs to type in a message and send it out. For this reason it is the last thing that the dispatcher does when alerting. Paging is a verbal process, and is done at the front-end of the dispatching process.

In *GA's* opinion, the current practice of paging, followed by digital alerting is a redundant system, and for that reason is a good system. The access to responder information that comes with the digital option is valuable, and desirable, but must come second to actually having the volunteer

[167] https://www.bell.ca/Mobility/Our_network_coverage

firefighters rapidly responding because they received the page over their pager. Both systems should be supported.

Fire Radio and Unit Identification System

A system of standardized identification of trucks and personnel is required to avoid errors in radio communications that could lead to confusion or lack of understanding, and thereby to unwanted consequences.

To aid in standardization across the county, fire apparatus unit numbers and radio assignments by rank and position should be established. A draft of MCC's own communications guideline was developed in April of 2006 and partially reiterated in another draft dated January 16, 2009. Neither initiative appears to have taken root in all fire departments. Many are still going their own way in this area.

As part of this fire services *Review* the fire departments were requested to complete a radio inventory which included the radio IDs of each piece of radio equipment. Of the ten departments that completed their requested data worksheets, only five provided the requested radio or unit identification. Four of the five departments had not implemented nor do they follow the 2006/2009 guidelines. The fifth fire department implemented only a portion of the *Guideline*.

The following detail is being recommended as a guide for implementing a standardized, County-wide, radio use identification system for all fire apparatus and officers in the MCC Fire Services.

Fire Stationing Numbering

The purpose of numbering fire stations is to assist in the associated fire apparatus and personnel radio identification. Ease of communications and a standard structure is the basis for the program. The numbering system starts with a single-digit station number (i.e., 1) and progresses up to two-digits (i.e., 18). The station number assignments in the 2006/2009 draft MCC guidelines should be implemented, and is extended for use in the following discussion and examples.

Fire Apparatus Identification

In furthering the standardization of radio communications all fire units should be classified by their capabilities, and then ID numbered accordingly. Taking this approach assists the incident commander (IC), who is aware of incoming fire apparatus to his incident, with what the basic capabilities of that apparatus is. The IC can then assign it appropriately.

TABLE 33: PROPOSED FIRE APPARATUS NUMBERING BY TYPE AND CAPABILITY

Unit Type	Capability	Unit Numbering Series
Initial Attack Apparatus	All	11 - 12
Pumper	Pumping capacity maximum 1050 Igpm	13 - 15
Pumper	Pumping capacity minimum 1250 Igpm	16 - 19
Pumper-Tanker & Tanker	Water tank between 1100-2000 Igal	20 - 25
Pumper-Tanker & Tanker	Water tank larger than 2100 Igal	26 - 29
Rescue	Light capacity (single-axle), 12ft body	30 - 35
Rescue	Medium or Heavy capacity, 14 ft body+	36 - 39
Aerial Ladder/Snorkel/Platform, etc.	All	40 – 42
Quint	All	43 – 45
Utility	All	50 – 52
ATV/RTV/UTV w/wo trailer	All	53 – 55
Special Vehicles (dedicated purpose only): i.e. Command, Rehab, Tactical	Example; Command 271	56 – 59
Boats	Example; Marine 2 (i.e. Pugwash)	Station number

Examples of applied IDs:

Station	Current ID	Recommended ID	Radio Phraseology
Wallace	Truck 3	Pumper 113	Pumper one-thirteen
Wallace	Truck 1	Tanker 120	Tanker one-twenty
Springhill	Quint 1	Quint 1543	Quint fifteen-forty-three
Pugwash	Boat 6	Marine 2	Marine two
River Hebert	621	Pumper 616	Pumper six-sixteen
Lorneville	Truck 2	Attack 511	Attack five-eleven
Wentworth	Truck 4	Pumper 1413	Attack fourteen-thirteen
Collingwood	Truck 2	Tanker 1220	Tanker twelve-twenty
Westchester	Truck 1	Rescue 1330	Rescue thirteen-thirty

Position Radio Call Signs

As with any fire organization, there are several identifiable positions, especially at an incident. All positions need to be clearly identified (position ID) and standardized across the County. Whereas the fire service is a hierarchical, and paramilitary organization, so must be the radio call signs be so.

Again, the use of fire station numbers come into play. The use of phonetic lettering and numbers may be used in some of the radio identifications.

TABLE 34: PROPOSED PERSONNEL POSITION IDENTIFICATION

Position	Prefix	Call-Sign Identification Numbering Series
Director of Protective Services	None	Chief 1
Administration Deputy/Assistant Chief(s)	None	Chief 2, 3, etc.
Local Fire Chiefs	Station ID	01
Local Deputy Chiefs	Station ID	02, 03
Local Assistant Chiefs	Station ID	04, 05
Captains/Lieutenants	Station ID	06 - 10
Firefighters	Station ID	Accountability tag ID

Pump Operators/Drivers

Drivers/operators assume the fire apparatus unit ID designation. For example, a Pumper is assigned an ID number of 613, then the pump operator's portable call sign would be "Pumper 6-13." A driver of a Rescue unit with a call sign of 1330, then the driver would have a portable Radio ID of "Rescue 13-30."

Line-Officers (Captains, Lieutenants)

If a Lieutenant responds, the radio ID would prefixed by his/her station ID and then followed by their pre-assigned rank ID. For example; responding on River Hebert Pumper 616 is a Lieutenant with a Radio ID of 608. This Lieutenant would have the same Radio ID if he responded on any other vehicle.

Communications Summary and Recommendations

All requests for emergency services commences with a 911 call. Once the call is placed the expectations of the public are extremely high. Emergency call-taking, dispatching and radio communications must be efficient, timely and very effective.

If any part of the process that goes awry, a chain of events can start that could, as a worst case scenario, cost either a citizen's or a responder's life. A delay in response, responders sent to an incorrect address, or a firefighter's May-Day call being missed are all possible consequences of not having adequate and reliable equipment, proper training, vetted procedures, and of having people not adhering to them. Effective and efficient communications is the incident commander's best tool in the tool box to manage an incident, and to protect citizens and responders alike.

Communications must be a disciplined process right from the time a call is received for service, to completion of the event. It is a total collaborative process. In addition to being a tool and process that permits talking and listening, the process if properly equipped and managed, allows for analytics that permits the organization to establish key performance indicators and adjust service needs and levels according to a past history of events. A good quality computer aided dispatch software (CAD) and an integrated fire department records management system (RMS) permits an efficient means for not only capturing data, analyzing data, but could aid in the defense of any civil suit or investigation.

Emergency Services communications are mission critical for successful outcomes of incidents and enhances the safety of firefighters. Portable radios are akin to protective safety equipment such as PPE (bunker gear) and SCBA; they are part of the safety equipment required by firefighters.

The need for standardization of radio systems, radio equipment, radio usage and procedures, are all key components to enhance safety of both the firefighter and the public.

As a result of this review of the dispatch and communication systems and procedures, several recommendations are provided for consideration in addressing some of the issues referenced.

Recommendation 68: GA recommends that Cumberland County take over full responsibility and ownership of all fire services emergency communications components, including; the dispatch services contract, any other related communications services contracts (e.g., repeater towers and radio agreements); the fire service emergency alerting software contracts (currently IamResponding); all communication equipment that is not provincially owned, including; base stations, mobile and portable radios, fire department pagers, and any related software programs and equipment. Independent purchasing and use of other than approved County equipment should be prohibited.

Recommendation 69: GA recommends that Cumberland County ensure that that all radio bases, mobile and portable radios are appropriately licensed with Industry Canada, as is required by Federal Regulation, and further that the former Fire Service Coordinator's name be removed as the contact authority from all licenses. It is recommended that the municipal clerk position be so named, or other suitable position.

Recommendation 70: GA recommends that all Cumberland County fire departments cease the utilization of VHF radio systems, except for the use of the paging services to alert firefighters and the use of Marine radio for marine incidents; and further that all fire service operations should convert exclusively to the use of the TMR system.

Recommendation 71: GA recommends that Cumberland County evaluate the need for TMR vehicular repeaters if there are TMR communications black spots. If their use is indicated, GA recommends that these be purchased and installed in appropriate vehicles, in the affected fire departments.

Recommendation 72: GA recommends that Cumberland County investigate and implement a contract for the servicing and inspection of all radio equipment on an annual basis, and as needed for breakdowns.

Recommendation 73: GA recommends that Cumberland County develop a capital replacement plan for the current TMR portable radios; to be replaced with portable radios that meet current standards for firefighter radios; and more specifically, ensure any and all future firefighter portable radio acquisitions meet the requirements as spelled out in NFPA 1802: Standard on Two-Way, Portable RF Voice Communications Devices for Use by Emergency Services Personnel in the Hazard Zone.

Recommendation 74: GA recommends that Cumberland County provide sufficient radios to meet the incident response needs of the fire departments, and that procedures and guidelines be established to ensure that each fire department deploys such radios to meet the needs as outlined in NFPA-1500 Standard on Fire Department Occupational Safety, Health, and Wellness Program - Chapter 8 Emergency Operations, which requires all personnel in the warm and hot zones have a portable radio. A starting basis for the required numbers of TMR portable radios is discussed in the section Radios Equipment Needs in this Report.

Recommendation 75: GA recommends that Cumberland County ensures that any and all VHF pagers and associated batteries that are purchased and placed in service for Cumberland firefighters are labeled (ULC)

and comply with Standard CAN/CSA-C22.2 No. 157-92 (R2016) Intrinsically safe and non-incendive equipment for use in hazardous locations. This feature is an available option on current Motorola Minitor pagers and requires compliant replacement batteries.

Recommendation 76: GA recommends that Cumberland County implement a consistent and standardized radio/unit/officer ID system similar to what is proposed in this Report.

Recommendation 77: GA recommends that Cumberland County implement a radio parts inventory for appropriate spare radio and pager parts that are commonly needed and field serviceable. These parts are not generally quickly available and can cause avoidable down-time without quick access to parts such as batteries, chargers, remote microphones, and antennas, and etc.

Recommendation 78: GA recommends that Cumberland County require the fire dispatching services to copy the designated person at MCC fire administration with copies of all fire reports and communications sent to fire stations.

Recommendation 79: GA recommends that Cumberland County work with Valley Communications, EMO - 911, and the Minister of Health, to facilitate changes needed to enable Valley Communications to receive all ALI/ANI digital 911 information that is currently being withheld and therefore requires the manual transfer of phone call information, possibly leading to avoidable errors and fire service delivery delays.

MEDICAL FIRST RESPONSE

The EHS Medical First Response (MFR) program is a provincial-based program that serves to enhance pre-hospital patient care provided by the Emergency Health Services. The MFR system in Nova Scotia is a program that responds non-ambulance personnel to a life-threatening emergency situation if they are closer than paramedics, to rapidly stabilize the scene and/or patient(s), to provide relevant medical information to paramedics before and when they arrive, and to support paramedic care on scene after paramedics arrive.

Although dominated by the volunteer fire service; MFR first responders can also include police/RCMP, life guards, security guards, etc. Trained personnel are certified as Medical First Responders (MFR)'s.

Within the Municipality of Cumberland County, MFR is provided by all of the sixteen fire departments and by the three fire departments who have been providing fire and MFR services to parts of the County under a signed agreement.

The Core Business of Fire Departments

The *Fire Safety Act* of Nova Scotia[168] defines a fire department as an organization that provides fire suppression services. It further defines “fire suppression” as an organized emergency response for controlling and extinguishing fires.

The *Municipal Government Act* §3(af)[169] says a

> "fire department" means an incorporated body that provides fire services and that may, at its option, provide one or more other emergency services, and includes a fire or emergency services department of a municipality, village, fire protection district or other body corporate.

[168] CHAPTER 6 OF THE ACTS OF 2002 amended 2007, c. 10, s. 3; 2008, c. 10, ss. 53, 54; 2014, c. 34, s. 9; 2018, c. 1, Sch. A, s. 111 An Act to Promote and Encourage Fire Safety Municipal Government Act, Interpretation 3 (o), (u)

[169] Municipal Government Act CHAPTER 18 OF THE ACTS OF 1998

> *3(ah)170 "fire services" means services related to the prevention and suppression of fires;"*

The definitions state that the sole purpose of the fire department core business, (its raison d'être) is the prevention and suppression of fires. Although other services are not expressly precluded, fires is the primary focus.

It is therefore contingent upon fire departments to ensure they have proper numbers of members available to respond, that departments have the right equipment, maintain the equipment and train to ensure the firefighters know how to use the equipment to control and extinguish fires, and associated life-saving.

The Nova Scotia fire services, generally speaking, in the sixties and the seventies provided basic firefighting and fire prevention services and responses to motor vehicle collisions and what can be described as emergency (basic) first aid services in both suburban and rural areas. The first aid services were just that, basic first aid, which included some basic trauma equipment and a basic piece of oxygen supplying equipment known as a resuscitator. Often it was the responding fire department that called one of many private ambulance services in their area (many were operated by funeral homes) to respond.

The reason for these additional (non-fire related) services being delivered by fire departments, were based upon needs, as a result of requests for services when there were no other organizations providing same.

January 15, 1972, NBC Television network launched the series "Emergency". This series was about emergency medical services (MFR) being provided by the Los Angeles Fire Department.

The series generated overwhelming response amongst individuals who had an interest in emergency medical services, and they started joining the local volunteer fire departments. The down-side of the series was citizens were expecting the same service and service level from their local fire departments. Over the years, fire departments enhanced their medical service levels by

[170] Municipal Government Act CHAPTER 18 OF THE ACTS OF 1998

providing a means of transporting patients to the closest hospitals, this included the purchasing of ambulances by some departments.

Legislation at the time was not restrictive, as with today's legislation, and did not stop fire departments from providing additional, *value-added* services or services of opportunity that went beyond that of a fire department's core business.

Fast forward to 1999, the Nova Scotia *Municipal Government Act*[171] amended legislation to include Emergency Services and required body corporates to apply for Registration with a municipality to provide fire and emergency services. This legislation was a move to recognize the de-facto existence of many volunteer fire departments, most particularly in rural areas. It augmented the *Rural Fire Districts Act* as a means to achieve fire services in already organized municipalities. In the legislation, the alternative was for the municipality to provided the emergency services itself.

As part of the MGA recognition process, Registration with the municipality involved a stipulation of services that were intended to be delivered. One of these was medical first response (MFR).

Current MFR Program

Emergency Health Services (EHS) is a branch of the Nova Scotia Department of Health tasked with providing emergency medical services. It is also responsible for transportation of patients between hospitals and medical facilities. At present, all ground ambulance and air ambulance service in Nova Scotia is contracted by EHS to Emergency Medical Care Incorporated, (EMCI), a subsidiary of Medavie Health Services which is owned by Medavie Blue Cross.

[171] *Municipal Government Act*. CHAPTER 18 OF THE ACTS OF 1998 as amended. See *Ch 6: Governance* for an in-depth discussion on the *MGA* and the Registration process, etc.

The Current provincial MFR program falls under the Minister of Health and Wellness' authority as outlined in the *Emergency Services Health Act*.[172]

Interpretation 2 in the *Act*,

> *"(d) "emergency health services" means the arrangement of personnel, facilities and equipment required for the effective, co-ordinated delivery of services provided by registered pre-hospital first responders and by paramedics and other health professionals pursuant to this Act and required in the prevention and management of medical, trauma and health conditions."*

Standards for management, operation and use of ambulances

> *"5 (1) Subject to the regulations, the Minister may establish standards for the management, operation and use of ground and air ambulances providing emergency or non-emergency services, for emergency health services and for communications-centre services and for any equipment, supplies and facilities required to provide the services and ensure compliance with those standards and, in particular, establish standards respecting;*
>
> *…*
>
> *(d) emergency and non-emergency ambulance communications and dispatch;*
>
> *(f) medical first response;…*
>
> *Assistance with services and training*
>
> *8. The Minister may assist hospitals, other health institutions and agencies, municipalities and other organizations and persons to provide emergency health services and to train personnel to provide services, and to enter into agreements or arrangements for that purpose.*

MFR Agency Sponsorship Registration

There are two types of agencies that could apply to provide Medical First Responder programs;

- Fire department MFR Agency or
- Community-based MFR agency.

A community-based agency is typically a group of like-minded citizens who volunteer to respond to medical calls within their community, separate from any other agency or organization. The organization must meet and agree to a number of criteria, including 24-hour,

[172] *Emergency Health Services Act* CHAPTER 5 OF THE ACTS OF 2005 An Act Respecting the Provision of Ambulance Services and Emergency Health Services, April ,1, 2017

seven day a week coverage in the area of coverage proposed, the application is approved by the area municipal government, and the level of response requested is maintained.

Response Level Choices

During the registration process, the proposed MFR agency can choose one of the following levels:[173]

- Immediate Life Threat
- Time Critical
- Urgent/Potentially Serious
- Less Urgent
- Non Urgent

If the registered fire department choses to respond to all Non Urgent incidents, they are effectively opting to respond to most MFR calls in their area; i.e., to the largest number of MFR incidents. On the other hand, if the fire department choses to respond to only Immediate Life Threat incidents, they are opting to respond for only the most critical case calls; i.e., to the least number of MFR incidents.

After a fire department applies to be registered as an MFR provider, the application is evaluated and presented to the EHS' Medical First Responders Stakeholder Relations Committee.

There is a level of response that is not truly part of the MFR program; it is an "ALL AGENCIES" level. Such a response might be to a serious motor vehicle collision. At that incident the fire department has several possible roles, one of which might also be MFR, although firefighting and scene safety will take precedence.

Again, regardless of MFR level chosen, the fire department will usually be requested for any of the following incidents, due to the fire department's unique capabilities.

- Motor Vehicle Collision
- Fire or Explosion

[173] These levels correspond to CTAS levels I through V; https://novascotia.ca/dhw/publications/Emergency-Care-Standards.pdf , see page 12.

- Haz-Mat or related rescue type situation
- Electrocution
- Confined Space and industrial extrication
- Request of paramedics
- Any other situation in which the Medical Control Centre Watch Commander suspects might require the presence of a fire department.

So, even if a fire department does not decide to register for the MFR program, they will likely still be responding to incidents where there are patients.

Requirements For MFR Responders

Initially, all personnel providing MFR services must have successfully completed a training program by an EHS approved training agency, (Canadian Red Cross, St. John Ambulance, or Rescue 7). This is followed by additional EHS practical training, known as Bridging; to familiarize the responders with the use of the tools/equipment provided by EHS to MFR participants.

The initial training agency's MFR acceptable course is of 40 hours duration. The cost for this training is approximately $500 per person. After the initial training, there is an ongoing tri-annual renewal requirement. Renewal certification consists of 20 hours of training and an examination. The recertification cost is approximately $255 per person.

Approximately four years ago, EHS offered a lower intensity training program, now termed MFR lite.

MFR lite requires Standard First Aid, with CPR and AED training, for a total of 16 hours, followed by an additional eight hours of Bridging training. MFR Lite training is provided free of charge by an EHS/EMCI facilitator, resulting in a total of 24-hours of training commitment by the MFR agency member for everything. The Standard First Aid, with Level C CPR and AED training is approximately $160.00 per person through St. John Ambulance.

EHS Support for MFR

The Province's EHS supports MFR agencies by providing limited liability protection. EHS also offsets some training costs by providing each agency initially with a one-time $1500 grant, and then covers the recertification of up to two persons per year to a maximum of $300 (i.e., $150/ea.). As noted, recertification cost per person is $255.

EHS also supports MFR agencies by providing equipment and supplies;

- Providing each agency with one Automatic External Defibrillator (AED)
- Medical jump kit (bandages, cervical collars etc.)
- Resuscitator and Oxygen supplies
- Back Boards, Spinal immobilization etc.
- Disposable supplies, i.e., defibrillator pads, trauma supplies
- Oxygen cylinders are resupplied by EHS/EMCI within forty-eight hours.
- All the above is at no charge to the agency, funded through provincial funds.

What Support is Not Provided

Decontamination supplies to clean medical or fire department equipment is not provided. Any non-disposable PPE (e.g., non-disposable respirators). Spoiled personal clothing is also not reimbursed.

The EHS' MFR program does not provide any financial support for other costs, including;

- program administration,
- vehicle operational costs,
- vehicle capital costs,
- communications equipment,
- quality assurance or medical oversight,
- honouriums

Many volunteer fire departments in Nova Scotia have reoriented their organization and funding to support the provision of MFR, including the purchase of smaller suitable response vehicles,

which they have outfitted. Some Cumberland fire departments are also significantly MFR focussed. Associated costs are also not considered by EHS.

MFR Delivery Metrics and Quality Assurance

With any program delivery, especially emergency services, operational reviews are vital if the organization is to understand and ensure that service levels meet expectations, procedures and protocols are being followed, and the return on investment is also meeting expectations. In the case of MFR, return on investment consists of evidence that patient outcomes are improved by the provision of MFR services; i.e., the services are making a documented, and statistically significant difference for patients.

Compliance with treatment protocols and successful practitioner skill performance, especially effective CPR and AED administration and patient care reports, require tracking (documenting) followed by review to ensure program delivery quality, and to identify any shortcomings or training opportunities.

One of the mission critical metrics is patient outcomes when CPR is performed, along with the application of an automatic external defibrillator (AED) and oxygen.

Without an effective quality assurance program, that employs recognized service delivery metrics, patient outcomes may be at risk, and the organization and individuals delivering the service are at risk for liability. The risk exists if service delivery deficiencies are not identified and corrected before they cause harm. Quality assurance programs are intended to scrutinize the service delivery, and to make corrections where needed.

Each AED has a memory chip, and AEDs will record the incident on that memory. The information collected is the heart rhythm at the time the pads were placed on the chest, if the patient was shocked, and the result of the shock being delivered. This information can be downloaded following the event. The information can then be used by to review the incident as part of a quality assurance program and for metrics (for statistical evidence) of the effectiveness of AEDs and the program that delivered it to the patient; i.e., the fire department. EHS advises

they do not retrieve the memory chips or review AED use in the field by MFRs. It is *GA's* understanding that the fire departments do not do so either.

EHS does have a Medical Director assigned to the provincial MFR program. However, this position does not appear to be actively reviewing metrics related to fire department delivery of MFR as part of the provincial system for EMS service delivery.

According to the 2019 review[174] of EHS, the province may be working on addressing this and related MFR deficiencies. MCC Fire Services do not have their own Medical Director to oversee the local responses and training. Therefore, there appears to be no current oversight of the actual delivery of MFR by MCC firefighters.

Skill retention is critical of any emergency service. If an individual attends only a few MFR responses in any given year, then skill decay will develop and training must increase throughout the year to counteract this tendency for skill decay. This need can affect the entire fire department's fire service delivery program. For example; in a volunteer fire department with as a little as four hours of monthly training, if half is expended for MFR skill retention, then skill retention in other areas will suffer, areas that are considered the core business of the fire department.

MCC Fire Department Response Expectations

In conversation with EMCI, the private company responsible for the delivery of ambulance services within the province, it was stated to *GA* that there are no expectations for the fire departments to respond to MFR incident. The response was characterized as an "Ask" by the EHS communications centre for a fire department to respond to a medical call. Any response is strictly on a volunteer basis. In other words, the MFR agency, in this case the fire service within MCC, can say no to any such requests without any repercussions, from EHS at least.

[174] *Current State and Best Practices Review, Emergency Health Systems*, October 2019, Fitch and Associates: ref pages 28-29. https://novascotia.ca/dhw/publications/FITCH-EHS-Report-Redacted.pdf

Furthermore, *GA* has discovered that there are no EHS established protocols for a minimum staffing level for a MFR response, other than what occurs in MFR preparatory training.

In *GA's* opinion, the MFR program effectively lacks any service delivery expectations.

MFR Incident Volumes

Ch 1: Current Provision of Fire Protection Services discusses historic incident responses during the years reviewed for this *Report*. *Chart* 1 and *Table 1* shows the total number of incidents, of all types, including MFR incidents. Comparing that data to *Chart* 10, shows that for some fire departments, the proportion of MFR incidents is negligible, but for others it is substantial and constitutes the majority of their activity.

Overall, from 2016-2019 the proportion of MFR incidents with respect to all incident responses is shown in *Table 35* below. Note that the presented numbers do not include mutual-aid calls by other fire departments to the same MFR incident, nor other types of incidents. Those are discussed in detail starting on page *95* of this *Report*.

TABLE 35: MFR INCIDENTS AS A PERCENTAGE OF ALL INCIDENTS, ALL FIRE DEPARTMENTS

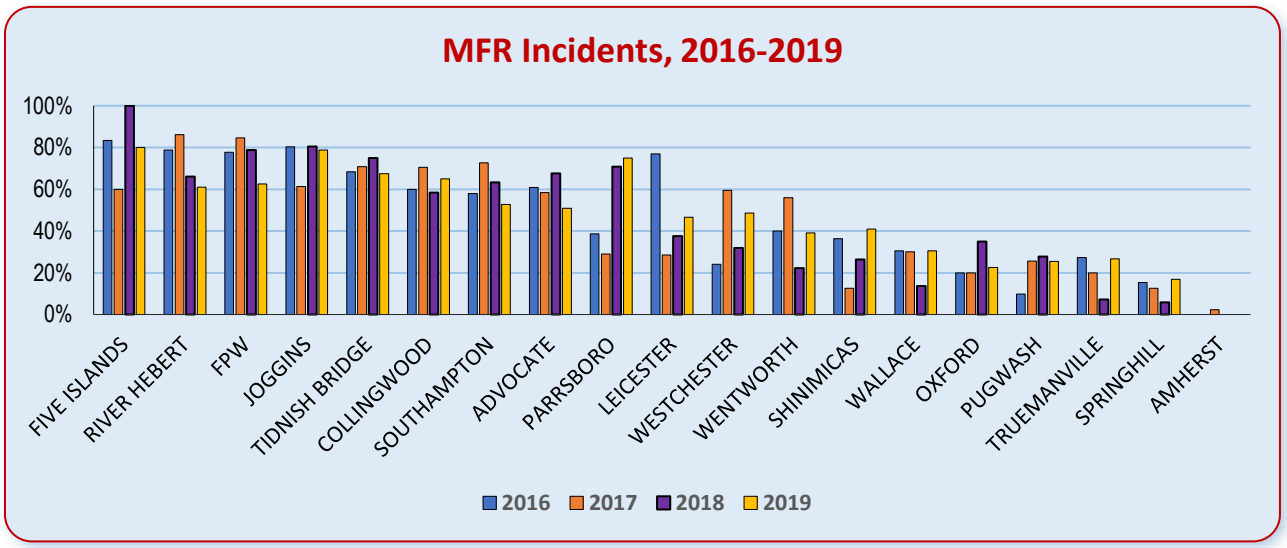
Year	All Incidents	Non-MFR Incidents	MFR Incidents	MFR %
2016	682	376	306	45%
2017	753	451	302	40%
2018	934	543	391	42%
2019	1,010	528	482	48%
AVG	**845**	**475**	**370**	**44%**

Individual fire departments, will of course vary above and below the percentages shown above.

Prior to Covid (2016-2019 data), it appears that the proportion of incidents that were MFR related for individual fire departments was a matter of the level of MFR service they had chosen. Those that chose to run to almost all MFR incidents had higher proportional incidents than those who chose to only run to life-critical incidents.

The following *Figure 26* shows the proportion of total incidents, by fire department, that were MFR. Only the pre-Covid years are shown, and for Amherst their 2016 data is not included.

FIGURE 26: PERCENTAGE OF ALL INCIDENTS THAT ARE MFR, BY FIRE DEPARTMENT



The data in the figure shows a range of MFR participation percentages, from an 4-year average high of 81% (Five Islands) to a low of less than 1% (Amherst). The figure is arranged, left to right, from highest to lowest 4-year average. The horizontal red line is the 44% 4-year average from *Table 35*.

In 2019 EHS had ambulances bases in Amherst, Springhill, Oxford, Pugwash, and Parrsboro. It is interesting to note on *Figure 26* that the fire departments closest to the ambulance bases had the lowest percentage of MFR incidents.

GA was not able to determine with certainty the selected MFR level chosen by all the fire departments, as there were reportedly some changes recently that caused firefighter confusion on this understanding, and then a complete intervention occurred through emergency Covid protocols, which were then modified in 2021, for some fire departments. Anecdotally, fire departments that were the furthest from ambulance bases, and therefore typically experienced longer ambulance travel-times, tended to select a greater participation in the MFR program. That appears to be born out by the MFR proportions shown in the *Figure 26*.

MFR Program During COVID (2020-2021)

As a result of the COVID pandemic the province's EHS, that oversees the MFR program, released a directive on March 23, 2020 that deferred all elective MFR service levels and instead imposed a *Modified Level 5* response protocol for all MFR delivered services. With the new protocol, MFR agencies were only *asked* to respond to Motor Vehicle Accidents with difficult extrications. This resulted in a dramatic reduction in MFR responses by MCC departments over the two years, and is reflected in the incident data as can be seen in *Table 36*, below.

TABLE 36: IMPACT OF COVID MFR MODIFIED PROTOCOLS IN MCC

Year	All Incidents	Non-MFR Incidents	MFR Incidents	MFR %
2016	682	376	306	45%
2017	753	451	302	40%
2018	934	543	391	42%
2019	1,010	528	482	48%
Avg:	**845**	**475**	**370**	**44%**
2020	578	457	121	21%
2021	641	426	215	34%
Avg:	**610**	**442**	**168**	**28%**

In *Table 36* it is evident that MFR numbers increased about 50% for 2021 vs 2020, although still well below prior years. The COVID protocols were modified as a result of a revision to the MFR program. On September 24, 2020 EHS' MFR Services began respirator quantitative fit-testing and training for MFR responders on the use of N95 disposable masks.

As training completed, with a stable supply of PPE, relatively low numbers of COVID cases in Nova Scotia, and the introduction of the modified MFR COVID-19 guideline; County fire departments who had completed the testing began receiving notifications for cardiac arrests, which is classified as Immediate Life Threat incidents.

The EHS Stakeholders Committee is currently reviewing the MFR elective Response Levels and it is anticipated that they may change, and perhaps other changes will also occur as a result of lessons learned during the pandemic. EHS has suggested that new MFR response criteria could be released in June of this year. County fire departments will then likely need to reassess their MFR services.

Staffing

Typically, Medical Fist Responder incidents only require[175] two to three responders. Comprised of either a couple qualified MFRs and a single helper or a qualified MFR and a couple of firefighters to assist. The majority of incidents are responses to single patients at a single family residence.

Do the fire departments have ample qualified MFRs to respond? The fire departments have committed to provide a certain level of MFR, on a twenty-four hours a day seven days a week basis.

Below is a chart illustrating the number of MFR staff as compared to total fire department members. The Chart and Tables only represent the fire departments that provided the requested information in their data workbooks.

TABLE 37: MFR QUALIFIED PERSONNEL, BY FIRE DEPARTMENT

	Collingwood	Leicester	Parrsboro	Pugwash	River Hebert	Shinimicas	Southampton	Springhill	Truemanville	Wallace	Westchester
Total Members	15	19	20	32	18	20	20	25	23	33	19
MFR Qualified	10	7	7	16	9	14	10	8	13	9	
% MFR of Total	**67%**	**37%**	**35%**	**50%**	**50%**	**25%**	**70%**	**40%**	**35%**	**39%**	**47%**

As part of the data requested by *GA* from the fire departments for this *Review* was the number of personnel that attended the incident location (i.e., were *on-scene*), as part of the response to that incident. Only four fire departments provided the number of responders for their MFR responses. So, the following analysis is not a complete picture of what all fire departments are accomplishing in this regard. It also suggests that even basic metrics, like number of responders on-scene, is not being rigorously collected by all fire departments; as it needs to be to meet reporting requirements for firefighter health threat exposures, and other goals.

[175] There are exceptions to this when the incident is primarily of another characteristic, but yet has a significant patient care component, for example; motor vehicle collisions, off-road incidents, mass-causality incidents, and fires with victims.

The available data revealed extremes. At one MFR call there was reportedly only 1 fire department member on-scene; unknown if they were MFR qualified. On the other extreme, a fire department report 19 members were on scene. Since no fire department that *GA* has data for has this many MFR qualified personnel, *GA* assumes that a fair percentage of these personnel were not qualified MFR responders. There may be an explanation, but further incident details are unknown. Many incidents reported more than the minimum needed of 2-3 personnel on-scene.

Large turnouts of personnel to MFR incidents is not required and indeed is not desirable. Valley Communications dispatch data also indicated there have been incidents where multiple fire units from a single department responded to a medical call. For some departments, it was the norm to involve automatic-aid, resulting in two (sometimes more) fire departments (with multiple personnel and multiple fire trucks) responding, for a single MFR call, for a single patient. The amount of apparatus and staffing responding appears at times to be in excess of what is really required, desired, or helpful.

Multiple fire trucks responding, with red lights and sirens, long distances, is also an increased risk that may not be justified. Consider also the numbers of volunteer firefighters being asked to respond, when it may not be necessary. Consider the impact on these volunteer firefighters regular employers.

Good management of these risks, and what is recommended practice to meet the service needs, requires good data collection; data that can be evaluated and analysed, leading to improved response protocols, adequate resource availability, effective use of these resources, and reduced costs for the County. It may also result in better patient outcomes.

Platooning

Some stakeholders reported that one of the types of incidents that has taken a toll on responders is medical responses. This can be a prevalent issue particularly in smaller communities, where responders know many, if not all of the local residents. In some cases, the responder will respond

to family relatives. If not from a single stressful incident, but also from many incidents' accumulated exposure, over time may lead to traumatic stress issues for the MFR responder.

Multiple medical responses throughout the year in addition to fire responses and other fire department activity can lead to firefighter burn out and may lead to members retiring from the service.

In some fire departments it may be necessary to address over/under response by personnel and lessen firefighter burnout risk. A department could implement a platoon system, or an on-call system, in which for a period of time, such as a week or a block of four days, what ever the department decides, groups are dedicated as the initial first responders for all medical responses during that time period. Others may respond to the hall and stand by, if they so wish, but there is no requirement to be in a hurry to get there. If the first on scene personnel require additional assistance, then another couple of firefighters are able to immediately respond.

During the on-call period, a department could have two groups, one group who is available during the day time and a group who is available during the evening. Depending upon the number of members and their availability, the on call or platooning system may vary for each fire department.

Response-Times

According to the dispatch data provided to *GA* by Valley Communications, the 90th percentile[176] response-time to a Cumberland MFR call is fifteen minutes and fifty seconds (00:15:50). With the shortest time being just over two minutes and the longest time being over one hour at 01:17:10

A critical piece of life saving equipment is the Automatic External Defibrillator (AED). If the AED is utilized on a victim of cardiac arrest (due to ventricular fibrillation), particularly within the first 5 to 10 minutes after the attack, the likelihood of survival is relatively high, but

[176] See *Analysis of Timestamp Data* starting on page *111* for a review of how time data is evaluated.

decreasing with time. Survival rates in cardiac rehabilitation programs that provide defibrillation within the first few minutes after a cardiac arrest are higher than 85 per cent.[177] With each passing minute from the time of the arrest, the probability of survival declines about 7 to 10 per cent.[178] Studies show that few patients survive if the time from collapse to defibrillation is greater than 12 minutes.[179,180] If CPR is performed from the time of collapse to the time the defibrillator arrives, survival may be possible after a longer time interval than mentioned above.

Evidence from clinical studies clearly shows that bystander CPR can help to improve survival rates from cardiac arrest. Bystander CPR is the best treatment that a cardiac arrest patient can receive until a defibrillator and advanced medical care arrives.[181] Citizen CPR training programs are literally lifesavers and often supported by local organization or local government initiatives.

Thus, response time is critical. The use of heavy and slow fire apparatus in response to a medical call, especially cardiac arrests, is not ideal. Some of the MCC departments that have smaller response units, do use these smaller units as first out to medical calls. A small number of MCC departments have SUVs i.e., a GMC Yukon, Ford Excursion, or smaller ex-ambulance based rescue trucks. Ideally departments that provide MFR service and have the justifying call volume could benefit from a suitable vehicle for medical response.

Such units with four-wheel drive, will not only provide quicker response times in all weathers, but will also lessens the wear and tear on larger fire apparatus. If four-wheel drive units are available, they will provide easier access to mountainous areas, especially during winter season

[177] Larsen MP, Eisenberg MS, Cummins RO, et al. Predicting survival from out-of-hospital cardiac arrest: a graphic model. Annals of Emergency Medicine 1993;22:1642-1658.

[178] Hazinski MF, Markenson D, Neish S. American Heart Association Scientific Statement: Response to cardiac arrest and selected life threatening medical emergencies. Circulation 2004;109:278-91

[179] International Liaison Committee on Resuscitation (ILCOR). Guidelines 2000 for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Part 4: Automated External Defibrillator: Key link in the chain of survival. Circulation 2000;108(Suppl 2):I60-I76.

[180] Cummins RO, Ornato JP, Thies WH, Pepe PE. Improving survival from sudden cardiac arrest: the “chain of survival” concept: as statement for health professionals from the Advanced Cardiac Life Support Subcommittee and the Emergency Cardiac Care Committee of the American Heart Association. Circulation 1991;83:1832-47.

[181] The Public Access Defibrillation Trial Investigators. Public-access defibrillation and survival after out-of-hospital cardiac arrest. New England Journal of Medicine 2004;351(7):637-646).

and can be utilized when not on a MFR call as a firefighter transport or other "rescue truck" typical use.

Municipal Responsibility in MFR Registration

§295(1) of the MGA[182] states "*A body corporate may apply to a municipality for registration as an emergency services provider to provide emergency services other than fire services*." This permits any corporate body to register as a MFR agency other; the MFR agency does not need to have any association with a fire department.

MFR Agency Application

Each fire department or other emergency services body corporate must complete and file an application for "Sponsorship" with EHS. The application form includes a number of basic questions relative to population served, geographic area to be served, applicant information etc. The web site for the MFR Agency application process requires confirmation that the application is "Approved" by the area Municipal Government (i.e., signature from Warden, Mayor or CAO).

Figure 27 below is from the EHS website.

[182] Municipal Government Act CHAPTER 18 OF THE ACTS OF 1998

FIGURE 27: MFR AGENCY REGISTRATION APPLICATION WITH EHS

What is interesting is the use of the words "Sponsorship" and "Approved" especially in the context of municipal participation in the process.

One definition of the word "Sponsorship"[183] is: "*Sponsoring something (or someone) is the act of supporting an activity, person, or organization financially or through the provision of products or services*." The provincial department of Health and Wellness, Emergency Health Services (EHS) is responsible for providing paramedic services (ground and air) in the province. Emergency Health Services, permitted by the *Emergency Health Services Act* sponsors registered agencies through the provision of certain equipment and training. According to *GA's* conversations with EHS, the sponsorship does not require any mandatory service expectations in return.

Figure 28 shows where the MFR sponsorship application (aka registration) with EHS requires a Municipal Representative to confirm the municipality's concurrence (approval?) with the application. It would appear that a municipality could block this process, by refusing to sign-off on a review of the application. *GA* has not seen the applications by the fire departments to EHS,

[183] "Sponsorship Lexicon and Glossary - Sponsorship Resources 22 August 2013.

so cannot confirm whether or not Cumberland County has actually signed these forms in the past.

FIGURE 28: MUNICIPAL REPRESENTATIVE AUTHORIZATION OF MFR SPONSORSHIP APPLICATION FORM

FOR COMPLETION BY MUNICIPAL REPRESENTATIVE

This application for EHS MFR Sponsorship has been reviewed by:
(please print clearly)

Signature _____ **Date** _____

Name _____

Title _____

Mailing Address _____

_____

Email Address _____

Telephone _____ **Fax** _____

In *GA's* non-legal professional opinion, EHS is shifting all the initial responsibility for the initiation of MFR service delivery to the Municipality, by requiring the municipality to implicitly *approve* and formally acknowledge the *review* of the application by the fire departments to become a registered MFR service.

This raises a conundrum in *GA's* opinion. Whereas a corporate body may compel (with caveats) a municipality to register it to provide emergency services (including MFR services) through the requirements of the MGA, neither the MGA nor any other Act, directly compels the Municipality to sign-off on the corporation's application for MFR sponsorship with EHS. Without sponsorship, the corporation cannot deliver MFR services.

The second step to the municipality accepting responsibility for MFR services comes with the fire department Registrations. If the municipality accedes to support the corporation's application to EHS, the municipality's then furthers this support through part 4 of the registration form, wherein the fire department includes the intent to provide MFR services. The municipality, by signing each of the nineteen fire departments annual registrations is approving the MFR service delivery in Cumberland County.

The above two-step acceptance of responsibility by the municipality for the provision of MFR services, supported by providing funding, creates a situation where the County may be accepting some vicarious liability for how the service is delivered. Although provincial legislation protects volunteer firefighters and volunteer fire departments, to some extent, from liability and consequences of law suits, it expressly does not protect the municipality, as discussed next.

MFR Delivery Liability

There is limited liability protection offered by the *Volunteer Services Act* of Nova Scotia[184] as the following excerpts show; {***emphasis*** added}

> *"Emergency assistance to person*
>
> *3 Where, in respect of a person who is ill, injured or unconscious as a result of an accident or other emergency, a volunteer renders services or assistance at any place,* ***the volunteer is not liable for damages*** *for injuries to or the death of that person alleged to have been caused by an act or omission on the part of the volunteer while rendering services or assistance,* **unless it is established that the injuries or death were caused by gross negligence** *on the part of the volunteer, and no proceeding shall be commenced against a volunteer which is not based upon his alleged gross negligence."*

> *"Automatic external defibrillator*
>
> *4B (1) A volunteer is* ***not liable for damages*** *incurred as a result of injury, illness, disease or death resulting from the use of an automatic external defibrillator unless it is established that the injury, illness, disease or death was caused by the* ***gross negligence or the wilful misconduct*** *of the volunteer and* ***no proceeding shall be commenced*** *against the volunteer that is not based upon the alleged gross negligence or wilful misconduct of that person.*
>
> *(2) A volunteer responsible for an automatic external defibrillator is* ***not responsible for damages*** *incurred as a result of injury, illness, disease or death resulting from the use of the automatic external defibrillator* ***unless it is established that the volunteer did not take reasonable steps to ensure the defibrillator was maintained*** *in accordance with the manufacturer's guidelines and other applicable guidelines."*

The above legislation is not an absolute protection against being sued. All the plaintiff needs to do is allege gross negligence and find some indicators that support a claim that the firefighter knew or should have known better. In addition, lack of records proving maintenance and testing of the defibrillator could place the firefighter in jeopardy. Good record keeping is important.

[184] *Volunteer Services Act* CHAPTER 497 OF THE REVISED STATUTES, 1989 as amended

Gross negligence and consequences/protections of volunteer firefighters and fire departments is further clarified in the *Volunteer Fire and Ground Search and Rescue Services Act.*[185] However, first it is useful to clarify who this legislation considers is a volunteer firefighter, followed by the legislated protections.

> *Interpretation*
>
> *3 In this Act,*
>
> *…*
>
> *(d) "volunteer firefighter" means an individual performing services for a volunteer fire department who does not receive in respect of those services*
>
> *(i) compensation, other than reasonable reimbursement or allowance for expenses actually incurred, or*
>
> *(ii) money or any other thing of value in lieu of compensation in excess of five hundred dollars per year or such other amount as prescribed by the regulations;*
>
> *…*
>
> *Department property exempt from seizure*
>
> *"6 (1) Notwithstanding any enactment,* ***no real property, fire vehicle, fire apparatus, fire equipment, money or other asset of a volunteer fire department is subject to seizure*** *because of the liability of the department for damage caused by an act or omission of a volunteer firefighter on behalf of the organization* ***if the firefighter was acting within the scope of the firefighter's responsibilities*** *in the department at the time of the act or omission.*
>
> *(2) Subsection (1)* ***does not apply if***
>
> *(a) the damage was caused by willful, reckless or criminal misconduct or gross negligence by the firefighter;*
>
> *(b) the damage was caused by the firefighter while operating a motor vehicle, vessel, aircraft or other vehicle for which the owner is required by law to maintain insurance;*
>
> *(c) the act or omission that caused the damage constitutes an offence; or*
>
> *(d) the firefighter was unlawfully using or impaired by alcohol or drugs at the time of the act or omission that caused the damage.*
>
> *(3)* ***Nothing in subsection (1) affects the liability of a municipality or the enforcement of a judgment against a municipality****."*

Volunteer fire-fighter is even further defined in associated *Regulation*;[186]

> *"2 For the purposes of the Volunteer Fire [and Ground Search and Rescue] Services Act, "volunteer fire-fighter" means an individual described in clause 3(d) of the Volunteer Services Act who*

[185] Nova Scotia; SNS 2002, c 13, as amended. Note: title was amended in 2010 from "Volunteer Fire Services Act."

[186] *Volunteer Fire Services Regulations*, N.S. Reg. 160/2002

> *(a) is an active member of a recognized volunteer fire department and has been an active member **for at least 12 months**;*
>
> *(b) has participated **in at least 20% of all activities** of the volunteer fire department, including **fire calls and training**, conducted while that individual has been an active member as required by clause (a); and*
>
> *(c) has written **confirmation of active-member** status, as required by clause (a), in the form prescribed by the Deputy President of the Executive Council and signed by the chief or deputy chief of the volunteer fire department."*

The above noted protections in legislation might suggest to some volunteer firefighters and managers, and *GA* has heard this expressed by some firefighters, that they have immunity. In *GA's* opinion, not as legal professionals, there is little protection against anyone bringing suit against a firefighter or the fire department, alleging gross negligence. The consequences of such a suit would ultimately be decided in court (and in the court of public opinion), but would nonetheless be difficult for everyone involved and damaging. In *GA's* opinion, the need for QA programs that evaluate and correct skills and practices, and thereby prevent situations of causing harm, are valuable in protecting against future claims of liability.

It is important to note in §6(3) of the *Volunteer Fire and Ground Search and Rescue Services Act*, quoted above, that the municipality's involvement in the provision of the emergency services is expressly not provided the same protections as is the volunteer firefighter and fire department providing the services.

MFR Summary and Recommendations

In Cumberland County, all fire departments are registered with EHS, and with the County, to deliver MFR services. From EHS's point of view, this relieves pressure on EHS by having MFR responders stopping-the-clock for medical incidents. In that consideration, the ideal MFR assistance in Cumberland is the volunteer fire departments, whose stations are spread throughout the County in more localities than the ambulance bases, and all have MFR qualified responders available. Another benefit to EHS is that the municipally provided MFR program is largely un-reimbursed by the entity responsible for the provision of emergency health services; i.e., the province, and its corporate ambulance service contractor.

Anecdotally, the firefighters generally feel that MFR is a valuable program for their citizens. This seems to be particularly the case in the more rural areas where typically ambulance arrival times can be prolonged, as compared to more urbanized areas with nearby ambulance bases. On the face of this, this opinion by firefighters seems a reasonable conclusion. It becomes a question of how to assign value.

In fire districts where there are infrequent fire/rescue incidents; MFR incidents keep firefighters in the public eye, shows them assisting in the community, and promotes the fire department. It also provides an activity for the firefighters that coincides with a public service, so can be good for moral. Some fire department members told *GA* in the stakeholder meetings that they specifically joined the fire department to participate in MFR incidents. That was their main interest.

That situation is not universal. In other fire departments, they spend more time training and have higher frequencies of fire/rescue incidents, as well as MFR incidents. MFR incidents can become disruptive and lead to over activity for firefighters. In these departments, dialing back MFR responses is done by making a choice on their EHS registration to provide MFR to only life-threatening incidents, avoiding incidents where, medically speaking, they can offer little contribution.

Not all MFR responses are life threatening. This is especially so for those fire departments who have essentially chosen to respond to all EMS incidents in their jurisdiction. In those jurisdictions, most times[187] firefighters are responding to non-life threatening incidents including incidents where the firefighters may not provide much more than emotional support for the patient and family. That also has value, but it needs to be understood that that is actually what is being provided in those cases.

[187] The 2013 Ontario Auditor General report on Ambulance Services identified that about 1% of ambulance patients were CTAS 1 and 24% were CTAS 2, (total 25%) representing the most critical life-threatened patients. However, ambulances were over-prioritized by a factor approaching 3-times. https://www.auditor.on.ca/en/content/annualreports/arreports/en13/304en13.pdf see online document page 16 (ON-AG report page 136).

Correspondingly, firefighters also do respond to life-threatening situations, and have the opportunity to perform life saving or life altering interventions. All the fire departments, no matter what level of response they have chosen, will respond to those life-threatening level of incidents.

GA, has noticed with respect to this *Review*, that there appears to be a lack of data, metrics, and resulting analytics that would help establish the effectiveness of the MFR services being provided, and that would provide a path to making informed decisions in the future. Even an understanding as simple as how many MFR qualified firefighters historically, and therefore predictably in the future, have attended to patients is not available, or at least was not provided to *GA*. The apparent lack of any evaluation of the Cumberland MFR program makes it difficult to make any firm recommendations, other than on the need to start collecting the data necessary to make the evaluation.

What *GA* is able to determine, based on personal experience and on our work in other jurisdictions in NS, is that at some level of effort MFR has value and can sometimes contribute to improved outcomes for seriously injured/ill patients. However, statistics and other jurisdictional experiences[188] has shown that positive outcomes are only possible for a (depressingly) small percentage of patients who urgently need assistance for the most challenging life-threatening event, which is an out of hospital cardiac arrest (OHCA), and only if the right assistance arrives in time. MFR is only one link in the *chain of survival*.[189]

The provision of emergency medical services, even at the MFR level, is an activity that entails risk for the municipality, as does the delivery of fire services. The municipality could be held proportionally liable for mistakes and decisions made by firefighters that have unwanted outcomes. The County needs a comfort level that the risk is sustainable.

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[188] A definitive study of the provision of pre-hospital emergency care by firefighters requires skills outside the scope of this *Review*. In several Canadian jurisdictions such evaluation is actively being pursued, e.g., Ontario. Cardiac arrest is considered the most challenging emergency health event due to its frequent occurrence, its low survivability, and the challenge of response-times by adequately qualified personnel. One recent study relating to survivability of OHCA patients is found here http://www.bcehs.ca/our-research-site/Documents/cardiac_arrest_annual_report_2016_2017.pdf

[189] https://www.heartandstroke.ca/-/media/pdf-files/canada/2017-position-statements/final-en-addressingcardiacarreststatement-nov-2019.Ashx?Rev=388eeef4069747dcb4ab6353d36b3f7b%26hash=9e27a3232e8f908e45e115b0b9dcc9d5

In *GA's* conversations with EHS, it was determined that the provincial EHS-MFR program does not offer a quality assurance program for MFR delivery, and does not require any minimum response performance from MCC fire departments, outside of what is instilled in sponsored training. That essentially means that no one is specifically vetting the delivery of MFR services in MCC.

Emergency Health Services (EHS) is the responsibility of the provincial government. They have designed the MFR program. *GA* has been advised by an EHS Stakeholder Committee stakeholder, that changes to the MFR program will be released in June of this year. Any changes have not been publicized at this time.

The core business of any fire department is responding to and extinguishing fires, and responding to other emergencies that only the fire department is trained and equipped to deal with. However, when one looks at the response data, especially pre-Covid data, one could make the argument that the core business has shifted significantly for *some* fire departments, from fire suppression to that of emergency medical first response (MFR). Does that shift agree with Cumberland County's assessment of priorities, and appropriate responsibilities?

In *GA's* opinion, Cumberland County needs to gather more and better information, and determine the value of the level of MFR services being provided. Certain changes are recommended in the way MFR services are delivered and governed; to ensure that this service meets the expectations of the public and is sustainable.

Recommendation 80: GA recommends that Cumberland County review with competent legal counsel, the potential risk to the Municipality by continuing support for the delivery of MFR service as it is currently structured.

Recommendation 81: GA recommends that Cumberland County engage the services of a qualified medical practitioner to act as Medical Director to provide oversight and quality assurance of the MFR program being provided by all 19 fire departments within its geographical boundaries.

Recommendation 82: GA recommends that Cumberland County stop the practice of automatic-aid dispatching two or more fire departments to a single patient MFR call. Not included in this recommendation are those incidents involving off road, or similar rescue where specialized equipment

and significant manpower is needed/anticipated, or for incidents where there is the realistic potential of multiple patients requiring medical assistance.

Recommendation 83: GA recommends that Cumberland County request the fire departments to evaluate the possibility of implementing an on call or platoon system to eliminate excessive staffing responses to MFR calls and to reduce burn out and responder stress.

Recommendation 84: GA recommends that all fire departments be required to forward copies of all MFR response patient reports, and all other data related to MFR incidents to the Director of Protective services, as part of an initial quality assurance program.

Recommendation 85: GA recommends that Cumberland County develop policies, procedures, and protocols to collect the appropriate data, establish metrics, and perform analytics to determine the effectiveness of the delivery of MFR in the County. Considerations should include the various levels of MFR service delivery, and which ones are most appropriate for which areas of the County.

Recommendation 86: GA recommends that if the preceding recommendations on the MFR program are not achievable within a reasonable period of time as established by Council direction, and recommended to be not less than 2 years, that the appropriate steps should be undertaken to withdraw County support for the delivery of MFR services in Cumberland County. This recommendation is not intended to include the response to incidents where MFR is a secondary objective.

HEALTH AND SAFETY POLICIES

GA conducted a review of fire department Health and Safety Policies, including the Municipality of Cumberland County Policy 15-13 *Health & Safety Policy*.

There are a number of Acts and regulations in Nova Scotia that have impacts on the administration and operations of volunteer fire departments. The majority of the regulations reference the National Fire Protection Association's standards where applicable as base for the regulation or form part of the regulations.

One particular document was reviewed vis à vis its applicability to the volunteer fire service, and *GA* has concluded it does apply. The *Nova Scotia Fire Services Occupational Health & Safety Reference Guide*,[190] was developed as an interpretation of how the NS *Occupational Health and Safety Act* applies to firefighters.[191]

The Reference Guide is based upon NFPA-1500; *Standard on Fire Department Occupational Safety and Health Program*. In addition to the Guide an additional sixteen (16) NFPA applicable standards were considered in the basis for the review.[192]

The following Acts and regulations were reviewed as to applicability:

- Workplace Health and Safety Regulations made under Section 82 of the Occupational Health and Safety Act
- NS Occupational Safety General Regulations made under Section 82 of the Occupational Health and Safety Act
- Workers' Compensation Act

The Municipality of Cumberland County Policy 15-13 Health & Safety Policy, sentence 5. States;

> *"Managers and Supervisors also have a general responsibility for ensuring the safety of equipment and facilities."*

[190] Effective Date: 25/04/2003

[191] The Reference Guide is included in *Appendix 12: NS Firefighters Occupational Health and Safety Guide*

[192] See *Appendix 10: Standards; Firefighter Occupational Health and Safety.*

Lacking any contrary written agreement with any Society Fire Department, sentence 5 suggests that the municipality is taking responsible for the safety of municipality owned fire stations, apparatus and equipment. If in fact the foregoing is applicable then it would seem to be the responsibility of the County to ensure compliance with the safety regulations and requirements for maintenance of the same under the NS OH & S Acts and Regulations.

Municipal Liability

Federal Bill C-45, 2003[193] (aka the Westray Bill), enacted amendments to the *Canadian Criminal Code* that affected the potential for criminal liability of organizations and their directors.

Bill C-45 redefined an "organization" with a new definition

> *"a public body, a body corporate, a society, a company and a firm, a partnership, a trade union or an association of persons created for a common purpose."*

Bill C-45 uses also the term, "representative." Representative, is defined under §2 to mean directors, partners, members, agents and contractors, as well as employees.

Bill C-45 also led to changes in the Criminal Code of Canada. The following was added to §217.1 to the Criminal Code:

> *"217.1 Every one who undertakes, or has the authority, to direct how another person does work or performs a task is under a legal duty to take reasonable steps to prevent bodily harm to that person, or any other person, arising from that work or task."*

The amendment also redefined the term organization to include a broader definition of those potentially liable and added §22.1 and §22.2 to the Criminal Code, imposing criminal liability on organizations and its representatives for negligence (§22.1) and other offences (§22.2). More specifically, §22.1 of the Criminal Code provides that an organization is responsible for the negligent acts or omissions of its "representative".

[193] Bill C-45: An Act to amend the Criminal Code (criminal liability of organizations) March 31 , 2004, 37-2-C 45-E

Added to the Criminal Code was a new section, §217.1, which provides that those who are responsible for directing the work of others are under a legal duty to take reasonable steps to prevent bodily harm to any person arising from such work. This provision does not create a new criminal offence. However, by clarifying the existence of such a legal duty, the provision facilitates the application of the offence of criminal negligence, which is predicated, in part, on the existence of a legal duty.

> *"Executives, directors and other officers and employees of the corporation enjoy no special immunity from either criminal or quasi-criminal liability. Such persons are legally accountable for any misconduct of their own and for any misconduct by others to which they are a party, whether done on behalf of the corporation or otherwise."*[194]

As will be discussed in some depth in *Ch 6: Governance*, the *Municipal Government Act* (MGA) expressly provides powers to municipalities for the development of policies and procedures in the delivery of fire services. In *GA's* opinion, as non-legal professionals, municipal criminal liability can arise from either acts or omissions of the municipality, as seems pretty clear from the above discussion on Bill C-45. Liability could arise under the provisions of Bill-C45, and likely cannot be avoided by a municipality who has omitted to exercise these MGA powers.

Workplace Safety

A safety program is mission critical to any organization; even more critical for the fire service. Any injury that involves lost time for a volunteer or even death is costly not only in financial terms, but in quality of life, and can lead to degradation of department morale and the negative psychological impact on members of the department and the community.

A fire service safety program includes two distinct functional positions. A staff function, responsible for *Occupational Health and Safety* of the organizations, and a line function who exercises authority as an *Incident Safety Officer*. Although these roles have safety as their base responsibility, the roles have very different responsibilities and also skill sets.

[194] https://lop.parl.ca/sites/PublicWebsite/default/en_CA/ResearchPublications/LegislativeSummaries/372LS457E

The objectives of any fire service safety program is to identify problems, before they cause an injury or health impact; to develop preventative policies, procedures, and control measures, and then train personnel in those measures; to lessen the risk to all department members and ultimately to the organization.

In addition to reviewing department provided procedures and operating guidelines, this *Review* looked at specific subject areas related to OH&S;

- Occupational Health & Safety officers, numbers of and qualifications,
- Incident Safety Officers, numbers of and qualifications
- Firefighter Incident Rehabilitation procedures
- Emergency Vehicle design, testing, and inspection
- Fire Equipment testing and inspections i.e., ladders and hose
- Personal Protective Ensembles
- Respiratory Protection equipment
- Fit-testing

A review of the fire departments found some standard operating procedures, guidelines, policies and procedures. It was noted that there was not any reference to emergency responders at an incident scene, nor to training exercises, or to firefighter rehabilitation.

The Occupational Health and Safety officer and the Incident Safety Officer.

A review of fire department formal positions appeared, in some cases, not to differentiate the role of the department "Safety Officer" into its two safety functions. What is the difference between a fire department Occupational Health and Safety Officer (HSO) and that of the Incident Safety Officer (ISO)?

Both roles are responsible for identifying risks and putting into place practices, policies, and procedures to prevent injury to fire department personnel. From there their roles differ. The ISO role is part of an Incident Command team during an incident and addresses avoidable dangers present during an emergency event.

The HSO is responsible for programs and polices relating to facility (fire station) related injuries and chronic illnesses prevention. Of particular concern is preventing cancer causing exposures that can arise as a result of events that can occur prior to and/or post an emergency incident, or a training event. Such exposure as to the products of fire and/or to a chemical in an environmental incident.

ISO Role

The role of the ISO includes but is not limited to the following;

- Assists in the development of the Incident Action Plan
- Conducts ongoing assessments of risk
- Manages risks at the incident.
- Monitors the Incident Action Plan throughout the incident.
- Checks for unsafe acts.
- Checks for unsafe conditions.
- Has authority to alter or terminate operations to prevent injury
- Conducts at scene Accident Investigations
- Prepares documentation for required HSO investigation
- Conducts Post Incident Analysis

ISO Skill Set

The ISO position must have the necessary background, training and experience including;

- Comprehensive knowledge of incident hazards
- Risk management criteria, including what constitutes unacceptable level of risk;
- Ability to apply knowledge of fire behavior and fire dynamics and their impact on conditions, building construction, hazardous energy, reading smoke,
- Experience as a fire ground officer

HSO Role

The role of the HSO includes but is not limited to the following;

- Development of, and implementation of, the OHS organizational risk management plan dealing with chronic issues.
- Identify risks; develop goals, objectives, and action plans to manage those risks; analyze data; perform cost-benefit analysis.
- Develop a plan for the support of treatment and transport of an injured or ill member.
- Conducts facility inspections.
- Develops, implements and manages the organization's accident prevention program.
- Conducts safety and health investigations.
- Manage the collection and analysis of data related to accidents, occupational deaths, injuries, illnesses, and exposures to infectious agents and communicable diseases.
- Recommend safety-related specifications for fire apparatus and fire equipment, given new or existing fire apparatus and fire equipment specifications.
- Analyzes the fire department health maintenance program and makes recommendations if required.
- Develop, implement, and manage the fire department's infection control program.

The Volunteer Firemen's Insurance Services (VFIS) developed a worksheet[195] to assist in implementation of an NFPA-1500 compliant program. This is a very good tool to assist any HSO in establishing a Safety, Health, and Wellness program in their department.

HSO Skill Set

The HSO position must have the necessary background and experience in

- Occupational Health and Safety
- Understanding the intent of applicable Acts, regulations and standards
- Ability to assess, classify and determine risks and implement appropriate control measures.
- Ability to identify risks, develop goals, objectives, and action plans to manage those risks; perform cost-benefit analysis; compile and analyze data,
- Ability to conduct investigations and write comprehensive legal reports.
- Ability to manage the collection and analysis of data.

[195] https://www.vfis.com/Portals/vfis/emergency-service-operations/NFPA-1500-Worksheet-2018-Edition.pdf

Rehabilitation During Emergency Operations and Training Exercises

As part of firefighter's health and wellbeing there is a need during emergency operations and training exercises to monitor firefighter physiological conditions so as to spot any issues that may lead to serious medical conditions.

NFPA-1584: *Standard on the Rehabilitation Process for Members During Emergency Operations and Training Exercises*, establishes protocols and requirements for at scene rehabilitation of emergency responders. NFPA-1584 identifies several aspects of firefighter rehab at both incidents and training activities, including; preparedness beforehand, rehabilitation area responsibilities and characteristics, and rehabilitation procedures and guidance.

The County fire service needs to develop standard operating procedures/guidelines that outline a systematic approach for the rehabilitation of members operating at incidents and training exercises. The procedures need to address cooling and warming, physiological monitoring and the provision of emergency medical care if indicated, and documentation.

In addition, NFPA-1500: §8.9 *Rehabilitation During Emergency Operations* expands on the need for rehabilitation with some specific recommendations.

Exposure to Contaminants

NFPA-1500 Chapter 14 *Exposure to Contaminants* requires the AHJ (the municipality) to provide standard operating procedures related to the prevention and mitigation of firefighter exposure to contaminants. These must outline a systematic approach for the prevention and mitigation of exposure to contaminants by firefighters operating at incidents and at training exercises, and at the fire station.

Station contamination issues are discussed in the section on *Fire Station Assessments*, starting on page *215*.

Although more firefighters die from cardiac issues, the current prominent medical issue for firefighters is cancer, which is catching up fast. The leading causes for the high rate of cancers amongst firefighters is their exposure to contaminants released during fire incidents and possibly as extended low level exposures at the fire stations..

The *Firefighter Cancer Support Network's* 2013 Whitepaper *Taking Action Against Cancer in the Fire Service*[196] provided lifesaving details about recognizing and reducing firefighters' cancer risks. It includes 11 immediate actions that firefighters should take to protect themselves, their families, and their fellow firefighters.

In 2018 the National Volunteer Fire Council (NVFC) released a report *Lavender Ribbon Report, Best Practices for Preventing Firefighter Cancer*.[197] This best practice report was updated in 2021.

As with the Firefighter Cancer Support Network whitepaper the NVFC released an actions list to mitigate the risks of cancer. *Figure 29* on the next page lists the 11 best practices for preventing firefighter cancer. Every firefighter should know these by heart and fire department procedures should support these best practices.

[196] https://firefightercancersupport.org/wp-content/uploads/2017/11/taking-action-against-cancer-in-the-fire-service-pdf.pdf

[197] Lavender Ribbon Report, Best Practices for Preventing Firefighter Cancer", NVFC, September 24, 2021 https://www.iafc.org/docs/default-source/1vcos/iafc-lavender-ribbon-report-update.pdf?sfvrsn=c9e7640c_4

FIGURE 29: LAVENDER RIBBON REPORT, 11 BEST PRACTICES FOR PREVENTING FIREFIGHTER CANCER

Two important practices to prevent and mitigate exposures to carcinogenic materials is to decontaminate regularly and immediately after a fire.

The department must document any and every possible exposure to carcinogenic material. This will assist down the road in the event of illnesses and with any future Workers Compensation Board claim.

Recommendation 87: GA recommends that Cumberland County develop appropriate Policy and procedures that make it mandatory for every fire department to record the participation of every firefighter engaged in any firefighting, or any other activity, in which they may have been exposed to contaminants. The record should include their position or role at the incident or activity, and how long they were involved in the exposure. This record should be forward to the County for permanent record keeping.

MCC should have a central fire department records management system[198] to store the exposure data. There are a number of secure software products that also track firefighter exposures and protect privacy. Volunteer firefighters come and go, but their exposure to potential cancer causing events will follow them for the rest of their lives, and it needs to be documented, and available, when and if needed, even 20 years down the road. Even a single event, just one, can change the health outlook for a firefighter.

Fire Equipment,

Fire Hose

NFPA-1962: *Standard for the Care, Use, Inspection, Service Testing, and Replacement of Fire Hose, Couplings, Nozzles, and Fire Hose Appliances*, 2018 Edition

NFPA standards establishes the maintenance and testing requirements for all types and sizes of fire hose, care and inspection of couplings, and gaskets and nozzles.

In addition to the annual requirement for pressure testing all fire hose. There is also a requirement for each preconnected hose line or any attack line used for interior fire-fighting operations on a fire apparatus together with the nozzle or hose connected appliance it supplies to be flow tested as a system at least annually.

All hose and nozzles and water appliances should be individually identified and records kept of all maintenance, testing, failures, along with ancillary equipment maintenance and failures.

Cumberland records of annual testing were not available and information from the stakeholder meetings suggested that in the past a person was hired to conduct the annual fire hose testing but that no longer appears to be the case. During the stakeholders' meetings only one department

[198] See *Recommendation 202*

indicated that they tested fire hose themselves, but only every two years, not as per the annual requirement.

One of the most important pieces of equipment that is tied to not only firefighting but for life safety of the firefighters is the fire hose. If the hose fails during operations, especially interior firefighting operations, that failure could place the firefighters at extreme risk, and a possible failed occupant rescue.

Recommendation 88: GA recommends Cumberland County ensure that every fire department conducts annual fire hose (pressure and suction hoses) nozzle, and hose appliances annual inspections and testing. Every length of hose and nozzle and appliance must be uniquely identified and labelled, and permanent records kept of each item, including all inspection and testing, and any repair work. Hose that fails testing or inspection shall be repaired or if not repairable, have its couplings cut off so that is cannot be pressurized. All such as recommended shall be in conformance with NFPA-1962.

Recommendation 89: GA recommends that on every fire apparatus equipped with a pump, that every preconnected hose, complete with nozzle and any other connected appliance, be flow tested as a system at least annually in conformance with NFPA-1962.

In addition on the subject of fire hose, NFPA-1500: §6.5.15 requires that all fire hose deployed during fire suppression operations and that were exposed to contaminants shall be decontaminated in accordance with NFPA-1962 and the manufacturer's recommendations prior to being returned to service.

Ground Ladders

Portable ladders as per Section 82 of the NS Regulations[199]

> *"200 (1) Where a portable ground ladder is used for structural fire-fighting, an employer shall ensure that it complies with or exceeds the latest version of NFPA standard NFPA 1931, "Standard on Design of and Design Verification Tests for Fire Department Ground Ladders", and is used, maintained and tested in accordance with the latest version of NFPA standard NFPA 1932, "Standard on Use, Maintenance and Service Testing of Fire Department Ground Ladders."*

[199] Occupational Safety General Regulations made under Section 82 of the Occupational Health and Safety Act S.N.S. 1996 c. 7, NS Reg. 53/2013

Ground ladders shall also be visually inspected at least monthly and after each use. There are nineteen inspection criteria. In addition to the monthly inspection there are approximately fifteen items to maintaining firefighter's ground ladders.

The information provided to *GA* by the fire departments clearly shows that annual ground ladder testing is not and may never have been done for almost all the fire departments. Even where a particular fire department indicated that it was done in the past, it has been years since it was last done.

Recommendation 90: GA recommends that Cumberland County ensure that all ground ladders be tested and inspected according to the manufacturer's recommendations and to the requirements established by NFPA 1932. A certified 3rd party contractor should be engaged to do annual inspections and testing, and should provide complete records of such tests and inspections in electronic form.

GA's past experience with a similar situation shows that a number of ladders will fail this annual inspection and test, and will need replacing.

Recommendation 91: GA recommends that Cumberland County instruct fire departments on how to conduct monthly and after use inspections and maintenance and how to record inspections and findings as per NFPA-1932. MCC should develop procedures and a program to ensure that the Standard's requirements are met. All fire departments should commence a program of inspections and maintenance in accordance with this standard, and all records of such inspections should be submitted to MCC at least monthly.

Annual required testing of ground ladders is specialized and best conducted by a competent 3rd party who has the necessary specific equipment, procedures, and experience.

Personnel Protective Equipment

PPE is governed a number of Regulations and industry standards. The Nova Scotia government has two documents directly related to firefighters and fire services.

Nova Scotia Fire Services Occupational Health & Safety Reference Guide Effective Date: 25/04/2003;

Occupational Safety General Regulations made under Section 82 of the *Occupational Health and Safety Act*, N.S. Reg. 53/2013

Part 16 of the *General Regulations* addresses *Equipment for Firefighters*, and includes the requirement to comply with the appropriate ULC and NFPA standards for:

> *"191-(1) Protective Headwear When engaged in structural fire-fighting, a firefighter shall use protective headwear that complies with or exceeds the latest version of NFPA standard, NFPA 1971, "Standard on Protective Ensemble for Fire Fighting".*
>
> *(2) An employer shall ensure that attachments to and on the protective headwear referred to in subsection (1) are made only in the manner specified by the manufacturers of the headwear."*
>
> *Hazard to head (Non-fire Hard Hats)*
>
> *"11 Where a person is exposed to a hazard that may injure the person's head, an employer must ensure that protective equipment is worn that is appropriate to the hazard and that complies with 1 of the following standards:*
>
> *(a) the latest version of CSA standard CSA Z94.1, "Industrial Protective Headwear"; or*
>
> *(b) the latest version of ANSI standard ANSI Z89.1, "Industrial Head Protection."*
>
> *"192-Protective Footwear, when engaged in structural fire-fighting, a firefighter shall use protective footwear that complies with or exceeds the latest version of NFPA standard NFPA 1971, "Standard on Protective Ensemble for Fire Fighting", or the standard for Grade 1 footwear, with sole puncture protection and electric shock resistant soles in the latest version of CSA standard CSA Z195, "Protective Footwear"; is water-resistant for at least 12.7 cm above the bottom of the heel; and has a slip-resistant outer sole."*
>
> *193-Protective Handwear,*
>
> *When engaged in structural fire-fighting, a firefighter shall wear protective handwear that complies with or exceeds the latest version of NFPA standard NFPA 1971, "Standard on Protective Ensemble for Fire Fighting".*
>
> *194- Protective coat and trousers,*
>
> *(a) NFPA 1971, "Standard on Protective Ensemble for Fire Fighting", [or] CGSB standard CGSB 155.1, "Fire Fighter's Protective Clothing for Protection Against Heat and Flame"; and*
>
> *(b) fit properly in sleeve length, coat length, chest girth, waist girth, trouser inseam length and crotch rise so as to prevent unsafe situations resulting from the interference of one piece of clothing or equipment with another.*
>
> *195 Respiratory protective equipment*
>
> *A firefighter who may be exposed to an oxygen deficient atmosphere or to harmful concentrations of air contaminants when engaged in structural fire-fighting shall wear positive-pressure self-contained respiratory protective equipment that complies with or exceeds the latest version of NFPA standard NFPA 1981, "Standard on Open-Circuit Self-Contained Breathing Apparatus for the Fire Service", together with a protective hood that complies with or exceeds the requirements in the latest version of NFPA standard NFPA 1971, "Standard for Protective Ensemble for Fire Fighting".*

An employer shall ensure that a firefighter who is wearing self-contained respiratory protective equipment when engaged in structural fire-fighting is accompanied by another firefighter similarly equipped and having the same air capacity.

An employer shall ensure that self-contained respiratory protective equipment used by a firefighter when engaged in structural fire-fighting is equipped with a personal distress alarm device that complies with or exceeds the latest version of NFPA standard NFPA 1982, "Standard on Personal Alert Safety Systems (PASS)".

196 An employer shall ensure that firefighters receive annual quantitative fit-testing of their self-contained respiratory protective equipment.

13 Respiratory hazard

(1) Where a person is exposed to a respiratory hazard that may cause injury or disease, an employer shall provide and ensure the use of an adequate respirator that is appropriate to the hazard.

(2) An employer shall ensure that the compressed breathing air used in a respirator complies with or exceeds the latest version of CSA standard CAN3-Z180.1, "Compressed Breathing Air and Systems".

(3) An employer shall ensure compliance with the latest version of CSA standard CSA Z94.4, "Selection, Use, and Care of Respirators", in respect of

(a) the selection, use, maintenance and testing of a respirator; and

(b) the training of users of a respirator

Fall Protection, Body Harnesses and Safety Ropes

197(2) A firefighter entering a confined space for the purposes of rescue shall wear a body harness that complies with or exceeds the latest version of NFPA standard NFPA 1983, "Standard on Fire Service Life Safety Rope and System Components", and self-contained respiratory protective equipment that complies with or exceeds the latest version of NFPA standard NFPA 1981, "Standard on Open-Circuit Self-Contained Breathing Apparatus for the Fire Service.

198 An employer shall ensure that ropes and associated body harnesses and hardware used by a firefighter for structural fire-fighting or rescue purposes comply with or exceed the latest version of NFPA standard NFPA 1983, "Standard on Fire Service Life Safety Rope and System Components".

When working from an aerial device, as defined in subsection 201(1), a firefighter engaged in structural fire-fighting or rescue shall use a body harness that complies with or exceeds the latest version of NFPA standard NFPA 1983, "Standard on Fire Service Life Safety Rope and System Components".

199 Where a body harness has been worn by a firefighter for structural firefighting or rescue, the employer shall ensure that the body harness is not worn again until it is inspected by a competent person to ensure all components are in an adequate condition.

Fall Arrest Equipment must comply with Nova Scotia Workplace Health & Safety Regulations[200]

"21.12 the latest version of CSA standard CSA Z259.10, "Full Body Harnesses";

[200] Work place Health and Safety Regulations made under Section 82 of the Occupational Health & Safety Act, S.N.S 1996. C. 7. N.S. Reg. 143/2014

> *21.14 (1) the latest version of CSA standard CSA Z259.11, "Energy Absorbers and Lanyards";"*

Fall protection training is required by the employer prior to any person using fall protection equipment. In addition to being initially trained the employee (volunteer firefighter), must receive renewal training every three years and records must be kept.

> *21.19 Fall-protection training required*
>
> *(b) every 3-year renewal*
>
> *21.21.(1) Training record required*

Fall Protection Best Practices

A Best Practice document that should be referenced for guidance as it relates to firefighter fall protection is the *Ontario Association of Fire Chiefs Health & Safety Section 21 Guidance Notes.*[201] Firefighter guidance notes are best practices for protecting the health and safety of fire service workers in Ontario and have applicability in NS as a best practice.

Guidance Note "*4-11 Fall protection from elevating devices*" is a very good document to review as well as Guidance Note "*6-14 Safe roof operations*."

Aerial Devices

From the NS *Workplace Health and Safety Regulations*;[202]

> *201 (1) In this Section, "aerial device" includes an aerial bucket, aerial ladder, elevating platform, aerial ladder platform or water tower that is designed to position personnel, handle materials, provide a means of exit or discharge water, as the case may be.*
>
> *(2) Where an aerial device is used for structural fire-fighting, an employer shall ensure that it*
>
> *(a) complies with or exceeds the latest version of NFPA standard NFPA 1914,[203] "Standard for Testing Fire Department Aerial Devices", or Underwriters' Laboratories of Canada standard ULC S515, "Automobile Fire Fighting Apparatus"; or*

[201] https://www.ontario.ca/document/firefighter-guidance-notes

[202] Workplace Health and Safety Regulations made under Section 82 of the Occupational Health and Safety Act S.N.S. 1996, c. 7. N.S. Reg. 143/2014

[203] NFPA-1914 was withdrawn in 2006 and its contents were incorporated into NFPA-1911. So, the latest version stipulated in the Regulation is NFPA-1911 edition 2017.

> *(b) is certified in writing by an engineer as being safe to elevate a firefighter to a work site above ground when used for structural fire-fighting purposes.*
>
> *Elevating work-platforms*
>
> *23.13 (1) An employer must ensure that portable, self-propelled and self-propelled boom-supported elevating work-platforms are designed, constructed, erected, maintained, inspected, monitored and used in accordance with the latest version of the following applicable standards:*
>
> *(2) An employer must ensure that elevating work-platforms used for fire-fighting are designed, constructed, erected, maintained, inspected, monitored and used in accordance with the latest version of the following applicable standards:*
>
> *(a) NFPA standard NFPA 1901, "Standard for Automotive Fire Apparatus";*
>
> *(b) NFPA standard NFPA 1911, "Standard for the Inspection, Maintenance, Testing and Retirement of In-Service Automotive Fire Apparatus".*
>
> *(3) n employer must ensure that a record of inspections, tests, repairs, modifications and maintenance activities required by the applicable standards in subsections (1) and (2) includes the name and signature of the person or persons who performed the required activities*

Cumberland is apparently not currently performing the required testing on the Springhill Quint as required under NFPA-1911. See *Recommendation 9* on page *188*. See also *Table 20: NFPA-1911 Inspection, Maintenance, and Performance Verification Requirements* on page *165* for a breakdown of all requirements.

Battery powered lights

From the NS *Workplace Health and Safety Regulations*;

> *202 An employer shall ensure that each fire truck is equipped with 2 portable intrinsically safe hand lights, each of which is powered with at least a 6-volt battery.*

It was noted in the apparatus equipment inventories that many fire apparatus did not carry these required lights, or did not report them as being part of the inventory. The current practice with firefighters is more towards personal hand lights, however this need is still in the Regulations, and is good practice.

Personal Protective Equipment (PPE)

This section focuses on structural firefighters personal protective equipment (PPE); namely the protective coat, trousers, helmets, gloves, boots (aka bunker-gear) and respiratory protection equipment (aka SCBA).

Stakeholder Comments

During firefighter stakeholder meetings, concerns about PPE, (coats and trousers) was raised at stakeholder meetings. A number of PPE issues were reported, but not specifically verified by *GA*.

- Lack of Standardization.
- Recent purchases downgraded the quality of the PPE from prior gear (this might actually be a reference to fit, features, and reduced cost).
- Improper fitting PPE, no female sizing, some male sizing not large enough.
- Lack of sufficient sets of PPE for use as spares and for replacements.
- Some firefighting helmets are past their retirement date.
- Some departments reported no supply of spare gloves.
- One department has no structural firefighter PPE compliant with NFPA.
- Not all Defensive level FFs have PPE, despite being close to fires.
- Only Level I FFs receive PPE, no PPE is available for those in training to be Level 1.
- Ten-year retirement requirement not always adhered to. One department reported 65% of PPE over 10 years old.
- No annual inspections were occurring.
- No PPE replacement plans in place.

Not all stations had the same concerns. Some expressed satisfaction with what they had received from the County.

Many of these items will be discussed in the following sections, through a discussion on meeting Standard requirements for PPE.

Legislative Requirements and Best Practices

NS Regulation[204] addresses the requirements for structural firefighters' protective coat and trousers;

> *194 When engaged in structural fire-fighting, a firefighter shall wear protective coat and trousers that*
>
> *(a) comply with or exceed the latest version of NFPA standard NFPA 1971, "Standard on Protective Ensemble for Fire Fighting", [or] CGSB standard CGSB 155.1, "Fire Fighter's Protective Clothing for Protection Against Heat and Flame"; and*
>
> *(b) fit properly in sleeve length, coat length, chest girth, waist girth, trouser inseam length and crotch rise so as to prevent unsafe situations resulting from the interference of one piece of clothing or equipment with another.*

Chapter 5 of the *Fire Services OH & S Reference Guide*,[205] states that;

> *5-2.1.5 No firefighter shall enter any hazardous atmosphere without the protective clothing as specified in section 5-2 of this guide.*

In addition to the foregoing requirements to wear PPE that meets the Standard for manufacturing (NFPA-1971), and the requirement for proper sizing and fitting, there is the following standard for the care and maintenance of PPE ensembles that have been issued to firefighters.

NFPA-1851: *Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*. Excerpts from this standard say:

> *1.2.1 The purpose of this standard shall be to establish a program for structural firefighting protective ensembles and ensemble elements and for proximity firefighting protective ensembles and ensemble elements to reduce the safety risks and potential health risks associated with poorly maintained, contaminated, or damaged protective ensembles and ensemble elements.*
>
> *1.2.2 The purpose of this standard shall also be to establish basic criteria for selection, inspection, cleaning, decontamination, repair, storage, and retirement of structural firefighting protective ensembles or ensemble elements and proximity firefighting protective ensembles or ensemble elements.*

The general OH&S Standard for firefighters, NFPA-1500, addresses requirements for PPE ensembles in Chapter 7, and includes protective clothing for structural firefighting. This general provision states as follows;

---

[204] Nova Scotia Occupational Safety General Regulations, N.S. Reg. 53/2013.

[205] Copy of the Guide is provided in *Appendix 12*.

> *7.2.1 Members who engage in or are exposed to the hazards of structural firefighting shall be provide with and shall use a protective ensemble that shall meet the applicable requirements of NFPA 1971.*

In "Appendix A" to the Standard (which is a non mandatory component of the Standard) is an expansion on the thinking of the Standard committee with regards to 7.2.1, as follows;

> *A.7.2.1 The fire department should consider providing each member with two complete sets of structural fire-fighting protective clothing that meet the requirements of NFPA 1971 whenever possible. It is not reasonable to expect that a fire department would have enough stock protective clothing available to all members in the event that the protective clothing became soiled, wet, or contaminated during daily activities. Fire fighters provided with two complete sets of structural fire-fighting protective clothing can change easily into proper-fitting garments and will not be unnecessarily exposed or expose the public to contaminants. Structural protective clothing that is cleaned and properly and completely dried before the next use will last longer and provide greater protection than soiled or damp garments.*

It must be understood that this Standard is intended as a blanket standard for all structural firefighters, including those who respond to maybe one structural fire annually, as some would in Cumberland, all the way up to those firefighters who report for their shift in the morning and are so busy that they are lucky to get back to the fire station for supper; they live in their bunker-gear.

Every structural fire carries risk, and exposure to dangers and hazards, so all structural firefighters require appropriate PPE. However, not all firefighters do not have the time to launder and clean their PPE between needs to don it. The need for second sets must be evaluated on a case by case basis. The ability to locally launder and dry PPE affects this thinking, and is one of the reasons that *GA* has recommended[206] providing PPE laundering services in Cumberland, to expedite turn-around on PPE laundering.

NFPA-1500, §7.2.1. requires correctly sized and fitted protective clothing and §7.2.1.1 requires in addition a *dynamic fit-test* for each member. Protective ensembles and ensemble elements are important tools that enable fire fighters to perform their jobs in a safe and effective manner, but only if they fit properly.

[206] See *Recommendation 97* on page *333*.

There is a need to recognize that firefighter structural PPE has a mandatory life span, and to reach that age it requires regular inspections and care. These aspects are a necessary part of any protective equipment program.

NFPA-1851 is not adopted by legislation in Nova Scotia, but is a best practice which is well known by the manufacturers of structural firefighter PPE. The Standard says that;

> *10.1.2* Structural fire fighting ensembles and ensemble elements shall be retired in accordance with 10.2.1 or 10.2.2, no more than 10 years from the date the ensembles or ensemble elements were manufactured. [emphasis added]*
>
> *10.2.1 Retired structural fire fighting ensembles and ensemble elements and proximity fire fighting ensembles and ensemble elements shall be destroyed or disposed of in a manner ensuring that they will not be used in any fire fighting or emergency activities, including live fire training.*
>
> *10.2.2 Retired structural fire fighting ensembles and ensemble elements and proximity fire fighting ensembles and ensemble elements as determined in 10.1.8 shall be permitted to be used as follows:*
>
> *(1) For training that does not involve live fire, provided the ensembles and ensemble elements are appropriately marked as being for non–live fire training only*
>
> *(2) As determined by the organization*

Firefighting ensembles in this Standard include, helmet, coat, trousers, hoods, gloves and boots.

The consensus of the NFPA technical committee is that the life of a structural firefighter's PPE is generally less than 10 years, but this would depend on usage where some firefighters would wear out gear in much less time than the 10 years. It is not only about the wear and tear at structural fire incidents. The PPE will be worn for training and for other incident types as well.

Regardless of when the PPE element was originally produced, it is imperative that the protective elements be routinely inspected to ensure that they are clean, well maintained, and still safe. Just knowing the age of the elements cannot do that. Premature failure is possible.

It should be noted that firefighter PPE is designed, and regulated, for the use of active structural firefighting, not for other purposes such as Incident Commend, traffic control, firefighter rehab and support, pump operator, and etc. In Cumberland County, it seems that the majority of fire department members are not Qualified to perform structural firefighting, and as such, do not

need compliant firefighter structural firefighting PPE. It is therefore likely that expired, or alternative, PPE would well suffice these other roles, and at greatly reduced cost.

NFPA-1851 requires destruction or otherwise safety marking of expired PPE. It is suggested that expired firefighters structural firefighting PPE be prominently labeled as "NOT FOR STRUCTURAL FIREFIGHTING OR TRAINING" before being utilized in an alternative role as mentioned above.

Recommendation 92: GA recommends that Cumberland County ensures that bunker gear components of firefighter structural firefighter PPE that have expired and must be retired to meet NFPA-1851 requirements be prominently labeled as not fit for firefighting or firefighter training before being used for other purposes.

PPE Issuance

The question of fire departments and firefighters alike is who gets the newest and the best of PPE ensembles. In a volunteer fire department, the fact that there are members on the scene of an emergency who perform tasks in high-risk environments, and others not, is quite common.

The main function of a fire service is to fight and hopefully extinguish fires in order to rescue persons and save property. Firefighting operations require personnel who perform functions in various areas or zones of a fire scene.

NFPA 1500: - *Chapter 8 Emergency Operations*, says:

> *8.7 Emergency Incident Hazard Control Zones.*
>
> *8.7.1 Emergency incident hazard control zones shall be established at every emergency incident to identify the level of risk to emergency responders and the appropriate level of PPE.*

The fireground is often divided into control zones. Typically, there are three zones; Hot Zone (aka RED), Warm Zone (aka Yellow), Cold Zone (aka Green).

RED - The area that presents the greatest risk of injury and contamination exposure to members. This is the area immediately surrounding a hazard that can be considered an immediately

dangerous to life and health (IDLH) environment, requiring appropriate PPE, full SCBA, accountability entry procedures, and a standby rapid intervention team (RIT).

YELLOW - The area surrounding, the hot zone where personnel and equipment are operating in support of an operation. Firefighting operations in this area are defensive in nature, such as playing hose lines on exposures and or playing hose lines or master stream devices into a structure from a safe distance. SCBA may or may not be required.

GREEN – The area surrounding a warm zone that is used for an incident command post, support agency interfacing, and staging of personnel not actively engaged at the moment, and equipment. Firefighting PPE is not required in this Zone, Safety/traffic vests are often worn.

Outside of the Green Zone is the red tape line, safe for the public.

Based upon the above control zones and the requirement for appropriate PPE and breathing protection, the following *Table 38* summarizes PPE requirements.

TABLE 38: APPROPRIATE PPE BY CONTROL ZONE

Minimum PPE Roles:	HOT Zone Interior Structural Firefighting/Rescue/work in IDLH areas	WARM Zone Exterior Defensive Operations	COLD Zone Operations support, Command, Staging, etc.
PPE Ensemble	Meets NFPA-1971 & 1851 (§10.1.2)	As appropriate, not NFPA-1971 requirement	Not Required, if worn does not need to meet NFPA
Second set PPE	Meets NFPA-1971 & 1851 (§10.1.2)	N/A	N/A
Hood/Balaclava	Meets NFPA-1971 & 1851 (§10.1.2)	As appropriate to need, not required to meet NFPA	Not Required, if worn does not need to meet NFPA
Firefighter Helmet	Meets NFPA-1971 & 1851 (§10.1.2)	As appropriate to need, not required to meet NFPA	Not Required, if worn does not need to meet NFPA
Gloves	Meets NFPA-1971 & 1851 (§10.1.2)	As appropriate to need, not required to meet NFPA	Not Required, if worn does not need to meet NFPA
Firefighter Boots	Meets NFPA-1971 & 1851 (§10.1.2)	As appropriate to need, not required to meet NFPA	Not Required, if worn does not need to meet NFPA
SCBA	Meets NFPA-1981	As appropriate to need, not required to meet NFPA, must meet NS Reg. 53/2013	Not Required
SCBA PASS	Meets NFPA-1982	As appropriate to need, not required to meet NFPA	Not Required

Minimum PPE Roles:	HOT Zone Interior Structural Firefighting/Rescue/work in IDLH areas	WARM Zone Exterior Defensive Operations	COLD Zone Operations support, Command, Staging, etc.
Safety Vest	N/A	As appropriate to need; CSA Z96-15: High Visibility Apparel	CSA Z96-15: High Visibility Apparel
Hardhat	N/A, See firefighter helmet	As appropriate to need, advisable, CSA Z94.1-15: Industrial Protective Headwear	CSA Z94.1-15: Industrial Protective Headwear
Safety Footwear	N/A, See firefighter boots	Advisable, CSA Z195-02: Protective Footwear	CSA Z195-02: Protective Footwear

Firefighter Boots

Stakeholders reported improper boot sizing/fit is a concern, Some departments have leather boots, while others have rubber.

It is understood that MCC in the past maintained a supply (8-12 sets) of firefighting boots kept on hand. *GA's* past experience informs that it is possible to maintain a supply of common sizes of boots, e.g., sizes 8-10 standard width, but that there must be in place a standing-order with a supplier who will fulfil an order for a pair of boots within 24-hours, shipped directly to MCC.

Firefighter boots must comply with NFPA-1971: *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*. The standard does not specify the boots be leather or rubber. Leather boots are more than twice, and can be four times the cost of rubber boots.

> ***Recommendation 93: GA recommends that Cumberland County conduct a program of investigating and through trial settle on a make and model of rubber firefighter boot that fits well and is comfortable. This boot would then become the standard boot purchased, except in exceptional circumstances where a fit cannot be obtained.***

Not all boots are the same. Some are manufactured off-shore and it is uncertain who they are expected to fit. Others are made on general sizing lasts of an average width and fit, and usually are not satisfactory, but are commonly available and generally cheaper. *GA's* past experience is that there are boots available that are manufactured to shoe size fit and also half-sizes, with different available widths, that fit very well and are comfortable. They may cost a small premium, but are worth it when a firefighter is stomping around in them for many hours.

Firefighter Helmets

Fire Helmets must comply with NFPA-1971: *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*.

Firefighters current PPE ensembles are very similar in design and colour, so it is challenging for incident commanders to know who is qualified to perform tasks in the Red (Hot) zone or the Yellow (Warm) Zone, especially during mutual aid attended incidents. One of the easiest and most cost-effective ways is to apply vinyl stickers on both sides of the fire helmet to indicate the firefighter's capabilities on the fire ground, for example; an R for recruit, A for Level I qualified, etc. As an individual firefighter's competencies enhance, then the vinyl sticker is replaced with a new appropriate sticker.

Some fire departments are using different coloured helmets for this purpose. *GA* discourages this practice for a couple of reasons. There are multiple levels of firefighter skills and training. It is unlikely that there are an equivalent variety of colours available for helmets to cover off these differences. This means that the coloured helmet is only an approximation of the firefighter capability.

As firefighters progress through their training levels, they will need new (different colour) helmets. With a ten year life, and firefighter turnover often being less than this, it is wasteful at the high cost of helmets to be doing this.

If individual fire departments are doing their own thing in this regard, it completely defeats the purpose of identifying capabilities through helmets. A fire chief or other officers on a fire department should know the capabilities of their few members well. It is the occasion of mutual aid teams working together where the identifying of capabilities is most needed, to ensure that some eager, but not well enough trained, firefighter is not assigned to a task beyond their sure capability, with potentially tragic results. This then requires a standard approach, no exceptions.

Recommendation 94: GA recommends that Cumberland County, through consultation with the fire departments, determine a standard method of identifying volunteer firefighter capabilities through appropriate markings on their firefighter helmets or other appropriate protective headwear, and that this method be enforced through policy.

There are many designs and manufacturers of firefighter helmets available, Styles vary with some firefighters wanting the "New York" look or the "Houston" look or the "traditional" leather helmet look, and not the modern standard look. Some of these trendy helmets cost as much as $1,500-$1,850 *each,* and will still expire in 10 years.

Adequate standard modern design helmets are available, that interface properly with SCBA and PPE, and cost in the range of $400-$500 each, and will easily last their 10 year life-span. They are also lighter, and sit lower so are more comfortable to wear and less strain on the neck. They are also easier to attach identification labels to, as recommended above.

FIGURE 30: HELMET DESIGN OPTIONS

Trendy

Practical

Firefighter Gloves

Firefighter gloves must comply with NFPA-1971. It is usually wise to have spare gloves on hand to replace those irrevocable contaminated, or damaged, or lost. Not all glove designs fit everyone. A variety of sizes, and at least two brands are usually necessary to achieve a good fit for most everybody.

Additional options must be available for difficult to fit firefighters. Gloves are intended to protect a firefighter's hands from injury due to heat, toxins, and sharp objects. If gloves fit poorly, then they will be pulled off to do manual tasks, and fail in their purpose. As a side benefit, gloves that are being worn are hard to lose.

Wildland PPE

Feedback from the stakeholder, included;

- Wildland coveralls 15 years old
- No Wildland Coveralls, or no approved coveralls; DNR refuses volunteer entry into the wildland.
- One department had to purchase their own Wildland PPE.

The appropriate standards is NFPA-1977: *Standard on Protective Clothing and Equipment for Wildland Fire Fighting and Urban Interface Fire Fighting*, 2022 Edition.

This standard includes protective garments, protective helmets, protective gloves, protective footwear, protective goggles, and protective chain saw protectors; and provisions for load-carrying equipment (helicopters).

In addition to the NFPA-1977 standard; for further guidance reference the following standards on helmets and boots;

- CSA Z94.1 Industrial protective headwear — Performance, selection, care, and use
- CSA Z195 Protective footwear

Many if not all of the fire departments have already purchased wildland firefighting appropriate PPE. Others are actively doing so through the proceeds of the firefighters' 50/50 draws, and presumably in the past some have used other fund-raising, or possibly County funds. This need is likely an ongoing need as gear is destroyed or worn out.

County firefighters seem to recognize that structural firefighter PPE is not appropriate for wildland firefighting and have been taking action to secure more appropriate PPE. It is unknown if all purchased and/or utilized gear meets the standards mentioned above.

Recommendation 95: GA recommends that Cumberland County review currently used wildland firefighting PPE gear and if deficient provide protective garments, meeting the requirements of NFPA-1977, for each firefighter that is qualified and participates in wildland firefighting operations.

PPE Routine Inspection

All PPE inspections, cleaning, decontamination, repair and storage should comply with chapters 6, 7, 8 and 9 of NFPA-1851.[207] Any service contractor engaged for this purpose will need to be certified by the manufacturer, and meet this Standard.

Each fire department member;

> *shall conduct a routine inspection of their protective ensembles and ensemble elements upon issue, at the beginning of each duty period and after each use,*

The routine inspection shall include, at a minimum, the inspections specified in §6.2.2.1 through §6.2.2.7. (which is too long to reproduce here), and

> *6.3.3 Advanced inspections of all protective ensemble elements that are issued shall be conducted annually and whenever a routine inspection determines potential damage.*

The specified annual inspection must be conducted by a qualified person/firm that has the manufacturer's endorsement. There are requirements to use specialized testing equipment and when repairs are necessary, which happens pretty often, there are particular methods and materials that must be used to maintain the protective integrity of the PPE, and thereby the liability exposure of the County who owns the PPE.

> ***Recommendation 96: GA recommends that Cumberland County develop and implement a program that ensures that all structural firefighter protective ensembles are tested and maintained in accordance with the requirements of NFPA-1851. GA recommends that a qualified firm be engaged to perform testing, inspection, and deep cleaning work on at least an annual basis. GA further recommends that MCC maintain thorough records of the PPE element serial or ID numbers, descriptions, and condition audits obtained in these annual inspections and tests, in electronic format.***

PPE Storage

NFPA-1851, - Chapter 9; addresses the storage of PPE. Some highlights are;

> *PPE shall not be stored in Ultraviolet (UV) light, especially from sunlight, is a known cause of protective ensemble degradation. Storage in both direct and indirect sunlight causes degradation of fibers in protective garments, resulting in fabric strength loss,*

[207] NFPA 1851: *Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*, 2020. This document may be viewed for free at https://www.nfpa.org/codes-and-standards/all-codes-and-standards/list-of-codes-and-standards/detail?code=1851.

and can cause accelerated aging of other equipment. In addition, other UV light sources, such as fluorescent light, can cause similar degradation. Therefore, ensembles and ensemble elements should be stored to minimize exposure to all sources of UV light. LED light sources produce minimal amounts of UV light, and therefore, could be a good alternative to other light sources.

Ensembles and ensemble elements shall be clean and dry before storage.

Ensembles and ensemble elements shall not be stored or transported in compartments or trunks with sharp objects, tools, or other equipment that could damage the ensembles or ensemble elements. Where ensembles or ensemble elements must be transported or stored in such environments, the ensemble or element(s) shall be placed in a protective case or bag to prevent damage.

Ensemble and ensemble element storage areas shall be clean, dry, and well ventilated.

Structural Firefighters PPE Cleaning

NFPA-1500 directs that PPE inspection, cleaning and maintenance of PPE meet NFPA-1851.

NFPA 1851 section 7.3.4 states as follows;

"Where not subjected to prior advanced cleaning, ensembles and ensemble elements that are issued and used shall receive advanced cleaning at least every six months, resulting in a minimum of two advanced cleanings in a 12-month period, with one of these advanced cleanings occurring at the time of annual advanced inspection".

Currently the fire departments use various options for the cleaning of their PPE, as follows;

- Clean Heroes, Truro NS, Offers a mobile at scene service, 12-hour turnaround, and a cheaper fixed site facility.
- Atlantic Bunker Gear, Hebbville, NS, Received reports of 5-day turnarounds at their fixed site.
- Amherst Fire Department has cleaning facilities, but one fire department specifically mentioned the travel distance was too great. Another Fire Department, from time to time, will have their gear cleaned by the Amherst FD.

To reduce turn-around time on only having PPE professionally cleaned, a supplementary local capacity will be advantageous and will reduce pressure on the need for second sets of PPE by helping ensure that firefighters can be ready to respond as soon as possible.

Recommendation 97: GA recommends that Cumberland County designate three fire stations to be established as PPE cleaning and decontaminating facilities; and be equipped with NFPA-1851 compliant extractors and dryers; to decontaminate, clean and dry fire services PPE. The recommended stations for these facilities are Parrsboro, Pugwash, and Springhill. Such facilities do not replace the need for annual expert cleaning and inspection of PPE, but only enable quick access to proper cleaning to remove contaminants, permitting rapid return to service.

Recommendation 98: GA recommends that Cumberland County specifically prohibit the home laundering, or laundering of PPE by commercial means, or through use of public laundromats. The risk of serious health impact to the public, to unsuspecting laundry personnel, or to a firefighter's family should not be tolerated. Contaminated firefighters' PPE is toxic and dangerous.

It should be noted that station space requirements at the recommended sites for laundry equipment could be an issue, as well as managing access by other fire departments. *GA's* experience in the past with these types of shared services is that an exterior access door that allows access to only the shared area could work well. Given that PPE cleaning needs to be in a segregated area, this idea facilitates that concept. Having a coded lock, with regular code changes will ensure security. Another option is an outbuilding, or a Sea-Can, with the required services.

The intent of the program is not necessarily having the PPE cleaning stations actually conduct the cleaning of the other stations PPE but to house the equipment and maintain the equipment. Firefighters would clean their own gear. The stations chosen were as a result of their fairly central locations and size, being more likely to be able to house the equipment as per the recommended best practices and standards; and within reasonable and encouraging driving distances from the stations served, similar to the logistics centre concept.

FIGURE 31: PROPOSED PPE CLEANING ZONES

Zone 1: PPE Cleaning Station Springhill	Zone 2: PPE Cleaning Station Pugwash	Zone 4: PPE Cleaning Station Parrsboro
Fire stations supported	Fire stations supported	Fire stations supported
Springhill Truemanville Leicester Collingwood Southampton River Hebert Joggins	Pugwash Wallace Wentworth Westchester Lorneville Tidnish Bridge Shinimicas	Parrsboro Advocate Apple River FPW

The requirement by a third party to conduct annual inspections and testing as per NFPA 1581 remains. An inspection and maintenance program operated by a third party for hydrostatic testing and approved PPE repairs is required that complies with NFPA-1851. The County may benefit from a single County-wide contract for such a service program as compared to the individual fire departments obtaining individual service agreements.

Regardless how the PPE cleaning services are carried out there will be a need for extra sets of PPE ensembles, including bunker gear, hoods, and gloves. Not all spare bunker gear is required to be fully compliant with NFPA-1971: *Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*. Only the Level 1 qualified interior firefighters require full compliant bunker gear, because only they should be performing interior rescue and fire control.

PPE for MFR

There were no reported issues with PPE provided by EHS for Medical First Responders. All MFR responders were initially fit-tested for N-95 masks at the start of the COVID19 epidemic, however, no further fit-testing has taken place since the initial test.

Respiratory Protective Equipment (SCBA)

All fire departments have self-contained breathing apparatus (SCBA). It is estimated that there are approximately 140 sets of SCBA in service, with an additional equal number of spare air cylinders (aka bottles). The following table outlines what was reported to *GA*, from various sources and using some deduction;

TABLE 39: SCBA INVENTORY IN CUMBERLAND FIRE DEPARTMENTS

Highlighted numbers; is some guesswork on model and quantity (basis service records)

	From Service Records	Self-Reports in FD DataBooks	SURVIVAIR Sigma	Honeywell Titan	SCOTT Air-Pak 2.2	SCOTT Air-Pak 75 2216	SCOTT Air-Pak 2216	SCOTT Air-Pak Fifty 2216	SCOTT Air-Pak X3 Pro 4.5 with mask TIC and C5 radio interface	Drager PSS-2018 (2216)	MSA UNK model	Remarks
Advocate	8	N/A				8						
Collingwood	12	10				12						
FPW	7	N/A								7		
Joggins	7	N/A								7		
Leicester	N/A	8										
Parrsboro	15	10						15				
Pugwash	10	11			5	5						
River Hebert	9	9								9		
Shinimicas	12	12							12			From interviews
Southampton	7	3								7		

Highlighted numbers; is some guesswork on model and quantity (basis service records)												
	From Service Records	Self-Reports in FD DataBooks	SURVIVAIR Sigma	Honeywell Titan	SCOTT Air-Pak 2.2	SCOTT Air-Pak 75 2216	SCOTT Air-Pak 2216	SCOTT Air-Pak Fifty 2216	SCOTT Air-Pak X3 Pro 4.5 with mask TIC and C5 radio interface	Drager PSS-2018 (2216)	MSA UNK model	Remarks
Springhill	18	18									18	From interviews
Tidnish Bridge	N/A	N/A										
Truemanville	12	12	4	8								
Wallace	9	10			2	5	2					
Wentworth	6	6			6							
Westchester	9	8			5	4						
Totals:	141	117	4	8	18	34	2	15	12	30	18	

Interoperability amongst fire departments is key at any incident when SCBA is required. Currently in MCC fire departments (not including the 3 contract fire departments) there are five different manufacturer of SCBAs, with eight different models of SCBA in service, and not all operating at the same pressures (i.e., 2216 vs 4500 psig).

NS' *Occupational Safety General Regulations*,[208] at §195(2) requires that;

> *(2) An employer shall ensure that a firefighter who is wearing self-contained respiratory protective equipment when engaged in structural fire-fighting is accompanied by another firefighter similarly equipped and having the same air capacity.*

Regulation requires that firefighters engaged in structural firefighting to be similarly equipped and have the same capacity of air in their cylinders. This speaks strongly to standardization, and speaks strongly to potential health and safety risks if not complied with. It also speaks to a respiratory program that addresses operational variables.

Lack of standardization could lead to a safety issue when multiple departments are operating at a scene and may have to use another department's SCBA. There is a high likelihood that that needed SCBA is from a different manufacturer and that the firefighter is not trained in that particular unit, or similarly in the use of a unit of a same manufacturer but with different operating pressure.

[208] N.S. Reg. 53/2013

The problem is further compounded when considering the need for replacement/spare SCBA cylinders at the scene of a fire. Cylinders from one manufacturer CANNOT be utilized on SCBA from a different manufacturer, and in some cases the cylinders are not even interchangeable between models from the same manufacturer. The cylinders might attach, but they are not certified to operate together, and as such are a potential for liability, let alone a serious injury.

This situation forces the fire departments attending a mutual-aid incident to operate in silos, as if they were not actually there to work together. It also impacts on County budgets, because it precludes the ability to have a central cache of available SCBA spare bottles, like on a county-wide support vehicle. Instead, each fire department struggles to amass enough spare cylinders to manage the highest demand fire, and ultimately will fail in that endeavour.

Not only is this a safety issue but also complicates training and managing maintenance issues.

One department stated that they had to standardize with a large facility, who has SCBAs on their site. The facility's SCBA manufacture is different than others used by County fire departments. It is also not certain that the facility uses SCBA certified for firefighter use. There are other varieties of look-alike SCBA from the same manufacturer.

A review of this department's calls over a six year period indicated that the fire department in question responded to reports of a single fire alarm and one structure fire call over this time period, totaling two fire incidents. During the same time period, that fire department in question provided responses to 134 mutual-aid call requests from other County fire departments. These other County fire departments use different manufacturer SCBAs than this department. When compared to the facility number of calls, the department in question responded to the facility for fire incidents at only 1.5% of their calls. In other words, 98.5% of the time the call for service was for mutual aid calls to neighbouring County fire departments, and at each one there was SCBA incompatibility.

Additionally, during this same reporting period, the fire department in question, received mutual-aid assistance 63 times from five other fire departments. Accounting for mutual aid given and received, the percentage of responses to the facility in question drops to 1.0%.

The above example does not mean that the manufacturer type or model used by this department, may not be the best standard SCBA to be used across the county moving forward. That needs to be determined.

Fourteen years ago the Municipality of Cumberland County Council approved the *Fire Services Standardization Policy* FS-08-02. This policy lists a number of types of fire equipment to be standardized. SCBA is on that list of equipment to be standardized. Given the varying manufacturers and models and differing operating pressures, it appears this policy was neither adhered to, nor enforced.

SCBA Serviceable Age

NS' Occupational Safety General Regulation indirectly talks about the age of SCBA when it requires the following; {emphasis added}

> *"Respiratory protective equipment*
>
> *195 (1) A firefighter who may be exposed to an oxygen deficient atmosphere or to harmful concentrations of air contaminants when engaged in structural fire-fighting shall wear positive-pressure self-contained respiratory protective equipment that complies with or exceeds the latest version of NFPA standard NFPA 1981, "Standard on Open-Circuit Self-Contained Breathing Apparatus for the Fire Service,…" [emphasis added]*

The need to keep existing SCAB current is certainly more than just implied by the Regulation. SCBA manufactures offer update kits for retrofitting SCBA to keep current with changes in the NFPA Standard, which occur on a 4-6 year cycle. However, there are limits on what can be retrofitted. Major changes, that come about ever cycle or two, cannot be effectively updated. In those cases the SCBA would no longer strictly meet the Regulation.

In that case, although the older SCBA might not be considered immediately unsafe to use, older versions will not address issues arising from new respiratory challenges and from firefighter incidents. One such issue is the ability of the SCBA to withstand a sudden high heat environment, whereas several firefighters have narrowly escaped death and been injured in

flash/roll-over events; these lessons (and others) are leading to changes in the Standards for PPE.[209]

SCBA compressed breathing air cylinders require, by federal regulation,[210] regular inspection and testing, usually on a 5 year cycle. At 15 years of age the cylinders are scrap[211] and it is illegal to use them or even to refill them with compressed air for another purpose. They become lamp-shade holders and must be destroyed such that they cannot be used.

Taking into account the regulated need to maintain SCBA up to the current NFPA standard, and the need to scrap and replace the SCBA cylinder, and associated spare cylinder at 15-years old, it makes sense to consider the age limit on SCBA as approximately 15 years. It seems pointless to purchase two new bottles ($3-$4k) with a new 15-year life, when the SCBA they are intended for, designed for, will likely not last 30 years without violating the currency requirement of the Regulations, and without requiring increasingly expensive (if possible) upgrades and repairs as their performance degrades and they fail required testing.

Recommendation 99: GA recommends that Cumberland County standardize on a single make and, as far as practical, model of Self Contained Breathing Apparatus (SCBA) as a priority Health and Safety initiative. A committee should be struck to investigate current inventories and makes/models, available options, conduct trials for practical aspects of each, and settle on a recommendation for consideration by the County. Cumberland County should enact Policy that will permit the continued purchase of standardized SCBA, if such action is not already permitted in the County purchasing by-law and procedures.

Recommendation 100: GA recommends that Cumberland County adopt a fifteen-year age limit on SCBA. All SCBA should be inventoried, all separable components permanently identified with a unique ID tag, and the age, condition, maintenance, and testing records for each component should be kept by MCC as part of a permanent record.

[209] In the event of an injury to a firefighter, one of the first steps by the provincial investigators is to seize all PPE that the firefighter was using, and the associated records for that equipment. A lack of complete records could suggest to investigators that there was no proper system for maintenance or that the records were tampered with. Neither scenario reflects well on those responsible for the equipment and will likely lead to Ministerial orders against the fire department and the County as owner of the equipment.

[210] Canada; Transportation of Dangerous Goods Regulations, SOR/2001-286

[211] This requirements applies to all modern cylinders which are fabricated from aluminum/carbon or aluminum/Kevlar composite materials. Ancient steel or aluminum only bottles have an unlimited life-span, but are limited in other ways since they cannot be used on modern SCBA.

Recommendation 101: GA recommends that Cumberland County develop and implement a program of scheduled annual inspections of all SCBA cylinders in accordance with recommended procedures in NFPA-1852; Annex B, and take appropriate actions as recommended therein. Records of all such inspection and retirement activities should be recorded, and such records should be kept by MCC as part of permanent records.

Recommendation 102: GA recommends that Cumberland County establish and enforce a procedure and provide support for a program whereby all SCBA are cleaned and disinfected after use in accordance with the recommendation contained in NFPA-1852, unless other methods are specifically recommended by the SCBA manufacturer, in which case those recommendations or requirements shall be followed. Decontamination and disinfection facilities should be established at each fire station, in a designated area in the fire station, and using materials and tools that are not used for any other purpose. Any such tools and materials shall be clearly labeled as for SCBA USE ONLY.

Recommendation 103: GA recommends that a procedure and policy be developed and implemented that provides for inspection, maintenance, or retirement of all SCBA components in accordance with NFPA-1852. Records of all such inspection and maintenance and retirement activities should be recorded, and such records should be kept by MCC as part of permanent records.

SCBA Unit Maintenance, Testing and Decontamination

There is a requirement to have the SCBA units annually bench tested[212] to verify that their performance still meets the standards they were manufactured to. Usually, at the time this testing is done, repairs or adjustments are needed. This work is currently being done under contract by two or more different suppliers, or possibly by alternating suppliers.

Companies that are servicing and testing SCBA must be qualified on the equipment they are working on by the manufacturer. With the large variety of SCBA equipment that MCC owns, it might be that there is no single service provider for all SCBA. That is problematic from a management perspective, and from a record keeping perspective. Not all suppliers keep similar records, or might not be able to provide them electronically. The last point is, that it is more cost effective to have all SCBA done by the same supplier, especially considering volume pricing, and travel costs and expenses. It is also better for record keeping.

Current decontamination procedures of SCBA units in Cumberland is questionable. SCBA are not all that easy to decontaminate. However, a proper decontamination and deep cleaning

[212] NFPA 1852: Standard on Selection, Care, and Maintenance of Open-Circuit Self-Contained Breathing Apparatus (SCBA), 2019 chapter 7

process is available through a company located in Truro who has a specialized mobile SCBA decontamination unit.

Recommendation 104: GA recommends that Cumberland County continue the practice of annually, or more often as needed, bench testing of all SCBA units by a qualified supplier. The proper and permanent marking with unique IDs for each separable component of the SCBA will facilitate the keeping of permanent electronic records of these inspections, tests, and maintenance activities.

There is considerable liability that could be attached to the SCBA owner, the County, if SCBA is not properly maintained and tested.

SCBA Face Pieces

It is of the upmost importance that structural firefighters have properly fitted/sized facepieces. There were a number of concerns raised during the firefighter stakeholders' meetings related to facepieces. The most common issue mentioned by individual firefighters was insufficient facepiece size availability at the scene of an incident.

Just to expand on what is being said here. If there are 4 SCBA placed on a pumper, each must have with it a face-mask for it to be used. The question is what size or style mask should be used? Most SCBA manufactures offer different sizes, sometimes material options (rubber, silicone), and design variants to their masks. For example; Scott offers mask models AV-2000, AV-3000, Vision C5, and each of these has availability is sizes S, M, L. There are also variations in the head harness. All will operate on current standard Scott SCBA. But not all fit the same way.

GA's experience in introducing quantitative fit-testing into fire departments was that it took a variety of options (as above) to successfully fit a mask for each person, a fit that would allow the wearer to pass the fit-tests; i.e., that provided protection for the wearer, which is of course the point of mandatory quantitative fit-testing.

Back to the pumper example. When arriving at the scene of the fire, a firefighter who only achieved a fit-test pass on a medium AV-3000 mask does not have that option available to use, because no such mask model/size combination happens to be on the truck that day. Only the most common sizes were provided, on the assumption that most often only the most common

sized firelighter will need them, even if the thinking went that far. That situation is a fail for the fit-testing program, and a potential liability for the owner of the SCBA (the County) and for the fire department. It also affected the firefighter who almost certainly will be exposed to an IDLH atmosphere. This affects the public as well, who might not get the full performance from that firefighter who knows that they are not well protected, and/or might not be able to make that last effort, into that most contaminated space to effect a rescue, because they cannot breath properly. They may also let down their partner because they will experience a lower air endurance, since poor fitting masks leak air.

GA understands that some of the MCC fire departments had assigned individually sized facepieces for each member of their department, although this was not verified. In *GA's* experience it was in the long run more effective to provide an assigned SCBA face mask to each eligible qualified Level I interior firefighter, and ultimately cheaper too because they looked after them better when it was theirs, and there was a lesser need to have multiple masks, in multiple sizes and models, on each truck, to help ensure that there was a greater chance that a firefighter could take the time to search through them and find one that fits, at a particular fire.

Annual Quantitative SCBA Face Piece Fit-testing

The NS *Occupational Safety General Regulations*[213] requires that; {*emphasis* added}

> *Respiratory hazard*
>
> *13 (1) Where a person is exposed to a respiratory hazard that may cause injury or disease, an employer shall provide and ensure the use of an adequate respirator that is appropriate to the hazard.*
>
> *(2) An employer shall ensure that the compressed breathing air used in a respirator complies with or exceeds the latest version of CSA standard CAN3-Z180.1, "Compressed Breathing Air and Systems".*
>
> *(3) An employer shall ensure compliance with the latest version of CSA standard CSA Z94.4, "Selection, Use, and Care of Respirators", in respect of*
>
> *(a) the selection, use, maintenance and testing of a respirator; and*
>
> *(b) the training of users of a respirator*

[213] N.S. Reg. 53/2013

> *196 An employer shall ensure that firefighters receive annual quantitative fit testing of their self-contained respiratory protective equipment."*

CAN/CSA Z94.4.1:21 is a new Canadian standard[214] that applies to filtering respirators, like the N95 medical-grade masks utilized for MFR response. This standard recommends annual quantitative fit-testing for wearers, and requires it at least every two years or sooner if needed.

A second standard, CAN/CSA-Z94.4-18 *Selection, use, and care of respirators* applies to SCBA components, including the face mask, and is a legislated requirement in Nova Scotia, as noted in the above excerpt from Regulation. The 2018 edition is the latest version, as required by the Regulations.

Z94.4 Standard has certain requirements for users of respirators covered by the standard (i.e., including SCBA). The following excerpts[215] address the fit-testing program and conditions for fit-testing and the use of a tight-fitting respirator (i.e., SCBA). {*emphasis* added}

> *"8.1.3* ***Respirator user screening and medical assessment***
>
> *This activity requires an understanding of the health assessment process, physiological and psychological conditions that could require reassessment, and individual accountabilities.*
>
> *An initial assessment of user suitability may be performed by someone who is not a health care professional but is working under the direction of a health care professional. A respirator user screening form is a tool to identify user suitability or flag any health concerns that warrant a medical assessment by a health care professional…*
>
> *A medical assessment shall consist of a review and written opinion by a health care professional as to the suitability of the worker to safely use a respirator…*
>
> *9* ***Respirator fit testing***
>
> *9.1.2 No person shall use or be assigned a tight-fitting respirator until a satisfactory fit has been verified by a qualitive[216] or quantitative fit test.*
>
> *9.1.3 The fit test shall be used to verify the selection of the specific make, model, and size of a tight-fitting respirator for individual users. A sufficient variety of respirators shall be provided to ensure that each user has an opportunity to obtain a satisfactory fit because no single make, model, or size can be expected to fit all persons….*
>
> *9.1.6 A fit test shall be carried out*

[214] https://www.levitt-safety.com/blog/can95-respirator/?utm_source=rss&utm_medium=rss&utm_campaign=can95-respirator

[215] Excerpts are provided here because access to the standard online is onerous, but never the less encouraged, at the following link. https://community.csagroup.org/docs/DOC-126130

[216] Note that the N.S. Reg 53/2003 requires qualitative fit-testing only.

a) after completion of user screening …

h) at least every 2 years.

9.2 ***Respirator interference concerns***

9.2.1 ***General***

9.2.1.2 The program administrator shall ensure that the potential interferences to the fit and function of the respirator are effectively managed in accordance with the requirements described in Clauses 9.2.2 to 9.2.5.

9.2.1.2 Individuals who are unwilling or otherwise unable to comply with the interference-free requirement, or who are unable to obtain an acceptable fit, shall be prohibited from using a tight-fitting respirator.

9.2.1.3 Fit testers shall follow the requirements of the program and shall not perform a fit test if they observe that the person is not free from interference where the respirator seals to the skin of the face of neck….

9.2.2 ***Facial hair****. Individuals shall present themselves for fit testing free from interference of hair where the respirator seals to the skin of the face or neck. Although the rate of hair growth varies among individuals, for many, this requires being clean-shaven within the previous 24 or preferably 12 h to ensure that hair neither infringes on the sealing surface of the respirator nor interferes with valve or respirator function (see examples of acceptable and unacceptable facial hair in Annex P).*

9.2.3 ***Personal conditions****. Individuals shall present themselves for fit testing in the same personal condition they would expect to be in when using the respirator. This includes hair styles (e.g., hair buns) and wearing or not wearing dentures, eyeglasses, or contact lenses…*

9.2.4 ***Personal effects or accessories****. Individuals shall present themselves for fit testing in such a way that personal accessories such as head coverings, garments, facial jewellery, or other items shall not come between the skin and the sealing surface of the respirator. Note: Such accessories can impair respirator effectiveness by interfering with valve function, respirator adjustability, and proper secure positioning. Makeup, cremes, or lotions can also interfere with effective respirator function.*

9.2.5 ***Personal protective equipment (PPE) integration****. When PPE such as eye, face, head, or hearing protectors or protective garments are required to be worn during respirator use, they shall be worn during respirator fit testing to ensure that the respirator seal is not compromised."*

The subject of facial hair and the fitting of SCBA masks can be a contentious issue. Some of the volunteer firefighters may not meet the requirements of Z94.4 and should not be allowed to wear an SCBA; as long as they do not meet the requirements. The long-term health of the firefighter is important to everyone, especially the volunteer firefighter and their family, and in *GA's* opinion it is not worth taking the risk of exposure, to deadly environments, that could arise from a poorly fitting SCBA mask. That is why those environments are called IDLH – immediately dangerous to life or health.

Quantitative vs Qualitative

There are two types of fit-testing available; qualitative and quantitative. NS Regulations require quantitative.

Qualitative fit-testing is essentially putting on the mask, placing a bag over the subject's head, and introducing a smelly substance. There are obvious problems with this, starting with the person's ability to smell, and how much odourant does it take for *that* person to smell it. It would be different, presumably because it is not measured, for each subject. If the subject does smell it, then the mask is adjusted and it is tried again. Do they smell it now? … or are they still smelling it, they think, from the first time?? Also, some people do not have a sense of smell.

Quantitative is a scientific process that measures the difference in aerosol counts between normal room air and filtered air provided to the mask. It is independent of any subjective input from the person being tested.

Stakeholder meeting have assured *GA* that fit-testing of any type is not being done, other than the one-time when EHS did it for N95 medical masks in 2020 (i.e., not SCBA face masks). For clarity, if a person wears two or three different respirator protective equipment types, e.g., N95 medical mask, SCBA face mask, etc., then they must be quantitative fit-tested on all equipment that they wear. This means that firefighters who are qualified as structural firefighters *and* as MFR persons must, annually, be fit-tested on each system. If they wear a respirator at their regular work, they must be fit-tested there too, and at work fit-testing does not replace the requirement for firefighter fit-testing in MCC.

Fit-testing is also a requirement of NFPA-1500.[217]

Quantitative fit-testing is conducted on the firefighter by a qualified person meeting the requirements of Z94.4 or Z94.4.1:20. The firefighter must be wearing a specific size and style of facepiece that is needed for them to comfortably pass the fit-test. They must also wear their helmet and balaclava and bunker coat during the test. The purpose is to ensure they have a proper

[217] NFPA 1500: *Standard on Fire Department Occupational Safety, Health, and Wellness Program*, 2021

fit while dressed as they would be during firefighting operations, so as to prevent leakage and becoming exposed to contaminants. To ensure proper fit during fire operations, the firefighter should have their own individual face piece, that they will be fit-tested with, and will wear during operations.[218]

Recommendation 105: GA recommends annual quantitative fit-testing of all persons who will be required to wear SCBA or medical mask on an annual basis, in conformance to the latest amendment of NS Occupational Safety General Regulations N.S. Reg. 53/2013. Since not all firefighters will be able to wear breathing protection for various reasons; those firefighters who are not fit-tested and therefore not qualified to wear SCBA or medical masks should not be permitted to operate in IDLH atmospheres.

Recommendation 106: GA recommends that in order to comply with the intent of N.S. Reg. 53/2013, that every interior structural firefighter qualified to level 1 with fire control, be issued their own SCBA facepiece if they pass quantitative annual fit-tested as per NS Regulation.

Recommendation 107: GA recommends that Cumberland County provide a sufficient number of powered air purifying respirators (PAPP) for use by fire investigation personnel when SCBA is not practical or safe to use.

Recommendation 108: GA recommends that Cumberland County purchase a PortaCount quantitative fit-testing machine and train a staff member to operate it.

Recommendation 109: GA recommends that Cumberland County either takes steps to procure equipment and training of staff to conduct fit-testing "in-house," or engages a competent contractor to at least annually, and more often as required, provide quantitative fit-testing on all firefighters who will be required to wear a respirator to protect their breathing.

Breathing Air Compressor Systems, Cylinder Filling Stations, and Cascade Systems

Station Breathing Air Systems

There are a number of fire departments that have installed breathing air compressor systems, producing their own breathing air for use in SCBA. Nova Scotia's *Occupational Safety General*

[218] Fit-testing costs are contained in the *Administration* group of the *Other Operational Expenses* category, coming up later in this report.

Regulations, §13(2), requires that compressed breathing air used in respirators (e.g., SCBA) "*complies with or exceeds the latest version of CSA standard CAN3-Z180.1 Compressed Breathing Air and Systems*." The latest version is the 2019 edition (i.e., Z180.1:19)

The breathing air compressor systems installed in the fire stations must continue to meet the requirements of the latest version of the CSA standard, in order to comply with the Regulation. *GA* does not know if this is currently the case. §5.3 of the Standard requires a periodic compliance evaluation, and this should probably be done *at least* as often as the standard is updated,[219] and probably whenever any change is made to the system or building that might affect the air quality.

One requirement (§5.7) is the maintenance of critical records, and this requirement is comprehensive in nature. Included in the mandated records is the lifetime retention of commissioning records, and the minimum 5-year retention of all other servicing and testing records. *GA* does not know if this is being done.

The air intake for the breathing air system is required (§6.3) to be identified with warning signage, readily visible from a distance of 30m (100 ft). Such signage was not noted by *GA.* Indeed, there are requirements (§6, §8) for the location of these intakes, which should be reviewed by a competent expert.

Compressor Installation Considerations

The CSA standard, Z180.1 requires that the compressor manufacturer's requirements be met for the installation of the compressor system. The retention of commissioning records is one method of ensuring, for review, the maintenance of these requirements. Manufacturers do not require, but appear to assume that compressors will be installed in a separated compressor room, meeting their requirements. Some of the points related to this are as follows;[220]

- Although not specifically required, most compressor manufacturers make the assumption that the compressor will be installed in a separate room where operating conditions can be controlled and machine noise isolated from the remainder of the facility.

[219] Z180.1 Standard updates occurred in the following years; 1973, 1978, 1985, 2000, 2013, 2019.

[220] Adapted from Scott compressor installation requirements.

- Compressor shall be bolted to a concrete floor. Floor should be of the same design as that for a floor for fire apparatus. Some manufacturers recommend vibration control mounts.
- Room should feature auto ventilation. However, this is dependent upon the size of compressor and size of the room.
- Highly recommend, if there is room and the budget permits, that the air cylinder refill station and defrag chamber should be in a room separated from the actual compressor itself. This negates[221] wearing of hearing protection.
- If in a room off the apparatus floor, the room walls are required to meet the fire rating separation for the apparatus floor area.
- Typically, walls are constructed of concrete block walls and fire rated steel doors with self-closures.
- STC ratings. A sound blocking level of STC 50 means that a listener in a quiet room would need to exert effort to hear raised speech levels in adjacent rooms, and the speech would not be understandable or disruptive. Sound Transmission Class (STC) is an integer rating of how well a building partition attenuates airborne sound.
- Door signage indicating a requirement for hearing protection.

GA suggests that rooms for small compressors be at least 10 feet by 10 feet with the fill-station in a separate room. For larger compressors a 15 feet by 15 feet room is recommended. Manufacturer may recommend different dimensions.

NFPA-1989: Standard on Breathing Air Quality for Emergency Services Respiratory Protection contains recommendations on operating breathing air compressors and recommendations for ensuring good quality breathing air. As a supplement to CAN Z180.1, it is a good resource.

Fill-Stations

Some fire departments have what *GA* considers are unsafe cylinder filling stations. These consist of little more than pieces of pipe or tubing into which the cylinder being filled is oriented but not held in an upright position, thereby exposing the fill-station operator to the potentially fatal effects of any failure of the cylinder being filled. This is especially so when operator controls are adjacent, or worse above, the fill station.

[221] In *GA's* opinion, with the loud noise from compressed air at decompression of filling hose and disconnection of the cylinder, and the possibility of an overpressure protection device failing or cylinder failure, hearing protection while filling scba cylinders is recommended and should be standard practice.

SCBA cylinders can and have failed catastrophically when being filled. Catastrophic failures can result in serious injury to firefighters due to cylinder parts becoming projectiles, and multiple pieces of shrapnel being ejected, including parts of the fill-station itself. There will also be a super-sonic sound pressure wave that can damage hearing or internal organs. Such failures have been known to damage or demolish fire service vehicles, buildings or fill-stations[222] and to injure firefighters. Air cylinder filling stations should be capable of containing a catastrophic failure during refill of the cylinder. Such fill stations are readily available and a couple of Cumberland systems do incorporate them.

The Standard Z180.1, §12, specifically addresses filling stations, and the referenced clause in the Standard (A.8.4) goes into some detail on what should be included in a proper filling station design, that protects the filling station operator and any others in the vicinity of filling operations. Some Cumberland fill-stations are of concern since they do not likely meet the requirements, and definitely do not meet the recommendations, of the Standard. There were similar fill-stations of concern found on rescue trucks that were equipped with cascade systems.

Shown below in *Figure 32* are two examples of cylinder fill-stations found. The red framed one is non-compliant, and unsafe. The green framed one meets standards and is much safer for the operator or anyone else in the vicinity.

FIGURE 32: EXAMPLES; UNSAFE (LEFT) AND RECOMMENDED SCBA CYLINDER FILLING STATIONS

[222] Excerpted from Ontario Section-21 Guidance Note 1-9. https://www.ontario.ca/document/firefighter-guidance-notes/1-9-scba-air-cylinder-handling

Mobile Filling Stations and Mobile Cascade Systems

There are some fire departments that have a mobile capability to fill SCBA cylinders, also known as cascade systems, installed on vehicles. *GA* does not know exactly how many of these there are, but *GA* saw several. The relevant standards that would regulate these installations is CSA Z180.1 and NFPA-1901: *Standard for Automotive Fire Apparatus* - Chapter 24 *Air Systems*; which sets requirements for these type of systems, including mandatory annual testing and inspection. Transportation of Dangerous Goods (TDG) Regulations[223] also apply, and it is doubtful that some of the observed retention systems for large cascade cylinders meet these federal regulations.

GA has not examined these mobile systems, but understands that they were not installed by qualified technicians, and that such qualified technicians have in the past refused to service them.

SCBA Cylinder Storage

There are a number of SCBA breathing air cylinders stored within stations and on apparatus. NFPA-1901 requires that for certain types of fire apparatus that there be one SCBA on the vehicle for each firefighter seat, and that there be at least one spare SCBA air cylinder for each SCBA on the vehicle. *GA* estimates[224] there are approximately 140 SCBA and another 140 SCBA air cylinders spares stored on vehicles. There are other SCBA cylinders at fire stations.

The use, handling, filling, and transportation of SCBA compressed breathing air cylinders is federally[225] regulated; and therein also required to meet CSA B340-18.[226] The main considerations in B340 are that the cylinders not be overfilled and that the cylinders meet the standard for valve protection and cylinder design. All air cylinders purchased specifically for use in SCBA should already meet design standards. A commercial, certified, properly maintained and operated cylinder filling station should prevent the over-filling of the air cylinder.

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[223] Canada; *Transportation of Dangerous Goods Regulations*, SOR/2001-286

[224] See *Table 39: SCBA Inventory in Cumberland Fire Departments* on page 282.

[225] Canada; Transportation of Dangerous Goods Regulations, SOR/2001-286

[226] CSA B340-18 (2018 edition), *Selection and use of cylinders, spheres, tubes, and other containers for the transportation of dangerous goods, Class 2*. https://community.csagroup.org/docs/DOC-58194

TDG regulation specifies that SCBA cylinders are Class 2 dangerous goods, and that;

> *"5.4 A person must load and secure dangerous goods in a means of containment[227] and must load and secure the means of containment on a means of transport in such a way as to prevent, under normal conditions of transport, damage to the means of containment or to the means of transport that could lead to an accidental release of the dangerous goods."*

NFPA-1901[228] requires that carried spare SCBA cylinders on pumpers[229] be;

> *"5.9.4(9) …each mounted in a bracket fastened to the apparatus or stored in a specially designed storage space."*

SCBA compressed air cylinders hold either 2216 or 4500 psi of pressure when full. If damaged, they can fail catastrophically (and without warning).

Cylinders need[230] to be secured in position during transportation, and during storage. Cylinders should be fitted with a valve protection cap[231] over the air hose connection when the cylinder is not in use so as to protect the fragile aluminum threads from physical damage. The use of a valve protection cap will prevent contaminants from entering the open connection and potentially contaminating the air supply or damaging the SCBA regulator; potentially causing an unexpected SCBA malfunction when in use by the firefighter. The valve protection cap should be left in place whenever the cylinder is not in use. The cap is retained by a lanyard and remains with the cylinder while installed on an SCBA.

To further protect cylinders in storage, on apparatus, or in the station; individual cylinder storage sleeves are available and should be used. For years firefighters have used plastic water pipe cut to the correct length, and used a simple webbing loop to secure the cylinder in the sleeve.

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[227] SOR/2001-286; Interpretation, §1.3(2)(j) defines a means of containment as the container that contains the dangerous goods *"…in compliance with the Act and these Regulations for the purposes of handling, offering for transport, or transporting…"* (aka the SCBA breathing air cylinder).

[228] NFPA-1901; Standard for Automotive Fire Apparatus

[229] The same or similar requirements exists in each of the different chapters of the Standard, that addresses the various classes of fire apparatus; e.g., aerials, initial attack, etc.

[230] For best practices see https://www.ontario.ca/document/firefighter-guidance-notes/1-9-scba-air-cylinder-handling

[231] http://threadsaver.com/

As already mentioned, it is a violation of federal regulations[232] to have an unsecured pressure vessel, and very dangerous. NFPA-1901 has specific design parameters (§15.5.5, §15.5.6) for horizontal or vertical storage of SCBA cylinders on apparatus, in order to meet the various requirements already noted above.

FIGURE 33: IMPROPERLY STORED SCBA CYLINDERS ON FIRE TRUCK

The accompanying image from a Cumberland pumper truck shows a situation that is potentially dangerous and in violation of federal regulations. The SCBA cylinders shown could easily be damaged through rubbing and impact, are unsecured as is required, and the threads are exposed to dirt, dust, and damage.

Recommendation 110: GA recommends that Cumberland County engage a qualified breathing air system technician or engineer, familiar with the manufacturer's recommendations, and who has knowledge of the requirements of NFPA-1500 and 1901, CSA Z180.1:19 and B340-18, and Transportation of Dangerous Goods (TDG) Regulations; to investigate and make recommendations with respect to all fire station installed breathing air compressors, cylinder filling stations, cascade systems, air bottle storage systems, and vehicle mounted breathing air cascade and filling stations, or whatever other breathing air components are found during the investigation. GA further recommends that MCC take action on the recommendations that come out of this investigation.

Recommendation 111: GA recommends that Cumberland County take immediate steps to develop and implement procedures to properly secure for transport all SCBA cylinders and cascade cylinders on all vehicles, in conformance with the requirements of federal Regulation SOR/2001-286, and using guidance and best practices from NFPA-1901. GA further recommends that MCC purchase and require the installation of valve protection caps on all SCBA cylinder valve connections, and implement a procedure that requires their proper use.

[232] Transportation of Dangerous Goods Regulations, SOR/2001-286. https://laws-lois.justice.gc.ca/eng/regulations/sor-2001-286/

Fire Apparatus and Equipment.

Requirements for fire apparatus, including safety requirements are discussed in detail in the section *NFPA Standards for Automotive Fire Apparatus*, starting on page *163*. That discussion is part of the chapter *Ch 3: Fire Apparatus and Equipment* that starts on page *148* of this *Report*.

Fire apparatus and fire equipment are mission critical in delivering expected and needed services to the community. It was identified in those sections of the *Report* that there are currently some gaps in meeting standards and requirements with the current fleet of fire apparatus.

Firefighter Health

Firefighter Medical Evaluations and Physical Fitness

Firefighting can be very physically demanding. These demands can be seen[233] across all firefighting related tasks (officer, driver, firefighter) on the fire-ground and will severely stress firefighters' cardiac systems from the time of the alarm onwards. Cardiac incidents are the leading[234] cause of firefighter on-duty deaths. They are recognized by WCB and insurance carriers as presumptive illness related to firefighting, and can occur even after the firefighter has returned home. These events are devastating for the individual, family, the community, and the fire department.

Cardiac health and aerobic capacity are two critical factors in firefighters' ability to do the strenuous work of firefighting, and to survive. A decline in aerobic capacity with aging is known, but can be improved through physical fitness[235] and aerobic training. Cardiac health is also related to other risk factors, and may not be preventable solely through exercise and conditioning, but can be through other factors such as life-style, for many people. What is

[233] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7039485/

[234] https://www.nfpa.org/News-and-Research/Data-research-and-tools/Emergency-Responders/Firefighter-fatalities-in-the-United-States/Firefighter-deaths-by-cause-and-nature-of-injury

[235] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3361265/

important, is to know if there are cardiac deficiencies that could lead to sudden cardiac death occurrence after/during firefighting exertions.

There are two standards that address the issue of medical and physical fitness for firefighters and fire departments.

- NFPA 1500: Standard on Fire Department Occupational Safety, Health, and Wellness Program, 2021 Edition
- NFPA 1582: Standard on Comprehensive Occupational Medical Program for Fire Departments, 2022 Edition

NFPA-1500, Chapter 11, requires fire department candidates to meet the medical requirements specified in NFPA-1582, Chapter 6 and furthers requires members of the department to be evaluated as specified in Chapter 7, and to meet medical requirements specified in Chapter 9. Chapter 7 requires annual medical evaluations by a qualified physician.

Although the Standards might be interpreted by some as only applying to career firefighters, serious consideration should be applied to understanding that firefighting is not essentially a career vs volunteer activity. Firefighting activities are similar if not identical to both groups, and the demand on a firefighters' body is the same. You do not have to be a career firefighter to suffer a cardiac arrest from firefighting.[236]

The Standard requires that medical evaluations consider the risks and the functions associated with the individual's duties and responsibilities, it further requires the fire department to develop physical performance requirements for candidates and members who engage in emergency operations.

The Standard requires that candidates be qualified as meeting the physical performance requirements established by the fire department prior to entering a training program to become a firefighter. It also requires members who engage in emergency operations to be annually qualified as meeting the physical performance requirements established by the fire department.

[236] https://encompass.eku.edu/cgi/viewcontent.cgi?article=1165&context=etd

The Standard says that any member who does not meet the required level of physical performance shall not be permitted to engage in emergency operations.

Regular medical evaluations are of enormous direct value to individual firefighters; it is a mistake to believe that if problems are not looked for, then they do not exist. Evaluations may help spot a developing issue before it seriously affects an individual's health and their life. Cardiac events are the leading cause of death for volunteer firefighters and indicators may be spotted in advance through regular and effective medical check-ups. Higher rates of Cancer than the general public is another serious concern, and are usually survivable if spotted early.

Medical evaluations are also important for the fire department in helping to avoid a sudden on-duty loss of life.

In summary, the standard requires that the physical requirements be identified, that candidates for firefighting be evaluated against the requirements, and that incumbents be regularly evaluated as still meeting the requirements.

NFPA-1582 also requires the fire department to officially designate a physician[237] who will be responsible for guiding, directing, and advising the members regarding their health, fitness, and suitability for duty. Physical fitness and health programs can be beneficial in retaining volunteer firefighters by providing them the opportunity to evaluate themselves and their lifestyle choices, and to be inspired to improve their wellbeing through participate in a collaborative and supported program.

Recommendation 112: GA recommends that Cumberland County develop and implement a policy requiring intake medical screening for volunteer firefighter applicants who will be participating in firefighting activities. Such screening should be based on a physical demands analysis developed with the guidance of NFPA-1582 and local requirements. Candidates who do not pass the medical screen should not be considered for a firefighting role.

[237] Some medical screening programs for recruits rely on the candidates personal physician to provide a letter confirming fitness. In GA's direct experience, such an approach is likely to be lacking accuracy. Personal physicians generally have no true understanding of the requirements of firefighting and tend to underestimate the demands. A consistent approach by one physician who is well acquainted with the demands will produce better and more consistent results.

Recommendation 113: GA recommends that Cumberland County support and encourage the development and implementation of a physical fitness and health promotion program for all fire department members, including a focus on maintaining the health and fitness of fire department members who participate in high physical demands activities. There are many good references available on which to base a suitable program.

Recommendation 114: GA recommends that Cumberland County develop a Policy requiring periodic medical re-evaluation for all firefighters who engage in high physical demands activities, as appropriate. These evaluations should focus on cardiac health, aerobic capacity and other life threatening medical conditions as identified in the Policy.

Recommendation 115: GA recommends that Cumberland County retain a physician knowledgeable on firefighter requirements to perform intake medical screening and for regular medical screening of existing volunteer firefighters who engage in high physical demands activities.

Mental Health

The overall health and welfare of the volunteer firefighter is paramount. During their vocation as an emergency responder the volunteer will be exposed/experience situations that most of the general public never will; experiences that can trigger deep emotional reactions. These experiences can add up over time; cumulative stress. Currently volunteer firefighters are becoming harder to recruit and harder to retain, and mental health issues are part of this challenge.

In the event that a volunteer has experiences that require assistance, and if the correct assistance is not available, not only could the community loose a valuable member of its fire department, the situation could also negatively impact the volunteer's employment and/or his family life… and his/her own life.[238]

[238] https://www.cdnfirefighter.com/studying-the-statistics/
file:///D:/REFERENCES%20MISC/OHS/Mental%20Health%20Stats%20ijerph-18-12666-v3.pdf

CIS/PTSD

During *GA's* the stakeholder meetings with firefighters, generally, the majority seemed to understand the concept of Critical Incident Stress (CIS) and knew how to activate the Fire Service Association of Nova Scotia's *Critical Incident Stress Management Debriefing* (CISM/D) team.[239] However, there was almost no understanding of any availability of follow-up resources, or what comes after a visit by the CISM/D team. Most sort of felt that a team visit was it; all done.

There are occasions where an individual, after a single critical incident may not have any symptoms related to a single critical incident; but over time, or over several critical incidents, they can develop symptoms of *Post-Traumatic Stress Disorder* (PTSD). PTSD is a debilitating disorder that can severely affect an individual's life, and that of their family and colleagues.

It is natural to feel afraid or upset during and after a traumatic situation. Nearly everyone will experience a range of reactions after trauma, yet most people recover from initial symptoms naturally. Those who continue to experience problems may be diagnosed with PTSD. People who have PTSD may feel stressed or anxious, even when they are not in danger.

Signs and Symptoms

While many traumatized people experience short term symptoms, the majority do not develop ongoing (chronic) PTSD. Not everyone with PTSD has been through a dangerous event. Some experiences, like the sudden, unexpected death of a loved one, can also cause PTSD. Symptoms usually begin early, within 3 months of the traumatic incident, but sometimes they begin years afterward. Symptoms must last more than a month and be severe enough to interfere with relationships or work to be considered PTSD. The course of the illness varies. Some people recover within 6 months, while others have symptoms that last much longer. In some people, the condition becomes chronic.

[239] These debriefings are typically done with the emergency responders as a group after a Critical Incident.

Re-experiencing symptoms may cause problems in a person's everyday routine. The symptoms can start from the person's own thoughts and feelings. Words, objects, or situations that are reminders of the event can also trigger re-experiencing symptoms.

Individuals having symptoms of PTSD require professional assistance beyond that of Critical Incident Stress debriefing.

If an individual or individuals required assistance beyond the debriefing, there were some members and departments who were unsure how to move forward. Some departments have insurance programs[240] that do provide for additional assistance.

The Municipality of Cumberland County does not appear to have a formal mental health program available at this time, but have on occasion provided services on ad hoc basis.

In spring 2018, WCB Nova Scotia led a stakeholder consultation process for the Department of Labour and Advanced Education (LAE) to support the development of regulations to provide the benefit of presumption for PTSD in frontline and emergency response workers.

Following that consultation, LAE announced changes to the *Workers' Compensation Act* that will make it easier for first responders to access Workers' Compensation Benefits. As of October 26, 2018, it will now be presumed that a diagnosis of PTSD is because of a first responders exposure to traumatic events. A PTSD diagnosis from a psychiatrist or psychologist will be required. It is important to understand that Presumption does not guarantee that a frontline or emergency response worker who files a claim, will have that claim accepted.

Recommendation 116: GA recommends that Cumberland County establish a formal program and develop effective Policy regarding mental health supports for volunteer firefighters, and regularly and effectively communicates the availability of that program and the availability of support, in every fire station. GA further recommends that a record be permanently kept by MCC of exposure to traumatic, or potentially traumatic, events; for each firefighter who attended such incident. Such recordings of exposure could be an adjunct to the recommended recording of chemical and biological exposures.

[240] See *Honourarium* starting on page 359.

Health and Safety Summary and Recommendations

A fire services organization should always strive to improve operational excellence while keeping firefighters and the community safe. If the organization is relying on inconsistent, out-of-date or incomplete policies for guidance, the organization is at increased risk of experiencing an adverse event and the potential for legal liability specifically in the area of OH&S; with the additional possibility of the laying of criminal charges against the organization and anyone who was in a position of authority to change the potential for such a situation.

It is of the utmost importance to ensure that the regulations and standards for personnel safety, and the maintenance of fire equipment are adhered to. Many of the requirements are law in Nova Scotia.

As required by regulations and standards the fire service needs to adopt Policy, as follows;

- Official and in writing, addressing occupational safety, health, and wellness, that
- identifies specific goals and objectives for the prevention and elimination of accidents and occupational injuries, and
- addresses potential exposure to communicable disease; and
- potential exposure to products of combustion, carcinogens, fireground contaminants, and
- other incident-related health hazards; and
- illnesses that can arise; and
- work related fatalities, and
- in compliance with, and that meets the intent of, regulations and applicable standards.

The standards require the fire services to evaluate the effectiveness of their occupational safety, health, and wellness program at least once every 3 years and to submit an audited report of the findings to the organization, which in this case should be both the fire department and the County.

Recommendation 117: GA recommends that Cumberland County establish and support a fire services occupational health and safety committee with strong representation by firefighters and by MCC management. The purpose of this committee is to establish procedures and advise on policy regarding OH&S measures; encompassing facility maintenance and house-keeping, incident scenes, responding to incidents, and after incident activities.

Recommendation 118: GA recommends Cumberland County, through the recommended fire services occupational health and safety committee, develop and implement a Risk Management plan as per NFPA-1500, section 4.2.

Recommendation 119: GA recommends that Cumberland County reviews and amends as necessary, and then enforces MCC's* Fire Equipment Standardization Policy *FS-08-02.

Recommendation 120: GA recommends that Cumberland County establish and support a Standardization Committee composed of knowledgeable volunteer firefighters and knowledgeable MCC staff that will address research, testing, specification development, and promotion of standard specifications and purchasing processes for PPE ensembles and other key equipment such as SCBA, water rescue suits, rescue PFDs, wildland coveralls, and etc.. The results of this committee's work should be accepted and implemented as The Standards for purchase and provision to the fire departments, and no other should be supported by MCC; without strong justification and acceptance by the committee as one-time exceptions.

Recommendation 121: GA recommends that Cumberland County develop and implement a program for the care, and maintenance of structural firefighting personal protective ensembles and ensemble elements used by the members of the organization in the performance of their assigned functions. As per NFPA 1851: Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, latest edition.

Recommendation 122: GA recommends that only qualified firefighters are permitted to operate breathing air compressors, and to inspect, and to refill SCBA air cylinders. GA also recommends that records of all cylinder refills be made and maintained in accordance with best practices.

Recommendation 123: GA recommends that every qualified Level I structural firefighter should annually demonstrate their competence to don and to wear their PPE appropriately and thus re-qualify as structural firefighters. This process should meet the recommendation in NFPA-1500, and include the turnout-gear ensemble and a demonstration of PPE and SCBA pre-donning inspection, proper donning, and operation, all within established time targets. Records of all such annual re-qualifications should be filed with MCC and maintained in permanent records.

Recommendation 124: GA recommends that the purchasing, testing, inspection, maintenance, and retirement of; bunker gear, SCBA, fire hose, rescue rope and harness, life safety rope and harness, ground ladders, and flashlights be done in accordance with all requirements of NS occupational health safety and safety legislation, for all affected equipment, in all fire departments.

CH 6: GOVERNANCE

LEGISLATIVE FRAMEWORK

Goudreault Associates (*GA*) were asked to review current policies, bylaws and governance options as they relate to the MCC's fire protection services. This includes an examination of fire department Registrations, and the relationship between the volunteer fire departments and the municipality. The overall powers and responsibilities of a municipality, specifically as to governance and regulation of fire protection services, will need looking at first.

Provincial legislation

The Municipal Government Act

The *Municipal Government Act*[241] (MGA) provides for the establishment and governance of fire protection in the Municipality. The main provisions of the MGA that concern the establishment of the fire emergency services are as follows;

> *2 The purpose of this Act is to*
>
> *(a) give broad authority to councils, including broad authority to pass by-laws, and to respect their right to govern municipalities in whatever ways the councils consider appropriate within the jurisdiction given to them;*
>
> *(b) enhance the ability of councils to respond to present and future issues in their municipalities; and (c) recognize the purposes of a municipality set out in Section 9A. 1998, c. 18, s. 2; 2019, c. 19, s. 1.*
>
> *9A The purposes of a municipality are to*
>
> *(a) provide good government;*
>
> *(b) provide services, facilities and other things that, in the opinion of the council, are necessary or desirable for all or part of the municipality; and*
>
> *(c) develop and maintain safe and viable communities. 2019, c. 19, s. 2.*
>
> *3 "Interpretation*
>
> *In this Act*

[241] Municipal Government Act CHAPTER 18 OF THE ACTS OF 1998, as amended by 2021, c. 14, ss. 1, 2; 2021, c. 33, ss. 1-3

(o) "council" means the council of a municipality, except as otherwise defined in this Act;

(ac) "emergency services" means services related to the provision of emergency services, including fire services, emergency medical services, search and rescue, water rescue and assistance and protection for people and property in the event of disasters including, but not limited to, floods, hurricanes, motor vehicle accidents and chemical spills;

(af) "fire department" means an incorporated body that provides fire services and that may, at its option, provide one or more other emergency services, and includes a fire or emergency services department of a municipality, village, fire protection district or other body corporate;

(ah) "fire services" means services related to the prevention and suppression of fires;

Establishing fire service and the power to make by-laws

Power to make by-laws

172 (1) A council may make by-laws, for municipal purposes, respecting (a) the health, well being, safety and protection of persons; (b) the safety and protection of property;…

174 Without limiting the generality of Section 172, a council may make

by-laws respecting

(b) the prevention and fighting of fires; …

(d) fire and burglar alarms;

293 The Municipality may maintain and provide fire and emergency services by providing the service, assisting others to provide the service, working with others to provide the service or a combination of means.

Municipal powers to make policies respecting fire service;

296 (1) The council may make policies respecting full-time, volunteer and composite fire departments and emergency service providers in the municipality.

(2) Policies for fire departments and emergency service providers may include

(a) requirements and procedures for registration;

(b) personnel policies with respect to those members who are employees of the municipality;

(c) the manner of accounting to the council for the use of funds provided by the municipality;

(d) an annual meeting to report to the public respecting fire and emergency services;

(e) such other matters as are necessary and expedient for the provision of emergency services in the municipality.

(3) The council may require proof of compliance with its policies before advancing any funds.

Registration of Fire Departments

The legislative mandates around the Registration of independent, corporate, fire departments are as follows;

294 (1) A body corporate may apply to the Municipality for registration as a fire department.

(2) A municipality shall not refuse to register a body corporate that complies with this Act if the

(a) municipality is satisfied that the body corporate is capable of providing the services it offers to provide;

(b) body corporate carries liability insurance, as required by the municipality;

(c) body corporate does not provide the fire services for profit; and

(d) municipality does not provide the same services for the same area.

(3) A fire department, including a fire department of a municipality, village or fire protection district, shall register in each municipality in which it provides emergency services.

(4) A registered fire department shall provide the municipality with a list of specific emergency services it will endeavour to provide and the area in which the services will be provided.

(5) Registration continues in force until withdrawn by the municipality for cause or the fire department requests that the registration be revoked.

(6) A municipality may grant or lend money to, or guarantee a loan for, a registered fire department for operating or capital purposes.

(7) A municipality may grant or lend assets, without charge, to a registered fire department.

(8) Registration does not make a fire department an agent of a municipality.

(9) A registered fire department is not a municipal enterprise pursuant to the Municipal Finance Corporation Act.

Firefighter Powers at Fires

The MGA provides powers directly to firefighters to assist their activities;

Powers where fire

297 (1) When any fire, rescue or emergency occurs, the fire chief or other officer in charge, and any person under the direction of that officer, shall endeavour to

extinguish the fire and prevent it from spreading, conduct the rescue or deal with the emergency and, for that purpose, may:

(a) command the assistance of persons present and any inhabitant of the Municipality;

(b) remove property from buildings on fire or in danger of fire;

(c) take charge of property;

(d) enter, break into or tear down any building;

(e) exclude and remove persons and vehicles from the building or vicinity; and

(f) generally, do all things necessary to respond to the emergency.

(2) It is an offence to disobey any lawful order or command of the officer in charge.

(3) Where a fire alarm is given or the officer in charge has reason to believe that a fire exists on any premises, the officer in charge and any person under the direction of that officer may enter or break into any building for the purpose of ascertaining whether a fire exists.

(4) The officer in charge may direct that a building be pulled down or otherwise destroyed if, in the judgment of that officer, doing so will tend to contain a fire or protect the public from a dangerous condition.

(5) A Municipality, a fire department, an emergency services provider and an officer in charge, and a person acting under the direction or authority of that officer, are not liable for an act done in the exercise of any of the powers conferred by this Section. 2008, c. 39, s. 308."

As quoted above, §297 of the MGA says there is a duty and thereby an expectation placed upon firefighters. This duty was described as: "*...shall endeavour to extinguish the fire and prevent it from spreading, conduct the rescue or deal with the emergency...*" This duty also comes with some considerable powers and protections, thereby facilitating the firefighters in their endeavours, including §299 which made it an offense to interfere with firefighters and fire protection systems.

Liability

The MGA also provides some specific protection against liability;

No Liability

300 The Municipality, an employee of the Municipality, a member of the fire department of the Municipality, a registered fire department, a member of a registered fire department, a registered emergency services provider and a member of a registered emergency services provider are not liable for an act or omission in providing, or failing to provide, an emergency service, unless they are grossly negligent.

Restriction on where action may or may not lie with respect to liability was provided in §301 (not quoted here).

The MGA permits the Municipality to provide or to receive assistance from other municipalities;

> *Mutual aid*
>
> *302 (1) The Municipality may assist at fires, rescues or other emergencies occurring outside its boundaries.…"*

Volunteer Fire Services Act & Volunteer Protection Act

The *Volunteer Fire and Ground Search and Rescue Services Act*[242] (VFGSRSA) makes a volunteer firefighter a volunteer within the meaning of the *Volunteer Protection Act*.[243] The provisions of the *Volunteer Protection Act* are virtually the same, mutatis mutandis, as the VFGSRSA.

In the VFGSRSA, the property of a volunteer fire department is protected against seizure, with conditions, as follows;

> *6 (1) Notwithstanding any enactment, no real property, fire vehicle, fire apparatus, fire equipment, money or other asset of a volunteer fire department is subject to seizure because of the liability of the department for damage caused by an act or omission of a volunteer firefighter on behalf of the organization if the firefighter was acting within the scope of the firefighter's responsibilities in the department at the time of the act or omission.*
>
> *(2) Subsection (1) does not apply if*
>
> *(a) the damage was caused by willful, reckless or criminal misconduct or gross negligence by the firefighter ;*
>
> *(b) the damage was caused by the firefighter while operating a motor vehicle, vessel, aircraft or other vehicle for which the owner is required by law to maintain insurance;*
>
> *(c) the act or omission that caused the damage constitutes an offence; or*
>
> *(d) the firefighter was unlawfully using or impaired by alcohol or drugs at the time of the act or omission that caused the damage.*
>
> *(3) Nothing in subsection (1) affects the liability of a municipality or the enforcement of a judgment against a municipality. 2002, c. 13, s. 6.*

[242] *Volunteer Fire and Ground Search and Rescue Services Act*. 2002, c. 13, s.1.; 2010, c. 28, s. 2.; previously titled the *Volunteer Fire Services Act*.

[243] Volunteer Protection Act. 2002, c. 14, s.1.

The protection to a volunteer fire department against a legal judgement depends on the *individual actions* of its members. If a firefighter is acting within his/her scope of responsibilities (i.e., duties) the fire department is protected. However, if the firefighter is reckless, grossly negligent, or committing a criminal act, for example; driving a fire truck while impaired, then any negative consequences of such an act exposes the fire department to a judgement against it. If the fire truck is municipally owned, liability might also extend to the municipality in some measure, especially if there was an omission to anticipate such an occurrence and the municipality did not exercise its powers to curb such actions.

It should be noted that sentence (3) specifies that the municipality does not have the same protections as the volunteer fire department. It therefore behooves both the society fire department and the municipality to have policies, procedures, and penalties in place to help protect against the unwanted actions of firefighters; and to enforce them strictly.

Municipal Bylaws

GA reviewed 33 policies and 7 bylaws. In *Table 40* that follows, is a list of each item that was reviewed, along with the date they were authorized by council; including related comments on issues noted.

Establishing and Regulating Bylaw

There is currently no overarching County bylaw establishing fire protection services in the County, nor regulating how fire protection services will be delivered; which would indicate the level of service expected, the standards to be met, or the general methodology of service delivery. Such a bylaw would be termed an Establishing and Regulating bylaw, and although not required by legislation in NS, it is common[244] in other provinces as a means of encapsulating the municipal powers and obligations contained in one or more pieces of legislation/regulation;

[244] The two examples here provide a sense of how to structure such a bylaw. One is for a BC and the other is for an ON jurisdiction. No NS example could be found. https://mulmur.ca/content/town-hall/bylaws/establish-and-regulate-a-fire-department-by-law-48-13.pdf and https://hope.ca/sites/default/files/documents/dcd591_Fire_Bylaw.pdf

which might be of particular value with the fractured fire-service related legislative environment in NS.

Recommendation 125: GA recommends that Cumberland County develop, authorize, promulgate, and implement an Establishing and Regulating bylaw that summarizes and details the County's intentions with respect to providing and governing the provision of fire and emergency services, and establishes expected standards, levels of service, and other related matters that fall within the County's powers under Legislation.

Registration Bylaw

There is a Cumberland Policy[245] to establish procedures and requirements for the registration of fire departments that provide fire services in the County. There also exists individual fire department Registration documents for each providing fire department, and of course confirming bylaws for the annual budget estimates that including funding to those fire departments.

With the addition of the Director of Protective Services position, a fair number of polices, and a couple of bylaws, require amendment to reflect the addition of that new position, and the elimination of the defunct Fire Services Coordinator position.

In one instance there appears to be polices that are similar in nature, one a fire service policy and one a municipal policy, both addressing records management. A further review should be conducted by the appropriate parties to determine if both policies are required.

There are number of approved policies that apply to municipal employees, agents and volunteers that deal with personnel issues and safe work environments. These existing policies might be appropriate for application with the fire departments as well.

False Alarm Bylaw

Policy 07-08, *Fire and Burglar Alarm*; is a False Alarm Bylaw and as such it is an admirable bylaw in an effort to reduce unnecessary fire responses, especially to those occupancies who

[245] Policy FS07-02; Fire Department Registration Policy

have ongoing issues with their fire alarm systems, or occupancies whose operating conditions manifest into accidental alarms, and the owners have failed to take appropriate measures to reduce or eliminate the unnecessary alarms, and the unneeded fire department responses. However, *GA* was informed by staff that the bylaw has not been enforced.

If the bylaw is not being enforced that could lead to negative consequences. For those occupancies in which fire alarms are not uncommon, responders become complacent and do not respond expecting a real incident to be occurring. That belief can lead to either a delay in response or a lack of resources responding the next time there is an alarm sounding, even when *this time* there is a working structure fire. Volunteer firefighters make a decision every time the pager sounds, as to whether a situation is urgent and their presence is really needed. Secondly, building occupants become inured to the recurrent alarm bells, and do not evacuate immediately, possibly causing some to become stranded in the building, requiring short-handed volunteer firefighter teams to rescue them.

Beside the obvious impacts on the outcome from a fire in either of those situations mentioned above, and actually they usually occur together, the municipality was in a position to reduce or otherwise influence those occurrences, through the existence of the bylaw. Failure to enforce a bylaw is failure to act in accordance with the expectations of Council, as is discussed further on page *475*. It can attract liability for negligence on behalf of a municipal employee's inactions.

There are several courses of actions to eliminate this risk; enforce the bylaw by whatever means are provided in the bylaw, revise the bylaw to make it enforceable, or repeal the bylaw. The above example can be extended to most Policies and bylaws, as appropriate.

Other Cumberland Bylaws

Table 40 that follows, lists other County bylaws, and provides some comments on same.

TABLE 40: SUMMARY OF EXISTING POLICIES AND BYLAWS, WITH COMMENTS

Policy Ref	Policy Title	Approved by Council	Purpose/Intent	Comments
	Fire Protection Services Long Range Plan and Implement Plans and Policies	04/19/2006	Approval and content based upon Fire Underwriters Fire Services review of 2002/2003	Reference specific comments below.
FS06-01	Budgeting & Budgetary Control	07/19/2006	The purposes are to; provide fire departments with a framework to prepare operational & Capital budgets, to identify the importance of proper budgeting and control procedures and to identify the roles and responsibilities of the fire department, Municipal Council and Municipal Staff.	Needs updating with the new position of Director of Protective Services; Policy amendments are required
FS06-02	Communication Policy	07/19/2006	Provides an effective two-way communication protocol between Council and Fire Service	Needs updating with the new position of Director of Protective Services; Policy amendments are required
FS06-03	Fire Service Consultation Policy	07/19/2006	The policy establishes the process that the Municipality intends to follow as detailed planning moves forward. The policy intent is to assist the Municipality in its development of the 2006 Implementation plans and policies.	Needs updating with the new position of Director of Protective Services; Policy amendments are required
FS06-04	Fire Services Emergency Reserve Fund Policy	07/19/2006	To establish the responsibility for the creation and maintenance	Needs updating with the new position of Director of Protective Services; Policy amendments are required
FS06-05	Fire Service Funding Policy	07/19/2006	Intent of the Municipality is to establish; A reasonable and equitable amount of funding for operations and capital funding for registered Fire departments	Needs updating with the new position of Director of Protective Services; Policy amendments are required
FS06-06	Fire Service Purchasing Policy	07/19/2006	REPEALED (FS17-06) 19/04/2017	Replaced with the Municipality's Procurement Policy 17-05, April 9, 2017
FS07-01	Fire Service Dry Hydrant Policy	01/17/2007	To study and make recommendations for improvement of current water supply in non-hydrant areas.	Needs updating with the new position of Director of Protective Services; policy amendments are required Committee structure review is required given the new position of Director of Protective Services Needs a representative from MCC Public Works and a Representative from NS Environment
FS07-02	Fire Service Department Registration Policy	01/17/2007	Intent is to add to the provisions found in §294 of the MGA as it applies to the Registrations of fire departments providing service within the Municipality.	Needs amendments to reflect current practice of annual registrations. Section 9, edit "may" to "shall" and Appendix "A" form in policy is out of date, Director of Protective Services (DPS) needs to replace the Fire Service Coordinator (FSC) role in the registration review process and any reference to the FSC needs to be replaced by the DPS. Registration Form approved by policy is not the form being used in practice. Needs updating REF: Chapter on FD Registrations
FS06-07-03	Fire Service Bulk Purchasing Policy	07/18/2007	The purpose was to take advantage of potential savings, by purchasing standardized items through a bulk purchasing program FS06-06 Fire Service Purchasing Policy REPEALED (FS17-06) 19/04/2017	Replaced with the Municipality's Procurement Policy 17-05, April 9, 2017
FS08-01	Fire Service Computer Policy	05/21/2008	Purpose of the Policy is to establish access and use guidelines for the computers supplied to the Fire Departments by MCC	Needs updating with the new position of Director of Protective Services; Policy amendments are required Para 8 under Policies and Procedures makes reference to an unknown Fire Service Communication Committee, that does not exist.
FS08-02	Fire Service Standardized Equipment Policy	05/21/2008	Purpose of the Policy is to ensure equipment, listed within the policy, is acquired and compatible with all MCC Fire Departments.	Needs updating with the new position of Director of Protective Services; policy amendments are required Policy lists equipment to be standardized. However, provides no specifications.
FS08-03	Fire Service Capital Expenditure Policy	07/16/2008	REPEALED	

Policy Ref	Policy Title	Approved by Council	Purpose/Intent	Comments
FS08-04	Fire Service Capital Expenditure Policy	07/16/2008	The purpose of this policy is to ensure that all Capital Expenditures adhere to the Fire Service Long Rang Plan and other policies developed by Municipal Council.	This policy no longer has precedence. The MCC's Procurement Policy 17-05 dated April 19, 2017, is the current policy for capital expenditures.
FS08-XX	DRAFT training Discussion Paper and Policy		Never officially adopted	Requires complete review with consideration of updated standards & best practices.
FS09-01	Fire Service Financial Reporting Policy	04/01/2009	Purpose is to ensure all registered fire departments provide a yearly accounting of expenditure of funds provided by the Municipality. Services are being provided as per FD registrations	Further Review is required to ensure this policy reflects current practices & expectations.
FS09-02	Fire Service Computerized Records Management Policy	04/01/2009	This policy establishes guidelines for the control of Fire Departments records.	Needs updating with the new position of Director of Protective Services; Policy amendments are required. Para 1 under Policies and Procedures makes reference to an unknown Fire Service Communication Committee that apparently does not exist. This policy appears to mirror the Municipality's MCC Records Management Policy 04-01 IN general, fire department records should be kept much longer than municipal norms, many permanently
FS12-01	Fire Inspection Policy	06/13/2012	The policy establishes an inspection schedule based upon Occupancy type.	Fire Inspection & Prevention is not part of the *Review* Scope. However, there is no requirement within the policy to notify the local fire chief of any serious issues discovered during inspections that may impact on firefighting or rescue operations. See *Fire Prevention* starting on page *568*. On the MCC Fire Services web site https://www.cumberlandcountyfireservices.ca/node/184 It advices that the Local Fire Chief is to be contacted for inspection of Federal Buildings as well as structures containing 3 or less residential units. Are they qualified? There is no requirement within the Fire Inspection By-law that requires this of the Local Fire Chief.
FS13-01	Firefighter Level One Incentive Policy	11/13/2013	References Firefighting Level I as BFF Level 1	Needs updating with the new position of Director of Protective Services; Policy amendments are required, Referenced Schedule "A" could not be located by Staff. The document also makes reference to a BFF level 1 Certification or Qualification. Provincially there no longer exists a BFF Level 1 Certification or Qualification. The reference to BFF Level 1 is in conflict with GOG 300-01 which references Firefighter Level I.
04-01	Records Management Policy	18/02/2004	To establish effective management & control of information	A review of this document in combination with Policy FS08-01 Fire Service Computer Policy to determine the need for both and or any amendments required of either.
06-06	Road Naming Policy	19/07/2006	Establishes roles & responsibilities and process for Road naming within MCC	§28 NOTIFICATION should be amended to reflect (From The Nova Scotia Emergency Measures Organization) That any and all new private road names or municipal streets shall be approved by Council, and that Municipality shall update GEONOVA, Nova Scotia and update the NS Civic Address File (NSCAF) system.
12-05	Private Road Signage & Standards	18/07/2012	Purpose is to set signage standards for private roads to aid emergency first responders & providing clear & consistent signage for the identification of private roads.	If all private roads were required to have a unique name extension, for example "LANE," it would simplify understanding by fire services that the road address is a private road and is likely not up to municipal standards as to width, maintenance, and bridge capacities, etc.
15-03	Expenditures Policy	04/02/2015	Establishes procedures and authorities for council approved expenditures & daily operational expenditures	9 (2) (a) permits quarterly operating grants to volunteer fire departments. The policy needs review as to amounts provided to align with fire department management needs
15-06	Conflict of Interest Policy	15/04/2015	To prevent public officials or an employee from gaining a personal or financial advantage from their work for the Municipality.	This Policy is directed to MCC employees only. MCC should consider similar Policy for the Volunteer Fire Departments and its members as part of the

Policy Ref	Policy Title	Approved by Council	Purpose/Intent	Comments
				Annual FD registration process. By having individual members sign on to the policy.
15-02	MCC Volunteer Policy	16/12/2015	To provide staff & volunteers with guidance to ensure a safe, meaningful, and productive volunteer experience with the Municipality	This policy is meant more for those citizens who volunteer directly for the Municipality and not necessarily volunteer fire departments.
16-01	Social Media Policy	06/04/2016	To maintain the integrity of MCC presence in social media & To ensure social media is used appropriately & within its guidelines.	This Policy is directed to MCC employees only. MCC should consider similar Policy for the Volunteer Fire Departments and its members as part of the Annual FD registration process. By having individual members sign on to the policy.
16-02	Routine Access to Information Policy	06/04/2016	Provides access to the principle of the MGA Part XX Freedom of Information & Protection of Privacy of the MGA & the Personal Information Protection & Electronics Documents Act.	Should give consideration to the inclusion of Schedule 'A' fire department response reports and who is responsible for managing the information that volunteer fire departments might provide to the public.
17-05	Procurement Policy	19/04/2017	To provide policies and procedures of all goods and services	This policy applies to registered fire departments within the Municipality
18-01	Drugs and Alcohol in the Workplace	24/01/2018	Defines roles, responsibilities and procedures for dealing with suspected use in the workplace	This Policy is directed to MCC employees only. MCC should consider similar Policy for the Volunteer Fire Departments and its members as part of the Annual FD registration process. By having individual members sign on to the policy.
18-14	Sexual Harassment Policy	05/09/2018	Policy is to prevent sexual harassment in the workplace and provides direction on how to deal with an incident	This Policy is directed to MCC employees only. MCC should consider similar Policy for the Volunteer Fire Departments and its members as part of the Annual FD registration process. By having individual members sign on to the policy.
19-01	Multi-Year Capital Planning Policy	06/02/2019	Ensure the effective management of Capital Assets. Including essential public services	
19-02	Personnel Policy	06/03/2019	Policy documents the personnel practices and policies of the Municipality	The Policy is directed towards Municipal employees only. Under Part XI Expense Reimbursement For the volunteer FDs; consideration should be given to establishing a county wide policy for those occasions in which fire volunteers must travel for training sessions, which may include overnight stays.
20-08	Employee Recognition	07/12/2020	To provide recognition of employee service to the municipality	Recommend a Fire Service Volunteer Recognition Program that officially recognizes volunteer service to the county.
21-02	Health & Safety Policy	19/02/2021	The Provisions are to provide a healthy and safe work environment for MCC's employees, officers and agents.	The Fire Service should have a set of its own Health & Safety policies and procedures. See page 372 for recommendations.
300-01	Training Policy	January 2009	Establishes Firefighter Training Level as Firefighter Level I Trained or Qualified	Establishes Firefighter training Level. Unknown if this is one of the GOGs Officially Recognized by Council in 2011. If it was it remains in effect. The Policy also makes reference to a firefighter association that apparently no longer exists.
84-06	Public Safety Bylaw	10/08/1984	Establishes rules around setting fires, burning materials and the discharge of weapons	Due to its age a full review is needed
06-12	Outdoor Wood Burning Appliance	22/1/2006	Establishes standards for Outdoor Wood burning appliances and fines for contravention of the Bylaw.	The By-law does not make reference to the responsible organization within the Municipality for Enforcement. It is assumed it will by By-Law Officers. Although the By-Law does reference; The Building Code Act. The Fire Safety Act, and the Building Code By-law.
07-08	Fire & Burglar Alarm	03/11/2007	Establishes rules for the installation, maintenance and operation of a system and fees for false alarms.	Needs updating Replace Fire Service Coordinator role with an appropriate staff person TBD.; Policy amendments are required. Policy has the Fire Services Coordinator responsible for Burglar alarms, which is a police responsibility. Section 7 references procedure to not immediately call the police but to verify with owner first. This should be amended to reflect time of day etc. Section 9 references delivery of notices, but fails to indicate by who within the County shall do so.

Policy Ref	Policy Title	Approved by Council	Purpose/Intent	Comments
				There is no procedure within the policy requiring the Fire Chiefs to report any alarms that were false in nature/ Nor for the Police to report to the County false alarms. The need to send invoices is lacking. May consider repealing or revamping as a result that since 2007 monies generated from this By-law was zero dollars.
12-02	OpenAir By-Law	18/04/2012	To prevent open air fires which are hazardous or which pose a threat to public safety	
13-02	Regional Emergency Management By-Law	13/11/2013	To provide for a prompt and Coordinated response to a local state of emergency.	
Chapter. 27	By Laws & Ordinances Town of Springhill:	28/04/1944	Provides for the Establishment of the Springhill Fire Department	Whereas the Springhill Fire Department is now a Society Fire Department and no longer a Town of Springhill Municipal Fire Department, it is recommended that Chapter 27 of the Town of Springhill By-Laws be repealed. Other parts have been.
70-1	Town of Parrsboro By-laws	31/07/1991	Establishes the rules for the Town of Parrsboro's Fire Department	Whereas the Parrsboro Fire Department is now a Society Fire Department and no longer a Town of Parrsboro Municipal Fire Department, it is recommended that the Parrsboro Fire Department By-laws 70-1 approved July 31, 1991 be repealed.

Recommendation 126: GA recommends that Cumberland County staff, as appropriate, review the comments and recommendations contained in Table 40: Summary of Existing Policies and Bylaws, with Comments, and take appropriate actions to repeal, amend, or replace fire service related bylaws and policies of Council as necessary.

Fire Department Registrations and Society Fire Departments

Society (Fire Department) Registrations

As presented in more detail, starting on page *374* of this *Report*, §293 of the MGA, provides the municipality with the powers to:

> *Maintain and provide fire and emergency services by providing the service, assisting others to provide the service, working with others to provide the service or a combination of means, 1998, c, 18, s. 293*

The MGA requires [§294] that all fire departments register with the municipality to whom the fire department proposes to provide service, regardless of whether it is a municipally owned and operated fire department or a independent corporate body fire department, such as are the Cumberland volunteer fire department societies.[246]

Conditions

The MGA requires [§294(2)] the municipality to accept the services of the fire department, if certain specified conditions are met, namely;

> *(a) municipality is satisfied that the body corporate is capable of providing the services it offers to provide;*
>
> *(b) body corporate carries liability insurance, as required by the municipality;*
>
> *(c) body corporate does not provide the fire services for profit; and*
>
> *(d) municipality does not provide the same services for the same area.*

GA is of the opinion that the MGA does not unconditionally force municipalities to accept volunteer fire department registration as a fait accompli, but that the municipality has considerable ability to clarify and direct how those services should be delivered.

In consultation with the Nova Scotia Department of Municipal Affairs, Policy Office, and with the Office of the Fire Marshal, the advice received by *GA* was that it is highly recommended that in addition to the basic Registration of the corporate body (independent volunteer fire department), that a service agreement between the corporate body and the municipality be

[246] Fire departments may Register as non-profit corporations founded under the provisions of the *Societies Act, Chapter 435 of the Revised Statutes, 1989, amended 1993, c. 42*. https://nslegislature.ca/sites/default/files/legc/statutes/societie.htm

established to clarify and agree to expectations of service provision. Such provisions should be enabled by the County passing an Establishing and Regulating Bylaw as discussed on page *379*.

Recommendation 127: GA recommends that Cumberland County, in addition to the registration of the corporate body, establish an accompanying service agreement between the volunteer fire departments and the County for the purposes of clarifying expectations of service provision and the conditions under which the County will accept the provision of these services by the fire department.

Registration Transactions Details

Provisions in the MGA grant the municipality considerable leverage over how fire services will be delivered. Section 294 contains the following;

> *(4) A registered fire department shall provide the municipality with a list of specific emergency services it will endeavour to provide and the area in which the services will be provided.*
>
> *(5) Registration continues in force until withdrawn by the municipality for cause or the fire department requests that the registration be revoked.*
>
> *(6) A municipality may grant or lend money to, or guarantee a loan for, a registered fire department for operating or capital purposes.*
>
> *(7) A municipality may grant or lend assets, without charge, to a registered fire department.*

As will shortly be discussed in more detail, the municipality has the power to determine what the registration process looks like. In addition, although the fire department (body corporate) may unilaterally withdraw its services, without any legislated Notice, the municipality may also terminate the Registration for Cause.[247]

The municipality is under no obligation to fund the fire department in any way or amount, although it may choose to do so. This last is important, because funding means the expenditure of public funds for which process there are attached a host of municipal obligations; not the least of which is accountability and public scrutiny.

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[247] *Cause* is a Civil Law term and *Consideration* the equivalent Common Law term. https://www.canlii.org/en/commentary/doc/1952CanLIIDocs34

Essentially, it seems that "*withdraw by the municipality for cause*" means that the basis of the contract (i.e., the Registration) between the municipality and the corporate body (fire department) have not been fulfilled by the fire department. The basis of the contract, its "*skeleton*" is "*an offer and an acceptance, as well as a cause or consideration for the agreement between the contractual parties*." https://flsc.ca/wp-content/uploads/2020/01/Common-Law-and-Civil-Law-A-Comparative-Primer.pdf

It is a fact that without public funding through the municipality, in the form of grants, services, and capital assets, the current Cumberland fire departments could not provide fire and emergency services, at least not to any acceptable standard.

Policies Around Registration

As part of this fiscal responsibility. MGA §296(2) empowers the municipal council to establish Policies that help ensure accountability and transparency for public funds, as follows;

> *Policies*
>
> *296 (1) The council may make policies respecting full-time, volunteer and composite fire departments and emergency service providers in the municipality.*
>
> *(2) Policies for fire departments and emergency service providers may include*
>
> *…..*
>
> *(c) the manner of accounting to the council for the use of funds provided by the municipality;*
>
> *(d) an annual meeting to report to the public respecting fire and emergency services;*

If the municipality did enact such a Policy as it is permitted to do, and the fire department failed to comply with these provisions that provide transparency and accountability, in *GAs* opinion it is extremely likely that this is more than sufficient Cause [§294(5)] for the municipality to terminate a Registration (if meeting the Policy was part of the Registration agreement). Otherwise, continued funding would, necessarily, be contingent on meeting the Policy requirements but outside of the Registration agreement.

Other Powers of the County

In the MGA, other powers are granted to the municipality to regulate the provision of fire and emergency services, as follows;

> *Policies*
>
> *296 (1) The council may make policies respecting full-time, volunteer and composite fire departments and emergency service providers in the municipality.*
>
> *(2) Policies for fire departments and emergency service providers may include*
>
> *(a) requirements and procedures for registration;*
>
> *(b) personnel policies with respect to those members who are employees of the municipality;*
>
> *…*

> *(e) such other matters as are necessary and expedient for the provision of emergency services in the municipality.*

The key parts of these powers granted to the municipality by the MGA are the ability [§296(2)(a)] to set the requirements and procedures for Registration of the society fire department. Coupled with the powers to make policy [296(2)(e)] on "*such other matters as are necessary and expedient*," it is *GA's* opinion that the municipality may include any reasonable process, or may detail an expected outcome, as part of agreeing to the Registration of the fire department.

In *GA's* opinion, this last power [296(2)(e)], i.e., to make policy on "*…other matters ...necessary … for the provision of emergency services in the municipality*," speaks directly to the expected standard and/or level of service that the municipality may expect related to the provision of the services by the fire departments. It seems likely that such policy would need to be County-wide in nature so as not have the appearance or effect of being specifically targeted at a particular fire department.

In *GA's* opinion, such other matters may include the requirement for annual renewals of Registrations, requirement for up-to-date member and qualification lists, requirements for legal Notice periods and the manner in which these must be delivered, requirements to meet Policy objectives of the municipality with regards to financial matters, requirements to follow procedural requirements of the municipality with regards to handling municipal funds or what they may be used for, using municipal assets, beneficial ownership agreements,[248] working with municipal staff, following municipal direction within municipal authority, recording and submitting data, participating in municipal efforts on standardization, ensuring that Society bylaws do not conflict with the municipality's authority, and the requirement to enforce Society bylaws, etc.

Policy Bylaws on Expectations of Service

In case there is any doubt about how broad these municipally developed requirements might be, the MGA has specifically give the municipality powers respecting;

[248] See *Recommendation 182*.

Power to make by-laws

172 (1) A council may make by-laws, for municipal purposes, respecting

(a) the health, well being, safety and protection of persons;

(b) the safety and protection of property;

Power to make by-laws

174 Without limiting the generality of Section 172, a council may make by-laws respecting

…

(b) the prevention and fighting of fires;

…

(d) fire and burglar alarms;

In *GA's* opinion these two sections of the MGA provide the municipality the power to enact broad bylaws[249] that establish the expectations of the municipality for how fire prevention and fire fighting services will be delivered (standards, levels, who), but also the ability to establish policy that facilitates the establishment of procedures and guidelines, that regulate the provision of these services. In *GA's* opinion, it also gives the municipality the power to appoint an overall County fire chief.

Appointment of the Fire Chief(s)

The appointment of a fire chief by the County is not a novel idea, but it is rare. *GA* was concerned, and has been for some time while doing these municipal reviews, that there does not seem to be any explicit legislative authority to appoint fire chiefs. Although the existence of a fire chief is well recognized in the MGA and in the *Fire Safety Act*, as if they pop out of nowhere.

GA consulted with the NS Fire Marshal on this subject, because there is apparently nowhere in NS legislation that directly addresses the authority to appoint a fire chief, as is more common[250] in other provinces.

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[249] See *Recommendation 125*.

[250] Ontario makes fire chiefs a statutory appointment of municipal Council "***6*** *(1) If a fire department is established for the whole or a part of a municipality or for more than one municipality, the council of the municipality or the councils of the municipalities, as the case may be, shall appoint a fire chief for the fire department.*" https://www.ontario.ca/laws/statute/97f04

This is problematic for a number of reasons, not the least is because a fire chief has extraordinary powers when mitigating a fire incident or *possible* fire incident. Powers that the police do not have, and in some cases, powers that circumvent what the public might consider as due process. It seems obvious that the appointment of a fire chief, and the responsibility for that appointment, must legislatively rest somewhere.

In Cumberland, local volunteer fire department society members (not all are firefighters) elect, most often annually, one of their members to be their "fire chief" and there is no apparent qualifications[251] for such election, other than popularity. And thereafter, apparently, the province de facto recognizes their existence.

GA has questions about this acceptance by the province of a private corporation appointing a public official, without any obvious public interest process. The following was the question and preceding argument posed to the province;

Saskatchewan makes fire chiefs a statutory appointment of municipal council "*fire chief" means: (a) with respect to a municipality, a person appointed or employed as a fire chief by a municipality;*" https://www.canlii.org/en/sk/laws/stat/ss-2015-c-f-15.11/latest/ss-2015-c-f-15.11.html

[251] Under the *Fire Safety Act* the Fire Marshal has the authority to appoint a qualified fire chief as a local assistant. He can also appoint any other member of the fire department, and indeed anyone.

FIGURE 34: CORRESPONDENCE; WITH RESPECT TO APPOINTMENT OF FIRE CHIEFS

In GA's non-legal opinion, the Societies Act only establishes the requirements for (and subsequent powers of) being registered under the Act as a "body corporate." The Act is universally general in application to non-profit organizations. Nothing in the Societies Act specifically provides the society the authority to designate a society member as "fire chief," or if so named, for that position to be also recognized as the "fire chief" stipulated under any other statute.

For more clarity; the Societies Act does require the appointment of corporate officers to act on behalf of the society (i.e., at least one director, and optionally other directors/officers) in exercising the duties, and responsibilities, and rights of the society, but none of these are entitled "fire chief" in the Societies Act. No matter what the society may internally decide to title their corporate directors/officers, or indeed include such titles in their by-laws; how does that naming activity translate into obtaining the statutory powers and obligations of a fire chief as provided under the MGA, or the Fire Safety Act, or etc.?

Under the MGA the appointment of fire chiefs does occur in municipal fire departments, not statutorily, but under the municipality's powers [§296(2)(b)] to enact personnel policies for municipal fire department employees (including the power for appointments). But that only applies to employee fire personnel; i.e., in municipal fire departments.

The MGA also provides powers [§172] to the municipality to enact by-laws dealing with;

"(1)…(a) the health, well being, safety and protection of persons; (b) the safety and protection of property;…(k) services provided by, or on the behalf of, the municipality;…"

and furthermore [§174] for "(b) the prevention and fighting of fires."

These powers do not appear to be restricted by the existence of society fire departments.

Under the other paragraphs of the MGA [§296(1),(2)]; the municipality may make Policies (which by definition are adopted by bylaw) for the registration of fire departments, and "…(e) such other matters as are necessary and expedient for the provision of emergency services in the municipality;" Such Policies would apply even to society based volunteer fire departments.

Under the Fire Safety Act the Fire Marshal has the authority to appoint a qualified fire chief as a local assistant. He can also appoint any other member of the fire department, and indeed anyone. How does a person become qualified?

The Societies Act prohibits societies from bestowing qualifications on anyone. "12 No society shall have the power to grant or confer any degree or diploma of literary, technical or scientific character." So it would appear that the fire department (i.e., society) cannot certify the qualifications of their designated fire chief; unlike what a municipality can do. We understand that the OFM provides some orientation to new local assistants, but we have seen that this appears to occur after they are appointed as a local assistant, so they may not actually be qualified at the time of appointment?

Past practice suggests that the OFM recognizes society-selected fire chiefs as de-facto fire chiefs? Is there anything that supports that recognition in legislation or regulation; or is it just past practice in lieu of specific legislative powers?

Who has the direct authority to appoint a fire chief and how?

The response received did not address the authority to appoint a fire chief, but did address the authority of the Fire Marshal to appoint a society fire chief as a Local Assistant, which is a statutory power, and not disputed.

> *"The Office of the Fire Marshal (OFM) may appoint the elected / appointed chief of a fire dept or in the absence of a fire department the Mayor or Warden as a Local Assistant (LA) to the Fire Marshal under the Fire Safety Act."*

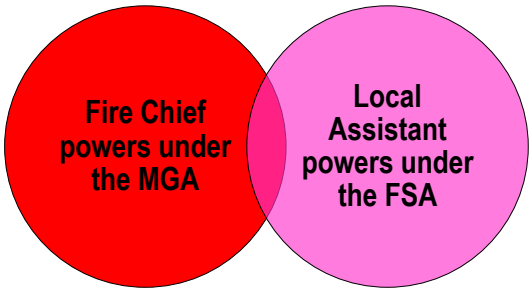
The response also indicated that the Fire Marshal is the gate-keeper to those he appoints as Local Assistants.

> *"The Fire Marshal can place restrictions on the LA or revoke their authority should the situations warrant this. The OFM evaluates the fire chiefs based on their years of service, training, and any certifications they hold in relation to fire suppression, codes, etc., and if they have taken the OFM training program for LA , sometimes this is a requirement to take within a specific time or to take a refresher."*

This ability is not disputed either, as it is a *discretionary* power provided to the Fire Marshal under the Fire Safety Act (FSA).

The point that this correspondence does not address, and the point of our enquiry, is that a fire chief does not have to be a Local Assistant to the Fire Marshal to be a fire chief. Actually, the two positions are distinct, better represented by a Venn diagram. The overlapping portion represents where both a fire chief and a local assistant have similar powers; i.e., either/or.

What appears to be the case is that the NS Fire Marshal customarilly recognizes the "designated" member of a fire services provider as a de facto fire chief, when so told. Who is empowered, and how, to do the designating?



The bottom line appears to be that; the only perceivable legislated powers available to appoint a fire chief rests with Cumberland County under the powers granted in §172 and §174 of the MGA. In *GA's*, non-legal professional opinion, this includes setting criteria and requiring individual confirmation by the County Council on any member of a society fire department who might be nominated to be the fire chief in a particular area of the County.

The alternative is to appoint the Director of Protective Services, or another staff member, as *the* County Fire Chief. This process would strongly mirror the Fire Marshal's ability to appoint a Local Assistant. This was the process, under the authority of municipal bylaws, in Springhill and Parrsboro before their dissolution some 6 years ago. Both Town Councils appointed their fire chiefs. West Hants is apparently now vetting fire chiefs.

There is clearly no apparent legislated power possessed by a private corporate fire department to appoint a legislatedly recognized position. Consider that a society may be founded and name itself the *XX District Fire Department*, or any other name it might so chose. If the Registrar of the Societies Act accepts the name, the society is not thereby made a fire department, regardless of the name.

Registered as a corporation under the *Societies Act*, its by-laws might designate the name of its chairman as "Fire Chief" or to use an older firefighter term "Chief Enginer." There is no apparent stipulation or restriction on what corporate officer titles can be. Naming one officer of the corporation as *Fire Chief*, or *Master*, or *Chief Engineer*, *etc*. is apparently allowed and does not have any significance outside the four walls of the society; or should not. All of those titles have significance in various Legislation, but using those names does not make them so.

However, once a corporation manages to meet the requirements for fire service delivery; i.e., acquires appropriate assets and trained manpower, they may then apply to be Registered with a municipality as a fire department.[252] If their registration is accepted by the municipality, then the society (with any name it choses and any corporate officer names it choses), is *now* a fire department, *but not before that registration event*. The *key* is the municipality. Without a municipality registering the society, it appears that a society cannot become a fire department as defined in the MGA. It also follows that; if a fire department is *deregistered*, it is no longer a fire department.

[252] In accordance with the requirements of §294 of the Municipal Government Act.

As part of the Registration process the municipality should consider the capability of the leadership and management[253] of the corporation (aka fire department), that is delivering the fire services, as key components to the corporation being able to deliver these services. Furthermore, in *GA's* opinion, the County should vet any candidate for fire chief of the fire department.

In *GA's* opinion, any resistance to the County's justification to accept or reject the leadership and management of the society fire department are strong Causes for doubt about the fire department's ability to deliver fire and emergency services, and to operate cooperatively with the County in providing this service, and should consequently directly affect the County's ability to accept or continue Registration of the society as a fire department.

County's Current Registration Process

GA was not provided with copies of all 19 fire department Registration documents to review, so is unable to confirm that all fire service providers are registered by the County, as required by the *MGA*.

MGA Guide, 1999

A Registration format,[254] with guidance was originally developed and provided by the Department of Municipal Affairs in 1999; at the time the new MGA was brought in. The Guide was developed to;

> *… provide … the background necessary to work with the Municipal Government Act (the "MGA") provisions respecting fire and emergency services. These provisions take effect April 1, 1999."*

[253] Realistically, the County may need to invest training and guidance resources into developing the current and future fire chiefs.

[254] Fire and Emergency Services Guide, Nova Scotia Department of Housing and Municipal Affairs, March 1999. This guide is no longer available on-line, but is provided in *Appendix 7: MGA, Fire and Emergency Services Guide*.

The Guide and associated model format were never Regulated, although it was widely adopted verbatim, and it continues to be in use by some municipalities. It appears that when the Guide was developed it was never envisioned as *the* method of achieving Registration, as it says;

> *The municipality should establish a registration system for those who provide fire and other emergency services in the municipality by April 1, 1999. Fire departments and emergency service providers will probably want to take advantage of the benefits of registration (see below) as soon as possible.* ***It may be a very simple registration system to begin with until the municipalities and the departments work together to develop a more complete system.*** *{**emphasis** added}*

It is important to note that there appears to be no legal impediment to the County if it decides to develop its own registration forms or process, as long as such meets the requirements in the MGA. That approach fits with the intention stated in the Guide document.

The Guide further states that since the municipality must be satisfied that the applicant is capable of providing the services it offers, the municipality should adopt some criteria. The criteria could be as simple as a requirement that the department have basic equipment. A council policy to establish the registry and adopt the criteria is required. Council passed a policy for Fire Department Registration, in 2007.[255]

Model Registration Policy, 2019

In 2019 the province created a new model registration policy, with an attached model registration form. This new document is included in *Appendix 8: Sample Provincial Fire Service Registration Policy, 2019* starting on page *929*.

This 2019 version of the provincial interpretation of the registration process speaks more to the requirements to be registered than does the original, and sets the registration process as an annual occurrence. It also introduces a slightly different registration form ("Appendix A") which includes more stipulations related to expected standards of service, such as a requirement to maintain certain fire apparatus and equipment.

[255] MCC FS07-02 *Fire Service Department Registration Policy* 01/17/2007

It appears from our reviews of the current Registrations of the fire departments, that this newer form is basically what is being used in the County, however in a modified form.

Modification to County Registration Form

The currently used Cumberland registration form, as represented by the Registrations that were reviewed by *GA*, is not the form that was approved for use by Council approved Policy. It is unknown who or when the form currently being used was implemented, but its *basis* appears to be the 2019 provincial model policy and registration form document mentioned in the previous section. However, it has been edited from the provincial model.

The current form is a completely new form from that that was included in the approved Council Policy. The approved MCC form is quite simple, basically a single page form, with space to check-off services, and a signature block at the bottom of the page.

The new form that is being used is 4 pages long, and includes various requirements for the fire departments to indicate in more detail the services they will be providing, with some space for caveats on limitations or conditions of service. In that respect it mostly mirrors the 2019 provincial model.

Figure 35 below, shows a side-by-side comparison between the last page of the currently used County form (in green on the right) and the entire 2007 Cumberland Council authorized form (in blue on the left).

The old and new forms are dissimilar in a number of ways. In addition to a completely different signoff, the new form introduces caveats for failure to provide services that are not in the Council approved form, and not on the 2019 provincial model form either. These changes might serve to reduce any expectation of achieving the expected service levels or standards.

FIGURE 35: COMPARISON OF COUNCIL APPROVED VS CUMBERLAND CURRENT USE REGISTRATION FORM

Form Approved by Council Policy FS06-07-02

Municipality of Cumberland
FS07-02 Fire Department Registration Policy

Appendix "A"
Registration Form

Company/Society Name: _____
Registry ID: _____
Type: _____
Status: _____
Registered Office: _____
The_____ Fire Department requests to be registered as the primary service provider for the provision of emergency services as indicated.

		Yes	No	Technician	Operations	Awareness
1	Exterior Fire Attack			Not Applicable		
2	Interior Fire Rescue & Fire Attack					
3	Wild Land Fires					
4	Fire Prevention					
5	Registered First Responder					
6	Medical Assistance					
7	Water Rescue					
8	Ice Rescue					
9	High Angle Rescue					
10	Vehicle Rescue					
11	Hazmat Operation					
12	Heavy Urban Rescue					
13	Ground Search & Rescue					

The abovementioned services are to be provided to the fire service area known and defined as _____.

I confirm that the _____ Fire Department has and will maintain the equipment and training necessary to provide the aforesaid services. In the event that the Fire Department is unable to continue the provision of service in part or in whole, the Fire Protection Services Coordinator shall be notified immediately.

_____ _____
Chief Fire Protection Services Coordinator

The _____ Fire Department has the following limitations. (Provide information as necessary)

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Edited portions of Form Currently used by FDs

APPLICANT

_____
(Name of Department)

I have read and understand the Departments' role in the registration process and the "Definitions of Terms Used in the Registration Form" in Appendix B, attached.

I understand by signing this I am not committing my department to any guaranteed level of service or response. [As a volunteer organization there may be circumstances where inadequate response to an emergency may occur. We do actively participate in an automatic mutual aid response, however, there is no assurance that mutual aid response will be adequate.]

I declare that the information provided in response to this Application for Registration as a Primary Fire Response or Emergency Services Provider under the *Municipal Government Act* with the [Name of Municipality] is true to the best of my knowledge, information, and belief.

Date: _____

Name of Chief – ***Please Print***

_____

Signature of Chief

MUNICIPALITY

Date of Approval of Registration Application:

_____

Name of Chief Administrative Officer (CAO) –

_____

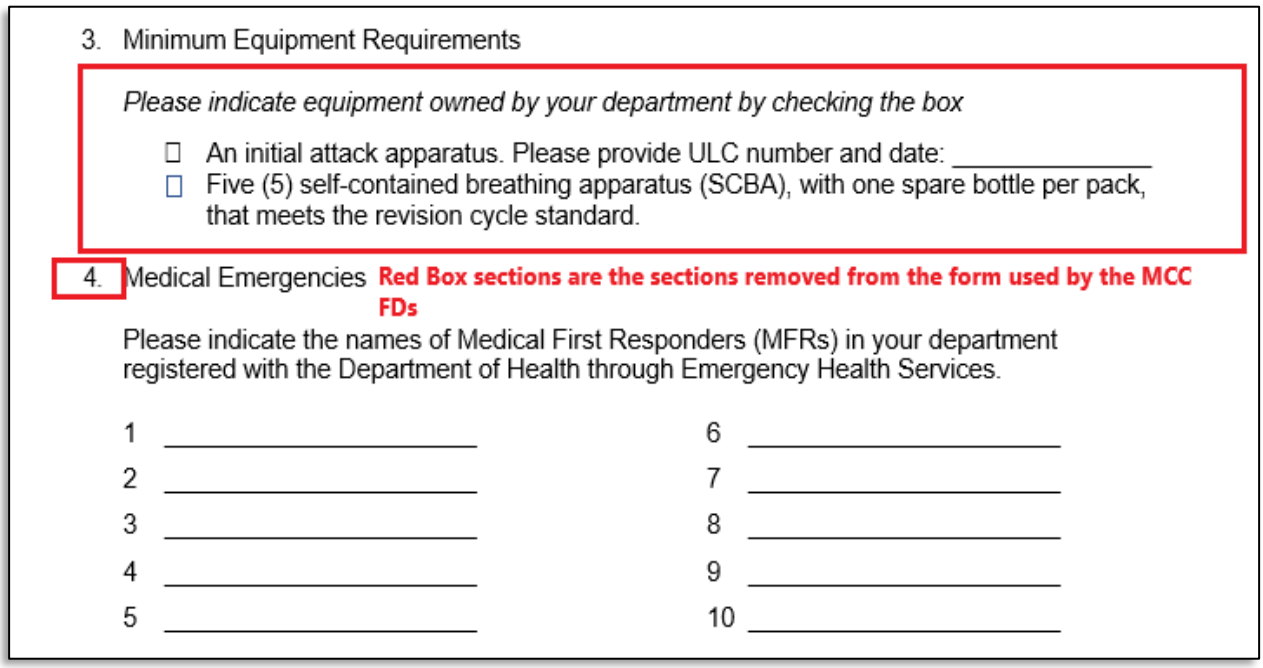
Signature of CAO or his or her designate

The Red Boxed area above has been added; was not part of the 2019 Provincial Model, nor was this format part of the Council Approved format. All MCC Registrations have the modified sign-off as part of their form. Highlighting is part of the form.

GA could find no record of Council approving this new format.

Figure 36 below, shows part of the second page of the 2019 provincial model application for registration form. It is also indicating an edit, where the current use MCC form has removed requirements from the provincial model. The entire 2019 model form can be found in *Appendix 8*, starting on page *932*.

FIGURE 36: MCC MADE MODIFICATION TO SECOND PAGE OF THE 2019 MODEL FORM



3. Minimum Equipment Requirements

Please indicate equipment owned by your department by checking the box

☐ An initial attack apparatus. Please provide ULC number and date: _____
☐ Five (5) self-contained breathing apparatus (SCBA), with one spare bottle per pack, that meets the revision cycle standard.

4. Medical Emergencies **Red Box sections are the sections removed from the form used by the MCC FDs**

Please indicate the names of Medical First Responders (MFRs) in your department registered with the Department of Health through Emergency Health Services.

1	_____	6	_____
2	_____	7	_____
3	_____	8	_____
4	_____	9	_____
5	_____	10	_____

Registration Form Service Level Requirement

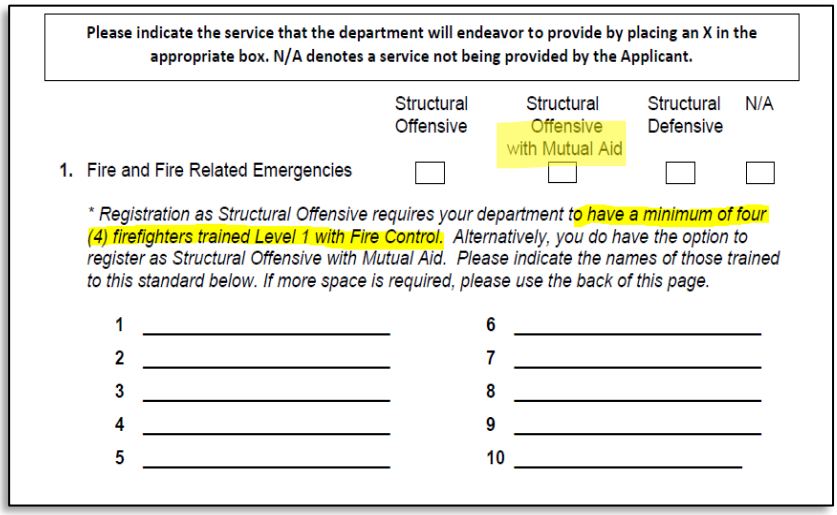
With reference to *Figure 37* below, the 2019 provincial model form, and the original 1999 form, had checkboxes for the fire departments to indicate the level of firefighting they planned to provide, i.e., Structural Offensive or Defensive. The 2019 model form has added a "*with Mutual Aid*" provision and so it is included as well in the current use MCC form. Also included is an explanation of what structural offensive means; that was not in the 1999 form, nor was it in MCCs approved 2007 form.

GA speculates that the inclusion of the note requiring 4 qualified firefighters for Structural Offensive work arises from a Ruling in a case that was before the NS Occupational Health & Safety Appeal Board (Case No. OHS-0086OHS dated June 03, 2008; also known as the Boyle Decision)[256] in which the adjudicator supported the requirement to have at least 4 firefighters *on scene of the incident* before structural firefighting could begin. Although, that is not what the

256 https://www.canlii.org/en/ns/nsohsap/doc/2008/2008canlii93010/2008canlii93010.html?searchUrlHash=AAAAAQASYm95bGUgZmlyZSBmaWdodGVyAAAAAAE&resultIndex=1

note on the form says, not exactly, as the words *on scene* are not mentioned, despite being an important component of best practices and of the aforementioned ruling.

FIGURE 37: REQUIREMENT FOR LEVEL I FIREFIGHTERS ON REGISTRATION FORM



Please indicate the service that the department will endeavor to provide by placing an X in the appropriate box. N/A denotes a service not being provided by the Applicant.

	Structural Offensive	Structural Offensive with Mutual Aid	Structural Defensive	N/A
1. Fire and Fire Related Emergencies	☐	☐	☐	☐

** Registration as Structural Offensive requires your department to have a minimum of four (4) firefighters trained Level 1 with Fire Control. Alternatively, you do have the option to register as Structural Offensive with Mutual Aid. Please indicate the names of those trained to this standard below. If more space is required, please use the back of this page.*

1	_____	6	_____
2	_____	7	_____
3	_____	8	_____
4	_____	9	_____
5	_____	10	_____

Alternatively on the form, the fire department applicant has the option to Register as *"Structural Offensive with Mutual Aid*." On the form, the fire department is required to indicate the names of those firefighters in the fire department that are trained to meet Level 1 with Fire Control in conformance to the requirements of NFPA-1001.

Presumable, those listed firefighters could be mutual-aid fire department members if that option is chosen. Of course, that mutual-aid fire department might also be registered with the County, and needs to be if there is no formal mutual-aid agreement; in which case mutual-aid really does not exist. That is one of the reasons that *GA* has recommended[257] formal mutual-aid agreements.

Back to the names; there is space on the form for 10 firefighter names, qualified to NFPA-1001 Level I. This is where the problem arises with incorporating only part of the Boyle Decision in the form. Being volunteer firefighters, it is expected that only a percentage of those listed qualified Level 1 firefighters that exist in the fire department will be available for any given incident page, and maybe not as many as the 4 that are required to safely fulfil the indicated service level. If 4 qualified firefighters must be available, then out of 10 names, the fire department must have a reliable 40% turnout of Level I firefighters to meet the Registration commitment. That may be an achievable number for some fire departments, but not for others.

[257] See *Recommendation 138*.

Any department that registers as *"Structural Defensive"* is also advising that the department does not have the required number of Level 1 qualified personnel resources to enter any structure to perform a rescue or interior structural firefighting.

Registration Frequency

All fire departments regardless of their status as a Society or a Municipal Fire Department are required to Register with the Municipality to which they provide service. The three contract fire services, Town of Amherst, Town of Oxford and Five Islands Fire Departments are also required to register with the Municipality of Cumberland County. *GA* has only received a registration for the Town of Amherst Fire Department. The date of this unsigned registration is May 1999.

There are sixteen Society Fire Departments within the County providing services to the Municipality of Cumberland County. *GA* has received fourteen fire department registrations with the Municipality. It appears as though registrations are conducted annually for these fire departments. However, the annual review process to ensure the departments are abiding by the types of services they are to provide and that the levels of service as outlined within their registration are being maintained, and that the required Society annual public meetings are being held, does not appear to be occurring.

Registration was stated as a one-time process in the 1999 Guide to the MGA. However, every time the fire department changes its services or there are changes within the fire department that impact on service levels and expectations the fire department is required to update its registration. A change in service could include an addition of fire and emergency service equipment such as all-terrain vehicles, boats, fire apparatus, or even one name changed or dropped on the list of qualified Level I firefighters due to a retirement.

The new 2019 model Policy from the province states that registrations should occur annually, exactly to keep track of changes. The current MCC practice appears also to be annual registrations, Amherst possibly excepted.

If the municipality formally amends its registration policy it may be advisable to have all of the fire departments re-register at that same time with the Municipality so that the fire departments are fully versed in any policy changes.

A Review Of Current Fire Department Registrations

GA reviewed the fourteen provided MCC fire department registration documents submitted to MCC, and the Amherst registration. The review of these registrations is based on the currently used MCC form, upon the requirements of the MGA, and the new provincial model, available in *Appendix 8.*

In the current registration form, part 2 says

> *All Officers in your department are strongly encouraged to meet the minimum standards of the Nova Scotia Fire Service Officer Qualifications (attached). Please provide a list of Officers for your department and indicate if they meet the minimum Officer Qualifications.*

However, there are no qualifications attached to the Registration form. This was missed in the province's 2019 model also. *GA* is viewing this reference to a minimum standard as meaning the *Fire Service Association of Nova Scotia* (FSANS) published Officer Qualifications. FSANS has established qualifications[258] for Chief Officers, Fire Captains and Lieutenants.

Table 41 that follows, summarizes highlights from the review of existing Cumberland fire department registrations. The Compliance column notes areas where the current applications/registration do not comply with the County's approved Policy on Registration, or where there is likely issues with the fire departments ability to deliver services that meet expectations.

TABLE 41: SUMMARY OF THE REVIEW OF CUMBERLAND REGISTRATIONS

Society	Registration Requirement	Compliance
Collingwood	Joint Stock Expiry Date	October 31, 2021
	$5 million Liability Insurance	Unknown
	Complete Financial Statements from previous year	Not Included

[258] https://www.fsans.ns.ca/documents-forms/standards

Society	Registration Requirement	Compliance
	Boundaries of Primary Service Territory	Not Included
	Number of Active Members	Not included
	Training Records of all Active Members	Not included
	Minimum 4 firefighters trained Level 1 with Fire Control	Yes
	Fire Dept Officers meet Minimum Standards as per FSANS	Yes
	Schedule of Mutual Aid Agreements with Approval of details from the Municipality	Not Included
	Additional Comment(s)	Copy Provided not signed by Municipality
FPW	Joint Stock Expiry Date	July 31, 2021
	$5 million Liability Insurance	Unknown
	Complete Financial Statements from previous year	Unknown
	Boundaries of Primary Service Territory	Not Included
	Number of Active Members	Not Included
	Training Records of all Active Members	Not Included
	Minimum 4 firefighters trained Level 1 with Fire Control	No
	Fire Dept Officers meet Minimum Standards as per FSANS	No
	Schedule of Mutual Aid Agreements with Approval of details from the Municipality	Not Included
	Additional Comment(s)	Limited Service between 6 am & 6 pm Copy Provided not signed by Municipality
Joggins	Joint Stock Expiry Date	Unknown
	$5 million Liability Insurance	Unknown
	Complete Financial Statements from previous year	Not Included
	Boundaries of Primary Service Territory	Not Included
	Number of Active Members	Not Included
	Training Records of all Active Members	Not Included
	Minimum 4 firefighters trained Level 1 with Fire Control	Yes
	Fire Dept Officers meet Minimum Standards as per FSANS	Chief Officers Only
	Schedule of Mutual Aid Agreements with Approval of details from the Municipality	Not Included
	Additional Comment(s)	Copy Provided not signed by Municipality
Leicester	Joint Stock Expiry Date	May 1, 2021
	$5 million Liability Insurance	Unknown
	Complete Financial Statements from previous year	Not Included
	Boundaries of Primary Service Territory	Not Included
	Number of Active Members	Not Included
	Training Records of all Active Members	Not Included
	Minimum 4 firefighters trained Level 1 with Fire Control	Yes
	Fire Dept Officers meet Minimum Standards as per FSANS	Yes
	Schedule of Mutual Aid Agreements with Approval of details from the Municipality	Not Included
	Additional Comment(s)	Copy Provided not signed by Municipality
Pugwash	Joint Stock Expiry Date	November 30, 2021
	$5 million Liability Insurance	Unknown, Registration states period of coverage April 1 to March 31 annually
	Complete Financial Statements from previous year	Not Included, Registration states Provided each Year
	Boundaries of Primary Service Territory	Not Included
	Number of Active Members	Not Included
	Training Records of all Active Members	Not Included
	Minimum 4 firefighters trained Level 1 with Fire Control	Yes
	Fire Dept Officers meet Minimum Standards as per FSANS	Yes

Society	Registration Requirement	Compliance
	Schedule of Mutual Aid Agreements with Approval of details from the Municipality	Not Included
	Additional Comment(s)	Copy Provided not signed by Municipality
River Hebert	Joint Stock Expiry Date	November 01, 2021
	$5 million Liability Insurance	Unknown
	Complete Financial Statements from previous year	Not Included
	Boundaries of Primary Service Territory	Not Included
	Number of Active Members	Not Included
	Training Records of all Active Members	Not Included
	Minimum 4 firefighters trained Level 1 with Fire Control	Yes
	Fire Dept Officers meet Minimum Standards as per FSANS	Not All
	Schedule of Mutual Aid Agreements with Approval of details from the Municipality	Not Included
	Additional Comment(s)	Copy Provided not signed by Municipality
Shinimicas	Joint Stock Expiry Date	July, 24, 2021
	$5 million Liability Insurance	Unknown
	Complete Financial Statements from previous year	Not Included
	Boundaries of Primary Service Territory	Not Included
	Number of Active Members	Not Included
	Training Records of all Active Members	Not Included
	Minimum 4 firefighters trained Level 1 with Fire Control	Yes
	Fire Dept Officers meet Minimum Standards as per FSANS	Chief and Captains No- Deputy Chief Yes
	Schedule of Mutual Aid Agreements with Approval of details from the Municipality	Not Included
	Additional Comment(s)	Only 1 Registered Medical First Responder, Copy Provided not signed by Municipality
Southampton	Joint Stock Expiry Date	January 31, 2022
	$5 million Liability Insurance	Unknown
	Complete Financial Statements from previous year	Not Included
	Boundaries of Primary Service Territory	Not Included
	Number of Active Members	Not Included
	Training Records of all Active Members	Not Included
	Minimum 4 firefighters trained Level 1 with Fire Control	Yes
	Fire Dept Officers meet Minimum Standards as per FSANS	Chief -Yes, Deputy – No, Other officers Yes & No
	Schedule of Mutual Aid Agreements with Approval of details from the Municipality	Not Included
	Additional Comment(s)	Copy Provided not signed by Municipality
Springhill	Joint Stock Expiry Date	June 30, 2021
	$5 million Liability Insurance	Unknown
	Complete Financial Statements from previous year	Not Included
	Boundaries of Primary Service Territory	Not Included
	Number of Active Members	Not Included
	Training Records of all Active Members	Not Included
	Minimum 4 firefighters trained Level 1 with Fire Control	Yes
	Fire Dept Officers meet Minimum Standards as per FSANS	Yes
	Schedule of Mutual Aid Agreements with Approval of details from the Municipality	Not Included
	Additional Comment(s)	Possibility of lack of Responders Monday to Friday 7 am to 3 pm. Copy Provided not signed by Municipality
Tidnish Bridge	Joint Stock Expiry Date	September 30, 2021

Society	Registration Requirement	Compliance
	$5 million Liability Insurance	Unknown
	Complete Financial Statements from previous year	Not Included
	Boundaries of Primary Service Territory	Not Included
	Number of Active Members	Not Included
	Training Records of all Active Members	Not Included
	Minimum 4 firefighters trained Level 1 with Fire Control	Yes
	Fire Dept Officers meet Minimum Standards as per FSANS	No
	Schedule of Mutual Aid Agreements with Approval of details from the Municipality	Not Included
	Additional Comment(s)	Copy Provided not signed by Municipality
Truemanville	Joint Stock Expiry Date	January 31, 2022
	$5 million Liability Insurance	Unknown
	Complete Financial Statements from previous year	Not Included
	Boundaries of Primary Service Territory	Not Included
	Number of Active Members	Not Included
	Training Records of all Active Members	Not Included
	Minimum 4 firefighters trained Level 1 with Fire Control	Yes
	Fire Dept Officers meet Minimum Standards as per FSANS	Chief – Yes Deputies – No, Other officers - Unknown
	Schedule of Mutual Aid Agreements with Approval of details from the Municipality	Not Included
	Additional Comment(s)	Copy Provided not signed by Municipality
Wallace	Joint Stock Expiry Date	April 30, 2021
	$5 million Liability Insurance	Not Known
	Complete Financial Statements from previous year	Not Included
	Boundaries of Primary Service Territory	Not Included
	Number of Active Members	Not Included
	Training Records of all Active Members	Not Included
	Minimum 4 firefighters trained Level 1 with Fire Control	Yes
	Fire Dept Officers meet Minimum Standards as per FSANS	No. Provided names of members but not their position
	Schedule of Mutual Aid Agreements with Approval of details from the Municipality	Not Included
	Additional Comment(s)	Copy Provided not signed by Municipality Society Bylaws have Wallace FD operating under the rules of a "Rural Fire District"
Wentworth	Joint Stock Expiry Date	March 31, 2022
	$5 million Liability Insurance	Unknown
	Complete Financial Statements from previous year	Not Included
	Number of Active Members	Not Included
	Boundaries of Primary Service Territory	Not Included
	Training Records of all Active Members	Not Included
	Minimum 4 firefighters trained Level 1 with Fire Control	Yes
	Fire Dept Officers meet Minimum Standards as per FSANS	Fire Chief – Yes Deputy Chief – Yes Assistant Deputy – No Training Officer – Yes - Other Officers - Unknown
	Schedule of Mutual Aid Agreements with Approval of details from the Municipality	Not Included
	Additional Comment(s)	Copy Provided not signed by Municipality
Westchester	Joint Stock Expiry Date	February 29, 2021
	$5 million Liability Insurance	Not Known
	Complete Financial Statements from previous year	Not Included

Society	Registration Requirement	Compliance
	Boundaries of Primary Service Territory	Not Included
	Number of Active Members	Not Included
	Training Records of all Active Members	Not Included
	Minimum 4 firefighters trained Level 1 with Fire Control	Yes
	Fire Dept Officers meet Minimum Standards as per FSANS	Fire Chief – Yes Deputy Chief – Yes - Ass't Deputy – No - 3 Captains - Yes-
	Schedule of Mutual Aid Agreements with Approval of details from the Municipality	Not Included
	Additional Comment(s)	Copy Provided not signed by either party
	Note: (Tabulated on information received December 2021)	

Registration and Mutual-Aid

Fire departments are not required to register in other municipalities in order to respond to requests for mutual-aid assistance. However, this is a *conditional* exemption dependant upon the *existence* of a formal and executed mutual aid agreement between the fire department parties. Without a mutual-aid agreement, responding into another County; Colchester for example, is a violation of the MGA requirement to be registered to deliver services, or be part of an executed mutual-aid agreement.

If there is no municipally approved mutual-aid agreement in existence, then it would be prudent for the fire departments to Register with every municipality in which it is likely that it could provide services.

GA has noted that currently there are *no* formal mutual-aid agreements between the fire departments within the Municipality of Cumberland County (i.e., between themselves) nor is there an agreement with fire departments outside of the County (i.e., Oxford, Amherst). Agreements with fire departments in Colchester County and Westmoreland County (NB) would also be appropriate.

The Societies Act

The review of the fire department Registrations, in the preceding section, raised some points with regards to the division of responsibilities and powers, vis à vis the County and an independent corporation (the fire departments).

The County derives its powers and accompanying responsibilities from the *Municipal Government Act* and, to a lesser extent, from the *Fire Safety Act*. The individual society based corporate fire departments derive their powers and duties from the *Societies Act*[259] under which they have chosen to incorporate as non-profit corporations. None of these Acts appears to be in direct conflict with each other.

However, there are a number of the Registered fire department in the County that have approved bylaws under the *Societies Act* that clearly infringe on the rights and powers of the County; and that could, and has, been problematic.

Societies Act Provisions

A quick review of the *Societies Act* might be helpful. The following are selected excerpts from the *Act*.

> ***Interpretation***
>
> *2 In this Act,*
>
> *"director" includes trustee, officer, member of an executive committee and any other person occupying such a position by whatever name called;*
>
> *(d) "society" means a society incorporated under this Act;*
>
> ***Purposes for incorporation of society***
>
> *3 (1) A society may be incorporated under this Act to promote any benevolent, philanthropic, patriotic, religious, charitable, artistic, literary, educational, social, professional, recreational or sporting or any other useful object, but not for the purpose of carrying on any trade, industry or business.*
>
> ***Registration and issue of certificate of incorporation***
>
> *6 (1) Where the Registrar is satisfied that the memorandum and by-laws comply with this Act and that the objects of the society are within the scope of this Act and are*

[259] Nova Scotia *Societies Act;* Chapter 435 of the Revised Statutes, 1989 amended 1993, c. 42

sufficiently set forth, he shall register the memorandum and by-laws and issue a certificate that the society is incorporated.

Body corporate

9 From the date of the certificate of incorporation the subscribers to the memorandum, and such other persons as may from time to time become members of the society, shall be a body corporate by the name contained in the memorandum, having perpetual succession and the right to a common seal. R.S., c. 435, s. 9.

Powers

10 In addition to the powers by law vested in a corporation or body corporate and politic, a society may

(b) contract and be contracted with and sue or be sued in its corporate name;

use its funds and property for the attainment of its objects and purposes;

No power to grant certain degrees

12 No society shall have the power to grant or confer any degree or diploma of literary, technical or scientific character. R.S., c. 435, s. 12.

Society By-laws

13 (1) A society may by special resolution make, amend or repeal by-laws, not inconsistent with this Act or with its memorandum, for the conduct and management of its activities and affairs.

Content of by-laws

(2) The by-laws of every society shall contain provisions in respect of the several matters mentioned in Schedule B.

SCHEDULE B

(Section 13)

(1) Terms of admission of members and their rights and obligations.

(2) Conditions under which membership ceases and manner (if any) in which a member may be expelled.

(3) Mode and time of calling general and special meetings of the society, number constituting a quorum at such meeting and rights of voting.

(4) Appointment and removal of directors and other officers and their duties, powers, and remuneration.

(5) Exercise of borrowing powers.

(6) Audit of accounts.

(7) Custody and use of the seal of the society.

(8) Manner of making, altering and rescinding by-laws.

(9) Preparation and custody of minutes of proceedings of meetings of the society and of the directors and other books and records of the society.

(10) Time and place at which the books and records of the society may be inspected by members.

(11) Execution of contracts, deeds, bills of exchange and other instruments and documents on behalf of the society.

Existing Society By-laws

The *Act* requires that all society by-laws conform to the basic requirements of Schedule B of the *Act*. The Act does not specifically prohibit inclusion of additional components in the by-law, but article 6 requires the Registrar under the *Act* to review and approve the memorandum of incorporation and to approve the proposed by-laws; i.e., do they meet the requirements of Schedule B.

Nothing in the *Act* refers to a requirement for the by-laws being "lawful," in that they cannot support an unlawful activity, nor is there mention of conflict with other statutes. Such requirements *may* be understood to be part of the duties of the staff of the Registrar's office, but they are not in the *Act*. This raises the issue of the potential for by-laws to overstep into areas where other legislation has precedence, and still receive approval from the Registrar.

GA received society by-laws from eleven MCC fire departments. Of that number fifty-five percent address the actual intent of the Societies Act. The remaining forty-five percent have gone beyond the intent of Schedule B of the Societies Act and have incorporated into their Society By-laws, what best can be described as fire department administrative and operational policies, rules and regulations.

In *GA's* review of the by-laws there were several instances where fire service delivery (i.e., operational) aspects were incorporated into the society by-laws. The following is an example, whereby the activities and powers described actually rest within the *Municipal Government Act* with respect to fires, and possibly under various other legislation (federal and provincial) with respect to environmental, medical, police, military, and etc. emergencies.

> *The Chief shall have the absolute command and control at any emergency response. He or she shall direct all measures as may be deemed necessary for the saving of lives, the reduction of personal injury, and the limiting of property damage.*

Clearly though, as a fire department, the context is the mitigation of fire incidents, even though that is not stated. However, even within that context, the powers mentioned in the by-law are not as unlimited as might be suggested in the by-law, and should in fact be questioned as to whether

or not it resides with the municipality to decide[260] who is the "Chief" (aka the fire chief under the MGA), and under what procedures that he/she may exercise his powers. Furthermore, without the Registration of the fire department by the County, the society is not a fire department at all, and therefore the bylaws cannot be valid.

Rural Fire Districts Act

The Wallace and District Volunteer Fire Department's By-laws as outlined in its 'Objects' provides for the fire suppression and emergency services to an identified area pursuant to the 'Rural Fire Districts Act'.

The Society amended its By-laws, November 17, 2020. The clause indicating that the services provided as per the 'Rural Fire Districts Act' remains.

It appears though this department does not operate in accordance with the 'Rural Fire Services Act', therefore the By-laws require amending to reflect the current operational environment.

Recommendations on Registrations and Society By-Laws

Recommendation 128: GA recommends that Cumberland County undertake a thorough review of all society by-laws of the Registered fire departments and require the removal of all components that infringe on the County's powers and responsibilities to establish fire services administrative and operational policies, rules and regulations, etc. Such removal should be a condition of the County consideration of acceptance of any application for registration as a fire service provider.

Recommendation 129: GA recommends that Cumberland County develop and implement an annual fire registration process that includes reviewing and ensuring that all required information is provided and all fields of the registration form are completed in full prior to accepting and approving the fire department application for registration as a fire services provider. And further that the subject fire department is currently in good standing with respects to its by-laws and registration under the Societies Act or under what ever legislation they are incorporated.

Recommendation 130: GA recommends that Cumberland County establish service delivery standards and expectations, administrative procedures between the County and the fire department, and to meet

[260] See *Appointment of the Fire Chief(s)* starting on page 333.

goals of transparency and accountability that include public meetings and disclosure of financial information; all that to form part of the requirements for accepting and approving the fire department application for registration as a fire services provider.

Recommendation 131: GA recommends that Cumberland County develop a service agreement between the corporate fire departments and the County that clarifies all key aspects with respect to administration needs and service delivery expectations and standards; and that such service agreement be implemented as an integral component of the requirements for registration as a fire services provider in the County.

Recommendation 132: GA recommends that Cumberland County investigate the Wallace District Volunteer Fire Department's inclusion in their incorporation bylaws the reference to them operating as part of a Rural Fire District; and to consider that if they do exist as part of a Rural Fire District, how that impacts on how they are currently being funded by the County and if it impacts the ability of the County to include the Wallace District Volunteer Fire Department in the standard application for registration as fire service provider in the County.

Recommendation 133: GA recommends that Cumberland County update their fire department Registration Policy to reflect the recommended changes in this Report, and to include an updated form to address the need to include clear understanding of the services being offered, the means to deliver those services, and the standards to which these services will endeavour to be provided; in other words, to incorporate current needs of both Parties who are signatory; and to include an annual submission for Registration, or more often if there is any change to service level expectations, either an increase or a decrease. The new form should be predetermined and not editable, except in areas where custom information is expected.

Recommendation 134: GA recommends that Cumberland County, through the office of the Director of Protective Services, develops a proposal to Council for the adoption of an Establishing and Regulating Bylaw for the delivery of fire protection services inside the boundaries of Cumberland County, and provides for mutual aid responses by MCC fire services outside of Cumberland County when called to assist its neighbours.

Recommendation 135: GA recommends that Cumberland County appoint the Director of Protective Services as the County Fire Chief and thereafter request the provincial Fire Marshal to appoint this position as a Local Assistant to the Fire Marshal. Such appointments will facilitate the Director in applying the various powers in the MGA and the Fire Safety Act as regards the provision of fire protection services in Cumberland County.

FIRE SERVICE DELIVERY OPTIONS

Introduction

Prior to 1999 many communities throughout the province had what was known as "Ratepayer Associations." The Ratepayer Associations had a board of directors and were responsible for the administration and operation of local government responsibilities, including fire service delivery.

The majority of volunteer fire departments prior to 1999 were not corporate bodies, and were dependent upon fund raising and funds received from a fire tax levy that was requested at the annual ratepayer's association meeting. Fire Chiefs were required to provide monthly reports to the board and an annual report delivered at the annual Ratepayers meeting.

Typically, the Fire Chiefs for the local fire departments were appointed by and were responsible to the ratepayers board of directors. Such a system still exists under the *Rural Fire Districts Act*.

Fire service delivery and municipal working relationships with the local fire department(s) altered with the introduction of Part X into the *Municipal Government Act*.[261] in 1999. As it says in the *Act*, its purpose is to

> *(a) give broad authority to councils, including broad authority to pass by-laws, and to respect their right to govern municipalities in whatever ways the councils consider appropriate within the jurisdiction given to them;*

and

> *9A The purposes of a municipality are to*
>
> *(a) provide good government;*
>
> *(b) provide services, facilities and other things that, in the opinion of the council, are necessary or desirable for all or part of the municipality; and*
>
> *(c) develop and maintain safe and viable communities.*

One of the services that municipal residents and businesses expect to be provided is emergency services, specifically, fire services.

[261] *Municipal Government Act* CHAPTER 18 OF THE ACTS OF 1998, *Part X Fire and Emergency Services.* See *The Municipal Government Act* starting on page *318* for a fuller discussion on the MGA.

The *Act* defines emergency services as those services related to the provision of emergency services, including fire services, emergency medical services, search and rescue, water rescue and assistance and protection for people and property in the event of disasters including, but not limited to, floods, hurricanes, motor vehicle accidents and chemical spills.

The *Act* defines fire services as those services related to the prevention and suppression of fires.[262] The prevention and suppression of fires is typically delivered by a fire department. In Cumberland's case the suppression of fires is the task of the volunteer fire departments with support by the County, while the prevention of fires is, in part, done by County inspection and enforcement employees. The fire departments are tasked with the provision of fire safety education and post-fire investigation.

The *Act* defines a fire department[263] as an incorporated body that provides fire services and that may, at its option, provide one or more other emergency services, and includes a fire or emergency services department of a municipality, village, fire protection district or other body corporate;

In the MGA, §293, a municipality may maintain and provide fire and emergency services by providing the service, assisting others to provide the service, working with others to provide the service or a combination of means.

Theoretically, a municipality may chose not to provide fire services, but the *Fire Safety Act* forces the municipality to provide portions of fire prevention services (inspections and enforcement) and a corporate fire department established in the municipality may force the municipality to be involved in Registering that fire department.

> *294 (1) A body corporate may apply to a municipality for registration as a fire department.*
>
> *(2) A municipality shall not refuse to register a body corporate that complies with this Act if the*
>
> *(a) municipality is satisfied that the body corporate is capable of providing the services it offers to provide;*

[262] MGA §3. (ah)

[263] MGA §3. (af)

(d) municipality does not provide the same services for the same area.

(5) Registration continues in force until withdrawn by the municipality for cause or the fire department requests that the registration be revoked.

So, regardless of the option chosen, or the wishes of the municipality, they are involved in the provision of fire protection services to some degree.

Service Delivery Methodologies

Breaking down §293 of the MGA into the offered options, the are four available for the municipality in the provision of fire and emergency services within municipal boundaries.

(i) The municipality provides the services itself

(ii) The municipality assists others to provide the service

(iii) The municipality works with others to provide the service

(iv) The municipality provides the services by a combination of the above means

Alternate Fire Service Delivery Models

Cumberland is currently utilizing option (ii) from the above list, by providing financial and capital assets to independent corporate fire departments who provide the hands on service. Cumberland has also in the past provided administrative assistance through the office of the County Fire Coordinator, and has provided other coordination and service delivery assistance as well.

One of the questions asked of *GA* as part of this *Review*, was where to next? This question was asked because the current way of doing things is not meeting expectations of Council or of the Administration of the County. There are multiple issues, some being; accountability, transparency, standards, code of conduct, sustainability, efficiency, effectiveness, safety, and some working relationships.

There are basically three major directions in which the County could turn, ignoring for the moment the choice of some combination of the three. As already mentioned, the not providing services is not an option. The three major directions available are;

Status Quo: whereby the County continues to fund the 16 independent fire departments and only imposes requirements when there are issues that need addressing.

Municipal Service: whereby the County takes full ownership of the provision of services by owning all assets, controlling all aspects of the service, and provides services through volunteer, career, or composite fire stations that the municipality establishes and staffs.

Hybrid Standardized Service: whereby the County works with the independent volunteer fire departments to provide services that the meet the needs and expectations of the public, Council, and the Administration, and where funding is 100% municipal, and municipal Policy directs standards and many aspects of service delivery and resourcing.

Technically, there is a fourth direction, represented by MGA option (iii), and that essentially is to Register the fire departments as required, and to take no further initiative other than as might from time to time be necessary to "work with" the fire departments on a request basis in conformance to legislative mandates. This direction would lead to the re-establishing of local fire rates in lieu of municipal direct funding, and to the demise of some fire departments through lack of sufficient assessment funding. Since this direction leads to the devolution of MCC fire services, downgrading of services for many, it will therefore not be again discussed in this *Report* as a viable option.

Model: Status Quo

The current model of fire service governance is not meeting the objectives of all involved in the delivery of fire and emergency services. Many feel it is not sustainable operationally or organizationally.

GA found that it is unclear to many stakeholders; who is responsible for what, and who has authority over what. This includes Councillors, right through to the front-line volunteer firefighters. There is little apparent teamwork amongst fire departments and between the County and the many fire departments; and where there has been some, it has been uneven, and not

equitable, often creating a competition for resources, where there should have been and *needs* to be strong support and coordination.

GA has heard that the County appeared to have, by times, taken a hands-off approach in areas where the fire departments believed that the municipality had responsibility over certain aspects of fire service delivery. This may be because the County had waivered in its support and involvement with the fire departments, and once responsibility had been established, a waning in support was keenly felt.

Training is an example, where support for training facilities, associated funds, and initiatives, have all come and gone at least three times in the last 15 years or so, with still little to show for it. There are many reasons for this, but the main one appears to have been a lack of defined direction, perhaps a wavering of interest, and a collective lack of leadership to take the service to where it needed to be.

There are many symptoms of these past challenges. Competition for funding, and a failure to define, and to develop, and to promulgate a unified service vision has left many fire departments operating in silos. This has evolved into some fire departments being almost wholly municipal funded and others still purchasing used and outdated equipment, fund raising to purchasing expensive but little used assets, and tiffing with their neighbours.

The society fire departments have operated with little direction from the County on how to manage their internal affairs. Although independent corporations, the services they provide are very public, especially when they are predominantly funded from the public purse. What happens behind closed doors at a fire department meeting, often spills out into the public. Lack of oversight and support for the affairs of the fire departments has left Council and County administration frustrated in having to deal with the fallout from several incidents of severe malfeasance by fire department officials and members, for which the public has been, rightly, outraged. Such activity severely undermines the confidence of the public in the management of the fire departments, and cannot but reflect negatively on the Administration and the Council of the day, who feels powerless to correct it, and has limited options after the fact on how to do so.

It seems that there is little appetite on the part of everyone involved to continue down this Status Quo path. As one fire chief stated during stakeholder meetings, when expostulating on the involvement of the County in the delivery of fire services, "you are either in or you are out, you cannot be both."

Unfortunately, this model perpetuates the neither in, nor out, status quo. It is strongly not recommended for this model to continue.

Model: Municipal Regional Fire Service

This model uses volunteer firefighters to deliver first-responder services, but all the administration, management, and much of the leadership will come from full or part-time County staff positions. Therefore, from an administrative, operational, management, accountability, and transparency perspective; this model would likely address any issues that the County has with administration, management, and direction of the fire services conforming to the needs and obligations of the municipality. In this model, most decisions and responsibility for achieving Council direction rests with County staff. The fire department would operate like any other County department, as far as that is possible with a fire service based on volunteer first responders.

Under this model the fire service would operate as a regional service. The municipality would be responsible for all fire department related issues, for example, all human resource management issues, including recruitment and retention of volunteers. There would be more direct management of all eighteen stations and all assets contained therein. The setting of standards, provision of training, and the day to day administration would all rest with County staff.

To accomplish this model from the current model, two major things would happen. First, funding and the current provision of assets to the independent corporate fire departments would be withdrawn, and second, fire department Registrations would be rescinded.

The transition to a fully Municipal Model from the current practice would likely be planned to occur over a period of a few years and for a time would see a mix of both municipal and independent fire departments.

The County would have to decide whether to buy-out any needed society fire department assets, or acquire alternatives. The biggest challenge would be the retention of the volunteer firefighters. Some would quit and some new faces would join.

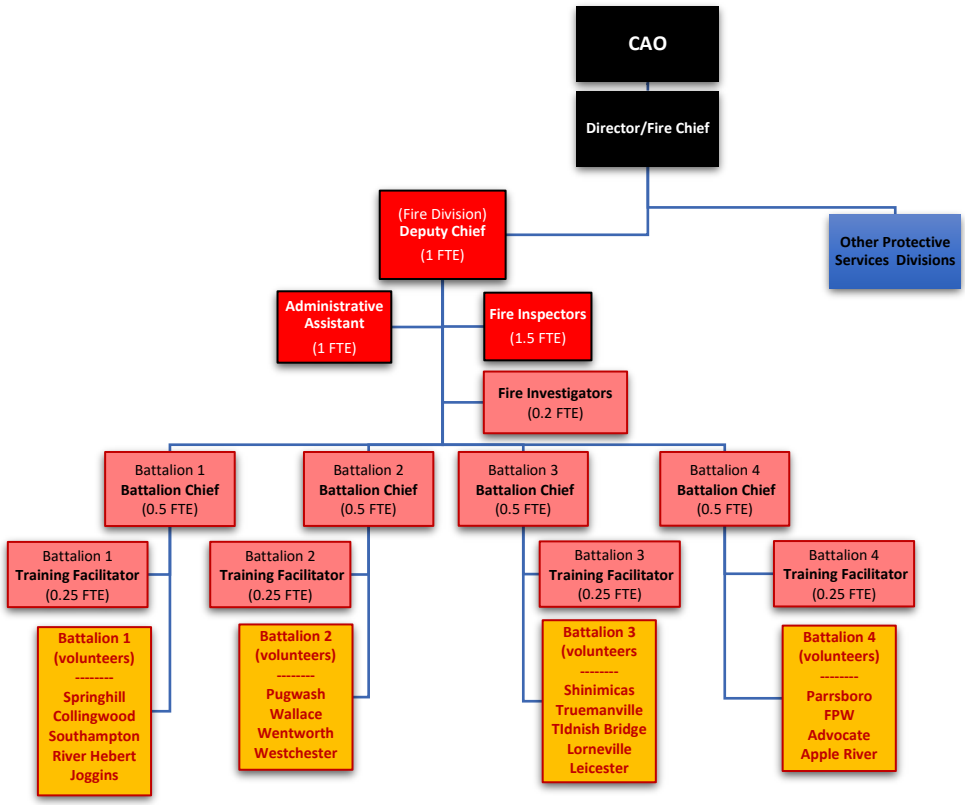
The model transition initially may become an emotional issue within the existing fire department memberships and within the community that they serve. How the transition is planned and executed will be key, with proper messaging, and involvement of the public a certainty.

Undetermined at this point is the required initial cost to implement this model. If too many assets need to be acquired from society fire departments, there could be a significant associated front-end cost.

This model provides full control over the administration, management and operation of fire service delivery. Management and leadership overhead for the County will increase, with the need to add several full-time equivalent positions (FTEs) to manage a larger municipal department/organization than currently exists.

Figure 38 shows the organizational chart, with the staffing and reporting concept for this model. Fire Prevention is outside the scope of this *Review*, and *GA* does not know the specific number of FTE for the existing Fire Inspectors, but they are shown here for completeness. For the purposes of this org-chart *GA* has assumed 1.5 FTE.

FIGURE 38: MUNICIPAL MODEL PROPOSED ORGANIZATIONAL CHART



Excepting the existing Fire Inspectors, *Table 42* that follows shows the estimated staffing costs to fill the Fire Division positions on the organizational chart.

TABLE 42: MUNICIPAL MODEL STAFFING ESTIMATE

Position	No of Positions	FTE	Job Level	Step	Annual Rate (equivalent)	Annual Hours (per FTE)	Hourly Rate	Benefit Cost Allowance	Annual Cost	Notes
Deputy Chief	1	1	8	1	$ 70,393	2080	salary	30%	$ 91,511	Full-time, salary
Admin Assistant	1	1	3	1	$ 42,073	2080	salary	30%	$ 54,695	Full-time, salary
Battalion Chiefs	4	2	5	1	$ 49,005	2080	$ 23.56	30%	$ 127,412	Part-time, hourly
Fire Investigators	2	0.4	4	1	$ 45,365	2080	$ 21.81	30%	$ 23,590	Part-time, hourly
Training Facilitators	4	1	4	1	$ 45,365	2080	$ 21.81	30%	$ 58,974	Part-time, hourly
Total	**12**	**5.4**							**$ 356,182**	

The costs in this table do not include support costs for the personnel; for example, offices, uniforms, mileage, vehicles, or consumables.

GA might recommend the implementation of the Municipal Model as a means of achieving the objectives of the County. However, the downsides of increased costs and increased risk of a complete fracture with the volunteer firefighters and local communities suggests that there is a need to seek another model with fewer risks. That model is the next one discussed.

Model: Hybrid Fire Services

This model includes service delivery continuing through the volunteer fire department corporations, with volunteer firefighters remaining as the first responders. What is different from the Status-quo Model, and is similar to the Municipal Model, is that in this model the County provides strong direction and direct assistance to the management and administration of the fire service organization as a whole, including for the fire departments. This is done through the provision of full-time and part-time staff at critical points in the organization.

The County will fully fund the fire service delivery program. The County will also standardize service delivery and equipment, and will seek economies of scale. The County will set achievable and needed standards of service delivery through the development and application of policies, strategic direction, and procedures that also assist the County in meeting its municipal and legislated responsibilities in associated areas.

Although first responder services are still operated by the sixteen independent corporate fire departments, on behalf of the municipality, there is oversight, substantial support, and integration of many administrative services, all under the direction of the County's Director of Protective Services.

This model requires the County to develop a Service Agreement, and to obtain agreement with the Registered fire departments that this Service Agreement is the underpinning of how fire services will be managed and supported and delivered in the County. Acceptance of the Service Agreement would become a mandatory component of the Registration process.

Although this sounds like an onerous process, actually it is no different than any other private company providing services on behalf of the Municipality. The service provider needs to know what is expected by the client and the conditions under which the services need to be delivered. It is expected that the development of such a Service Agreement would be essentially consensual in process, but all parties will have their needs. For the municipality, some of these needs are absolute; driven by legislation that is not fire service related, for example; accountability for public funds and concerns around liability.

Under this model the municipality would be responsible for the acquisition; of all fire department equipment, fire department vehicles, fire stations, and the maintenance of same The County would support recruiting, retention, and training of the volunteer firefighters. The County would be committed to being a full partner in the delivery of these services.

This model eliminates the need for the volunteer fire departments to fund raise for needed equipment and allows additional time for training. It also puts limits on the fire departments unilaterally developing their own concept of service demands and how to address them. It will break down the silos.

The County will develop in cooperation with the fire departments; standardized administrative and operational policies and procedures such as standard response protocols, standardized training, etc.; and they will be applied to all sixteen fire departments.

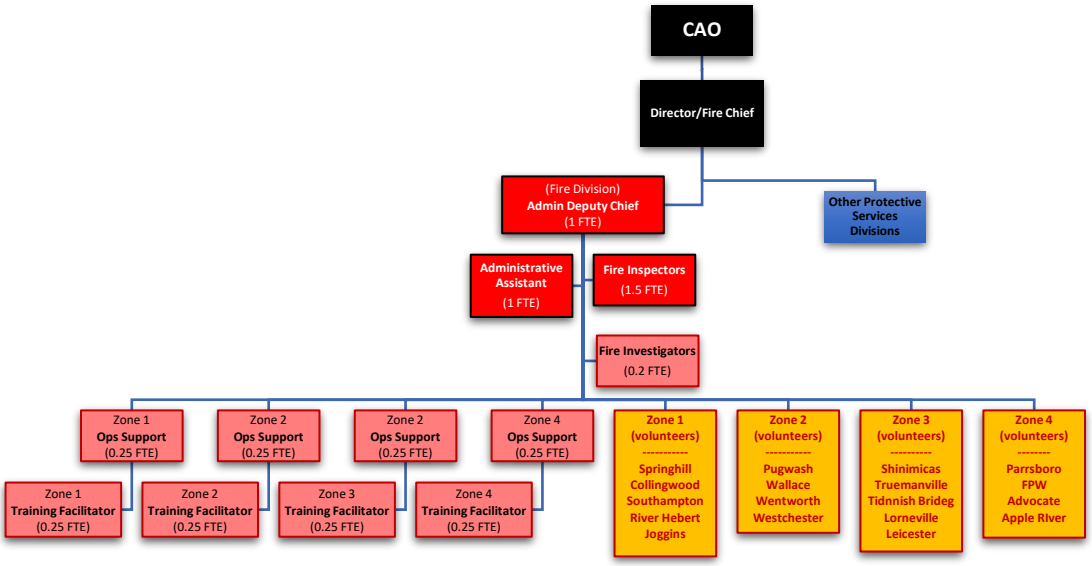
The role of the local fire chiefs of the corporate fire departments will be to ensure that the commitments contained in the Service Agreement and Registrations are honoured, and to manage and lead their fire department personnel in achieving collective goals.

One big objective with this model would be to lessen the administrative workload of the individual local fire chiefs and to define clear lines of responsibilities and roles, within the framework of overall position descriptions, and of a better defined organization composed of many parts.

There is a cost to this model, as the County will need to invest in FTEs for the support of administrative and management functions, as well as boots on the ground in the areas of training, logistics, administration support, fire investigation, and maintenance.

Figure 39 shows the organizational chart, with the staffing and reporting concept for this model. Fire Prevention is outside the scope of this *Review*, and *GA* does not know the specific number of FTE for the existing Fire Inspectors, but they are shown here for completeness. For the purposes of this org-chart *GA* has assumed 1.5 FTE.

FIGURE 39: HYBRID MODEL PROPOSED ORGANIZATIONAL CHART



Excepting the existing Fire Inspectors, *Table 43* that follows shows the estimated staffing costs to fill the Fire Division positions on the organizational chart.

TABLE 43: HYBRID MODEL STAFFING ESTIMATE

Position	No of Positions	FTE	Job Level	Step	Annual Rate (equivalent)	Annual Hours (per FTE)	Hourly Rate	Benefit Costs Allowance	Annual Cost	Notes
Administration Deputy Chief	1	1	8	1	$ 70,393	2080	salary	30%	$ 91,511	Full-time, salary
Admin Assistant	1	1	3	1	$ 42,073	2080	salary	30%	$ 54,695	Full-time, salary
Operations Support Officers	4	1	5	1	$ 49,005	2080	$ 23.56	30%	$ 63,706	Part-time, hourly
Fire Investigators	2	0.4	4	1	$ 45,365	2080	$ 21.81	30%	$ 23,590	Part-time, hourly
Training Facilitators	4	1	4	1	$ 45,365	2080	$ 21.81	30%	$ 58,974	Part-time, hourly
Total	12	4.4							$ 292,476	

The costs in this table do not include support costs for the personnel; for example, offices, uniforms, mileage, vehicles, or consumables.

Governance Model Summary and Recommendations

By legislation, the municipality is required to be involved with the provision and delivery of fire and emergency services. Council is in the position of having to decide on the service delivery methodology and to what level that the municipality needs to be involved in the provision and delivery of fire services; while ensuring service delivery meets expectations, and municipal mandates of transparency and accountability of taxpayers' funds, and addresses liability concerns.

The volunteer firefighters are a very important part of delivering fire and emergency services to the municipality's citizens. In such a large geographic area, where response times are challenging, a volunteer firefighter based service makes the service more affordable, and provides value to the citizens, and enhances community cohesion. However, it also comes with responsibilities. The corporate/society based volunteer firefighters owe a duty of care to the County and to the citizens of the communities that they serve on behalf of the municipality. The municipality is bound by legislation to operate in a particular manner, with many responsibilities and requirements. These municipal obligations must be addressed in the provision of all services that are contracted to the municipality; services like those delivered by the current volunteer

firefighter based societies. As such, the municipality is compelled to exert its authority and clearly indicate what its requirements are.

The three models presented above do not all have the same ability to address the obligations of the County. All three can continue to deliver fire services, but not all to the same standard or level. A short summary of that aspect, associated with each model, is provided here, with *GA's* thoughts on each;

- **The Status Quo model**: This model does nothing significant to improve meeting the municipality's obligations, from that of the current situation. It represents an ongoing partial and unspecified commitment to regulating and supporting the provision of the contracted fire services. The fire departments continue to operate independently in silos, without effective coordination. The success of the provision of services depends almost entirely on the virtuous actions of individuals and of these fire department corporations; while lacking significant municipal direction or support other than funding. The municipality continues to operate in an information vacuum, where decisions are stymied and inevitably parochial. In *GA's* opinion, this is not a sustainable model.

- **The Municipal Model**: This model is a complete conversion to a municipal department operation, but still with volunteer firefighter first responders who report directly to County staff. There is every opportunity for the County to build a structured service delivery department that meets the expectations of Council and the administration. Council will be able to make decisions based on informed recommendation from municipal staff, staff who are accountable to County administration, and thereby to Council, for the performance of the department.

  Personnel costs will be higher than for any other model as there is a need to properly staff the organization for success in delivering a critical service. Overall, costs should be contained through good management and oversight.

  The challenge will be retaining local community commitment to the volunteer first responder service model; which means maintaining the enthusiasm and commitment of community members to still volunteer as firefighters, and to keep the volunteer fire station as an important centre in the local community. In *GA's* opinion, this model could be workable but has significant risks associated with retaining the services of volunteer firefighters in the near term.

- **The Hybrid Model**: This model retains the fundamental character of the local community volunteer fire department, with a continuing degree of independence. It also implements a more structured support through the appointment of full-time and part-time staff that relieves some of the training, administration, and logistical load from the local fire departments, and likewise leads to better outcomes in these areas. Council will be able to make decisions based on more informed recommendation from municipal staff, staff who are more accountable to County administration, and thereby to Council, for the performance of the fire services, than is currently the case.

  Personnel costs will be somewhat lower than for the Municipal model, as there is still a need to properly staff the organization for success in supporting the delivery of a critical service. Overall, costs should be better contained through good management and oversight and through working closely with the local fire department management. Full-costs are supported by the County.

Better defined methods, standards, and outcomes will be key features that address the needs of the municipality, in order for it to meet its obligations. This model should largely achieve the outcomes of the municipal model, while still preserving the volunteer fire departments as local institutions and better preserving the volunteer culture.

The biggest challenge to this model will be in achieving a good collaborative working relationship with the volunteer firefighters; which is crucial to achieving a better fire service in Cumberland County. In *GA's* opinion, this Hybrid Model can produce good results for the County while maintaining what is good about the current service provisions.

Recommendation 136: GA recommends that Cumberland County pursue the implementation of the Hybrid Fire Services Model as described in this Report, including the appointment of full-time and part-time staff as indicated in the proposed organizational chart in Figure 39 of the Report.

REVIEW OF CONTRACTED SERVICE FIRE DEPARTMENTS

The Municipality of Cumberland County currently has under contract two municipal fire departments located within the boundaries of Cumberland County. These fire departments are not society incorporated fire departments but are owned and operated by the Towns of Amherst and Oxford. Also under contract is a society based independent fire department, the Five Islands and District Fire Brigade, located in Colchester County. These three fire departments provide fire services into defined response districts within Cumberland County, from their normal base of operations, and provide coverage to areas that County fire departments are unable to respond to in a reasonable period of time.

GA was asked to review these agreements and to provide comment. Copies of the contracts with the Town department were provided, but no copy of the Five Islands contract was provided.

The focal point of the review was, on the types of services being provided, the service levels, and how is performance measured in meeting the intent of the agreements.

The agreements between the County and the Town of Amherst and the Town of Oxford are near identical agreements, although coverage area and terms of consideration for the services differed. Both agreements are somewhat dated, having been established in 2008. They are set to expire March 31, 2023.

In the agreements, the section that defines service levels is vague and it would be challenging to be able to measure performance of the service being delivered, and likewise if expectations of service delivery are being met. The agreement also lacks indemnification protections for both parties.

There was a sentence within both agreements that the; *"Towns of Amherst and Oxford, in cooperation with neighboring rural fire departments* ***will obtain and maintain*** *the Fire Underwriters Survey Superior Water Shuttle Accreditation for the Coverage Area".*

In discussions with Fire Underwriters, *GA* was informed that there is no record of any Accredited Superior Water Tanker/Shuttle Service being achieved in the County.

Rather than comment on each individual area of the agreements for potential improvement, GA has developed and offers a sample draft of a *"Fire and Emergency Services Agreement"*, for consideration. See *Appendix 13: Sample Service Agreement*.

Recommendation 137: GA recommends that Cumberland County include in their service agreements with the Town of Amherst and the Town of Oxford, when renewed, clauses that address the establishment of service levels, liabilities, responsibilities, lines of authority, and mechanisms for dispute resolution.

MUTUAL-AID & AUTOMATIC-AID AGREEMENTS

The Municipal Government Act (MGA) provides the municipality the authority to enter into Mutual-Aid Agreements.

> *Mutual aid*
>
> *302 (1) A municipality may assist at fires, rescues or other emergencies occurring outside its boundaries.*
>
> *(2) A municipality may agree with municipalities, villages, fire protection districts, federal and provincial departments and agencies or others to provide assistance at fires, rescues and other emergencies and to receive assistance at fires, rescues and other emergencies.*
>
> *(3) A fire department that assists a registered fire department pursuant to a mutual aid agreement is not required to register and is entitled to all of the protections provided by this Act for the assisted fire department.*

Mutual-aid might increase exposure for a municipality to liability, since they own most of the fire equipment and vehicles. The MGA does provide some protection from litigation in the delivery of fire services in §300 and §301 of the *Act*. This protection is as follows;

> *No liability*
>
> *300 A municipality, a village, a fire protection district, an employee of a municipality, village or fire protection district, a member of the fire department of a municipality, village or fire protection district, a registered fire department, a member of a registered fire department, a registered emergency services provider and a member of a registered emergency services provider are not liable for an act or omission in providing, or failing to provide, an emergency service, unless they are grossly negligent. 1998, c. 18, s. 300.*
>
> *When action lies*
>
> *301 (1) No action lies with respect to an act or omission in providing, or failing to provide, an emergency service against an employee of a municipality, village or fire protection district, a member of the fire department of a municipality, village, fire protection district, registered fire department or registered emergency services provider.*
>
> *(2) Notwithstanding subsection (1) and subject to Section 300, an action may lie against a municipality, village, fire protection district, registered fire department or registered emergency services provider with respect to its employee, member of its fire department or member.*

In the above quotes the emphasis on registered fire department is telling. As previously discussed, registration is necessary for a fire department to be able to provide services in a municipality. *GA* has already recommended that fire departments that provide mutual-aid outside of the County should register with the appropriate municipality also, in order to be recognized as

authorized service providers. This is key in order to obtain the protections against liability contained in §300, §301 of the MGA; you have to be registered.

However, a proper mutual-aid agreement obviates this need to register, and affords the assisting fire department the protections of §300, §301 of the MGA *as if* they were registered. It is important to note that; no registration and no mutual-aid agreement equals *no* protection under the MGA.

Table 4: Mutual-Aid Matrix: 2016-2021 on page *100* shows that in the six years of call data reviewed by *GA*, there were 111 instances where Cumberland County based fire departments responded outside of the County borders, most often to Colchester County. *GA* has discovered that there are no formal (i.e., no valid) mutual-aid agreements with any Cumberland fire departments. Therefore, are the various fire departments who responded into Colchester also registered there as fire departments and service providers? If not, then they are exposing themselves and Cumberland County to avoidable liability.

Recommendation 138: GA recommends that whereas Cumberland County has complete or partial ownership in capital equipment and other equipment used by the fire department to deliver mutual-aid assistance outside of and inside of the County; and funds the fire service operations almost to the exclusion of any other sources of funding; it is recommended that Cumberland County develop and require the fire departments to become signatories to a formal multi-party mutual-aid agreement between all the County fire departments, and with the three contract fire departments, and with any other municipality and fire department either inside the overall boundaries of Cumberland County, or with whom it is reasonable to anticipate that mutual-aid might be provided, including those fire departments in Colchester County and Westmoreland County. It is recommended that all mutual aid agreements also be signed by Cumberland County.

Mutual Aid is the request for equipment and manpower resources from an assisting fire department and made by a requesting fire department. The requesting fire department is already on the scene of the incident and has assessed that its own resources are not sufficient, and require assistance.

Furthermore, NFPA-1201[264] defines mutual aid as a reciprocal assistance by emergency services under a prearranged plan. In other words, it works both ways, but is not a strict accounting of who owes who.

Automatic-Aid is similar but different in several key points. Automatic-aid is also based on agreements but in this case the assisting fire department is dispatched to respond simultaneously

[264] NFPA-1201 Standard for Providing Fire and Emergency Services to the Public, 2015 Edition

with the primary fire department. There is no request delay as there is with mutual-aid, it is automatic.

Automatic-aid permits the closest fire department to respond regardless of jurisdictional boundaries. Automatic-aid can accelerate the response of needed resources, facilitate service delivery, and potentially lead to cost sharing efficiencies.

Mutual-Aid and Automatic-Aid (Autoaid), are essential elements of emergency preparedness. They help to ensure that adequate resources will be available when emergency requirements exceed the capacity of local responders.

A formal, written mutual aid agreement between service providers offers a framework that enhances the collective ability of firefighters to protect lives, homes and businesses.

Formal Agreement Components

Formal written agreements provide certainty and circumvent disputes.

Formal agreements address the terms and conditions governing reimbursement for use of equipment, supplies, facilities, property, services and other resources provided under an agreement.

A formal agreement establishes procedures for;

- Requesting Mutual Aid or receiving Automatic Aid and resources.
- Who has authorization to accept a mutual aid request and,
- The level of personnel, types of equipment, and resources to be made available during an emergency.

These agreements manage risk by:

- Ensuring that an adequate number of firefighters are available to operate safely and effectively;
- Indemnify mutual aid partners from any liability from alleged negligence occurring during a mutual aid response;
- Stipulating the party responsible for the provision of members benefits in the event of an incident;

- Specify the mechanism for dispute resolution should a dispute or material disagreement arise between the parties to an agreement.
- Oral or "HANDSHAKE" agreements lack the legal safeguards of formally written mutual aid agreements approved by the municipality's elected officials.

Address Operational Issues

Operational issues addressed should include as a minimum, issues such as (not limited to);

- What the Command-and-Control structure is when your assets and personnel are deployed to a mutual aid call;
- Whose department operating guidelines are observed when responding to a mutual aid request;
- Is there a system in place to keep the on-scene Incident Commander informed of who is responding;
- Is there an on-scene accountability system to account and track all personnel at scene.
- Is there a Standard Operating Procedure that provides mutual aid for community fire protection cover, while the community's resources are away supporting another community?
- Is there an inventory of all equipment available, including specialized equipment, that will be available if needed as part of the Mutual Aid Agreement;
- How are the service gaps addressed while the departments within your jurisdiction responded to the mutual aid request;
- Mutual aid partners should as a minimum conduct an annual joint training session.

Addresses Administration Issues

- Administratively there a number of issues that the Municipality should be aware of.
- First and foremost, has the municipality approved the Mutual Aid agreement, if so, does it retain copies?
- Is there an established procedure for review of the agreements? What is the frequency and is it defined as to who the participants are in the review process?

Review of Cumberland County Mutual-Aid Agreements

Goudreault Associates (GA) were asked to review and provide comment on the mutual-aid agreement(s) within MCC. The county is comprised of sixteen fire departments, three contract fire departments and an operational response agreement with the "Special Hazards Response Unit" located in Bible Hill, NS. This unit is a Level "A", Hazardous Materials Response unit and MCC supports this unit financially through the annually budgeting process.

GA has learned that there are no formal written mutual aid agreements. The agreements are what best can be described as handshake agreements. Currently there is no formal process to review, or amend the current agreements, as there are no agreements.

However, there is an unsigned and appears not to have been released, (no issue or revision date), Operating Guideline addressing "Mutual Aid Response" (OG-400-13). This operating guideline is not a replacement for a formal Mutual-Aid Agreement as it does not address any of the issues required of a formal Mutual Aid agreement.

As for any automatic-aid agreements, *GA* has discovered that there are apparently no formal agreements either. However, the fire departments, collectively have provided instruction to the County's Fire dispatch provider, Valley Communications, on when and to what incidents certain fire departments should be dispatched in addition to the primary fire department. This is termed by the fire chiefs as automatic-aid, but without a formal agreement and schedules, it is better described as a run-card system.

With there being no formal written agreement between the various departments and/or the County there are no records that indicate any review of the Automatic-Aid policies has occurred.

However, based upon *GA's* interviews with the various Cumberland fire departments, and the contract service providers, no serious issues were raised over any of these verbal agreements.

Recommendation 139: GA recommends that a committee comprised of the Director of Protective Services and a select number of local Fire Chiefs be established to develop, formal written Mutual Aid and Automatic Aid agreements. These agreements should be multi-party agreements and layout the framework of how multi-resource fire services will be delivered in the County. It is recommended that the framework of the agreement be approved by MCC Council and set in Policy.

Some of the framework principals that should be included in the Mutual Aid agreement include the following;

- Who has the authority to request mutual aid;
- How is mutual aid activated;
- Command and Control
- Back filling of communities who are providing the mutual aid.
- Obligations of the parties, i.e., training cycles, record keeping, reports,

- Process for Standard Operating Procedure development, review, amending and harmonization,
- Reimbursement for extraordinary costs
- Indemnification or participants, and clauses to address any potential legal issues that may impact upon the Mutual Aid agreement.
- Duration of Agreement
- Review cycle
- Agreement Approval Process

Some of the framework principals that should be included in the Automatic Aid agreement include the following;

- Closest department dispatched regardless of jurisdictional boundaries
- Address any interoperability issues, i.e., communications and equipment
- Change of Command procedures if and when required
- Back filling of communities who are providing the automatic aid.
- Indemnification clauses to address any potential legal issues that may impact upon the Automatic Aid agreement.
- Duration of Agreement
- Review cycle
- Agreement Approval Process

JURISDICTIONAL SCAN

As part of the Fire Service Review a Jurisdictional Scan was conducted. A jurisdictional scan is a decision-making tool to:

a. Consider how challenges have been framed in other similar jurisdictions,
b. Compare and evaluate options based on action taken in other jurisdictions, in response to similar problems and assess if the solution is working and how it is perceived.
c. Identify and anticipate implementation considerations associated with options.

The scan assists in ensuring that the organization employing the scan, is using best practices in service delivery and governance, which is the focus of the scan undertaken.

This section of the *Report* will highlight the methodology used, identify any commonality between the jurisdictions selected for the scan; in actions taken in addressing similar identifiable issues. This scan was done at a high level, and does not delve too deeply into the issues.

In determining what municipalities to include in the scan, it was decided to look at municipalities that have a similar governance model to Cumberland County and those municipalities having a majority of their fire service provided by fire departments who are registered in the province as a Society. In addition, the scan municipality employed a Fire Service Coordinator, who would be the principal contact for comparative information.

Based upon the foregoing criteria Goudreault Associates reached out to the following municipalities, all of whom actively participated.

- Municipality of the District of Barrington
- Municipality of the District of Chester
- Municipality of the County of Colchester
- Municipality of the District of Guysborough
- Municipality of the County of Kings
- Municipality of the District of Lunenburg
- Municipality of Victoria County

Review Topics

Areas of the high-level review for each municipality included:

- Population
- Square area of Municipality
- Population Density
- Number of Fire Departments, Fire Department Ownership and Governance Model
- Fire Services Advisory Committee
- Ownership
- Beneficial Ownership
- Call volume
- Funding Methodology
- Purchasing Standards
- Training
- Mutual Aid Policy
- GOGs and Code of Conduct Policies
- Code of Conduct Policies
- Fire Department Registrations
- Honourariums
- Volunteer Benefit Programs
- Summary

Methodology

The scan was conducted by questionnaire, telephone interviews and web-based research.

The data was compiled and analyzed for commonality amongst the various topics and then the responses and information were summarized. The objective was to identify opportunities, in addressing challenges that may impact the ability of the Municipality to provide a cost-effective fire service delivery program to its constituents.

Scan Results

Upon review of the collected data, the most common theme was the complicatedness in managing a provided service through non municipal entities; i.e., through the use of Societies as service delivery agents. Beyond that singular commonality amongst the municipalities, common or standard approaches in the practices of fire service delivery were relatively few.

Population

The total population of the municipalities scanned was 155, 365. The Municipality of Cumberland County with a population of 19,402 represents 12.5 percent of the total population scanned. Reference *Table 44: Scanned Municipalities* Metrics for tabulated results.

Population and other factors such as; square area and population density, are important factors in assessing, along with other considerations, demands for service, the types of services and service levels to be provided.

Municipal Area

The area of a municipality along with population data aids in the planning of how many stations are required and the appropriate distribution of fire stations for effective response, so as to deliver the service level required or established by the municipality.

The area served and the location of a fire station also relates to travel-time and the ability of the fire department/station to respond to its outer extremes of fire coverage area in a reasonable amount of time.

The Municipality of Cumberland County has a reported area of 4,255 square kilometers. This is the largest of all the municipal areas reviewed. Reference *Table 44: Scanned Municipalities* Metrics for tabulated results.

Cumberland also has the largest average area per fire station, with on average a response district area of 203 square kilometers per station.

Population Density

Population density is used to quantify demographic information and to assess relationships with services such as health, policing and fire services. For the fire service it helps predict the frequency of demands for service, and as it related to the possible socio-economic conditions that might exist due to higher density urban areas, or lower density rural areas, to the types and levels of services required. It can also drive considerations of response standards, as per NFPA-1720 and FUS standards,[265] including the number of fire stations needed and their locations.

For fire service delivery, the higher the population density the more cost effective it is to deliver service in a timely manner. The lower the density, timely response becomes a challenge and it becomes less cost effective and it has a negative effect on service levels.

The population density for the Municipality of Cumberland County (MCC) is 4.6 persons per square kilometer. Population densities ranged from a high of 15.18 per square kilometer to a low of 1.8. Reference *Table 44: Scanned Municipalities* Metrics for tabulated results.

TABLE 44: SCANNED MUNICIPALITIES METRICS COMPARISONS

Municipality	Pop (2016)	Area (Km^2)	Pop Density	No of FDs	No of Contract FD. s	Total Number of Stations	Area per Station	Pop per Station
Municipality of Cumberland County	19,402	4,255	4.6	16	3	21	202.6	924
Municipality of the District of Barrington	7,504	635	11.8	3	3	6	105.8	1251
Municipality of the District of Chester	10,750	1,122	9.2	7	1	8	140.3	1344
Municipality of the County of Colchester	37,464	3,572	10.5	16	0	19	188.0	1,972
Municipality of the District of Guysborough	4,615	2,200	2.1	9	0	13	169.2	355
Municipality of the County of Kings	48,000	2,212	21.7	13	3	16	138.3	3,000
Municipality of the District of Lunenburg	3,168	1,760	1.8	24	3	27	65.2	117
Municipality of Victoria County	7,089	2,871	2.5	11	0	15	191.4	473
West Hants Regional Municipality	19,016	1,253	15.2	5	2	8	156.6	2,377

[265] See *Fire Underwriters Surveys (FUS)* starting on page 80, and *NFPA-1720* starting on page 74.

Note: Total stations include municipal and contract station serving the municipality

Fire Department Numbers, Ownership, and Governance Models

In Nova Scotia, the *Municipal Government Act* (MGA), the *Rural Fire Districts Act*, and the *Societies Act*, regulate the ownership, governance, and relationship of fire departments and a municipality. A Municipality, under the MGA, may establish policies for fire departments. See *Ch 6: Governance* starting on page *374* for a thorough discussion of all these issues.

The act permits the municipality to operate its own fire department, or assist others in providing fire protection services, and furthers suggest a fire department to be a body corporate, (Society).

A review of the data in *Table 45* below indicates that the majority of fire departments providing fire services within the reference municipalities are society based body corporates.

The total number of fire departments references the all fire departments, regardless of ownership or governance status, that provide services to a municipality.

TABLE 45: SCANNED MUNICIPALITIES FIRE DEPARTMENT OWNERSHIP STATUS

Municipality	No. Departments within Municipality Boundaries	No. Municipally owned & Operated FDs	No. Society Owned & Operated FDs.	No. Owned & Operated by a Fire Commission	No. Operates under the Rural Services Act
Municipality of Barrington	3	0	3	0	0
Municipality of Chester	7	0	1	6	6
Municipality of the County of Colchester	16	1	12	4	0
Municipality of the County of Cumberland	16	0	16	0	0
Municipality of the District of Lunenburg	24	0	16	2[1]	7 Private Members Bill
Municipality of the County of Victoria	12	0	12	0	0
Municipality of Kings County	10	0	3	4 1 Village	2
Municipality of the District of Guysborough	9	0	9	0	0
Regional Municipality of West Hants	5	2[2]	3[2]	0	0

1. There are two Fire Commisisons established but they do not have any fire departments to over see.
2. Southwest Fire Department is a registered Society but their fire service is ran and operated by a Municipal Department, Hantsport.

In the Municipality of the District of Lunenburg (MODL), the Town of Mahone Bay provides fire protection services to the Maders Cove Fire Protection Commission, they also cover Oakland

and Clearland where there is no commission or fire department; by means of a fire protection agreement.

The average number of individual fire departments within a municipality is 11.3, with a high of 24 and a low of 3. MCC has 16 fire departments within its borders.

Advisory Committees

To assist in the governance of fire service delivery, or at least to obtain input, the municipality sometimes establish a Fire Service Advisory Committee (FSAC). Such a committee may assist Council, municipal administration, and fire chiefs with administration issues and by addressing operational issues of their respective departments. They may also act as a liaison between the department and Council. One of the issues with these committees is that they tend not to stay with in bounds of strictly operational or strictly policy issues, so expectations may exceed parameters for the committee if they do not have clear terms of reference and strict adherence to mission.

A FSAC should be established through Council Policy and include a clear Terms of Reference, membership criteria, and meeting requirements, and etc. MCC established a FSAC in February of 2021. The frequency of meetings was intended to be on a bi-monthly basis. The committee has reportedly met twice in 2021.

The Cumberland committee's mandate is listed as;

- Policy Review
- Development of Cumberland County Standards
- Review reports from the Fire Service Coordinator regarding the risk assessment information provided by the fire departments.
- Development of a new five-year strategic plan.

GA has seen that depending upon internal relationships, by-in, conflicts, and lack of consensus, poor leadership, or other factors such; and the resulting lack of function of the FSAC, these committees could, and have, become road blocks and ineffective bodies in the governance of fire service delivery. And have become a foil for not making critical decisions.

TABLE 46: SCANNED MUNICIPALITIES FIRE SERVICE ADVISORY COMMITTEES

Municipality	FSAC - Y/N	Committee Structure
Municipality of Cumberland County	N	Established a FSAC in February 2021. Membership included the FSC, 2 elected officials, 2 Fire Chiefs and the Director of Finance and an Administrative Assistant.
Municipality of the District of Barrington	N	
Municipality of the District of Chester	Y	The committee meets every 2 months. Membership is comprised of the FSC, Fire Commission & Fire Chiefs.
Municipality of the County of Colchester	N	Fire Chefs report to the Fire Service Coordinator
Municipality of the District of Guysborough	Y	Membership consists of the FSC, 3 firefighters elected by the mutual aid association and 2 councillors appointed by council.
Municipality of the County of Kings	Y	The committee is made up of the FSC, Deputy CAO, & 3 Councillors. Any recommendations then must be submitted to the 13 Fire Chiefs for approval.
Municipality of the District of Lunenburg	Y	The committee is comprised of 4 fire personnel, 4 councillors and 2 at large citizens and 2 municipal staff
Municipality of Victoria County	Y	The committee is comprised of 2 municipal Councillors, (1 either Warden & or Deputy Warden), 2 Fire Chiefs the Fire Service Coordinator & Municipal CFO

Fire Station and Equipment Ownership

Table 47 below provides a snapshot of ownership of major assets.

TABLE 47: SCANNED MUNICIPALITIES ASSET OWNERSHIP

Municipality	FIRE STATIONS	Municipality	Society	Fire Commission	Other
Municipality of Cumberland County		X	X		
Municipality of the District of Barrington			100%		
Municipality of the District of Chester				100%	
Municipality of the County of Colchester		1	15		
Municipality of the District of Guysborough			100%		
Municipality of the County of Kings			100%	100%	
Municipality of the District of Lunenburg					Whoever builds it
Municipality of Victoria County			100%		
West Hants Regional Municipality		Not reported	Not reported	Not reported	Not reported
Municipality	**FIRE APPARATUS**	**Municipality**	**Society**	**Fire Commission**	**Other**
Municipality of Cumberland County		X	X		
Municipality of the District of Barrington			100%		
Municipality of the District of Chester				100%	
Municipality of the County of Colchester			100%		
Municipality of the District of Guysborough			100%		
Municipality of the County of Kings			100%	100%	
Municipality of the District of Lunenburg					Whoever purchases it
Municipality of Victoria County			100%		

The majority of the fire department infrastructure is owned by the Societies, regardless of whether or not the municipality paid it. MCC itself has a mixed ownership[266] strategy, in which, according to the fire departments, some apparatus is fully owned by the society, some purchased by the Municipality. In another extreme case there is dual ownership for a rescue unit by both MCC and the Society.

The result of the scan show that there is no common philosophy to ownership of fire department assets, even within what on the surface appears to be identical governance models.

For example, in one municipality the fire commission owns the fire halls and the fire apparatus. In another municipality of the sixteen fire stations, the Municipality has ownership of one.

In another municipality, Fire stations and apparatuses are owned by both the fire commission and the societies.

Beneficial Ownership Agreements

Beneficial ownership agreements are being developed to address the issue of municipal funds (i.e., public monies) being used to purchase major assets in which the municipality retains no ownership interest.

TABLE 48: SCANNED MUNICIPALITIES BENEFICIAL OWNERSHIP AGREEMENTS

Municipality	BENEFICIAL AGREEMENTS
Municipality of Cumberland County	NO
Municipality of the District of Barrington	NO*
Municipality of the District of Chester	NO*
Municipality of the County of Colchester	NO
Municipality of the District of Guysborough	LOAN GUARANTEE
Municipality of the County of Kings	NO
Municipality of the District of Lunenburg	NO
Municipality of Victoria County	VERBAL AGREEMENT
West Hants Regional Municipality	YES

Note: NO* - These Municipalities are of the opinion that legislation provides for ownership transfer of society/fire department assets to the Municipality in the event of a society failure. However, *GA* has not been able to verify that such surety exists.

[266] See Table 15 on page 96.

A beneficial ownership agreement is a conditional contract in which both parties agree that ownership (a) is shared in proportion to the ratio of funds invested, (b) restricts the disposal of those assets, and (c) ensures that the municipality retains control of the assets if the society fire department ceases operation, for any reason. The main condition to such an agreement is that in order to receive municipal funds or other financial support the agreement must be executed. It protects the public interest and, as such, address issues of accountability.

One community within one of the larger municipalities in the scan, has established an agreement, which in the event of a failure of the society, where the municipality provided funds, the assets will revert to the municipality at fair market value.

Another municipality has a loan guarantee that if the department fails on loan payments the Municipality retains ownership. This is not the same as securing the asset after payment of the loan.

The Municipality of the District of Lunenburg advised that some society bylaws within their boundaries, specifically state that the society is able to give their assets to whomever they wish to, even though the taxpayer paid for the assets.

Call Volumes

Call volumes are an indicate of the demand for service, but may not be a good estimator of the need for service, which can only be determined by a needs/risk assessment in the community. So caution should be exercised in viewing this data. Often, call volume is used as a means to validate direct value to the citizens, which might not be the case. Activity is not the same as need, effectiveness, efficiency, and quality/standards.

As reflected below, MCC fire services are the fourth busiest amongst the scanned municipalities, with an average of 3.09 calls[267] per day.

[267] This table is based on calls, and not incidents. This *Review* has analysed the number of unique incidents in Cumberland and also the number of reported calls. The number of calls includes the number of incidents within its total number, but a significant proportion of calls are internal assists between fire departments at the same unique incident. Not many jurisdictions make that

Comparing the cost per call for service delivery, MCC is the 2nd lowest out of the eight municipalities surveyed.

TABLE 49: SCANNED MUNICIPALITIES COMPARISON OF CALL VOLUMES

Municipality	Annual Ops Budget	Annual Calls Total	MFR%	Cost per Call
Municipality of Cumberland County	2,100,000	1,216	31	$1,727
Municipality of the District of Barrington	934,000	281	29	$3,324
Municipality of the District of Chester	2,080,000	800	50	$2,600
Municipality of the County of Colchester	3,300,000	1,880	50	$1,755
Municipality of the District of Guysborough	737,000	200	70	$3,685
Municipality of the County of Kings	2,548,000	1,500	20	$1,699
Municipality of the District of Lunenburg	3,400,000	1,300	30	$2,615
Municipality of Victoria County	939,000	270	65	$3,478

Operating Funding

A review of the various funding methodologies by municipalities produced little in the way of commonality amongst the scanned municipalities as indicated in the following table.

TABLE 50: SCANNED MUNICIPALITIES SOURCE OF FUNDING FOR FIRE SERVICES

Municipality	Methodology
Municipality of Cumberland County	General Levy
Municipality of the District of Barrington	Area Fire Tax Rate
Municipality of the District of Chester	Area Fire Tax Rate
Municipality of the County of Colchester	Area Fire Tax Rate
Municipality of the District of Guysborough	Area Fire Tax Rate plus grants
Municipality of the County of Kings	Area Fire Tax Rate Ref Note Below
Municipality of the District of Lunenburg	Area Fire Tax Rate
Municipality of Victoria County	Grants (i.e. general levy)

Revenues in support of the fire departments, were mostly by means of an area fire tax rate. However, the majority, were considering alternatives to this methodology and some were of the

distinction. Incident numbers, and not call volume, are the actual determinant of demands for service. See *Incident vs Call* starting on page 27.

opinion that the general levy methodology is a better means of achieving equity and addressing the needs of those areas that need the most assistance financially.

The Municipality of the District of Guysborough is providing an additional program for less fortunate departments as a result of low assessments in their respective areas. The program is a reverse grant formula. This is a program in which fire service grants, taken from general revenues, are distributed at a higher percentage to those departments that are in more need as compared to departments that are better off financially, as a result of their ability to generate more funding from their respective area tax rate.

Currently Kings County is drafting a recommendation about changes to the fire departments' operational funding model. If accepted by council, the current funding formula for fire department operating expenses would be maintained for the 2022-2023 fiscal year and fire department operational budgets would be frozen at the 2021-2022 level.

If approved by Council, moving forward the recommendation would allocate $1,892,390 for operating expenses to 10 volunteer fire departments serving Kings County. Each would be given a base fee of $50,000. Additional funding would be allocated using a formula, 50 per cent property-based and 50 per cent assessment-based. Under this scenario, five of the 10 subject departments would see various reductions in operational funding.

In the Municipality of the District of Barrington, in addition to area fire rates, a 1% addition to the general levy was added across the board for discretionary budgets so as to ensure that the departments adhere to and maintain applicable NFPA standards.

Purchasing Standards

The scan included ascertaining, whether or not the municipality exercised influence over the purchasing of apparatus and fire ground equipment such as personal protective equipment (PPE), self-contained breathing apparatus (SCBA), fire hose, and etc.

Cumberland has an approved Standardized Equipment Policy FS08-02 (May 21, 2008) which was officially recognized by Council November 23, 2011.

TABLE 51: SCANNED MUNICIPALITIES EQUIPMENT STANDARDIZATION EFFORTS

Municipality	Purchasing Standards Apparatus	Purchasing Standards Equipment
Municipality of Cumberland County	YES, Policy FS08-02*	YES, Policy FS08-02, *
Municipality of the District of Barrington	NO: try maintain NFPA Standards for years of service, Do not buy used Apparatus	SCBA - NO (Majority Scott 2.2/4.5) PPE - NO (Majority - Morning Pride) Fire Hose - NO Nozzles – NO
Municipality of the District of Chester	YES, Guidelines only, as per registration policy, ULC labelled and annual testing. If not, the society is not registered.	NO: working towards that goal.
Municipality of the County of Colchester	NO: Used equipment must Pass MVI	NO
Municipality of the District of Guysborough	YES: Do not buy used Apparatus. Adhere to ULC & NFPA. Commercial Cab & Chassis only	Yes: 10-year rule for interior firefighter PPE Hose ULC listed /NFPA and stenciled
Municipality of the County of Kings	NO	NO
Municipality of the District of Lunenburg	Annual Pump test required as part of FD Registration Used - require MVI & ULC pump tests. Not all follow.	NO: Fire Equipment i.e., Hose, SCBA and Ladders must be tested annually as part of registration including fire pump testing. If not completed County will not register. Pull grant money first, The Municipality can deregister.
Municipality of Victoria County	NO	NO

*Note- MCC Fire Service Standardized Equipment Policy FS08-02, was approved by Council May 21, 2008. Several equipment items are listed in this policy including fire apparatus. Unfortunately, this policy does not appear to have been enforced for fire equipment and there are no accompanying specifications for either the equipment standardization or the standardizing of fire apparatus.

In *Table 51* above, the majority of municipalities report that have no apparatus or equipment standards. Two municipalities, Chester and Lunenburg, have policies relative to acquisition and maintenance, (such as required annual pump, SCBA, and ladder testing), as part of their fire department registration process. If the society does not meet the requirements, then either the department's grant money is pulled or they are not registered.

Barrington and Guysborough do not permit purchase of used apparatus.

Training

The majority of the Municipalities surveyed advise that their fire services conduct routine training and the majority adhere to the NFPA-1001 training standard. One municipality, in

addition to the NFPA-1001 standard, has adopted and implemented the Fire Services Association of Nova Scotia's training standard for support fire fighters.

TABLE 52: SCANNED MUNICIPALITIES TRAINING STANDARDS

Municipality	Notes on Training Methods and Standards
Municipality of Cumberland County	The majority of the training was conducted by the Fire Service Coordinator, The County has its own training standard. Pugwash has started to develop a small training area and facility. In the past the County contributed to a training facility in Oxford which has not yet been completed. Several fire departments have broken away from the County "standard" and are teaching to NFPA-1001.
Municipality of the District of Barrington	Mostly FDs do their own, just started joint training sessions. The departments who have Qualified level 1 Training Officers assist other departments with their training., most training is coordinated through Fire Coordinator office. There are county wide level 1 and level 2 & Officer training programs. All training meets NFPA-1001 (FF) using IFSTA 7 & NFPA-1021(Fire Officer). Municipality has a Sea-tainer for live burns. The Municipality does not have nor developed their own training standard. New firefighter has 2 years to accomplish level 1 and all officers have some officer training
Municipality of the District of Chester	Individual Depts do their own. NSFFS Municipal guideline minimum for fire fighters and have adopted FSANS standards for support ffs. NFPA-1001, level 1 for interior fire fighters Each dept have their own qualified Training Officer (TO) qualified Level 1, now working towards TO Level II. Municipality provides Training fund for twice a year mutual aid training. Fire departments share TOs. There is a municipal Training facility, that includes a Tower, a unit for confine space training and vehicle rescue training. The facility does not have the ability for live fire training. MGA Act levy generates - 300-400 K/year towards Training. Depts send personnel to NSFFS County does & does not have their own training standards. There is a municipal annual training grant.
Municipality of the County of Colchester	Training is conducted weekly by individual departments. Dept TOs some are qualified others are not. County Wide program for Basic Fire Fighter then sent to Nova Scotia Fire Fighters School. 4 or 5 FDs have 2 story Sea-tainers for training facilities. County has its own standard for the Basic Fire Fighter training.
Municipality of the District of Guysborough	Each Dept does not have own Qualified TO. There is a County Wide Sharing of TOs. Any advanced or Level 1 firefighter training personnel are sent to the Nova Scotia Fire Fighter School (NSFFS) No training facility - NSFFS or NSFFS mobile trainer. County does not create its own Training standards follows NSFFS & NFPA-1001(FF) & NFPA-1021(Officers)
Municipality of the County of Kings	Kings County FF Assoc. establishes the training needs and delivers the training. Standards are established by the Assoc. Use of the NS Firefighters School: Yes & No. There are a number of Qualified TOs within the County and to some extent they are shared amongst the fire departments who do not have any. The county currently does not have any practical training facility
Municipality of the District of Lunenburg	90% of entry level and Level 1 training is completed on line from the US. Once completed practical training is scheduled, locally. NS Firefighters School is too costly to send firefighters too. But do use the Fire School on occasion. Each FD has at least 1 Qualified TO. FDs do share TOs. with other departments when the need arises. Regional Fire Service Committee puts on Annual School. The district adheres to NFPA-1001 the best they can.
Municipality of Victoria County	Fire Coordinator tries to coordinate training across the County for the individual fire departments and brings in fire school for courses Some FDs do not have a qualified or Certified TO. Sometimes FDs share qualified TOs. The county does not have its own training facility. Cape Breton Regional Municipal Fire Service offers up their facility including burn unit and sometimes the county will use the NS Firefighters School's mobile burn trailer. No county wide training standards. Follow NFPA-1001 (FF1), with Hi-Rise requirements removed. Municipality has established a training fund with a limit of $18,000. This amount is exceeded every year. The funds are derived from Municipal General funds

MCC has a Training guideline OG 300-1 Minimum Training Levels for Volunteers, Revised January 2009, and were officially recognized by Motion of Council dated November 23, 2011. The policy defines Level 1 trained as meeting or exceeding all minimum requirements a person must have before they can apply for Provincial qualification Level 1 (presumed to refer to NFPA-1001 Level 1).

The policy further states that no members are able to participate in structural firefighting duties who are not Level 1 trained or Qualified. MCC has since established its own training regime, which may no longer meet the intent of the "recognized" OG.

The majority of fire departments in the scanned municipalities have qualified and/or certified Training Officers which are shared amongst the municipality's fire departments. This is not the case in Cumberland, but is a possible solution to quality training.

None of the Municipalities have established their own training standards as it relates to NFPA-1001 interior firefighting, other than MCC despite it apparently not being officially followed.

Many of the of municipalities have to one degree or another have a local training facility or have access to a facility close by.

A couple of municipalities provide for an annual county-wide training day. One provides this opportunity twice a year, a so called mutual-aid training day. Cumberland does not do this.

Fire departments are eligible to receive training assistance monies generated from the NS Finance and Treasury Board, under the *Assistance for Volunteer Fire Departments* clause. One municipality's fire department generates $300-400k annually this way and this revenue is used to cover training costs. The pertinent clauses in this policy are below;

> *"Assistance for Volunteer Fire Departments*
> *Volunteer fire departments incur costs when responding to automobile collisions, which can be a strain on resources. The independent auto insurance review determined that automobile insurers and their consumers should bear a fair share of these costs.*
>
> *Volunteer fire departments can claim costs incurred in responding to collisions on a case-by-case basis. However, it is difficult for small volunteer fire departments to submit and follow-up on such claims.*
>
> *To address this situation the provincial government has implemented a levy to be paid by automobile insurers to help volunteer fire departments cover the cost of responding to automobile collisions. The levy will ensure that the parties causing collisions and their insurers are providing at least a minimum amount of compensation to volunteer fire departments which may lack the resources to make claims.*
>
> - *The levy is 50 cents per vehicle insured in Nova Scotia.*
> - *The Superintendent of Insurance will collect the levy annually.*
> - *Volunteer fire departments can continue to make insurance claims for economic losses on a case-by-case basis."*

Mutual Aid Policy

All but one of the of the municipalities have written mutual aid agreements and have a review process that varies from three to five years. The review processes also vary in who conducts the review and who approves any revision to the plan

TABLE 53: SCANNED MUNICIPALITIES MUTUAL AID AGREEMENTS

Municipality	MUTUAL AID	Written Agreement	Review Process
Municipality of Cumberland County	YES	NO	N/A
Municipality of the District of Barrington	YES	YES	Fire Chiefs & Fire Service Coordinator (FSC) review submit any changes to council for approval. Last review 7 yrs. ago
Municipality of the District of Chester	YES	YES	No real review processes. Address issues as they arise
Municipality of the County of Colchester	YES	YES	Fire Chiefs & Fire Fighters Assoc. review. Review is every 5 yrs.
Municipality of the District of Guysborough	YES	YES	Written Agreements, reviewed every 3 to 5 yrs. Fire Services Advisory Committee reviews, (FSC, 3 elected FFS by their Assoc, 2 elected officials, Then presented to council then Firefighters Assoc. for consensus
Municipality of the County of Kings	YES	YES	1 agreement for all departments. Review is completed by the Fire Services Advisory Committee. Then submitted to all of the Fire Chiefs for consensus
Municipality of the District of Lunenburg	YES	YES	Review is every 5 yrs. Fire Chiefs & the FSC conduct the review.
Municipality of Victoria County	YES	YES	Mutual Aid is part of the EMO Municipal sharing of services Agreement. NO requirement to declare state of emergency. Signed by County Warden & CAO, has not been reviewed in 5 yrs. REMO conducts review.
West Hants Regional Municipality	YES	YES	N/A

The review process ranges from the Fire Service Coordinator and the Fire Chiefs and/or a Fire Services Advisory Committee. Recommended changes are submitted to the recognized body who has final approval, and then typically to Council.

The Municipality of Cumberland County Fire Departments have all advised that they have Mutual-Aid agreement and Auto-Aid agreements. Unfortunately, these are all nonwritten agreements, really just past practice, with no real review process.

General Operating Guidelines (GOG) and Codes of Conduct

The majority of scanned municipalities do have Standard Operating Guidelines, also known as General Operation Guidelines (GOG). But their adoption varies from municipality to municipality. One municipality provides operating procedures and the expectation is that all fire departments are required to adhered to them.

Another municipality offers their developed procedures, but leaves the adoption up to the individual department. Yet another municipality leaves the development and the implementation of operating GOGs up to the County Firefighters Association.

TABLE 54: SCANNED MUNICIPALITIES OPERATING GUIDELINES

Municipality	GOGs
Municipality of Cumberland County	YES /NO See note below
Municipality of the District of Barrington	YES, County Wide SOGs enforced by Policy.
Municipality of the District of Chester	NO County Wide GOGs
Municipality of the County of Colchester	NO County Wide GOGs
Municipality of the District of Guysborough	County SOGS, are drafted and presented to the depts. It is up to the depts to adopt or not.
Municipality of the County of Kings	YES: County Wide GOGs developed and promulgated By Firefighters Association
Municipality of the District of Lunenburg	NO County Wide GOGs
Municipality of Victoria County	NO County Wide GOGs

MCC has numerous GOGs, unfortunately the majority are very dated and are either designated as "draft," or unsigned and it is unclear if the GOGs have been officially approved and/or implemented. *GA's* stakeholder interviews showed that some fire departments were not even aware of the County GOGs.

Code of Conduct Policies

One municipality has a code of conduct for both the fire chiefs and fighters. The majority rely on the Society's bylaws to address Code of Conduct and behaviour expectations. A couple of the municipal positions is that the Societies Act prevents them from developing and enforcing any type of behaviour code.

In one municipality they advise that each of the Societies have a type of code of conduct within their bylaws and takes a hands-off approach to this issue.

TABLE 55: SCANNED MUNICIPALITIES CODE OF CONDUCT

Municipality	Codes of Conducts
Municipality of Cumberland County	NO
Municipality of the District of Barrington	For Both Fire Chiefs & Dept personnel
Municipality of the District of Chester	NO- Rely on Society Bylaws
Municipality of the County of Colchester	NO – Legislation Prevents
Municipality of the District of Guysborough	NO
Municipality of the County of Kings	NO
Municipality of the District of Lunenburg	NO – Each Society has code of conduct in their Bylaws
Municipality of Victoria County	NO

MCC currently does not have any polices or Guidelines that outline expected behaviours or conduct of Fire Chiefs or fire department members.

Fire Department Registrations

The Municipal Government Act stipulates that all fire departments must be registered with the Municipality that they wish to provide fire services to, and stipulate the services they are capable of delivering, and the area in which these services can be delivered.

TABLE 56: SCANNED MUNICIPALITIES REGISTRATION PRACTICES

Municipality	FD Registrations
Municipality of Cumberland County	YES, Annual FD registrations, no formal review process – Ref Note Below
Municipality of the District of Barrington	YES, Annual FD registrations. Reviewed by Fire Service Coordinator (FSC)
Municipality of the District of Chester	YES, Annual Registrations Review is FD to Fire Commissions to FSC
Municipality of the County of Colchester	YES, All FDs submit annual Registrations. Review by FSC
Municipality of the District of Guysborough	YES Annually, must submit records of SCBA annual testing, Pumper flow tests, Training records and an independent financial review. If an audited review is requested, the Municipality picks up the costs, Annual Registrations reviewed by Fire Service Advisory Committee.
Municipality of the County of Kings	NO annual Policy may require from time to time NO review process
Municipality of the District of Lunenburg	YES, Annual FD registrations. FSC Reviews, do not get detailed Training Records,
Municipality of Victoria County	YES -Annual FD registrations. FSC reviews then sends copy to CAO & Copy to Provincial Fire Marshal's Office

Annual fire department registrations require an annual effort of municipalities to review and ensure that all of the departments are registered properly and that the society bylaws are current

and are in good standing with the provincial Registrar. Who is involved in this review varies from Municipality to Municipality.

Some of the reviews are conducted by the municipality's Fire Service Coordinator, while other municipalities annual registrations are reviewed by a Fire Service Advisory Committees which can be wieldy.

For all scanned municipalities, all fire departments submit annual registrations except for one. That particular municipality has a policy that states "as on a needed basis."

One Municipality requires records of SCBA annual testing, pumper flow tests, and etc., as well as training records and an independent financial review. If an audited review is requested, the Municipality picks up the costs,

MCC Policy FSO7-02 approved by Council (dated January 17, 2007), in section 9, *Ongoing Requirements* states;

> *The Fire Services Coordinator may from time to time require a registered fire department to provide current documentation or other information to ensure the requirements of the Act and this policy are still being met."*

There is no requirement within the policy for annual review of the registrations. A review is conducted by the Fire Service Coordinator upon application for Registration as a fire services provider with the County.

The policy referenced makes reference to an outdated registration form, as in that; at some point the form being used ceased to be the one approved in the Policy.

Honourariums

The Honourarium review resulted in basically three categories;

a. Honourariums for all volunteers
b. No Honourariums
c. Limited or mixed Honourariums.

Limited or mixed honourarium means that in a particular municipalities only some of the fire departments are providing honourariums, not all. In most cases the funding for the honourarium is a line item in the society's annual operational budget.

Within the Municipality of Cumberland County there is one fire department who fund raises to pay for their department members honourarium.

TABLE 57: SCANNED MUNICIPALITIES HONOURARIUMS

Municipality	Honourarium.
Municipality of Cumberland County	No Departmental Honourariums, small stipend for local fire chiefs
Municipality of the District of Barrington	No Department Honourariums
Municipality of the District of Chester	Very Limited; 2 out of 7 fire departments have Honorariums. Up to a maximum of $1,000 per person
Municipality of the County of Colchester	Only Bible Hill FD - paid for by the Village.
Municipality of the District of Guysborough	No Department Honourariums
Municipality of the County of Kings	Honourariums are a line item in the budget. Varies by Department
Municipality of the District of Lunenburg	No Municipal, 1 or 2 Fire Departments have a program on their own which is derived from their area rate.
Municipality of Victoria County	No Department Honourariums

Volunteer Benefit Programs

All Municipalities offer some form of additional benefits to their volunteer firefighters beyond the basic Workers Compensation legislated requirement. This scan only reflects what is offered beyond the legislated WCB coverage by the municipality.

MCC provides EAP as an additional program to the volunteers within their municipality, but only on an ad hoc basis in the past, not as a featured program. However, there a number of MCC departments that have additional insurance coverages and currently others are looking into it. Societies pay for some of this coverage, but that likely ends up being paid by the municipal grants.

The majority of municipalities fund insurance coverages provided by *Volunteer Fire Insurance Services* (VFIS). VFIS is one of the largest providers of insurance for emergency services in

North America.[268] The scanned municipalities indicated that VFIS is used because their program is tailored to volunteer firefighters and there is also access other tailored coverage that addresses the need of the fire department or municipality.

Six of the municipalities scanned provide additional coverage. However, the coverage programs are varied. Depending upon the program(s) provided, costs are shared between the municipality and the individual volunteer fire fighter.

TABLE 58: SCANNED MUNICIPALITIES BENEFITS COVERAGE

Municipality	Volunteer Benefit Programs
Municipality of Cumberland County	Municipality offers ad hoc EAP. County pays for all departments to have $100,000 principal benefit, on-duty, accident and sickness coverage. County pays for liability insurance. County pays for annual recognition events.
Municipality of the District of Barrington	County - pays for VFIS coverage
Municipality of the District of Chester	VFIS including EAP is provided by the Municipality, and charged back to the departments.
Municipality of the County of Colchester	County pays for VFIS 24-hour coverage, EAP included as well as a family plan, plus all liabilities, 1st & 3rd party.
Municipality of the District of Guysborough	County Provides, EAP, VFIS on call 100%, 24/7 coverage and a family plan. The 24/7 and family plan is paid for by the individual fire fighter.
Municipality of the County of Kings	The County provides coverage for EAP expenses.
Municipality of the District of Lunenburg	Provides a Group insurance plan which comes off their tax rate. ($11,000 Grant)
Municipality of Victoria County	County Pays for Vol FF 24-hour Coverage for FF. The additional Family plan is paid for by individual fire fighter.

Scan Summary

The objective of the jurisdictional scan was to ascertain common approaches and best practices in the main areas of service delivery, funding and governance.

As one peruses the findings, the challenges are similar amongst the various municipalities with a common wish for resolve to those issues. The methodologies in addressing the issues varies.

Why such variations? The answer may lie in past and continuous practices, the participants preferences, and what is and is not acceptable not only to the service providers but those communities being served.

[268] These comments are not an endorsement of VFIS.

DISTRICT RESPONSE BOUNDARIES

Part of the scope for this Review was to take a look at the current fire district boundaries to see if there were any fundamental issues.

A big factor affecting the delivery of fire services are the challenges of geography in Cumberland County; there are often long distances involved in emergency responses, especially on the extreme limits of a fire station's response district. This is a reflection of the wide-spread distribution of the many hamlets and cross-road settlements in Cumberland County, which in the main is very rural in nature. There are a few larger centres, but in general these are at distance from each other, and are only large in comparison to the balance of the County.

The Importance of Travel-time

In normal residential and commercial structures, fire grows over time somewhat predictably. In an industrial or commercial structure, there are fewer compartments (i.e., walls), heavier fire loads (i.e., things that burn) and therefore fire growth rates can be much quicker than in a residence, and fire size can also be much greater. In wildland fires, fire growth rates can be explosive depending on the condition of the fuel and weather factors such as sun and wind.

It seems intuitive then, that it is desirable to achieve the fastest response-times possible to reports of emergency incidents.

Fire Growth

Almost all fires start small (i.e. incipient), and grow (if unchecked and unrestricted) until such time as they run out of fuel.[269] Inside a structure, there are other factors involved as well. Particularly the availability of oxygen. This means that in a *closed* building, an unchecked fire can consume all the available oxygen, and thereby slow down its growth, until such time as additional oxygen is introduced by opening doors/windows or by fire burning through part of the

[269] See more at *The Importance of Response-time* starting on page 68.

structure. Survivability of persons inside is unlikely due to lack of oxygen and buildup of toxic gasses. In summary, time is of the essence when it comes to responding to fires. Even with the challenges of distance and geography, it is still in the best interests of the citizens of Cumberland to receive assistance in the shortest time *possible*.

District Review

Response time is measured by the public as the total time it took from the placing of the 9-1-1 phone call to the moment the fire truck arrived at your door. Certainly that is more than a perception, it is a measure of the entire emergency response system. However, much of that elapsed time is beyond the control of the fire department. There are many steps, and many decision point along the way that affect how long it took to get the fire truck to the door. These are discussed in significant detail elsewhere[270] in this *Report*.

The fire district itself, assigns primary responsibility of a particular fire department to be the first out-the-door to a call for assistance from any point inside the boundaries of that district. It is akin to a home territory for that fire department. As such, there needed to be a means of determining how those boundaries of the district were determined. There are several possibilities.

Traditionally,[271] fire districts were determined by subscribers, rate payers, who determined themselves who was in and who was outside the district. The boundaries tended to reflect the population distribution at the time, and who was willing to pay for fire protection. *GA* has seen several situations where a village has raised a fire department, one that would not leave the village under any circumstances, forcing the establishment of a rural fire department that completely enclosed the village. Sounds crazy today, and even at the time there were many examples of tragedy arising from this approach.

[270] See the sections on *The Importance of Response-time* and *Appendix 6: Communications*.

[271] Ignoring the 18th and 19th century system of fire subscriptions, and fire marks on the house indicating who had paid and was eligible for fire protection.

Over time there has been a recognition that it was in everyone's best interests to have district boundaries that tended to even out the access to fire services. And likewise, the ability to assist each other, instead of fight over territory. The principal of equal access to services can be simply described as *providing the closest available appropriate resources in response to a incident*.

The application of above principal is evident in Cumberland County with the current distribution of fire stations, establishment of sub-stations, and the contracting of services in critical areas to non-County fire departments. However, there are still some vestiges of fire districts that end on community, or municipal, or traditional boundaries. That may be only coincidental, representing a suitable ground landmark on which to establish a findable boundary. Further investigation is warranted, however.

In recognition that there are many factors in response-time that are not directly related to fire response districts, *GA* focussed on looking at **travel-time** from the fire station to an incident location (i.e. fire district boundary) as a means to do an objective assessment. An assessment that is independent of service demand, population, volunteer staffing, or turn-out times, and etc.

This assessment is also independent of turn-out[272] time. Turnout time is complex, and is not consistent for any given station since it is influenced by many factors that can fluctuate from day to day and season to season. It is also more controllable than travel-time, through the application of management and response strategies. For this assessment, it has not been considered, but could be included by management as a tie-breaker.

Travel-time must take into consideration geography of the districts, road networks and conditions, and distance. Google mapping tools were used in determination of estimated distances and travel-times. These results were randomly verified by actual response data where such existed. Weather and seasonal conditions were not considered, nor were time of day factors, as such conditions would be expected to across-the-board affect everyone.

[272] See *Response Timeline Components* starting on page 72.

Despite all the foregoing, the establishment of fire districts must make sense on the ground. It is pointless to establish the boundary between two fire districts as Mrs. Smiths old apple tree. Something in the nature of a recognizable (more permanent) landmark, like a bridge over a creek, makes more sense, or a gap in civic addresses could make a good dividing point, one that a computer could make sense of, as well as the responding firefighters. Such considerations also factored into *GA's* deliberations.

One last point, in situations where a boundary could go either way, it is probably a moot point if consideration to *GA's* recommendation[273] of responding multiple fire stations for fires and other manpower/resource intensive incidents is implemented. On the day in question, whoever arrives first will get to work. Several fire departments have already adopted this approach.

Upon completion of the review there a number of areas that Cumberland should consider for adjustment in fire district boundaries. These are presented in turn, in the following pages.

South-West Cumberland County

The fire department boundaries considered in this part of the review were;

- FPW
- Parrsboro
- Southampton
- Five Islands

Table 59 below indicates geographic locations reviewed, as relating to the boundaries between Parrsboro, Southampton, FPW, and Five Island fire districts. Associated *travel*-times and distances are shown, with Google Maps used as the main tool to generate estimates. The green highlighted rows are the lowest travel-times to the designated pin location from the fire station. Where tied, then the lowest distance is highlighted. More detailed discussion follows on the next few pages.

[273] See *Recommendation 21* on page *163*.

Locations in the table are illustrated by coloured pins on *Map 6*. The pins are described in the following pages.

TABLE 59: TIME-DISTANCE FOR PARRSBORO, FPW, SOUTHAMPTON, FIVE ISLANDS

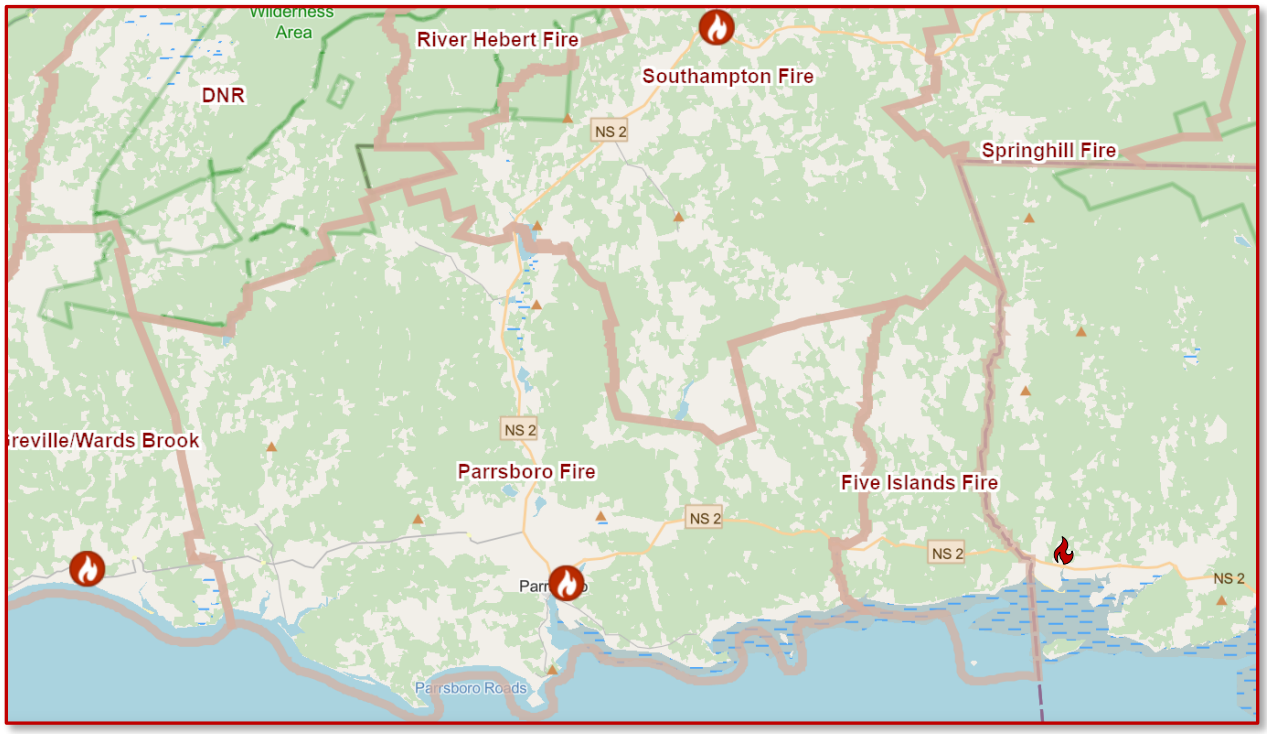
From Fire Station:	To Location:	Km	Time (mins)	Notes on Pin Locations (see *Map 6*)
FPW	Diligent River-Wharton Boundary	11.6	10	On NS Route-209
Parrsboro	Diligent River-Wharton Boundary	10.4	10	On NS Route-209
FPW	Access to Yorke Settlement	8.7	7	On NS Route-209 @ Ramshead River Road
Parrsboro	Access to Yorke Settlement	13.3	12	On NS Route-209 @ Ramshead River Road
FPW	Wharton-Kirkhill-Cross Roads Boundaries	16.4	13	On NS Route-209 @ Kirkhill Road.
Parrsboro	Wharton-Kirkhill-Cross Roads Boundaries	5.1	7	On NS Route-209 @ Kirkhill Road
FPW	West Bay	23.9	22	West Bay Rd. @ Partridge Island Road
Parrsboro	West Bay	4.4	6	West Bay Rd. @ Partridge Island Road
Southampton	Harrison Settlement Road	13.9	10	NS Trunk-2 @ Harrison Settlement Road
Parrsboro	Harrison Settlement Road	12.1	11	NS Trunk-2 @ Harrison Settlement Road
Southampton	Newville Road	11.0	11	Parrsboro-Southampton Boundary
Parrsboro	Newville Road	15.1	15	Parrsboro-Southampton Boundary
Southampton	Halfway River	11.1	8	NS Trunk-2 @ Boars Back Road
Parrsboro	Halfway River	14.9	13	NS Trunk-2 @ Boars Back Road
Five Islands	Parrsboro-Five Islands Boundary	9.1	7	NS Trunk-2 at Moose River bridge
Parrsboro	Parrsboro-Five Islands Boundary	11.4	10	NS Trunk-2 at Moose River bridge

South-West Fire District Boundaries

For reference, *Map 5* below shows several current fire district[274] boundaries; but of interest here is the districts associated with the FPW, Parrsboro, Five Islands, and Southampton fire stations. The Five Islands fire district is only shown on the map as the portion that is inside Cumberland County boundaries. The station is shown by the un-circled flame icon, and is located in Colchester County.

[274] From https://data-cumberlandns.opendata.arcgis.com/apps/b2b1835a393e4bb4bcfeae157d7df630/explore

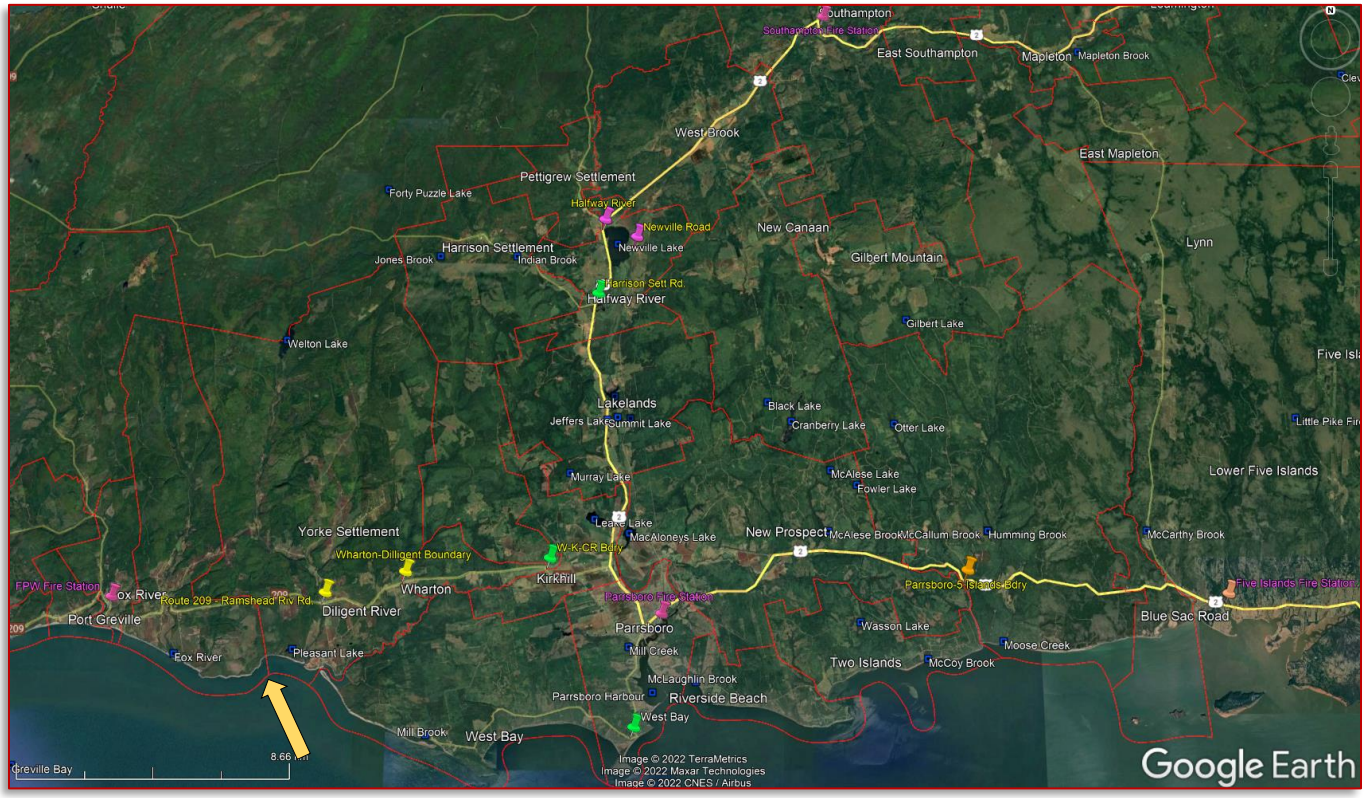
MAP 5: CURRENT FIRE BOUNDARIES SOUTH-WEST CUMBERLAND



Map 6 below includes several landmarks that are part of this discussion of travel time and distance in the response districts around Parrsboro, as follows;

- **Yellow** coloured pins indicate the locations to which the FPW fire departments has the potentially fastest estimated travel-times,
- **Light green** colored pins indicate the locations to which the Parrsboro fire departments has the potentially fastest estimated travel-times,
- **Hot Pink** colored pins indicate the locations to which the Southampton fire departments has the potentially fastest estimated travel-times,
- **Orange** colored pins indicate the locations to which the Five Islands fire departments has the fastest travel-times.
- The four fire stations in this analysis are also shown and labeled on the map.

MAP 6: GEOGRAPHIC POINTS AROUND PARRSBORO, WITH COMMUNITY BOUNDARIES, & FIRE STATIONS



Five Islands / Parrsboro

The current boundary between Five Islands and Parrsboro fire districts is at the Moose River bridge on NS Trunk-2, as shown on *Map 6*; at the location of the orange pin. This location also coincides with the New Prospect and Moose River community boundaries.

The travel-time from the Five Islands fire station, responding along Trunk-2 to the orange pin location, is estimated at approximately three minutes quicker than from the Parrsboro fire station. Based upon this initial finding no other analyses involving Five Islands were conducted.

Parrsboro / Southampton

The intersection of NS Trunk-2 and the Harrison Settlement Road/Canaan Road was reviewed in relation to responses from Parrsboro and Southampton fire stations. This intersection is currently in Parrsboro's fire district. As *Table 59* shows, it is a virtual tie to that location between travel-times from both stations, with Parrsboro being almost 2 kilometers closer. It is expected that time

of day travel through Parrsboro suburban streets would be a factor that causes travel-time to fluctuate.

The current boundary between Southampton and Parrsboro fire districts is shown by two hot pink pins, one on Trunk-2 at the Halfway River bridge near the intersection with Boars Back Road and another at a stream crossing on the Newville Road. As *Table 59* shows, both of these locations are several minutes closer in estimated travel-time to Southampton fire station.

In conclusion, consideration should be given to adjusting the Parrsboro-Southampton fire district boundary the nearly 3 kilometers southwards; closer to the Canaan Road.

Recommendation 140: GA recommends that Cumberland County consider moving the fire district boundary between Southampton and Parrsboro, along NS Trunk-2 and along the Newville Road, further southward from its current location to a suitable location just north of the Canaan Road.

Parrsboro / FPW

The next fire district boundary examined was along Highway-209 and involved the FPW and Parrsboro fire departments. The current fire district boundary is at the Fox River-Diligent River community boundary, which can be seen on *Map 6* where the gold coloured yellow arrow is pointing out the red community boundary line.

Three landmark locations were considered; NS Route-209 at the intersection with Ramshead River Road, the Diligent River-Wharton community boundary, and at Route-209 intersection at the Kirkhill Road. Estimated travel-times to each of these locations from both fire stations were estimated, with the results shown in *Table 59* above.

On the basis of travel-time estimates it is suggested that consideration be given to moving the current FPW-Parrsboro fire district boundary eastwards to the Dilgent River-Wharton communities boundary from it current location.

This suggestion should improve travel-times to Diligent River and Yorke Settlement residents.

Recommendation 141: GA recommends that Cumberland County consider relocating the FPW-Parrsboro fire district boundary along Highway-209 from its current location at the western boundary of the Diligent River community to a suitable location near the eastern boundary of the Diligent River community at the Diligent River-Wharton communities boundary. All roads leading off Highway 209 that are affected by this

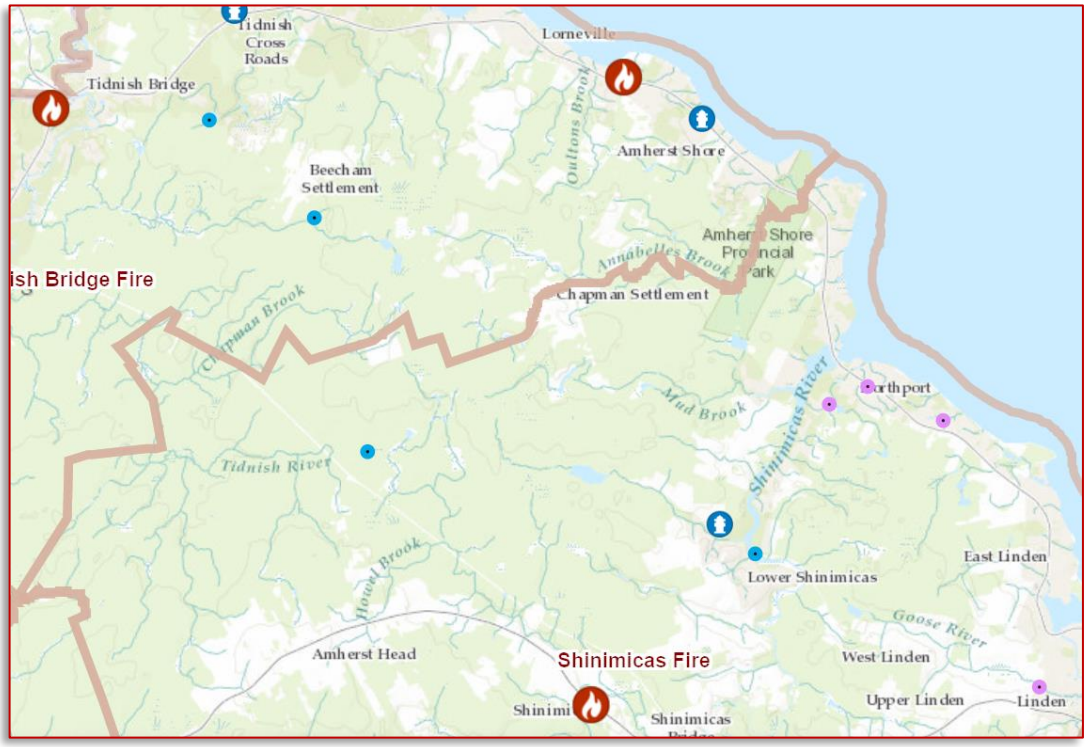
change would also have the effect of changing associated fire departments for the communities serviced by those roads, for example; Yorke Settlement, Pleasant Lake.

North-West Cumberland County

In this corner of the County, the analysis and review focused on the impact of the Lorneville substation location, which does not seem to have been considered in the current fire district boundaries. The sub-station location should influence the current fire district boundary between Shinimicas and Tidnish Bridge/Lorneville. *GA* has made the assumption that if the Lorneville sub-station meets its intended purpose, then the station has adequate responders to staff a first due fire apparatus. Any other consideration is not part of this boundary review.

Map 7 shows the current Cumberland fire district boundary[275] between Shinimicas and Tidnish Bridge, with the Lorneville sub-station also shown.

MAP 7: NORTH-WEST FIRE DISTRICT BOUNDARIES



[275] https://data-cumberlandns.opendata.arcgis.com/apps/b2b1835a393e4bb4bcfeae157d7df630/explore

Boundary Analysis

Locations and their corresponding time-distance comparisons for this part of the review are shown in *Table 60* below.

TABLE 60: TIME-DISTANCE COMPARISONS NORTH-WEST CUMBERLAND

From Fire Station:	To Location:	Km	Time (mins)	Notes on Pin Locations (see Map 8)
Tidnish Bridge	Lorneville Sub-Station	11.4	9	Station to Station
Tidnish Bridge	Seagrove Lane	5.5	4	Intersection NS-Route-366 @ Seagrove Lane
Lorneville	Seagrove Lane	5.8	4	Intersection NS-Route-366 @ Seagrove Lane
Lorneville	Chapman Settlement	5.4	5	Intersection Chapmen Settlement Road @ Greeno Road (location of current Tidnish Bridge-Shinimicas fire districts boundary)
Tidnish Bridge	Chapman Settlement	13.9	14	Intersection Chapmen Settlement Road @ Greeno Road
Shinimicas	Chapman Settlement	11.5	12	Intersection Chapmen Settlement Road @ Greeno Road
Lorneville	Greeno Road	8.7	9	Boundary Chapman Settlement and Lower Shinimicas Communities
Shinimicas	Greeno Road	8.2	8	Boundary Chapman Settlement and Lower Shinimicas Communities
Lorneville	Mud Creek – Road	8.5	8	Mud Creek Road at Mud Creek bridge
Shinimicas	Mud Creek – Road	8.7	8	Mud Creek Road at Mud Creek bridge
Lorneville	Northport	7.6	6	Intersection Route-366 @ Shinimicas Road
Shinimicas	Northport	9.4	8	Intersection Route-366 @ Shinimicas Road
Lorneville	Montague Cove	10.9	9	Intersection Route-366 @ Montague Cove Lane
Shinimicas	Montague Cove	13.2	9	Intersection Route-366 @ Montague Cove Lane

Map 8 below illustrates travel-time points of interest from the above table. On the map coloured pins indicate the following;

- **Yellow** Pins indicate the points to which Lorneville has a shorter estimated travel-time than Shinimicas.
- **Light Green** Pins indicate the points to which Shinimicas has a shorter estimated travel-time than Shinimicas.

MAP 8: GEOGRAPHIC POINTS AROUND LORNEVILLE SUB-STATION

Shinimicas / Lorneville

Map 8 shows that Chapmen Settlement and part of Greeno Road (which is currently within Shinimicas fire district boundary) are a significantly shorter estimated travel-time for the Lorneville sub-station than from the Shinimicas station. The midpoint in terms of estimated travel-time for both departments is approximately at the Lower Shinimicas-Chapman Settlement communities boundary on the Greeno Road. The Shinimicas fire station estimated travel-time to this location is slightly better at a shorter distance than a response from the Lorneville station.

Mud Creek Road crosses Mud Creek a little more than half-way between the Greeno Road and the Tyndal Road (NS-Route 366). This point, where the creek crosses is slightly closer, travel-time wise, to Lorneville and is a likely good physical location to place the fire district boundary between Lorneville and Shinimicas along Mud Creek Road.

Along NS Route-366 the current fire district boundary is at Amherst Shore Provincial Park. Consideration should be given to moving this boundary much further east to the intersection with

Montague Cove Lane in Northport, which is at or near the community boundary between Northport and Linden.

Recommendation 142: GA recommends that Cumberland County consider adjusting the fire district response boundary between Shinimicas fire station and Lorneville fire station. The proposed modifications include; (1) moving the boundary southwards from Chapman Settlement to a location on the Greeno Road approximately at the Chapman Settlement/Lower Shinimicas communities boundary; (2) establishing the boundary at the bridge over Mud Creek (aka Mud Brook) on Mud Creek Road; and (3) moving the boundary eastwards from its current location adjacent to Amherst Shore Provincial Park to a location on NS Route-366 east of the intersection with Montague Cove Lane. All roads leading off any of these named roads that are affected by these changes would also have the effect of changing the primary response fire station responding into those communities serviced by those roads. GA further recommends that for pre-fire and fire incidents that Automatic-Aid protocols be instituted for any responses into the aforementioned boundary areas.

West Cumberland County - Joggins and River Hebert Fire District Boundaries

Existing Situation

The contemporary situation in the Joggins-River Hebert communities features two fire stations separated by a distance of 4.9 Kms, or approximately five (5) minutes travel time apart. Each station is operated by a separate corporate body, each registered with the County.

Over a five (5) year period, 2016-2021, Joggins responded to a total of 284 jurisdictional incidents, not including mutual/auto-aid[276] calls. Including all call types, Joggins responded to a total of 660 calls during this period.

River Hebert during the same reporting period responded to 309 jurisdictional incidents and 658 call that included mutual/auto-aid responses.

Most of the mutual/auto-aid calls[277] were back and forth between the two fire districts.

[276] Not including mutual-aid to the incident scene calls, or standbys at another station, or standby at their own station at the request of another department.

[277] See *Table 4: Mutual-Aid Matrix: 2016-2021* on page 70 for a summary.

Station Location Considerations, a Combined Station

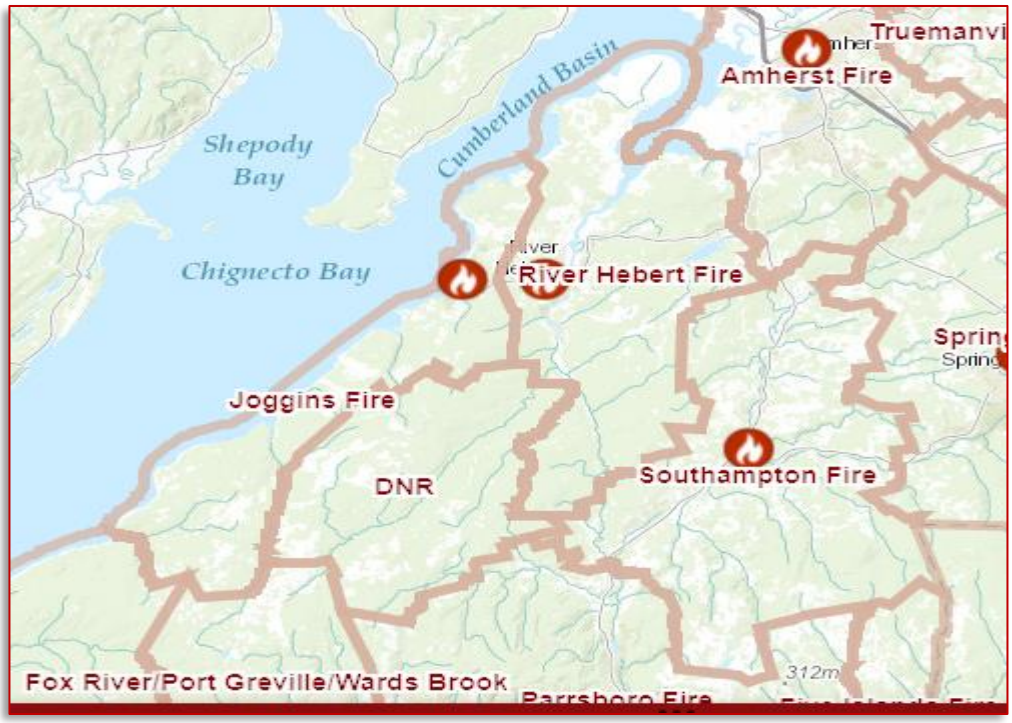
In planning locations of fire stations, one of the mission critical factors is travel-time. Typically, considered locations are based upon a location with balanced overall travel distances (time) to various locations within their geographical response area.

The foregoing is a correct approach when the fire station is staffed with full-time personnel. When planning for volunteer staffed fire stations, there is an additional factor that must be considered, and that is the location of the residences of the volunteer members. If the volunteers' residential factor is not considered it can result in a significant addition to overall response-time. This occurs when volunteer firefighters have to travel away from the population centre to the fire station and then travel back to the community on the response.

There has been some analysis on the possibility of combining the two departments into one and constructing a centrally locate fire station between the communities.

Map 9 below illustrates the current fire district boundaries for each of Joggins and River Hebert Fire Departments.

MAP 9: EXISTING FIRE DISTRICTS, WEST CUMBERLAND COUNTY



Looking more closely at the current situation, and giving consideration as to where most of the volunteers for each department live, it is possible to gain insight as to whether a single 'central' fire station would be effective. According to the Joggins department, the majority of their members reside within the Joggins community itself. The River Hebert department reports that most of their members reside east of the current station location.

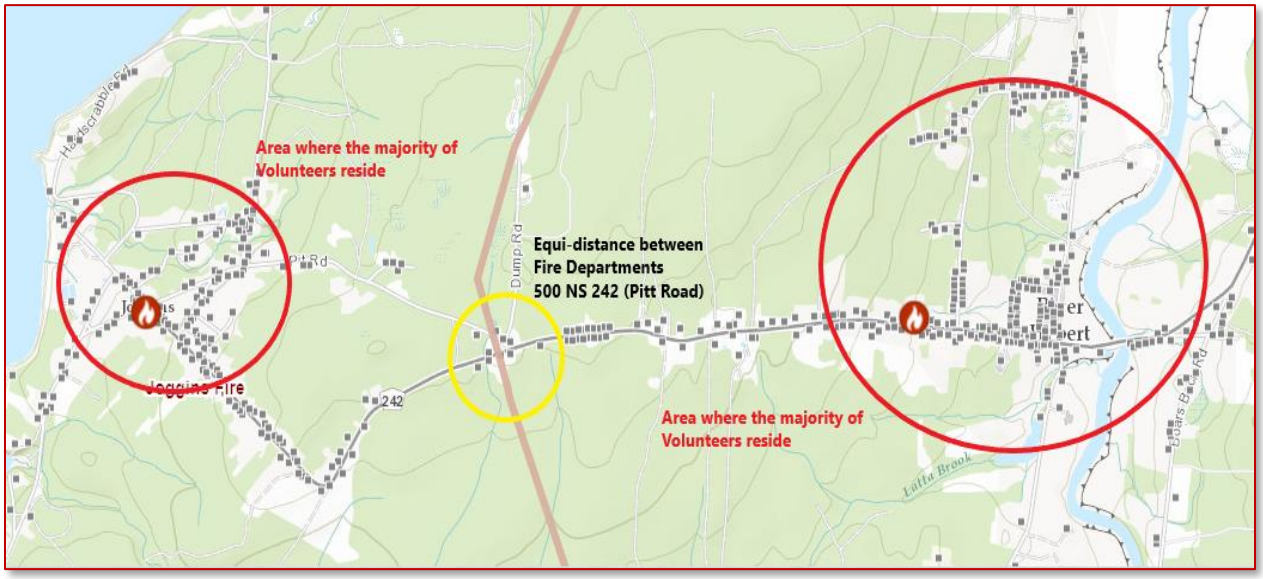
Map 10, below indicates the approximate central point to locate a combined station, (yellow circle), and the red circles indicate where the majority of each department's members reside.

The equidistance location between the current fire stations' address is approximately at civic address 500 along NS-Route 242, very near the intersection with Pitt Road. Each of the current fire stations have an approximate travel-time of two+ minutes to that location. This location is also the current fire district boundary line between the two departments. This suggests a possible location for a single fire station and a combined department.

On the surface, this looks like a reasonable resolve and if the station was staffed with paid personnel (this is not a *GA* recommendation), it would likely be the ideal location, given the narrow range of possibilities. However, there is a down side because the service is volunteer based. The location increases the travel time for the volunteers to respond to the station, as compared to the current station locations.

Considering where many volunteers reside, the distance to an equidistance located station, will increase the time for the volunteers to turn-out to the station by an average of two+ (2) minutes. If the call is in the centre of their communities, they now must drive the fire truck back to the community where the call is located, another additional two+ (2) minutes, totaling an additional 4 - 5 minutes of response time. On that basis, the combined 'central' fire station is not an attractive proposal, since it will negatively affect service delivery.

MAP 10: JOGGINS, RIVER HEBERT VOLUNTEER HOMES



Recommendation 143: GA recommend that Cumberland County not consider establishing a new fire station mid-way between the current fire stations in River Hebert and Joggins. Establishing such a station would likely result in an additional approximate average response-time increase of up to 5 minutes vs the status quo for both communities.

Optional Possibilities

If a combined fire station is counter-productive for service delivery, a question arises as to if there are any additional options may be considered to improve the overall service delivery in this geographical area of the Municipality; and simultaneously to address what appears to be inefficiencies with two stations so relatively close together? One suggestion is relocating the River Hebert station from its present location. Given the age and condition of this station, that is a potentially reasonable consideration in the short to medium term.

Map 11 below suggests a new location for the River Hebert fire station, moving from the current location to an area in the vicinity of civic number 2284 on NS Route-242; i.e., near the intersection with Boars Back Road. The red pin is the proposed general location for establishing a new fire station for the River Hebert Fire Department. The nearby pink pin is the current location.

MAP 11: PROPOSED POSSIBLE LOCATION, NEW RIVER HEBERT FIRE STATION

If the River Hebert Station is relocated to the east side of the bridge, near the intersection of Boars Back Road and NS Route-242, then the new equidistance point between Joggins and River Hebert stations moves to the vicinity of civic number 10335 on NS-Route 242. The **green** pin on *Map 11* illustrates the approximate midway point for both departments, based on an estimate of travel-time. The Joggins fire district boundary could be expanded to this area.

It is proposed that the relocation of River Hebert station, from the extreme western-edge of its current fire district to a more central location as described, could have an overall positive impact on service delivery for the residents throughout the River Hebert response district. It can also have a positive impact beyond the current district boundaries, into areas currently serviced from Amherst, in particular.

The following table estimates the travel-time estimates, with the proposed station location. The estimates also include other existing fire stations and district boundaries. Green rows are shortest estimated times.

TABLE 61: TIME-DISTANCE COMPARISONS, AMHERST, RIVER HEBERT, SOUTHAMPTON, SPRINGHILL

From Fire Station:	To Location:	Km	Time (mins)	Notes on Pin Locations (see *Map 12*)
Proposed River Hebert	Maccan	11.4	9	Intersection, NS Route 242 @ Route-302 (#3267 NS Route-302)
Amherst	Maccan	11.8	13	Intersection, NS Route 242 @ Route-302 (#3267 NS Route-302)
Southampton	Maccan	16.6	13	Intersection, NS Route 242 @ Route-302 (#3267 NS Route-302)
Proposed River Hebert	Trider Road	13.1	10	Intersection, NS Route-302 @ Trider Road
Amherst	Trider Road	12.1	12	Intersection, NS Route-302 @ Trider Road
Proposed River Hebert	Nappan	16.5	13	Intersection, NS Route-302 @ Southampton Road, Nappan
Amherst	Nappan	8.7	9	Intersection, NS Route-302 @ Southampton Road, Nappan
Proposed River Hebert	Athol Station	17.4	14	Intersection, NS Route-302 @ Little Forks Road
Southampton	Athol Station	10.6	8	Intersection, NS Route-302 @ Little Forks Road
Springhill	Athol Station	16.7	15	Intersection, NS Route-302 @ Little Forks Road
Proposed River Hebert	Halfway Brook	15.8	12	Current Amherst-Southampton fire districts boundary (near #2417 Route-302)
Southampton	Halfway Brook	12.3	9	Current Amherst-Southampton fire districts boundary (near #2417 Route-302)
Amherst	Halfway Brook	18.1	17	Current Amherst-Southampton fire districts boundary (near #2417 Route-302)
Proposed River Hebert	Mines Road, Maccan	12.7	10	Intersection, NS Route-302 @ Mines Road
Southampton	Mines Road, Maccan	15.3	12	Intersection, NS Route-302 @ Mines Road
Proposed River Hebert	Chignecto	16.1	14	Intersection, Mines Road @ Mines Road Loop N
Amherst	Chignecto	13.3	14	Intersection, Mines Road @ Mines Road Loop N
Springhill	Boss Brook	11.9	10	Springhill-Amherst fire districts boundary, NS Trunk-2
Amherst	Boss Brook	13.3	12	Springhill-Amherst fire districts boundary, NS Trunk-2
Springhill	Ripley Branch Rd.	15.7	13	Intersection, NS Trunk-2 @ Ripley Branch Road
Amherst	Ripley Branch Rd.	9.4	10	Intersection, NS Trunk-2 @ Ripley Branch Road

Map 12 below illustrates the selected points from *Table 61*, showing changes in primary fire station districts of the current fire stations; but including the proposed location for a replacement River Hebert fire station, but does not include the current station.

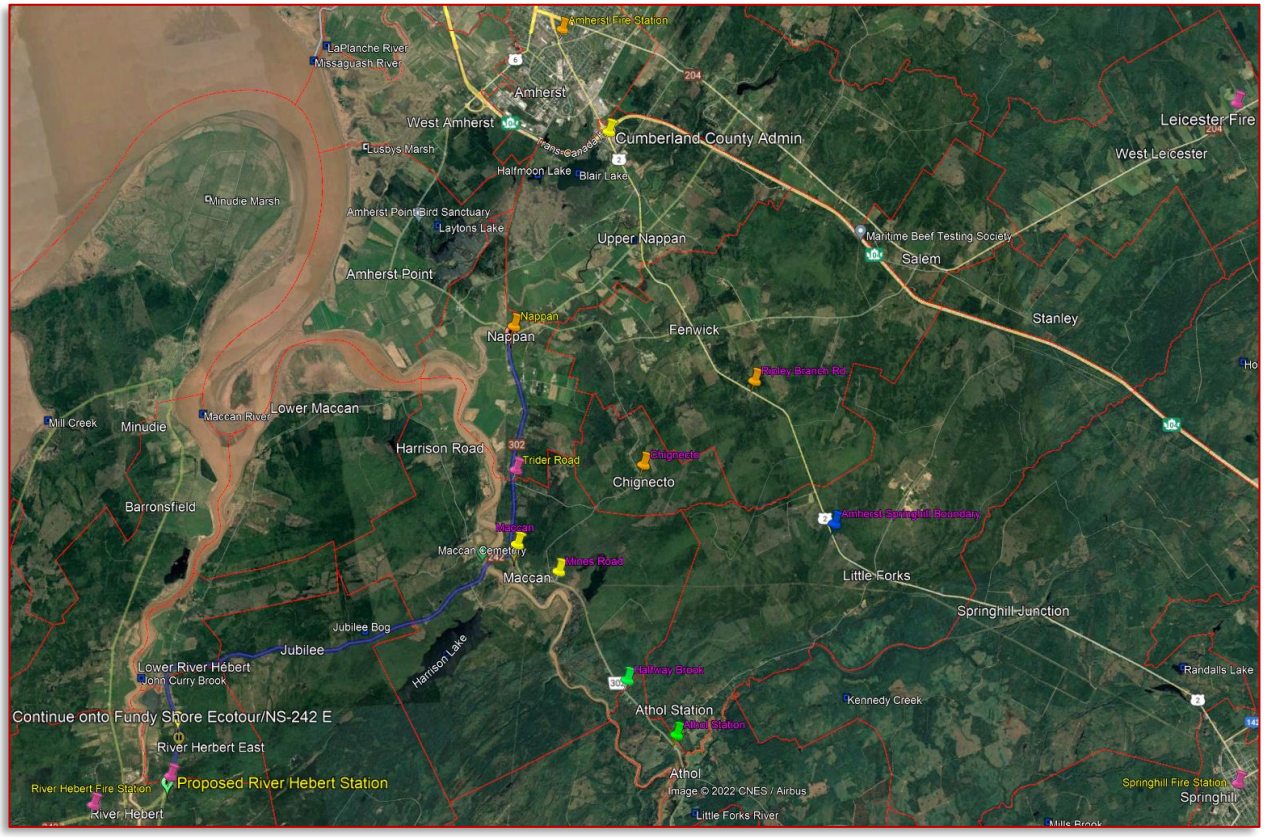
The **yellow** pins indicate localities to which the proposed River Hebert station location is predicted to have lowest estimated travel-time.

The **orange** pins indicate localities to which the Amherst fire station location is predicted to have lowest estimated travel-time.

The **green** pins indicate localities to which the Southampton fire station location is predicted to have lowest estimated travel-time.

The **blue** pins indicate localities to which the Springhill fire station location is predicted to have lowest estimated travel-time.

MAP 12: POINTS OF INTEREST; AMHERST, RIVER HEBERT (PROPOSED), SPRINGHILL, SOUTHAMPTON



Impacts:

- The community would have a fire station on either side of the bridge in River Hebert in the event of a bridge closure.
- The new location provides for quicker travel-time to an expanded River Hebert primary response area, into Maccan and north and south on NS Route-302 (displacing Amherst).

- River Hebert firefighters should have an average somewhat quicker turn-out time with the station located more centrally to the volunteer firefighter homes.

Recommendation 144: GA recommends that Cumberland County consider that when the time comes to replace the River Hebert fire station; that the new station be positioned in the vicinity of the intersection of Boars Back Road and NS-Route 242. GA further recommends that if the above is implemented, then the fire district boundary between Joggins and River Hebert be adjusted from its current location to a sensible point approximately midway between the stations. Furthermore, that adjustments to the Amherst-River Hebert and to the River Hebert-Southampton fire district boundaries in the areas around Maccan and Chignecto, etc. should also be considered.

GENERAL OPERATING GUIDELINE REVIEW

This sections starts with a review of the various document types and their raison d'être.

Policies, Procedures, Guidelines, Standing Orders

In any organization, political parties, business, volunteer organizations i.e., the International Red Cross and emergency services there are many different documents required to address the administration and operations of their respective organizations to meet their business obligations and adherence to statutory regulations.

When developing documents that direct the focus and direction of the organization one must understand the differences between the various components of a well a managed organization.

Having a good policy framework in place.

Every organization needs to implement a good policy framework with a document hierarchy. This enables distinguishing between the different enforcement levels of documents – are they compulsory or voluntary? *GA* is of the opinion the hierarchy should flow like this:

- Legislation
- Standards
- Policy
- Procedure
- Guideline
- Standing orders

Standards and Legislation

Federal/provincial governments develop legislation, and such legislation consists of Bills/Acts with associated Regulations. Regulations can change quickly, they do not require returning to Parliament/Legislatures to change the nuts and bolts of how things shall be done, unlike the originating Bills/Acts. Usually a Minister of the Crown or an Order in Council (aka the Cabinet)

can make a regulation change quickly in reaction to a developing situation, as we have amply seen throughout COVID19.

Legislation is often based on, or makes direct referral to, established and recognized standards; like those developed by the National Fire Protection Association (NFPA). This precludes the need to redevelop the wheel, and facilitates cross-jurisdictional consistency.

Municipalities, and others, are empowered by legislation to enact Policy (bylaws), most usually through a formal process that involves public consultation. Such policy will almost always make reference to the powers to make the Policy, as founded in the appropriate legislation. Municipalities are in fact extensions of the Province, permitted to exist through provincial legislation. This means that municipal policy/bylaws cannot contradict provincial, or often indeed federal legislation. Although in many cases they may enhance those requirements.

Policies, Procedures, Guidelines

Policy

Policies in an organization represent the defining of goals, objectives, measures, sometimes rules and penalties, powers, authorities, and usually definitions. They are not usually designed to tell you the steps on how to do something, but will provide the expectations of the organization to which all organizational activities need to comply.

Policy is generally broad in scope, covering many possible activities. It gives direction to those who have been given the power, through policy, to develop the procedures that convey the intentions of the policy, that will help to achieve the objectives of the policy, that will help to ensure the organization meets its goals.

Policy is the most important document because it reflects the organizations strategy to achieve its objectives, and within the constraints (if any) of the legislation that created the organization or that permitted the policy to exist.

An example of a policy that you will typically find in organisation is: "*Legal services shall review all third-party contracts.*" In this example, the policy of the governing body of the organization is that legal services is authorized, indeed required, to review third party contracts. This means that no other department in the organization can usurp this activity. Generally speaking, unless it is illegal, within an organization policy is mandatory and must be followed by all employees.

When an organization, specifically a municipality, makes policy that is within its powers to make, that policy is generally immune from liability, provided it does not infringe on or contradict any Code or superior legislation. The policy is within the rights of the organization to make.

For example, if a municipality decides it is not going to provide fire hydrants on a municipal water system in the community, it has the rights to make that decision as a matter of policy, with powers granted under provisions of the *Municipal Government Act,*. The only recourse is the voters.

However, if a municipality does make the decision to provide fire hydrants, then the expectation is that they should operate when needed. The organization's senior employees (managers) will develop procedures to maintain and inspect the hydrants and associated water system to ensure the policy objectives are met; i.e., working fire hydrants. A failure to do so is a breach of Duty and creates liability, which can be adjudicated in a court of law.

Procedure

A procedure provides detailed mandatory steps (sometimes in the form of a checklist) someone needs to follow to achieve a recurring task or comply with a policy. These procedures can include step by step instructions or statements telling you where something needs to go. A procedure informs employees how to carry out or implement a policy. Procedures usually contain written instructions in logical numbered steps.

For example; an employee wants to get paid for their work. The *procedure* for getting paid involves the submission of a detailed timesheet, signed by their supervisor, at the end of the work

week, and no later than noon on the following Monday, to the payroll office. Skip any step, and the employee might not receive their pay as expected.

Some people use the phrase "process", "practice" or "work practice" instead of a "procedure". They are essentially the same. However, the standard term used by fire services is "standard operating procedures" or "SOPs".

Procedures should outline the following information:

- Who is responsible for each task
- What steps need to be taken
- Who the responsible party reports to
- Procedure is mandatory.

Unlike policy, failure to follow procedures is susceptible to liability and charges of negligence, or in the case of volunteer firefighters, gross negligence. The organization expects that duly enacted policy will be followed. The public expects that the outcome of the policy will be as stated in the policy, or as determined in common law by a comparison to peers (i.e., the standard of care). If an employee fails, or deliberately neglects, to follow the appropriate procedure developed to enact that policy, and there is a negative consequence of that action/inaction by the employee, then it is likely that the employee, and through the principals of vicarious liability, the organization will be sued, and worse, convicted.

Sometimes a department of a municipality will promulgate a "Policy" on some subject within their sphere of activity. This document usually starts out with the words "This policy…" Such documents are in fact *not* policies of the organization. They are probably better described as goals and objectives of the department, or plans, statements of intent.

Standards

As mentioned above, standards may be referenced and codified in legislation. However, they may also be referenced in procedures and in standards of practice as an expected way to achieve the goals of a procedure and thereby of the mother policy.

Standards are an acceptable level of quality, attainment, or service level. Most organizations specify internal standards. Internal standards can be mandatory from the organization's perspective, especially if the related policy dictates it is so.

The fire service often uses the NFPA standards as an example of best practices. In some cases the NFPA standards are also codified into legislation. Many examples of this are discussed in the section on *Health and Safety Policies*.

NFPA standards used in procedures are common. These standards, and in some cases guides, are developed as consensus standards, with input from industry, suppliers, and all sizes and shapes of the fire services. They are updated on a 4-6 year cycle. Users of these standards must pay attention, they can change. NFPA standards are the leading overall view on the best practice of operating/establishing fire services.

Standards are typically quantifiable, and in terms of the fire service examples, allows the municipality to measure and determine if the fire service delivery policy levels and/or if firefighter training programs are being met as required by the established municipal policy.

Procedures should reference standards so that employees understand the level of expected outcomes. However, a failure to specify a widely accepted industry standard in a policy or in a procedure does not mean that the existence of the standard can be ignored. In a liability case, or in a workplace accident investigation; standards become standards of practice and the individual and organization will need to convincingly explain why they did not choose to follow a standard that many/most other similar organizations are following. Failure to adequately justify non-conformance will have consequences.

Guidelines

A guideline provides general guidance, and additional advice and support for policies or procedures. A guideline gives the reader guidance and additional information to help produce a desired result. It could also assist management by explaining a procedure, or a policy, in direct, action oriented, terms. Many people confuse a guideline with a procedure because a guideline

contains similar content to a procedure. The biggest difference between the two is that a guideline is voluntary and procedure is mandatory.

An example of a fire service guideline is: "*When the first officer arrives on-scene at a fire he should provide over the radio to fire dispatch and other responding firefighters an on-scene report that includes the following information…….*"

Fire service guidelines are generally as follows;

- A model on how to act in a given situation, that other responding (in the case of an operational guideline) firefighters expect will be followed, unless there are good reasons why not;
- To be followed except where extenuating circumstances require a deviation, and in those circumstances advice that the guideline is not being followed generally needs to be communicated to the other team members;
- Are usually developed over time and with multiple inputs (collaborative) including analysis of past events;
- Represent the organization's best practices at incidents (operational guidelines) that reduce the need for communications, and increase team safety and effectiveness;
- Where deviation from the guideline may require later explanation and justification.

The accompanying diagram[278] provides a quick overview of the various components that lead to the development of a guideline.

Standing Orders

Typically, in the Fire service there is another category of documents that provide direction to the organization, employees and or volunteers. This category is referred to as "Standing Orders".

Standing orders (SO) are usually short, and specific. They are issued by management in order to immediately respond to a sudden situational change, or a threat to health, safety, or operations. SO's are a prescribed procedure[279] in force until replaced by the more collaborative process of

[278] https://www.linkedin.com/pulse/20140611162901-223517409-difference-between-guideline-procedure-standard-and-policy/

[279] Standing Orders are usually procedural but could be guidance related. The use of the words SHALL and SHOULD will often distinguish between intentions.

procedures or guidelines. For example, when COVID19 was declared a pandemic, there was little time to convene the policy and procedure committee to discuss and agree on the need to implement a change to MFR incident responses. A SO was issued in many fire department that required forthwith that all MFR responses would follow infectious disease protocols (aka procedures).

A SO should be replaced by an SOP or SOG at the earliest appropriate time. Some SOs will have an expiry date, but all should be intentionally short lived.

Standing orders must be issued by the senior officer of the fire department. Some fire departments often refer to them as Chief's Orders.

In Cumberland, an SO could be issued by the district fire chief of an individual fire department to address an issue only within his/her fire department.

However, if the issue that is being address is a county-wide issue, MCC's Director of Protective services, should issue his own Standing Order until such time as the issue is on longer a concern or the Standing Order is replaced by an appropriate Procedure or Guideline.

NFPA-1700; Guide for Structural Fire Fighting

NFPA-1700 was developed to;

> *"provide guidance for the development of policies, procedures, and guidelines including strategies, tactics, and tasks for structural firefighting supported by science-based research"*

NFPA-1700 contains the following definitions;

> *"3.3.199 Standard Operating Guideline (SOG).*
>
> *– A written directive that establishes recommended strategies/concepts of emergency response to an incident.*
>
> *3.3.200 Standard Operating Procedure (SOP).*
>
> *– A written directive that established specific operation or administrative methods to be followed routinely for the performance of a task or for the use of equipment."*

Develop, Approve, Implement

Various entities are involved in the development, adoption and enforcement for policies, procedures and guidelines, etc. The following table captures these entities, as the process applies to the fire services in MCC;

TABLE 62: ROLES IN POLICY, PROCEDURE, GUIDELINES

Document Type	Developer	Approver	Implement-Enforce
Municipal Policies	CAO & Municipal Staff	Council	CAO & Senior Staff
Municipal Procedures	DPS, committee of 4 or 5 Fire Chiefs, Municipal Staff	DPS	DPS and All Fire Chiefs
Fire Guidelines	DPS, committee of 4 or 5 Fire Chiefs	All Fire Chiefs	Officers of the fire departments
DPS Standing Orders	DPS	DPS	All Fire Chiefs, Officers of the fire departments
Fire Chief Standing Orders	Individual Dept Fire Chief	Individual Dept Fire Chief	Officers of the fire departments

Note: DPS is the MCC Director of Protective Services

MCC General Operating Guidelines Review

GA was provided with seventy-seven General Operating Guidelines (GOG's), and a single 2006 document containing approximately seventy individual guidelines. All were labelled "draft" with no issue date.

November 23, 2011 the Municipality of Cumberland County approved motion 11-169 that "Officially Recognized" the "January 2010 FD GOG'S".

The above motion as written, does not clarify specifically what was submitted to council for Official Recognition and what GOG's were actually recognized given that about fifty per cent of the Guidelines were drafted prior to 2010, and a number were apparently drafted post this Council motion. The use of the phraseology Officially Recognized, suggests that Council did not approve the specific GOGs, nor should they as it is Council's duty to approve Policy and not Procedure/Guidelines.

There was a considerable amount of time invested in the development of the MCC GOG's and they covered much of the subject matter typically found within a fire service organization.

"*Operating Guideline O.G. 100-06, Subject: General Guidelines*" suggests the intended process for the development of GOGs. It is quoted here in its entirety;

> *"Purpose: Guidelines shall be established to allow for the safe and efficient operations of the Fire Service within the Municipality of the County of Cumberland. These guidelines are designed for both emergency operations and the day-to-day operations.*
>
> *Scope: These guidelines are to be followed by all members of the Municipality of the County of Cumberland Fire Protection Services, regardless of the jurisdiction in which they may be operating. Authority to deviate from these guidelines rest with the Fire Chief or Incident Commander who is solely responsible for the results of any deviation.*
>
> *These guidelines attempt to meet or exceed National Fire Protection Association (NFPA) Standards, Provincial Laws and recognized Firefighting practices as much as possible.*
>
> *Authority: These guidelines have been developed by the Fire Protection Services Coordinator (FPSC) in consultation with the CCFFA and Sanctioned by Council.*
>
> *Amendments to the Guidelines: All members of the CCFFA are eligible to submit in writing proposed amendments or additions to the Operating Guidelines.*
>
> *Amendments or proposed guidelines are to be submitted in writing to the FPSC and will be brought forth to the CCFFA at a general meeting for discussion.*
>
> *Amendments or proposals must not contravene Provincial Laws, NFPA Standards, Occupational Health & Safety or accepted practices.*
>
> *Maintenance: The FPSC, or designate is responsible for the maintenance of the Operating Guidelines on a yearly basis.*
>
> *The FPSC, or designate will ensure all amendments and new guidelines are correctly entered in the existing guidelines.*
>
> *The FPSC, or designate will ensure all fire departments receive amendments and updates of the guidelines and that all Fire Station copies are amended.*
>
> *The Fire Department Chief is to be responsible for the individual fire stations copies to be updated."*

Overall the process described appears to be reasonable and workable. However, the highlighted section notes that "*These guidelines have been ..... Sanctioned by Council*," where the sanctioned by Council part is surprising, and should not be there. Council must not be involved in operational decisions.

It appears that very few, if any, of the GOG's were put into effect, or at least were not enforced, reviewed, and/or amended as might be expected is necessary.

The title of General Operating Guidelines was the default typography for *all* of these documents, when many were actually procedures.

Recommendations on Procedures and Guidelines

Recommendation 145: GA recommends that Cumberland County establish a standing committee, chaired by the Director of Protective Services or his designate, and including appropriate representatives from the individual fire departments, to complete a thorough review of all of the so called Operating Guidelines with the following objectives;

- ***To develop a terms of reference for this committee, with appropriate agreement, understanding that these are living documents and this review is a process and not an event,***
- ***to develop a priority and appropriate schedule for the committee's work and to communicate that to firefighters directly,***
- ***to amend, replace, remove, as appropriate, all documents to reflect current fire department practices or to modify such practices,***
- ***to develop procedures and guidelines in all areas of activities in which the fire services engages in,***
- ***to assess and include appropriate standards, and to include appropriate best practices,***
- ***to separate such documents into Operating Procedures and Operating Guidelines according to their natures,***
- ***to develop an implementation plan, to help develop a training plan and a program for the implementation of the revised documents,***
- ***to promote and communicate the need for these documents, and to move forward with all practical speed in achieving these objectives.***

CH 7: HUMAN RESOURCES

RECRUITMENT AND RETENTION

Perhaps the IAFC report[280] says it best when it laments about the current challenges of recruiting volunteer firefighters. Stakeholder meetings with fire chiefs and membership in Cumberland County seem to echo the thoughts in that report.

> *"The old model of neighbors helping neighbors is all but gone in most places, as many people don't have strong ties to, or even know their neighbours anymore. Volunteer Fire Services have always relied on multigenerational families passing down the tradition of joining the local fire department, but that is also becoming a thing of the past. As with many other industries, as the baby boomers retire en masse on the back end, they need to be replaced with young people on the front end. In sheer number, there aren't enough millennials and iGens to replace the baby boomers, and worse, those two younger generations aren't trending toward the fire service. With many young people needing two jobs to survive, plus other obligations, the free time necessary to be part of the emergency sector seems to be a luxury few can afford. In addition, the number of non-profit organizations recruiting the same volunteers is at an all-time high, and frankly, the fire service, as it exists with its current culture, is not an attractive option for younger generations who value flexibility, creativity, and inclusivity."*

The ability to attract/recruit and retain volunteer firefighters is in part a demographic challenge. Prospective volunteers must be fit enough and available. Generally, fit means a healthy adult who is not too young nor too old. The aging population, particularly in Cumberland County means there are fewer younger persons in the community, and current volunteers eventually get too old to withstand the rigours of being an interior firefighter.

StatsCan's 2016 census[281] shows the Median age for Cumberland County is 52 years. Residents 65 years of age and over makes up 17.5% of the Municipality's population. The primary age group from which to draw firefighters is normally between 15 and 64 years of age, and this cohort only makes up 39.3% of the Municipality's population.[282] The youngest members of the above group, the 15 – 18 year-olds have a place as Junior Firefighters, where the old adage *get*

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[280] *State of the Volunteer Fire Service Report 2018*, International Association of Fire Chiefs https://www.iafc.org/docs/default-source/1vcos/nvws_stateofthevolunteerfireservice.pdf?sfvrsn=fe13800d_2

[281] See *Table 74: Census Population Characteristics* on page *169*.

[282] See line 13 in *Table 74: Census Population Characteristics* on page *169*.

them young, train them right, and they are yours forever has been *GA's* experience in the volunteer fire service.

A secondary demographic challenge is lack of local employment, which is also a factor[283] in portions of Cumberland County. Volunteer firefighters with jobs that are distant from their fire station are less likely to remain volunteer firefighters. They are not able to effectively respond to incidents while at work; and they spend more time commuting and therefore have less time available for volunteer firefighting. Their interest flags and as attendance drops so does their skills level, and unfortunately their value to the organization.

Volunteer firefighting is not a weekend pastime or a casual commitment like the book club. A volunteer firefighter should expect to contribute between 100 and 300 hours per year in scheduled activities; training, equipment maintenance, fund-raising, meetings; and in those unscheduled events; going to incidents.

Recruitment vs Retention

There is an inextricable link between recruitment and retention. Existing members of an organization retain a substantial investment in the organization themselves. They also represent a substantial investment by the organization itself. This investment includes training, equipping, and developing character and responsibility, building teamwork, building capacity and trust, etc. These are massive investments in each member of the organization; often overlooked.

Volunteer firefighters, when asked why, will often cite their interest in helping the community as their main objective is joining. In truth, it is much more complicated than that. In *GA*'s experience, what brings a volunteer candidate in the door is not what keeps them volunteering for years.

At first it is the excitement, a challenge, the desire to be part of a winning team; a team that has social value in the community, prestige. What keeps a volunteer there is in part a source of pride

[283] See *Table 77: Census Commuting Characteristics* on page *175*.

in the organization, the comradeship, *and* the value of the job; i.e., the ability to make a difference. There is also a transaction, whereby the volunteer gives time and effort, and a lot of inconvenience, and expense; in exchange for feeling good about being there. Many members of the fire department experience personal growth as they develop new skills, test their resolve and find courage in their training and developing skill set. They work as a team with deep trust between members, and faith in their leadership. It is a brother/sister hood that is world-wide and very deep.

All that can be for nought if the bonds are broken. Poor leadership, unfairness and discrimination can destroy trust. Trauma, mentally/emotionally or physically, can interrupt the positive relationship and leave life-long scars. Failure to continually challenge and develop the individual through meaningful training and activities can lead to loss of interest, and eventually to leaving or being purged.

Some factors are outside the control of the fire department. Loss of family support, relationship breakup, change in job situation, having kids, a new love interest, etc.; can be fatal to membership. Volunteer membership can extend for years, 20, 30, 40. Think of all the life changes that can happen over that long period of time. For some, the volunteer fire service is a refuge.

In one study conducted by Farmer and Fedor (1999),[284] the authors concluded that;

> *"Volunteers who reported their expectations were met and they perceived organizational support and care, were shown to have increased attendance and intentions to remain. This study found that organizations were perceived to be better at meeting expectations of ongoing support than they are at matching expectations that volunteers had upon entry. However, the study also showed that when volunteers sense the organization cares about their general well-being, they are more willing to overlook particular unmet expectations."*

Clearly though, it cannot all be about the individual. The organization has needs and expectations also.

[284] Farmer, S. M., & Fedor, D. B. (1999). Volunteer Participation and Withdrawal: A Psychological Contract Perspective on the Role of Expectations and Organizational Support. Non-profit Management & Leadership, 9 (4), 349-367.

How to achieve and meet expectations/needs of both the volunteer and the organization is a time-consuming challenge to any organization. Volunteers bring their own expectations to the organization based upon; perceived knowledge, and information passed on by current volunteers (who may over-sell the position or organization), and through social media. The reverse is also true, in that if the reputation of the volunteer service is not positive nor current, or members express dissatisfaction with the volunteer organization; the impact can be disastrous for recruiting.

Retention Starts with Recruitment

Recruitment should start with a need's assessment of the organization. How many personnel are needed. What kind of availability is needed (i.e., individual work schedules) since the fire department is a 24/7/365 service delivery organization. Much depends on the community.

Each community's demographics can be distinct. Especially in rural and smaller urban communities the population is aging, local manufacturing can be closing and the younger citizens may be moving to more urban settings to seek a living or more excitement. There may even be competition amongst different volunteer organizations.

A review of the fire service needs, may reveal that there are positions that do not require younger, physically fit, eager individuals. Positions such as public fire safety education, administration, radio operators, traffic control persons, occupational health and safety opportunities. There may be seniors who are looking to keep active and are willing to provide some time, skill and experience that can fill a void within the organization.

There are two groups of functions that are needed in the delivery of fire and emergency services, line and staff. Line being the most labour intensive and the front line of the fire service and Staff, which are the folks that support the front-line responders.

Traditionally, the majority of volunteer fire services required any and all members of their respective departments to be firefighters; trained in all services offered by the department. The reality is that not all fire department members are suited, or want, to respond to all incidents, for

example; medical incidents or water rescue etc. Some volunteers just wanted to fight fires. Other joined mostly go to medical incidents. In our stakeholder interviews, *GA* met both types of these fire department members.

The challenges facing the recruitment of volunteers requires evolving recruitment practices that reconsider the requirement for all members to be all-around, all-hazards, volunteer firefighters. In order to staff and survive, the volunteer service may need to be more varied in its goals.

This means answering the question, "Do all volunteer fire department members have to be structural firefighter trained"? The answer is no.

However, volunteer fire departments still do need the majority of their membership to be firefighter trained and capable so as to be able to deliver the department's core services; which is responding to fires, rescuing people, and extinguishing those fires.

Fire Service Line Function Requirements

What types of functions/positions are required at the scene of a structure fire that are required to be firefighter qualified?

- Firefighters
- Fire Officers
- Fire Incident Safety officer
- Accountability Officer

What are some of the functions/positions that are required at the scene of a structure fire that do not need to be required to be a trained firefighter?

- Apparatus Driver/operator
- Air/SCBA support person
- Command Post - radio communicator/scribe
- Firefighter rehabilitation support personnel
- EMS
- Traffic Safety Control

- Logistics

What are some of the other types of emergency services do some fire departments provide that do not require volunteer members to be firefighter trained?

- Water rescue
- Ice Rescue
- High angle rescue service
- Medical First Responders

Additional non-emergency Staff functions in which volunteers do not need to still be firefighter qualified but could be most beneficial to the fire department.

- Administration, (records and reports, budget, inter-government relations)
- Fire Prevention
- Maintenance
- Communications
- Research & Planning
- Community Relations/Public Information
- Financial Management
- Personnel Management
- Logistics

Regardless of the function/role of the volunteer, all volunteers will require specific subject/service training, skills maintenance and fire department orientation. Many will need past fire department experience, but may no longer be physically fit enough to be front-line firefighters.

The use of non-trained firefighters in non-active firefighter roles, will lessen the burden on the firefighting volunteers and help prevent burnout, loss of interest, stress, and the consequent potential for member loss to the organization.

The very first stage of the Recruitment process is to conduct a real human resource needs assessment of the service and of the current recruitment and selection process. Identify what modifications are required to meet the needs of the organization, and is it compliant with current HR best practices and requirements. Does it align with MCC corporate human resource policies?

Are there properly written job descriptions complete with expectations and benefits? Job descriptions need to outline necessary qualifications, time commitment estimates (frequency and length), responsibilities, activities, accountability, and evaluation methods. The importance of matching volunteer interests and talents to organizational needs is not only a recruitment goal, but is an ongoing process for retention. Onboarding, as distinct from hiring, is a process, a culture, a continuum, and not just an event that occurs at the front end of a volunteer firefighters 'career'.

Caution in selecting volunteer applicants.

It may be tempting for the fire service to accept any help that is offered. After all, the fire service is resource dependent and volunteers could be viewed as free labour. Though seemingly correct, this logic is based on false assumptions and misunderstandings. A volunteer firefighter based service is not founded on the concept of free labour.

If the volunteer fire service is to be effective it will require significant efforts in the areas of orientation, training, promotion, and materials. At the front end the fire service must pour a lot of resources and guidance into the volunteer in order to bring them to a point where they will be capable and effective. Resource-effectiveness for the organization is achieved when a volunteer can take the resources invested in him/her and return it multi-fold through the provision of a quality service for the public.

In order to get to that point, the fire service must first devote time, energy and resources in growing the volunteer. A volunteer fire department is well served to be selective in choosing volunteers who already have some other skills and experience that demonstrate their ability to fulfill the role of volunteer firefighter. Vetting during recruitment is required uncover any concerns.

Valuable resources will be wasted unnecessarily if the organization indiscriminately signs on volunteers and pours resources into them only to find out later that the volunteers are unable or become unwilling to fulfill their role as a team member. *GA* has seen this before where, the

euphoria of joining, based on a romantic idealism, is replaced by the reality of how challenging is the role of volunteer firefighter, with its physical and mental demands, and with the level of required commitment to the service.

Some Program Ideas to Boost Membership

Mutual-Aid Firefighter Program

So called Mutual-Aid firefighters is actually a policy that breaks down the silos of individual fire departments. It considers the manpower resources of all fire departments as a single pool of personnel, who should be available wherever they are needed. This approach is consistent with *GA*'s recommendation throughout this *Review*, in that no fire department is an island, and that all must work together.

As was noted in the prior discussion of work statistics, working away from your home fire district is an impediment to being able to be a volunteer firefighter. But many potential volunteer firefighters have dual lives. There is the time they are at home, and could respond to their fire department incidents, and then there is the times they are working in another area of the County, and could, if permitted, respond to support the fire department in that area. These are called, in some areas of the Province, mutual-aid firefighters. Seems like a reasonable concept.

Mutual-aid firefighters may assist in staffing during times when a department struggles with staffing, especially with skills like *Level I interior firefighters*. This idea could permit members of one department to "join" another department (dual memberships), but with restrictions because of the Society impediment.

This program focuses on fire department membership across the county in which, some members may work in another fire department's district on a weekly basis or a fire department member has property or cottages in another department's district for extended periods of time. i.e., summer periods etc. who would make themselves available during those periods.

There would be requirements of the mutual-aid member, to attend some training sessions to become familiar with the other departments equipment, operating procedures (ideally these would be the same across the county) and department members.

Junior Firefighter Programs

Some of the fire departments have a few junior firefighters. Junior firefighters are typically teens in the age range of fifteen to eighteen years.

A Junior Firefighter Program supports fire and emergency service departments by fostering relationships and engaging youth in learning about, and ultimately becoming, members of the emergency services. It is key to attract people into the emergency services while they are young so that they form a lifelong connection, whether as a first responder or as a community supporter.

Junior firefighter programs give youth the chance to learn about local fire, rescue, and emergency medical services response organizations in a safe, controlled, educational, and fun way while providing departments with an excellent recruitment mechanism in hopes of staffing the regular/senior department. One of the possible side benefits is that if the junior firefighter has a positive experience as being a member of a volunteer, team oriented, organization, they may decide to remain within their community if that possibility exists. It may also be an opportunity that diverts a youth from tending towards less desirable ways of passing their excess available time.

Even though Junior members may leave the community to further their education or employment, perhaps they will volunteer in another community. While here, the junior member contributed to their community and to the fire department.

The junior firefighter program is of such importance across North America that the National Volunteer Fire Council has developed and offers a developed *National Junior Firefighter*

Program[285] with information and tools to help fire departments develop, grow, enhance, and promote a local junior program. Resources available include;

- Training for departments and volunteers through the NVFC's Virtual Classroom
- Tools for departments to recruit for their junior firefighter program
- Information to start and implement a junior firefighter program
- Information to recruit for and promote a local program
- Tools to help potential volunteers get involved

The Manitoba Fire Commissioner's Office also provides[286] training materials for establishing a Junior Firefighter's program as well as training materials for Junior firefighters.

Recruitment Process.

The recruitment process needs to be a partnership between the municipality and the fire departments. The recruitment program needs to be a standardized process throughout the county with local flavourings and priorities considered. The program should ensure that successful applicants are assigned to the closest station to their residence. The recruitment process needs to commence with a properly designed marketing program throughout the Municipality.

The role of the municipality would likely include the application process, setting up interviews, arranging for Vulnerable Sector and Criminal background checks, driver abstracts, arranging for interviews with the applicant and the stations' panel, arrange and pay for a medical verification of physical fitness appropriate to the role applied for. Participation by a municipal Human Resource person is critical to ensure requirements of legislated selection process are adhered to.

Currently[287] the *Municipality of Cumberland County Fire Services* has an online website that provides information to individuals that are interested in becoming a volunteer firefighter, including a downloadable application form. Although this concept is generally a good idea, the

[285] https://www.nvfc.org/programs/national-junior-firefighter-program/

[286] https://firecomm.gov.mb.ca/support_junior_firefighter.html#:~:text=The%20Junior%20Firefighter%20Program&text=Junior%20firefighter%20programs%20give%20our,with%20an%20excellent%20recruitment%20mechanism.

[287] https://www.cumberlandcountyfireservices.ca/career

information contained thereon for recruiting and contacts is dated, does not follow adequate procedure, and *GA* was told is not authorized by MCC, although the home-page suggests otherwise.

Current State of Recruitment

During stakeholder interviews, almost without exception, fire chiefs reported that recruiting is a challenge and they are understaffed. This is immediately evident when the fire department registration documents are reviewed, and there are low numbers of *Level-1 structural firefighting capable firefighters* listed on the form. *GA* views this current situation as critical, and as an existential threat to the continuation of the volunteer fire suppression service in MCC. It is probably the biggest challenge for MCC at this point in time.

In Cumberland County, volunteers are required in each of its sixteen fire departments and two substations communities. Some communities are in need of volunteers more than others. Some of the reasons are demographics. Some of the reasons are likely related to how interest is developed in the fire department, a competition if you like with other interests. Some of the reasons are how the fire department is perceived in the local community; for which there may be one or more past events that colours this perception. Some of the reasons may be a loss of local identity, where the fire department has lost its central position in the community.

In every case, the local fire department, with assistance from MCC, is advised to do some thorough research in the community on all aspects of their profile, attractiveness, interest, and factors that either help or hinder the attraction and retention of suitable volunteer firefighters. It might be appropriate to engage professional assistance and support for this process. Any program growing out of this knowledge should include both a local and a County level approach to the solutions.

Recruitment Recommendations

Recommendation 146: GA recommends that Cumberland County coordinate and sponsor a needs assessment in each fire department with the objective of matching staffing and skill needs with current

membership. Consideration needs to be made to services committed on the fire departments' Registration, turnout percentage statistics, current membership numbers, current membership ages and physical fitness, and projections of future ability to maintain services. All task areas of fire department membership should be considered; i.e., those in supporting roles as well as front-line structural firefighters.

Recommendation 147: To ensure that discrimination and HR standards are met, and to ease the burden on individual stations, it is recommend that there be an annual recruitment process, managed municipally, with direct input and participation from each of the fire department stations.

Recommendation 148: GA recommends that Cumberland County should take the lead role in providing administrative and human resource expertise for managing firefighter staffing resources.

Recommendation 149: GA recommends that Cumberland County consider the value of supporting and promoting a Junior Firefighter program for each of the volunteer fire departments.

Recommendation 150: GA recommends that Cumberland County promote and support the utilization of so called mutual-aid firefighters between the fire departments in MCC.

RETENTION:

Retention is a critical challenge requiring a continuous effort on behalf of fire department management and each and every person of authority in the fire department. Officers and others in authority in each station must have the requisite human resource, They must have the soft skill leadership training and acumen to be able to manage and address the complex nature of not only the current volunteers but newer younger volunteers who reside and live in an environment that may be foreign to older officers and management. Leadership at all levels is crucial in managing retention.

Retention is the maintenance phase of the volunteer /organization relationship. This phase often focuses on communications; with individual feedback, recognition, and appreciation for volunteer efforts being essential. Appreciation can be expressed by a department t-shirt and a peer recognition of a job well done, annually or after a particularly challenging incident. As the saying goes, “little hinges swing big doors.”

If a volunteer displays a lack of engagement there are a couple of paths to assist in the retention of the volunteer. It is vital that the reason(s) for the loss of engagement are diagnosed. Only then can a specific effort be made to address the issue(s). They may be related to the organization, or that may relate to the volunteer’s private or work life. Some are controllable/addressable by the fire department, and some are admittedly not so much, although support is still possible.

The following paragraphs discuss some ideas that *GA* have found in the past to be helpful.

Providing a restorative break

Leave of absence should be an allowed safety valve for a volunteer firefighter that could benefit from a brief disengagement from obligation to the fire department. It is important that during the restorative break that a designated fire department person stay in contact and check-in on the firefighter during their away time. This will allow for easier re-entry and will send the message that the organization still cares about the volunteer as a person and not just because of what they

do for the organization. This should be done even if there is no guarantee that the volunteer will return.

The Critical Role of the volunteer Fire Chief

Capable volunteer fire chiefs know how to focus volunteer firefighters' time and energy on activities that have the greatest impact on the department's mission, its service to the community, and the life safety of its members and citizens. Much of this comes down to understanding the volunteer chief's role and how they can use their skills to support their members.

Capable fire chiefs, more importantly, know that the volunteer firefighter is a valuable, and fragile resource that needs care and support always, and at times very specifically.

A volunteer fire chief has one foot in the organization and one foot in the community. Chiefs must work to ensure the quality and appropriateness of services to the citizens by integrating community needs and concerns with how they manage the fire department. Chiefs achieve this through management and leadership of the volunteer firefighters, but must realize their ideas are likely to succeed only when the volunteers actually buy in.

A fire officer's role and responsibilities often have more to do with people skills than with emergency response roles. Often, a firefighter is promoted to an officer position, based on their success as a firefighter; their skills, their courage, their aggressiveness, their reliability. As the Peter Principle tells us, that is no guarantee of success in a promoted level position.

An officer must serve as a leader, manager, coordinator, enabler, change agent, capacity-builder, role model, human resource manager, facilitator, volunteer advocate, visionary and planner.

Increasingly advanced skills will be required of fire chiefs and all officers. Cumberland County should work with district fire chiefs to create a professional development plan and make the time to develop their own skills as well.

Valuing Volunteers

The most significant asset in any organization, is the volunteers. Stations, equipment and apparatus are indeed valuable, but really serve no value without staff to operate them.

Fire chiefs who manage volunteers must ensure that a motivational climate within the department creates a friendly and healthy environment. General praise is critical to team success. Chiefs must realize that they are a cheerleader for the department and the volunteers by maintaining their own enthusiasm for the efforts of volunteers.

Further, chiefs should look for and utilize additional talent and skills that volunteer members bring to the department that can help. Many department volunteers can have themselves, skills that are valuable to the organization as an organization. Wise chiefs are not threatened, but utilize these bonus resources.

Contributing, satisfied and well-managed volunteer firefighters will remain active longer. A successful fire chief will allow for more people to be engaged in the organization's management. Volunteers will want to make contributions if leadership will allow it.

Reasons most often heard why volunteers quit: It's not fun, I'm not appreciated, it's a waste of time, there were unrealistic expectations, there was too much drama, people were resistant to my ideas, I do not feel important, I can get this grief elsewhere, I don't need it here. These are more than likely the symptoms of a larger problem within the fire department related to a lack of leadership.

Everyone has value. This stems from realizing that there are different levels of value based upon personality, attitude and activity level. Effective leaders make volunteers feel that they are high-priority, valued members, and show respect for their individuality.

Volunteer retention studies and supported by information received from *GA*'s stakeholder meetings at each fire station, highlight a number of key expectations of the volunteer. All stated financial gain was not the reason for becoming a volunteer. However, in a regional setting they all expect the following and expect the region to provide the following.

- Inclusiveness
- Open two-way communications, they too have things to contribute
- Fair and equitable treatment across the county
- Recognize and value the volunteer's knowledge, skills and time
- Most firefighters said a simple "thank you" from superiors would motivate them.
- Celebrate department successes
- Recognition can be as small as a social media post.
- Officers need improved people skills
- Include members' families in recognitions
- Benefits can be both tangible and intangible
- Recognize administrative members for their contributions, not just firefighters
- Recognition needs to comes from the top but also from peers and officers

Training and Professional Development

Many volunteer joined to acquire skills. This seem especially evident in the last 10+ years. Some recruits would like to parlay their skills and experience as volunteer firefighters into a full time firefighters position. This is sometimes hard for established volunteer firefighters to accept.

GA heard from several new recruit volunteers that their level of frustration was building at a lack of coordination and quality to training programs that they were excited to be a part of, specifically the County's firefighter "Level-1" training program. Such comments mean that the firefighters' expectations were not being met, and at least one recruit mentioned quitting was likely because of that.

A segment of (in particular) volunteer firefighters want to be challenged, want to grow, want to have access to developing their skills and experience. Meeting such expectations is key to their retention. These are the firefighters that will pull the loads in terms of turning out to fires, doing heavy interior structural firefighting, being ambassadors in the community for others in their cohort, and so forth. The fire departments absolutely *cannot* lose these recruits, or risk damaging further recruiting, by not meet expectations. Establish quality professional development

programs, with hands on experience a key component, and then deliver. Talk the walk, then, walk the talk.

Retention Recommendations

Recommendation 151: GA recommends that Cumberland County develop a volunteer retention policy and program, that includes providing managers and officers with the appropriate skills to effectively manage volunteer firefighters.

Recommendation 152 : GA recommends that Cumberland County annually recognizes volunteer firefighters for their contributions to the health and safety of their communities. MCC could do this by funding and assisting with the organization of local community annual awards banquets, as well as public recognition by Council of important milestones, including; service awards (federal/provincial), outstanding actions, service anniversaries, retirements, and achievement of qualifications.

HONOURARIUM AND BENEFITS

Cumberland County, in their request for proposal, required *GA* to review and consider the desire by firefighters and apparent need for an honourarium program for the MCC fire service.

Honourarium Expectations

Honorarium was a component of the volunteer recognition for the two of the fire departments; in the former towns of Parrsboro and Springhill. These departments now find themselves under the umbrella of the County, when the towns were dissolved some 6-7 years ago. In stakeholder interviews by *GA* some members expressed a desire to have the honourarium program reinstated. There is also another volunteer fire department who fund raises to pay their members an honourarium.

When speaking with volunteers during the many stakeholder meetings for this *Review*, many firefighters spoke to the fact that it "*is not for the money why they volunteer*." A few firefighters expressed the opinion that honourariums would lead to attracting citizens to their departments for the wrong reasons. The major stressor relating to the topic of honourariums, is not having them but the expectation that if there are honourariums that it is based on value; i.e., a fair and equitable program across all fire departments. One that fairly and equitable recognizes levels of input.

One of the many issues facing the fair and equitable portion of the expectation of the equation is how the program is established and the rules surrounding what activities qualify to receive an honourarium.

Some honourarium programs are only incident response based. As the only measure of contribution, such a basis raises perceptions of inequality since although all firefighters are expected to put in many organizational hours and are required to be trained and ready to respond; if honourariums are only response based then only those in busy fire departments will get the

lion's share of the benefit. Honourarium then becomes a disincentive in those departments where fire protection is equally important.

Honourarium Definition and Intent.

An honourarium is a voluntary payment that is given to a person for services for which fees are not legally or traditionally required. Canada Revenue Agency has rules relating to Honoraria. Provincial rules state honourariums are to assist in covering expenses incurred by the individual volunteers during their volunteer activity.

The initial intent and objective of honoraria in the volunteer fire service was to cover out of pocket expenses for those individuals who actively participate in an emergency role. However, over the years it has become a tool to assist with recruitment and retention as well as recognition for the volunteer's time and dedication to the community.

Nova Scotia defines[288] a volunteer fire fighter as;

> *"Volunteer firefighter" means an individual performing services for a volunteer fire department who does not receive in respect of those services*
>
> *(i)compensation, other than reasonable reimbursement or allowance for expenses actually incurred, or*
>
> *(ii)money or other thing of value in lieu of compensation in excess of five hundred dollars per year or such other amount as prescribed by the regulations.*

And further[289] as;

> *"Volunteer fire fighter*
>
> *4 (1) For the purposes of the definition of volunteer fire fighter in clause 38A(1)(d) of the Act, a volunteer fire fighter is an individual who satisfies all of the following criteria during a taxation year:*
>
> *(a) provides fire services as a member of a volunteer fire department during the taxation year;*
>
> *(b) participates in at least 20% of each of the following activities during the taxation year:*
>
> *(i) responses by the volunteer fire department to emergency calls,*

[288] Nova Scotia *Volunteer Fire and Ground Search and Rescue Services Act*.

[289] N.S. Reg. 63/2008.

(ii) training sessions conducted by the volunteer fire department,

(iii) meetings held by the volunteer fire department."

The County has for a number of years recognized the local department fire chiefs by providing them an annual honourarium; ostensibly in recognition of the extra workload of the position. *GA* understands that the annual payment to the Fire Chiefs is approximately $1,000 and has not been adjusted for several years. Some fire chiefs refuse this honourarium. Some share it with other officers in the fire department. Anecdotally, one departments bills the County a higher amount, which the County pays.

Honourarium Complexities

The many differences in roles, positions, duties and responsibilities, and expectations across the many fire stations, creates many challenges. There are a number of factors that need to be considered in defining and developing a fair and equitable Volunteer Fire Service Honourarium Program that complies with the intent of the CRA and Provincial regulations such as:

- Position Role and Responsibilities
- On Call periods
- In House Training
- Out of Municipality Training
- Fire Related Communication meetings
- Public Events
- Fund Raising
- Committee service
- Use of Personal Vehicle for Emergency response and station activities
- Part time department employees who also serve as volunteers
- Manageability of the program
- Municipal Affordability
- Provincial rules
- Federal CRA rules

Honoraria are considered salary and thus, taxable income under the Income Tax Act. In the case where a gift is substituted for honorarium (gift in lieu of money), it is still classified as a taxable

benefit by Canada Revenue Agency. These rules must be taken into consideration in creating an honourarium program.

Emergency Services Volunteers - CRA

Under the Income Tax Act, a municipality may exclude reporting[290] through a T4 slip up to $1,000 from amounts paid to volunteer firefighters. The $1,000 exemption only applies if the amount paid for the duties that the individual performs is a nominal amount compared with what it would have cost in the same circumstances to have the same duties performed by a regular full-time or part-time individual.

The $1,000 exemption does not apply if the individual was employed in the year by the same public authority for the same or similar duties (such as a full-time firefighter who, from time to time, acts as a volunteer firefighter or rescue worker for their employer).

Individuals who have received a T4 slip minus the exempt amount may also qualify for the volunteer firefighters' tax credit. When the eligible individuals file their income tax and benefit return, they can choose to either receive an income exemption or claim a tax credit.

Pensionable and Insurable Rescue or Volunteer Firefighter Income

The Canada Revenue Agency has rules that specify when income earned from search and rescue or volunteer firefighting organizations is pensionable or insurable. As a general rule, volunteer firefighters are not employees and would not be considered engaged in insurable or pensionable employment. If, however, the volunteer is being paid to perform services, the firefighter would not be considered a volunteer, and both EI and CPP premiums would be required to be paid by the firefighter *and* by their employer, who could be deemed to be the County if they are the source of the payments.

[290] https://www.canada.ca/en/revenue-agency/services/tax/individuals/topics/about-your-tax-return/tax-return/completing-a-tax-return/personal-income/line-10100-employment-income/line-10100-emergency-services-volunteers.html

Honourarium Options

As stated previously, honourarium programs can be difficult to make equitable, and to manage efficiently without a lot of staff time involved, and extensive record keeping and vetting.

Honourarium programs that are meant to have a positive impact can also have an adverse effect if they are not adequately designed and managed, or they do not have sufficient meaning to individual volunteer firefighters. It is also, for some, difficult to accept the dollar value that the municipality can reasonably afford to place on them.

There are other options to that of honouriums; options that may have a better overall value, to more volunteer firefighters. These options include the perks and benefits that accompany being a volunteer firefighter. These can be powerful retention and recruitment assets.

The Value of Wage Replacement and Medical Benefits

Once engaged as contributing volunteer firefighters, and beyond the first blush excitement of having made it onto the team, it is important to understand that volunteer firefighters can fear losing everything they have managed to build in their lives if they are injured and cannot maintain their income/job and their health. This becomes especially important as the volunteer firefighter ages, marries, and starts a family. Volunteer firefighters will quit being a volunteer if they feel there is no consideration of, or provision for, their family's well being, in the event they themselves are injured or killed.

In Nova Scotia, Workers' Compensation Benefits are now mandatory for volunteer firefighters, although at the lowest level[291] of coverage. In addition to WCB benefits, Cumberland County should ensure that other aspects/strategies are addressed, including adequate supplemental benefits for those firefighters who stand to suffer financial and emotional hardship despite the WCB coverage. These other strategies should include consideration of adequate benefits in case of sickness, loss of life or disability, loss of employment, and mental health impacts on the

[291] If a volunteer firefighter has higher regular job earnings that are insured with the volunteer firefighter WCB coverage, the benefit paid will be based on the higher earnings loss. If not, it is based on the municipality selected benefit coverage.

firefighter, and importantly, on their family. Coverage objectives should be similar to that of a career firefighter, who faces no greater threats.

It should be considered that not all volunteer firefighters have the same economic earnings loss potential arising from a similar injury incident. Some volunteers have secure jobs as employees with medical and health benefits, and supplemental insurance benefits, including high level WCB insurable earnings.

Some members of the volunteer fire departments are not otherwise WCB insured or protected except as a volunteer firefighter, and that is at minimum coverage level. Retired, part-time, self-employed, or contract workers in their regular jobs are also volunteer firefighters; and they can lose their entire livelihood if there is not *adequate* supplemental accident and sickness benefits provided. These same firefighters could also benefit from off-duty coverage, as well as the current on-duty coverage. Such additional benefits could substantially help address concerns over injury consequences, and aid in retention of valuable members.

The province has also recognized through its WCB program what are called presumptive causes of certain firefighter diseases. In addition to cardiac illness, Volunteer firefighters are also covered under related WCB Regulation[292] for primary site cancers, provided they meet qualification requirements, which includes in part; a minimum 20% attendance at all activities of the volunteer fire department each year, including fire calls and training.

Mental health concerns for first responders is a big topic in the last 10 years. It is now recognized that volunteer firefighters are suffering mental health impacts from situations they are exposed to in the conduct of firefighting and rescue duties. Compounding this fire/rescue exposure to trauma is the response by firefighters to MFR incidents; where firefighters are also exposed to very ill persons in the community, many of them known to the firefighter, and sometimes repeatedly. No longer can physical impacts be the only visible health impacts of being a firefighter. Of course, the firefighter brings all this home to his family.

[292] *Firefighters' Compensation Regulations*, N.S. Reg. 166/2020.

Cumberland currently (2021/22 budget) does address some additional benefits by providing a $100,000 (principal benefit amount) of on-duty only, accident and sickness benefits through VFIS.[293] This protection includes wage replacement support, access to medical travel and treatment, and support to the family during treatment. It also includes death or disability benefits.

Death Benefits

Cumberland does not provide a lump-sum death benefit (i.e., life insurance), through a group policy, and that is another option to consider.

There is a provincial death benefit. [294] The Nova Scotia government will compensate for the death of a volunteer firefighter who is acting in accordance with their responsibilities, in the volunteer fire department of which they are a member; if death occurs

> "while responding[295] to an emergency, the Minister of Finance shall pay to the surviving spouse or domestic partner of the firefighter or, where there is no surviving spouse or domestic partner, the estate of the firefighter the sum of one hundred thousand dollars."

The Federal Government, through Public Safety Canada, has established the "*Memorial Grant Program*" for First Responders. This program

> *"provides a one-time lump sum, tax-free maximum payment of $300,000 to the families of first responders who have died as a result of their duties."*

Volunteer Firefighter Tax Benefits

The Nova Scotia Department of Finance and Treasury Board provides for a five-hundred-dollar non-refundable provincial tax credit for eligible volunteer firefighters. To be eligible individuals have to meet the attendance and other requirements under the *Volunteer Fire and Ground Search and Rescue Services Act* and associated *Regulations*. This requirement includes not having

[293] https://www.cviscanada.com/images/pdfs/On-Duty-Brochure2021.pdf

[294] Nova Scotia *Volunteer Fire and Ground Search and Rescue Services Act*.

[295] 'Responding' refers to acting within the firefighters responsibilities at an incident, and not just driving to the incident.

received any payments (salary, wages, compensation or anything in lieu of salary) outside of reasonable reimbursements or allowances for expenses, in respect of firefighting.

In addition to the provincial tax credit, a volunteer fire fighter is eligible to claim a federal tax credit[296] of $3,000, if the volunteer meets all of the following conditions:

- A person was a volunteer firefighter or a search and rescue volunteer during the year.
- They completed at least 200 hours of eligible volunteer firefighting services or eligible search and rescue volunteer services in the year. Note: This equates to an average of 16.7 hours of volunteer service per month, i.e. more than 4 hours/week.

The eligible services are as follows;

- Responding to and being on call for firefighting and related emergency calls as a firefighter
- Attending meetings held by the fire department
- Participating in required training related to preventing or suppressing fires

In addition, qualifying volunteer firefighter can receive annual registration fee exemption by the province on their personal vehicle.

Minor Benefits

Cumberland currently provides approximately $30,000 annually (2021/22 budget) for the fire departments to use for membership recognition events. This equates to approximately $100 per fire department member.

Cumberland offers a direct bonus to firefighters who achieve their NFPA-1001 Level I qualification or certification.[297] The amount is $600 for the achievement of qualifications and $1,000 for being Certified, to a combined one time maximum total of $1,000.

Fire departments also receive approximately $1,000 each, annually, for use in providing new members with uniform components.

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[296] https://www.canada.ca/en/revenue-agency/services/tax/individuals/topics/about-your-tax-return/tax-return/completing-a-tax-return/deductions-credits-expenses/line-31220-volunteer-firefighters-amount-line-31240-search-rescue-volunteers-amount.html

[297] See *Fire Service Qualifications, Certifications, and Attainment* starting on page *500*.

Each of the local department fire chiefs can receive from the County an annual amount to offset costs with the use of their personal cell phones for fire department business. This is in addition to their annual $1,000 stipend from the County.

Cumberland also directly funds (in addition to facility and fire vehicle insurance) liability insurance coverage for the fire departments and its members.

Other Opportunities for Recognition of Service

During *GA*'s stakeholder meetings with the volunteer firefighters, they were asked what options to an honourarium program that they would consider in recognition of their service to the community. A number of possibilities were presented as follows;

- Provision of dress uniforms for members
- Annual fire department awards banquets for members, friends and family
- Recognition of long service through a long service award program similar to that of MCC employees
- Additional insurance coverage and benefits

Benefits of Additional Insurance Coverage,

Benefit packages that support both the volunteer firefighter and the family are critical to retention programs. It starts with EAP, and continues with appropriate health benefits.

Recommendations

Recommendation 153: GA recommends that Cumberland County review the current honourarium being provided to the district fire chiefs in consideration of whether or not such honourarium adequately addresses the expectations of the County for the perspective of the administrative duties that the County expects from the fire chiefs.

The County already contributes to a number of modest benefit programs, but firefighter stakeholder feedback has indicated there is a need for more direct recognition.

Recommendation 154: GA recommends that Cumberland County develop a recruitment and retention policy that utilizes a combination of honourarium, cost reimbursement, and firefighter and family benefits

and incentives. Benefits could include access to firefighter EAP services, mental health coverage for members and families, life insurance, and enhanced accident and sickness benefits; among other concepts discussed in this Report.

The Municipality's firefighter lists and premium remittance is submitted quarterly to WCB. It is important that the list of active fire department membership is kept up to date, and that those on the lists meet the definition of a volunteer firefighter as defined by the *Volunteer Services Act*. The WCB remittance database needs to be reviewed and updated quarterly to avoid the cost of paying premiums on persons that are no longer by definition firefighters, and to avoid a new firefighter not getting just compensation if needed. *GA* noticed some disparities between fire department reported membership and the County's WCB lists of firefighters.

Recommendation 155: GA recommends that Cumberland County establishes with each fire department a procedure and mechanism whereby, at least quarterly, a live list of active volunteer firefighters meeting the requirements to be classified as active, is submitted to the County on time and for the purposes of ensuring that the quarterly submission of the list of WCB qualified firefighters is current and correct.

PROFESSIONAL QUALIFICATIONS AND STANDARDS (TRAINING)

Training Review

The Fire services Review requested a look into Professional qualifications and training standards, more specifically assess standards of existing department personnel to determine current and future training needs with consideration to documentation requirements and succession planning.

When an incident occurs, there must be a safe, effective and unified effort that minimizes damage to property while maintaining the safety of the public and fire fighters. This can all be accomplished by the application of and delivering of the appropriate, quality educational and training opportunities to enable the responders to deliver and meet the requirements and expectations of emergency services delivery standards. It is also a want of the volunteer membership.

It is important to understand the use of the following terms used throughout the *Report*.

Some Definitions

Appropriately trained and qualified: means having received specialized training designed to teach the skills necessary to successfully perform one's job.

Certification: is a voluntary program administered by a non-governmental organization? It grants the use of a credential to individuals for a specific period of time. The Certification is available to those who meet predetermined and standardized criteria for knowledge, skills, or competencies.

Competency: the ability to do something successfully or efficiently, competency is the capability to apply or use a set of related knowledge, skills, and abilities required to successfully perform "critical work functions" or tasks.

KSA's: Knowledge, skills and abilities acquired by a person through experience or education; the theoretical or practical understanding of a subject

Knowledge: is a familiarity or awareness, of something, such as facts (descriptive knowledge),

Skill: is the ability to do an activity or job well, especially because you have practised it.

Abilities: possession of the qualities required to do something; necessary skill, competence, or power, and the presence of mind to apply what was learned

OFM: Office of the Fire Marshal of Nova Scotia

Professionalism: an individual's adherence to a set of standards, code of conduct or collection of qualities that characterize accepted practice within a particular area of activity. It is not simply receiving renumeration.

Professional Development: A continuous process of training, education, knowledge, and skills enhancement.

Qualification: is awarded for achievement of a narrow body of knowledge with very specific learning objectives. This type of program often takes the form of a classroom learning experience followed by an assessment to determine if the desired learning goals and objectives for the training have been met. Qualifications typically have no recertification component. They are typically valid for life.

Standard: A document, the main text of which contains only mandatory provisions using the word "shall" to indicate requirements and which is in a form generally suitable for mandatory reference by another standard or code or for adoption into law. Nonmandatory provisions are not to be considered a part of the requirements of a standard and shall be located in an appendix,

Training Course: means a course of studies including practical skills training meeting established standards

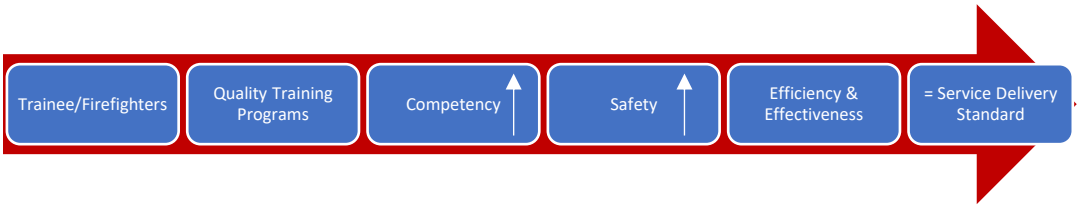
Training: is the structured approach to enhance someone's knowledge, this usually requires completion of prerequisite courses or on the job training where a worker is given the knowledge needed to apply theory into practice. Usually, it is the combination of both.

Stakeholder Feedback

Goudreault Associates recorded 201 attendees during the fire department stakeholder meetings held in December 2021. One of the most critical subjects discussed was training. Concerns over, type of, quality, training methodology, lack of local resources and travel were raised.

Good quality training can be a motivator. Appropriate training is required to not only enable the fire department to deliver and meet the expected service delivery, it also assists in increasing firefighter and occupant safety during emergency operations and could reduce WCB insurance premium rates for the municipality; through targeted operational training or safety programs.

Any increase in firefighter competency along with an enhanced safety culture and practices will enable the fire service to deliver and meet the expected service delivery standard for their individual department, while protecting the firefighter and citizens.



During the stake holders' meetings with the fire departments, it was apparent that there were those who had very little background or knowledge on National Fire Protection Association Standards, or Nova Scotia's Occupational Health and Safety Firefighter safety regulations.

The province of Nova Scotia's Office of the Fire Marshal has not established any training standards for the fire service. Therefore, training is left up to the local authority of jurisdiction (AHJ). Depending upon the Fire Service organizational structure and relationship with the

municipality it serves, the AHJ could be either the individual fire department or the municipality in which the fire department(s) reside and serves.

Standards

Within Nova Scotia there are basically two organizations that have in practice, adhere to existing recognized third-party agencies like NFPA, or have established some of their own training standards. Two are the Nova Scotia Firefighters' Training School and The Fire Service Association of Nova Scotia (FSANS).

The *Nova Scotia Fire Services Occupational Health & Safety Reference Guide*[298] establishes NFPA-1500 *Standard on Fire Department Occupational Safety, Health, and Wellness Program* as its base document.

The *Guide* stipulates;

> *"3-1.6 Fire department training officers should at least meet the qualifications for Instructor 1 as specified in 1041 Standard for Fire Service Instructor Professional Qualifications. However, in all cases teaching shall be conducted by a competent person in the subject being taught."*

NFPA-1500 contains a number of requirements in Chapter 5 - *Training and Education*, addresses fire department training, as follows'

> *The fire department shall establish and maintain a training and education program with a goal of preventing occupational deaths, injuries, and illnesses.*
>
> *5.1.2 The fire department shall provide training and education for all department members commensurate with the duties and functions that they are expected to perform.*
>
> ***5.2.1 All members who engage in structural firefighting shall meet the requirements of NFPA 1001, Standard for Fire Fighter Professional Qualifications.***
>
> *5.2.5 All fire officers shall meet the requirements of NFPA 1021, Standard for Fire Officer Professional Qualifications.*
>
> *5.3.3 The fire department shall develop and maintain a system to monitor and measure training progress and activities of its members.*

[298] Nova Scotia Fire Services Occupational Health & Safety Reference Guide Effective Date: 25/04/2003

5.3.4 The fire department shall provide annual skills check to verify minimum professional qualifications of its members.

An annual skills check should address the professional qualification specific to a member's assignment and duty expectation. As an example, a fire fighter is checked for skills required by NFPA 1001, Standard for Fire Fighter Professional Qualifications. A driver/operator would be checked for skills required by NFPA 1002, Standard for Fire Apparatus Driver/ Operator Professional Qualifications.

5.2.11 Fire departments can utilize instructors who are not necessarily trained and/or certified to the requirements of NFPA 1041, Standard for Fire Service Instructor Professional Qualifications. However, in using these instructors they should ensure that they are familiar with the fire department, its organization, and operations and, in addition, are qualified in that particular area of expertise.

1.4 Equivalency.

1.4.1 The authority having jurisdiction shall be permitted to approve an equivalent level of qualifications for the requirements specified in Chapter 5 of this standard.

NFPA-1500 further states that

"In no case should the equivalency afford less competency of members or safety to members than that which, in the judgment of the authority having jurisdiction, would be provided by compliance with meeting the requirements of Chapter 5".

1.4.2 The fire department shall provide technical documentation to demonstrate equivalency.

Fire Underwriters Survey

Part of the Fire Service Survey by the Fire Underwriters Survey (FUS) includes the review of the fire department's "auxiliary (volunteer)," i.e., their volunteer firefighters;

An auxiliary (volunteer) is a person who is not employed full time, for monetary compensation, for firefighting, but is trained and equipped as a fire fighter and available to respond to fire calls through a defined arrangement (ex. on-call).

FUS establishes minimum requirements for training level and minimum training hours per year.

Minimum requirements:

- Training/Fitness: Fire Fighter I per NFPA 1001 (as relates to providing structural fire protection) or equivalent AND trains a minimum of 48 hours per year (documented),
- Equipment: Personal Protective Clothing as defined in NFPA 1001.
- Availability *: lives and works in community and is available to respond to fires

* To be fully credited, on-call fire fighters (auxiliary/volunteers) should be located within a reasonable travel distance to the fire station.

NS Fire Safety Act

The *Fire Safety Act* established the Powers and duties of Fire Marshal

> *13 (1) The Fire Marshal may*
>
> *(6) With the approval of the Minister, the Fire Marshal may assist, including providing administrative support for, the work of a non-profit organization with a primary mandate that relates to,*
>
> *(c) training or certification of members of fire-suppression services, fire investigators, municipal fire inspectors or local assistants, or accreditation of such training or certification programs;*

The foregoing could be interpreted to mean that the OFM is able to approve the accreditation of a Municipality's developed firefighter training program.

Training and Learning

Albert Einstein once said, "*Education is not about learning of the facts, but the training of the mind to think.*"

Fire Service Needs

The fire service needs both training and learning, as they complement each other. Certain aspects of the firefighter's role will require more on the training equation that that of learning. Other skill sets, depending upon the fire service role, will rely more heavily on learning. But all fire service job functions and skill sets require a little of both to enable the firefighter to fulfill their mandate and community expectations. The community expectations, regardless whether the firefighters, career or volunteer, expect a professionally trained and qualified person to attend to their emergency.

The fire service needs to be risk averse. The fire service albeit career or volunteer, training is required to minimize the fire service and by vicarious liability the municipality's exposure to possible civil actions. Certain types of training are specifically designed and needed to minimize the risk to workers and the organization in terms of accidents, safety code violations, lawsuits and citizen complaints. In today's modern environment, organizations require diversity training,

training about sexual harassment, workplace safety training, customer/taxpayer service training and other quality initiatives can all help develop better work environment and services while minimizing any hazards along the way.

Traditionally fire service personnel trained only on how to respond, to emergencies, operate and maintain equipment. Now they must have the required skill sets to write training syllabus' policies, procedures, reports, read, understand and develop complex budgets and financial reports. In some roles, even legal documents!

Fire Service Qualifications, Certifications, and Attainments

Credential Creep is a term that over time focuses on credentials which in turn leads to an inflation of minimum requirements for a specific task. This is pervasive in the health care industry and has been creeping into the fire service for years. A mass move towards certification requirements has led to massive business opportunities for institutions and private organization. Certifications have been a result of numerous litigations against the fire service.

To maintain and retain volunteers who in today's society are working one or two jobs to make ends meet, raising families, the competing needs amongst school, sporting, and church activities and competition with other community volunteer organizations, who do not have the demands on personal time as the fire department is required to, it is challenging to maintain qualified, not alone certified community minded volunteers. If a volunteer knows how to operate a pump, he/she knows how to operate a pump. In a volunteer world what is the difference whether they are qualified or certified? As long as they have been trained to the standards of pump operation and tested to the Job Performance Requirements (JPRs) of pump operation and there are standardized records of training, and continuous training to maintain skill; there should be no issue.

During the stakeholder meetings on the topic of training there were a number of issues raised. However, the issue surrounding qualification versus certification was raised numerous times. The concern was the extra time and costs for certification. To assist in making a decision on

which level of training should be accepted by the Municipality's fire services, the single most important issue in determining whether requiring all volunteer emergency services courses be certified or not is the answer to the question "is certification really required and what is the beneficial difference between qualification and certification to the organization?"

Accreditation Bodies

Within the fire service there are two certifying and accreditation bodies, *The National Board on Fire Services Professional Qualifications* (the Pro Board®) and *The International Fire Service Accreditation Congress* (IFSAC®). IFSAC is a not-for-profit, peer-driven, self-governing system of both fire service certifying entities The IFSAC Certificate Assembly provides accreditation to entities that certify the competency of and issue certificates to individuals who pass examinations based on National Fire Protection Association (NFPA) fire service professional qualifications and other standards approved by the Assembly. The accreditation is made at the provincial, federal government, or territorial level for fire fighter certification programs. The IFSAC Certificate Assembly accredits the certification (examination) process of certifying entities. This includes evaluation of various elements of knowledge (written) and practical skills examinations,

Pro Board Accredits those public sector organizations (generally governmental or educational) that certify emergency services responders against the requirements of the Standards of the National Professional Qualifications System. Those Standards are promulgated by the National Fire Protection Association. They do not accredit training systems, programs, or curriculum. Their focus is directed at the testing process used by an eligible agency. They do not accredit for profit companies or concerns. The Pro Board accredits organizations that use the National Fire Protection Association's (NFPA's) professional qualification standards.

Certificate of Attainment

Recently there have been fire service-learning centers issuing *"Certificates of Attainment"* as opposed to a qualification or a certification.

What is a Certificate of Attainment?

A Certificate of Attainment requires a completed number of modules called *Job Performance Requirements* (JPRs) related to a subjects contained within a standard. A Certificate of Attainment is issued when a student completes one or more of these JPRs but does not complete the full list of JPRs required for a full qualification or certification.

In other words, a certificate is a record of successfully completed units of competency that are part of a qualification, but does not necessarily meet the overall requirements for a qualification.

For Example; NFPA-1521 *Standard for Fire Department Safety Officer* courses in Nova Scotia.

There are a number of MCC fire personnel who attended the Nova Scotia Fire School for two days to participate in a "Incident Scene Safety Officer Course", which is only *part* of the NFPA-1521 Standard. NFPA-1521 requires as a minimum, the student to have successfully completed and/or be certified to the NFPA-1021 *Fire Department Officer Level 1 Standard*. Prerequisites for the Fire School's *Incident Scene Safety Officer Course* includes the student having already achieved, as a minimum NFPA-1001 Fire Fighter Level 1.

NFPA-1521 *Standard for Fire Department Safety Officer* has a minimum of eighteen main JPRs, (skills/knowledge components), while the *Fire Scene Incident Officer* only requires completion of seven of those eighteen JPRs.

As a result, the institutions of learning cannot qualify or certify students in the standard due to the student only receiving instruction in seven of the required eighteen JPRs. Thus, the issuance of the "Certificate of Attainment".

Are Certificates of Attainment, all the same? Maybe not.

In keeping with the Incident Fire Safety Officer training issue, let's look at other facilities that offer Incident Safety officer Training.

Justice Institute of British Columbia

- Pre-requisites- 0
- Course Duration – 35 hours
- Recognition 2.5 hours credit (like a CE credit)

Newfoundland Justice and Public Safety

- Pre-requisites- NFPA 1001 – LII Certified
- Course Duration –40 hours
- Recognition – none

Nova Scotia Firefighters School

- Pre-requisites- 18 years of age, Active member of a recognized FD, FF Level I or Officer.
- Course Duration –16 hours
- Recognition - Certificate of Attainment

What are the benefits of the Certificates of Attainment?

The department may have a position need that requires fulfilling but do not have people available to take a full course, but are motivated to take such short versions as they may not have time nor interest in the full standard program but the abstracted program addresses the department need and motivation of the firefighter. The other issue could be that the fire department may not have the available funds to make the full standard course and qualifications/certifications available to interested department members.

However, certificates of attainment may not address any liability related to training and qualifications as a result of actions or non-actions of the department or individual who received the certificate of attainment. Especially, as we will discuss later in this *Report* on the variances of program content and durations.

What are the benefits of certification?

Professionalism has long been a goal sought by members of the fire service. It has only been within the past 25/30 years that a system has evolved to produce national professional qualifications standards that an agency can use to establish performance measures for personnel. Agencies that achieve either IFSAC or Pro Board® accreditation are recognized as having met the rigors of review by an independent organization. This third-party independent review is the

best way to assure firefighters and governance bodies that the agency's program meets the national standards.

The term "Professional" does not differentiate between career or volunteer, it refers to a person formally certified by a professional body of belonging to a specific profession by virtue of having completed a required course of studies and/or practice; whose competence can usually be measured against an established set of standards.

What is Certification?

Certification is a voluntary program administered by a non-governmental organization. Depending upon the subject It grants the use of a credential to individuals for a specific period of time. The Certification is available to those who meet predetermined and standardized criteria for knowledge, skills, or competencies. Testing is by a third party (Pro Board, etc.). Depending on the field of study, recertification after a prescribed period of time recertification may be required.

What is Qualification?

A Qualification is awarded for achievement of a narrow body of knowledge with very specific learning objectives. This type of program often takes the form of a classroom learning experience and some practical exercises, followed by an assessment to determine if the desired learning goals and objectives for the training have been met. Testing is typically administered by the course instructor or course agency. Qualifications typically have no recertification component.

What is Trained To?

"Trained to" is a term in the fire service that means an instructor in a specific subject, trained students to a certain standard. However, there was no method of ensuring the students in attendance acquired the specific knowledge or skills of the standard associated with the course attended. In other words, there was no testing or validation that either the instructor provided the

required information nor the student absorbed or acquired the requisite knowledge and skills. The student ends up with basically a certificate of attendance for attending.

The Review

The review required the municipality and the fire departments to provide current department training records and to complete a training survey indicating the various training received by its members and to identify whether the training was a qualification or a certification. Unfortunately, as a result of lacking and conflicting data, the review was not able to verify results. However, even though meaningful analytics was problematic, it was obvious training was conducted across the county in several areas.

The second part of the review was to determine what training courses that are needed to be certified if any. As a result of previous fire industry litigations and the potential for litigation and the need for stringent technical knowledge, it has been determined that there are three (3) identified fire service positions that require certification;

- Training Officers,
- Fire Department Safety Officers, and
- Fire Inspector/Fire Investigators.

In Nova Scotia there are a number of Fire Service course available to the fire departments and their firefighters at no cost, as illustrated below.

The following certification courses are available through the Nova Scotia Firefighters School (NSFFS), who are able to provide the training locally within the Municipality.

In partnership with the Fire Service Association of Nova Scotia through the Provincial Insurance levy, the following select courses are being offered to volunteer firefighters at no charge. NSFS is scheduling for in person classes (and select online also available) for 2022.

- 1022 - Introduction to Hazmat
- 1023 - Hazardous Materials Operations
- 2004 - Building Construction

- 3000 - Media Relations Awareness
- 3030 - Vehicle Extrication
- 3024 - Anhydrous Ammonia Response
- 3032 - Hybrid & Electrical Vehicle Considerations
- 3035 - Emergency Responders Traffic Management
- 3045 - Emergency Vehicle Driver Training
- 3207 - Fire Investigation - First Responders
- 4006 - Training Operations for Small Departments
- 4020 - Incident Scene Safety Officer
- 4030 - Managing Company Tactical Operations
- 4042 - ICS 200

Fire Fighter I & II

In addition to what is offered by the NSFFS, the Volunteer Firemen's Insurance Services (VFIS) offer over 575 on line courses fire and emergency services courses that one takes on their own schedule. Some of these courses are provided without a fee.

Do all volunteer fire department members have to be fire trained?

A review of the fire service needs and skill sets required may reveal that there are positions that do not require young viral physically fit, gun ho individuals, positions such as, Public Education, administration, radio operators, traffic control persons, occupational health and safety opportunities, truck drivers. There may be seniors or other persons within the community who do not desire to enter burning buildings or respond to car accidents or medical calls, who are looking to keep active and are willing to provide some time to a volunteer organization with previous skill sets and experience that can fill a void within the organization.

Traditionally, the majority of volunteer fire services required any and all members of their respective departments to be firefighters, then be trained in additional services offered by the department. This means answering the question, "Do all volunteer fire department members have to be fire fighter trained"? The answer is no.

Volunteer fire departments do need the majority of their membership to be fire trained so as to be able to deliver the department's core services; responding to, rescuing people and extinguishing fires or those services outlined in their annual fire department registrations.

Fire Service Functional Requirements

What types of functions/positions are required at the scene of a structure fire that are required to be firefighter qualified?

- Firefighters (Interior/Exterior)
- Fire Officers
- Incident Safety officer
- Accountability Officer
- Incident Commander

What are some of the functions/positions that are required at the scene of a structure fire that do not need to be required to be a fully trained firefighter?

- Apparatus Driver/operator
- Air/SCBA support person
- Command Post - radio communicator/scribe
- Firefighter rehabilitation support personnel
- EMS
- Traffic Safety Control
- Logistics

What are some of the other types of emergency services do some fire departments provide that do not require volunteer members to be firefighter trained?

- Water rescue, (Boat enthusiasts, SCUBA Drivers)
- Ice Rescue
- High angle rescue service
- Medical First Responders

Additional non-emergency Staff functions in which volunteers do not need to be firefighter trained but could be most beneficial to the fire department.

- Administration, Mgt of Records (data) and reports, budget, inter-government relations)
- Fire Prevention
- Maintenance/equipment testing
- Communications
- Research & Planning
- Community Relations/Public Information
- Financial Management
- Personnel Management

Regardless of the function/role of the volunteer, all volunteers will require specific subject/service training, skills maintenance and fire department orientation, and all persons in their specifically assigned role will need to be trained and qualified in their assigned role. However, taking the specific assigned role approach to training and learning, some of the traditional basic firefighting courses would not be required and thus make more effective use of allotted training funds and perhaps aid in department recruitment.

Observations and Feedback

Documentation

The first observation related to the review of Professional Qualification and Standards is the lack of appropriate training documentation. The training records that were provided and the requested training survey data, proved to be challenging in that there were variations and discrepancies. This resulted in the inability to conduct a proper and thorough analytical review. Some fire departments appeared to be better organized and training focussed that others, and their records were more complete.

The National Fire Protection Association's standard, NFPA-1401 *Recommended Practice for Fire Service Training Reports and Records*, requires training reports and records that are comprised of eight (8) sections, totaling thirty-five (35) recording elements.

The majority of required minimal records for training activities and individualized professional development records can be found in computer based fire records management systems (RMS). By having fire departments enter training and skills acquisition events and details into an RMS system, as the firefighters acquire such knowledge and practical skills, the fire departments will be in possession of excellent planning records, and a better understanding of the strengths and needs for their training programs.

For individual firefighters, they need a tracking method that allows them to see their progress in achieving KSA goals, for example in achieving *Firefighter Level I* qualification. Individualized booklets[299] that outline the job performance requirements, and tracks their individual achievements, is a good way to accomplish this, and can be used as evidence that the firefighter has achieved a certain level of ability, and is ready for testing and assignment. It is a morale booster and a motivator as well as practical.

Training Standards

MCC Fire Services Policy 300-01 (2009) establishes Firefighter Level 1 as the minimum firefighting standard, yet another MCC Fire Services Policy FS13-01 Firefighter Level One Incentive Policy, makes reference to a BFF (Basic Firefighter level 1) Certification or Qualification. Provincially BFF Level 1 Certification or Qualification is no longer referenced. Firefighter Level I, is the common reference to entry level firefighter training, and itself is a reference to NFPA-1001.

In earlier years the Nova Scotia Firefighters School offered a Basic Fire Fighter-1 Fire Control Course but changed the program to meet the requirements of the NFPA-1001 *Standard for Fire Fighter Professional Qualifications*; Firefighter Level I.

Standard NFPA 1006, Standard for Technical Rescue Personnel Professional Qualifications.

[299] Some excellent examples, and that *GA* has used in the past, can be found here: https://www.oafc.on.ca/practical-skill-sheet-booklets

NFPA in the nineties amended NFPA-1001 Level I competencies/qualifications/certifications to include skills and knowledge contained within NFPA-1072, *Operations* section (§6.2 and §6.6 only). The competencies defined would provide responders to motor vehicle accidents with the requisite skill sets, required in the referenced sections, so as minimize hazards while protecting themselves from potential harm from fluid leaks and spills, while wearing only their bunker gear.

Basically, the Haz Mat Operations §6.2 and §6.6 requirements provides one with the necessary skills to control fuel spills or anything that can be done in firefighting bunker gear. There is no plugging, no patching skills required as these are required competencies of a full Haz Mat Operational training program. The competencies in §6.2 and §6.6 include product damming, diking, and motor vehicle accident, clean up.

Whereas only two sections of the NFPA-1072 training standard are required to complete NFPA-1001 Level I firefighter program, any so called Haz Mat Operation courses solely provided to address §6.2 and §6.6 are non-core and non-accredited courses. However, they are required to obtain Firefighter Level I Qualification or Certification. These sections of Haz Mat training do require the participant to obtain either the NFPA-472 or NFPA-1072 Awareness level training.

The Nova Scotia Firefighters school's thirty-two-hour Haz Mat Course, for Level I Firefighters includes Awareness Level training as well as Haz Mat Ops Core training only covering §6.2 and §6.6. The Haz Mat course referenced here does not qualify anyone to be a Core Hazardous Material Responder as per the intent of the full NFPA-472 or NFPA-1072 standards.

Training/Courses Required by Incident Type and Fire Department Position

Due to the mere fact that firefighters are volunteers and their time commitment is strained, training requirements must be very judicious and only required on a "need" basis. Often the term "minimum" is used. This term must be used in the context of the actual training required to meet the need of the skill sets in order to perform the duties and tasks required of the particular volunteer's position and responsibilities within his/her organization. Safely, and effectively.

MCC Major Incident Types

A review of the majority types of incidents occurring within the Municipality boundaries are, in order of frequency:

- Wildland Fires
- Structure Fires and Pre-fire conditions
- Medical First Response
- Rescue

Initial and ongoing training should be focused on the needs of the community in addition to the foregoing types of incidents, there are requirements for officer, safety and additional emergency incidents that may occur within a community that a fire department has been approved to provide.

Time Commitment

Often, time commitment for training, especially if out of community travel and overnight stays is required can be burdensome.

A NFPA-1001 Level I firefighter qualification course requires a time commitment of 168 hours plus an additional 32 hours for Haz Mat Operations §6.2 and §6.6 for a total of 200 hours of volunteer time. If the course was spread out over several 16-hour weekends this would equate to approximately 12 weekends. Such a time requirement is very onerous for the volunteer recruit.

If the elapsed-time requirement to acquire qualifications is too ambitious, a department may discourage participation, and lose volunteers. Alternatively if the allowed time is too long, standards may change and the ability for the department to achieve sufficient qualified firefighters may not be met, with students chasing updated standards. A good balance is probably to allow a three-year period; a reasonable amount of time for a new recruit to become qualified as per NFPA-1001, Level I qualified.

Once a firefighter has obtained their Level I qualification, they are eligible to acquire a Level II firefighter qualification. This training requires an additional commitment of 80 hours or 5 weekends.

There are a number of agencies, associations and organizations that provide qualification recommendations for each of the positions within a fire department. These recommendations are general in nature in an attempt to cover a broad spectrum of communities and fire service organizations. The base line for any trained firefighter is the Level I.

In addition to the Level, I fire fighter qualification, there will be additional training requirements for the volunteer based upon the services and programs offered by the community fire department.

- Vehicle extrication
- Apparatus operator/driver
- Specialized rescue
- Medical First Responder and associated courses i.e., establishing Helicopter landing zones
- Proper Radio Communication Procedures
- DNR Emergency Wildland Firefighting Course (Formerly known as the Basic Forest Fire Suppression Course). This course is now a six-hour classroom program with a written test, no practical is required). *Note: In discussions with the Regional DNR Fire Tech, he will be offering this spring some practical training sessions and a Wildland/Urban Interface training program to MCC Fire Services Chief Officers.*

All positions within a fire organization require continuous skill and knowledge retention after initially obtaining their qualifications. This requirement is the mainstay of weekly training (aka practices) sessions for the volunteer fire services.

The Fire Service Association of Nova Scotia developed a set of minimum standards for officer qualifications and training to assist departments in determining what level of training and competencies are required by position. These are summarized in the following *Table 63*.

TABLE 63: SUMMARY OF FSANS STANDARDS

FSANS	Minimum Experience	Pre-requisite
Orientation Level (Phase 1)	0 – Required Pre-Training	Standard First Aid
Exterior FF	Can be Level 1 but does not feel comfortable with interior operations	Standard First Aid
Interior FF	0	Standard First Aid
Operations Lieutenant	2 years	-Level 1 trained /Qualified -Incident Command -Strategy & Tactics -Fire Safety Officer
Operations Captain	4 years	-Level 1 trained /Qualified -Incident Command -Strategy & Tactics -Fire Safety Officer
Fire Training Fire Training Officer	5 years	Level 1 trained /Qualified Recommended complete Instructional Techniques 1. A prerequisite for this course is Level I certified -Incident Command -Strategy & Tactics -Fire Safety Officer
Fire Safety Officer	4 years	Level 1 trained /Qualified -Incident Command -Strategy & Tactics -Fire Safety Officer
Chief Officers	5 years	Level 1 trained /Qualified -Incident Command -Strategy & Tactics -Fire Safety Officer -Fire Investigation Basic NFPA 921 within 24 months of election or appointment

Training Challenges

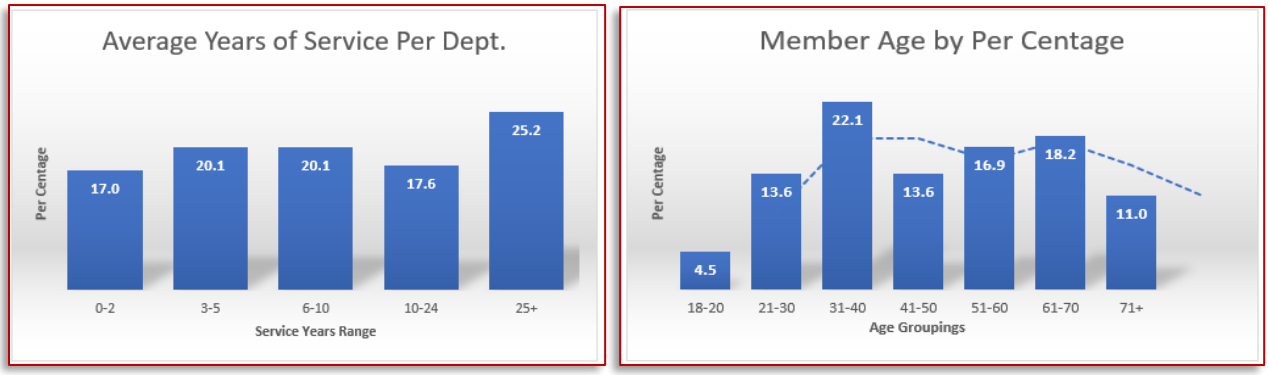
There are a number of challenges for the local fire service to conduct training, which mostly occurs during an average two-hour session one evening a week or twice a month. Providing training to those who need it, and yet keeping all of the attendees engaged, especially with members with a wide range in years of experience and age.

After completing the specific topic KSAs there is a need to focus on team exercises and developing team skills. Engaging experienced firefighters to assist with less experienced

personnel can go a long way in personnel and team development and meeting personal satisfaction needs of those involved.

Based upon a years of service and age survey, (44% return), the following is the average years of service for the area fire departments and percentage of member age.

TABLE 64: AGE AND YEARS OF SERVICE FOR CUMBERLAND VOLUNTEERS



Note: 29.2% of the firefighters are over the age of sixty. While 46% percent are over the age of fifty years

Table 64 points up the challenges of meeting the needs of the various levels of experience in the fire station. The challenge is how best to get, and keep, everyone interested and engaged.

Service years does not always equate to experience. Experience is related directly to a combination of years of service, number of responses to incidents, training and qualifications.

The secret is to instill within the training programs flexibility and different delivery methodologies that will be accepted by the different membership backgrounds and learning attributes. Experience may not be obtained by actual incidents, that is a bit of a crap shoot, but a good training program can provide highly simulated equivalencies.

Another challenge on the fireground is knowing who has what training and experience, especially with Mutual aid, is how does the incident commander or others know what qualifications that personnel on scene have? Of particular importance is who is a qualified firefighter and who is not. One option is the use of different colour helmets to distinguish the variation, this is a costly way to distinguish the differences. Other departments in other

jurisdictions use a more cost-effective and flexible method and that is the use of different reflective coloured stickers and or letters on helmets.

During the stakeholder meetings the issue of travelling long distances to training, especially for those stations that are considered outside the main stream locations of some of the other stations. The issue is the travel time involved especially after a long day at work, and then have to drive considerable distance to attend training sessions. The issue can be remedied by having more training delivered to these stations or alternate locations on a weekly basis or develop in house capabilities.

One of the major challenges for three fire stations is that they have no meetings rooms to conduct training. Two of the three are substations, Lorneville and Apple River, the third is Joggins. One option is the renting or leasing of a mobile office trailer.

Training Officers/Instructors.

The results of a survey by eleven respondents fire stations suggested that county wide there are ample fire training officers, as outlined in the table below to deliver training. The Training Officers could also be shared across the county, depending upon their subject matter expertise and availability.

TABLE 65: AVAILABLE TRAINING OFFICER RESOURCES IN CUMBERLAND

	Instructor Level	Trained To	Qualified	Certified
Fire Instructor	Fire & Emergency Services Instructor I	4	12	3
	Fire & Emergency Services Instructor II	0	2	0
	Fire & Emergency Services Instructor III	0	0	0
	Live Fire Instructor	1	5	0
	Live Fire Instructor in Charge	0	4	0

Training Quality and Motivation

During the stakeholders' meetings, attendees raised concerns over the quality of the training being received. There was even discussion about a couple of members leaving their department as a result of the poor quality of content and instruction. Not every firefighter is there to work at improving themselves. However, most start out that way, and one good way to keep (retain) them is to challenge them and provide opportunities for personal growth. Never stop learning is a common axiom in the fire services, and appropriate in a never changing and dangerous environment.

Training is a motivator and a team builder, firefighting and delivering emergency services is a team sport. The appropriate training delivered is critical to attendance and the enhancement of knowledge, skills and ability, (KSA), development, in other words the enhancement of competencies.

Training Methodology/Programs

Delivery of training and education is many faceted. The educational environment encompasses self-study, online programs, instructor lead classroom sessions, attendance at higher learning institutions such as colleges, accredited fire schools etc.

NFPA-1500: *Standard on Fire Department Occupational Safety, Health, and Wellness Program* requires all departments to:

- Prepare and maintain written policies and standard operating procedures that document training requirements,
- The fire department shall establish and maintain a training, education, and professional development program with a goal of preventing occupational deaths, injuries, and illnesses.
- Shall provide training, education, and professional development for all department members commensurate with the duties and functions that they are expected to perform.
- Shall Establish training and education programs that provide new members initial training, proficiency opportunities, and a method of skill and knowledge evaluation for duties assigned to the member prior to engaging in emergency operations.
- Shall develop a recurring proficiency cycle with the goal of preventing skill degradation and potential for injury and death of members.

- Shall develop and maintain a system to monitor and measure training progress and activities of its members.
- Shall provide an annual skill check to verify minimum professional qualifications of its members.

Skills and abilities require constant repetitive drills; both individual and team drills. The annual monthly average training hours per department based upon the data ranged from nine fire departments is 5.6 hours per month. The departments reported from a high of nine hours per month to a low of four hours per month. These hours do not include additional training that a department may conduct on a special weekend or day. Taking into consideration attendance requirement percentages and actuals, the average firefighter has access to fewer than the number of provided training hours. In addition, training is usually suspended for a month in summer, and for December.

There are a number of courses available on-line; including courses that lead to becoming certified. The programs still require time commitment for the students. However, depending upon the course or program the student is able they are able to proceed at their own pace and the comfort of the home, so long as they have a computer and internet.

Facilities

As stated previously, a good portion of training is conducted in the local fire station delivered by experienced firefighters with a training background. However, due to the nature of the business, field training exercises and out of classroom training experiences are essential to maintain individuals' skillsets and to build team-work.

There are two options to address this issue. One is to develop a training facility that has the ability for live fire training or the other is to use the provincial fire school's mobile burn unit. Previously there were scheduling issues for booking the mobile burn unit.

A local training area(s) for the county is needed to provide many of the practical skill sets required not only for the individual firefighter skill sets, but team skill sets, and inter station and mutual aid departments to practice joint operating procedures and inter departmental taskings

together. Distance between departments is a major issue in ensuring practical training is available.

GA has been informed that a number of years ago there was a movement to develop a practical training area in the Oxford area. This was a joint effort by the Town of Oxford and the County. A budget was approved and some work commenced. The County withdrew from the project for unknown reasons. Oxford Fire Department advises there is a small amount of funds remaining in the facility budget.

The current Oxford practical training area currently consists of a fire pad with fire water filters and is only used by the Town of Oxford fire department.

Pugwash has a shipping container that is used for some practical fire control training. It is unknown to the consultants if the structure and its live fire use is in compliance with NFPA-1402: *Standard on Facilities for Fire Training and Associated Props* or with NFPA-1403 *Standard on Live Fire Training Evolutions.*

Information provided, advised that a number of firefighters from MCC departments challenged the Firefighter Level I certification exam at the Nova Scotia Firefighters School. The challenge is focused mostly on the practical fire control of the certification. The challenge reportedly resulted in a high failure rate of Cumberland volunteers. *GA* does not know precisely what constitutes *high* in these anecdotes, but understand it was higher than the norm.

A practical facility, if properly designed, can meet a lot of the training needs of the fire service. However, due to the high risk of firefighter injury and liability associated with live burn scenarios, and given the associated costs of building and maintaining a live fire facility, that must be built, maintained and operated in accordance with NFPA 1402, and with the availability for the Fire School's mobile unit to travel to the area, the recommendation is to investigate and develop a training facility to meet the needs of the many practical skill sets and scenarios required and take advantage of the school's mobile burn units. Use of the mobile burn units will meet the needs of the local fire services, will be more cost effective and no risk to the department or municipality.

The Nova Scotia Fire School offers a number of non-accredited free courses at their facility. The courses available at no charge are:

- Introduction to Haz Mat
- Operations at Haz Mat incidents
- Vehicle Extrication
- Incident Scene Safety Officer
- Emergency Vehicle Driver Training
- Managing Company Tactical Operations
- Emergency Responders Traffic Management Guidelines
- Incident Command System, (ICS 100 & ICS 200).

In conversation with the Fire School management, almost any and all courses can be delivered locally. In some cases, they are able to fast track courses based upon need.

Free on-Line Courses

There are a number of online courses that could be taken, that are capable of supplementing fire courses, yet would be beneficial to fire department members, in particular Occupational Health and Safety Courses, as well courses that would aid officers or those desiring to become officers. In developing required skill sets in business and human resource management.

The *Occupational Health and Safety Division of the Department of Labour and Advanced Education* provides the availability of free safety training to the people of Nova Scotia. These courses are delivered, in partnership with the *Canadian Centre for Occupational Health and Safety* (CCOHS), and provide up-to-date and relevant topics in both health and safety. All CCOHS courses are available in both English and French. There are twenty-four (24) online courses to choose from.

The *Nova Scotia Department of Labour and Advanced Education* in partnership with CBDC, (*Canadian Business Development Corporation*), offers training programs[300] for non-profit

[300] The website is SkillsonlineNS https://www.coursepark.com/ns/assets/SkillsonlineNSCatalog_Final.pdf

organizations and their employees and volunteers at no cost. This program allows the building of a private learning area for an organization, allowing access to hundreds of need focused online courses.

Most courses take 20 minutes to complete. Some examples include:

- Microsoft Word
- Excel
- Human Resource Management
- NS Occupational Health & Safety
- Interpersonal Communications
- Financial Management
- Advanced Leadership Skills
- Social Media

Annual County Training Weekend.

Another tool in the tool box featured by many departments is the organizing and developing an annual training and symposium weekend. Such a weekend can involve invited subject matter experts from outside the area and an opportunity for all of the county firefighters to attend classroom plenary sessions and practical exercises. Such opportunities may allow for the testing operational procedures such as tanker shuttles or long pumper relays that may have not been practiced for a period of time and permit new members to participate who previously may not have had a previous opportunity to do so. It is understood that such weekends from time to time were conducted by some of the MCC fire departments.

These weekends promote camaraderie, the introduction of new and different trainers/instructors and topics. Such weekends are invaluable in building trust amongst fire services team members as well as an opportunity to meet and know newer members. There is an old fire service metaphor “It is always better to know your neighbor before you need them”.

Medical First Responder

Medical first responders (MFR) must complete MFR training through one of the EHS approved Medical First Responder training agencies - St. John Ambulance ($400) or Canadian Red Cross. ($500). Anyone who is 19 years of age or older, has successfully completed MFR training by an EHS approved MFR training agency, is a current resident of Nova Scotia, and is associated with an EHS MFR response agency. Each consecutive year, a fully sponsored EHS MFR agency is entitled to receive reimbursement for MFR training of two (2) persons at a maximum rate of $150/person.

MFRs are required over a three-year period to maintain their EHS/MFR competencies. Competency training is available free through EHS/MFR program. The program has the ability to provide the department a volunteer paramedic free of charge to deliver the required EHS/MFR training locally. For more information on the MFR program please refer to *Medical First Response* starting on page *293*.

Standard First Aid

For those firefighters that are not MFRs qualified or certified, they are required by the provincial MFR program to have a *Standard First Aid Course*. Of the eleven departments who completed the training data worksheet only three departments indicated fire departments members having this training.

Succession Planning

Succession planning is a process for identifying and developing new leaders who can replace old leaders when they leave, retire or die. Succession planning increases the availability of experienced and capable employees that are prepared to assume these roles as they become available.

The typical succession planning definition is achievable in a full-time work place where certain individuals are considered potential leaders and are targeted and placed on a career development path.

This is more of a challenge in a volunteer organization in which the top senior positions (Fire Chief or Deputy Chief) are elected on a pre-determined schedule (annual, biannual, or triannual), by the membership at large,[301] and often with very minimum requirements to qualify for the chance of being elected or in some cases no required qualifications. Succession planning in the true sense of the definition is not really achievable.

What is achievable is to ensure that the organization has programs in place that provide educational opportunities for those individuals with an interest to take on a leadership role. With clearly defined organizational goals, objectives, along with defined position requirements and opportunities for training and education to meet those requirements is really all of the succession planning that a volunteer organization is able to accomplish in an organization where the more senior position are elected and have the ability to oversee who receives the training and educational opportunities.

Municipality's Responsibilities and Abilities in Training Firefighters

There are provisions within the MGA §296 that permits municipalities oversight of fire services through policy implementation, more is discussed on this in *Ch 6: Governance* starting on page *374*.

There is no mandatory province wide standardized training program/curriculum. However, most voluntarily follow NFPA-1000 series firefighter training. In the absence of provincially recognized standards, the default becomes best practices, as established through a scan of the municipal peers. In general, such a scan will reveal that the standard of care is based in large measure on fire industry standards such as NFPA-1001 for training and development.

[301] Including in some cases non-firefighter members of the society, depending on the corporate by=laws.

This lack of provincial mandate has led many fire departments to develop their own programs, often in isolation of best practices or their neighbours. This may result in member departments of mutual-aid systems having different levels of training, leading to Incident Commanders lacking confidence in the abilities of the firefighters responding from other fire departments. This is currently happening in Cumberland.

Health and safety concerns for firefighters and the public Registration of a fire department does not ensure the fire department can competently provide the services it is funded for, or meet community service delivery needs or expectations

GA's interpretation of MGA §296 (2)(e) addresses the municipalities ability to enact by-laws for "*such other matters as are necessary and expedient for the provision of emergency services in the municipality*" as broad enough for municipalities to stipulate training and service-delivery standards.

Nova Scotia Fire Services Occupational Health & Safety Reference Guide Section 1.4-*Equivalency*, references NFPA-1500, and provides the ability for the authority having jurisdiction (AHJ) to determine and *equivalent level of qualifications*. As stated below;

> *1.4.1 The authority having jurisdiction shall be permitted to approve an equivalent level of qualifications for the requirements specified in Chapter 5 of this standard.*

The implication of this is that there is an ability for the County to determine what are the basic KSA needs for its firefighters, in order to have some confidence that at least that aspect of service delivery is addressed. In some ways, this reflects what was occurring in the County with the recent use of a County BFF training program. But it is uncertain that that program was consistent, adequate, or approved.

Development of a County program may address some concerns with firefighters who question the need-to-know aerial operations if they do not possess or own such a piece of equipment. However, there is much to be said for understanding how one can be useful, and how to work with one when it arrives at the emergency incident scene.[302]

[302] Note that NFPA-1001, Level I, does not require knowledge of aerial device operations.

So the question must be asked. Just because they themselves do not own an aerial device, what are the chances of either responding to and/or receiving mutual-aid where there is a situation, in which an aerial device may be employed as part of the incident operations?

The same discussion surrounds the training and operations of both rural water supplies and or municipal fire hydrants. One of the basic principals that run throughout this *Report* is that the individual fire department have to work together, and should be able to do so effectively.

Cumberland Training Data

Attached in *Appendix 11: Professional Development Profile, Current Firefighters* are tables containing the results of *GA's* survey of the fire departments in Cumberland to ascertain the current level of knowledge, skills, and abilities in the County fire departments. All sixteen MCC departments and the three departments who provide service under the terms of a service agreement were asked to complete the training worksheet. Eleven of the sixteen MCC departments responded to the data request, as did all three of the contract Fire Departments.

The fire departments were asked to identify the number of personnel that were training, qualified or certified to certain listed Standards based job performance requirements, for example; NFPA-1001, Level I.

The data for these tables was provided by the individual fire departments as noted in the table. *GA* is only reporting what data was provided. For those departments who indicated certifications for NFPA subject matter, verification was not requested.

There are a number of skills sets and subject matters that would not apply to all departments. The numbers in the table columns represent the number of personnel at each level of a Standard.

Summary and Recommendations

Training and experience are two ways that a person can become competent. However, simply sitting through a training session isn't enough. To be competent, a volunteer firefighter also needs to be able to demonstrate their capabilities to their supervisor or performance reviewer.

However, competency consists of a number of elements, of which training is only one. Others include skills, knowledge, experience, and appreciation and understanding of the task at hand, and include situational awareness of the surrounding environment, and a range of human factors such as behavioral safety and interpersonal communication. Clearly, training and/or qualifications alone will not necessarily mean that a volunteer firefighter, or a volunteer officer, is truly competent.

Nova Scotia Fire Services Occupational Health & Safety Reference Guide references Chapter 5 of NFPA-1500; *Standard on Fire Department Occupational Safety, Health, and Wellness Program*", which states as follows;

> *5.5.3 States- The fire department shall provide annual skills check to verify minimum professional qualifications of its members.*
>
> *5.6.1 states – All training exercises shall be conducted under the direct supervision of a qualified instructor.*

Each station should have its own assigned and qualified training officer with the responsibility to ensure standards and training needs are being met, and who can coordinate the training and educational activities with the station's training committee, if one exits.

A County-wide program, with homogenous training policies and procedures, with common goals and objectives needs to be implemented and managed. To assist in the development of such a deliverable it is recommended that an individual be provided to the organization to assist in the development and delivery of a county standardized training and personnel development program.

The organization must develop and implement quality, and meaningful, training with a schedule and flexibility not only in the delivery of the training but flexibility in how training is delivered. Training must prepare not only the responders but prepare the next generation of leaders through proper mentoring and succession planning.

Training is a critical aspect of safe and effective operations. It is the responsibility of the organization to ensure responders are trained/qualified or certified to the highest possible levels.

Education and Training should be focused on the fire services core business, its raison dè être. Fire Departments core business is the prevention of and extinguishment of fires, and the rescue of fire victims.

Other types of services offered are those being requested by local citizenry. Education and training should focus on its core business first until that is mastered.

It is axiomatic that an increase in training/competencies increases safety and lowers firefighter and citizen injuries. Quality training is also a motivator and a team builder. Training and education not only build confidence within the individual but the team as a whole.

The fire service must be the agent of positive change, not the victim of inevitable change. We must keep up with the changes around us while protecting our greatest resource: the volunteer firefighter.

Volunteer fire departments are always just one generation away from extinction. It's the job, as training officers, to make sure firefighters are prepared not just for today, but for the future, and to be attractive to new members.

But there is another concern: volunteers may be in jeopardy of becoming overwhelmed, not by fire-related tasks, such as structural and wildland fire fighting, but by myriad additional training requirements, such as first response medical, extrication, hazardous materials response.

Training is the biggest tool in the fire services arsenal in the recruitment and retention of volunteers. If training is not meeting expectations, volunteers will leave. If training does not meet the needs of the services provided or is of poor quality, people will leave the organization. Once these volunteers leave, they become the voice of the fire service and it will not be a positive one.[303]

[303] During stakeholder meetings *GA* was advised that people have left because of dissatisfaction with training quality.

Do the department's programs meet the needs of the individual volunteer? If it meets the needs of the volunteer then it should meet the needs of the department.

Are the training and educational programs available to all or at least to the specific needs of the various individuals based on position specific roles? Do the programs sufficiently challenge the individual volunteer, not too challenging for some and more challenging for others?

Successful operations require continuing education and skills enhancement training. All team members must make a commitment to lifelong learning. Periodic competency assessments foster deeper understanding of the skills and encourage individual pride through safely completing operational tasks and providing constructive feedback.

Recommendation 156: GA recommends that Cumberland County conduct a full and complete training need analysis and establish a priority list for addressing gaps.

Recommendation 157: GA recommends that Cumberland County review past downgrading incidents in the fire departments to determine if a targeted training program could enhance workplace safety and reduce the likelihood of future similar incidents.

Recommendation 158: GA recommends that Cumberland County engage either on a fulltime or part-time basis an individual(s) to provide training development, planning, and coordination. For new subject matter, this person could be a train-the-trainer resource.

Recommendation 159: GA recommends that Cumberland County engage on a part-time basis the available, qualified, and interested Certified Training Officers in Cumberland County fire department to assist those fire departments that do not have access to expert training leadership.

Recommendation 160: GA recommends that Cumberland County establish an education and training committee with fire department representation. The committee numbers should be at a level that the committee is manageable and effective, (i.e., Certified and Qualified Training officers), and be led by MCC staff. The purpose of the committee is to develop, recommend, research, and support a quality and appropriate training program for County firefighters. The first task is to develop an appropriate terms of reference.

Recommendation 161: GA recommends that Cumberland County establish a Policy that; as required by the Nova Scotia Occupational Health and Safety Reference Guide (25/04/2003) that all County firefighters who engage in structural firefighting shall meet the requirements of NFPA-1001; Standard for Fire Fighter

Professional Qualifications*, Level I or II, and shall have the demonstrated practical skills to engage in interior firefighting and fire control.*

Recommendation 162: GA recommends that fire departments continue partnering with the NS Department of Natural Resources *in obtaining practical skills in relation to* Emergency Wildland Firefighting Training*; and to facilitate fire officers participation in the DNR Commander courses, when they become available.*

Recommendation 163: GA recommends that Cumberland County assess the feasibility and need for revitalizing and further developing the Oxford training facility, or some other centrally located facility.

Recommendation 164: GA recommends that Cumberland County conducts an audit of the Pugwash live burn site to determine if it complies with NPFA-1402; Standard on Facilities for Fire Training and Associated Props*; and further recommends that there be a review of fire evolutions at that site to determine if they are conducted in compliance with NFPA-1403;* Standard on Live Fire Training Evolutions*. Failing either of these audits, it is recommended that the site be demolished or brought up to standard, or a moratorium on its use be implemented.*

Recommendation 165: GA recommends that Cumberland County implement an individual firefighter training-log booklet with sign off spaces. As the individual completes and learns each skill competency in a planned path of skill acquisition, a qualified trainer would sign off and date the firefighter log. The results of such a program is that over a period of time all of the competencies will become signed-off, and the individual can then decide to take on the qualification exam and/or challenge a certification exam if one exists, if they chose to do so. Such a log is also a proof of skills and competency.

Recommendation 166: GA recommends that Cumberland County investigate options to provide fire stations, who do not currently have adequate space and facilities to conduct classrooms training, with suitable facilities.

SOCIETY CODES OF CONDUCT, RULES AND REGULATIONS

As part of the scope of this *Review*, *GA* was asked to review and provide comment on the individual fire departments' codes of conduct and any rules and regulations that they might have. Although requested, no specific supporting documents in these areas were provided to *GA*. In lieu, a review was conducted of the registered bylaws, for ten of the sixteen volunteer fire departments, that were filed with the Nova Scotia Registry of Joint Stocks Companies. These were provided by MCC and reviewed by *GA*.

Three Departments

Within two sets of the fire department bylaws, there were references to "Discipline". These two sets of bylaws were almost identical in wording and provided for certain actions that could be taken in addressing issues with duties of all personnel, general duties, and other duties. Discipline contained within the department's bylaws is a mixture of fire department operations and operations of the society. There is little distinction between the two.

The above two sets of very similar bylaws, stipulate the Fire Chief is empowered to suspend any member of the department for willful misconduct, (not defined), or disobedience. However, another paragraph states "*when disciplinary action is required it shall be the task of the Deputy Chief, as the Disciplinarian of the department, to call a committee to review the matter*". It further states "*On conclusion of the review, the committee shall decide as to the appropriate action*". The foregoing appears to be in conflict with the Fire Chief's ability to summarily suspend.

One other fire department's society bylaw states the following; "*Any member may be dismissed for just cause in conduct detrimental to the welfare of the department*." Just cause is not defined.

Overall, and except for the above noted, it appears that the other departments do not have codes of conduct and or rules and regulations. It is possible some do, but not all fire department documents were received in time for the writing of this *Report*.

Recommendations

Recommendation 167: GA recommends that the individual fire department bylaws, as filed with the Registry of Joint Stocks, not address the provision of fire services in the County. Such bylaws should restrict themselves to the operations of the society as provided in the Societies Act, Schedule B, and not cross into areas where the County has jurisdiction under the Municipal Government Act.

Recommendation 168: GA recommends that fire departments should revise their bylaws to clearly define what constitutes unacceptable behaviours of members and should clearly indicate the consequences of such unacceptable behaviours, and where the authority lies and under what procedure that correction is to occur, for unacceptable behaviour. GA further recommends that for fire departments who do not act in accordance with their bylaws, the County may have Cause for the cancellation of the Registration of that fire department for the provision of fire and emergency services.

Recommendation 169: GA recommends that Cumberland County and representatives of the fire departments collectively and through a consensus process develop a comprehensive code of conduct and associated rules and regulations for fire service application County-wide. Such documents should be developed under the authority of the County as empowered in the Municipal Government Act, and application of the provisions therein will apply to all fire service members.

CH 8: HISTORICAL FIRES; OCCUPANCY, ORIGIN, CAUSE, SAVE/LOSS

This chapter looks at what the MCC historical records for the years 2016-2021 hold in relation to where fires have been occurring; the fire origins, the possible causes of these fires, and the fire departments success ratio with respect to proportion of property value saved.

The fire departments were requested by *GA* to provide information that they would have collected as a focus of their after-incident investigations. All fires are required by §32 of the *Fire Safety Act*[304] to be investigated in order to provide certain data to the Nova Scotia Office of the Fire Marshal (NS-OFM). The NS-OFM requests the data because; "*Fire incident reporting helps the Office of the Fire Marshal track information about fires that happen in Nova Scotia. This information supports the office's training and education programs, as well as required reporting processes.*"

FIRE INVESTIGATION IN CUMBERLAND COUNTY

Fire investigation, as mentioned, is a mandated activity after every fire. The person currently responsible for doing the investigation is the district fire chief, who is customarily appointed as a *Local Assistant to the Fire Marshal* by the Fire Mashal. The *Act* allows other members of the fire department to be delegated as Local Assistants by the Fire Marshal and to do fire investigations; indeed any qualified person may be appointed under §14 of the *Act*.

GA interviewed the local fire chiefs and they do own the responsibility for investigations. However, they also expressed that with time and energy expended fighting the fire, and with being responsible for the department during and after the fire; often they are not well motivated to spend more time the next day at a fire doing a detailed investigation. They lean on the Fire Marshal's office (NS-OFM), and have leaned on insurance company adjusters to provide investigation of some fires.

[304] https://beta.novascotia.ca/fire-incident-reporting-fire-services

The Fire Marshal's fire investigators will investigate fires, but only do a fraction of the province's number of fires every year. There must be a death, serious injury, very large loss, or suspicion there is something of provincial interest, for the OFM to accept doing an investigation. The catch is, in order to know if these triggers are present, some investigation needs to be done locally first.

In the six years of data that was provided to *GA*, the Fire Marshal investigated 19 fires. For 44 fires, the Fire Marshal's office was contacted by the fire department due to the circumstances of the fires meeting one or more criteria.

Insurance companies are motivated to avoid paying out dubious or fraudulent claims; which is understandable. Unfortunately, this can make them an inherently biased source for fire investigation services. Most use contracted services, who are generally competent. Fire investigation is a science, and must be conducted accordance to forensic investigation rules. Conclusions must be supportable in court, in a contest of experts and facts.

The RCMP is responsible for prosecuting Criminal Code offenders for arson. To do this they need evidence from a fire to build a case for prosecution. Usually, the RCMP work with the NS-OFM in obtaining this evidence, but only if NS-OFM accepted the fire for investigation.

Under the rules of the *Canada Evidence Act*, the police need probable cause to obtain a warrant before they can start taking physical evidence from the fire scene in a criminal investigation. If the NS-OFM is not involved in an investigation, then the probable cause must come from the fire department's investigator, who does not need a warrant.

Probable cause is most effective when it comes early in a case, and not 24-36 hours later after potential evidence is lost, destroyed or altered due to weather or human actions. It is also more valuable, and secure, if it comes from a credible source; i.e. a qualified fire-investigator. It is *GA's* experience that a successful fire investigation should start while the fire is still in progress.

Fire investigation is a professional skill, and takes considerable training and experience to become competent. This is a deterrent for Local Assistants (aka fire chiefs) to take on the role

that often comes with the position, a position that is won or lost annually through election in most fire departments. Not being skilled, competent, or experienced is a deterrent to getting a well processed and informed investigation that will withstand scrutiny.

For the average citizen who experiences a fire loss, the value of a solid investigation is the insurance company will more likely pay-out the loss. For the municipality, there is a value in the opportunity to focus fire-safety education and inspection programs appropriately. For the fire service, good investigation may identify commonalities in fires, for example; a reoccurring equipment deficiency, that might save a life in a future fire avoided.

Good investigation generates confidence in the fire service by the public and by insurance adjusters. Working relationships are thereby facilitated and built. It also discourages arson because those who might consider such an action will know that they will not escape detection.

***Recommendation 170**: GA recommends that qualified fire-investigators meeting the requirements of NFPA-1033, and who are certified to conduct investigations in compliance with NFPA-921, be retained by the County for the purposes of investigating all fires for their origin, cause, and circumstances. These persons could be part-time and supported in obtaining and maintaining their qualifications.*

Filing of Post-Fire Investigation Reports

The Nova Scotia Fire Marshal requires[305] that post-fire investigation reports be filed by the fire department with the NS-OFM within 7 days of completing a post-fire *incident* investigation.[306]

Of the 1,264 fire incidents that occurred in MCC over the 6-year period of data, *GA* has only limited data on what proportion of fire *incidents* were in compliance with this requirement. The following explains why.

Only 11 of the 16 MCC fire departments returned the workbook requested by *GA* for providing this information. These 11 fire departments had collectively responded as the primary fire

[305] Authority for this arises out of §13(1)(d) of the Fire Safety Act.

[306] https://beta.novascotia.ca/documents/fire-investigation-and-fire-scene-security-guide

department to 885 of the 1,264 fire *incidents* over the six-year period; i.e., as primary they were responsible for filing the post-fire investigation report.

Of these 11 fire departments, only 7 of the returned workbooks provided any information in this regard, and that information was limited in scope and did not address every fire *incident*. These 7 departments represented collectively 675 fire incidents, as the primary fire department.

Of the 675 fire incidents, 463 responses addressed whether or not a post-fire incident report was filed with NS-OFM. Of these responses, 224 incidents had a fire report filed and 239 had no report filed; i.e., roughly a 50/50 split on compliance with requirements, within the records reported.

Procedure for Investigating Fire Incidents

The NS-OFM requires all fires to be investigated where "*in respect of fires in the province attended by fire suppression personnel where property has been destroyed or damaged, where there has been a loss of human life or where the origin is believed to be incendiary*."[307]

In accordance with the *Act*, all fires meeting the above criteria must be investigated "*in no case later than twenty-four hours following a fire.*" In good practice, investigation commences while the fire is burning and continues thereafter. For this reason alone, fire chiefs are usually too busy directing firefighting to conduct fire investigations, at least initially.

Furthermore, "*(2) Where (a) there has been a loss of human life; or (b) the local assistant investigating the fire believes that the fire is incendiary or of suspicious origin, the local assistant shall notify the police immediately and the Fire Marshal within twenty-four hours following the fire.*"[308]

[307] In accordance with §32(1) of the Nova Scotia *Fire Safety Act*.

[308] §32(2) of the *Fire Safety Act*.

A fire department may[309] also notify the NS-OFM where "*(a) requires the assistance of the Fire Marshal with an investigation of a fire; or (b) determines that the Fire Marshal should carry out the investigation, the local assistant shall notify the Fire Marshal immediately or in no case later than twenty-four hours following the fire*."[310]

All of the requirements for investigating and reporting are included in the NS-OFM published guideline on the subject; *Fire Scene Investigation and Fire Scene Security Guide*, revised edition published in March 2020.[311]

As previously noted, 7 of the 16 MCC fire departments returned information related to post-fire investigations. In response to *GA*'s questions related to how post-fire investigations are conducted, the following information was reported by these 7 fire departments.

There were 304 responses as to whether the NS-OFM was contacted for assistance with the post-fire investigation. For 44 incidents the NS-OFM was contacted and for 260 incidents they were not; i.e., the NS-OFM was contacted 14.5% of the time within the reported data. This percentage is a reasonable split for incident falling within the criteria for notification and aligns with a reported approximate 13% of fires being determined as arson related in the County.

From the data received by *GA*, the NS-OFM came to MCC and conducted a post-fire investigation for origin, cause, and circumstances on 19 occasions during the six-year period. According to the criteria in the *Act* and in the *Fire Investigation and Fire Scene Security Guideline*, investigation by NS-OFM personnel is discretionary and not guaranteed, despite the criteria for requiring the fire department to contact NS-OFM having been met for a particular incident.

The fire departments that responded to this section of *GA*'s data query noted that the post-fire investigation was conducted by the fire department on 193 of the fire incidents. Summing the above data in *Table 66* reveals the following.

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[309] §32(4) of the *Fire Safety Act*.

[310] https://beta.novascotia.ca/documents/fire-investigation-and-fire-scene-security-guide, revised 2020

[311] https://beta.novascotia.ca/documents/fire-investigation-and-fire-scene-security-guide

TABLE 66: REPORTING AND INVESTIGATION STATISTICS

Row	Item	Count	Compare	Compare	Compare
A	Total Number of Fire *Incidents*, 2016-2021[312]	**1,264**			
B	Total number of FDs servicing MCC	**19**			
C	Number FDs responding to *GA* query by providing data	**7**	36.8% of row B		
D	Row C Fire Departments had primary responsible for how many fires?	**675**	53.4% of row A		
E	Number of fire incident records containing data, and reported to *GA*	**463**	36.6% of row A	68.6% of row D	
F	NS-OFM post-fire Investigation report WAS filed by fire department	**224**	17.7% of row A	33.2% of row D	48.4% of row E
G	NS-OFM post-fire Investigation report was NOT filed by fire department	**239**	18.9% of row A	35.4% of row D	51.6% of row E
H	Number of fire incidents where NS-OFM WAS contacted post-fire	**44**	3.5% of row A	6.5% of row D	9.5% of row E
I	Number of fire incidents where NS-OFM was NOT contacted post-fire	**260**	20.6% of row A	38.5% of row D	56.2% of row E
J	Number of fires for which NS-OFM conducted the post-fire investigation	**19**	1.5% of row A	2.8% of row D	4.1% of row E
K	Number of fires for which the fire department conducted the post-fire investigation	**193**	15.3% of row A	28.6% of row D	41.7% of row E

Conclusions from the Data

Some conclusion from the data presented in *Table 66* above are as follows.

Although not all fire departments responded to *GA*'s request for input, those that did had incomplete data. Regardless, there is a clear pattern of a significant number of post-fire investigation reports not being filed with the NS-OFM as is required. This proportion is in the vicinity of 50% of all fires, based on the direct responses as to whether or not a report was filed.

If it is assumed that the 41% of fire incidents, where the respondent fire departments did not report having records, actually represents a failure to report, then the proportion of fire incidents where the NS-OFM report is not filed as required for fire incidents jumps to almost 67%.

The truth is likely somewhere between these figures; i.e., between 67% and 50%.

[312] Data for Amherst responses in not included for 2016.

Looking at the post-fire investigation numbers, 193 investigations by the fire departments plus 19 by the NS-OFM are less than 46% of the fires for which the respondent fire departments provided some data. This suggests that a lot of fires were not actually being investigated at all, or only cursorily.

It seems reasonable to see a strong correlation between a high proportion of incidents not being reported and a high proportion of fires not being investigated, at least according to the data received. It seems apparent that there is a failure on the part of fire departments to consistently follow the NS-OFM requirements;[313] to promptly investigate and report all fires where there is any loss or damage to property, loss of life, or arson. It may be that there is a lack of suitable training and experience related to post-fire investigations within some or all of the fire departments.

This situation does not appear to be a recent phenomena. A scan of the data received by *GA* shows that the failure to investigate occurs in older records also. The incidents that were not reported to NS-OFM come from all years of the data.

The requirement to only report fires that cause loss, also does not appear to be a reason for not filing more reports with NS-OFM. Fires are noted in the data that did incur total loss of structures and vehicles, and for which a report was not filed.

MCC Results of Fire Origin, and Cause Investigations

Data on occupancy, fire area of origin, and fire cause was provided to *GA* by 6 of the fire departments. This is data that would be discovered during a post-fire incident investigation and was not intended to be created for the *GA* survey. The data presented to *GA* was incomplete; was not provided for every fire incident. Of the 1,264 fire *incidents*, data was provided to *GA* on 316 fires where the major occupancy was identified.

[313] As is required in §13 and §32 of the *Fire Safety Act*.

Defining Occupancy

Occupancy is the purpose for which a building, structure, or property is used. For structures that are regulated by the Building and Fire Codes an alpha-numeric Classification is assigned for each grouping of occupancies. These fall under six main Groups, with sub-groups where needed. The main Classification Groups are as shown in the following table; wherein Groups A, B, and F also have sub-classifications which are not enumerated here.

TABLE 67: BUILDING CODE OCCUPANCY CLASSIFICATIONS

Group	Occupancy Description	**Examples** (samples only, not an exhaustive list)
A	Assembly	Theatre, bowling alley, church, community hall, library, taverns, restaurants, schools, arena, grandstands
B	Detention	Jail, detention quarters, hospitals, care facility, hospital, nursing home, group home, hospice, respite centre
C	Residential	Private home, apartment building, boarding and lodging, college residence, hotel/motel, residential school, convent
D	Business and Personal Services	Bank, salons, barber, laundromat, doctor office, dentists, tool rental or repair
E	Mercantile	Department store, exhibition hall, supermarket, corner stores, shops
F	Industrial	Manufacturing or processing, hazardous storage, factories, recycle handling, hanger, truck depot, repair garage, service station, workshop, laboratory, warehouse, auto sales

Fires also occur in areas that are not structures regulated by the Building/Fire Codes. The following additional classifications have been adopted by *GA* for the purposes of shorthand coding these property classifications in which fires have also occurred.

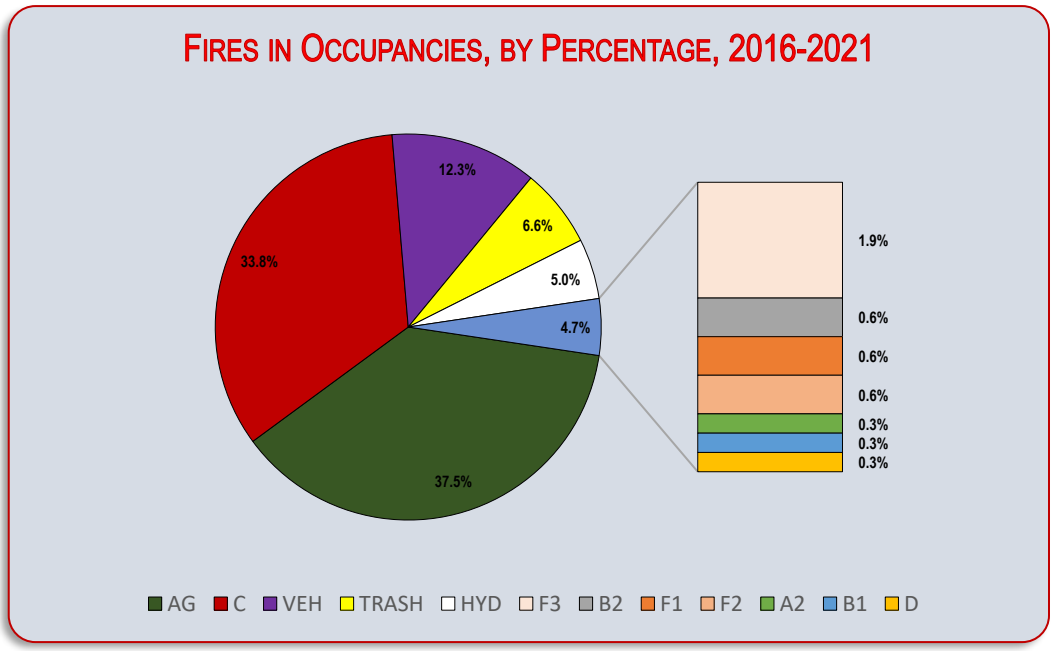
TABLE 68: ADDITIONAL OCCUPANCY GROUPS

Group	Group Description	**Examples** (samples only, not an exhaustive list)
VEH	Vehicles	Automobiles, trucks, farm equipment, mobile machinery, travel trailers, motor home, house boat, boats, vehicle parts, aircraft, train, RVs
CL B	Flammable/Combustible	Gasoline, diesel, propane, chemicals, plastics, rubbers,
AG	Agricultural / Wildland	Fields and crops, woods, wild-lands, grass, bog
GOODS	General goods	Finished products, textiles, food, clothing,
MISC STRUCT	Miscellaneous structure	Mailbox, fence, playground, shed, telephone booth, sauna, gazebo, donation box
HYD	Hydro	Electrical power infrastructure, including power poles, sub-stations, transformers, wiring
TRASH	Garbage	Bins, dumps, land-fill, garbage cans, accumulated trash,
MISC	Miscellaneous	Other miscellaneous structure or property

Where are Fires Occurring in MCC?

The following chart shows the frequency of occupancies/properties involved in fires in the years 2016-2021 in MCC, based on provided data detail. Data represents 316 fire *incidents*, reported by 6 fire departments.

CHART 20: BREAKDOWN OF FIRES IN OCCUPANCIES



The five leading property classifications that had fires were agricultural/wildland (AG), residential (C), vehicles (VEH), garbage/debris (TRASH), and power distribution infrastructure (HYD). Together these five classifications represent over 95% of all fire occurrences in the reported data.

When looking at the wider data received[314] from the fire dispatching services, including data from the 6 contributing fire departments, although without specific information on property/occupancy for many of the incidents, it is possible to make some larger estimates for all of MCC.

[314] Amherst data from 2016 is not included.

The following is estimated from the entire data set. If this data correlates substantially with the above percentages than it is reasonable to project the above pie chart percentages across the entire data set.

AG Fires:

Dispatched	Number
Grass / Brush Fires	344
Woods / Trees Fire	81
Bales of Hay Fire	7
Total	**432**
Percentage of total fires (1,264)	**37.7%**

According to *Chart 20* above, agricultural and wild-land fires are the most frequent type of fire occurrence at 37.7%. Of the total 2016-2021 fire *incidents* (including *incidents* for which the 6 respondent fire departments submitted data) there is the following breakdown of fires in this category, as shown in the accompanying table. It should be noted that *agricultural crop fire* is not an allowed choice of Response Type Dispatched in the incident/call data, and likely some of the "grass" fires are in fact crop fires. Correlation with the pie chart is close at 37.7% vs 34.2%; i.e., approximately +/- 10%.

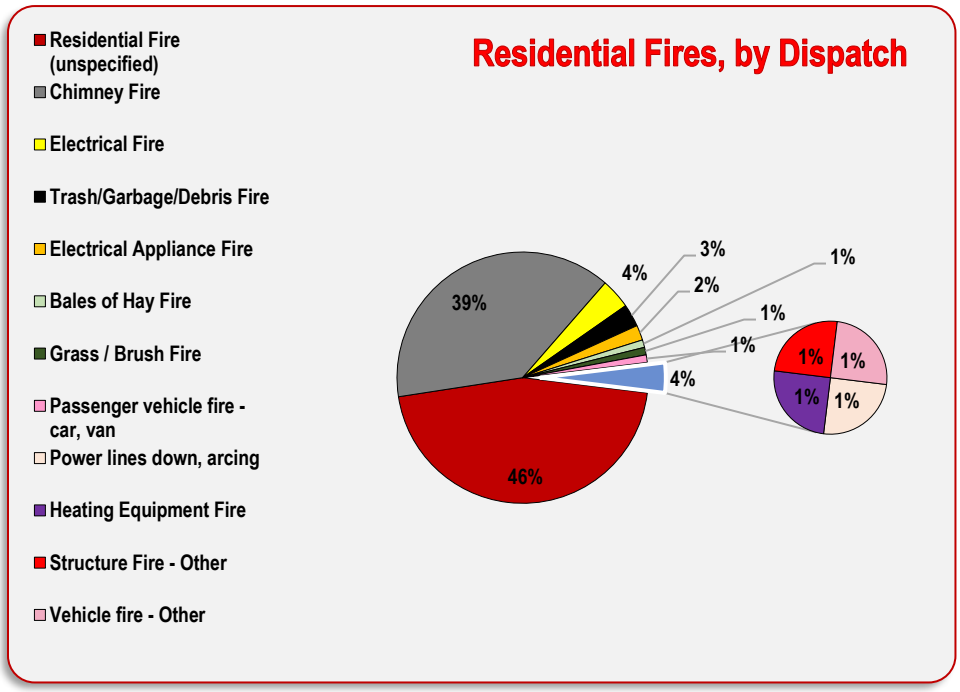
C Occupancy Fires:

Dispatched	Number
Residential fire (unspecified)	196
Chimney fire	167
Electrical fire	16
Electrical appliance fire	16
Heating equipment fire	4
Total	**399**
Percentage of total fires (1,264)	**33.5%**

According to *Chart 20* above, fires in dwellings (residences) are the second most frequently occurring fires in MCC at 33.5%. Of the total 2016-2021 fire *incidents* (including *incidents* for which respondent fire departments submitted data) there is the breakdown of these fires in this occupancy category, as shown in the accompanying table.

Chart 21 that follows, provides more detail on the Types of fires at the time of dispatching. It includes data from firs that exceeded 1% in occurrence rate, according to the dispatch data over the years 2016-2021. Data is displayed in percentages of total residential *incidents*.

CHART 21: RESIDENTIAL FIRE TYPES, BY DISPATCH INFORMATION

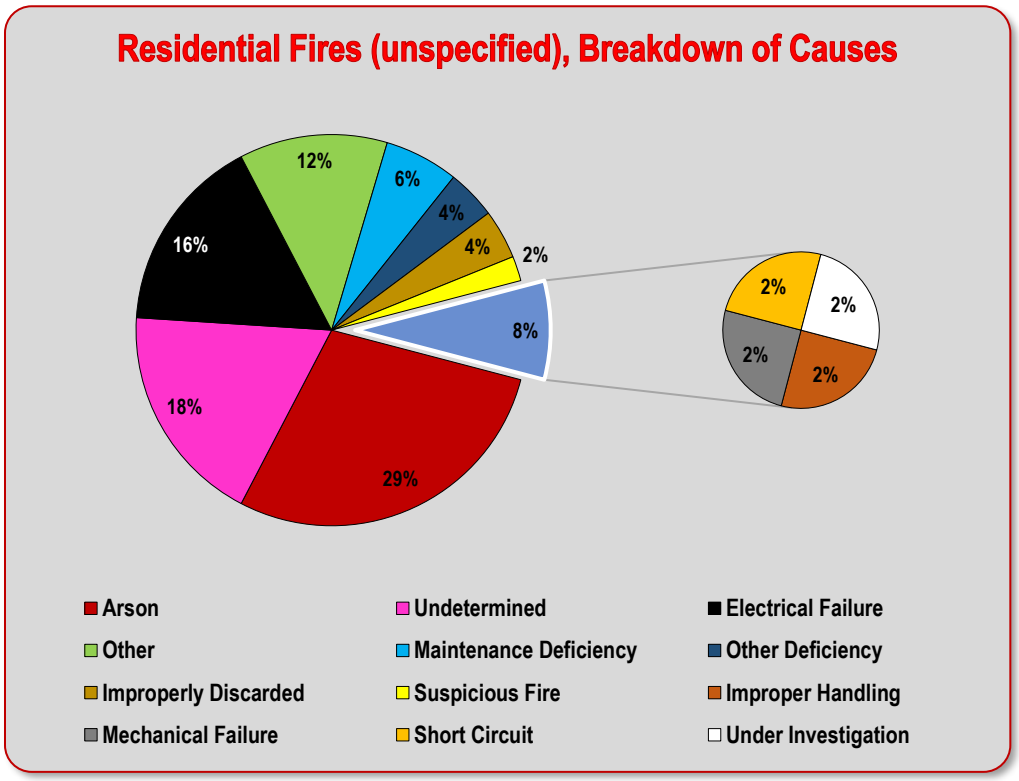


Some electrical and heating fires were verified as associated with a residential incident and are included here. There are other dispatched incidents in the data that are not included here and that are likely associated with dwelling fires, but with no means to verify their association, lacking the specific data. Correlation with *Chart 20: Breakdown of Fires in Occupancies* on page *555*, shows good correlation, at 33.8% vs the 33.5% in this Occupancy's breakdown tabulation.

The large proportion of generic residential fires that are *unspecified* in the chart above bears a closer examination. Using the information provided by seven fire departments, which included fire investigations for Cause on only 125 residential fires, *Chart 22* that follows shows what is revealed on the Causes that were determined for the Residential Fires (unspecified) *incidents*.

CHART 22: RESIDENTIAL FIRES, BREAKDOWN BY CAUSE

Arson is the leading cause of these fires, representing nearly 1/3 of those examined fires. Extending this percentage to include all residential fires in the database, it suggests that approximately 13% of residential fires could be Incendiary in nature.



VEH Fires:

Dispatched	Number
Passenger Vehicle fire	91
Vehicle fire – other	50
Commercial vehicle fire	24
Total	**165**
Percentage of total fires (1,264)	**13.5%**

According to *Chart 20* above, vehicle fires are the third most frequently occurring fires at 12.3%. Of the total 2016-2021 fire *incidents* (including *incidents* for which respondent fire departments submitted data) there is the following breakdown of these fires in this category, as shown in the accompanying table. Correlation with the pie chart is close at 12.3% vs 13.5%; i.e., approximately +/- 10%.

TRASH Fires:

Dispatched	Number
Trash/Garbage/Debris fire	88
Trash/Debris fire	4
Total	**92**
Percentage of total fires (1,264)	**7.3%**

According to *Chart 20* above, TRASH fires are the fourth most frequently occurring fires at 6.6%. Of the total 2016-2021 fire *incidents* (including *incidents* for which respondent fire departments submitted data) there is the following breakdown of these fires in this category, as

shown in the accompanying table. Correlation with the pie chart is close at 6.6% vs 7.3%; i.e., approximately +/- 10%.

HYD Fires:

According to *Chart 20* above, HYD fires (fires in power distribution equipment) are the fifth most frequently occurring fires at 5.1%. Of the total 2016-2021 fire *incidents* (including *incidents* for which respondent fire departments submitted data) there is the following breakdown of these fires in this category, as shown in the accompanying table. Correlation with the pie chart is not particularly good at 5.1% vs 8.5%; i.e., approximately +/- 50%.

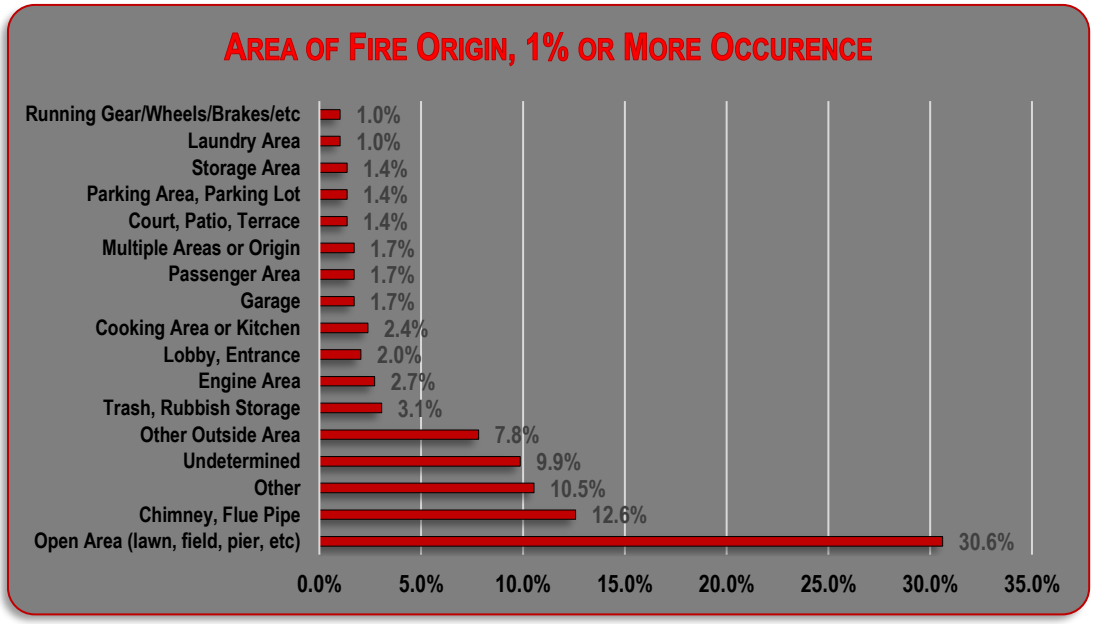
Dispatched	Number
Power lines down, arcing	55
Trees on lines on fire/arcing	26
Power pole on fire	23
Transformer of fire	4
Total	**108**
Percentage of total fires (1,264)	**8.5%**

However, in this case it is certain that the dispatch types in the data *only* apply to the HYD group of property, and the pie chart is apparently under-reporting occurrence rates. The pie chart is based on only the six responding fire departments submissions. Taking the entire data set at face value, this moves power distribution fires into place as the fourth most frequent type of fires, now ahead of TRASH fires.

Reported Area of Origin

Post-fire investigations seek to determine the Origin of all fires. The Origin is the location within a structure, or other property, where the fire is determined to have first occurred. It is not what started the fire, but where it started. The contributing fire departments to *GA*'s data request reported the area of Origin for 293 fire *incidents*. The following *Chart 23* shows the top 272 incidents' frequency of Origins; i.e., Origins with 1% or more occurrence rate.

CHART 23: BREAKDOWN BY FIRE AREA OF ORIGIN



There is good correlation between the frequency of AG fires as the most occurring fire type, and the most occurring Origin as being an "Open Area."

The almost 10% of Origin listed as "Undetermined" is relatively high and ranks fourth in Origin. This could be a factor associated with long response times resulting in far-advanced fires on arrival of the fire department that obscure the area of Origin, or at least makes it very difficult to determine without advanced investigation skills, tools, experience and determination.

MCC Fire Cause Determinations

Post-fire investigations also seek to determine the Cause of all fires. Cause is the fundamental reason that a fire started, for example; equipment deficiency, maintenance deficiency, misuse, arson, code violation, etc.

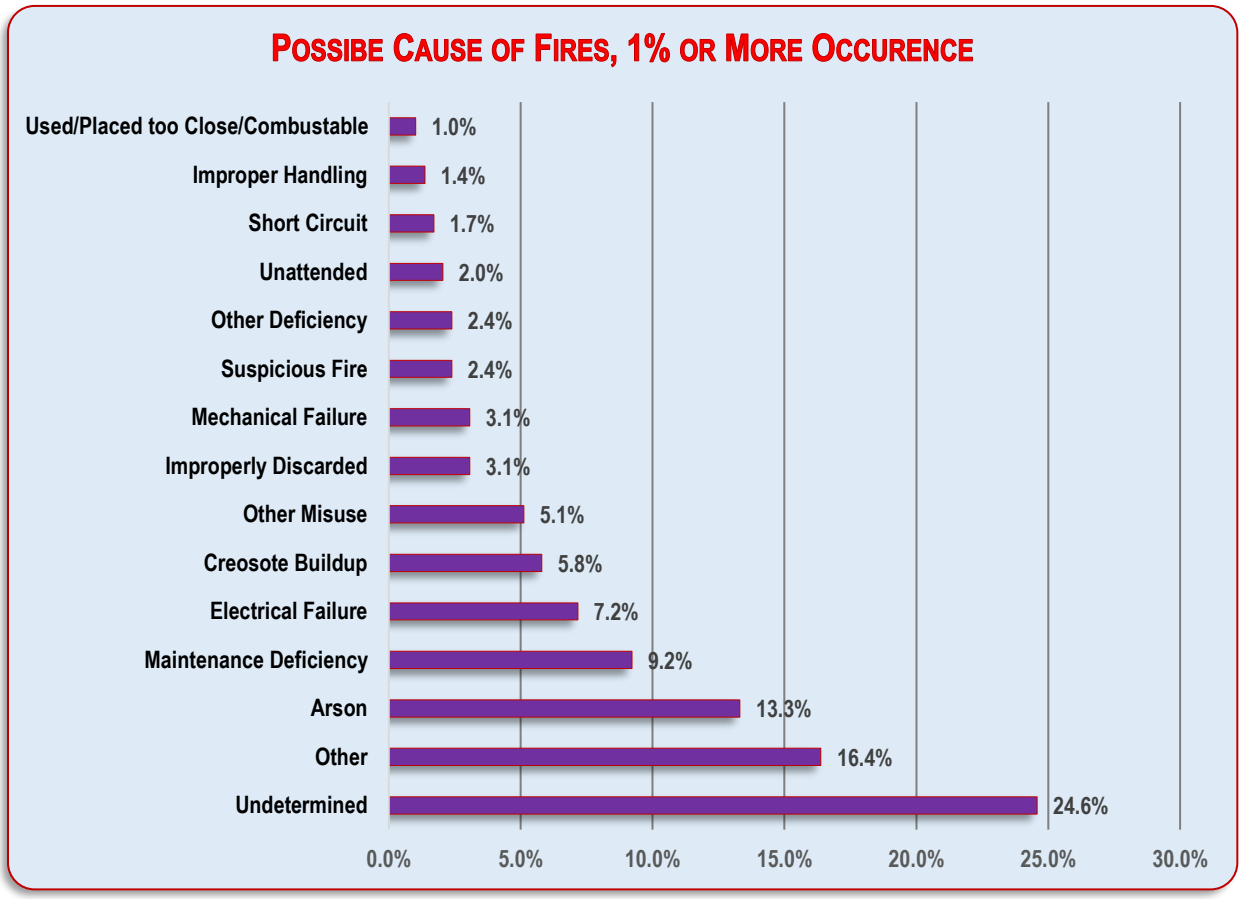
Cause can often not be determined with absolute certainty. Such a certainty of determination could be decided in a civil court of law, where the process would weigh all evidence and input and make a determination on a balance of probability, in lieu of certainty.

However, in the case of a fire department determination of the Cause of a fire, a civil court equivalent decision is not the test. Nor is a criminal "beyond all reasonable doubt" determination the test. The report to NS-OFM asks for the *Possible* Cause; determined basis a scientific process of examination of the fire scene, with evidence obtained where possible to support a conclusion or hypothesis, or to exclude alternatives. Often, the outcome is the elimination of all reasonable alternative causes until only one remains; i.e., the likely cause, a.k.a. the NS-OFM's *Possible* Cause.

Certainly a fire department fire investigator could be required to present and defend his methods and conclusions in a civil or criminal court, but that is part of the process. Consequently, the fire investigator needs to be experienced and competent, and to follow accepted methods and procedures.

The following *Chart 24* shows the 2016-2021 data's top 289 determined Causes of fires in MCC; i.e., the Cause with a 1% or more occurrence rate. Data comes from the 6 contributing fire departments.

CHART 24: POSSIBLE CAUSES OF FIRES IN MCC



Examining the chart, from the data received from the 6 contributing fire departments, 1 in 4 fires (24.9%) do not have a possible cause determined, they are "Undetermined." This figure is higher than *GA* expected. There are a number of possible reasons for this, including a reluctance by fire investigators to state their conclusion, a lack of skills and training, or possibly a lack of a designated investigator who could contribute to better closure in some of the more complex fires.

Recommendation 171: GA recommends that MCC establish an effective Policy on post-fire and explosion incident investigation.

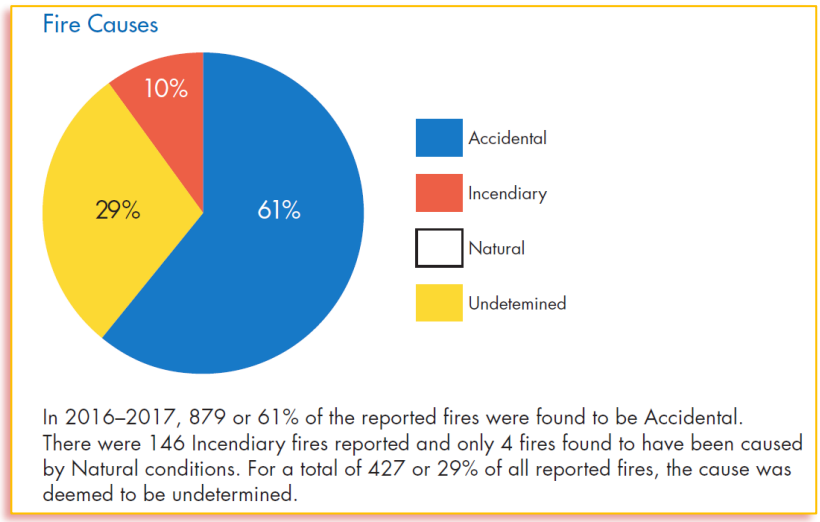
Recommendation 172: GA recommends Cumberland County develop a program for County-wide post-fire and explosion investigation; effectively resourced and supported through the retaining of trained, qualified, and experienced on-call investigators (part-time), and through the provision of the associated appropriate equipment, ongoing training, and support for the reporting of findings.

MCC Fire Cause Comparison to Provincial Statistics

Nova Scotia requires fire departments to submit post-fire reports and makes the resulting statistics arising from these submissions available in its annual reports. The apparent latest such public report[315] is for the 2016-2017 year.

From the NS-OFM annual report, the accompanying snapshot in *Chart 25* shows the top 4 Causes of fires listed in NS for 2016-2017.

CHART 25: PROVINCIAL BREAKDOWN OF FIRE CAUSES



The NS-OFM report explains these categories as follows; *"Fire Causes are divided into four categories. Accidental fires are those for which the proven cause does not involve an intentional human act and include mechanical/electrical misuse and failure, construction/design deficiency and misuse of ignition sources or materials. Incendiary fires are fires that are deliberately set with the intent to cause a fire to occur in an area where the fire should not be. Natural fires are those fires caused without direct human intervention or action and include fires resulting from lightning, earthquake, wind and flood. Undetermined fires are those fires where the cause cannot be proven to an acceptable level of certainty and include fires that are under investigation."*

In *Table 69* below, is a comparison of provincial vs MCC data on fire cause;

[315] https://beta.novascotia.ca/sites/default/files/documents/1-1452/annual-report-office-fire-marshal-2016-2017-en.pdf

TABLE 69: COMPARISON OF NS VS MCC FIRE CAUSES

Category of Fire	MCC Stats	NS-OFM Stats
Accidental	42.0%	61%
Incendiary	15.4%	10%
Undetermined	24.9%	29%
Other	16.4%	<1%

Dwelling Smoke Alarms

Installed,[316] functioning and maintained[317] smoke alarms are required in all dwelling units in Nova Scotia, including in MCC. It is the law. It is also good sense for the protection of life and property. The risk[318] of dying in a dwelling fire in Canada where there are *not* working smoke alarms is much higher than where there are working smoke alarms. Smoke alarm programs are a centre piece in almost every municipal public fire safety education program, and a strong focus for fire inspection efforts.

In the data received from 7 contributing fire departments, there were 69 records presenting data on the presence and functionality of smoke alarms in the structure, determined post-incident. *GA* is not aware of other data gathered, i.e., through a community survey program operated by the fire departments, of the presence of working smoke alarms in dwellings in MCC other than as was reported post-incident.

Not all of these smoke alarm records involved fire incidents. One incident was CO in the house (Hazard incident). 7 incidents were associated with Pre-Fire Conditions, including smoke in the building (chimney issues) and *not quite yet* fires due to cooking and electrical problems.

The balance of records were fires in Group A, B, and D occupancies. The majority (66 of the 69 records) of the occupancies were C occupancies consisting of single family detached and semi-

[316] National Fire Code of Canada §2.1.3.3, adopted by Nova Scotia *Fire Safety Act*.

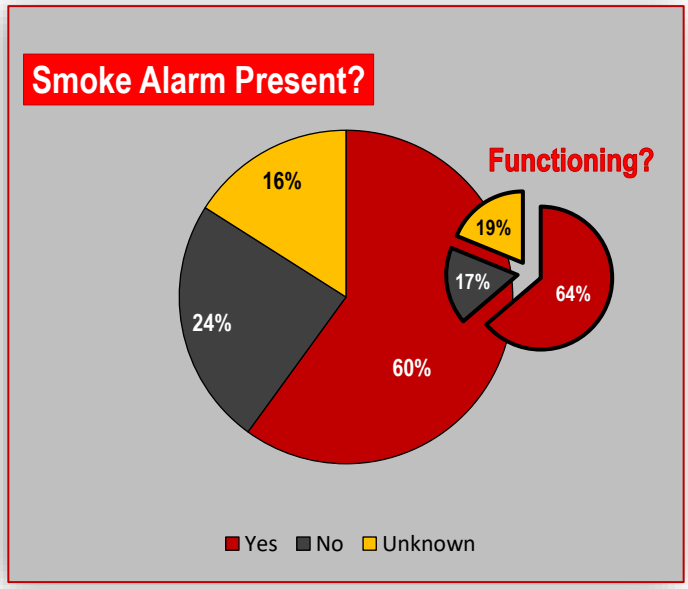
[317] National Fire Code of Canada §6.7.1.1, adopted by Nova Scotia *Fire Safety Act*.

[318] https://cjr.ufv.ca/wp-content/uploads/2018/04/Murdoch-University-Fire-and-at-Risk-Populations.pdf

detached homes and in multi-unit dwellings. The location where most fires occur *is* in homes. The most likely place to die or be injured in a fire *is* in your own home.

It is good practice to have fire personnel verify the presence and operability of smoke alarms in dwellings whenever they are in a dwelling, whatever the incident might be.

FIGURE 40: PRESENCE OF SMOKE ALARMS IN MCC



The MCC incident records contain only a tiny slice of information on fire incidents over the past 6 years. However, if the limited data is typical county-wide, and only 60% of occupancies have smoke alarms present; that means that a very high proportion of the population in MCC are gambling with their lives that they will not have a home fire, one in which a smoke alarm would be valuable in providing adequate warning of the fire; in time to escape safely.

In GA's experience, such a high level of absence of installed smoke alarms is a concern.

Furthermore, having smoke alarms installed is only part of the issue seen in the MCC data. The working condition of the installed smoke alarms is another issue.

Of the smoke alarms reported to be present, one third were not functioning. Computing the combination of percentages; altogether only 38% of the occupancies (for which data was provided) had working smoke alarms present. This relationship is illustrated in *Figure 40* above.

Of the occupancies visited by the firefighters to acquire this data, 66 of the 69 were homes, and every case of non-functional smoke alarm was in a detached dwelling. If correct, this is a very

low level of protection being provided by smoke alarms in homes in MCC. Such a low level of working and/or present smoke alarms in dwellings is usually of high concern for fire departments.

Recommendation 173: GA recommends that MCC develop an effective program to assess the degree that working smoke alarms are present in dwellings in the County. This program should also establish and implement initiatives and measurable goals to achieving smoke alarm compliance with legislation and risk, and also include a follow-up assessment of program effectiveness. The main goal is to achieve a high percentage of dwelling units with functioning smoke alarms. The program should be by nature a sustained effort by the fire service.

Fire Injuries and Deaths

In the contributed information provide by 11 fire departments, there were recorded the following injuries and deaths in relation to three fire *incidents* that occurred over the six years of the data. *Table 70* shows this data.

One of the fires was in an industrial (Group F2) occupancy equipped with multiple smoke alarms and resulted in injuries to two persons. The other two fires were in Group C occupancies that did not have working smoke alarms present at the time of the fires.

TABLE 70: CUMBERLAND HISTORICAL INJURIES AND DEATHS FROM FIRE

Year	Injury Adult	Injury Child	Fatality Adult	Fatality Child	Injury Firefighter	Fatality Firefighter
2016						
2017						
2018	1					
2019						
2020						
2021	2		2	4		

The data shows zero reports of firefighter injuries over the six years of data. This would be very unusual as it is common for minor firefighter injuries to occur in such a large dataset over the number of years involved. It is suspected that firefighter injuries are being under reported, or were just not included in the provided data which also did not include all incidents in the dataset.

All injuries, no matter how slight, as well as near-miss events, should be recorded as part as an effective loss prevention program. With volunteer firefighters now a mandated component of the

Municipality's WCB experience, such records and programs will become critical to keeping the cost of WCB premiums down, County-wide, and is key to protecting the health and safety of all fire service personnel.

Recommendation 174: GA recommends that a comprehensive and effective injury reporting system be developed and implemented to facilitate the identification, reporting, mitigation, and prevention of firefighter injuries while firefighters are engaged in all aspects of their duties.

Historic Loss Save Record

Four contributing fire departments submitted records of fire *incidents* spanning the six years of data review that included the value of fire buildings, value of contents, value of building loss, value of contents loss, and insurance status. Unfortunately, the records were for so few fire incidents, that no real conclusions can be made on the general effectiveness of the MCC fire service in their ability to save valuable property.

Table 71 does provide an overview of the limited data that was provided and analysed.

TABLE 71: MCC PROPERTY LOSS VALUES DUE TO FIRES

Item	Building ($)	Contents ($)	Total ($)
Value of Property	3,310,000	1,197,300	**4,507,300**
Estimate of Loss (total)	418,000	68,800	**486,800**
Estimate Loss, Uninsured (part)	148,000	17,300	**165,300**
Uninsured portion	**35.4%**	**25.1%**	**34%**
Save/Loss Ratio	**8:1**	**17:1**	**9:1**

Anecdotally, *GA* has heard that incident commanders are sometimes reluctant or unable to evaluate value and loss information after a fire. Estimating values is difficult without some sort of tools to assist. Not every firefighter has significant knowledge of the value of construction or of contents and therefore it becomes a burden to make what they consider an uneducated guess.

Recommendation 175: GA recommends that MCC institute a procedure requiring estimation and reporting of fire losses and pre-fire values by incident commanders and fire investigators. MCC should develop a tool to assist with estimating building and contents losses. This tool should be incorporated into a standard incident report (SIR) that is accessed online after the incident is concluded. Follow-up with the insurance adjuster should be included in this procedure.

FIRE PREVENTION

Fire prevention is out of scope for this *Review* although some mention of traditional fire prevention areas has inevitably occurred during *GA*s data analysis, and was therefore brought forward in this *Report*. Additionally, Fire Prevention is partly the responsibility of the fire departments, as things are arranged in Cumberland. The County only does inspections related to Fire Code enforcement activities, while the rest of fire prevention (public fire safety education, post-incident investigation) are mainly the responsibilities of the fire departments.

A deeper analysis of the connections between the activities of residents and fires is not explored in this *Report*. One challenge for anyone attempting this is that there are very limited resources available for further comparison with Canadian and Nova Scotian statistics that would facilitate the further investigation. The public reporting of statistics has apparently not, at least in recent decades, been a priority for the Canadian fire prevention industry, like it is in the USA. Even when the data exists, it is not readily available, again as it is in the USA. Notably, the last NS-OFM annual report that contains published fire data dates from 2016-2017.

The following links may be useful for research into what *GA* sees as critical areas for further study by MCC on fire occurrences and causes, and low installation/function rates for smoke alarms, particularly in dwellings. In *GA*'s opinion there is a need to identify community risks, develop preventative measures/programs and promulgate fire safety initiatives County-wide.

1. Fire Losses in Canada, Year 2007 and Selected Years, 2011, Mahendran Wijayasinghe, PhD, Manager, Research & Analysis, Office of the Fire Commissioner, Public Safety Division, Alberta Municipal Affairs
2. Annual Report, Office of the Fire Marshal. 2016-2017, Nova Scotia
3. Fire statistics in Canada, Selected Observations from the National Fire Information Database 2005 to 2014, 2017, Statistics Canada
4. Home Structure Fires, 2021, Marty Ahrens and Radhika Maheshwari, NFPA
5. Smoke Alarms in US Home Fires, 2021, Marty Ahrens, NFPA
6. Association between neighbourhood socioeconomic features and residential fire incidence, related casualties and children: a cross-sectional population-based study in 4 Canadian provinces (https://www.cmajopen.ca/content/cmajo/7/3/E562.full.pdf)

Despite external reference works and statistics, the reliable gathering of credible statistics for every fire event that occurs in MCC is a critical step in securing the necessary data on which to base future decisions. That does not appear to be currently occurring on a reliable basis.

Recommendation 176: GA recommends that a comprehensive standard incident reporting (SIR) system be developed and implemented for all fire protection activities in MCC. As well as collecting emergency response data, this system should also provide policies, procedures and methods that include collecting key fire prevention metrics in the areas of inspection-code compliance, fire investigation, and public fire safety education.

Provincial inspectors are responsible for fire inspection-code enforcement in higher-hazard Group A, B, C, and F occupancies across the province. These occupancies include housing for vulnerable persons, taller residential buildings (apartments, condos, etc.), and larger high-hazard process buildings. These occupancies would individually and collectively represent the largest fire and rescue challenges in any community.

Anecdotally, several fire chiefs reported that the provincial inspectors do not, nor does the NS-OFM, share their inspection reports or findings of deficiencies with the local fire chief, who is also a local assistant to the fire marshal and is part of the system. Some chiefs reported that they were concerned that this lack of knowledge by the fire department creates additional risk for firefighters and residents.

Also anecdotally, municipal fire inspectors, who inspect all other inspectable occupancies, also do *not* communicate their inspection results and findings with the local fire chief.

Recommendation 177: GA recommends that MCC forge relationships with the NS-OFM and MCC Inspectors to obtain fire inspection reports for all properties from which critical information may be extracted and disseminated to the local fire chief as appropriate.

CH 9: COMMUNITY DATA

The following were used as sources for information presented in this chapter on the communities in MCC; Statistics Canada 2016 census, MCC 2021 assessment database, MCC community information, and the fire service dispatch data for the years 2016-2021.

Community Groupings

TABLE 72: FIRE DEPARTMENTS AND THEIR SERVICED COMMUNITIES

Advocate FD	Wallace FD	Collingwood FD	FPW FD	Joggins FD	Five Islands FD
Advocate Harbour	Angevine Lake	Collingwood Corner	Brookville	Joggins	Lower Five Islands
Allen Hill	East Wallace	Farmington	Fox River	Lower Cove	Moose River
Allenville	Fox Harbour	Millvale	North Greville	Shulie	
Apple River	Kerrs Mill	Poison Lake	Port Greville		
Cape Chignecto Provincial Park	Malagash Centre	River Philip	Wards Brook		
East Fraserville	Malagash Mine	Williamsdale			
Eatonville	Malagash Point	Windham Hill			
Fraserville	Malagash Station	Wyvern			
Isle Haute	Middleboro				
New Salem	North Shore				
Red River	North Wallace				
Sand River	North Wallace Bay				
Spencers Island	Richmond				
Spicers Cove	Upper Malagash				
West Advocate	Wallace				
	Wallace Bridge				
	Wallace Grant				
	Wallace Highlands				
	Wallace Ridge				
	Wallace River West				
	Wallace Station				

Truemanville FD	Shinimicas FD	Tidnish Bridge FD
Hastings	Amherst Head	Chapman Settlement
Truemanville	Amherst Shore	Lorneville
Warren	Beckwith	Tidnish Bridge
	Lake Killarney	Tidnish Cross Roads
	Linden	Tyndal Road
	Lower Shinimicas	
	Northport	
	Shinimicas	

Pugwash FD	Parrsboro FD	Oxford FD	Leicester FD
Conns Mills	Cross Roads	Birchwood	East Leicester
Fountain Road	Diligent River	Black River Road	Mansfield
Gulf Shore	Greenhill	Hansford	Salem
Hartford	Halfway River	Jersey	Stanley
Miller Road	Harrison Settlement	Kolbec	West Leicester
Port Howe	Kirkhill	Little River	
Port Philip	Lakelands	Mount Pleasant	
Pugwash	New Prospect	Oxford Junction	
Pugwash Junction	Parrsboro	Riverview	
Pugwash River	Two Islands	Roslin	
Rockley	West Bay	South Victoria	
South Pugwash	Wharton	Thomson Station	
Wallace Bay		Victoria	
West Pugwash			

Springhill FD	Southampton FD	River Hebert	Wentworth FD	Westchester FD	Amherst FD
Athol Road	Athol	Barronsfield	Hart Lake	Cross Road Mountain	Amherst Point
Claremont	East Southampton	Lower Maccan	Lower Wentworth	Greenville Station	Brookdale
East Mapleton	Gilbert Mountain	Lower River Hebert	Mattatall Lake	Higgins Mountain	Chignecto
Glenville	Mapleton	Maccan	Streets Ridge	Lower Greenville	East Amherst
Leamington	New Canaan	Maccan Woods	Wentworth	Rose	Fenwick
Little Forks	Pettigrew	Minudie	Wentworth Centre	Stevens Mountain	Fort Lawrence
Rodney	Settlement	River Hebert	West Wentworth	Sutherland Lake	Nappan
Salt Springs	South Athol	River Hebert East (Strathcona)		Westchester	Upper Nappan
Springhill	South Brook			Westchester Mountain	West Amherst
Springhill Junction	Southampton				
Valley Road	West Brook				

There are 173 designated communities in MCC. Each is provided fire services by one or more of the 16 MCC fire departments, or by one of the 3 contract fire departments. Not all fire department districts neatly fit community boundaries. Communities listed above were gathered, as shown, under a predominant fire department for the purposes of this section of the *Review*.

Fire District Proportions

The following *Table 73* shows some of the information derived from MCC data for each of the fire department districts. Population is estimated basis Statistics Canada (StatsCan) residents per dwelling unit and multiplied by the estimated number of dwelling units. The population is therefore a peak number as if every dwelling unit was regularly occupied; i.e., ignoring seasonal variations.

Assessment is the total of all categories, including exempt, and is a measure of the value being protected. It is shown in multiples of $1,000. Areas shown are a measure of fire district size and may include some marine areas. Undeveloped lands, including the forest and arable lands, is an indication of the potential for wildland fires.

TABLE 73: FIRE DISTRICT BASIC STATISTICS

Fire Department	Assessment $k	Farm Area Acres	Forest Area Acres	Properties Count	Buildings Count	Dwelling Units Count	Peak Seasonal Population Est.	Fire District Area Km²	Fire District Area Acres
Advocate	69,001	2,086	89,603	1,390	457	457	967	544	134,425
Amherst	263,100	13,632	13,561	2,441	1,142	1,150	2,612	247	61,035
Collingwood	61,862	5,912	55,841	963	418	418	946	248	61,282
Five Islands	15,401	136	27,231	135	68	68	155	69	17,050
FPW	21,678	1,099	10,048	482	233	234	495	144	35,583
Joggins	32,067	143	46,080	526	252	252	533	173	42,749
Leicester	30,198	2,948	30,081	407	172	172	390	120	29,653
Oxford	79,602	7,049	53,662	1,344	557	559	1,259	256	63,259
Parrsboro	227,819	13,000	84,647	3,183	1,424	1,475	3,059	346	85,498
Pugwash	267,357	9,471	28,301	3,404	1,893	1,918	4,304	259	64,000

	Assessment	Farm Area	Forest Area	Properties	Buildings	Dwelling Units	Peak Seasonal Population	Fire District Area	Fire District Area
River Hebert	84,478	6,038	61,125	1,310	631	637	1,389	259	64,000
Shinimicas	140,339	11,123	32,973	1,941	1,059	1,067	2,422	223	55,104
Southampton	55,712	5,693	75,068	836	309	309	700	305	75,367
Springhill	228,151	3,780	56,040	3,181	1,922	2,164	4,920	312	77,097
Tidnish Bridge	112,672	2,727	32,311	1,662	917	915	2,077	172	42,502
Truemanville	46,425	2,468	16,055	443	260	259	588	76	18,780
Wallace	220,581	8,672	27,195	2,569	1,369	1,370	3,059	296	73,143
Wentworth	99,883	2,111	41,515	1,447	664	665	1,485	200	49,421
Westchester	55,976	2,808	58,677	947	375	375	837	262	64,472
Total:	**2,112,302**	**100,896**	**840,014**	**28,611**	**14,122**	**14,464**	**32,197**	**4511**	**1,114,420**
Average:	**111,174**	**5,310**	**44,211**	**1,506**	**743**	**761**	**1,695**	**237**	**58,668**

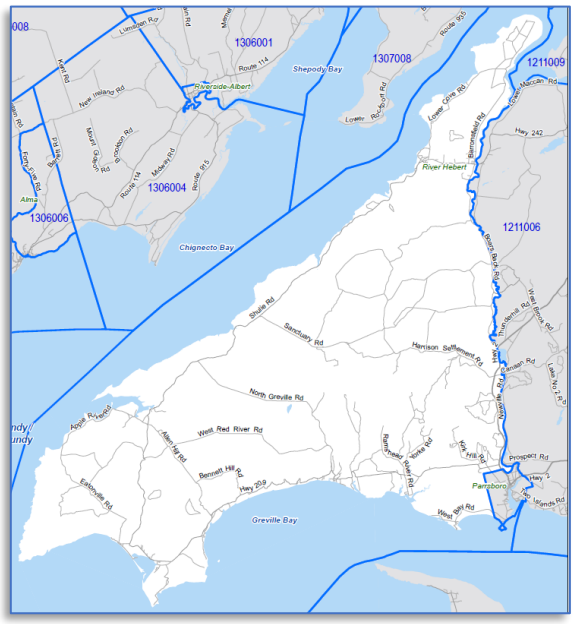
Statistics Canada Demographic Data

Although the 2016 Statistics Canada (StatsCan) census is now outdated, at the time of this writing the 2021 census and analysis has not been fully released and very limited data is available. Therefore, the following information is based on the 2016 census.

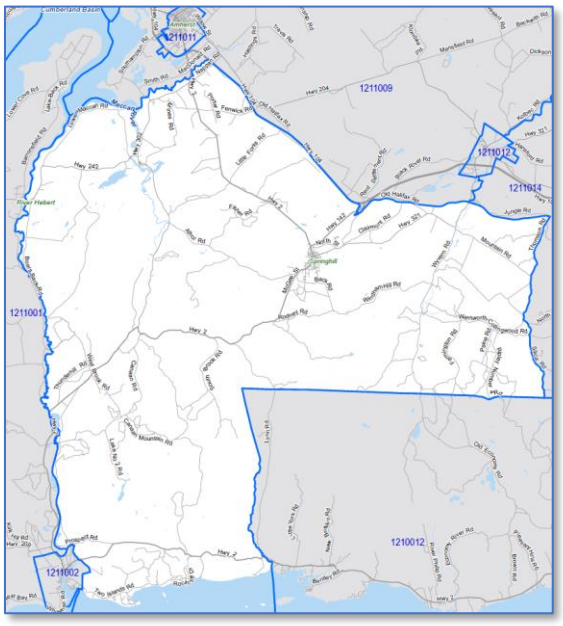
Cumberland County (MCC) does not fall all under a single census sub-division. It falls under four. The advantage of this is the ability to see the differences in demographics between each of the four quadrants. Parrsboro is treated separately in the 2016 census, because the data is pre-dissolution of Parrsboro. This then makes a fifth sub-division for practical purposes. Springhill was recently dissolved at the time the 2016 census data was being compiled so data for Springhill is also available, although its numbers are also included in one of the MCC sub-division totals. This may be the last census for which six different census data sets were available for analysis of MCC in toto.

The following 6 maps (*Map 13* - *Map 18*) show the StatsCan geographic sub-divisions breakdown of MCC.

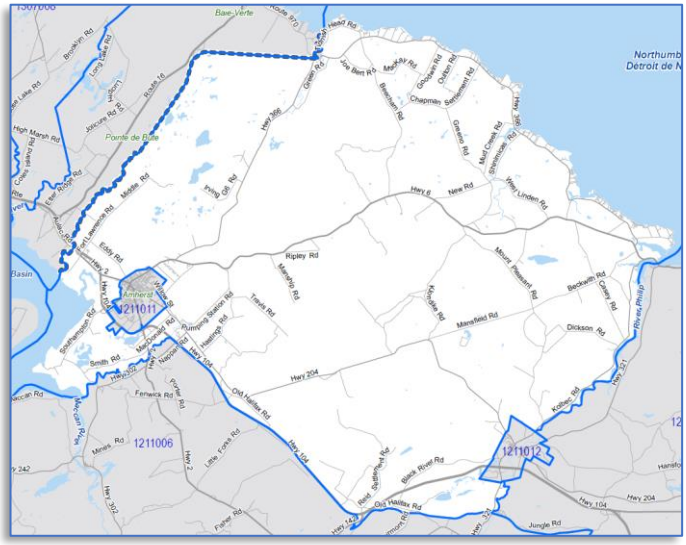
MAP 13: CENSUS SUB-DIVISION A



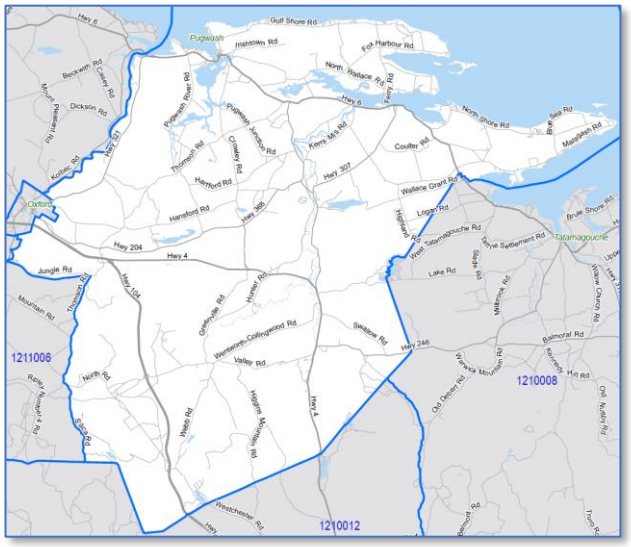
MAP 14: CENSUS SUB-DIVISION B



MAP 15: CENSUS SUB-DIVISION C

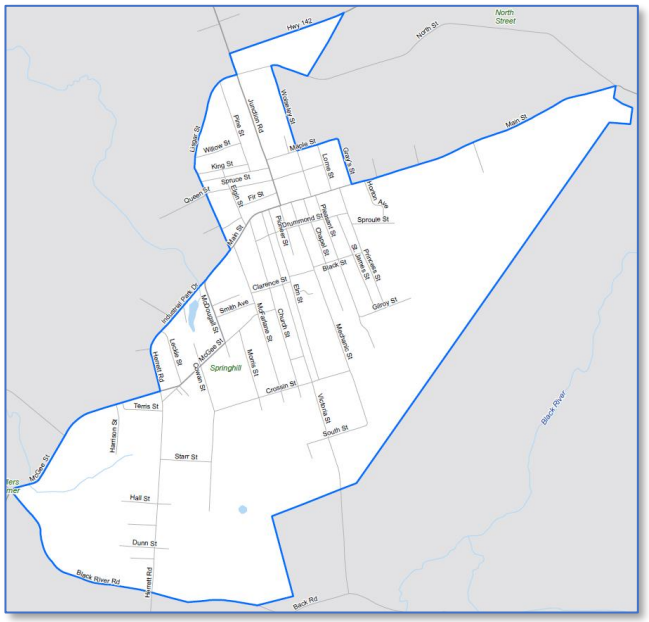


MAP 16: CENSUS SUB-DIVISION D



MAP 17: CENSUS SUB-DIVISION PARRSBORO

MAP 18: CENSUS SUB-DIVISION SPRINGHILL



Cumberland Socio-Demographic Factors and Fire Protection

Statistics Canada (StatsCan) Population Data

The following two tables, *Table 74* and *Table 75*, show selected 2016 and 2021 StatsCan data[319] for Cumberland County, NS; with commentary that follows each table. Commentary will refer to the line numbers in the tables. These tables were abridged by *GA* based on the full census analysis table, in order to focus on issues relevant to this *Review*. Line numbers are added by *GA* and are not from StatsCan.

Note that StatsCan only reports number counts to the nearest 5 persons within each area of the census analysis (above line 7 in the table). This can be misleading when a low number is the actual census value/number. For example; a 1 or 2 will be reported in the analysis tables as a 5. A good example of this is line 33 in this first table. This practice can create rounding errors in StatsCan's table and group totals.

Various rows in the tables are sub-total rows, although not labeled as such, usually for several rows immediately below. These sub-total rows are highlighted. Peak numbers in certain rows are also highlighted by *GA*.

TABLE 74: CENSUS POPULATION CHARACTERISTICS

LINE	POPULATION CHARACTERISTICS	sub-A	sub-B	Springhill (included in sub-B)	sub-C	sub-D	Parrsboro (now part of sub-A)	COUNTY TOTALS
1	Population; **2016**	1,915	**6,859**	2,743	5,268	4,155	1,205	**19,402**
2	Population; 2011	2,141	7,448	2,978	5,325	4,266	1,305	**20,485**
3	Population percentage change; 2011 to 2016	-10.6	**-7.9**	-7.9	-1.1	-2.6	-7.7	**-5.3**
4	Total private dwellings	1,389	3,558	1,427	**4,003**	3,380	773	**13,103**
5	Private dwellings occupied by usual residents	906	**3,017**	1,257	2,321	1,861	609	**8,714**
6	Population density per square kilometre	1.7	5.9	566.5	5.9	3.9	81.4	**4.6**
7	Land area in square kilometres	1,120	1,168	5	898	1,054	15	**4,255**
8	Total - Age groups and average age of the population - 100% data	1,915	**6,860**	2,740	5,270	4,155	1,205	**19,405**
9	0 to 14 years	215	910	440	670	440	135	**2,370**

[319] https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/prof/search-recherche/results-resultats.cfm?Lang=E&TABID=1&G=1&Geo1=&Code1=&Geo2=&Code2=&type=0&SearchText=cumberland+&SearchType=Begins&wb-srch-place=search

LINE	POPULATION CHARACTERISTICS	sub-A	sub-B	Springhill (included in sub-B)	sub-C	sub-D	Parrsboro (now part of sub-A)	COUNTY TOTALS
10	0 to 4 years	60	260	130	195	115	40	670
11	5 to 9 years	85	305	140	230	160	40	820
12	10 to 14 years	75	345	175	250	170	50	890
13	15 to 64 years	1,065	4,300	1,665	3,290	2,430	715	11,800
14	15 to 19 years	95	370	140	280	210	75	1,030
15	20 to 24 years	60	350	150	195	160	55	820
16	25 to 29 years	70	290	120	185	130	35	710
17	30 to 34 years	60	315	130	205	150	40	770
18	35 to 39 years	70	315	120	250	170	35	840
19	40 to 44 years	90	415	170	335	180	70	1,090
20	45 to 49 years	110	490	175	360	235	85	1,280
21	50 to 54 years	155	570	205	445	375	95	1,640
22	55 to 59 years	170	570	235	485	410	120	1,755
23	60 to 64 years	190	610	225	545	425	105	1,875
24	65 years and over	635	1,650	640	1,315	1,280	355	5,235
25	65 to 69 years	215	595	205	485	445	110	1,850
26	70 to 74 years	165	395	160	315	330	85	1,290
27	75 to 79 years	120	280	90	255	235	70	960
28	80 to 84 years	75	190	75	140	125	35	565
29	85 years and over	65	190	110	115	135	50	555
30	85 to 89 years	45	120	60	70	90	30	355
31	90 to 94 years	20	55	35	35	35	15	160
32	95 to 99 years	5	15	10	10	10	5	45
33	100 years and over	0	5	0	0	0	0	5
	Total Distribution (%) of population by broad age groups-100% data	100%	100%	100%	100%	100%	100%	100%
34	0 to 14 years	11%	13%	16%	13%	11%	11%	12.2%
35	15 to 64 years	56%	63%	61%	62%	59%	59%	60.8%
36	65 years and over	33%	24%	23%	25%	31%	30%	27.0%
37	85 years and over	3%	3%	4%	2%	3%	4%	2.9%
38	Average age of the population	51	46	45	47	50	49	48
39	Median age of the population	56	50	48	52	55	54	52

TABLE 75: 2021 CENSUS UPDATE

LINE	POPULATION CHARACTERISTICS 2021 CENSUS[320]	sub-A	sub-B	sub-C	sub-D	COUNTY TOTALS
1A	Population; **2021**	3,201	6,786	5,694	4,283	19,964
2A	Population; 2016	3,120	6,859	5,268	4,155	19,402
3A	Population percentage change; 2016 to 2021	2.6	-1.1	8.1	3.1	2.9
4A	Total private dwellings (2021)	2,107	3,448	4,111	3,322	12,988
5A	Private dwellings occupied by usual residents (2021)	1,,586	2,997	2,523	2,020	9,126
6A	Population density per square kilometre (2021)	2.8	5.8	6.4	4.1	4.7

[320] https://www12.statcan.gc.ca/census-recensement/2021/dp-pd/prof/search-recherche/results-resultats.cfm?Lang=E&SearchText=cumberland

LINE	POPULATION CHARACTERISTICS 2021 CENSUS[320]	sub-A	sub-B	sub-C	sub-D	COUNTY TOTALS
7A	Land area in square kilometres (2021	1,136	1,168	896	1,053	4,253

NOTE: In *Table 75*, numbers shown in RED are lower than in the 2016 census numbers.

The following are a few observations related to fire protection issues in the above data.

- Lines 1, 2: are the permanent resident counts for the two census years. The latest census (2021) shows on line 1A that MCC census numbers may be stabilizing with an overall increase since 2016. Not all MCC sub-divisions are seeing as dramatic an increase/stabilization as the County has seen overall. In particular sub-division B (south-central MCC including Springhill) is still declining, albeit at a reduced rate.
- Lines 4, 4A: The 2021 census indicates there are 12,988 private dwellings, down from the 13,103 in the 2016 census. Of the 12,988 dwellings, 30% (3,862 dwellings) are not occupied permanently. This is a high vacancy rate, and it can be assumed that these are either seasonal, vacant, or housing transients (seasonal workers). Interestingly, this unoccupied number is almost 500 fewer than it was in 2016. Overall, private dwelling numbers are down about 1%, which matches the decline in vacant dwellings.
- Dwellings are not necessarily separate buildings. They can include homes in multi-unit residential buildings; i.e., apartments, flats, suites. However, in MCC the majority are stand-alone buildings (houses); as data discussion later will reveal. Vacant buildings are a hazard to the community and to firefighters because fires can obtain a head-start without being noticed, except by neighbours, at which point fires are usually well advanced and property is unsavable and can threaten other nearby property; in an urban setting particularly.
- Lines 6, 6A: The average population density in MCC is low, although it is creeping upwards, likely as a result of development in the area surrounding Amherst and along the Northumberland shore.
- Lines 9-39: The age distribution in MCC shows a higher proportion of older residents (average age 48) than in the rest of Nova Scotia (average age 43.5) or Canada (average age 41.2).
- The median age shows that this trend towards aging will likely continue in MCC with the median age being 52 years old; meaning there is likely a portion of the County population that is reaching ages well beyond the normal expected lifespan.
- For NS the median is 45.5 years and for Canada the median age is 41.2, very close to the Canadian average age of 41.

Statistics Canada (StatsCan) Housing Data

Table 76 following, shows StatsCan 2016 census data on housing and accommodation for residents of Cumberland County. Again, highest numbers in some rows were highlighted by *GA*. Commentary on the data's influence on fire protection in MCC is noted after the table.

TABLE 76: CENSUS HOUSING CHARACTERISTICS

LINE	HOUSING CHARACTERISTICS	sub-A	sub-B	Springhill (included in sub-B)	sub-C	sub-D	Parrsboro (now part of sub-A)	COUNTY TOTALS
40	Total - Occupied private dwellings by structural type of dwelling - 100% data	905	3,015	1,255	2,320	1,860	610	**8,710**
41	Single-detached house	840	**2,620**	960	2,120	1,670	515	**7,765**
42	Apartment in a building that has five or more storeys	0	0	0	0	0	0	**0**
43	Other attached dwelling[321]	40	**290**	265	115	100	70	**615**
44	Semi-detached house	15	**55**	45	25	15	10	**120**
45	Row house	0	**45**	40	5	45	30	**125**
46	Apartment or flat in a duplex	0	**60**	55	35	20	0	**115**
47	Apartment in a building that has fewer than five storeys	25	**130**	125	40	15	35	**245**
48	Other single-attached house	0	5	0	10	5	0	**20**
49	Movable dwelling[322]	30	**110**	30	90	95	25	**350**
50	Total - Private households by household size - 100% data	905	3,020	1,255	2,320	1,865	610	**8,720**
51	1 person	265	895	455	585	530	250	**2,525**
52	2 persons	425	**1,250**	440	1,105	885	225	**3,890**
53	3 persons	120	445	185	295	210	65	**1,135**
54	4 persons	65	275	115	225	160	40	**765**
55	5 or more persons	35	155	65	120	80	30	**420**
56	Number of persons in private households	1,895	**6,630**	2,680	5,220	4,000	1,200	**18,945**
57	Average household size	2.1	2.2	2.1	2.2	2.2	2.0	**2.2**
58	Total - Private households by tenure - 25% sample data	905	**3,020**	1,245	2,320	1,865	610	**8,720**
59	Owner	805	**2,435**	830	2,130	1,600	425	**7,395**
60	Renter	105	**580**	410	185	265	180	**1,315**
61	Band housing	0	0	0	0	0	0	**0**
62	Total - Occupied private dwellings by condominium status - 25% sample data	905	3,020	1,245	2,320	1,860	605	**8,710**
63	Condominium	0	20	20	0	0	10	**30**
64	Not condominium	905	2,995	1,220	2,320	1,855	600	**8,675**
65	Total - Occupied private dwellings by number of bedrooms - 25% sample data	905	3,015	1,245	2,320	1,865	605	**8,710**
66	No bedrooms	0	0	0	0	0	0	**0**
67	1 bedroom	75	**275**	185	120	145	115	**730**
68	2 bedrooms	225	**790**	305	545	560	155	**2,275**
69	3 bedrooms	370	**1,370**	585	1,025	705	225	**3,695**

[321] https://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=144257&CVD=144258&CLV=0&MLV=2&D=1

[322] StatsCan says that; "*A mobile home fixed permanently to a foundation is also classified as a single-detached house*."

LINE	HOUSING CHARACTERISTICS	sub-A	sub-B	Springhill (included in sub-B)	sub-C	sub-D	Parrsboro (now part of sub-A)	COUNTY TOTALS
70	4 or more bedrooms	235	585	170	**630**	440	110	**2,000**
71	Total - Occupied private dwellings by number of rooms - 25% sample data	905	3,020	1,245	2,325	1,860	610	**8,720**
72	1 to 4 rooms	140	**500**	300	245	280	180	**1,345**
73	5 rooms	130	**545**	220	415	315	60	**1,465**
74	6 rooms	195	**630**	255	465	390	90	**1,770**
75	7 rooms	155	**505**	180	315	285	95	**1,355**
76	8 or more rooms	290	840	290	**880**	585	190	**2,785**
77	Average number of rooms per dwelling	6.7	6.5	6.1	7.0	6.7	6.4	**6.7**
78	Total - Private households by housing suitability - 25% sample data	910	3,020	1,245	2,320	1,860	610	**8,720**
79	Suitable	880	2,965	1,220	2,300	1,810	595	**8,550**
80	Not suitable	25	55	20	25	50	15	**170**
81	Total - Occupied private dwellings by period of construction - 25% sample data	905	3,015	1,245	2,320	1,865	610	**8,715**
82	1960 or before	560	**1,390**	695	640	735	305	**3,630**
83	1961 to 1980	170	**850**	340	650	440	150	**2,260**
84	1981 to 1990	60	315	125	**415**	250	80	**1,120**
85	1991 to 2000	60	270	50	**325**	205	45	**905**
86	2001 to 2005	30	60	15	**85**	70	0	**245**
87	2006 to 2010	25	95	15	**130**	90	15	**355**
88	2011 to 2016	0	40	0	**80**	65	10	**195**
89	Total - Occupied private dwellings by dwelling condition - 25% sample data	905	**3,020**	1,245	2,320	1,860	610	**8,715**
90	Only regular maintenance or minor repairs needed	765	**2,575**	1,045	2,115	1,640	540	**7,635**
91	Major repairs needed	140	**440**	200	210	225	65	**1,080**
92	Median value of dwellings ($)	$ 80,090	$ 85,302	$70,057	**$164,797**	$149,835	$ 94,942	**$ 126,251**
93	Average value of dwellings ($)	$121,293	$111,502	$73,423	**$195,894**	$176,887	$114,279	**$ 153,922**
94	Total - Tenant households in non-farm; non-reserve private dwellings - 25% sample data	105	**580**	410	175	265	185	**1,310**

The following are a few observations related to fire protection issues in the above data.

- Lines 41: The percentage of single detached homes in MCC is high at 89% overall, which is likely a reflection of the predominantly rural nature of most of MCC. A fire or similar incident in a detached home is less likely to affect more than one dwelling, but is more likely to affect out-buildings and vegetation.
- Line 42: According to StatsCan there are no apartment buildings taller than 4 stories in MCC.
- Lines 43-48: Attached or semi-detached dwellings comprise almost all the remaining home types in MCC. Springhill is in particular where these multiple-dwelling buildings are located; at 43% of the 615 shown for all of MCC. The risk of a serious dwelling fire impacting more than one dwelling is substantially raised in attached homes.
- Line 45: StatsCan says[323] that an apartment or flat in a duplex is; "*One of two dwellings, located one above the other, may or may not be attached to other dwellings or buildings.*" StatsCan also counts that about 9% of all the MCC attached dwellings are duplexes in Springhill.

[323] https://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=144257&CVD=144258&CLV=0&MLV=2&D=1

- Line 47: All residential buildings in MCC are 4-stories or lower. Five stories is classified as a mid-rise building; while 4-stories or less are low-rise buildings and can generally be laddered by the longest ground ladders, although that takes a large and well-trained crew to manage.
- Line 49: About 4% of the dwellings in MCC are mobile homes. Fires in mobile homes have their own challenges, including very rapid fire spread and low survivability if residents are not promptly warned of fire (i.e., working smoke alarms) and do not have a practiced and effective fire escape plan. With the low level of working smoke alarms in MCC,[324] particular efforts should be directed at mobile homes.
- Lines 58-61: Subdivision-B, led by Springhill at 32.9%, has the highest ratio of tenants per private household in MCC. Landlords are primarily responsible for providing and maintaining smoke and carbon monoxide alarms in properties that they own.
- Line 60, 94: County-wide, 15% of households live in rented accommodation (i.e., tenants), with the Springhill and Amherst suburb areas being the apparent highest concentrations. In many jurisdictions, rental accommodations are more likely to be of substandard quality, with missing or non-functioning smoke alarms and potential fire hazards due to age, condition, or lack of adequate maintenance. *GA* has received no data to elucidate conditions in rental housing in MCC.
- Many renters do not carry fire insurance on their possessions. Fires in rental dwellings can be even more devastating to residents without insurance, and can impose severe hardship. The very limited dollar loss record[325] that was made available to *GA*, suggests that in MCC 34% of fire losses were not insured. If correct, this means that lack of insurance may be wider spread than only renters. Information on home ownership is one of the data pieces that is usually collected after at every fire as part of the investigation phase.
- Line 65-77: The data in these rows is useful for a picture of the housing types and sizes. This data does not include seasonally vacant residences.
- Lines 78-80: Only 2% of households are living in unsuitable housing. Suitability is determined basis a national standard[326] and is not necessarily a reflection of dwelling condition.
- Lines 80-88: 42% of the occupied residential building stock (3,630 units) was built on or before 1960. Older buildings are more prone to fires since they have older utilities and systems, and may be in poorer overall condition. However, single family dwellings of this age can be smaller.
- Older dwellings will not likely have hardwired smoke and carbon monoxide alarms, and not on every floor, unless they have been retrofitted. Larger older homes are often converted to multi-unit dwelling buildings like duplexes and tri-plexes, often with areas where fire and smoke can spread between units, threatening the building and occupants in a fire scenario. Fires in these buildings can be highly challenging, especially with small crews and inadequate training and experience.
- Housing construction has been in steady decline since the 1960's, with fewer units constructed each decade. Also of note is that this decline has particularly affected census subdivision-B (Springhill and area), with an steeper decline as compared to the remainder of the County occurring after 1980. A similar decline within the same time frame has also affected census subdivision-A (Parrsboro and

[324] See the section on *Dwelling Smoke Alarms* starting on page 56 of this report.

[325] See the section on *Historic Loss Save Record* starting on page 58 of this report.

[326] Housing suitability - Refers to whether a private household is living in suitable accommodations according to the National Occupancy Standard (NOS); that is whether the dwelling has enough bedrooms for the size and composition of the household. A household is deemed to be living in suitable accommodations if its dwelling has enough bedrooms as calculated using the NOS. https://www23.statcan.gc.ca/imdb/p3Var.pl?Function=DEC&Id=100731

area). The two areas that are appearing to stabilize in recent years are census subdivision-C and D which include the Northumberland shores recreational areas, as well as the Amherst suburbs.

- Lines 89-91: County-wide almost 12.4% of dwellings are in need of major repairs. This is much higher than the Provincial average (8.8%) and almost twice the Canadian average (6.5%). Fire occurrences, deaths and injuries can be at increased frequency in under-maintained dwellings. Coupled with inadequate or absent fire insurance, fires in these properties will be devastating for the occupants.

The residential fires are the main risk for fire occurrences in most communities. They are also the main risk for injuries, and deaths, both of civilians and of firefighters. According to national statistics[327] for Canada;

> *"Fires in residential properties accounted, on average, for 69% of all structural fires and 79% of all structural fire deaths. ... Homes representing one/two family dwellings, apartments and mobile homes accounted for 82% of all fires in residential properties and 83% of all residential fire deaths. …. In Canada, home fires accounted for 30% of all fires and 67% of all fire deaths."*

Statistics Canada (StatsCan) Commuter Data

Work location and commuting statistics has an impact on fire service delivery in two ways.

First; community population home/work-cycle statistics will affect patterns of occurrence for incidents. This is shown in *Appendix 1: Response Data*, in the section *Incident Distribution*, starting on page *635* of this *Report*. Sleep-wake and home-away patterns influence when incidents occur, especially incidents associated with commuting (motor vehicle crashes and fires) and those most associated with dwelling fires (cooking, smoking).

Second; home/work statistics impact on recruiting, training, and retention of volunteer firefighters. They also impact the day-to-day and hour-to-hour availability of trained firefighters to respond to incidents, in a timely manner.

[327] Fire Losses in Canada Year 2007 and Selected Years, Wijayasinghe, September 2011, presented to the Canadian Council of Fire Commissioners and Fire Chiefs, http://www.ccfmfc.ca/stats.html

TABLE 77: CENSUS COMMUTING CHARACTERISTICS

LINE	COMMUTING CHARACTERISTICS	sub-A	sub-B	Springhill (included in sub-B)	sub-C	sub-D	Parrsboro (now part sub-A)	COUNTY TOTALS
95	Total - Commuting destination for the employed labour force aged 15 years and over in private households with a usual place of work - 25% sample data	445	2,095	830	1,905	1,285	320	**6,050**
96	Commute within census subdivision (CSD) of residence	120	**910**	485	195	735	170	**2,130**
97	Commute to a different census subdivision (CSD) within census division (CD) of residence	280	1,060	325	**1,455**	245	95	**3,135**
98	Commute to a different census subdivision (CSD) and census division (CD) within province or territory of residence	15	60	10	75	**260**	35	**445**
99	Commute to a different province or territory	15	65	10	**190**	45	15	**330**
100	Total - Main mode of commuting for the employed labour force aged 15 years and over in private households with a usual place of work or no fixed workplace address - 25% sample data	550	2,335	910	2,140	1,530	390	**6,945**
101	Car; truck; van - as a driver	505	**2,005**	720	1,955	1,335	305	**6,105**
102	Car; truck; van - as a passenger	40	**210**	100	105	70	30	**455**
103	Public transit	0	10	10	15	15	0	**40**
104	Walked	10	90	75	50	60	45	**255**
105	Bicycle	10	0	0	0	0	0	**10**
106	Other method	0	20	10	20	55	0	**95**
107	Total - Commuting duration for the employed labour force aged 15 years and over in private households with a usual place of work or no fixed workplace address - 25% sample data	550	2,335	910	2,145	1,525	390	**6,945**
108	Less than 15 minutes	165	**1,065**	500	975	600	210	**3,015**
109	15 to 29 minutes	155	**725**	265	715	375	40	**2,010**
110	30 to 44 minutes	135	**360**	100	260	270	20	**1,045**
111	45 to 59 minutes	20	100	20	90	**120**	45	**375**
112	60 minutes and over	75	85	25	105	**160**	85	**510**
113	Total - Time leaving for work for the employed labour force aged 15 years and over in private households with a usual place of work or no fixed workplace address - 25% sample data	550	2,335	910	2,145	1,530	390	**6,950**
114	Between 5 a.m. and 5:59 a.m.	55	**170**	75	170	145	50	**590**
115	Between 6 a.m. and 6:59 a.m.	150	**710**	295	465	305	80	**1,710**
116	Between 7 a.m. and 7:59 a.m.	145	630	200	**650**	510	70	**2,005**
117	Between 8 a.m. and 8:59 a.m.	85	420	140	**525**	240	70	**1,340**
118	Between 9 a.m. and 11:59 a.m.	25	95	45	110	**130**	65	**425**
119	Between 12 p.m. and 4:59 a.m.	90	**300**	150	225	200	50	**865**

The following are a few observations related to fire protection issues in the above data.

- Line 95: There are 11,800 residents in MCC age 15-64, and a further cohort of 5,235 who are aged 65+. Of those two combined (17,035) there are 6,050 who are commuting to work.
- Line 96: 35% of commuters are relatively close to home, being within their resident census subdivision while at work. Depending on the circumstances of their work, these persons are likely to be available during their work hours to respond to an incident.
- Line 97: Commuters who commute outside of their subdivision, but still inside Cumberland, represent 52% of commuters. These workers are not near home when at work, and are not likely to be available to respond as volunteer firefighters, except when they are not working or commuting. Recruiting and retention of volunteer firefighters in this cohort will be more difficult as well as impacting their availability.
- Line 98: The wording is a little confusing, but in essence it refers to those who commute outside of Cumberland County census division, for which Oxford and Amherst are considered part of the

Cumberland census division. In other words, those who are commuting to NB, PEI, Colchester, or wider, etc. This represents 7.4% of commuters.

Recommendation 178: GA recommends that as part of information collection in the post-incident investigation, that key demographic and housing data be gathered and entered into a comprehensive records management system. Such information will be valuable in designing targeted fire safety education and fire prevention programs in future years.

Recommendation 179: GA recommends that information on commuting and work patterns be collected in each fire department catchment area. Such data will be helpful in successfully targeting and developing recruitment and retention programs for volunteer firefighting positions in the communities.

CH 10: FINANCIAL

ANNUAL OPERATING BUDGET

GA was asked to review the current funding arrangements between the County and the Fire Departments. This review included an examination of MCC Capital and Operational budgets associated with the provision of fire emergency services. No examination of fire department individual budgets, which may or may not exist, was included in this *Review*. No examination of reserve accounts and current debentures was included in the *Review*.

Fixed vs Variable Costs

For fire services, like any operation-oriented service, costs are of two main components; i.e. fixed and variable.

Fixed costs include items like; debt servicing, equipment purchases, staffing, training, and other costs that reoccur on a regular basis. These costs can remain relatively consistent regardless of the incident activity levels of the fire department. They are based on maintaining the established capacity of the fire department. There are almost always opportunities to reduce fixed costs, and most cost-cutting initiatives are, and should be, aimed at fixed costs.

Variable costs include items like; fuel for the vehicles and motorized equipment, some equipment maintenance, wear & tear related depreciation (or destruction), and expendables such as meals and medical gloves. Variable costs change in accordance with the activity levels of the fire department.

Generally speaking, it is difficult to establish cost cutting initiatives on variable costs. Such initiatives, if attempted, tend to directly affect service levels and can create hazardous conditions for responders. For example; an initiative to reduce the use of firefighting foam can reduce the costs of foam purchases, but will definitely increase the extinguishment time and effort required at incidents where foam use is indicated. It may also generate a secondary incident where

firefighters have to re-respond to the original incident to deal with a rekindle; and it is likely that the firefighting foam will then be used, to avoid having to return a third time.

One real potential for cost savings on variable costs is to ensure that purchases of materials and equipment are of good value. Often this means purchasing good quality materials to start with, as well as doing group purchasing of standardization gear in order to achieve economies of scale, and to reduce overall inventory held in reserve.

Revenues

Revenue from area rates, general revenues, own sources, debentures, grants in lieu, and etc. have not been estimated. The municipality will need to make its own estimates for these sources as part of the annual budgeting process.

Fees for Service

There is an opportunity for additional revenue generated from cost-recovery fees. These fees are permitted under the MGA and other legislation, and are within the powers granted to the County.

Highway-104

GA extracted response numbers for fire department responses to incidents on Highway-104. The highway passes through the County for a distance of 71 kilometers. There are a significant number of incidents[328] that occur on the highway; in excess of 50 incidents annually. Before COVID-19 changed travel patterns, this number was annually trending upwards.

Highway-104 is mainly serviced by four fire departments jurisdictions in MCC; in which jurisdictions the highway falls throughout its length across the County. Amherst services the west end, Springhill is next, and Oxford services the long middle section. Westchester has a long component, the east end of the highway, including the Westchester Mountain highlands and the Cobequid Pass. Other fire departments have, on occasion, been called in on mutual-aid.

[328] See *Chart 7: Highway-104 Incidents, 6-years of* Data on page *28* for details.

Servicing the provincial highway costs the County in a number of ways. First is the consumable expenses associated with having MCC funded fire departments respond to these incidents. There is also wear and tear on expensive vehicles, extrication tools, and firefighting equipment. Investment in training and equipment specifically with the highway in mind is a hidden cost. Although, these tools and skills are also useful elsewhere, without the highway the costs might not be otherwise justified, and could be avoided.

Amherst and Oxford are both contract departments. Although their home jurisdictions contain short portions of the highway they also respond to long sections of the highway that are in the County. It is likely that consideration of servicing the highway is built into their annual contract price to MCC and could also be avoided if MCC did not service the highway.

GA is *not* recommending that MCC discontinue helping protect the travelling public that use the highway. Instead, *GA* is noting that there is the opportunity to collect revenue and thereby recoup costs from these responses. MCC should consider developing a process to collect these potential revenues.

Recommendation 180: GA recommends that Cumberland County investigate methods and develop procedures and Policy to implement service fees for reasonable cost recovery from responses to Highway-104.

Such fees are permitted by legislation. The *Insurance Act*,[329] §107B(7) states;

> *"For greater certainty, nothing in this Section prevents a fire department from making a claim for costs incurred in responding to a motor vehicle accident."*

For example; in Ontario the province has a program to reimburse fire departments at a rate of $488.40/hour,[330] per fire truck (maximum 3 trucks). Ontario fire departments can also opt out of the provincial program and charge drivers directly for higher actual costs. The insurance companies typically pay the fees for clients who are not residents of the municipality in which the incident occurred.

[329] Nova Scotia, *Insurance Act*, R.S., c.231, s.1.

[330] Current fee at the time of this report. Fee is adjusted annually by the province. Fire departments may charge more (or less) by opting out of the provincial program.

In Newfoundland & Labrador, the Province reimburses fire departments for responses outside municipal boundaries. As stated in the Province's 2015/16 annual report,[331] they paid $65,050 for 133 incidents (average $489.10 per incident).

The same approach could also be used for other provincial highways in Cumberland County. *GA* has not recommended establishing fees for these roads, because in almost all instances, these highways are used as local roads by residents, who already pay taxes to support the provision of fire services. However, the County could consider billing non-resident travellers, by establishing a procedure that identifies non-residents responsible for incidents.

User Fees

In *GA's* opinion, there is a reasonable rationale for charging other cost recovery fees; i.e., user fees.

The rationale for user fees goes to the reason for the establishment of fire services. The costs for basic fire-emergency services are paid by all residents through their property taxes. Everyone receives the same base-level service, which is mainly the response to emergencies. However, some services are only provided to a few residents, and usually for their own exclusive benefit, and are not to the general welfare. An example is the application for a liquor license, which requires a fire inspection. In this case, the applicant is the main beneficiary of the license and the County is essentially subsidizing this business for that purpose if the inspection is performed on demand and without a fee, especially when you consider that the inspection is not usually a one-visit event.

Fire safety and code compliance inspections are performed by the County, and a number of full-time staff are trained and utilized in this activity. *GA* is unaware of any fees for fire inspection services; including requested inspections associated with liquor licenses, daycares, restaurants, and for other purposes. Currently, these services appear to have no associated fee, and no funds are collected to offset the costs of these services, or to provide a revenue stream for the County to help offset fire protection costs.

[331] Fire and Emergency Services-Newfoundland and Labrador, 2015-16 Annual Report, page 16.

After or during a fire incident, the municipality and the fire department can often incur costs related to municipal infrastructure protection, securing the property for the safety of the public, and for the protection of evidence prior to a comprehensive post-fire investigation. Costs can include; management of water/waste-water services, the provision of site security and stand-by, temporary fencing, heavy equipment for fire extinguishment or to address dangerous conditions, cleanup of debris on the public way, dewatering costs, callout for disconnect of utilities on over-time, board-up security of a structure, and etc. Without provisions for cost-recovery, these costs will be to the account of the County.

Such costs are often recoverable from the property insurance company, and there are procedures to ensure this is possible, including a by-law for the capture and recovery of costs. Costs that are not recovered from insurance may be recovered from the property owner or applied against property taxes, which is a current recourse for abandoned/vacant property; but only if there is a bylaw in place.

Under §49 of the *Municipal Government Act*,[332] the Municipality has the power to make policies for the setting of fees to be paid for inspections, permits, applications, approvals pursuant to a by-law or legislation. Also, under §79 of the *Act*, the Municipality has the power to prescribe charges for the provision of services.

Some examples of services where cost-recovery fees might be appropriate could include the following;

- Fire inspection of occupancy on request (i.e., not on the established schedule policy)
- Liquor license inspection
- Inspection for occupancy load certificate (public space)
- Inspection of day-care centres
- Mobile food/beverage truck inspections
- Tent and special occasion permit inspections
- Response to provincial highways (non-residents)
- Inspection of trade shows and other special events
- Municipal open-air fire (burning) permits

[332] Nova Scotia, Municipal Government Act. 1998, c. 18, s. 1

- Fire extinguisher training
- Request for smoke or carbon monoxide alarm installation
- Request for report on a fire incident (usually related to an insurance claim)
- Request for consultation review of plans and/or development (hourly rate)
- Incurred extraordinary costs (which can be very significant) as a result of an incident (e.g. excavation/demolition equipment, security, fencing, investigation, damage to infrastructure, environmental abatement, and etc.); which costs are fully recoverable from the insurance company.
- Paid duty (e.g. standby for hot-work)
- False-alarm responses (preventable and excessive)

Annual Operations Budget Analysis

The source for all financial statements in this *Review* was MCC. There was not enough transaction detail in the provided budget/expenditure roll-ups for *GA* to determine with precision what expenditure category (cost element) was attributed to each type of expected expenditure. A detailed examination of accounts payable transactions might better determine to what extent certain programs and associated expenditures are currently taking place, but that is beyond the scope of this *Review*.

Instead, a different approach was used for the analysis and presentation of annual operational costs in this *Report*. *GA* has provided program based estimated costs that are likely not, or not fully, in the current operating expenses/budget. *GA* believes these costs might not be currently fully occurring because of observed or anecdotal information that associated programs are not being conducted at the expected level. In addition, *GA* has estimated costs for programs that have the potential to be changed through adoption of *GA* recommendations made throughout the *Report*.

Expenditures, Highlighted Annual Operational Cost Items

In this section that addresses the annual operations budget, *GA* has broken-down the presentation of some operational program annual expenses into the following groups;

- Firefighting Operations; containing the three sub-groups; Apparatus, Equipment, Communications.
- Other Operational Expenses; containing Administration costs.

Annualized expenses that are expected to differ (additions or changes) from the current budgets and expenditures are presented in the following *Table 78*. In some cases the expense does likely exist inside a current cost element in the MCC accounts. Where this is known, the current estimate of program cost is presented, with the cost of the *GA* recommended change, for comparison. Following the table is a more detailed description/discussion on each row in the table.

TABLE 78: HIGHLIGHTS; RECOMMENDED ANNUAL OPERATING PROGRAM EXPENSE ADJUSTMENTS

line	Groupings	EXPENSE ITEM	Annualized Item Cost	QTY	DESCRIPTIONS
	FIREFIGHTING OPERATIONS:				
	APPARATUS:				
1		Annual Pump Inspection and Service (3rd party)	31,500	46	Current number of fire apparatus with pumps
2		Annual Pump Performance Test (3rd party)	20,700	46	Current number of fire apparatus with pumps
3		Contractor travel and accommodation costs (pump servicing/testing)	4,200	11.5	Estimated days onsite, plus travel/accommodation costs and travel-time
4		5-Year Aerial NDT Inspection and Performance Test	2,500	1	Current number of fire apparatus with aerials (not pro-rated over 5 years)
5		Annual Vehicle Maintenance and Repair, Tires (MCC labour + parts)	315,700	67	Current number of on-road vehicles, all types (Heavy and Light), not incl UTVs, boats, trailers
6		Annual Motor Vehicle Inspections (Prov fee)	7,600	67	Current number of on-road vehicles, all types except trailers
7		Major Repairs, refits (contract machine shop, etc.)	20,000	lot	Planned and unplanned work
8		other, contingency	20,000	lot	5% of above
9		**sub-total:**	$ 422,200		Section Total
10	**EQUIPMENT:**				
11		Annual SCBA Function Test and Inspection	7,400	140	< assumed number of SCBA paks (basis NFPA-1901 minimum per apparatus per Type, see *Table 39*)
12		SCBA Contractor travel and accommodation costs	3,000	7.0	Estimate days onsite, plus travel/accommodation costs and travel-time
13		Quinquennial SCBA air Bottle Inspection & Testing (off-site)	2,300	280	< assumed number of SCBA air bottles (matching SCBA pak numbers)
14		Service Breathing Air Compressors (twice annually)	19,200	8	Various makes and models
15		Service Cascade Systems	2,000	5	< assumed number on rescue trucks and in stations (with no compressors)
16		Hydrostatic Test Cascade Bottles (5, 10 year)	700	36	< assumed number (prorated over 5 years)
17		Annual Ground Ladder Inspection and Testing	6,800	76	< assumed number of ground ladders to meet NFPA-1901 minimum for apparatus Type
18		Annual Bunker Gear Inspection and Testing, deep cleaning (remote site)	8,000	146	< assumed number of PPE for structural firefighting
19		Annual Hose Inspection and Testing	20,000	1,000	< assumed number 100' and 50' lengths of hose (basis reported + estimated)
20		Annual Inspection and Maintenance of other equipment	7,500	lot	Rescue and firefighting equipment (nozzles, appliances, TIC, Vetter bags, etc.)
21		Powered Equipment Maintenance and Repair	10,000	lot	Hydraulic extrication, power saws, portable pumps, etc.
22		Shipping costs	7,600	lot	Shipping/transporting equipment for service (PPE), SCBA air bottles
23		other, contingency	4,800	lot	5% of above
24		**sub-total:**	$ 99,300		Section Total
25	**COMMUNICATIONS:**				
26		Dispatch Services (contract)	51,900	$2.60	Basis 2021 population at rate (19,964) Note: Contract has expired, requires rate renegotiation (assumed here; costs to be negotiated)
27		Radio Testing, M & R annual contract (flat rate/radio) (current)	32,500	271	< assumed number of owned radios @ $120/radio), Provincial "seeded" TRM radios at no cost
28		Radio Testing, M & R annual contract (flat rate/radio) (proposed)	21,700	181	Proposed number of owned radios @ $120/radio), Provincial "seeded" TRM radios at no cost

line	Groupings	EXPENSE ITEM	Annualized Item Cost	QTY	DESCRIPTIONS
29		Pager Testing, M & R annual contract (flat rate/pager)	7,300	365	< assumed total number of pagers @ 10% pagers serviced/year @ $200/pager)
30		other, contingency	4,100	lot	5% of above (proposed lines)
31		**sub-total:**	$ 95,800		Total with buff and blue highlighted costs
32		**sub-total:**	$ 85,000		Section Total with green and blue alternate recommendation cost
33	**OTHER OPERATIONAL EXPENSES:**				
34	**ADMINISTRATION:**				
35		Staffing the Hybrid Management Model (proposed)	294,500	4.4 FTE	As per the Model Discussion, see page *420* of the *Report*
36		Volunteer Fire Chief Honourarium	32,000	16	Current program of $1,000 / Fire Department (current not fully costed)
37		Volunteer Benefits, Workers Compensation (mandatory)	40,200	365	Current Volunteer WCB ($110/member provides $25K coverage)
38		Volunteer Benefits AD&D benefit (increased)	36,800	16	Proposed $2,300/station provides $200k AD&D and medical reimbursement coverage
39		Volunteer Benefits MFAP	8,800	365	Proposed $24/member provides mental health support and access to treatment
40		Firefighter Respiratory Protection Fit-testing	12,100	219	< assumed number of authorized members for structural firefighting
41		Industry Canada VHF+TMR Radio Licenses (current)	12,200	212	< assumed number Owned radios, IC licensing for Prov "seeded" TMR radios at no cost
42		Industry Canada VHF+TMR Radio Licenses (proposed)	8,600	12	Proposed, retain 6 mobiles & portables for Marine use. Majority costs is IC licence on TMR owned radios
43		TMR costs, Access fee (current)	7,100	196	< assumed number Owned and Seeded radios (137 are seeded and at no cost)
44		TMR costs, Access fee (proposed)	20,300	306	Proposed Owned and Seeded radios (137 are seeded and at no cost)
45		Society Fees (NS-RJSC)	600	16	Each fire department must be registered, annual renewals are $31.15+HST (current not fully costed)
46		Computers and Software	7,200	18	Proposed, each station requires a computer and printer, and replacement every 5 years ($2k/ea.) (current not fully costed)
47		Computer-based Records Management Software	15,000	1	Proposed, annual support and access licenses
48		Public Events	32,000	16	Annual volunteer firefighter recognition event (current not fully expended)
49		Fire Prevention	36,000	18	Proposed, Fire Prevention week open house, smoke alarm program (current not fully funded)
50		**sub-total:**	$ 225,000		Total with buff and blue highlighted costs
51		**sub-total:**	$ 529,100		Section Total with green and blue highlighted costs

Firefighting Operations

Firefighting operations includes the cost of maintaining all the major equipment that the fire department needs to deliver its fire-emergency services to the public. Included is the trucks (fire apparatus), the equipment on the trucks, equipment used for personnel protection, communications equipment, and dispatch services.

Equipment/fire apparatus inspection, testing, and some maintenance is often done by third party service providers and must meet numerous standards, some of which are contained in NS and national legislation. All of these requirements are discussed in prior sections of this *Report*. The following is an expansion on each line item in the above table:

- Line 1: This is an additional cost as currently MCC is not following NFPA recommendations that there be an annual Inspection and Service of all fire apparatus components by a person meeting NFPA qualifications. The cost shown is for a qualified 3rd party contractor to perform this work in conjunction with the annual performance tests (line 2).
- Line 2: This is an additional cost as currently MCC is not following NFPA recommendations on annual Performance Testing of all fire apparatus equipped with a fire pump. FUS requires this testing to be performed by a qualified 3rd party, and that adequate records be kept of all aspects.
- Line 3: This is the associated cost to have the qualified contractor attend to each fire station to do the work in lines 1, 2 above. It is a 2-person team and is estimated to take 11.5 days to perform the testing on all *current* apparatus equipped with fire pumps. *GA* is recommending a reduction in fire fleet size, and therefore costs on lines 1, 2, and 3 can reduce proportionally if that happens.
- Line 4: This is an additional cost as currently MCC is apparently not meeting NS regulatory mandate to have the Quint (aerial truck) in Springhill annually performance tested, nor the required 5-year detailed inspection and performance testing of the aerial device, including non-destructive testing (NDT) evaluation of the aerial device by qualified individuals. This is the event cost for 2-days of specialist work, once every 5-years (i.e., is not annualized here) plus expenses. The aerial may currently be in arrears (apparently not done in 2017) for this testing, and would be due this year again, 2022, for its second round of inspections. If the recommended additional quint fire apparatus are placed in service, this cost will increase proportionally.
- Line 5: This is an estimate of the annual cost of fire apparatus routine maintenance in accordance with NFPA recommendations. Also included is the cost of maintenance for non-NFPA vehicles (rescue trucks, utility trucks). Included is a pro-rated costs of tires, changed every 7 years in accordance with NFPA recommendations.[333]
- Line 7: This is a contingency for a major repair to a pump or other major system on a fire apparatus. As the fire fleet ages, major repairs and un/planned extraordinary work is expected to occur.
- Line 11, 12: This line is for annual inspections function testing of self contained breathing apparatus (SCBA) as required by NS Regulation. This work appears to be currently occurring.

[333] The relatively low utilization of most MCC fire trucks will not likely wear out a set of tires within that 7-year tire life-span. A strategy should be considered whereby new tires are installed on fire trucks, and at the 4-5 year mark, these tires are moved to public works trucks where they will be worn-out before their remaining life expiry.

Cost estimates are presented here to assist with breaking this out of the consolidated MCC expenditure cost centres, and is based on an estimated total number of SCBA. This work is done on-site to reduce down-time.

- Line 13: This line is for the (5-year interval) inspections and testing of SCBA air-cylinders as required by NS Regulation. This work appears to be currently occurring. Cost estimates are presented here to assist with breaking this out of the consolidated MCC expenditure cost centres, and is based on the estimated total number of cylinders. This work is done off-site.
- Line 14: This line is the cost to twice-annually service the breathing air compressors at various fire stations in the County. This work appears to be currently occurring. Cost estimates are presented here to assist with breaking this out of the consolidated MCC expenditure cost centres. This work is done on-site to reduce down-time, and includes travel costs and expenses.
- Line 15, 16: This line is the cost to test and inspect the cascade air cylinders and fill controls at each station where there is a breathing air compressor or where there is a cascade system installed on a rescue truck. *GA* believes the compressor cascades are currently being serviced, but the rescue truck cascades are not. Cascade cylinders need, depending on age, either 5-year or 10-year hydrostatic requalification.
- Line 17: This line is the cost to do the annual inspection and performance testing of all ground ladders, to meet NFPA standards, and in accordance with NS regulatory requirements. *GA* understands that this work is not currently being done. The total number of ladders is an estimate since not all stations provide the requested information.
- Line 18: This line is the annual cost to deep-clean and thoroughly inspect, by a qualified person, all structural firefighting coats and pants (turn-out or bunker-gear). The cost is an estimate since it is unknown how many sets of turn-out gear exist in the County, and how many of those sets are required for interior structural qualified firefighters. Turn-out gear is only required for those persons qualified to enter a structure for interior firefighting. The number shown is *GA*'s estimate. There is the possibility of having this work done by a 3rd party, on-site, at an increased cost per set, if there are sufficient sets requiring attention. Otherwise, sets may be shipped to the service provider and returned in the same week. *GA* understands that some of the current turn-out gear is being annually serviced, but is uncertain if that includes all sets in service for firefighting.
- Line 19: This line is the annual cost of having a contractor inspect and test all fire hose in the County. There is an estimated 1,000 lengths of hose, almost all of which is on fire trucks. Reportedly, this work is not currently being undertaken. It is possible to defray some of this cost if firefighters were trained to do this work, and had access to a County hydrotesting machine.
- Line 20: This line is an annual cost allotment for a program to have firefighting equipment inspected and maintained by qualified personnel. Nozzles, appliances, and numerous other equipment need attention to ensure that they are in operating condition.
- Line 21: This line is the cost of inspections and repairs to powered equipment, including power saws, portable pumps, portable generators, power units for hydraulic spreaders, and etc.
- Line 26: The current dispatching contract with Valley Communications Inc. is expired and dispatch services is continuing under a temporary contract extension which is also expired or about to be so. Costs are based on population multiplied by a per-capita rate. The rate will need to be negotiated with the next service provider.
- Line 27: The estimated number of owned radios is shown; which includes mobiles, portables, and base stations operating on VHF frequencies and on the provincial trunked mobile radio (TMR) system. There are a variety of radios on each system. Fire departments own all the VHF radios, and some of the TMR radios. Some TMR radios are provided (seeded) by the province at no cost. This

line is the cost of an annual maintenance contract to service all owned radios. *GA* is uncertain to what extent this is already occurring.

- Line 28: This line is the alternate annual cost, similar to Line 27, but for a recommended conversion to all TMR radios. A portion (the same portion) of TMR radios will still be provided at no cost by the province.
- Line 29: This line includes the cost of a contract for servicing all pagers carried by firefighters across the County. The total number is estimated.
- Line 31: The sum of the buff and blue highlighted costs, in lines 26-30, is essentially a status quo total including needed maintenance of existing equipment which is not currently being done.
- Line 32: The sum of the blue and green highlighted costs, in lines 26-30, includes recommended changes to equipment numbers/characteristics in place of the buff status quo items.

Other Operational Expenses

This category includes some remaining expenditures for operating the fire departments that are usually included in administration overhead costs. The following notes also relate to lines in *Table 78*.

- Line 35: This line is the cost to staff the 4.4 FTE (10 positions) of the recommended Hybrid Model of service delivery. It includes benefits. Cost details are in *Table 43* on page *423* of the *Report*.
- Line 36: This line shows an increase to the annual honourarium for the local volunteer fire chiefs.
- Line 37: This line is the cost of current coverage for WCB premiums. It is assessed quarterly; facilitating the tracking of changes in membership of the volunteer firefighters, so it may fluctuate slightly quarter/quarter.
- Line 38: This line is the estimated cost of providing an increased accident and sickness coverage ($200k principal) for all firefighters. The cost shown is based on coverage by CVIS/VFIS specifically designed for the risks of firefighters. It requires a specific group coverage quotation through a local broker, and the cost might be slightly different due to brokerage agreements. The County has recently taken on the direct cost of providing all firefighters with $100k principal amount on-duty coverage, at an annual cost of $23,770.58 (2021/22 actual).
- Line 39: This line is the cost for the recommended provision of mental health coverage for firefighters and their families. The costs are estimated and may change at the time of quotation.
- Line 40: This line is the cost of providing an annual respirator fit-test as required by Nova Scotia Regulation. This cost is based on a third-party qualified provider doing this once per year for all firefighters trained to use SCBA. The estimated cost may be substantially higher depending on scheduling challenges, thereby requiring multiple repeat trips to MCC. This cost can be eliminated from this estimate or reduced by doing this testing internally with MCC trained staff and an appropriate testing machine, called a PortaCount. A PortaCount machine has been recommended in the Capital budget estimate. If done internally, services can be shared with other County departments.
- Line 41: This line is the current estimated cost of Industry Canada (IC) radio licensing fees for all owned radios. This includes both owned TMR radios and VHF radios. Provincially supplied TMR radios are at no cost. Total radio numbers are estimated. A cost breakdown is provided in *Table 79* below.

- Line 42: This line is the same costs as per Line 41, but instead with recommended conversion to an all TMR radio system. Costs are IC license fees for owned TMR radios only. Provincially supplied TMR radios are at no cost. A detailed calculations table is provided for these costs at *Table 79* on page *596*.
- Line 43: Similar to Line 41, this is the cost for TMR access fees for currently owned TMR radios. Provincially supplied TMR radios are at no cost.
- Line 44: Similar to Line 42, this is the cost for TMR access fees but instead with recommended conversion to an all TMR radio system. Costs are TMR access fees for owned TMR radios only. Provincially supplied TMR radios are at no cost.
- Line 45: There is an annual cost to the society fire departments to maintain their status as society corporations in good standing with the Joint Registry of Stocks in Nova Scotia. Currently, expenditures in the MCC operating budget are less than this amount.
- Line 46: This is the annualized cost of providing and maintaining a computer and multi-function printer (that can also scan and fax) in each of the 18 fire stations in MCC. It is prorated on a 5 year replacement schedule.
- Line 47: Fire departments will host an annual event (or two) to include the public and their families as a means of recognizing the contribution of volunteer firefighters, and the contribution/support of families, and of the community. These events can be key building blocks for success. The budget basis is $2,000 per fire department, as it currently is. Currently this account is under-expended.
- Line 48: Fire prevention education is a strong tradition and there is a need in the community. Fire departments will usually hold an annual open house or operate a door to door campaign to promote the installation of smoke alarms and the practice of exit drills in the home. These campaigns do save lives. The budget basis is $2,000 per fire station (18 stations including sub-stations).
- Line 49: The sum of the buff and blue highlighted costs, in lines 36-48, is essentially a status quo total, but including costs for needed programs currently not being undertaken fully.
- Line 50: The sum of the blue and green highlighted costs, in lines 35-48, includes recommended changes to radio equipment numbers/characteristics in place of the buff items.

TABLE 79: RADIO EQUIPMENT ACCESS AND LICENSING FEES CALCULATIONS

	Current Radio (estimate of quantities)						Recommended Radios					
	Ch.	Units	IC Fee	IC Costs	TMR Fee	TMR Costs	Ch.	Units	IC Fee	IC Costs	TMR Fee	TMR Costs
Item			monthly	annual	monthly	annual			monthly	annual	monthly	annual
Repeater VHF	2	0	$ 4.40	$ -	N/A	N/A	2	0	$ 4.40	$ -	N/A	N/A
Bases VHF	2	17	$ 4.40	$ 1,795	N/A	N/A	2	0	$ 4.40	$ -	N/A	N/A
Mobile VHF	all	67	$ 3.40	$ 2,734	N/A	N/A	Marine	6	$ 3.40	$ 245	N/A	N/A
Portable VHF	all	128	$ 3.40	$ 5,222	N/A	N/A	Marine	6	$ 3.40	$ 245	N/A	N/A
Bases TMR	2	1	$ 4.40	$ 106	$ 10.00	$ 120	2	18	$ 4.40	$ 1,901	$ 10.00	$ 2,160
Mobile TMR seeded (16x5)	all	63	$ -	$ -	$ -	$ -	all	63	$ -	$ -	$ -	$ -
Mobile TMR owned	all	9	$ 3.40	$ 367	$ 10.00	$ 1,080	all	9	$ 3.40	$ 367	$ 10.00	$ 1,080

	Current Radio (estimate of quantities)							Recommended Radios					
Portable TMR seeded (16x4)	all	74	$ -	$ -	$ -	$ -		all	74	$ -	$ -	$ -	$ -
Portable TMR owned	all	49	$ 3.40	$ 1,999	$ 10.00	$ 5,880		all	142	$ 3.40	$ 5,794	$ 10.00	$ 17,040
Totals:		**408**		**$ 12,223**		**$ 7,080**			**318**		**$ 8,551**		**$ 20,280**

Notes on *Table 79*

- The trunked mobile radio (TMR) system used by the fire departments is owned and operated by Bell Aliant. In other NS fire department reviews, *GA* has noted that fees for the TMR system was billed through Aliant and can be lumped into the historical financial records as telephone costs.
- The TMR system is partially paid by the province and partially paid by subscription fees. NS provided (a.k.a. seeded) up to 5 mobile radios and 4 portable radios free of all charges to each fire department. Fire departments may purchase additional radios themselves and then pay access fees of $10/mo. plus Industry Canada licensing fees. The above table shows the budget line basis for annual TMR access fees and IC licensing fees.

Minor Capital

Fire departments need to replace broken or worn out firefighting and rescue equipment at a relatively predictable rate. Sometimes replacement needs are also driven by an unforeseen failure or loss, or the desire to achieve a higher level of capability (modernize). Minor Capital is a concept that some municipalities use to ensure the adequate provision of annual funds for the purchase of such equipment, and to thereby control fluctuations in the annual budget estimates.

Minor Capital includes the purchase of smaller, semi-durable, items used in firefighting and rescue; such as fire hose, firefighter protective clothing (bunker gear), self-contained breathing apparatus (SCBA) components, rescue rope, axes, pike poles, saws, radios, pagers, batteries, and many other similar items.

Collectively, the items listed above are relatively small in individual cost, reoccurring in need in a predictable way, and essential to service delivery. Individual item costs do not exceed $25,000 and collective purchases also do not exceed $25,000. The Municipality will need to include appropriate and corresponding rules, definitions, procedures, as well as signing/authorizing authorities in its purchasing by-law in order to manage minor capital expenditures.

From one perspective, minor capital items are consumables. The need to purchase some of these items occurs annually and their life span is largely predictable, typically less than 15 years (e.g. radio batteries last at most 4 years, bunker gear is 10 years by regulation, SCBA 15 years practically speaking. However, the otherwise predictable life-span can be interrupted by unexpected destruction (e.g. fire-hose damaged at a fire). So, flexibility to quickly realign immediate priorities in order to maintain essential services is also a feature of minor capital. The proper management and oversight of minor capital budget/expenditures requires delegation to a central authority.

GA is uncertain how much MCC is currently expending on minor capital item purchases. It appears that several cost elements are currently being used, in part, for this purpose, and that responsibility for purchases rests with MCC as well as with individual fire departments. Some related cost elements appear to be; 7530, 7531, 7570, 8011, 8090, 8091, and 8041. In addition, other items are being capitalized, for example; bunker-gear and pagers in 2020/21.

It is certain that the fire departments have an ongoing need for the replacement, and in some cases the augmentation, of minor capital items. *GA* requested the fire departments provide an inventory of their minor capital equipment inventories, largely carried on their fire apparatus, and to also provide a prediction of their minor capital equipment needs, forecast over the next 20 years. Eleven fire departments responded to this request, with varying degrees of completeness.

In addition, *GA* has compiled best-practice information on the basic needs for minor capital equipment; based on meeting the NFPA-1901 standard for minimum equipment to be carried on fire apparatus, and to meet health and safety regulations and best practices. Also included was equipment needs associated with *GA's* recommendations related to standardization of SCBA, the move to the exclusive use of TMR radios, and several other recommendations as well.

The following *Table 80* shows the result of this work. Discussion on the items presented in the table will follow, according to the line numbers.

TABLE 80: MINOR CAPITAL ESTIMATES, YEARS 2022-2041

a	Rows a → f are header rows	All Station Requirements					Annual Average cost (2022 - 2041):	$ 377,968																		
b	A	B	C	D	E	F	G >>							+/- vs. annual average: Below / (-Exceeds)												
c						+/- avg: >	$161,643	$51,693	$52,593	$49,543	-$44,008	$106,843	$104,843	-$4,858	-$23,858	-$76,458	-$34,808	-$58,808	-$28,908	-$36,208	-$136,558	-$10,408	$13,743	-$17,808	-$758	-$67,458
d		Start year: 2022			(Estimated)	Annual >	216,325	326,275	325,375	328,425	421,975	271,125	273,125	382,825	401,825	454,425	412,775	436,775	406,875	414,175	514,525	388,375	364,225	395,775	378,725	445,425
e		End year: 2041			YEAR 2022		year 1	year 2	year 3	year 4	year 5	year 6	year 7	year 8	year 9	year 10	year 11	year 12	year 13	year 14	year 15	year 16	year 17	year 18	year 19	year 20
f	Class	Item	Life	Units	Unit Cost	Annual QTY	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
1	Respiratory:	SCBA Paks (Scott X3, 4.5)	15	140	$ 7,000	9.3								10	9	10	9	10	9	10	9	10	9	10	9	10
2		SCBA air Bottles (30 min, 4.5, carbon)	15	140	$ 1,750	9.3								9	10	9	10	9	10	9	10	9	10	9	10	9
3		SCBA Masks (AV-3000HT), personal masks	15	219	$ 500	6.6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6
4		PAPRs (for investigators)	7	3	$ 1,200	0.4		3							3							3				
5		Fit-tester (PortaCount) adapters	15	5	$ 300																					
6		Cascade Bottles	15	0		0.0																				
7		PASS Alarms (not integrated)	15	0		0.0																				
8		Scott RIT Pak III	15	8	$ 5,000	0.5																				
9		Air Pak upgrade Kits, Scott	15	40	$ 3,000	2.7	3	3	3	3	3		3	3	3	3		3	3	3	3		3	3	3	
10		Sight-in-Mask, heads-up TIC, Scott	15	219	$ 2,100	14.6																				
11		Voice Amplifiers, Scott EPIC 3	15	219	$ 1,500	14.6																				
12					Class Sub-TOTAL $:		12,500	15,600	12,500	12,000	12,500	3,000	12,500	97,750	96,600	97,750	84,000	97,750	93,000	97,750	93,000	92,350	93,000	97,750	93,000	88,750
13	Firefighting:	Ground Ladders, 40' (Duo-Safety)	25	3	$ 2,800	0.1	2																			
14		Ground Ladders, 35'	25	2	$ 2,000	0.1		2										1								
15		Ground Ladders, 24', 28'	25	25	$ 1,900	1.0	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
16		Ground Ladders, 14', 12' (roofs)	25	32	$ 900	1.3	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
17		1-1/2" hose (forestry, Mercedes Firebreak II)	10	20	$ 275	2.0					10					10						10				10
18		1-3/4" hose (Kraken EXO, 50')	15	360	$ 350	24.0	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24	24
19		2-1/2" hose (Kraken EXO, 50')	20	220	$ 450	11.0	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
20		3" hose	10	0		0.0																				
21		4" hose (legacy)	10	0	$ 900	0.0																				
22		5" hose, 300 psi service (Mercedes MegaFlo Breather, 100', 4" STORZ)	15	120	$ 1,250	8.0		16		16		16		16		16		16		16		16		16		16
23		Hard Suction Hose, 6", 10' length, PVC clear	25	90	$ 900	3.6																				
24		Hard Suction Hose, 5"	25			0.0																				
25		Hard Suction Hose, 4"	25		$ 700	0.0			4					4			4				4			4		
26		Hard Suction Hose, 2-1/2" (10')	25		$ 313	0.0			4					4			4				4			4		
27		Port-A-Tanks (3000 USgal)	20	16	$ 4,500	0.8			2		2			2	2		2	2			2	2		2	1	
28		Drafting Equipment (misc.)	25	16	$ 2,000	0.6			4					4			4				4			4		
29		Portable Pumps, Large (CET 23hp, 460 USgpm@35psi)	20	16	$ 6,500	0.8			2		2			2	2		2	2			2	2		2	1	
30		Portable Pumps, (wildland), Waterax Striker-2	20	16	$ 5,300	0.8			2		2			2	2		2	2			2	2		2	1	
31		Portable Generators	25	16	$ 1,500	0.6		1		1		1		1		1		1		1		1		1		1
32		Chain Saws (firefighting speciality)	15	25	$ 5,500	1.7	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1	2	1
33		K-12 Saws (fire service K900)	15	16	$ 5,000	1.1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
34		Chain saw Carbide replacement chain	5	16	$ 1,000	3.2	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
35		Forcible Entry Tools (misc.)	25	16		0.6																				
36		Firefighting Nozzles	25	228	$ 1,300	9.1	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
37		Hose Appliances	25	50	$ 800	2.0	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
38		Ventilation Fans	20	16	$ 6,500	0.8					4					4					4					4
39		Firefighting Tools (misc.)	25	880	$ 500	35.2	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35	35
40		Wildland back-pack pump-tanks (soft)	15	54	$ 375	3.6						12							14					10		

a	Rows a → f are header rows	All Station Requirements					Annual Average cost (2022 - 2041):	$ 377,968																	
b	A	B	C	D	E	F	G >>							+/- vs. annual average: Below / (-Exceeds)											
c						+/- avg: >	$161,643	$51,693	$52,593	$49,543	-$44,008	$106,843	$104,843	-$4,858	-$23,858	-$76,458	-$34,808	-$58,808	-$28,908	-$36,208	-$136,558	-$10,408	$13,743	-$17,808	-$758	-$67,458
d		Start year: 2022			(Estimated)	Annual >	216,325	326,275	325,375	328,425	421,975	271,125	273,125	382,825	401,825	454,425	412,775	436,775	406,875	414,175	514,525	388,375	364,225	395,775	378,725	445,425
e		End year: 2041			YEAR 2022		year 1	year 2	year 3	year 4	year 5	year 6	year 7	year 8	year 9	year 10	year 11	year 12	year 13	year 14	year 15	year 16	year 17	year 18	year 19	year 20
f	Class	Item	Life	Units	Unit Cost	Annual QTY	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
41		Thermal Imaging Cameras (TIC), Bullard NXT, truck-mount charger	12	16	$ 12,500	1.3					7					7					7					7
42		Streamlight LED Flash Lights, with 5-unit charger, hang on bunker gear	10	146	$ 240	14.6	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
43		Floodlights, portable	20	32	$ 900	1.6				8					8					8					8	
44		Electrical Equip. (misc.)	10	16	$ 200	1.6				8					8					8					8	
45		Foam Application equipment	15			0.0																				
46		Deck guns	30		$ 3,500	0.0																				
47		TIC Battery	5	16	$ 200	3.2				16					16					16				16		
48																										
49					Class Sub-TOTAL $		75,150	89,550	114,200	97,550	218,400	90,050	69,550	130,200	114,150	201,800	114,200	120,150	74,800	97,550	230,450	118,150	69,550	137,150	94,650	201,800
50	Rescue:	Hydraulic Power Unit	15	0		0.0																				
51		Hydraulic Spreaders (eDRAULIC), Hurst SP555E2	20	2	$ 18,000	0.1													1							
52		Hydraulic Cutters (eDRAULIC), Hurst 788E2	20	2	$ 16,000	0.1													1							
53		Hydraulic Ram (eDRAULIC), Hurst R421E2	20	2	$ 13,000	0.1													1							
54		Hydraulic Combi-Tool (eDRAULIC), Hurst SC758	20	16	$ 16,000	0.8		4		4								4		4						
55		Hydraulic tools (misc.)	20	2	$ 1,000	0.1													1							
56		Stabilization Struts (Rescue 42 kit)	20	16	$ 2,000	0.8						4					4					4				
57		Air Bags Large	20	2	$ 2,500	0.1											1									
58		Air Bags Small	20	4	$ 1,600	0.2											2									
59		Air Bag Controls	20	2	$ 2,800	0.1											1									
60		Air Bag Hoses	10	6	$ 400	0.6											6									
61		Blocking/Cribbing (misc.)	25	16	$ 200	0.6						3					3						3			
62		Hand Tools (misc.)	25	16	$ 500	0.6						3					3						3			
63		Auto/Ex Tools (misc.)	15	16	$ 500	1.1						5					5						5			
64		Rescue Rope (NFPA)	15	78	$ 400	5.2		10		10		10		10		10		10		10		10		10		10
65		Utility Rope	15	78	$ 150	5.2		10		10		10		10		10		10		10		10		10		10
66		Hi/Lo Angle Hardware (misc.)	10	0	$ 1,000	0.0																				
67		Throw Bags	15	34	$ 80	2.3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
68		Inflatable Rescue Boat (Oceanid RDC)	10	0	$ 7,500	0.0																				
69																										
70					Class Sub-TOTAL $:		160	69,660	160	69,660	160	18,260	160	5,660	160	5,660	23,660	69,660	48,160	69,660	160	13,660	4,760	5,660	160	5,660
71	PPE/Safety:	Bunker Gear (Coat/Pants)	10	146	$ 3,000	14.6	30		30		30		30		30		30		30		30		30		30	
72		Bunker Gloves	7	175	$ 150	25.0	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25	25
73		Bunker Boots	10	146	$ 250	14.6		15		30		30		30		30		30		30		30		30		30
74		Helmets, firefighting	10	146	$ 500	14.6		30		30		30		30		30		30		30		30		30		30
75		Balaclavas	10	146	$ 75	14.6		30		30		30		30		30		30		30		30		30		30
76		Wildland Coveralls (FR cotton)	10	150	$ 250	15.0		30		30		30		30		30		30		30		30		30		30
77		Auto/Ex Gloves	7	30	$ 110	4.3	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
78		Chemical Suits Level A (encapsulating for vapour, gas, mist, particles)	10	0	$ 1,900	0.0																				
79		Chemical Suits Level B (encapsulating, splash)	10	0	$ 800	0.0																				
80		Chemical Suits Level C (splash, box of 12)	10	16	$ 200	4.0	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
81		HazMat Gloves (nitrile, box 12)	5	16	$ 30	8.0	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
82		HazMat Boots	5	0	$ 90	0.0																				

a	Rows a → f are header rows	All Station Requirements					Annual Average cost (2022 - 2041):																			
b	A	B	C	D	E	F	G >>											+/- vs. annual average: Below / (-Exceeds)								
c						+/- avg: >	$161,643	$51,693	$52,593	$49,543	-$44,008	$106,843	$104,843	-$4,858	-$23,858	-$76,458	-$34,808	-$58,808	-$28,908	-$36,208	-$136,558	-$10,408	$13,743	-$17,808	-$758	-$67,458
d		Start year: 2022			(Estimated)	Annual >	216,325	326,275	325,375	328,425	421,975	271,125	273,125	382,825	401,825	454,425	412,775	436,775	406,875	414,175	514,525	388,375	364,225	395,775	378,725	445,425
e		End year: 2041			YEAR 2022		year 1	year 2	year 3	year 4	year 5	year 6	year 7	year 8	year 9	year 10	year 11	year 12	year 13	year 14	year 15	year 16	year 17	year 18	year 19	year 20
f	Class	Item	Life	Units	Unit Cost	Annual QTY	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
83		Water Rescue Suits, Mustang Ocean Commander	15	24	$ 1,400	1.6		3		3		3		3		3		3		3		3		3		3
84		Water Rescue Helmets	15	24	$ 250	1.6		3		3		3		3		3		3		3		3		3		3
85		PFDs (rescue), Force 6 Rescuer	15	24	$ 400	1.6		3		3		3		3		3		3		3		3		3		3
86		Rescue Helmets	10	0	$ 200	0.0																				
87		Rescue 5-point Harness	10	0	$ 450	0.0																				
88		Ladder Belts	25	12	$ 400	0.5	4		4			4														
89		Traffic Vests	20	220	$ 20	11.0	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
90		Traffic Control Equipment (flags, signs)	20	220	$ 30	11.0	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
91		Traffic Cones (5 per NFPA vehicle to meet NFPA)	15	220	$ 45	14.7	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
92		Accountability Equipment (Case Commander and Accessories)	20	16	$ 1,500	0.3						3										3				
93		Incident Command ((Case Commander and Accessories)	20	16	$ 1,500	0.3						3										3				
94																										
95																										
96					Class Sub-TOTAL $:		98,055	41,105	98,055	44,855	96,455	55,455	96,455	44,855	96,455	44,855	96,455	44,855	96,455	44,855	96,455	53,855	96,455	44,855	96,455	44,855
97	Haz-Mat:	Gas Detection (1 per station plus 1 spare) Draeger Xam2500, bump Station	12	19	$ 2,100	1.6		3		3		3		3		3		3		3		3		3		3
98		Overpak Drums/Pails	15	0		0.0																				
99		Decon Equipment, TFT Decon/Pak	15	19	$ 1,000	1.3	6	6	6													6	6	6		
100		Leak Kits	15	0		0.0																				
101		Tents	10	0		0.0																				
102																										
103					Class Sub-TOTAL $:		6,000	12,300	6,000	6,300		6,300		6,300		6,300		6,300		6,300		12,300	6,000	12,300		6,300
104	Comm's:	Portable Radios (owned TMR, not incl seeded) Moto APX6000, hi-temp RSM	15	142	$ 7,000	9.5		10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
105		Portable Radios (VHF, MARINE)	15	6	$ 500	0.4												4								
106		Radio Batteries Li-Ion 3400 mAh (portable radios)	4	222	$ 250	55.5	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56	56
107		Single charger, Impress	20	46	$ 150	2.3	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
108		6-Gang charger, Impress, 12-Volt	20	16	$ 1,500	0.8						4					4					4				
109		Mobile Radios MOTO APX-1500 (owned TMR, not incl seeded)	25	9	$ 4,000	0.4																				
110		Mobile Radios (VHF MARINE), mounting in Boats	15	6	$ 900	0.4							3							3						
111		Base Radios (TMR, 1 per station)	25	18	$ 4,500	0.7																				
112		Repeater Radios (VHF paging)	20	0	$ 15,000	0.0																				
113		Radio Towers (small)	30	0	$ 75,000	0.0																				
114		Pagers Minitor 6 VHF 1 channel Intrinsic-safe	10	365	$ 590	36.5	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36	36
115		Fax Machines (incl in Multi-Function computer Printer)	15	18		1.2																				
116		Modems	10	18	$ 200	1.8																				
117		Routers	5	0		0.0																				
118		Hubs, etc.	5	0		0.0																				
119		Pager batteries	4	365	$ 35	91.3	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92	92
120					Class Sub-TOTAL $:		24,460	94,460	94,460	94,460	94,460	94,460	94,460	94,460	94,460	94,460	94,460	94,460	94,460	94,460	94,460	94,460	94,460	94,460	94,460	94,460
121	Medical:	AEDs	5		EHS provides	0.0																				
122		Oxygen Equipment	5		EHS provides	0.0																				
123		Backboards	25		EHS provides	0.0																				

a	Rows a → f are header rows	All Station Requirements					Annual Average cost (2022 - 2041):	$ 377,968																	
b	A	B	C	D	E	F	G >>																		
c						+/- avg: >	$161,643	$51,693	$52,593	$49,543	-$44,008	$106,843	$104,843	-$4,858	-$23,858	-$76,458	-$34,808	-$58,808	-$28,908	-$36,208	-$136,558	-$10,408	$13,743	-$17,808	-$758	-$67,458
d		Start year: 2022			(Estimated)	Annual >	216,325	326,275	325,375	328,425	421,975	271,125	273,125	382,825	401,825	454,425	412,775	436,775	406,875	414,175	514,525	388,375	364,225	395,775	378,725	445,425
e		End year: 2041			YEAR 2022		year 1	year 2	year 3	year 4	year 5	year 6	year 7	year 8	year 9	year 10	year 11	year 12	year 13	year 14	year 15	year 16	year 17	year 18	year 19	year 20
f	Class	Item	Life	Units	Unit Cost	Annual QTY	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	2037	2038	2039	2040	2041
124		Stokes Baskets (1 per aerial)	25	1	$ 2,000	0.0																				
125		Medical Equipment (misc.)	5		EHS provides	0.0																				
126																										
127					Class Sub-TOTAL $:																					
128	Station Equipment:	Shop Tools (misc.)	20			0.0																				
129		Computers and Accessories	5	19	$ 2,500	3.8																				
130		Furniture	25			0.0																				
131		Extractor/Washers for PPE (1 per support station)	20	3	$ 15,000	0.2																				
132		Bunker Gear Dryers (2 per support station) Brigade 5	20	6	$ 5,500	0.3																				
133		Pressure Washers	20		$ 500	0.0																				
134		Hose Washers, Circul-Air for deep cleaning hose (one for County)	20	1	$ 15,000	0.1																				
135		Fire Hose Tester, 4-outlet, electric (one for County)	20	1	$ 8,000	0.1																				
136		File Cabinets	30			0.0																				
137		Flammable Liquids Cabinet, Large, self-closing doors	30	19	$ 2,800	0.6																				
138		Battery Chargers	15	16	$ 200	1.1																				
139		Utility Air Compressor, 50 gallon, industrial grade	15	19	$ 1,800	1.3		2		2		2		2		2		2		2		2		2		2
140		Exhaust Extractor Misc.	10			0.0																				
141																										
142					Class Sub-TOTAL $:			3,600		3,600		3,600		3,600		3,600		3,600		3,600		3,600		3,600		3,600

Notes on the Minor Capital Table

Table 80 arrangement:

- Column A represents a number of groupings for equipment of a similar purpose/type.
- Column B contains a brief description of the equipment item, sometimes with a make/model to correspond with the estimated cost.
- Column C is the equipment life-expectancy, in years. This is determined according to regulatory requirements, or by application of best judgement. Not all fire departments utilized their equipment such that it lasts the same number of years. Busier departments will tend to have shorter life cycles on some equipment.
- Column D is the inventory quantity of the particular equipment item, based on the NFPA-1901 minimums, fire department reported equipment, and *GA* recommendations.
- Column E is the estimated individual cost of each item in 2022 dollars. Pricing may vary from that noted, and often better pricing is available when obtaining quotations from competing vendors for the same item, especially when group purchasing of standardized equipment; i.e. as a County-wide purchase. No inflation is factored in the table, and costs will need validation year to year, as most fire equipment does not follow inflationary trends, as it is more influenced by the CDN dollar exchange with the US dollar.
- Column F is the recommended quantity that, on average, should be purchased annually for each item. It is largely based on the inventory divided by the service life, with consideration for immediate needs, as identified by individual fire departments during the *GA* survey.
- Under each year in the G columns is a number; opposite each equipment item description, that have an inventory quantity in column D, and a cost in column E. These are the annual numbers of that item that *GA* proposes be purchased in that year. Some items are grouped in the same year, for example rows 72-77, because these items when purchased together will attract better pricing if purchased that way, or are part of a system.

Specific Equipment Rows:

- Row a: Shows the average annual cost of all items in each year, averaged over the 20 years of the table. The amount is $377,968.
- Rows c, & d: Row d shows the sum of each column (year) in dollars; i.e., is the sum of all costs where a purchase is planned in the particular year. Row c shows the variance of that annual sum, from the 20-year average shown on row a. Red negative numbers mean the annual cost exceeds the average in that year.
- Row 1: The capital budget includes a project to standardize[334] the self contained breathing apparatus (SCBA) across the County fire departments. That proposal does not include all of 140 existing SCBA units. The minor capital budgets picks up where the capital project stops, commencing in year 8 (2029), with a planned replacement of all SCBA on a 15 year life-cycle basis. A complete inventory of SCBA, and other related decisions will affect the timing and quantities.

[334] See *Recommendation 99*

- Row 2: SCBA air bottles is associated with the project discussed for row 1.
- Row 3: This row is the costs and the phase-in timing to provide all firefighters with their personal SCBA face-piece (mask).[335]
- Row 4: Is the provision[336] of powered air-purifying respirators for the use of fire investigation personnel.
- Row 5: The capital budget contains the purchase of a PortaCount quantitative fit-testing machine. Adapters are required for the various SCBA and other respirator types the fire departments use. The number and precise costs of these adapters will depend on the outcome of standardizing SCBA.
- Row 6: Cascade bottles (compressed air cylinders) store breathing air produced by breathing air compressors. This row is a place holder in the table.
- Row 7: Some SCBA currently in use in MCC are so old that they do not have integrated personal alert safety system (PASS) alarms as part of the SCBA. This row is a place holder awaiting the outcome of the SCBA standardization recommendation.
- Row 8: RIT is the acronym for rapid intervention team, which is the firefighter saving firefighter standby team at the scene of a structure fire. This team should be equipped with an emergency air supply system, called a RIT-Pak. Only Shinimicas reported having one. More are needed to ensure coverage across the county. This row is a place holder awaiting the outcome of the SCBA standardization project.
- Row 9: Nova Scotia Regulation requires firefighter SCBA to meet the current NFPA-1981 Standard. This will require periodic upgrading to older SCBA as the Standard changes approximately 2 times in the life of an SCBA pack.
- Row 10, 11: These rows are place holders for SCBA upgrades requested by several fire departments to their existing Scott SCBA. These requests may be redundant depending on the outcome of the SCBA standardization project.
- Rows 13 thru 16: Once annual testing[337] of ground ladders commences, it is expected that a number of existing ladders will fail due to damage or due to age. Several fire departments have requested replacement for specific ladders and these are reflected here also.
- Rows 17 thru 19: Fire hose has a variable life-span depending on usage and fortune. It gets dirty with use which degrades its strength, and can be cut the first time it is deployed. The estimated service life shown is based on past experience by *GA*. Inventory quantities are based on reported counts from some of the fire departments who provided this information, extended to the 5 who did not. Brand and model shown allowed price estimating based on a high quality, high performance, made in Canada hose.
- Rows 21, 22: Currently the fire departments are utilizing 4 inch low pressure supply hose. *GA* has based this estimate of costs on a transition to high pressure 5 inch hose that can also be safely used as discharge (attack) hose, and flows approximately twice[338] as much water for the same pressure loss. Cost differential transition from 4 inch to 5 inch is attractive if ordered with 4-inch couplings so existing appliances are retained. Brand and model shown allowed price estimating based on a high quality, high performance, made in Canada hose.

[335] See *Recommendation 106*

[336] See *Recommendation 107*

[337] See *Recommendation 90*

[338] https://www.elkhartbrass.com/files/aa/downloads/performance/Fire%20Hose%20Friction%20Loss.pdf

- Rows 23 thru 26: Hard suction hose, used for drafting with a pump from a standing water source is very durable, but on occasion will need replacing. 5 inch and 6 inch diameter is the most common sizes for pumpers, while 4 inch is for initial attack and mobile water supply apparatus, and portable pumps use either 4 inch or 2½ inch. The 4 inch hose accompanies the purchase of portable pumps on Rows 29, 30.
- Row 27: Port-a-Tanks, aka dump-tanks, require periodic replacement of their vinyl liners and/or frames. Shown in the table is the phase-in of larger port-a-tanks than in current use, as needed to improve water shuttle performance.
- Row 41: Seven of the eleven fire departments that responded to *GA*'s request reported having a thermal imaging camera (TIC). TICs are essential and somewhat fragile tools and need regular replacement. A standard make and model is anticipated.
- Row 42: Nova Scotia Regulation[339] requires that firefighters have access to battery powered intrinsically safe hand lights. This row provides that every qualified firefighter has a flashlight meeting the requirements.
- Rows 51 thru 53: Every fire station has some make/model and composition of hydraulic extrication tools. These rows are a placeholder for replacement and standardization of these tools according to a coordinated program that will likely need to appear in the capital budget due to the cost of these systems. The transition from conventional systems with gasoline powered hydraulic "power units," hoses, and tethered tools, to independent, and much more capable, battery powered tools is anticipated in these rows.
- Row 54: This row anticipates outfitting every fire station with one combination cutter/spreader electric powered hydraulic extrication tool.
- Rows 56 thru 60: Pending a thorough review and coordination of extrication needs and resources, these rows are placeholders for the replacement/provision of equipment that is currently not standardized across the fire departments.
- Rows 71 thru 77: Not all members of the fire departments are trained and qualified to perform structural firefighting, or technical extrication (e.g., Auto/Ex). The numbers of required equipment is an estimate based on *GA*'s interpretation of information provided by only 11 of the 16 fire departments. It is subject to change after a thorough review by MCC. Bunker Gear (turn-out gear) is not required by every member of the fire departments. Bunker gear has a life-span of maximum 10 years for use in structural firefighting.
- Rows 78 thru 82: None of the fire departments does technical level response to hazardous materials incidents, so most of the equipment listed in these rows is there as a placeholder in case that changes. Rows 80 and 81 are equipment needed by those persons who will decontaminate firefighters after exposure to fire contaminants. They are single use items.
- Rows 83 thru 85: Six of the fire departments do open water rescue with powered boats. Personnel must wear exposure suits, personal floatation devices designed to be tethered, and head protection.
- Row 88: NS Regulation requires the wearing of fall protection when operating from an aerial device, such as Springhill's quint.
- Row 92, 93: These rows are placeholders for the implementation of a coordinated and standardized incident command and accountability systems. The equipment noted is suitable for that need.

[339] N.S. Reg. 53/2013 *General Regulations* under the *Occupational Health and Safety Act*, §202.

- Row 97: The detection of hazardous atmospheric conditions is a common need. This row represents the provision of standardized instruments for all fire departments.
- Row 99: The need to decontaminate firefighters, immediately after exiting a fire, requires equipment in order for the process to be effective.
- Rows 104 thru 113: These rows correlate with the recommendation[340] to transition to the use of the TMR radio system only.
- Rows 114, 119: Pagers are essential for alerting firefighters, but have a short life span due to being carried everywhere by volunteer firefighters.
- Rows 129, 131, 132, 134, 135, and 137 were moved to the capital budget proposal.

The above minor capital projection and estimate is based on *GA's* interpretation of inventory details and quantities solicited from all of the MCC fire departments. Not all fire departments responded to these requests, nor is there any certainty that the provided information is complete. MCC will need to do a complete and thorough assessment of all equipment, its utility, its age, and its functional condition; All needed for a more accurate projection of minor capital needs and costs, going forward.

Recommendation 181: GA recommends that Cumberland County complete a thorough inventory and assessment of condition, age, and utility, of all minor capital equipment, in every fire department; and that this inventory be evaluated as sufficient, or not, to meet the service delivery commitment contained in the fire departments' Registration documents with the Municipality.

[340] See Recommendation 70

MAJOR CAPITAL BUDGET

Capital expenditures include expenditures on major capital projects and the largest, and recurrent, demand is the replacement of fire apparatus (i.e. fire trucks). Fire trucks are becoming very expensive, approaching the cost of a properly appointed fire station. The goal of municipalities is to ensure that they have enough fire trucks, of the correct configuration, established in the best locations, and that are reliable and functional; but not more than is required, or with features that are not justified.

Various aspects of standards for fire apparatus, fire apparatus type and numbers needed, and the recommended deployment of fire apparatus is already thoroughly discussed in three chapters[341] of this *Report*. The capital budget projection for fire apparatus that follows is based on recommendations arising out of those chapters.

Replacing Fire Trucks

Typically for any fire department, the significant recurring demand for capital monies is the purchase of fire apparatus. Once the requirement[342] to have particular types/capabilities of fire apparatus and other vehicles, and the number thereof is determined, it becomes possible to project into future years the capital funding demands for their replacement. This means, there is the opportunity to plan for the upcoming expenditures, to know fairly accurately what the costs will be, and to decide the funding strategy by which the capital demands will be met.

A quick review of standards shows that NFPA-1911[343] recommends;

> *"… It is recommended that apparatus more than 15 years old that have been properly maintained and that are still in serviceable condition be placed in reserve status; be upgraded in accordance with NFPA-1912; and incorporate as many features as possible of the current fire apparatus standard (see Section D.3). This will ensure that,*

[341] See *Fire Service-Related Standards* starting on page *61*, *Ch 3: Fire Apparatus and Equipment* starting on page *80*, and *Ch 4: Recommended Deployment of* starting on page *119* of this report.

[342] A significant first step is a needs analysis, where the justifiable 'needs' for fire apparatus (numbers, types, features) is sorted from the 'wants and desires' for fire apparatus. A large part of this *Report* is focussed on determining and justifying the 'needs' for fire apparatus. These are based on community Risks (consequences and frequency) and establishing the ability to effectively intervene when necessary, as planned.

[343] National Fire Protection Association; NFPA-1911, Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Emergency Vehicles, 2017 edition; Annex D.1

> *while the apparatus might not totally comply with the current editions of the automotive fire apparatus standards, many of the improvements and upgrades required by the current editions of the standards are available to the fire fighters who use the apparatus."*

NFPA-1911 goes on to say that the original purchase of good quality, with good ongoing maintenance, and periodic upgrading to keep pace with safety and function improvements, can extend apparatus serviceable life somewhat.

The other major arbiter of fire apparatus age and condition is the Fire Underwriters Survey (FUS). FUS conducts detailed surveys of municipal fire protection capabilities for the purposes of recommending fire protection grades to the insurance industry. FUS recommendations are highly regarded as a consistent yardstick for comparison to past and future capabilities in fire protection, and their conclusions (ratings) can affect fire insurance costs for individual property owners.

It is clear that both NFPA and FUS consider 15 years as the maximum front-line serviceable age of fire apparatus. However, FUS does recognize[344] that low incident volumes, quality purchases, and good maintenance, *proved by testing and records,* can extend the front-line serviceable age to 20 years, followed by up to 5 years in reserve for smaller/rural communities or longer under certain conditions. Front-line means that the apparatus is relied on to be a mainstay for fire protection. Reserve means that it is not so relied on, but can periodically step into a front-line role when needed (e.g. as a maintenance spare).[345]

The main caveat is that fire apparatus must be well maintained and must pass service testing annually. It is *GA's* understanding that such testing and associated life extending upgrading to meet NFPA and FUS recommendations/requirements are not currently, or reliably, being met within the Cumberland fire apparatus fleet.

The components of the capital budget addressing the replacement of fire apparatus takes as its basis a maximum service life of 25 years for major fire apparatus; i.e., pumpers, pumper/tankers, mobile water supply apparatus, and initial attack apparatus. This service life is valid, provided,

[344] See *Table 16: FUS Service Schedule for Fire Apparatus* and *Table 17: FUS Frequency of Fire Apparatus Tests*.

[345] See *Table 23* on page *169* for specific recommendations on service ages.

NFPA and FUS standards/requirements are followed. The section in this *Report* on FUS discusses how to apply for service life extensions on major fire apparatus.

The capital budget projection does not include all ancillary equipment purchased by the fire department societies, including boats and trailers, nor off-road UTV like vehicles and their trailers. It is expected that the County will need to resolve responsibility for these vehicles.

Many of the existing[346] fire apparatus are past their replacement need; in age and likely there are condition issues as well. Some have been in the local fire departments since new. Some others have been well used before acquisition as second or third-hand fire apparatus by the fire departments, and were old before they arrived in Cumberland. Some of these past decisions have immediate consequences in this capital budget projection. This will create some front-end loading in the budget projection if the County desires to catchup.

In total, there appears to be eight vehicles that require immediate replacement based on their age, and a further three in the next year or so. Prioritizing should be based on their condition and suitability, and whether there is a cost/benefit incentive to seeking a modest service life extension through testing and rehabilitation. Past record retention will also be needed for service life extension.

It should be noted that budget years do not correspond with expenditure (cash flow) years for fire apparatus. It is usual for the fire apparatus purchasing process[347] to take approximately 18-24 months start to finish for a relatively standard fire apparatus, including the usual 8-12 months for construction. *GA* is hearing now that with supply chain issues and COVID impacts that this time frame has extended up to 36 months *after award of contract*, which time is on top of all the front-end steps that are under municipal control. Prices are also being affected by the unusual transition to a sellers market for fire apparatus, due in part to supplier consolidation. Many

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[346] See *Table 15* on page *83*.

[347] The major steps after achievement of budget approval are as follows; *determine needs, develop specification based on latest NFPA-1901 Standard edition, develop RFP*, issue RFP, evaluate proposals, negotiate corrections/clarifications, award contract (Council involvement), pre-build conference, order chassis and major components (pump, etc.), chassis and components received, commence assembly and construction, correspond during construction, approve alterations, pre-delivery inspection, provisional receipt of fire apparatus, acceptance testing, develop operational manual, commissioning training, development of maintenance schedules, placing into service. (Developing a standardized specification will significantly shorten the first *three steps* (italicised) which can typically take 6 months when properly executed by experienced staff).

municipalities are rushing to sign orders to lock in pricing, which is having a deleterious effect on pricing for those who do not.

The capital projection also highlights the retirement of current apparatus in accordance with the recommendations[348] on major fire apparatus deployment. Also shown is the re-deployment of two fire apparatus into a designate maintenance reserve status. All such items are **pink** highlighted in the budget table (*Table 82*) in the year where this is recommended to occur.

Other Capital Items

The capital budget projection includes recommendations[349] for water treatment systems and generator standby power systems for fire stations not currently so equipped. Individually these items might not qualify as capital expenditures, but collectively a group purchase to establish better pricing will. For this reason they are in the capital projection.

Also in the capital projection is the recommended[350] equipment for cleaning and disinfecting firefighter personal protective equipment, in particular bunker/turn-out gear. This includes speciality washers and dryers.

Recommended[351] in the capital budget is a respirator quantitative fit-testing machine, called a PortaCount.

A big item (approximately $875,000) in the budget is related to the safety recommendation[352] to standardization self-contained breathing apparatus (SCBA plus air cylinders) equipment across the County.

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[348] See *Ch 4: Recommended Deployment of Response Resources* starting on page *170*.

[349] See *Recommendation 51*

[350] See *Recommendation 97*

[351] See *Recommendation 108*

[352] See *Recommendation 99*

Fire Station Renovation/Replacement

The needs for fire station renovations or replacements are likely not completely included in the capital budget projections. Such needs should be based on more than just *GA*'s assessment of space and utilization contained in the section on *Fire Station Assessments* starting on page *215*. A station condition audit, looking at engineering issues and energy consumption, needs to be done for a complete picture of the future needs with these facilities. Such work was outside the scope of this *Review*. Items arising from station conditions and energy audits might require the addition of capital projects to address energy efficiency, structural defects, Code compliance issues, and health/safety issues that were not identified in *GA's* utilization scan.

However and considering the foregoing caveat, a number of station replacement/modification recommendations are included in the major capital projections. These are driven by two main concerns. The first, is a utility deficiency of a current facility; and the second, is the need to harmonize with *GA* recommendations for fire apparatus or other capability assigned to a facility.

Table 81 summarizes and list in priority order *GA's* recommendations in this regard, and are intended to assist the County is developing a priority order based on a thorough assessment that includes a building conditions/energy audit, as noted in previous paragraphs.

For the items addressing replacement of fire stations, all will likely need a suitably located and sized property to be acquired. The costs for land are *not* included in the estimates. *Table 82* includes the recommended timing for these projects.

TABLE 81: FIRE STATION EXPANSION/REPLACEMENT; RECOMMENDED CAPITAL PROJECTS

Priority	Station	Description of Work	Estimated Cost (+/- 10%)
1	Springhill	Logistics/Service centre. Basis 8 ft x 40 ft shipping container (300 sqft), fitted out with contaminated and clean rooms, heat, ventilation, lights, PPE laundering equipment (equipment not incl), water and waste connections. Storage room in one end. Cost basis $100/sqft.	$30,000

Priority	Station	Description of Work	Estimated Cost (+/- 10%)
2	Parrsboro	Logistics/Service centre. Basis 8 ft x 40 ft shipping container (300 sqft), fitted out with contaminated and clean rooms, heat, ventilation, lights, PPE laundering equipment (equipment not incl), water and waste connections. Storage room in one end. Cost basis $100/sqft.	$30,000
3	Pugwash	Logistics/Service centre. Basis 8 ft x 40 ft shipping container (300 sqft), fitted out with contaminated and clean rooms, heat, ventilation, lights, PPE laundering equipment (equipment not incl), water and waste connections. Storage room in one end. Cost basis $100/sqft.	$30,000
4	Shinimicas	Logistics centre. Basis 8 ft x 20 ft shipping container (150 sqft), fitted out with ventilation, lights, Cost basis $65/sqft	$10,000
5	River Hebert	Replace fire station in recommended location. 3-bays (3,000 sqft) for apparatus and facilities to meet standards and best practices. 6,700 sqft total station area. Cost basis $325/sqft. Land acquisition and other soft costs are not included.	$2,180,000
6	Westchester	Replace fire station in recommended location. 3-bays (3,000 sqft) for apparatus and facilities to meet standards and best practices. 6,700 sqft total station area. Cost basis $325/sqft. Land acquisition and other soft costs are not included.	$2,180,000
7	Parrsboro	Replace fire station in recommended location. 5-bays (5,000 sqft) for apparatus and facilities to meet standards and best practices. 9,100 sqft total station area. Includes logistics/service centre. Cost basis $325/sqft. Land acquisition and other soft costs are not included.	$2,960,000
8	Joggins	Replace fire station in recommended location. 3-bays (3,000 sqft) for apparatus and facilities to meet standards and best practices. 6,700 sqft total station area. Cost basis $325/sqft. Land acquisition and other soft costs are not included.	$2,180,000
9	Wentworth	Replace fire station in recommended location. 3-bays (3,000 sqft) for apparatus and facilities to meet standards and best practices. 6,700 sqft total station area. Cost basis $325/sqft. Land acquisition and other soft costs are not included.	$2,180,000
10	Advocate	Replace fire station in recommended location. 3-bays (3,000 sqft) for apparatus and facilities to meet standards and best practices. 6,700 sqft total station area. Cost basis $325/sqft. Land acquisition and other soft costs are not included.	$2,180,000

Beneficial Ownership Agreements

The County has in the past, and continues to do so, contributed capital and maintenance funds towards the purchase or upgrading of capital assets that are not held in ownership by the County, but are owned by individual fire departments. The fire departments are incorporated entities, with all the rights of an natural person, meaning that they have the power to divest their owned

assets as they see fit. Some of these assets may have been substantially, or entirely, purchased with public funds provided by the County, or by citizens (donations, bequests, fund-raising) on behalf of their community. These contributions of funds were intended for the purposes of providing fire and emergency services in the community, and not strictly to provide valuable assets to the local fire corporation.

Secondarily, the County has over the years contributed staff time and funds to inspect, test, maintain, repair, and upgrade capital assets, especially fire apparatus. In that sense they have a financial stake in the disposition of these assets, assets intended for the public good.

There is a need to protect the public's interest in investment made in assets not wholly owned by the County. A means to do so is the signing of beneficial ownership agreements between the County and all fire departments. Such an agreement should be a condition on any further funding or services being provided towards capital assets.

A beneficial ownership agreement is a conditional contract in which both parties agree that ownership (a) is shared in proportion to the ratio of funds invested, (b) restricts the disposal of those assets, and (c) ensures that the municipality retains control of the assets if the society fire department ceases operation, for any reason. The main condition to such an agreement is that in order to receive municipal funds or other financial support the agreement must be executed. It protects the public interest and, as such, address issues of accountability.

Recommendation 182: GA recommends that Cumberland County develop and implement a Policy requiring the signing of Beneficial Ownership Agreements with each corporate fire department to which public finds or services are provided for capital asset purchase, or maintenance, or improvement.

Presentation of the Major Capital Projection

The capital budget projection is presented in tabular format (*Table 82*), similarly to that of the Minor Capital recommendations. It includes 20 years, from 2022 through to 2041. The projections are based on the calculated needs for a scheduled renewal of the fire apparatus fleet, fire station replacements, and the other items mentioned immediately above. *GA* does not represent that the presented items are the entirety of the capital needs for the fire services, but only the items within the scope of this *Review*.

The total estimated capital project funds requirement for 2022, if every project was to proceed, is estimated at $3.24 million. The years 2024 and 2030 are also big capital budget projection years at approximately $4.2 million and $5.1 million respectively. The cash-flow needs for most of the budget year projects would not all occur in the budget year as some projects would carryover into following year(s) depending on lead-time and delivery time constraints.

There is significant front-end loading to the budget projection as a result of a pent-up need for fire apparatus replacement and rationalization, fire station related items, and the need to harmonize SCBA. For years 1-10 of the budget projection (2022-2031), a total expenditure is forecast of $27.2 million. For the second 10 years of the projection (2032-2041), a total expenditure is forecast of $12.3 million. These budget demands could/should be met by annual contributions to a fire reserve account in preceding years.

The budget projection amounts are in 2022 dollars and will need annual adjustment basis anticipated increases in cost of fire apparatus and other items in the budget. Particular attention will be required for tracking changes (i.e., increases) in fire apparatus pricing. Fire apparatus pricing is driven by market pressures; i.e.; acquisitions, as the fire apparatus fabrication industry is still consolidating; by the dollar exchange, since most of the major components including the chassis are USA dollar priced; and by changes in NFPA safety standards. Fire apparatus pricing does not follow the CPI, it tends to exceeds it. This also drives the cost, if not the value, upwards for used fire apparatus.

TABLE 82: MAJOR CAPITAL PROJECTION

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Notes on the Major Capital Projection Table

Table arrangement:

- **LN** has reference row numbers for the purposes of these notes.
- **Class** is a description under which capital projects are grouped.
- **Station** is the fire station to which a specific project is based, if any.
- **Note** is a flag indicating that a project is a change from a current item being replaced, or that an more thorough assessment is required before a commitment can be made to a particular project. New means the project is an addition to current capability.
- **New Item** indicates what is being proposed. In the case of fire apparatus, it is the type of apparatus that is being proposed.
- **Current Type** is what is being replaced, retired, or upgraded. It is the current apparatus type.
- **Replacing Current Item** is a further description of what is being replaced, if anything. For fire apparatus it shows the *chassis manufacturer* / *fire body manufacturer* (if applicable).
- **Fleet ID** is the fleet number assigned by MCC for maintenance purposes. Some current fire apparatus did not have fleet numbers in the information provided to *GA*.
- **Age** is the current age of a particular fire apparatus or other asset. It is the chassis age vis-à-vis 2022. In some cases, the body is considerable older than the chassis. This is particularly the case with some rescue trucks.
- **Owner** indicates the owner of the current asset. This information comes from a number of sources and is believed by *GA* to be mostly accurate.
- **Justification** is a brief and high-level explanation of why a capital project is being proposed.
- **Estimated Unit Cost** is an estimate of what a replacement cost might be today, in 2022 dollars. No inflation is built into the table. Prices are best determined through a competitive process with multiple suppliers and may be higher or lower than noted in this column. Particularly with fire apparatus, prices are volatile and can vary significantly between similar looking apparatus. Technology and features can substantially drive the price upwards.
- **Year Columns** show a 20-year projection of capital spending based on the projects proposed and the estimated costs. In any year, opposite each project row, a number can be placed to indicate the purchase of that number of items. The cost of all such selected items in that particular year is extended upwards to total at the top of that particular year's column. These totals are shown in the yellow highlighted row, and are displayed in thousands of dollars ($k).

Project Rows:

Projects are grouped according to their Class, i.e.; Fire Apparatus, Facilities, and Equipment. Within each Class, projects are grouped by similar projects. All fire apparatus that is recommended is based on the provided standard specification outlines, starting on page *183* of this *Report*.

The following paragraphs will provide some additional project detail to that contained in the Major Capital Projection table.

- Rows 1 thru 5: The fire departments are currently operating used pickup trucks, SUVs, and rescue trucks made from pickup trucks and cube vans, and one very old initial attack, and one newer. MCC is paying to maintain and operate these vehicles, and in most cases they are not fully functional in the role of fire apparatus. There is a need for initial attack apparatus in certain areas, as recommended,[355] and these rows address that need.
- Rows 6 thru 13: The comments for rows 1 - 4 on current apparatus are pertinent here also. These projects provide for replacing society owned vehicles with a proper, although modest, rescue truck[356] suitable for carrying equipment and manpower, to medical (MFR) incidents as well as to fire and rescue incidents. These vehicles should be properly specified and safe for the purpose, equipped with diesel engines and 4-wheel drive.
- Rows 14 thru 29: These rows address the need to replace existing mobile water supply apparatus and pumper/tankers as they age out. The bulk of these replacements will occur in the mid-2030's since the current fleet of these vehicles is relatively new. The recommended[357] vehicle is not a pumper/tanker, but is a high efficiency mobile water supply apparatus.
- Rows 30, 31: As per *Recommendation 20* on page *190* there is a need to keep at least 2 older pumpers that are no longer suitable for first-line service as maintenance reserves. The vehicles in these rows are recommended for this purpose. These vehicles need to be located where there is space and the willingness to look after them.
- Rows 32 thru 40: There are nine current rescue trucks that consist of a chassis and a medium to large fabricated body (modular). It is common practice to remount good quality/condition bodies on newer chassis when the time comes to seek higher reliability, or lower servicing costs. These timings are very individual, depending on condition, service history, and availability of repair components. It is also cost effective, usually costs less than purchasing a new apparatus, depending on the amount of updating and rehabilitation that is needed. Although *Table 82* projects the schedule for these replacements, a vehicle by vehicle individual, and detailed, assessment including the need to bring up to safety standards, should be done to each apparatus before committing to a budget and schedule for each one. Such evaluation was not part of *GA*'s scope.
- Rows 41 thru 57: These are replacements due to aging of Pumpers. Pumpers are the main-stay of firefighting, and of insurance ratings. As recommended,[358] a standard pumper should be provided for all stations. The outline specification for this apparatus is on page *183* of this *Report*.
- Rows 58, 59: These are recommended[359] replacements for 2 current pumpers, with Quint type fire apparatus. The discussion of this recommendation starts on page *202* of this *Report*. If this recommendation is not accepted, then these items will need to be converted to match rows 41-57.
- Row 60: This is the replacement of the current Quint located in Springhill, with a vehicle meeting the standard specification outline on page *186* of this *Report*.

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[355] See *Recommendation 39* on page *136* and the accompanying discussion starting on page *135*.

[356] See *Recommendation 42* on page *138*.

[357] See *Recommendation 43* on page *142*.

[358] See *Recommendation 3* and *Recommendation 4* on page *117*.

[359] See *Recommendation 33* on page *135*, and *Recommendation 35* on page *136*.

- Rows 61 thru 68: The fire apparatus and vehicles listed in these rows are not recommended for replacement, as surplus to requirements. These particular vehicles were selected for a number of reasons. Several of them are not currently equipped, effectively retired. Some do not meet any standard, having been locally fabricated for a need at the time. All of them are old to very old. They are surplus to requirements since other vehicles currently in service and/or scheduled for replacement meet recommended[360] equipping needs.
- Rows 70 thru 80: Many of the fire stations are provided water from untreated and untested water wells. As discussed in the fire station review, *GA* recommends this be addressed for health and safety reasons. These rows are an estimate of cost for typical treatment systems that include removal of iron, arsenic and water hardness, and to provide UV disinfection and filtering. Annual servicing costs will be around $500 per station if undertaken. Additional costs will also be incurred if mineral contaminants require reverse-osmosis systems (typically $20k ea.).
- Rows 81 thru 94: Few fire stations have adequate back-up power capabilities as discussed in the fire station review. *GA* recommends this be addressed through an assessment of electrical-demand requirements followed by the installation of automatic start generators of adequate size. Propane powered units are easiest to maintain and fuel never goes bad once stored. The units proposed in the Table are not specifically sized for the need, but are generally in the ball-park. Not included is the annual cost of renting or purchasing a 1,500 liter propane bullet ($120/year rental) or filling the tank. It is likely that electrical modification costs could exceed or be less than the amounts built into the projection. The provided estimates are based on Generac air-cooled models, and larger/much larger water cooled units are also available.
- Rows 95, 96: *GA* has recommended[361] that provisions be made for three service centres in Cumberland to provide access to appropriate equipment for washing and disinfecting of firefighter turn-out gear and wildland firefighting coveralls, balaclavas, gloves, helmet liners, and etc. This equipment is specialized and will need space modifications to install the equipment. These budget items include the cost of the equipment only. Installation and facility costs will vary depending on the specific fire station situation.
- Row 97: *GA* has recommended[362] that the County purchase and train someone to operate a quantitative fit-testing machine, called a PortaCount machine. Annual fit-testing of structural firefighters is required by NS Regulation. Having this in-house capability is cheaper in the long run and provides the flexibility to provide tests when needed and according to volunteer firefighter schedules. Such testing is also needed for other County workers who wear respirators.
- Rows 98, 99: *GA* has recommended[363] that the County standardize self contained breathing apparatus (SCBA) equipment. The current situation of up to 8 different brands and models of SCBA is a significant potential health and safety issue that affects interoperability between fire departments; something that is going to be more prominent in the future. This project addresses 100 of the current 140 estimated SCBA units (and associated spare air cylinders). It is estimated that this number may be enough to substantially achieve standardization as there is a predominant (not majority) SCBA brand and model being used. A thorough assessment is required to determine the exact situation, which *GA* was not able to definitively determine. NS Regulation requires that all firefighter SCBA meet current edition NFPA standards.

[360] See multiple recommendations in the chapter on *Ch 4: Recommended Deployment of* starting on page *122* of this report.

[361] See *Recommendation 97*

[362] See *Recommendation 108*

[363] See *Recommendation 99*

FINANCIAL RECOMMENDATIONS

Recommendation 183: GA recommends the scheduled fire apparatus replacements contained in the Major Capital Projection table be undertaken through establishment of a Council policy and strategic financing plan.

Recommendation 184: GA recommends an annual contribution of approximately $1.9 million (2022 dollars) to a fire capital reserve account to reduce the annual capital fluctuations in the fire department budgets to a minimal amount. Adequate reserve funds would greatly reduce the need to debenture these predictable capital costs, thereby reducing the overall cost of capital purchases. This amount will need to be adjusted over time with inflation of fire apparatus costs, and the value of the Canadian dollar.

No single fire department is able to provide all the equipment, staffing and other resources necessary to respond to every incident, nor even to serious or long duration fires, or even simultaneous incidents. They all rely on the assistance of their neighbouring fire departments as appropriate. In that sense, every taxpayer in Cumberland County participates in funding fire protection for all of Cumberland County.

Recommendation 185: GA recommends that Cumberland County directly fund the expenditures associated with the purchase of all major capital assets, specifically; the acquisition of pumpers, mobile water supply, initial attack, and rescue fire apparatus, as part of MCC corporate capital acquisition plans. Such purchases should be separate from fire department operating expense needs.

Recommendation 186: GA recommends that the ownership, and all associated rights thereto, of all capital asset purchases for fire protection and made by funds derived from MCC, whether paid directly for the purchase of the asset by MCC or provided to the fire department for their purchase of the asset, be retained and secured by agreement to the benefit of Cumberland County in proportion to the funds provided for the asset purchase.

Recommendation 187: GA recommends that Cumberland County require that all purchases of capital or minor capital equipment or vehicles, be authorized in writing by the County prior to fund-raising or any other source of funding occurs, and prior to purchase or gift. GA further recommends that any such purchases that do not receive written authorization from the County will not receive any financial or otherwise support from the County, and may not be stored in or deployed from County owned fire stations, or with the use of County owned vehicles, or included in any insurance or liability protection coverage, nor considered as official use. The provision of such equipment or vehicles is material to the fire departments' Registration with the County for the provision of fire and emergency services. GA recommends that the County develop a procedure for authorizing such purchases, including a guideline, and in consultation with the fire departments, a strategic plan.

Recommendation 188: GA recommends that all fire departments be required to annually file with Cumberland County an audited financial statement of all revenues and expenses; in a standardized format that MCC specifies. Such filings should be a condition on fire departments receiving any publicly funded; grants, services, or capital assets, and a condition on continuing Registration.

Recommendation 189: GA recommends that all fire departments be required to monthly file with Cumberland County a report on incidents responded to, including type of incident, location of incident, benchmark times for the incident, and fire department staffing at each incident, accountability details, and firefighter exposure reports. Such filings should be a condition on fire departments receiving any publicly funded; grants, services, or capital assets. Such filings could be achieved through the implementation of an on-line records management system (RMS).

Recommendation 190: GA recommends that Cumberland County develop definitions, rules, and limits around the provision of funding, purchasing procedures, appropriate signing authorities, receiving requirements, reporting requirements, and ownership; to support the concept of Minor Capital equipment provisions for fire protection services.

Recommendation 191: GA recommends that Cumberland County include in the annual estimates for the fire protection services Operational Budget an annual amount of $375,000 to cover the Minor Capital purchasing program. GA further recommends that this amount be reviewed annually and adjusted basis a current live inventory of minor capital equipment in the fire departments, and the experienced service life of that equipment.

Recommendation 192: GA recommends that Cumberland County manage the purchasing of all minor capital equipment. With advice from the Fire Chiefs, the County should set priorities on what equipment will be purchased that year. Funding for these purchases should be managed by MCC directly.

Recommendation 193: GA recommends that Cumberland County have discretionary powers to make adjustments, within the approved minor capital annual budget, to determine the exact mix of minor capital purchases according to need. In this way, the fire departments will be able to more quickly reset priorities as unplanned needs arise (e.g. after a major fire incident), balanced with equipment expiry deadlines.

Recommendation 194: GA recommends that any surplus minor capital funds at the end of the fiscal year (if any) be placed into a revolving reserve account for the future purchase of minor capital equipment. This initiative will remove any pressure on the fire departments to spend all the available minor capital funds in a particular year, even if not immediately required by service needs in that particular year.

Recommendation 195: GA recommends that the surplus minor capital revolving reserve account have a set maximum amount of approximately $100,000. If in any given future year there is an unprecedented or

emergency need to make minor capital purchases, and there are insufficient budgeted funds, a mechanism should be in place for the Director of Protective Services to request Council to release additional funds to cover the need, such funds to be withdrawn from the reserve.

Recommendation 196: GA recommends that the designated Cumberland County staff should manage the purchasing process. In this way municipal purchasing procedures will be followed, county-wide purchasing of standardized equipment will occur, and therefore best value for public funds should result.

Recommendation 197: GA recommends that Cumberland County should establish and coordinate the execution of service contract(s) for fire apparatus annual and other inspection, maintenance, and testing; for every piece of fire apparatus, in every fire department, where such service is indicated by NFPA standards and/or provincial/federal legislation. Such contracts to be funded and managed directly by MCC.

Recommendation 198: GA recommends that Cumberland County establish and coordinate the execution of service contract(s) for firefighting, rescue, and personal protective equipment annual inspection, maintenance, and testing; for every piece of affected equipment, in every fire department, where such service is indicated by NFPA standards and/or provincial/federal legislation. Such contracts to be funded and managed directly by MCC.

Recommendation 199: GA recommends that Cumberland County establish and coordinate the execution of service contract(s) for respirator fit-testing; for every eligible firefighter, in every fire department, to meet CSA standards and/or provincial/federal legislation. Such contracts to be funded and managed directly by MCC. Such contracts should be continued until such time as MCC decides to conduct these tests internally.

Recommendation 200: GA recommends that Cumberland County require that every fire department cooperatively participate in fire apparatus and equipment inspection and testing, as well as firefighter fit-testing, that is coordinated by MCC. Fire services effectiveness, efficiency, and the safety of firefighters and the public depends on these activities.

Recommendation 201: GA recommends that Cumberland County investigate and identify services and occurrences suitable for cost-recovery, and develop a bylaw to set fees for service and the methods, penalties, and rights associated with setting and collecting such fees. Such fees are described in more detail starting on page 585 in this report.

Repeatedly data was a focus throughout this *Review* and has been repeated as a recurring theme in this *Report.* Specifically, the value of having timely, accurate, complete, and appropriate data that has been collected for the purposes of developing appropriate metrics. Analytics arising

from such metrics are critical for ascertaining whether standards and requirements are being met (such as provincial legislation and best practices) as well as for developing an accurate understanding of how effective is the management and direction of the organization in meeting community and Council goals. Fire service delivery is an expensive and literally life affecting component of local government; and the need to understand its delivery effectiveness and efficiency is very important.

In *GA's* opinion, the current lack of any unified process for achieving the above data is very likely hampering Cumberland County's ability to consistently be effective with regards to fiscal, governance, and strategy policy decisions; and to have the comfort of more accurately gauging the impact of these decisions on the delivery of fire services.

Recommendation 202: GA recommends that Cumberland County investigate what is needed, source and implement a County-wide, computer based, on-line accessible, County fire service Records Management System (RMS) that addresses all areas where metrics are of value in determining the ongoing performance of the fire services. The RMS should keep track of key records and metrics associated with human resources, testing and inspection of fire apparatus and equipment, complete response statistics and other underlying data associated with emergency and non-emergency delivery of services, fire prevention components including fire code enforcement activities, public fire safety education activities, and post fire investigation activities. The RMS system should include a standardized incident reporting (SIR) component that guides input of all metrics and other information related to all incident responses, and that incorporates data from the Dispatch Services provider. The RMS must include a permanent and un-editable audit trail. The RMS should be accessible on-line by designated users at all fire stations, and its use should be a requirement of Registration as a fire service provider. The RMS system should include statistical analytics and report output (SQL) modules and a dashboard that will be of value to individual fire departments as well as to County administration.

Recommendation 203: GA recommends that monthly and annual reports that include key metrics associated with service delivery be prepared and submitted to Council, and as appropriate to the public, in support of better understanding and knowledge of fire service issues, successes, and challenges; resulting in more informed decision-making and enlightened support of firefighters and associated service delivery personnel.

PROVINCIAL ROLE IN FIRE DEPARTMENT FUNDING

Currently NS provides limited funding to emergency services providers through the Emergency Services Provider Fund[364] (ESPF). The ESPF's purpose is;

> *"The Emergency Services Provider Fund is a program intended to assist first responder organizations in Nova Scotia with the purchase of equipment used directly in response to a fire or emergency situation. The program will provide up to 75% of the total capital cost of a project, up to a maximum of $20,000."*

Several of the County fire departments have received grants in past years, with Pugwash and Wallace both receiving $20k in FY 2021/22. Organizations are only eligible to apply once every three years, and the cap is $20k per department for up to 75% in shared costs. The normal fund level is $500k province-wide.

Recommendation 204: GA recommends that Cumberland County annually coordinates with the individual fire departments to facilitate the application for grant funds through the Emergency Services Provider Fund, with the objective of furthering suitable projects that both the County and eligible fire department agree address fire protection needs in the community. Such coordination requires planning one to two years in advance of the application year as secured funding is required by the fire department before application.

LOCAL AREA FIRE RATE VS GENERAL RATE

GA was asked to comment on the funding models; i.e., area fire rates vs general rate.

About 20 years ago the County transitioned from an area fire rate funding base, supplemented by local fire department coordinated fund-raising; to that of funding the fire services from the general tax levy. This was apparently done to provide more equity in access to necessary funds for all fire departments. Some of the fire departments who had relatively large assessments were affected by a reduction in funding, while others who were in lower assessment areas, and struggling, benefitted. So, the opinions were mixed on whether this change was a good thing or not, depending on which side of the fence you were on.

[364] https://beta.novascotia.ca/programs-and-services/emergency-services-provider-fund

Throughout this *Report*, *GA* has consistently advocated the need for Cumberland County to standardize its approach to the delivery of fire protection services, and to its relationships with the various fire departments. *GA* has also recommended the implementation of standard staffing and equipping models for all fire stations, based on the basic character of the station, i.e. rural/remote or suburban/rural.

GA has also proposed fundamental response models; basically implementing the pre-programmed response of multiple fire station resources to pre-determined zones in the County; in mutual support for resource intensive incidents. Fundamentally, this entails the best utilization of the minimalized resources that are allocated to each fire department station. This approach recognizes the main limitations on the provision of fire services in the County; (a) available qualified staffing, and (b) available funding. It also provides for the maximization of the safety of firefighters. It is a recognition of reality.

Collectively, all the above means that in *GA's* opinion, fire districts in the tradition sense of independence from each other, needs to be a thing of the past. Everyone needs to break down the silos and contribute to developing a consistent and coordinated service delivery model. In part, this means that every fire station supports every other fire station. Dollars put into equipping a particular station, the innovation put into recruiting its firefighters, the effort put in to provide and acquire knowledge, skills and abilities; is all together shared by the *whole* County. Shared when that particular fire department responds outside of its fire district boundaries to assist a neighbouring, and sometimes a distant, community. As the data shows,[365] such sharing is currently occurring in almost one third of incidents, and if *GA*'s recommendations are undertaken, this proportion will likely increase.

It is difficult for *GA* to imagine how the needed improvements in efficiency, effectiveness, and firefighter safety can occur without a more regionalized approach than is currently occurring;

[365] See *Table 4: Mutual-Aid Matrix: 2016-2021* on page 71.

and therefore, without a regionalized approach to funding as well. In *GA's* opinion, the continuation of general levy funding permits this modernization and improvement to occur.

Reverting to local area fire rates will inject significant parochial concerns over the use of 'local fire resources' which the community 'paid for' being called away to service 'outside' communities who have 'not contributed but get the benefits of *our* fire department.' Contributing to or sustaining such feelings is counter-productive to the needs of the County's citizens as a whole.

There is also the practical aspect. Some fire departments will not be there if they need to depend on local area fire rates and fund raising to sustain their equipping and service delivery. The capacity to do so is not in some communities. This may trigger an evolutionary process, survival of the richest,[366] but the whole of the County's citizens will lose as well, as the source for locally recruited volunteers will dry up with the loss of the local fire department catalyst. This will impact the ability to draw on those resources when needed; they will not be there. Local area fire rate funding is counter-productive in this practical aspect, as well.

[366] The assessment column of *Table 73* illustrates this well.

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APPENDIX 1: RESPONSE DATA

Incident Type Cross Reference Table

The Response Type Dispatched is what the dispatcher tells the firefighters. The Review Category is a grouping of incidents in accordance with their fundamental nature. There are six Categories, plus undetermined (N/A).

TABLE 83: RESPONSE TYPE DISPATCHED CROSS-REFERENCE TO REVIEW CATEGORY

Response Type Dispatched	Review Category
Bales of Hay Fire	1. Fire
Chimney Fire	1. Fire
Commercial vehicle fire	1. Fire
Flammable liquid fire	1. Fire
Grass / Brush Fire	1. Fire
Passenger vehicle fire - car, van	1. Fire
Power lines down, arcing	1. Fire
Tree on lines on Fire / Arcing	1. Fire
Power pole on fire	1. Fire
Structure Fire - Barn / Warehouse	1. Fire
Structure Fire - Commercial	1. Fire
Structure Fire - industrial / factory	1. Fire
Electrical Appliance Fire	1. Fire
Electrical Fire	1. Fire
Heating Equipment Fire	1. Fire
Structure Fire - Other	1. Fire
Structure Fire - Residential; house / garage /shed	1. Fire
Transformer on fire	1. Fire
Trash/Debris Fire	1. Fire
Trash/Garbage/Debris Fire	1. Fire
Vehicle fire - Other	1. Fire
Woods / Trees Fire	1. Fire
Commercial Fire Alarm	2. Pre-Fire Conditions
Electrical	2. Pre-Fire Conditions
Electrical appliance	2. Pre-Fire Conditions
Heating Equipment	2. Pre-Fire Conditions
Investigation	2. Pre-Fire Conditions
Other alarms	2. Pre-Fire Conditions
Residential Fire Alarm	2. Pre-Fire Conditions
Smoke Condition (contained within a structure)	2. Pre-Fire Conditions
Smoke Sighted / Unknown Fire	2. Pre-Fire Conditions

Response Type Dispatched	Review Category
Building collapse	3. Rescue
Commercial / Industrial accident	3. Rescue
Confined space	3. Rescue
Grain bin / silo	3. Rescue
Multi-casualty event	3. Rescue
MVA - Confirmed Entrapment / Unknown	3. Rescue
MVA - No Entrapment	3. Rescue
Offroad Vehicle	3. Rescue
Other rescue	3. Rescue
Persons trapped	3. Rescue
Residential accident	3. Rescue
Vehicle extrication	3. Rescue
Water / Ice rescue	3. Rescue
Water rescue	3. Rescue
CO GAS - Carbon monoxide	4. Hazard
CO2 GAS	4. Hazard
Flood	4. Hazard
Fuel spill - Diesel	4. Hazard
Fuel spill - Gas	4. Hazard
Other Gases - ammonia, chlorine, etc.	4. Hazard
Other response	4. Hazard
Other spills	4. Hazard
Propane	4. Hazard
Propane Leak	4. Hazard
Public Assistance	4. Hazard
Suspicious Odour	4. Hazard
Toxic Chemical spill	4. Hazard
Assistance to another fire dept	5. Assist
Assistance to other agencies	4. Hazard
Assistance to Police	4. Hazard
Mutual aid to the Scene	5. Assist
Stand by at another station	5. Assist
Stand by at own station	5. Assist
Assistance to EHS	6. MFR
Lift Assist	6. MFR
Medical	6. MFR
Not Available	7. N/A

Incident Distribution

The occurrence of *incidents* is usually not consistent from day to day of the week, month over month during the year, and even during the hours of the day. This variability is driven by the

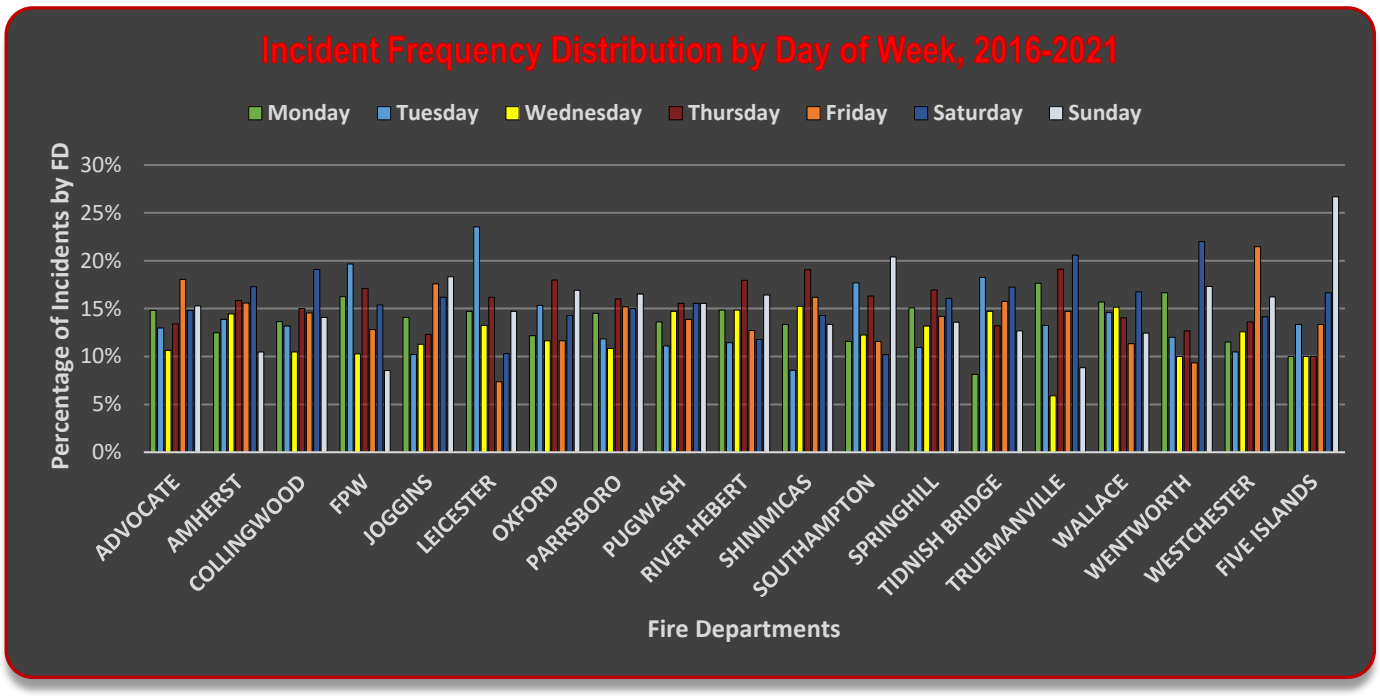
activities of the population. Human actions (or inactions) are the most common trigger for an incident to occur.

The following sections look at the distribution of incidents that occurred in MCC over the past six years.

Daily Incident Distribution

The following charts (*Chart 26* and *Chart 27*) shows how incident occurrences vary by day of the week. The first chart is an amalgam of six years[367] of data, presented by fire department, with percentages of their individual total volume of *incidents* over that time period.

CHART 26: INCIDENT DISTRIBUTION BY DAY OF WEEK

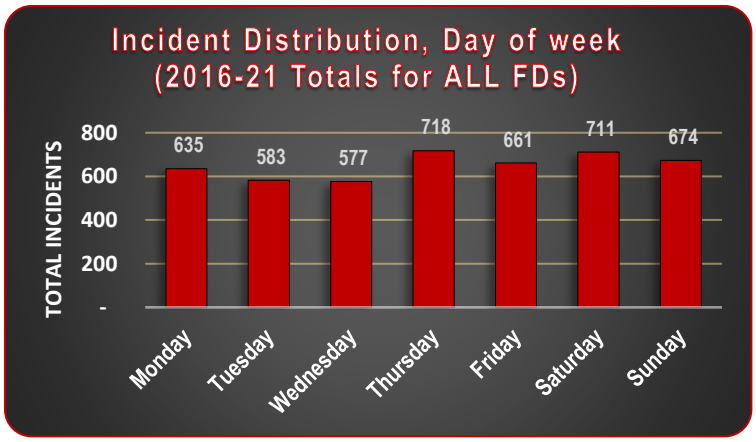


The second chart is the overall distribution in MCC by totals for all fire departments. The frequency pattern for many fire departments, and shown more clearly in the totalized chart, is

[367] Data does not include Amherst *incidents* for 2016.

one familiar to most experienced firefighters. Incidents seem to increase towards the end of the week and into the weekends from a mid-week lower point.

CHART 27: INCIDENT DISTRIBUTION DAY OF WEEK TOTALIZED



However, such a pattern may vary substantially from community to community depending on the major risks in the community. For example, communities with little local employment may see lower mid-week incident numbers because workers are commuting or overnighting away from home to distant jobs. Other communities with local employment, like farming and woods operations, may see incident numbers higher during mid-week or even relatively stable all week long. We see some of those variations in the individual fire department distribution data shown above.

The following two tables (*Table 84* and *Table 85*) contain the base data for the day of the week charts;

TABLE 84: INCIDENT DAY OF WEEK DATA, OCCURRENCES

INCIDENT DISTRIBUTION DAY of the WEEK	Incidents NOT Calls							
Incidents / Day of week (totals for ALL FDs all Incidents)	635	583	577	718	661	711	674	4,559
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	
ADVOCATE	32	28	23	29	39	32	33	**216**
AMHERST	44	49	51	56	55	61	37	**353**
COLLINGWOOD	30	29	23	33	32	42	31	**220**
FPW	19	23	12	20	15	18	10	**117**
JOGGINS	40	29	32	35	50	46	52	**284**
LEICESTER	10	16	9	11	5	7	10	**68**
OXFORD	23	29	22	34	22	27	32	**189**
PARRSBORO	87	71	65	96	91	90	99	**599**
PUGWASH	49	40	53	56	50	56	56	**360**

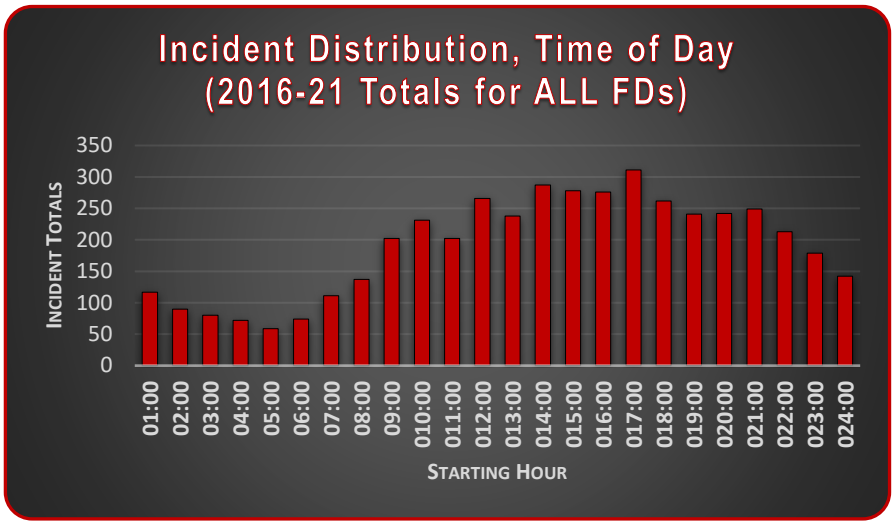
INCIDENT DISTRIBUTION DAY of the WEEK	Incidents NOT Calls							
Incidents / Day of week (totals for ALL FDs all Incidents)	635	583	577	718	661	711	674	4,559
RIVER HEBERT	48	37	48	58	41	38	53	323
SHINIMICAS	14	9	16	20	17	15	14	105
SOUTHAMPTON	17	26	18	24	17	15	30	147
SPRINGHILL	120	87	105	135	113	128	108	796
TIDNISH BRIDGE	16	36	29	26	31	34	25	197
TRUEMANVILLE	12	9	4	13	10	14	6	68
WALLACE	29	27	28	26	21	31	23	185
WENTWORTH	25	18	15	19	14	33	26	150
WESTCHESTER	22	20	24	26	41	27	31	191
FIVE ISLANDS	3	4	3	3	4	5	8	30
								4598

TABLE 85: INCIDENT DAY OF WEEK DATA, PERCENTAGES

By %	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
ADVOCATE	15%	13%	11%	13%	18%	15%	15%
AMHERST	12%	14%	14%	16%	16%	17%	10%
COLLINGWOOD	14%	13%	10%	15%	15%	19%	14%
FPW	16%	20%	10%	17%	13%	15%	9%
JOGGINS	14%	10%	11%	12%	18%	16%	18%
LEICESTER	15%	24%	13%	16%	7%	10%	15%
OXFORD	12%	15%	12%	18%	12%	14%	17%
PARRSBORO	15%	12%	11%	16%	15%	15%	17%
PUGWASH	14%	11%	15%	16%	14%	16%	16%
RIVER HEBERT	15%	11%	15%	18%	13%	12%	16%
SHINIMICAS	13%	9%	15%	19%	16%	14%	13%
SOUTHAMPTON	12%	18%	12%	16%	12%	10%	20%
SPRINGHILL	15%	11%	13%	17%	14%	16%	14%
TIDNISH BRIDGE	8%	18%	15%	13%	16%	17%	13%
TRUEMANVILLE	18%	13%	6%	19%	15%	21%	9%
WALLACE	16%	15%	15%	14%	11%	17%	12%
WENTWORTH	17%	12%	10%	13%	9%	22%	17%
WESTCHESTER	12%	10%	13%	14%	21%	14%	16%
FIVE ISLANDS	10%	13%	10%	10%	13%	17%	27%

Hourly Incident Distributions

CHART 28: INCIDENTS BY TIME OF DAY



A look at incident frequency distribution throughout the average day can further emphasize the human activity connection to incidents. The usual pattern reflects the typical sleep/wake cycle. *Chart 28* shows this very clearly. It is tabulated on incident total[368] numbers.

The chart shows the starting hour for the corresponding data bar. For example; 00:00 means the hour between midnight and 00:59 am.

The next chart attempts to show the hourly distribution of incidents by every fire department. With almost 500 datapoints it is challenging to show this in any quantitative manner that is easy to read. The chart design, although quantitative, appears more qualitative and is therefore easier to absorb.

The following *Chart 29* is based on the data, using percentages of each fire departments' incident totals. When viewed in conjunction with the preceding chart the patterns correlate.

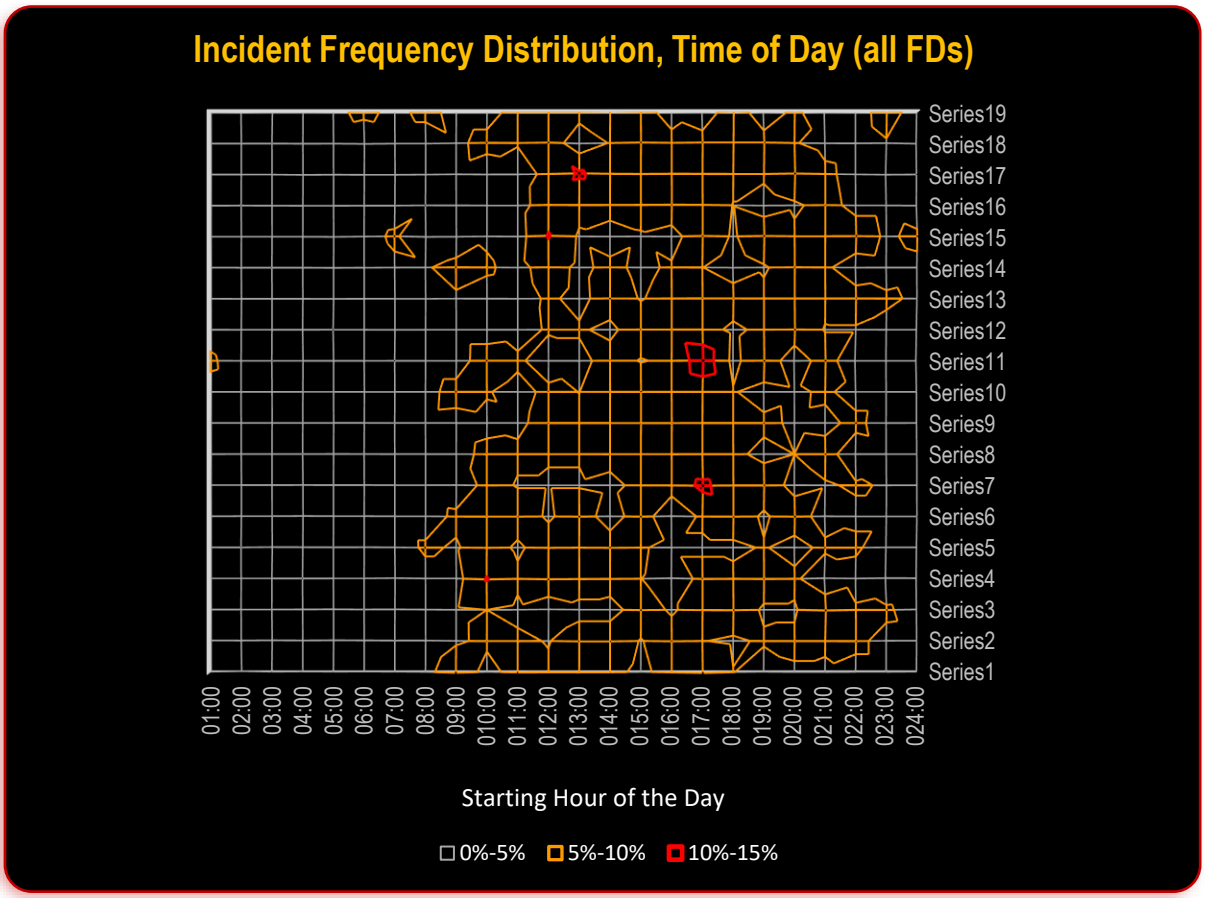
Incident frequencies are grouped in 5% intervals, like a on topographical chart. For example, Shinimicas shows their highest frequency in the hour between 16:00 and 16:59; it is shown as a red "mountain top." In the data, this result is produced by 13% of their calls happening in that period. The width of the "mountain" (up/down wards on the chart) gives an indication of how

[368] Data does not include Amherst *incidents* for 2016.

high this peak is in comparison to its neighbours (River Hebert/Southampton) who have 7% each of their incidents in that same hour.

As a further example, Leicester/Joggins/FPW/Collingwood all have relatively lower incident rates in the hour between 15:00 and 15:59. As well, Joggins' lower rate continues through the next two hours.

CHART 29: INCIDENT FREQUENCY TIME OF DAY BY PERCENTAGE, ALL FIRE DEPARTMENTS



It is interesting to see earlier in the day increases of incident rate for some fire districts in comparison to others; presumable that is where people are up and commuting earlier than in other districts, or possibly just passing through. Districts that appear to start earlier in the day also seem to taper off earlier in the evening.

The following tables (*Table 86*, *Table 87*) contain the base data for the above time of day charts.

TABLE 86: TIME OF DAY INCIDENT DATA

DISTRIBUTION TIME of DAY (hour starting at)																									
Number Incidents (for ALL FDs all Incidents)	**118**	**92**	**80**	**72**	**59**	**74**	**111**	**137**	**203**	**232**	**204**	**266**	**241**	**288**	**279**	**278**	**315**	**264**	**242**	**246**	**254**	**215**	**184**	**144**	**4598**
Starting Hour:	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	
ADVOCATE	6	0	6	3	5	4	5	8	17	8	14	12	13	13	9	14	20	11	7	10	10	8	8	5	**216**
AMHERST	7	8	3	7	3	5	9	7	16	20	20	17	26	26	17	24	18	16	19	20	19	21	13	12	**353**
COLLINGWOOD	7	6	6	5	3	6	4	7	10	11	9	4	8	8	15	10	15	16	10	10	20	12	13	5	**220**
FPW	3	3	3	4	3	3	0	4	4	12	7	11	9	8	6	1	8	7	8	7	1	4	0	1	**117**
JOGGINS	7	9	1	4	7	4	8	16	13	21	12	21	16	21	15	12	12	12	15	10	17	16	8	7	**284**
LEICESTER	2	1	1	0	1	1	2	2	4	5	5	3	5	2	5	1	4	5	3	5	2	3	3	3	**68**
OXFORD	2	2	3	1	3	2	5	5	4	12	9	9	9	8	11	13	21	13	14	7	9	10	9	8	**189**
PARRSBORO	18	14	12	15	7	14	18	17	23	35	33	31	31	36	36	36	32	35	24	30	37	19	23	23	**599**
PUGWASH	6	9	5	7	1	3	13	14	13	15	16	22	20	22	30	29	22	18	21	16	15	21	12	10	**360**
RIVER HEBERT	12	10	5	4	4	0	7	12	21	17	12	19	16	24	29	17	22	17	11	14	18	12	12	8	**323**
SHINIMICAS	6	3	3	0	1	2	4	3	3	8	6	3	4	7	5	6	14	4	9	2	8	1	3	0	**105**
SOUTHAMPTON	5	3	3	4	6	3	2	4	4	4	5	8	8	6	11	11	10	6	9	12	7	7	6	3	**147**
SPRINGHILL	18	7	13	9	5	15	13	13	35	27	24	45	31	56	38	51	60	59	47	51	48	51	44	36	**796**
TIDNISH BRIDGE	7	4	5	4	2	4	8	9	13	11	7	14	8	12	8	11	10	5	9	14	11	6	7	8	**197**
TRUEMANVILLE	1	1	1	1	0	2	4	0	1	3	2	7	3	2	3	2	6	3	6	4	4	5	3	4	**68**
WALLACE	3	5	3	2	2	3	4	8	7	6	6	14	12	13	14	16	15	9	5	8	12	7	7	4	**185**
WENTWORTH	4	3	3	0	2	1	1	3	6	4	5	9	16	11	9	11	10	9	9	14	9	5	2	4	**150**
WESTCHESTER	4	3	4	2	3	0	3	3	8	12	10	15	4	10	16	12	16	16	16	10	7	6	9	2	**191**
FIVE ISLANDS	0	1	0	0	1	2	1	2	1	1	2	2	2	3	2	1	0	3	0	2	0	1	2	1	**30**

TABLE 87: TIME OF DAY INCIDENT DISTRIBUTION, PERCENTAGE

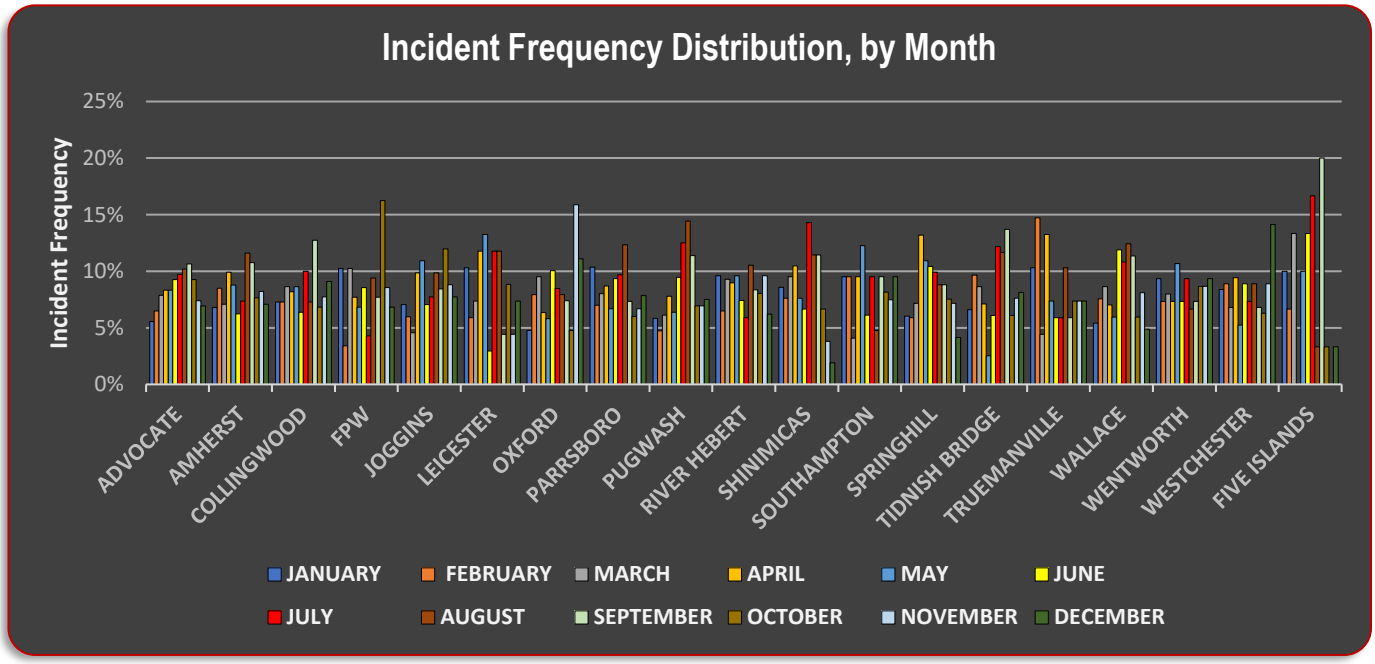
By %																							
Hour Starting:	00:00	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00
ADVOCATE	3%	0%	3%	1%	2%	2%	2%	4%	8%	4%	6%	6%	6%	6%	4%	6%	9%	5%	3%	5%	5%	4%	4%	2%
AMHERST	2%	2%	1%	2%	1%	1%	3%	2%	5%	6%	6%	5%	7%	7%	5%	7%	5%	5%	5%	6%	5%	6%	4%	3%
COLLINGWOOD	3%	3%	3%	2%	1%	3%	2%	3%	5%	5%	4%	2%	4%	4%	7%	5%	7%	7%	5%	5%	9%	5%	6%	2%
FPW	3%	3%	3%	3%	3%	3%	0%	3%	3%	10%	6%	9%	8%	7%	5%	1%	7%	6%	7%	6%	1%	3%	0%	1%
JOGGINS	2%	3%	0%	1%	2%	1%	3%	6%	5%	7%	4%	7%	6%	7%	5%	4%	4%	4%	5%	4%	6%	6%	3%	2%
LEICESTER	3%	1%	1%	0%	1%	1%	3%	3%	6%	7%	7%	4%	7%	3%	7%	1%	6%	7%	4%	7%	3%	4%	4%	4%
OXFORD	1%	1%	2%	1%	2%	1%	3%	3%	2%	6%	5%	5%	5%	4%	6%	7%	11%	7%	7%	4%	5%	5%	5%	4%
PARRSBORO	3%	2%	2%	3%	1%	2%	3%	3%	4%	6%	6%	5%	5%	6%	6%	6%	5%	6%	4%	5%	6%	3%	4%	4%
PUGWASH	2%	3%	1%	2%	0%	1%	4%	4%	4%	4%	4%	6%	6%	6%	8%	8%	6%	5%	6%	4%	4%	6%	3%	3%
RIVER HEBERT	4%	3%	2%	1%	1%	0%	2%	4%	7%	5%	4%	6%	5%	7%	9%	5%	7%	5%	3%	4%	6%	4%	4%	2%
SHINIMICAS	6%	3%	3%	0%	1%	2%	4%	3%	3%	8%	6%	3%	4%	7%	5%	6%	13%	4%	9%	2%	8%	1%	3%	0%
SOUTHAMPTON	3%	2%	2%	3%	4%	2%	1%	3%	3%	3%	3%	5%	5%	4%	7%	7%	7%	4%	6%	8%	5%	5%	4%	2%
SPRINGHILL	2%	1%	2%	1%	1%	2%	2%	2%	4%	3%	3%	6%	4%	7%	5%	6%	8%	7%	6%	6%	6%	6%	6%	5%
TIDNISH BRIDGE	4%	2%	3%	2%	1%	2%	4%	5%	7%	6%	4%	7%	4%	6%	4%	6%	5%	3%	5%	7%	6%	3%	4%	4%
TRUEMANVILLE	1%	1%	1%	1%	0%	3%	6%	0%	1%	4%	3%	10%	4%	3%	4%	3%	9%	4%	9%	6%	6%	7%	4%	6%
WALLACE	2%	3%	2%	1%	1%	2%	2%	4%	4%	3%	3%	8%	6%	7%	8%	9%	8%	5%	3%	4%	6%	4%	4%	2%
WENTWORTH	3%	2%	2%	0%	1%	1%	1%	2%	4%	3%	3%	6%	11%	7%	6%	7%	7%	6%	6%	9%	6%	3%	1%	3%
WESTCHESTER	2%	2%	2%	1%	2%	0%	2%	2%	4%	6%	5%	8%	2%	5%	8%	6%	8%	8%	8%	5%	4%	3%	5%	1%
FIVE ISLANDS	0%	3%	0%	0%	3%	7%	3%	7%	3%	3%	7%	7%	7%	10%	7%	3%	0%	10%	0%	7%	0%	3%	7%	3%

Monthly Incident Distribution

Incident frequencies also typically fluctuate from month to month over the year. Spring and late summer dry seasons, when agricultural and wild-lands are most vulnerable to fire will show peaks in those seasons. Fire prevention month occurs in early October, because home fires typically increase in numbers leading into the winter heating season. Summer tourist season and cottage season will push *incidents* during these months higher, possibly obscuring the base data associated with what Statistics Canada terms the "usual residents."

The following chart shows the *incident* distribution frequency by month for each fire department.

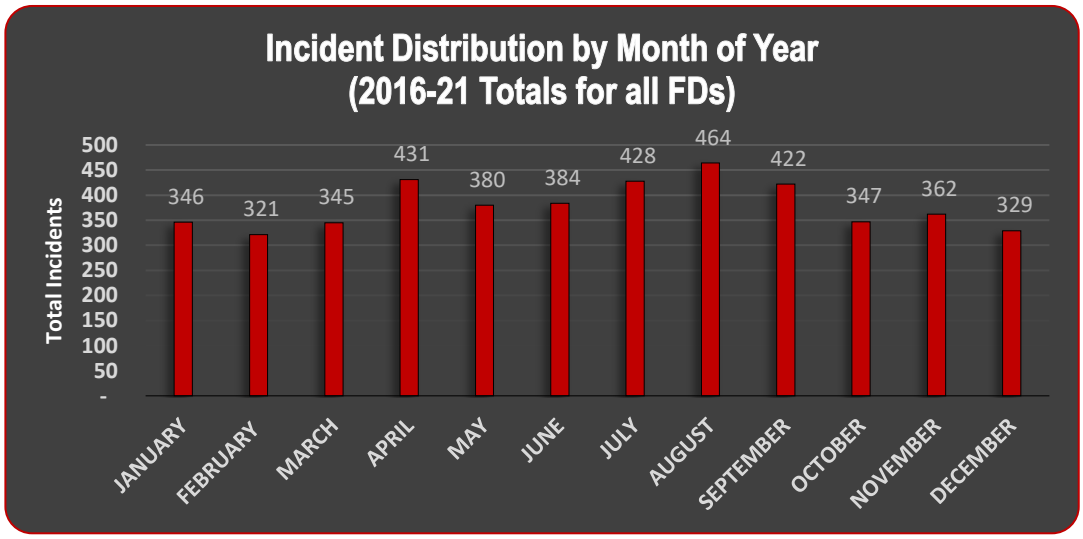
CHART 30: INCIDENT FREQUENCY BY MONTH OF YEAR



Percentages are the proportion of *each* fire department's *incidents*, totalled for the six years of data.

The following chart shows the distribution of monthly incidents for all fire departments, totalled over the *Review* years.[369]

CHART 31: INCIDENT DISTRIBUTION BY MONTH, TOTALIZED



The following tables (*Table 88* and *Table 89*) are the base data for the above two charts.

TABLE 88: INCIDENT DISTRIBUTION BY MONTH, OCCURRENCES

DISTRIBUTION Month of Year	Incidents NOT calls												
Month Totals:	346	321	345	431	380	384	428	464	422	347	362	329	4,559
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual Tot:
ADVOCATE	12	14	17	18	18	20	21	22	23	20	16	15	**216**
AMHERST	24	30	25	35	31	22	26	41	38	27	29	25	**353**
COLLINGWOOD	16	16	19	18	19	14	22	16	28	15	17	20	**220**
FPW	12	4	12	9	8	10	5	11	9	19	10	8	**117**
JOGGINS	20	17	13	28	31	20	22	28	24	34	25	22	**284**
LEICESTER	7	4	5	8	9	2	8	8	3	6	3	5	**68**
OXFORD	9	15	18	12	11	19	16	15	14	9	30	21	**189**

[369] Data does not include Amherst *incidents* for 2016.

DISTRIBUTION Month of Year	Incidents NOT calls												
Month Totals:	346	321	345	431	380	384	428	464	422	347	362	329	4,559
	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	Annual Tot:
PARRSBORO	62	42	48	52	40	56	58	74	44	36	40	47	**599**
PUGWASH	21	17	22	28	23	34	45	52	41	25	25	27	**360**
RIVER HEBERT	31	21	30	29	31	24	19	34	27	26	31	20	**323**
SHINIMICAS	9	8	10	11	8	7	15	12	12	7	4	2	**105**
SOUTHAMPTON	14	14	6	14	18	9	14	7	14	12	11	14	**147**
SPRINGHILL	48	47	57	105	87	83	79	70	70	60	57	33	**796**
TIDNISH BRIDGE	13	19	17	14	5	12	24	23	27	12	15	16	**197**
TRUEMANVILLE	7	10	3	9	5	4	4	7	4	5	5	5	**68**
WALLACE	10	14	16	13	11	22	20	23	21	11	15	9	**185**
WENTWORTH	14	11	12	11	16	11	14	10	11	13	13	14	**150**
WESTCHESTER	16	17	13	18	10	17	14	17	13	12	17	27	**191**
FIVE ISLANDS	3	2	4	0	3	4	5	1	6	1	0	1	**30**
													4,598

TABLE 89: INCIDENT DISTRIBUTION BY MONTH, PERCENTAGES

Equivalent Percentages	JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
ADVOCATE	6%	6%	8%	8%	8%	9%	10%	10%	11%	9%	7%	7%	100%
AMHERST	7%	8%	7%	10%	9%	6%	7%	12%	11%	8%	8%	7%	100%
COLLINGWOOD	7%	7%	9%	8%	9%	6%	10%	7%	13%	7%	8%	9%	100%
FPW	10%	3%	10%	8%	7%	9%	4%	9%	8%	16%	9%	7%	100%
JOGGINS	7%	6%	5%	10%	11%	7%	8%	10%	8%	12%	9%	8%	100%
LEICESTER	10%	6%	7%	12%	13%	3%	12%	12%	4%	9%	4%	7%	100%
OXFORD	5%	8%	10%	6%	6%	10%	8%	8%	7%	5%	16%	11%	100%
PARRSBORO	10%	7%	8%	9%	7%	9%	10%	12%	7%	6%	7%	8%	100%
PUGWASH	6%	5%	6%	8%	6%	9%	13%	14%	11%	7%	7%	8%	100%
RIVER HEBERT	10%	7%	9%	9%	10%	7%	6%	11%	8%	8%	10%	6%	100%
SHINIMICAS	9%	8%	10%	10%	8%	7%	14%	11%	11%	7%	4%	2%	100%
SOUTHAMPTON	10%	10%	4%	10%	12%	6%	10%	5%	10%	8%	7%	10%	100%
SPRINGHILL	6%	6%	7%	13%	11%	10%	10%	9%	9%	8%	7%	4%	100%
TIDNISH BRIDGE	7%	10%	9%	7%	3%	6%	12%	12%	14%	6%	8%	8%	100%
TRUEMANVILLE	10%	15%	4%	13%	7%	6%	6%	10%	6%	7%	7%	7%	100%
WALLACE	5%	8%	9%	7%	6%	12%	11%	12%	11%	6%	8%	5%	100%
WENTWORTH	9%	7%	8%	7%	11%	7%	9%	7%	7%	9%	9%	9%	100%
WESTCHESTER	8%	9%	7%	9%	5%	9%	7%	9%	7%	6%	9%	14%	100%
FIVE ISLANDS	10%	7%	13%	0%	10%	13%	17%	3%	20%	3%	0%	3%	100%

APPENDIX 2: COMMUNITY RISK DATA

The following tables do not include Highway-104 incidents, unless specifically indicated. Certain communities along the highway corridor are designated as being the jurisdiction of incidents, and these community basic risk data would be distorted if Highway 104 incidents are included as belonging to that community.

TABLE 90: INCIDENTS, BY COMMUNITY, 2019-2021

RESP Fire Dept.	COMMUNITY	Assessed PROPERTY Counts	BUILDINGS	DWELLING Units TOTAL	POPULATION estimated SEASONAL PEAK	POPULATION USUAL RESIDENTS	COMMUNITY area (km²) incl. water areas	COMMUNITY area (acres) incl. water areas	FIRE incidents 2016	FIRE incidents 2017	FIRE incidents 2018	FIRE incidents 2019	FIRE incidents 2020	FIRE incidents 2021	PRE-FIRE incidents 2016	PRE-FIRE incidents 2017	PRE-FIRE incidents 2018	PRE-FIRE incidents 2019	PRE-FIRE incidents 2020	PRE-FIRE incidents 2021	RESCUE incidents 2016	RESCUE incidents 2017	RESCUE incidents 2018	RESCUE incidents 2019	RESCUE incidents 2020	RESCUE incidents 2021	HAZARD incidents 2016	HAZARD incidents 2017	HAZARD incidents 2018	HAZARD incidents 2019	HAZARD incidents 2020	HAZARD incidents 2021	MEDICAL incidents 2016	MEDICAL incidents 2017	MEDICAL incidents 2018	MEDICAL incidents 2019	MEDICAL incidents 2020	MEDICAL incidents 2021	TOTALS all incidents 2016	TOTALS all incidents 2017	TOTALS all incidents 2018	TOTALS all incidents 2019	TOTALS all incidents 2020	TOTALS all incidents 2021	TOTALS all incidents 2016-2021	Incidents Highway 104, 2016-21
	Column Totals:	**28,625**	**14,135**	**14,467**	**32,200**	**19,402**	**4,659**	**1,151,244**	**163**	**207**	**240**	**224**	**209**	**171**	**76**	**81**	**107**	**106**	**102**	**94**	**69**	**79**	**109**	**109**	**93**	**92**	**19**	**28**	**21**	**38**	**14**	**24**	**305**	**300**	**390**	**479**	**121**	**215**	**632**	**695**	**867**	**956**	**539**	**596**	4,285	313
Advocate	Advocate Harbour	395	182	182	385		44	10,787	4	2	3	1	3	1	3	1	2	4	3		1			2	2			1					17	18	13	17	5	1	25	22	18	24	13	2	104	
Advocate	Allen Hill	29	7	7	15		25	6,288								1																							1					1	
Advocate	Allenville	27	14	14	30		5	1,275		1																								1						2					2	
Shinimicas	Amherst Head	160	70	70	159		65	15,968		1			6	1							1	1	2	2	1					1					2	2		1	2	2	5	9	1	20	
Amherst	Amherst Point	115	35	34	77		20	5,008		1		1										1		1														2		2			4	
Shinimicas	Amherst Shore	557	395	395	897		11	2,718	1		1	1	2								1	1	1		1	1	1						7	5	13	10		1	10	6	15	11	3	2	47	
Wallace	Angevine Lake	67	56	56	125		4	1,064	1	1			1	1																						1			1	1		1	1	1	5	
Advocate	Apple River	315	79	79	167		81	20,032	2	1		4	3								1	2		1	2				1				1	2	1	3		1	4	6	1	8	5	1	25	
Southampton	Athol	120	26	26	59		16	4,052			2		3	1											1								2	2	4	4	1		2	2	6	4	4	2	20	
Springhill	Athol Road	99	66	66	150		37	9,127	3	2	7			1								1	1			1							1	1		1			4	4	9	1		2	20	
Westchester	Atkinson	49	6	6	13		8	1,970																																						32
River Hebert	Barronsfield	63	27	27	57		17	4,263				2	1					1					1			1	1						3	4			1		4	4	1	3	2	1	15	
Shinimicas	Beckwith	54	23	22	50		15	3,636					1																								1					1		1	
Oxford	Birchwood	105	30	30	67		9	2,154			2	1																					1	1					1	1	2	1			5	
Oxford	Black River Road	67	20	20	45		15	3,740		1	1								1															1		1			2	1	1	1		5	15
Amherst	Brookdale	465	310	311	706		22	5,529		5	4	2	2			6	6	1	1	2		2		1	4	3		1											14	10	4	7	5	40	
FPW	Brookville	41	10	10	21		7	1,812		1	2	2											1								1								1	3	3			7	
Advocate	Cape Chignecto Provincial Park	6	3	3	6		115	28,496																											1						1				1	
Tidnish Bridge	Chapman Settlement	122	38	38	86		25	6,134			1	1	1												1											3					1	4	1	1	7	
Amherst	Chignecto	69	34	34	77		6	1,470					1												1																	2		2	
DNR	Chignecto Game Sanctuary	13	3	3	6		220	54,446																																						
Springhill	Claremont	50	21	21	48		9	2,158			3		1																				1						1		3		1		5	

RESP Fire Dept.	COMMUNITY	Assessed PROPERTY Counts	BUILDINGS	DWELLING Units TOTAL	POPULATION estimated SEASONAL PEAK	POPULATION USUAL RESIDENTS	COMMUNITY area (km^2) incl. water areas	COMMUNITY area (acres) incl. water areas	FIRE incidents 2016	FIRE incidents 2017	FIRE incidents 2018	FIRE incidents 2019	FIRE incidents 2020	FIRE incidents 2021	PRE-FIRE incidents 2016	PRE-FIRE incidents 2017	PRE-FIRE incidents 2018	PRE-FIRE incidents 2019	PRE-FIRE incidents 2020	PRE-FIRE incidents 2021	RESCUE incidents 2016	RESCUE incidents 2017	RESCUE incidents 2018	RESCUE incidents 2019	RESCUE incidents 2020	RESCUE incidents 2021	HAZARD incidents 2016	HAZARD incidents 2017	HAZARD incidents 2018	HAZARD incidents 2019	HAZARD incidents 2020	HAZARD incidents 2021	MEDICAL incidents 2016	MEDICAL incidents 2017	MEDICAL incidents 2018	MEDICAL incidents 2019	MEDICAL incidents 2020	MEDICAL incidents 2021	TOTALS all incidents 2016	TOTALS all incidents 2017	TOTALS all incidents 2018	TOTALS all incidents 2019	TOTALS all incidents 2020	TOTALS all incidents 2021	TOTALS all incidents 2016-2021	Incidents Highway 104, 2016-21
Collingwood	Collingwood Corner	158	86	86	196		13	3,336	2	3	1		4	1	2				1					1	2								7	11	4	4	1	7	11	14	5	5	8	8	51	
Pugwash	Conns Mills	106	31	30	67		33	8,261			1	1	3	3	1	1																					3	1	1	1	1	3	6	13	
Westchester	Cross Road Mountain	46	22	22	49		30	7,510						1																				2					2				1	3	24
Parrsboro	Cross Roads	65	29	29	61		13	3,226		3	1			1				1			1				1			1								1					1	4	2	1	2	1	11	
Parrsboro	Diligent River	737	149	148	313		80	19,824	1		4	1	4	3					1			1	1			1				2				2	4	13	5		1	3	9	16	10	4	43	
Amherst	East Amherst	387	261	262	595		9	2,340		1	1	7	4	2		2	4	3	4	1		4	4	3	1	4		1			1								8	9	13	10	7	47	
Advocate	East Fraserville	32	11	11	23		8	2,046	1			2										1	1	1	1		1											2	1	1	3	1		8	
Leicester	East Leicester	79	45	45	102		47	11,653	2	1	3	1	4	1											2								3		2			5	1	5	1	6	1	19	
Springhill	East Mapleton	87	44	44	100		19	4,679	1	1		2	1	1				1				1											2			1	1	1	3	2		4	2	2	13	
Southampton	East Southampton	23	10	10	23		12	2,903				1											1						1				1		1			1		3	1			5	
Wallace	East Wallace	88	42	42	94		10	2,555		3	1												1	1															3	2	1			6	
Advocate	Eatonville	22			1		44	10,770																					1												1				1	
Collingwood	Farmington	37	11	11	25		16	4,013					1																						1						1		1		2	
Amherst	Fenwick	375	174	173	393		35	8,669		5		3	2	4			1						2	4	1	4			1		1								5	4	7	4	8	28	12
Amherst	Fort Lawrence	467	84	84	191		59	14,669		4	2	5	1	4		2		1	1	1		1	1	1	2	3										1				7	3	7	5	8	30	17
Pugwash	Fountain Road	20	15	15	33		4	931																	1																		1		1	
Wallace	Fox Harbour	300	201	200	447		27	6,589	1		1	2	1			1			1	4			1		2									1	1			1	1	2	3	2	4	5	17	
FPW	Fox River	168	94	94	199		35	8,615	1	1	1			1								1				1	1						6	12	14	5	5	1	8	14	15	5	5	3	50	
Advocate	Fraserville	114	28	28	59		11	2,785	2										1					1									1		2	6	1		3		2	7	2		14	
Southampton	Gilbert Mountain	26	3	3	6		24	6,051																																						
Springhill	Glenville	59	20	20	45		11	2,774		2																													2					2	
Parrsboro	Greenhill	294	173	173	393		11	2,718		1		2										1		1										2	1	5	2		4	1	8	2		15	
Westchester	Greenville Station	59	14	14	31		7	1,800		1			1					1																1	2	3	2		1	3	3	3	1		11	
Pugwash	Gulf Shore	515	321	320	714		34	8,354	1	2	3	3	1					3		1		1			2									1	2		4	1	3	4	8	3	5	24	
Parrsboro	Halfway River	66	24	24	51		17	4,113				1		1								1	1	2	1									1		1			2	1	4	1	1	9	
Oxford	Hansford	121	40	40	89		20	4,853	2	2	1	2	1		1									1						1			2		2			5	2	3	4	1		15	
Parrsboro	Harrison Settlement	56	24	24	51		25	6,234	1	1		1		1																					1	1			1	1	1	2		1	6	
Wentworth	Hart Lake	58	39	39	87		6	1,499			1																								1	1					1	1			2	
Pugwash	Hartford	68	16	16	36		20	4,986			1		1												1																	1		2		3	
Truemanville	Hastings	159	79	79	179		31	7,630		1	1	1	1								1			4	2											2			1	1	1	7	3		13	
Westchester	Higgins Mountain	19					44	10,775																																						
Advocate	Isle Haute						22	5,389																																						

RESP Fire Dept.	COMMUNITY	Assessed PROPERTY Counts	BUILDINGS	DWELLING Units TOTAL	POPULATION estimated SEASONAL PEAK	POPULATION USUAL RESIDENTS	COMMUNITY area (km^2) incl. water areas	COMMUNITY area (acres) incl. water areas	FIRE incidents 2016	FIRE incidents 2017	FIRE incidents 2018	FIRE incidents 2019	FIRE incidents 2020	FIRE incidents 2021	PRE-FIRE incidents 2016	PRE-FIRE incidents 2017	PRE-FIRE incidents 2018	PRE-FIRE incidents 2019	PRE-FIRE incidents 2020	PRE-FIRE incidents 2021	RESCUE incidents 2016	RESCUE incidents 2017	RESCUE incidents 2018	RESCUE incidents 2019	RESCUE incidents 2020	RESCUE incidents 2021	HAZARD incidents 2016	HAZARD incidents 2017	HAZARD incidents 2018	HAZARD incidents 2019	HAZARD incidents 2020	HAZARD incidents 2021	MEDICAL incidents 2016	MEDICAL incidents 2017	MEDICAL incidents 2018	MEDICAL incidents 2019	MEDICAL incidents 2020	MEDICAL incidents 2021	TOTALS all incidents 2016	TOTALS all incidents 2017	TOTALS all incidents 2018	TOTALS all incidents 2019	TOTALS all incidents 2020	TOTALS all incidents 2021	TOTALS all incidents 2016-2021	Incidents Highway 104, 2016-21
Oxford	Jersey	4					17	4,234																							1										1		1	
Joggins	Joggins	393	190	191	404		52	12,928	6	11	7	5	10	3		2		1	1					1		2					1	1	33	26	29	34	6	65	39	40	36	41	17	71	244	
Wallace	Kerrs Mill	67	32	32	71		12	3,057						1																													1	1	
Parrsboro	Kirkhill	48	13	13	27		18	4,431			1																								1							2			2	
Oxford	Kolbec	144	86	86	195		15	3,597			1				1					1	7	1	4	1	1	3								1	3	1			8	2	8	2	1	4	25	
Shinimicas	Lake Killarney	40	16	16	36		15	3,731															1										1						1		1				2	
Parrsboro	Lakelands	124	51	51	108		30	7,354						1							1	3		2		1								1	2	3	1		1	4	2	5	1	2	15	
Springhill	Leamington	119	59	59	134		24	6,045	1	1	7	2	2	6											1	1		2			2	1							1	3	7	2	5	8	26	
Shinimicas	Linden	516	273	272	617		34	8,443	1	3	1	3	1		1						1	1				2						1	1	1	2	1			4	5	3	4	1	3	20	
Springhill	Little Forks	79	33	33	75		45	11,101	1	3		2	1	3		1			2	1		2		2		2							1		1				2	6	1	4	3	6	22	42
Oxford	Little River	199	94	94	213		45	11,014	2	1		1											2	1	1			1		1			3	1	1			5	3	3	3	1		15	
Tidnish Bridge	Lorneville	309	173	172	390		19	4,580			1	2	2	1					2														3	3	3	5		1	3	3	4	7	4	2	23	
Joggins	Lower Cove	89	39	39	82		22	5,366	1			1	2							2	1												8	1	4	2	2	5	10	1	4	3	4	7	29	
Five Islands	Lower Five Islands	82	44	44	100		14	3,437					1		1					1													2	2	2	1			3	2	2	1	1	1	10	
Westchester	Lower Greenville	55	19	19	42		22	5,467		1			1																										1			1		2	
River Hebert	Lower Maccan	82	20	20	45		17	4,187					1									1											1	1		1	1	1	1	2		1	2	1	7	
River Hebert	Lower River Hebert	22	16	16	36		6	1,414	2			1	1																				7			2			9			1	3		13	
Shinimicas	Lower Shinimicas	74	32	32	73		18	4,529		2			2									1			1						1				2	1	1		3		2	4	2	11	
Wentworth	Lower Wentworth	108	29	29	65		21	5,092																1	1	1				1			1	2	1				1	2	1	2	1	1	8	
River Hebert	Maccan	359	157	159	361		41	10,199	1	4	6	6	4	1			1		2		1			1		2							5	7	1	4	1	1	7	11	8	11	7	4	48	
River Hebert	Maccan Woods	2	2	2	5		38	9,405				1												1	1									1	1				1	1	2	1		5	
Wallace	Malagash Centre	241	127	127	284		16	4,060	1			3		1			2																				2	1		2	3		3	9	
Wallace	Malagash Mine	141	82	82	183		3	745				1		2				1																		1					3		2	5	
Wallace	Malagash Point	235	106	105	234		20	4,896										1			1			1	1										1	1	1	1			3	2	1	7	
Wallace	Malagash Station	38	12	12	27		4	982			1																														1			1	
Leicester	Mansfield	62	8	8	18		29	7,203			1			1																			1	1	1	1			1	1	2	1		1	6	
Southampton	Mapleton	109	42	42	95		17	4,085	1			5	2	3		1						2	1	2				1					1	4		1	1		2	8	1	8	3	3	25	
Wentworth	Mattatall Lake	74	58	58	129		13	3,294			1										1																		1		1				2	
Wallace	Middleboro	154	64	64	143		29	7,198		2	1		2	2								3	3			1	1										1	1	1	5	4		3	4	17	
Pugwash	Miller Road	24	23	23	51		5	1,338				1																									4				1		4	5	
Collingwood	Millvale	103	30	30	68		44	10,933			3		1	1								1						1							2	1				2	5	1	1	1	10	
River Hebert	Minudie	96	24	24	51		48	11,818	1	1			1																					1		1			1	2		1	1		5	

RESP Fire Dept.	COMMUNITY	Assessed PROPERTY Counts	BUILDINGS	DWELLING Units TOTAL	POPULATION estimated SEASONAL PEAK	POPULATION USUAL RESIDENTS	COMMUNITY area (km^2) incl. water areas	COMMUNITY area (acres) incl. water areas	FIRE incidents 2016	FIRE incidents 2017	FIRE incidents 2018	FIRE incidents 2019	FIRE incidents 2020	FIRE incidents 2021	PRE-FIRE incidents 2016	PRE-FIRE incidents 2017	PRE-FIRE incidents 2018	PRE-FIRE incidents 2019	PRE-FIRE incidents 2020	PRE-FIRE incidents 2021	RESCUE incidents 2016	RESCUE incidents 2017	RESCUE incidents 2018	RESCUE incidents 2019	RESCUE incidents 2020	RESCUE incidents 2021	HAZARD incidents 2016	HAZARD incidents 2017	HAZARD incidents 2018	HAZARD incidents 2019	HAZARD incidents 2020	HAZARD incidents 2021	MEDICAL incidents 2016	MEDICAL incidents 2017	MEDICAL incidents 2018	MEDICAL incidents 2019	MEDICAL incidents 2020	MEDICAL incidents 2021	TOTALS all incidents 2016	TOTALS all incidents 2017	TOTALS all incidents 2018	TOTALS all incidents 2019	TOTALS all incidents 2020	TOTALS all incidents 2021	TOTALS all incidents 2016-2021	Incidents Highway 104, 2016-21
Five Islands	Moose River	53	24	24	55		89	22,000				1			1				1			1	2	1										3	1	4	3	2	3	5	3	5	4	3	3	23	
Oxford	Mount Pleasant	137	65	65	148		29	7,219	1	1	1	1	1								1					1							3		4	2			5	1	5	3	1	1	16	
Amherst	Nappan	185	56	59	134		11	2,797		6	4	5	4	3		4	5	1		1		7	4	2		4		2		2								19	13	10	4	8	54	
Southampton	New Canaan	84	33	33	75		42	10,422	1	1		1																										1	1		1			3	
Parrsboro	New Prospect	201	108	107	243		49	11,987	2	4			1	2			1				1		1	1						2		1	2		9	7	3		5	4	11	10	4	3	37	
Advocate	New Salem	102	37	37	78		20	5,008		3	1	9		1			1						1										3			2			3	3	3	11		1	21	
FPW	North Greville	45	2	2	4		83	20,387																																					
Wallace	North Shore	196	129	129	288		19	4,745	1		2	1		2			1						1	1	2								1		2	2			2		6	4	2	2	16	
Wallace	North Wallace	171	107	107	239		31	7,705		2	3				1			1			1		2	1										1		1	1		2	3	5	3	1		14	
Wallace	North Wallace Bay	9	7	7	16		9	2,155																																					
Shinimicas	Northport	401	226	226	513		18	4,543		2	6	4		1						1	1	1		3		1	1							1		1	2	1	1	2	2	10	6	3	4	27	
Oxford	Oxford Junction	145	76	76	170		31	7,579	1			1		1			1		2	1		1	1	1										1	1	2	1		1	2	3	4	3	2	15	10
Parrsboro	Parrsboro	1,313	756	810	1,603		18	4,539	8	11	15	10	4	8	9	13	12	18	5	4	3	2	2	5	2	2	2	2	1	5	1	3	19	12	86	145	32		41	40	116	183	44	17	441	
Southampton	Pettigrew Settlement	25	13	13	27		9	2,306																									1	1	3				1	1	3				5	
Collingwood	Poison Lake	25	27	27	61		2	388		1	1		1										1		1									1	1	1		1		2	3	1	2	1	9	
FPW	Port Greville	135	82	83	175		7	1,840	2		2	2	4				1																9	9	9	4	1	6	11	9	12	6	5	6	49	
Pugwash	Port Howe	984	589	587	1,332		26	6,461	3	3	1	3	4	1	1	1	1				5		6	1	3	2	1		1	2					2	1		10	10	4	11	7	7	13	52	
Pugwash	Port Philip	109	50	50	112		4	977				1								2				1	1										1		1	1			1	2	2	3	8	
Pugwash	Pugwash	741	481	512	1,143		14	3,480	5	1	1		5	5	19	5	7	10	7	10	2	2	6	1	4	1	2	1	1	2			4	7	8	10	1	20	32	16	23	23	17	36	147	
Pugwash	Pugwash Junction	149	56	56	125		21	5,073			1	1	1	1																					1			2			2	1	1	3	7	
Pugwash	Pugwash River	114	37	37	83		15	3,793	2		1																									1		1	2		1	1		1	5	
Advocate	Red River	35					78	19,336																	1																		1		1	
Wallace	Richmond	35	17	17	38		11	2,694																					1							1						1	1			2	
River Hebert	River Hebert	558	318	322	681		48	11,834	7	1	12	8	6		3	2	1		1	1	3	1	2	3	2					1			49	42	35	30	4	13	62	46	50	42	13	14	227	
River Hebert	River Hebert East (Strathcona)	128	67	67	152		6	1,465		1	2	1	2		1					1														2		2	3		2	3	1	4	4	2	3	17	
Collingwood	River Philip	225	85	85	193		42	10,443	3		5	3	5	2			1	2	3		1			1	3	2		1	1				4	2	9	6		3	8	3	16	12	11	7	57	
Oxford	Riverview	85	30	29	66		11	2,657	1		1		1	2		1				1	1		1	1									1	1	1				3	2	3	1	1	3	13	
Pugwash	Rockley	84	26	25	56		18	4,437								1					1			1										1	1		4	1	1	1	1		4	8	
Springhill	Rodney	138	64	64	146		41	10,032	3		2	2	2	1		1				1					1				1				1					3	2	3	2	2	3	15	
Westchester	Rose	39	9	9	20		35	8,565						1						1	1		1															1		1			2	4	
Oxford	Roslin	111	39	40	89		25	6,107	2	1					1				1		1										1			1	1			4	2	1		1	1	9	
Leicester	Salem	96	31	31	70		7	1,698		2	1								1				1	2		1							1				2		1	2	2	2	3	1	11	

RESP Fire Dept.	COMMUNITY	Assessed PROPERTY Counts	BUILDINGS	DWELLING Units TOTAL	POPULATION estimated SEASONAL PEAK	POPULATION USUAL RESIDENTS	COMMUNITY area (km^2) incl. water areas	COMMUNITY area (acres) incl. water areas	FIRE incidents 2016	FIRE incidents 2017	FIRE incidents 2018	FIRE incidents 2019	FIRE incidents 2020	FIRE incidents 2021	PRE-FIRE incidents 2016	PRE-FIRE incidents 2017	PRE-FIRE incidents 2018	PRE-FIRE incidents 2019	PRE-FIRE incidents 2020	PRE-FIRE incidents 2021	RESCUE incidents 2016	RESCUE incidents 2017	RESCUE incidents 2018	RESCUE incidents 2019	RESCUE incidents 2020	RESCUE incidents 2021	HAZARD incidents 2016	HAZARD incidents 2017	HAZARD incidents 2018	HAZARD incidents 2019	HAZARD incidents 2020	HAZARD incidents 2021	MEDICAL incidents 2016	MEDICAL incidents 2017	MEDICAL incidents 2018	MEDICAL incidents 2019	MEDICAL incidents 2020	MEDICAL incidents 2021	TOTALS all incidents 2016	TOTALS all incidents 2017	TOTALS all incidents 2018	TOTALS all incidents 2019	TOTALS all incidents 2020	TOTALS all incidents 2021	TOTALS all incidents 2016-2021	Incidents Highway 104, 2016-21
Springhill	Salt Springs	125	27	27	61		52	12,814	1		3	1	2	1			3		1		1		2	1	4	2																	22	45
Advocate	Sand River	32	2	2	4		27	6,666																																				
Shinimicas	Shinimicas	139	34	34	77		42	10,348	1		1		5	1								2		2		1									1				1	2	2	2	5	2	14	
Joggins	Shulie	44	23	22	47		89	21,961		2	1	1												1		2		1								1				3	1	3		2	9	
Southampton	South Athol	63	24	24	55		14	3,372	1			2			1									1	1									1	2		2		3	2		5	1		11	
Southampton	South Brook	71	26	26	59		32	7,924				1		1						1						1								2	1	1	3		2	1	1	4		3	11	
Pugwash	South Pugwash	130	79	79	176		11	2,735			2	2	2	3	2	2	1	2	3	4		1		1	1	1				1		1		1	1			1	2	4	4	6	6	10	32	
Oxford	South Victoria	75	27	27	60		20	4,893		1		1	1												1	1										1				1	1	2	1	6	
Southampton	Southampton	194	90	90	205		92	22,719	3	4	4	4		5							1	3			1	2			1				1	11	6	5	5		5	18	11	9	6	7	56	
Advocate	Spencers Island	149	54	54	114		24	5,993			1			1							2						1					1	1		4	3	1		4		5	3	1	2	15	
Advocate	Spicers Cove	25	2	2	4		4	898																																				
Springhill	Springhill	2,199	1,463	1,705	3,876		11	2,749	45	51	43	24	25	32	20	23	34	30	33	32	4	6	6	2	3	8	4	4	4	10	2	7	14	14	9	18	6	6	87	98	96	84	69	85	519	
Springhill	Springhill Junction	115	53	53	120		58	14,344	1	1	3	3	1	3	1				2	1	1	1		2	1		1					1		1		1			4	3	3	5	4	5	24	16
Leicester	Stanley	44	28	28	64		14	3,486		1								3	1									1					1	1	2	5			1	2	3	8	1		15	
Westchester	Stevens Mountain	6					9	2,150																																				
Wentworth	Streets Ridge	90	32	32	71		24	6,015		1		1	1			1						1				1							1					1	3		1	1	1	7	
Westchester	Sutherland Lake	291	167	167	373		16	3,906			1				1								1		1								2	4	1	1			3	4	3	1	1		12	13
Oxford	Thomson Station	74	26	26	58		20	4,882	1			2	2						1					2	1	1							1		1	1			2		1	5	4	1	13	34
Tidnish Bridge	Tidnish Bridge	537	325	324	735		45	11,084	2	2	2	4	1	3	1			1				3	1	2	5	3	3				1	1	1	10	5	9	8		4	16	8	13	19	5	11	72	
Tidnish Bridge	Tidnish Cross Roads	516	301	301	683		26	6,321	1	2		2	1						2	1	3	1	2	1		1						1	7	4	7	6	4	3	11	7	9	9	7	6	49	
Truemanville	Truemanville	150	80	79	179		33	8,167	2	3	1		3	2	1					1	1		4	2	1	2	1					1	2		1	1			7	3	6	3	4	6	29	
Parrsboro	Two Islands	118	38	37	84		16	4,040										1		1					1					1												2	1	1	4	
Tidnish Bridge	Tyndal Road	178	80	80	182		83	20,442		1	1		2						1					1		3	1							1	2	1				2	4	1	6	1	14	
Wallace	Upper Malagash	159	85	85	190		10	2,578	1		1	1		1		1					1		2	1	1			1					2	1				1	4	3	3	2	1	2	15	
Amherst	Upper Nappan	220	108	110	250		18	4,478		3	1	1	2	3			2		3	6				2		1														3	3	3	5	10	24	29
Springhill	Valley Road	111	72	72	164		23	5,695				2	4	1	1				1				1	2	1				1				1	1		1			2	1	1	6	6	1	17	
Oxford	Victoria	77	24	26	58		21	5,170		1		1	1										1											1			1	3		2	1	1	2	3	9	
Wallace	Wallace	268	126	129	288		8	1,972	1	1	2		1	2		2	3	1					1	3		2	1	1	2		1		3	5	2	1		1	5	9	10	5	2	5	36	
Pugwash	Wallace Bay	155	56	56	125		27	6,609		2	2			1					1			2			2	1	1									2		2	1	4	2	2	3	4	16	
Wallace	Wallace Bridge	104	42	42	94		7	1,722	2				1				1									1								1					2	1	1		2		6	
Wallace	Wallace Grant	53	10	10	22		17	4,297																																				
Wallace	Wallace Highlands	21	7	7	16		13	3,267				1																														1		1	

RESP Fire Dept.	COMMUNITY	Assessed PROPERTY Counts	BUILDINGS	DWELLING Units TOTAL	POPULATION estimated SEASONAL PEAK	POPULATION USUAL RESIDENTS	COMMUNITY area (km^2) incl. water areas	COMMUNITY area (acres) incl. water areas	FIRE incidents 2016	FIRE incidents 2017	FIRE incidents 2018	FIRE incidents 2019	FIRE incidents 2020	FIRE incidents 2021	PRE-FIRE incidents 2016	PRE-FIRE incidents 2017	PRE-FIRE incidents 2018	PRE-FIRE incidents 2019	PRE-FIRE incidents 2020	PRE-FIRE incidents 2021	RESCUE incidents 2016	RESCUE incidents 2017	RESCUE incidents 2018	RESCUE incidents 2019	RESCUE incidents 2020	RESCUE incidents 2021	HAZARD incidents 2016	HAZARD incidents 2017	HAZARD incidents 2018	HAZARD incidents 2019	HAZARD incidents 2020	HAZARD incidents 2021	MEDICAL incidents 2016	MEDICAL incidents 2017	MEDICAL incidents 2018	MEDICAL incidents 2019	MEDICAL incidents 2020	MEDICAL incidents 2021	TOTALS all incidents 2016	TOTALS all incidents 2017	TOTALS all incidents 2018	TOTALS all incidents 2019	TOTALS all incidents 2020	TOTALS all incidents 2021	TOTALS all incidents 2016-2021	Incidents Highway 104, 2016-21
Wallace	Wallace Ridge	48	22	22	49		7	1,701														1	2			1						1			1			1	1	2	1		1	6	
Wallace	Wallace River West	46	35	35	78		7	1,681						1						1										1												1		2	3	
Wallace	Wallace Station	128	60	60	134		23	5,621				2	2								2	1	2	1											1				2	2	1	3	3	2	2	13	
FPW	Wards Brook	93	45	45	95		4	930		1		1	1	1																			1	3	1		3		2	3	2	1	4	12	
Truemanville	Warren	134	101	101	229		10	2,423	1	2	5	1	3	3					1		1	3	2	3		2		1					1	2		1		3	8	7	5	4	5	32	
Wentworth	Wentworth	746	277	277	618		61	15,026	2	3	2	5	2	2		2	7	4	4	2	4		9	6	3	2			2		1		1	7	4	6	3	1	7	12	24	21	13	7	84	
Wentworth	Wentworth Centre	164	106	106	237		39	9,753		1	1	3	1	1			2	2				1	1	1		2		1					2	3	1	4			2	6	5	10	1	3	27	
Advocate	West Advocate	107	38	38	80		50	12,318				2		2										3	1			1	1				5		4		2	2	5	1	5	5	3	4	23	
Amherst	West Amherst	158	80	83	188		13	3,134		3		1	3	2		2	4	5	2	4			3	2							2	1		2					7	7	8	7	7	36	2
Parrsboro	West Bay	136	50	50	106		34	8,324				2	1												1	1				1						1						4	2	1	7	
Southampton	West Brook	121	42	42	95		33	8,042	1		1	2						1						1	1			1					1	2	3	5		1	2	3	4	9	1	1	20	
Leicester	West Leicester	126	60	60	136		24	5,839			3	3	1			1		1	1		1					1							4		1	1	1		5	1	4	5	3	1	19	
Pugwash	West Pugwash	205	113	112	250		11	2,727		2	2		1	8		1		2		2		2			1								1				6		5	2	2	2	17	28	
Wentworth	West Wentworth	207	123	124	277		54	13,359			2	2	4		1				1				2		1						1		1	2	1	5			2	2	5	7	7		23	
Westchester	Westchester	286	126	126	281		29	7,251	4	1	7	4		3		1		1				1											3	15	9	12	3		7	18	16	17	3	3	64	21
Westchester	Westchester Mountain	97	12	12	27		45	11,210														1																								1
Parrsboro	Wharton	25	9	9	19		5	1,299	2		1	1									2																		4		1	1			6	
Collingwood	Williamsdale	219	103	103	230		62	15,440		1	2	1	3		1		1	1				1	1	1	1								6	4	4	5	1	9	7	6	8	8	5	9	43	
Collingwood	Windham Hill	73	26	26	59		31	7,581	1				1	1								1												2	1	1				3	2	1		1	1	8	
Collingwood	Wyvern	123	50	50	114		30	7,370	4		3	2	1	1				1						1		1				1			2	5	6	9	3	1	6	5	9	14	4	3	41	

TABLE 91: INCIDENT RATES, BY COMMUNITY, 2016-2021 DATA. BASIS PER 1000 POPULATION

RESPONSIBLE Fire Dept.	COMMUNITY	FIRE / 1000 pop 2016	FIRE / 1000 pop 2017	FIRE / 1000 pop 2018	FIRE / 1000 pop 2019	FIRE / 1000 pop 2020	FIRE / 1000 pop 2021	PRE-FIRE / 1000 pop 2016	PRE-FIRE / 1000 pop 2017	PRE-FIRE / 1000 pop 2018	PRE-FIRE / 1000 pop 2019	PRE-FIRE / 1000 pop 2020	PRE-FIRE / 1000 pop 2021	RESCUE / 1000 pop 2016	RESCUE / 1000 pop 2017	RESCUE / 1000 pop 2018	RESCUE / 1000 pop 2019	RESCUE / 1000 pop 2020	RESCUE / 1000 pop 2021	HAZARD / 1000 pop 2016	HAZARD / 1000 pop 2017	HAZARD / 1000 pop 2018	HAZARD / 1000 pop 2019	HAZARD / 1000 pop 2020	HAZARD / 1000 pop 2021	MEDICAL / 1000 pop 2016	MEDICAL / 1000 pop 2017	MEDICAL / 1000 pop 2018	MEDICAL / 1000 pop 2019	MEDICAL / 1000 pop 2020	MEDICAL / 1000 pop 2021	**ALL / 1000 pop 2016**	**ALL / 1000 pop 2017**	**ALL / 1000 pop 2018**	**ALL / 1000 pop 2019**	**ALL / 1000 pop 2020**	**ALL / 1000 pop 2021**
Advocate	Advocate Harbour	10	5	8	3	8	3	8	3	5	10	8		3			5	5			3					44	47	34	44	13	3	**65**	**57**	**47**	**62**	**34**	**5**
Advocate	Allen Hill								68																								**68**				
Advocate	Allenville		34																								34						**68**				
Shinimicas	Amherst Head		6			38	6							6	6	13	13	6					6						13	13		**6**	**13**	**13**	**31**	**57**	**6**
Amherst	Amherst Point		13		13										13		13																**26**		**26**		
Shinimicas	Amherst Shore	1		1	1	2								1	1	1		1	1	1							8	6	15	11		1	**11**	**7**	**17**	**12**	**3**	**2**
Wallace	Angevine Lake	8	8			8	8																						8			**8**	**8**		**8**	**8**	**8**
Advocate	Apple River	12	6		24	18								6	12		6	12			6						6	12	6	18		6	**24**	**36**	**6**	**48**	**30**	**6**
Southampton	Athol			34		51	17												17							34	34	68	68	17		**34**	**34**	**102**	**68**	**68**	**34**
Springhill	Athol Road	20	13	47			7								7	7			7			7				7	7		7			**27**	**27**	**60**	**7**		**13**
Westchester	Atkinson																																				
River Hebert	Barronsfield				35	18					18					18			18	18						53	70			18		**70**	**70**	**18**	**53**	**35**	**18**
Shinimicas	Beckwith					20																														**20**	
Oxford	Birchwood			30	15																					15	15					**15**	**15**	**30**	**15**		
Oxford	Black River Road		22	22								22															22		22				**44**	**22**	**22**	**22**	
Amherst	Brookdale		7	6	3	3			9	9	1	1	3		3		1	6	4		1												**20**	**14**	**6**	**10**	**7**
FPW	Brookville		47	95	95											47								47									**47**	**142**	**142**		
Advocate	Cape Chignecto Provincial Park																											158						**158**			
Tidnish Bridge	Chapman Settlement			12	12	12													12										35					**12**	**46**	**12**	**12**
Amherst	Chignecto					13												13																		**26**	
Springhill	Claremont			63		21																				21						**21**		**63**		**21**	
Collingwood	Collingwood Corner	10	15	5		20	5	10				5					5	10								36	56	20	20	5	36	**56**	**72**	**26**	**26**	**41**	**41**
Pugwash	Conns Mills			15	15	45	45	15	15																						45	**15**	**15**	**15**	**15**	**45**	**90**
Westchester	Cross Road Mountain						20																				41						**41**			**20**
Parrsboro	Cross Roads		49	16			16			16		16		16				16			16								16			**16**	**65**	**33**	**16**	**33**	**16**
Parrsboro	Diligent River	3		13	3	13	10					3			3	3			3					6			6	13	42	16		**3**	**10**	**29**	**51**	**32**	**13**
Amherst	East Amherst		2	2	12	7	3		3	7	5	7	2		7	7	5	2	7		2				2								**13**	**15**	**22**	**17**	**12**
Advocate	East Fraserville	43			86										43	43	43	43		43												**86**	**43**	**43**	**129**	**43**	
Leicester	East Leicester	20	10	29	10	39	10											20								29		20				**49**	**10**	**49**	**10**	**59**	**10**
Springhill	East Mapleton	10	10		20	10	10				10				10											20			10	10	10	**30**	**20**		**40**	**20**	**20**
Southampton	East Southampton				44											44							44				44		44				**44**		**132**	**44**		

RESPONSIBLE Fire Dept.	COMMUNITY	FIRE / 1000 pop 2016	FIRE / 1000 pop 2017	FIRE / 1000 pop 2018	FIRE / 1000 pop 2019	FIRE / 1000 pop 2020	FIRE / 1000 pop 2021	PRE-FIRE / 1000 pop 2016	PRE-FIRE / 1000 pop 2017	PRE-FIRE / 1000 pop 2018	PRE-FIRE / 1000 pop 2019	PRE-FIRE / 1000 pop 2020	PRE-FIRE / 1000 pop 2021	RESCUE / 1000 pop 2016	RESCUE / 1000 pop 2017	RESCUE / 1000 pop 2018	RESCUE / 1000 pop 2019	RESCUE / 1000 pop 2020	RESCUE / 1000 pop 2021	HAZARD / 1000 pop 2016	HAZARD / 1000 pop 2017	HAZARD / 1000 pop 2018	HAZARD / 1000 pop 2019	HAZARD / 1000 pop 2020	HAZARD / 1000 pop 2021	MEDICAL / 1000 pop 2016	MEDICAL / 1000 pop 2017	MEDICAL / 1000 pop 2018	MEDICAL / 1000 pop 2019	MEDICAL / 1000 pop 2020	MEDICAL / 1000 pop 2021	**ALL / 1000 pop 2016**	**ALL / 1000 pop 2017**	**ALL / 1000 pop 2018**	**ALL / 1000 pop 2019**	**ALL / 1000 pop 2020**	**ALL / 1000 pop 2021**
Wallace	East Wallace		32	11												11	11																**32**	**21**	**11**		
Advocate	Eatonville																					1,000												**1,000**			
Collingwood	Farmington					40																						40						**40**		**40**	
Amherst	Fenwick		13		8	5	10			3						5	10	3	10			3		3									**13**	**10**	**18**	**10**	**20**
Amherst	Fort Lawrence		21	10	26	5	21		10		5	5	5		5	5	5	10	16											5			**37**	**16**	**37**	**26**	**42**
Pugwash	Fountain Road																	30																		**30**	
Wallace	Fox Harbour	2		2	4	2			2			2	9			2		4									2	2			2	**2**	**4**	**7**	**4**	**9**	**11**
FPW	Fox River	5	5	5			5								5				5	5						30	60	70	25	25	5	**40**	**70**	**75**	**25**	**25**	**15**
Advocate	Fraserville	34										17					17									17		34	101	17		**51**		**34**	**118**	**34**	
Southampton	Gilbert Mountain																																			
Springhill	Glenville		44																													**44**				
Parrsboro	Greenhill		3		5										3		3										5	3	13	5		**10**	**3**	**20**	**5**	
Westchester	Greenville Station		32			32					32															32	64	96	64			**32**	**96**	**96**	**96**	**32**	
Pugwash	Gulf Shore	1	3	4	4	1					4		1		1			3										1	3		6	**1**	**4**	**6**	**11**	**4**	**7**
Parrsboro	Halfway River				20		20								20	20	39	20									20					**39**	**20**	**79**	**20**	**20**
Oxford	Hansford	22	22	11	22	11		11									11							11			22		22				**56**	**22**	**34**	**45**	**11**	
Parrsboro	Harrison Settlement	20	20		20		20																						20	20			**20**	**20**	**20**	**39**		**20**
Wentworth	Hart Lake			11																								11					**11**	**11**		
Pugwash	Hartford			28		28												28																**28**		**56**	
Truemanville	Hastings		6	6	6	6								6			22	11											11				**6**	**6**	**6**	**39**	**17**	
Westchester	Higgins Mountain																																			
Advocate	Isle Haute																																			
Oxford	Jersey																							44,789												**44,789**	
Joggins	Joggins	15	27	17	12	25	7		5		2	2					2		5		2				2	82	64	72	84	15	161	**97**	**99**	**89**	**102**	**42**	**176**
Wallace	Kerrs Mill						14																													**14**
Parrsboro	Kirkhill			36																								36					**73**			
Oxford	Kolbec			5				5					5	36	5	20	5	5	15								5	15	5			**41**	**10**	**41**	**10**	**5**	**20**
Shinimicas	Lake Killarney															28										28						**28**		**28**			
Parrsboro	Lakelands						9							9	28		19		9								9	19	28	9		**9**	**37**	**19**	**46**	**9**	**19**
Springhill	Leamington	7	7	52	15	15	45											7	7		15			15	7						**7**	**22**	**52**	**15**	**37**	**60**
Shinimicas	Linden	2	5	2	5	2		2						2	2				3						2	2	2	3	2			**6**	**8**	**5**	**6**	**2**	**5**
Springhill	Little Forks	13	40		27	13	40		13			27	13		27		27		27							13		13				**27**	**80**	**13**	**53**	**40**	**80**
Oxford	Little River	9	5		5											9	5	5			5		5			14	5	5				**23**	**14**	**14**	**14**	**5**	

RESPONSIBLE Fire Dept.	COMMUNITY	FIRE / 1000 pop 2016	FIRE / 1000 pop 2017	FIRE / 1000 pop 2018	FIRE / 1000 pop 2019	FIRE / 1000 pop 2020	FIRE / 1000 pop 2021	PRE-FIRE / 1000 pop 2016	PRE-FIRE / 1000 pop 2017	PRE-FIRE / 1000 pop 2018	PRE-FIRE / 1000 pop 2019	PRE-FIRE / 1000 pop 2020	PRE-FIRE / 1000 pop 2021	RESCUE / 1000 pop 2016	RESCUE / 1000 pop 2017	RESCUE / 1000 pop 2018	RESCUE / 1000 pop 2019	RESCUE / 1000 pop 2020	RESCUE / 1000 pop 2021	HAZARD / 1000 pop 2016	HAZARD / 1000 pop 2017	HAZARD / 1000 pop 2018	HAZARD / 1000 pop 2019	HAZARD / 1000 pop 2020	HAZARD / 1000 pop 2021	MEDICAL / 1000 pop 2016	MEDICAL / 1000 pop 2017	MEDICAL / 1000 pop 2018	MEDICAL / 1000 pop 2019	MEDICAL / 1000 pop 2020	MEDICAL / 1000 pop 2021	ALL / 1000 pop 2016	ALL / 1000 pop 2017	ALL / 1000 pop 2018	ALL / 1000 pop 2019	ALL / 1000 pop 2020	ALL / 1000 pop 2021
Tidnish Bridge	Lorneville			3	5	5	3					5														8	8	8	13		3	**8**	**8**	**10**	**18**	**10**	**5**
Joggins	Lower Cove	12			12	24							24	12												97	12	49	24	24	61	**121**	**12**	**49**	**36**	**49**	**85**
Five Islands	Lower Five Islands					10		10					10													20	20	20	10			**30**	**20**	**20**	**10**	**10**	**10**
Westchester	Lower Greenville		24			24																											**24**		**24**	
River Hebert	Lower Maccan					22									22											22	22		22	22	22	**22**	**44**		**22**	**44**	**22**
River Hebert	Lower River Hebert	55			27	27																				192				55		**247**			**27**	**82**	
Shinimicas	Lower Shinimicas		28			28									14			14							14				28	14	14		**41**		**28**	**55**	**28**
Wentworth	Lower Wentworth																15	15	15					15		15	31	15				**15**	**31**	**15**	**31**	**15**	**15**
River Hebert	Maccan	3	11	17	17	11	3			3		6		3			3		6							14	19	3	11	3	3	**19**	**30**	**22**	**30**	**19**	**11**
River Hebert	Maccan Woods				220												220	220									220	220				**220**	**220**	**440**	**220**	
Wallace	Malagash Centre	4			11		4			7																					7	**4**		**7**	**11**		**11**
Wallace	Malagash Mine				5		11				5																			5					**16**		**11**
Wallace	Malagash Point										4			4			4	4														**4**			**13**	**9**	**4**
Wallace	Malagash Station			37																														**37**			
Leicester	Mansfield			56			56																			56	56	56	56			**56**	**56**	**112**	**56**		**56**
Southampton	Mapleton	10			52	21	31		10						21	10	21				10					10	42		10	10		**21**	**84**	**10**	**84**	**31**	**31**
Wentworth	Mattatall Lake			8										8																		**8**		**8**			
Wallace	Middleboro		14	7		14	14								21	21			7	7									7	7	**7**	**35**	**28**		**21**	**28**
Pugwash	Miller Road				19																									78				**19**		**78**
Collingwood	Millvale			44		15	15								15						15							29	15			**29**	**73**	**15**	**15**	**15**
River Hebert	Minudie	20	20			20																					20		20		**20**	**39**		**20**	**20**	
Five Islands	Moose River				18			18				18		18	37	18										55	18	73	55	37	55	**92**	**55**	**92**	**73**	**55**	**55**
Oxford	Mount Pleasant	7	7	7	7	7								7					7							20		27	14			**34**	**7**	**34**	**20**	**7**	**7**
Amherst	Nappan		45	30	37	30	22		30	37	7		7		52	30	15		30		15		15									**142**	**97**	**75**	**30**	**60**
Southampton	New Canaan	13	13		13																											**13**	**13**		**13**		
Parrsboro	New Prospect	8	16			4	8			4				4		4	4						8		4	8		37	29	12		**21**	**16**	**45**	**41**	**16**	**12**
Advocate	New Salem		38	13	115		13			13						13										38			26			**38**	**38**	**38**	**141**		**13**
FPW	North Greville																																				
Wallace	North Shore	3		7	3		7			3						3	3	7								3		7	7			**7**		**21**	**14**	**7**	**7**
Wallace	North Wallace		8	13				4			4			4		8	4										4		4	4		**8**	**13**	**21**	**13**	**4**	
Wallace	North Wallace Bay																																				
Shinimicas	Northport		4	12	8		2					2	2	2		6		2	2							2		2	4	2	2	**4**	**4**	**19**	**12**	**6**	**8**
Oxford	Oxford Junction	6			6		6			6		12	6		6	6	6										6	6	12	6		**6**	**12**	**18**	**24**	**18**	**12**

RESPONSIBLE Fire Dept.	COMMUNITY	FIRE / 1000 pop 2016	FIRE / 1000 pop 2017	FIRE / 1000 pop 2018	FIRE / 1000 pop 2019	FIRE / 1000 pop 2020	FIRE / 1000 pop 2021	PRE-FIRE / 1000 pop 2016	PRE-FIRE / 1000 pop 2017	PRE-FIRE / 1000 pop 2018	PRE-FIRE / 1000 pop 2019	PRE-FIRE / 1000 pop 2020	PRE-FIRE / 1000 pop 2021	RESCUE / 1000 pop 2016	RESCUE / 1000 pop 2017	RESCUE / 1000 pop 2018	RESCUE / 1000 pop 2019	RESCUE / 1000 pop 2020	RESCUE / 1000 pop 2021	HAZARD / 1000 pop 2016	HAZARD / 1000 pop 2017	HAZARD / 1000 pop 2018	HAZARD / 1000 pop 2019	HAZARD / 1000 pop 2020	HAZARD / 1000 pop 2021	MEDICAL / 1000 pop 2016	MEDICAL / 1000 pop 2017	MEDICAL / 1000 pop 2018	MEDICAL / 1000 pop 2019	MEDICAL / 1000 pop 2020	MEDICAL / 1000 pop 2021	ALL / 1000 pop 2016	ALL / 1000 pop 2017	ALL / 1000 pop 2018	ALL / 1000 pop 2019	ALL / 1000 pop 2020	ALL / 1000 pop 2021
Parrsboro	Parrsboro	5	7	9	6	2	5	6	8	7	11	3	2	2	1	1	3	1	1	1	1	1	3	1	2	12	7	54	90	20		26	25	72	114	27	11
Southampton	Pettigrew Settlement																									36	36	109				36	36	109			
Collingwood	Poison Lake		16	16		16										16		16									16	16	16		16		33	49	16	33	16
FPW	Port Greville	11		11	11	23				6																51	51	51	23	6	34	63	51	68	34	29	34
Pugwash	Port Howe	2	2	1	2	3	1	1	1	1				4		5	1	2	2	1		1	2					2	1		8	8	3	8	5	5	10
Pugwash	Port Philip				9								18				9	9										9		9	9			9	18	18	27
Pugwash	Pugwash	4	1	1		4	4	17	4	6	9	6	9	2	2	5	1	3	1	2	1	1	2			3	6	7	9	1	17	28	14	20	20	15	31
Pugwash	Pugwash Junction			8	8	8	8																					8			16			16	8	8	24
Pugwash	Pugwash River	24		12																									12		12	24		12	12		12
Advocate	Red River																																				
Wallace	Richmond																					26							26					26	26		
River Hebert	River Hebert	10	1	18	12	9		4	3	1		1	1	4	1	3	4	3					1			72	62	51	44	6	19	91	68	73	62	19	21
River Hebert	River Hebert East (Strathcona)		7	13	7	13		7					7													13		13	20		13	20	7	26	26	13	20
Collingwood	River Philip	16		26	16	26	10			5	10	16		5			5	16	10		5	5				21	10	47	31		16	41	16	83	62	57	36
Oxford	Riverview	15		15		15	30		15				15	15		15	15									15	15	15				46	30	46	15	15	46
Pugwash	Rockley													18			18										18	18			72	18	18	18	18		72
Springhill	Rodney	21		14	14	14	7		7				7						7			7					7					21	14	21	14	14	21
Westchester	Rose						50						50	50		50															50		50			100
Oxford	Roslin	22	11					11				11		11											11		11	11				45	22	11		11	11
Leicester	Salem		28	14								14				14	28		14							14				28		14	28	28	28	43	14
Springhill	Salt Springs	16		49	16	33	16			49		16		16		33	16	65	33													33		131	33	114	49
Advocate	Sand River																																				
Shinimicas	Shinimicas	13		13		65	13								26		26		13									13				13	26	26	26	65	26
Joggins	Shulie		43	22	22												22		43		22								22			65	22	65		43
Southampton	South Athol	18			37			18									18	18								18	37		37			55	37		92	18	
Southampton	South Brook				17		17						17						17							34	17	17	51			34	17	17	68		51
Pugwash	South Pugwash			11	11	11	17	11	11	6	11	17	23		6		6	6	6				6		6		6	6			6	11	23	23	34	34	57
Oxford	South Victoria		17		17	17												17	17									17					17	17	17	33	17
Southampton	Southampton	15	20	20	20		24							5	15			5	10			5				5	54	29	24	24		24	88	54	44	29	34
Advocate	Spencers Island			9			9							18						9					9	9		35	26	9		35		44	26	9	18
Advocate	Spicers Cove																																				
Springhill	Springhill	12	13	11	6	6	8	5	6	9	8	9	8	1	2	2	1	1	2	1	1	1	3	1	2	4	4	2	5	2	2	22	25	25	22	18	22
Springhill	Springhill Junction	8	8	25	25	8	25	8				17	8	8	8		17	8		8					8		8					33	25	25	41	33	41

RESPONSIBLE Fire Dept.	COMMUNITY	FIRE / 1000 pop 2016	FIRE / 1000 pop 2017	FIRE / 1000 pop 2018	FIRE / 1000 pop 2019	FIRE / 1000 pop 2020	FIRE / 1000 pop 2021	PRE-FIRE / 1000 pop 2016	PRE-FIRE / 1000 pop 2017	PRE-FIRE / 1000 pop 2018	PRE-FIRE / 1000 pop 2019	PRE-FIRE / 1000 pop 2020	PRE-FIRE / 1000 pop 2021	RESCUE / 1000 pop 2016	RESCUE / 1000 pop 2017	RESCUE / 1000 pop 2018	RESCUE / 1000 pop 2019	RESCUE / 1000 pop 2020	RESCUE / 1000 pop 2021	HAZARD / 1000 pop 2016	HAZARD / 1000 pop 2017	HAZARD / 1000 pop 2018	HAZARD / 1000 pop 2019	HAZARD / 1000 pop 2020	HAZARD / 1000 pop 2021	MEDICAL / 1000 pop 2016	MEDICAL / 1000 pop 2017	MEDICAL / 1000 pop 2018	MEDICAL / 1000 pop 2019	MEDICAL / 1000 pop 2020	MEDICAL / 1000 pop 2021	ALL / 1000 pop 2016	ALL / 1000 pop 2017	ALL / 1000 pop 2018	ALL / 1000 pop 2019	ALL / 1000 pop 2020	ALL / 1000 pop 2021
Leicester	Stanley		16								47	16										16				16	16	31	79			16	31	47	126	16	
Westchester	Stevens Mountain																																				
Wentworth	Streets Ridge		14		14	14			14						14				14							14						14	42		14	14	14
Westchester	Sutherland Lake			3				3								3		3								5	11	3	3			8	11	8	3	3	
Oxford	Thomson Station	17			34	34						17					34	17	17							17		17	17			34		17	86	69	17
Tidnish Bridge	Tidnish Bridge	3	3	3	5	1	4	1			1			4	1	3	7	4	4				1	1	1	14	7	12	11		5	22	11	18	26	7	15
Tidnish Bridge	Tidnish Cross Roads	1	3		3	1						3	1	4	1	3	1		1						1	10	6	10	9	6	4	16	10	13	13	10	9
Truemanville	Truemanville	11	17	6		17	11	6					6	6		22	11	6	11	6					6	11		6	6			39	17	33	17	22	33
Parrsboro	Two Islands										12		12					12					12											24	12	12
Tidnish Bridge	Tyndal Road		6	6		11						6				6		17	6								6	11	6				11	22	6	33	6
Wallace	Upper Malagash	5		5	5		5		5					5		11	5	5			5					11	5				5	21	16	16	11	5	11
Amherst	Upper Nappan		12	4	4	8	12			8		12	24				8		4														12	12	12	20	40
Springhill	Valley Road				12	24	6	6				6				6	12	6					6			6	6		6			12	6	6	37	37	6
Oxford	Victoria		17		17	17										17											17			17	52		34	17	17	34	52
Wallace	Wallace	3	3	7		3	7		7	10	3					3	10		7	3	3	7		3		10	17	7	3		3	17	31	35	17	7	17
Pugwash	Wallace Bay		16	16			8					8			16			16	8	8										16	8	32	16	16	24	32
Wallace	Wallace Bridge	21				11				11								11									11					21	11	11		21	
Wallace	Wallace Grant																																				
Wallace	Wallace Highlands				64																														64		
Wallace	Wallace Ridge														20	41			20							20			20			20	20	41	20		20
Wallace	Wallace River West						13						13										13												13		26
Wallace	Wallace Station				15	15								15	7	15	7											7			15	15	7	22	22	15	15
FPW	Wards Brook		11		11	11	11																				11	32	11		32		21	32	21	11	42
Truemanville	Warren	4	9	22	4	13	13					4		4	13	9	13		9		4					4	9		4			13	35	31	22	17	22
Wentworth	Wentworth	3	5	3	8	3	3		3	11	6	6	3	6		15	10	5	3			3		2		2	11	6	10	5	2	11	19	39	34	21	11
Wentworth	Wentworth Centre		4	4	13	4	4			8	8				4	4	4		8		4					8	13	4	17			8	25	21	42	4	13
Advocate	West Advocate				25		25										37	12			12	12				62		50		25	25	62	12	62	62	37	50
Amherst	West Amherst		16		5	16	11		11	21	27	11	21			16	11							11	5		11					37	37	42	37	37
Parrsboro	West Bay				19	9												9	9				9											38	19	9
Southampton	West Brook	10		10	21						10						10	10			10					10	21	31	52		10	21	31	42	94	10	10
Leicester	West Leicester			22	22	7			7		7	7		7					7							29		7	7	7		37	7	29	37	22	7
Pugwash	West Pugwash		8	8		4	32		4		8		8		8			4						4						24		20	8	8	8	68
Wentworth	West Wentworth			7	7	14		4				4				7		4					4			4	7	4	18			7	7	18	25	25	

RESPONSIBLE Fire Dept.	COMMUNITY	FIRE / 1000 pop 2016	FIRE / 1000 pop 2017	FIRE / 1000 pop 2018	FIRE / 1000 pop 2019	FIRE / 1000 pop 2020	FIRE / 1000 pop 2021	PRE-FIRE / 1000 pop 2016	PRE-FIRE / 1000 pop 2017	PRE-FIRE / 1000 pop 2018	PRE-FIRE / 1000 pop 2019	PRE-FIRE / 1000 pop 2020	PRE-FIRE / 1000 pop 2021	RESCUE / 1000 pop 2016	RESCUE / 1000 pop 2017	RESCUE / 1000 pop 2018	RESCUE / 1000 pop 2019	RESCUE / 1000 pop 2020	RESCUE / 1000 pop 2021	HAZARD / 1000 pop 2016	HAZARD / 1000 pop 2017	HAZARD / 1000 pop 2018	HAZARD / 1000 pop 2019	HAZARD / 1000 pop 2020	HAZARD / 1000 pop 2021	MEDICAL / 1000 pop 2016	MEDICAL / 1000 pop 2017	MEDICAL / 1000 pop 2018	MEDICAL / 1000 pop 2019	MEDICAL / 1000 pop 2020	MEDICAL / 1000 pop 2021	**ALL / 1000 pop 2016**	**ALL / 1000 pop 2017**	**ALL / 1000 pop 2018**	**ALL / 1000 pop 2019**	**ALL / 1000 pop 2020**	**ALL / 1000 pop 2021**
Westchester	Westchester	14	4	25	14		11		4		4				4											11	53	32	43	11		**25**	**64**	**57**	**60**	**11**	**11**
Westchester	Westchester Mountain																																				
Parrsboro	Wharton	105		53	53									105																		**210**		**53**	**53**		
Collingwood	Williamsdale		4	9	4	13		4		4	4				4	4	4	4									26	17	17	22	4	39	**30**	**26**	**35**	**35**	**22**	**39**
Collingwood	Windham Hill	17				17	17								17												34	17	17				**51**	**34**	**17**		**17**	**17**
Collingwood	Wyvern	35		26	18	9	9				9						9		9					9			18	44	53	79	26	9	**53**	**44**	**79**	**123**	**35**	**26**

APPENDIX 3: MATCHING RESOURCE DEPLOYMENT AND RISK (MRDR)

In order to understand fully how to plan for an incident at each occupancy of concern it is necessary to understand how all the various response planning tools correlate. This Appendix shows how this is done.

Effective Response Levels

The Ontario Fire Marshal's office (ON-OFM) developed a workbook for benchmarking a fire department's staffing needs at fire incidents. The workbook identified various *Effective Response Levels* (ERL), that correlated with different fire incident risk levels. This incident risk level approach is similar to the FUS Risk Rating, but seems to better reflect achievable staffing levels.

The workbook then identifies *Fireground Critical Tasks* (FCT); tasks that are standard (scalable depending on incident circumstances) at all fire incidents, and also those that are needed to mitigate more complex (higher risk/challenge) incidents. Each task is matched with its required resources. The FCT list generates fireground staffing totals required to perform all appropriate task. The process was called **Matching Resource Deployment and Risk** (MRDR).[370]

Combining the requirements of *Table 11: FUS Table of Effective Response* that was introduced on page *138* of this *Report*, with the tasks and manning matrix of the MRDR workbook will provide a fuller picture of the resourcing needs at any size fire *incident*.

The following table of FCT was adopted by *GA* from the MRDR Guide, and shows the generic critical task list that could occur at any fire incident. It is provided here with expansion of meaning provided for some items, to clarify intent. At the appropriate scale, this task list applies to any size fire *incident*, by means of scaling up resources and adding additional FCT's to the tactical list of tasks.

[370] Ontario Fire Marshal's Office, *Operational Planning: An official Guide to Matching Resource Deployment and Risk*, January 24, 2011.

FIGURE 41: FIREGROUND CRITICAL TASKS[371]

Fireground Critical Tasks
Incident Command
Pump Operator
Attack Line (Confine & Extinguish)
Additional Pump Operator(s)
Additional Attack Line (Confine & Extinguish) + Backup
Search and Rescue
Initial Rapid Intervention Team (IRIT)
Ventilation
Water Supply - pressurized
Water Supply - non-pressurized
Forceable Entry Team
Utility Control
Laddering (Ground Ladders)
Laddering (Aerial or elevating device operator)
Exposure Protection
Incident Safety Officer
Accountability
Entry Control
Rehabilitation
Salvage
Lighting
Directing Occupants
Scribe
Sector Officers
Air Management (air refilling station, etc.)
Logistics Officer
Administrative and/or Finance Officer
Planning Officer
Evacuations (large scale)
Public Information Officer
Overhaul
Additional Firefighters

The firefighters assigned to tasks on the MRDR FCT list are scalable, meaning that different incidents and different occupancy circumstances can require the assignment of different numbers of staff, to tasks as needed.

For example; *Additional Pump Operator(s)* (line 4) will vary depending on how many pumpers are required at the incident. The number of pumpers will increase as the required fire flow (RFF) increases. This can occur through the need for relay pumpers, through the need for water supply pumpers at drafting sites, or the need for additional attack pumpers.

Similarly, an occupied multi-unit three-story apartment building will require more laddering staff than a single-story building.

Pre-planning of specific occupancies that are above the ordinary bread-and-butter *incidents* should identify these additional challenges and needs beforehand; i.e. identify all the applicable Critical Tasks for a fire in that occupancy.

Pre-planning should be based on foreseeable incidents, and should not minimize the possibility of a serious incident, just because there has not *yet* been one at that location. The best pre-plans

[371] *Operational Planning: An official Guide to Matching Resource Deployment and Risk*, January 24, 2011, Ontario Fire Marshal's Office,.

tend to be pessimistic in predicting the need for adequate resources; i.e. it is better to over-commit than run short.

In developing a staffing demands list to accompanying the FCT list (*Figure 41*), we add a series of columns that forms a matrix. Opposite each FCT task is a spot where the required number of staff can be inserted and totalled. The following *Table 92* shows the basic format of combining tasks with demands.

TABLE 92: MRDR MATRIX FORMAT

FORMAT	Fireground Critical Tasks	Low Risk		Moderate Risk		High Risk		Extreme Risk	
		LERL	UERL	LERL	UERL	LERL	UERL	LERL	UERL
Incident Response (Note: Where zero or no number has been assigned, the task may be performed at the direction of the IC.)	Incident Command								
	Initial Pump Operator								
	Attack Line (Confine & Extinguish)								
	Additional Pump Operator(s)								
	Additional Attack Line (Confine & Extinguish) + Backup								
	Search and Rescue								
	Initial Rapid Intervention Team (IRIT)								
	Ventilation								
	Water Supply - pressurized								
	Water Supply - non-pressurized								
	Forceable Entry Team								
	Utility Control								
	Laddering (Ground Ladders)								
	Laddering (Aerial or elevating device operator)								
	Exposure Protection								
	Incident Safety Officer								
	Accountability								
	Entry Control								
	Rehabilitation								
	Salvage								
	Lighting								
	Directing Occupants								
	Scribe								
	Sector Officers								
	Air Management (air refilling station, etc.)								
Other or Additional Response Considerations	Logistics Officer								
	Administrative and/or Finance Officer								
	Planning Officer								
	Evacuations (large scale)								
	Public Information Officer								
	Overhaul								
	Additional Firefighters								
Summary	Incident Staffing Totals:								

The MRDR matrix above presents a number of risk columns. They are titled Low, Moderate, High, and Extreme Risk. Each risk column is sub-divided into two columns, a lower effective response level (LERL) and an upper effective response level (UERL). These response levels represent the upper and lower bounds on each risk column. Think of them as lower challenge (LERL) and upper challenge (UERL) scenarios for a fire incident at that risk level.

The response level could change during the incident as conditions change, or the response level could be driven by particular occupancy characteristics.

Connecting FUS Effective Response with MRDR

Referring back to the *Table 11: FUS Table of Effective Response* on page *138* we are reminded of the FUS descriptions for Risk Rating Groups (in the building district examples column). *GA* has developed a cross reference between the FUS risk groups and the MRDR matrix, as shown in the following *Table 93*. Using this table will provide guidance for determining where a particular occupancy best fits, which Risk column, in the MRDR matrix, and how that reflects on FUS recommendations on RFF (required fire flow) and apparatus needs.

TABLE 93: FUS - MRDR CROSS REFERENCE

FUS Risk Group	MRDR Risk	Examples of Occupancies
1(a)	Low	Unattached garage or shed, small farm out-building. At least 10 meters to exposures.
1(b)	Low	Cottages or small homes not in a subdivision, not with wood shingles.
2	Low	Typical residential housing, bungalow, 2-story, 2,000-4,000 sqft in area, 10-20 feet separation.
3(a)	Moderate	Large residential, townhouses, single story motels, corner store, rural service garage, smaller-medium sized community hall or church, Victorian homes, single-story schools.
3(b)	High	2-4 story apartment or senior complex, nursing homes, hospital, shopping centre, bus garage, large schools, large agricultural structures, factories.
4(a)	High	Large timber framed residential school complex, large century churches, big box general merchandise store, old timber-framed school, large hay-barn.
4(b)	Extreme	Building supply warehouse (large), general merchandise warehouse (large), shipping terminal (large)
5	Extreme	Paper mill, knitting mill, large clothing mill, urban centre with crowded mixed commercial/residential timber-frame construction.

By combining the information in the FUS Effective Response table and the MRDR matrix, it is now possible to determine the Required Fire Flow rates (RFF), required pumper and ladder apparatus, and the required number of firefighters; for a broad range of incidents.

Selecting each specific occupancy of concern in the community, each in turn for pre-planning, select the best fit within the above cross reference *Table 93*; making note of both the MRDR Risk description and the FUS Risk Group. This information will be used in the next tool.

Selecting Required Fire Flows

Since the extent of the fire, and the occupancy in which the fire occurs, drives the need for fire flows, it is necessary to reflect these in looking at the FUS RFF *Table 11*. We will use the MRDR table to make this interpretation.

In *Table 94* below, follow down the appropriate MRDR Risk column for the occupancy being planned (using the cross-reference *Table 93* above), deciding first to plan for a LERL incident, and then repeat for an UERL incident in each risk column pair.

The result is shown below in *Table 94*, which is in three sections. The first (blue) shows the RFF. The second (pink) the number of attack pumpers to develop the RFF, based on pumper capacity. The third (green) section is the number of aerial apparatus needed.

In the blue section, read across for the appropriate FUS Risk Rating Group, under the planned MRDR Risk column pairs. The numbers in the boxes are the RFF in Imperial gpm to match the FUS table. Do a similar operation for pumpers and aerials.

Table 94 below uses in its calculations the MCC most common pumper capability, 1050 imperial gallons per minute.

TABLE 94: REQUIRED RFF, PUMPERS, AND AERIALS

	Low Risk		Moderate Risk		High Risk		Extreme Risk		
	LERL	UERL	LERL	UERL	LERL	UERL	LERL	UERL	
TABLE 2:									
From FUS Table of Effective Response									
FUS Risk Group Descriptions	**Fire Flow in Imperial gpm**								FUS RISK GROUP
Very small buildings, widely detached	400								1(a)
Scattered development (except where wood roof coverings)	600								1(b)
Typical modern, 1-2 story residential subdivision on 3-6m (10-20) detached		1,000							2
Close 3-4 story residential and row housing, small mercantile and industrial			1,200	2,800					3(a)
Seriously exposed tenements. Institutional. Shopping centers. Fairly large areas & fire loads, exposures					4,200				3(b)
Large combustible institutions, commercial buildings, multi-story and with high exposures						6,000			4(a)
High fire load warehouses and buildings like 4(a)							7,600		4(b)
Severe hazards in large area buildings, usually with major exposures. Large congested frame districts								10,000	5

Apparatus Needs for Manning and Fire Flow

TABLE 3:

Standard pumper capacity			**Attack* PUMPERS**								FUS RISK GROUP
1,261	USgpm	(110% capacity not accounted)	1								1(a)
4,773	lpm		1								1(b)
1,050	lgpm	* FOR A HYDRANT SERVICED AREA		1							2
		Note: additional pumpers will likely be needed for water sourcing,			1	3					3(a)
		relaying, etc. if area is NOT					4				3(b)
		serviced by hydrants						5			4(a)
									7		4(b)
										8	5

TABLE 4:	**AERIALS**								GROUP
Aerials required:	0								1(a)
	0								1(b)
		0							2
			1	1					3(a)
					2				3(b)
						2			4(a)
							3		4(b)
								3	5

As explained previously, the variation between the LERL and the UERL in each Risk column in the *Table 94* provides perspective for specific occupancy conditions when pre-planning for a response to the occupancy. The RFF can also change.

When determining the number of pumpers needed in the table, the pumping capacities of the pumpers that are responding is critical. In *Table 94*, the average pumper capacity was set at 1,050 Imp. gallons per minute (Igpm) for calculation purposes. That is the most common pump size in MCC. A typical dwelling would not need that large a pump, but large pumps are typically purchased if there are one or more larger community risks. Also, in water shuttle operations, the pumper at the tanker drop site, that relays into the attack pumper, needs extra capacity to manage water movement needs with port-a-tank operations.

Manning Demands Estimation

The last step is to estimate the staffing demands at a fire that corresponds to the above illustrated RFF and fire apparatus needs. For that we need to fill in the MRDR table that was shown in *Table 92* above. Referring to the apparatus and RFF needs in *Table 94*, the corresponding manning numbers to operate equipment and to perform tasks are placed in the MRDR matrix as shown below in the example in *Table 95*.

TABLE 95: EXAMPLE OF MANNING NEEDS AT HYDRANT SERVICED STRUCTURE FIRE

PERSONNEL REQUIREMENTS		Low Risk		Moderate Risk		High Risk		Extreme Risk	
	Fireground Critical Tasks	LERL	UERL	LERL	UERL	LERL	UERL	LERL	UERL
	Incident Command	1	1	1	1	1	1	1	1
	Initial Pump Operator	1	1	1	1	1	1	1	1
	Attack Line (Confine & Extinguish)	2	2	2	4	4	4	4	4
	Additional Pump Operator(s) Fire Attack	0	0	0	2	3	4	6	7
	Additional Attack Line (Confine & Extinguish) + Backup		2	6	12	16	20	22	24
	Search and Rescue		2	2	4	4	6	6	8
	Initial Rapid Intervention Team (IRIT)			4	6	8	8	8	8
	Ventilation		2	2	4	4	4	6	8
	Water Supply - pressurized		1	1	3	4	5	7	8
	Water Supply - non-pressurized								
Incident Response	Forceable Entry Team						1		1
(Note: Where zero	Utility Control		1	1	1	1	2	2	2
or no number has	Laddering (Ground Ladders)		2	2	3	3	4	4	6
been assigned, the	Laddering (Aerial or elevating device operator)				2	2	2	2	2
task may be	Exposure Protection				4	4	6	6	8
performed at the	Incident Safety Officer				1	1	2	2	2
direction of the IC.)	Accountability			1	1	2	2	3	3
	Entry Control				2	2	4	4	4
	Rehabilitation			1	1	2	3	3	4
	Salvage				2	2	2	2	2
	Lighting								
	Directing Occupants			1	1	1	1	1	1
	Scribe				1	1	1	1	1
	Sector Officers				2	2	4	5	5
	Air Management (air refilling station, etc.)				1	1	2	3	3
	Logistics Officer								
Other or Additional	Administrative and/or Finance Officer								
Response	Planning Officer								
Considerations	Evacuations (large scale)								
	Public Information Officer								
	Overhaul								
	Additional Firefighters								
Summary	**Incident Staffing Totals:**	**4**	**14**	**25**	**59**	**69**	**89**	**99**	**113**

Specific incidents at specific occupancies will require modification of staffing numbers in the above table. For example, not all tasks are full-time. Some staff may be utilized to accomplish one task then move on to a second task, etc.

Factors such as pressure and flow capabilities of fire hydrants is also a major consideration. For example; in the above table relay pumpers directly hooked to fire hydrants start to appear when the RFF raises to 1,000 Igpm, which happens at the Low Risk UERL scenario. From then on, in the example, additional pump operators, and additional fire hydrants start to increase.

Can a fire department provide the above estimated manning and apparatus for a serious fire at a specific occupancy within their response zone? If not, how many other fire departments need to be involved?

The requirements for manning and fire apparatus start to increase significantly when the water source is not provided by a connected fire hydrant. *Appendix 4: Tanker Shuttles* contains several examples of the above process, run on tanker shuttle water supplies.

APPENDIX 4: TANKER SHUTTLES

This appendix contains three worked examples of tanker water shuttle operations intended to deliver the required range of RFFs needed for structural fires. The first two examples are based on the same RFFs (required fire flows) and the same required fire attack fire apparatus tables as developed in Appendix 3: Matching Resource Deployment and Risk (MRDR) starting on page *646* in this *Report*. The third example is based on establishing a water shuttle to meet Commercial Lines requirements.

What is different here is the source of water supply. In the previous *Table 94* example, the source of water was a municipal (or private) fire hydrant equipped system. In this case, the water supply is based on rural water supplies, likely including dry hydrants, streams, and ponds that meet suitability requirements for extracting, by drafting, large quantities of water, sustainably and all year around.

Some conditions in this scenario are fixed by past choices in equipping the fire department. Some other conditions are variable depending on the location of the incident and of the water source. Some others are entirely within the ability of the fire department to influence through developing effective and efficient methods and through training and practicing, again and again, on perfecting the little things as well as the big things.

The examples are based on the consideration of a fire in a non-hydranted area (rural) which represents the majority of the County. The examples focus on water supply and the initial alarm functions as predicted in the case an LERL and UERL fire in a certain Risk category of occupancy. Exactly as was done before in the hydranted example. Additional staffing for extended operations is not necessarily shown, and adjustment to the tables for specific incidents are certainly warranted. This example is focused mainly on the water supply aspect of the fire scenario.

Water Shuttle Factors that Affect Effectiveness and Efficiency

In the example scenarios that follow, manning needs for "Additional Pump Operators Water Shuttle (fill, relay)" and for "Water Supply – non-pressurized (Tankers + helpers)" are very much driven by the capabilities of the water shuttle operation; demonstrating this is the main purpose of these example.

In a water shuttle, there is a need to establish drafting sites. To be maximally effective (i.e. not a casual or trivial operation) these sites each require a pumper. We say each, because there is a limit to how many tankers can fill at one site; therefore, multiple sites will be required in a large water demand (RFF) operation. These limits depend entirely on how efficient the tanker fill process is and the refill rate of the tankers (i.e., their design). If there is not enough time to refill a tanker without other tankers waiting in line, then there is a need for a second, third, etc., fill site. So, cycle time is the key.

In a water shuttle there is also a need to establish an unloading site; i.e., a dump site. To be maximally effective (i.e. not a casual or trivial operation) these sites each require a pumper. We say each, because there is a limit to how many tankers can dump at one site therefore, multiple sites will be required in a large water demand (RFF) operation. These limits depend entirely on how efficient the tanker handling process is and the dump rate of the tankers (i.e., their design). If there is not enough time to dump a tanker without other tankers waiting in line behind it, then there is a need for a second, third, etc., dump site. So, cycle time is again the key.

Methodology and site conditions are key. If there is sufficient space for tankers to drive past the fill site, and also to drive past the dump site, without needing to manoeuvre, reverse, turn-around, meet on narrow lanes, and etc., then the operation will be more efficient and more water will be delivered. However, that is not always the case, as it is not possible to chose the fire location, and also, water source sites may not have been prepared beforehand to be most efficient.

Methodology is also important. If it is the practice to have tankers enter driveways and reverse into dump tanks near the attack pumper, then water shuttle efficiency plummets. It is also a safety issue and will require a spotter to guide each driver.

Indeed shuttle operations may cease entirely if the tanker gets stuck and blocks the lane or the dump-tank, which can easily happen when reversing, or when trying to get past an oncoming tanker in the lane. Think winter and spring conditions, and night-time.

Similarly, if it is the practice to use the tanker to nurse the attack pumper, using its onboard pump and a hose, then water shuttle efficiency also plummets. The taker is no longer delivering water in a relay, the driver is out of the truck, and it is pumping and hose handling. The same lane issues will exist.

The most efficient dump arrangement is to have the tankers side-dump[372] into large dump-tanks on the main road. From there a relay pumper provides the water to the attack pumper through the use of a rural hitch,[373] also called a farm-lane lay. Even though this arrangement may be established at a particular fire, allowing tankers without side dumping capability to reverse into the dump site to off load will also cause the efficiency of the operation to suffer. In addition, reversing large trucks around other personnel is a safety issue and will require a dedicated spotter to guide each driver.

Tanker design is also key to water shuttle efficiency and the delivery of maximum water flows with minimal apparatus and therefore minimal personnel. At the end of this appendix is a discussion on optimal tanker design. The examples that follow are useful for informing future equipment design and purchases, and therefore capital decisions.

Scenarios, Existing and Optimized Water Shuttle Operations

Table 96, following, calculates the water delivery rate of a singe tanker and then extends that rate to determine the number of tankers required to meet the RFF rates for each of the Risk columns in the blue section of *Table 94* on page *663* (*Appendix 3*).

[372] NFPA-1901 requires all Mobile Water Supply Apparatus (aka Tankers) to be able to side dump at a minimum rate of 880 Imperial gpm.

[373] https://www.gotbigwater.com/content/operations/file/Rectangular%20Dump%20Tanks%20Clark%20051112a.pdf

TABLE 96: EXAMPLE CUMBERLAND CURRENT FIRE FLEET; WATER SHUTTLE DELIVERY RATE AND APPARATUS NEEDS

Shuttle with CURRRENT Tanker Fleet

Ref: NFPA-1901, NFPA-1142

Igal					Low Risk		Moderate Risk		High Risk		Extreme Risk		FUS RISK GROUP
					LERL	UERL	LERL	UERL	LERL	UERL	LERL	UERL	
1,500	Tanker Gross Capacity (Igal)	**5.0**	**Km.**	One-way distance from fire to water source	**Tankers Required for Risk Category Column RFF**								
	Tanker net capacity (Igal @ 90%):	**1,350**	Igal **NET**	at 90% of gross tank volume	4								1(a)
	Tanker handling time dump site:	**2.00**	Minutes	Position, park, deploy/open/close/retract chute(s), pull away	6								1(b)
880	Tanker Unloading time at rate:	**1.53**	Minutes	Water flow time, dump-chute		10							2
	Tanker empty travel time to fill site:	**4.4**	Min. at	**68** kmph average speed (empty)			11	27					3(a)
	Tanker handling time fill site:	**1.00**	Minutes	Position, park, attach/detach hose, open/close valves, pull away					40				3(b)
880	Tanker Refill time at rate:	**1.53**	Minutes	Make pressure, flow water, reduce pressure, stop flow						57			4(a)
	Tanker full travel time back to fire:	**5.0**	Min. at	**60** kmph average speed (loaded)							73		4(b)
	Per trip Average Delivery Rate:	**87**	Igpm	**Water average delivery rate per same tanker**								95	5

NOTE: Rear dump at dump site. Dump and fill rates are minimum NFPA requirements for Tanker performance capability.

Highlighted cells exceed MCC Equipment availability

RFF based on *Table 94*

			Pumpers required at DUMP SITE(s); Relay to Attack Pumpers								
			1								1(a)
9.4	Minutes	Tanker transit time (both ways)	2								1(b)
15.5	Minutes	TOTAL cycle time per tanker		3							2
					3	7					3(a)
3.53	Minutes	Tanker elapsed time at dump site					10				3(b)
	4.4	**Max theoretical number of tankers per dump site**						14			4(a)
									17		4(b)
										22	5

			Pumpers required at FILL SITE(s); Filling Tankers								
			1								1(a)
			1								1(b)
2.5	Minutes	Tanker elapsed time at fill site		2							2
	6.1	**Max theoretical number of tankers per fill site**			2	5					3(a)
							7				3(b)
								10			4(a)
									12		4(b)
										16	5

TABLE 97: EXAMPLE OPTIMIZED; WATER SHUTTLE DELIVERY RATE AND APPARATUS NEEDS

Igal				Shuttle with OPTIMIZED Tanker Fleet	Low Risk		Moderate Risk		High Risk		Extreme Risk		FUS RISK GROUP
Ref: NFPA-1901, NFPA-1142					LERL	UERL	LERL	UERL	LERL	UERL	LERL	UERL	
					Tankers Required for Risk Category Column RFF								
2,100	Tanker Gross Capacity (Igal)	**5.0**	**Km.**	One-way distance from fire to water source									
	Tanker net capacity (Igal @ 90%):	**1,890**	Igal **NET**	at 90% of gross tank volume	2								1(a)
	Tanker handling time dump site:	**0.25**	Minutes	Position, park, deploy/open/close/retract chute(s), pull away	3								1(b)
4,400	Tanker Unloading time at rate:	**0.43**	Minutes	Water flow time, dump-chute		5							2
	Tanker empty travel time to fill site:	**4.4**	Min. at	**68** kmph average speed (empty)			6	14					3(a)
	Tanker handling time fill site:	**0.50**	Minutes	Position, park, attach/detach hose, open/close valves, pull away					21				3(b)
2,000	Tanker Refill time at rate:	**0.95**	Minutes	Make pressure, flow water, reduce pressure, stop flow						30			4(a)
	Tanker full travel time back to fire:	**5.0**	Min. at	**60** kmph average speed (loaded)							39		4(b)
	Per trip Average Delivery Rate:	**164**	Igpm	**Water average delivery rate per same tanker**								51	5

NOTE: Side dump at dump-site. Dump and fill rates based on known high-performance Tanker capability

				Pumpers required at DUMP SITE(s); Relay to Attack Pumpers								
				1								1(a)
9.4	Minutes	Tanker transit time (both ways)		21								1(b)
11.5	Minutes	TOTAL cycle time per tanker			1							2
						1	1					3(a)
0.68	Minutes	Tanker elapsed time at dump site						2				3(b)
	17.0	**Max theoretical number of tankers per dump site**							2			4(a)
										3		4(b)
											3	5

Highlighted cells exceed MCC Equipment availability

RFF based on *Table 94*

				Pumpers required at FILL SITE(s); Filling Tankers								
				1								1(a)
				1								1(b)
1.4	Minutes	Tanker elapsed time at fill site			1							2
	8.0	**Max theoretical number of tankers per fill site**				1	2					3(a)
								3				3(b)
									4			4(a)
										5		4(b)
											7	5

TABLE 98: EXAMPLE CUMBERLAND CURRENT FIRE FLEET; WATER SHUTTLE DELIVERY RATE FOR COMMERCIAL LINES RFF

Ref: NFPA-1901, NFPA-1142

Shuttle with CURRRENT Tanker Fleet
Commercial Lines PFPG Distance

Igal					Low Risk		Moderate Risk		High Risk		Extreme Risk		FUS RISK GROUP
					LERL	UERL	LERL	UERL	LERL	UERL	LERL	UERL	
1,500	Tanker Gross Capacity (Igal)	**2.5**	**Km.**	One-way distance from fire to water source	**Tankers Required for Risk Category Column RFF**								
	Tanker net capacity (Igal @ 90%):	**1,350**	Igal **NET**	at 90% of gross tank volume	3								1(a)
	Tanker handling time dump site:	**2.00**	Minutes	Position, park, deploy/open/close/retract chute(s), pull away	4								1(b)
880	Tanker Unloading time at rate:	**1.53**	Minutes	Water flow time, dump-chute		7							2
	Tanker empty travel time to fill site:	**2.2**	Min. at	**68** kmph average speed (empty)			8	19					3(a)
	Tanker handling time fill site:	**1.00**	Minutes	Position, park, attach/detach hose, open/close valves, pull away					28				3(b)
880	Tanker Refill time at rate:	**1.53**	Minutes	Make pressure, flow water, reduce pressure, stop flow						40			4(a)
	Tanker full travel time back to fire:	**2.5**	Min. at	**60** kmph average speed (loaded)							51		4(b)
	Per trip Average Delivery Rate:	**125**	Igpm	**Water average delivery rate per same tanker**								66	5

NOTE: Rear dump at dump site. Dump and fill rates are minimum NFPA requirements for Tanker performance capability.

				Pumpers required at DUMP SITE(s); Relay to Attack Pumpers								
				1								1(a)
4.7	Minutes	Tanker transit time (both ways)		2								1(b)
10.8	Minutes	TOTAL cycle time per tanker			3							2
						3	7					3(a)
3.53	Minutes	Tanker elapsed time at dump site						10				3(b)
	3.0	**Max theoretical number of tankers per dump site**							14			4(a)
										17		4(b)
											22	5

				Pumpers required at FILL SITE(s); Filling Tankers								
				1								1(a)
				1								1(b)
2.5	Minutes	Tanker elapsed time at fill site			2							2
	4.3	**Max theoretical number of tankers per fill site**				2	5					3(a)
								7				3(b)
									10			4(a)
										12		4(b)
											16	5

Highlighted cells exceed MCC Equipment availability

RFF based on *Table 94*

TABLE 99: EXAMPLE MRDR MANNING MATRIX; CURRENT FIRE FLEET WATER SHUTTLE SERVICE

PERSONNEL REQUIREMENTS		Low Risk		Moderate Risk		High Risk		Extreme Risk	
	Fireground Critical Tasks	LERL	UERL	LERL	UERL	LERL	UERL	LERL	UERL
	Incident Command	1	1	1	1	1	1	1	1
	Initial Pump Operator	1	1	1	1	1	1	1	1
	Attack Line (Confine & Extinguish)	2	2	2	4	4	4	4	4
	Additional Pump Operator(s) Fire Attack	0	0	0	2	3	4	6	7
	Additional Attack Line (Confine & Extinguish) + Backup		2	6	12	16	20	22	24
	Additional Pump Operator(s) Water Shuttle (fill, relay)	3	5	12	12	17	24	29	38
	Search and Rescue		2	2	4	4	6	6	8
	Initial Rapid Intervention Team (IRIT)			4	6	8	8	8	8
	Ventilation		2	2	4	4	4	6	8
	Water Supply - pressurized								
	Water Supply - non-pressurized (Tankers + helpers)	5	12	14	33	49	70	89	117
Incident Response	Forceable Entry Team						1		1
(Note: Where zero	Utility Control		1	1	1	1	2	2	2
or no number has	Laddering (Ground Ladders)		2	2	3	3	4	4	6
been assigned, the	Laddering (Aerial or elevating device operator)				2	2	2	2	2
task may be	Exposure Protection				4	4	6	6	8
performed at the	Incident Safety Officer				1	1	2	2	2
direction of the IC.)	Accountability			1	1	2	2	3	3
	Entry Control				2	2	4	4	4
	Rehabilitation			1	1	2	3	3	4
	Salvage				2	2	2	2	2
	Lighting								
	Directing Occupants			1	1	1	1	1	1
	Scribe				1	1	1	1	1
	Sector Officers	1	1	1	3	3	5	6	6
	Air Management (air refilling station, etc.)				1	1	2	3	3
	Logistics Officer								
Other or Additional	Administrative and/or Finance Officer								
Response	Planning Officer								
Considerations	Evacuations (large scale)								
	Public Information Officer								
	Overhaul								
	Additional Firefighters								
Summary	**Incident Staffing Totals:**	**13**	**31**	**51**	**102**	**132**	**179**	**211**	**261**

TABLE 100: EXAMPLE MRDR MANNING MATRIX; OPTIMIZED WATER SHUTTLE SERVICE

PERSONNEL REQUIREMENTS		Low Risk		Moderate Risk		High Risk		Extreme Risk	
	Fireground Critical Tasks	LERL	UERL	LERL	UERL	LERL	UERL	LERL	UERL
	Incident Command	1	1	1	1	1	1	1	1
	Initial Pump Operator	1	1	1	1	1	1	1	1
	Attack Line (Confine & Extinguish)	2	2	2	4	4	4	4	4
	Additional Pump Operator(s) Fire Attack	0	0	0	2	3	4	6	7
	Additional Attack Line (Confine & Extinguish) + Backup		2	6	12	16	20	22	24
	Additional Pump Operator(s) Water Shuttle (fill, relay)	2	2	3	3	5	6	8	10
	Search and Rescue		2	2	4	4	6	6	8
	Initial Rapid Intervention Team (IRIT)			4	6	8	8	8	8
	Ventilation		2	2	4	4	4	6	8
	Water Supply - pressurized								
	Water Supply - non-pressurized (Tankers + helpers)	2	5	6	15	23	32	41	54
Incident Response	Forceable Entry Team						1		1
(Note: Where zero	Utility Control		1	1	1	1	2	2	2
or no number has	Laddering (Ground Ladders)		2	2	3	3	4	4	6
been assigned, the	Laddering (Aerial or elevating device operator)				2	2	2	2	2
task may be	Exposure Protection				4	4	6	6	8
performed at the	Incident Safety Officer				1	1	2	2	2
direction of the IC.)	Accountability			1	1	2	2	3	3
	Entry Control				2	2	4	4	4
	Rehabilitation			1	1	2	3	3	4
	Salvage				2	2	2	2	2
	Lighting								
	Directing Occupants			1	1	1	1	1	1
	Scribe				1	1	1	1	1
	Sector Officers	1	1	1	3	3	5	6	6
	Air Management (air refilling station, etc.)				1	1	2	3	3
	Logistics Officer								
Other or Additional	Administrative and/or Finance Officer								
Response	Planning Officer								
Considerations	Evacuations (large scale)								
	Public Information Officer								
	Overhaul								
	Additional Firefighters								
Summary	**Incident Staffing Totals:**	**9**	**19**	**28**	**67**	**82**	**111**	**128**	**158**

Notes on Shuttle Scenarios

There is a substantial performance difference between the two example scenarios shown in the proceeding four tables. Some assumptions were made in establishing the examples. These were as follows for the Current Fleet scenario in *Table 96*;

- Critical tasks that were established as a baseline in the hydrant serviced example in *Table 95* on page *665* were reused here, with the exception of the source of firefighting water. There are staffing and vehicle impacts to that change, reflected in the calculations.
- In the Current Fire Fleet example, *Table 96*, the existing single axle, 1,500 Imperial gallon tankers and pumper/tankers were used as the model.
- Many of these existing tankers do not have side dumps, but rely on a swivel rear dump to perform side dumping. Some existing tankers have no side dumping capabilities at all; only fixed rear dumps. Some have side dumping provisions, but through 10 inch round dumps.
- Dump and fill rates for the existing tankers are assumed to meet NFPA-1901 requirements of 1000 USgpm (880 Igpm) minimum rate capability. Testing will be required to verify these capabilities; which should have been done as part of the ULC certification process. *GA* has not seen these certificates.
- NFPA-1901 stipulates the water tank unloading be capable to left/right/rear with dumping at minimum specified rates for 90% of the tank capacity, with the apparatus on level ground. In the calculations, 90% of gross tank capacity is used.
- It was assumed in the exercise that available dump-tanks are large enough in capacity to contain the entire tanker contents in a single continuous dump (although, most Cumberland ones aren't).[374]
- It is assumed that there is adequate tank venting for maximum dumping capability. Although, past testing by *GA* has determined that NFPA-1901 compliant tanker venting is usually inadequate and slows dump performance.
- Handling time at dump and fill sites are estimated. Rear dumping is assumed. Drive-by filling is assumed.
- Travel speeds are assumed, based on best practices. Full tanker average speed is less than when empty.
- The travel distance from the fire to the water fill site is 5 kilometers for this example. This is in line with the FUS Accredited Superior Water Shuttle Service[375] (ASWSS) for obtaining an equivalent to hydranted insurance rating for "Personal Lines" Dwelling Protection Grade (DPG) purposes.
- To meet ASWSS requirements for DPG rating, a sustained 200 Igpm must be established and maintained.

[374] NFPA-1142, C.13 "drop tank that has a 40 percent greater capacity than the water tank of that apparatus. The strainer on suction hose used when drafting from a portable tank should be designed to minimize whirlpooling and allow the fire department to draft to a depth of 1 in. to 2 in. (25 mm to 51 mm) from the bottom. Cumberland Tankers are equipped with 1500 US gallon dump-tanks.

[375] See *Fire Underwriters Surveys (FUS)* starting on page *64* of this report.

For the optimized water shuttle service example in *Table 97*, the following different assumptions were made.

- All major assumptions from the prior example remain the same, except for the following.
- The optimized tanker model used in the example was based on an actual high-performance tanker that was constructed and placed in service by one of the *GA* associates. It has a 2,100 Igal gross capacity tank (1,890 Igal net capacity at 90%)
- Both fill and dump operations are drive-by operations, with no manoeuvring required. The dump-site uses a single-lane dump-tank arrangement, leaving the second lane open for tankers.
- Handling time at the dump-site is based on a drive-by dump without the need for manual assistance outside the tankers cab. Motorized dump chutes/valves are controlled from in the cab.
- The dump tanks used are 2,500 Imperial gallons in size; i.e., 32% larger than the net tank capacity of the optimized tanker's water tank.
- Fill handling times and refill times are reduced from the Cumberland standard tanker due to the design of the refill connection; reducing manual connect and disconnect time.
- Refill time is reduced on the optimized tanker as compared to the Cumberland standard tanker, despite its larger capacity. Refill rate capability in the example is limited by refill pumper capability and for the example was capped at 2,000 Igpm. The optimized tanker is actually capable of higher refill rates.
- No changes were made to travel times or distances for the purposes of this comparison example. The optimized tanker is actually capable of better performance.

Results of the Water Shuttle Exercises

The optimized tanker had an average delivery rate that was 89% higher than the delivery rate that the Cumberland standard 1,500 Igal tanker could deliver, under the conditions and assumptions of the example exercises. This is almost twice the water volume, in a tanker with a 40% larger water tank. The remainder of the increase is based on design factors, resulting in higher performance and the advantages of moving more water per trip, if there are no offsetting delays as a result.

The practicality of this gain in delivery rate is shown in the differences in apparatus commitments between *Table 96* vs *Table 97*; i.e., between the two examples.

In the first example, using the current fleet of tankers, the County will run out[376] of tankers at a Moderate Risk LERL fire. The required fire flow rate (RFF) for that fire is 1,200 Igpm; i.e., a little more than flowing a ground monitor with a handline also flowing. Such a scenario might be represented by a fire in a 2-1/2 story Victorian home with balloon frame construction walls.

In the optimized example, RFF to meet Moderate Risk UERL, and even well into High Risk LERL is possible with the 19 available tankers.

In practical terms, mobilizing and amassing such levels of resources is probably unrealistic. Looking at *Table 99* on page *673*, the manning commitment required to mobilize the current fire apparatus fleet to achieve maximum flow rates is difficult to obtain in a timely manner.

When comparing the manning commitment to obtain similar water flow rates, with optimized tanker operations as shown in *Table 100* on page *674*, it should be obvious that a 45% reduction in manning needs will be easier to achieve in a timely manner. Going along with this is a reduction in logistical organization demands, with fewer fill and dump site needs as well, and fewer mobilized pumpers and tankers. This leaves more resources uncommitted for other possible emergency business, elsewhere in the County.

Areas for Optimization of Water Shuttles

The following bullet points are brief, intended to identify areas where focus is needed to improve performance. Further effort will be needed if the future investments in firefighters and equipment are to be maximally effective.

- Training and practice in water shuttle operation should occur on a regular basis. These will require multi-station participation also. These skills are fundamental to delivering rural water supplies.
- Complacency can develop by using nursing operations for most fires. People tend to do what they are accustomed to, even when the situation clearly indicates other tactics are needed. Time will be lost, irrecoverably, switching tactics.
- Tanker water shuttle operations should be designed to utilize minimum manpower without compromising the effectiveness of the operation.

[376] *Table 12* on page *123* shows that MCC has 19 tankers and pumper/tankers in operation.

- District pre-planning will identify occupancy situations where large fires can occur and where apparatus access is difficult. Water shuttle operations should occur on the public road, utilizing a rural-hitch to move the water to the attack pumper near the fire.
- Develop effective and flexible procedures for a number of scenarios related to water shuttle operations. A standardized playbook will assist in all personnel understanding the process and performing well without undue instruction needed.
- Identify and develop water source sites in as many places in the fire district as possible. Especially where there are large structures that will demand higher water flow rates, establish water sources as close as possible, before the fire occurs.
- Higher capacity tanker trucks are required to improve water deliver rates. More water on the truck equals more water delivered, provided other choke-points are also addressed.
- Tankers should be based on approximately 2,100 Igal gross capacity. This capacity is limited by the practical size limits of dump-tanks. A 2100 Igal tank needs a +/- 2,500 Igal dump-tank. This is the largest practical size dump-tank that will fit in a rack on the side of the tanker, that is light enough for two firefighters to deploy, and that can be fit into a single lane of traffic.
- Tankers should be based on tandem-axle chassis in order to safely carry the suggested size water tank. The current tankers, at 1500 Igal exceeds the NFPA-1142 suggested[377] water tank size to be safely carried on a single rear axle truck. This excess is exacerbated on some, by the addition of a major pump weight.
- Utilize dump-tanks that are at least 30% larger[378] than the water tank net capacity. For the 1500 Igal Cumberland tankers, the required size of dump-tank is 1800 Igal. Currently, the size of dump-tank carried in Cumberland is 1500 USgal (1250 Igal). Only Oxford carries a larger size, and a couple fire departments utilize even smaller dump-tanks.
- Installing large capacity pumps on tankers is expensive, adds significant weight, adds to the length of the vehicle, and creates a mindset that the Tanker is a Pumper also. This can lead to committing the tanker as a pumper, usually poorly equipped for that role, and thereby removing it from availability as a tanker.
- Tankers should be designed for maximum dump rates, with double side-dumping capability. This will also require special attention to designing adequate venting of the tank while dumping.
- Tankers should be designed for rapid handling at the fill site. Attention should be paid to a design that considers ergonomics, since water filled large diameter hose is very heavy to handle.
- Tankers should be designed for very high refill water flow rates. This permits pumpers to produce high flows into the tank without damage.
- Keep apparatus fuel tanks full in the station so that water shuttle operations can be sustained without interruption for the first critical 2 hours, or longer. Call for a fuel truck early at major incidents.

[377] NFPA-1142 §C2; suggests that "*for a mobile water supply apparatus with a capacity greater than 1500 gal (5700 L), it might be necessary to utilize tandem rear axles*."

GA Note: Cumberland's tankers are 1500 Igal (i.e., 1800 USgal). Gross axle weight rating/capacity is not so much the issue as is vehicle stability and braking power when being driven as an emergency vehicle. This is especially so when the vehicle is equipped, in addition, with a large pump and pumper equipment, as is 11 of Cumberland's 19 tankers and pumper/tankers.

[378] NFPA-1142 §C.13; recommends dump-tanks that are 40% larger; GA's experience is that 30% is the minimum, and is a practical compromise.

APPENDIX 5: FIRE STATION ASSESSMENT FORMS

FIRE STATION ASSESSMENT

ADVOCATE

Address: 4176 Hwy 209, Advocate Harbour, NS

Ownership: Advocate Fire Department

Date of construction.: 1977

Date of last major renovation: Unknown

Total Square feet: Note two separate buildings on site. (Ref: Additional Notes)

	Yes	No
FIRE STATION PROPERTY – IDEAL DESIGN		
• **Is the fire station properly identified (*i.e., fire department name, address on exterior etc.?)*** • Note: Highway fire station warning signs & exterior signage on building. (Ref: photo 20 & 21)	✓	
• **Fire Stations constructed post 2005 are designated Post Disaster Readiness structures. Do these stations comply with Part 4 of the NBC?** Notes: Two separate buildings wood frame construction.		✓
• **Does the fire Station comply with NFPA Firewise recommendations for set back?** •	✓	

	Yes	No
• *(Desired characteristics- maintain 100 feet of defensible space around structures to increase chance of withstanding a wildfire, no burning debris traps that could ignite structure, e.g., wood decks, gutters, outbuildings near main structure, etc.).* Note: Area cleared greater than 100 ft. behind station, small group of trees on east side of Building #2 (Ref: photo 20 &21 25 & 26)		
FUNCTIONS and USE CONSIDERATIONS	Yes	No
• **Does the fire station have an office area for department administration?** • *(Desired characteristics – ample space for desks, file cabinets, computers, private meetings with personnel, etc.)* • Note: Very small office	✓	
• **Is the fire station training area adequately designed?** • *(Desired characteristics – sufficient classroom space for FD personnel, space for training (inside and outside); storage space for files, audio-visual equipment provided, and other training aids)*	✓	

	Yes	No
Note: Community Hall used for in house training, first aid, CPR and other classroom sessions.		
• **Is the fire station designed to include public use of the building?** • *(Desired Characteristics – to be used as a Public Reception Center during disasters or other community-based emergencies, or other municipal events; are there ample public (separate from fire department use) facilities such as washrooms, parking areas etc. without conflict of normal fire station operations, adequate signage?)* Note: Community Hall	✓	
• **What is the Fire Station water Supply?** ❖ Municipal Water Supply ❖ Cistern ➢ Capacity ____ ❖ Well ✓ ➢ Capacity - Unknown Note:	✓	
• **If Well or Cistern, does the Fire Station have a water treatment system and sanitation system (i.e., UV)? Is it serviced at least annually?** Note: No water treatment.		✓
• **If the water supply is not municipal, is the water supply tested as per Nova Scotia Standards?** a) Every 6 months for bacteria (PASS/FAIL) b) Every 12 months for chemical and mineral contaminants (PASS/FAIL)		✓

	Yes	No
c) Is there a log kept of all testing and maintenance on the non-municipal system(s) d) Is the certificate for testing posted prominently? e) Is the certificate of testing readily available? f) If not tested, or is a FAIL as potable, is there prominent and permanent signs displayed at all water source points indicating it's not fit for consumption? Note: No testing		
• **Does the fire station have emergency power supply during power outages and when used as a community reception center?** • *Desired Characteristics – Ideally there should be an on-site standby by generator with ample fuel supply that automatically starts on loss of power, alternative is to have an external connection to be used when a portable generator is brought to site.* • *The amperage required during loss of power should be sufficient to operate the necessities of a station i.e., radio communications, heat and sufficient lighting, water treatment and movement systems, life safety systems, mechanical systems, overhead apparatus bay doors, station lighting etc.* • *Is the generator located inside the building in a separate room?* Note: 6500 w Portable (Ref: photo 32 & 33) ✓✶ Does not provide sufficient power for all building requirements.	✓✶	✓
• **Generator /Emergency power unit.** • Amperage of Generator Panel: None • Wattage of Generator: 6500 • Generator Powered by: a) Diesel: Tank size: _____ b) Gasoline:✓ Tank size: 5 gal. c) Propane: Tank size: _____ d) Natural Gas	✓	

	Yes	No
Note:		
• **Does the fire station design allow for flexibility for the future?** • *(Desired Characteristics- designed for future changes in systems and methods, apparatus bay or other facility expansion)* • Note: There appears to be sufficient land area for facility expansion	✓	
• **ROOMS and ROOM CONSIDERATIONS** • *(Could be combined, depending on priorities, philosophies)*	**Yes**	**No**
• **Is there an office for the fire chief/senior chief officers?** • *(Desired Characteristics- Space for desk, chair, worktable, filing cabinet and two side chairs, minimum recommended space 12 ft. X 16 ft.)* • Note: ✓✱Very small space does not meet recommended space requirements.		✓✱
• **Is there an office space for Training officers and Fire Safety Coordinator?** • *(Desired Characteristics- Space for desk, chair, worktable, computer, printer, filing cabinet(s) duplicating machine and storage area)* Note:		✓
• **Does the fire station have sufficient storage room(s)?** • *(Desired Characteristics-Fire Safety, Training and administration space for audio visual equipment and supplies; training aids, and printed materials and public education materials, cleaning tools and supplies)* Note:		✓

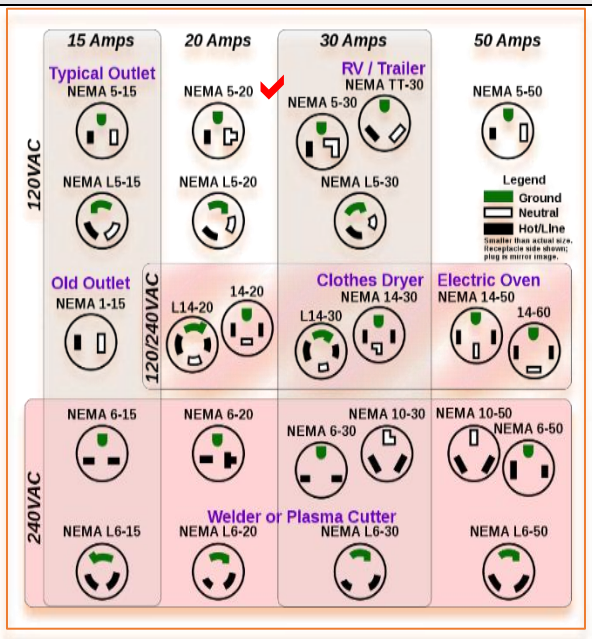
	Yes	No
• **Is there a meeting/lecture room?** • *(Desired Characteristics-Space large enough for Training purposes; give consideration to storage space for chairs, tables, lecterns, projector/storage room, will this room be used as a community reception center or an EOC?)* • Note: Community Hall at rear of building #1 (Ref: Photo 37)	✓	
• **Is there a Kitchen?** • *(Desired Characteristics-Space for cooking and food preparation; enough space should be provided so several people can work in the area at the same time; appliances sized to accommodate, department fund raisers, social events firefighter rehab/feeding, or community reception center needs if required; sufficient electrical service capacity; ventilation and exhaust systems meeting code.)* Note: Community Hall at rear of building #1 (Ref: Photo 38) •	✓	
• **Is there an Eating Area?** • *(Desired Characteristics-Space large enough to seat anticipated maximum number of volunteer fire fighters – meeting room could be used for this function)* • Note: Community Hall at rear of building #1 (Ref: Photo 37)	✓	
• **Does the station contain a dispatch/Communications room?** • *(Desired Characteristics- Space for radio equipment, emergency telephones, computers, maps, bulletin boards etc.)* Note: ✓* No dedicated office, small storage cabinet at back of apparatus floor (Ref: photo 40)		✓*

	Yes	No
• **Is there a provision for the decontamination showers?** • *(Desired Characteristics-should be located in a partially (3 sides) enclosed area, with a high flow over head spray and in floor large quick drain with retention tanks)* Note: •		✓
APPARATUS BAY		
• **Is the apparatus area of appropriate area and size to allow safe parking of apparatus, and minor** maintenance**?** *(Reference bay size standard as a guide)* • Building 1 Length: 27.65 ft. Width: 28.9 ft. No. of units: 1 engine & 1 utility • Building 2 Length: 42.5 l ft. Width: 38.7 ft. No. of units: 1 Rescue, 1 Engine & 1 utility trailer and all track. (Ref: photo 54) a) Meets recommended Standards or Best Practices *b)* Does not meet recommended Standards or Best Practices✓		
• **Are there measures to reduce vehicle exhaust fumes?** • *(Desired Characteristics- there are a few options: (a) capture at point of source, (b) CO/H_2S monitors in apparatus areas that activate overhead scrubbers or (c) CO monitor triggered fume exhaust and fresh air replacement fan systems in roof/walls. Apparatus bays are sealed from other parts of the station?)* Note:		✓
OTHER ROOMS		
• **Is there a SCBA compressor & Filling Station?** a) Is the air intake located in a safe and appropriate location? b) Is the fill station separated from the air compressor? c) Does the fill station incorporate a defrag chamber? • Note: (Ref: photo 52)	✓	✓ ✓

	Yes	No
Breathing Air sample tested Oct. 13th 2021		✓
• **Does the fire station have a washer or dryer in a separate room for cleaning of contaminated PPE?** Note:		✓
• **Is there an exercise Room?** • *(Desired Characteristics-A small area should be considered for volunteers to exercise and stress reduction)*		✓
LIFE SAFETY CONSIDERATIONS	**YES**	**NO**
• **Is the fire station sprinklered throughout?** Note:		✓
• **Does the fire station have a fire detection system throughout?** • **Is the detection system remotely monitored?** Note:		✓
• **Does the fire station have emergency lighting where required?** Note: Community Hall and Apparatus Bay of Building #1 (Ref: photos 37,38 & 46)	✓	
• **Are illuminated exit signs in the direction of exit travel where required?** Note: Community Hall and Apparatus Bay of Building #1 (Ref: photos 37, 38 & 46)	✓	
• **Are Carbon Monoxide detectors/alarms installed where required?** Note:		✓

	Yes	No
• **Potentially Contaminated Personal Protective Equipment.** • *Potentially contaminated personal protective equipment shall be stored in a dedicated, well-ventilated area or room.* • *Potentially contaminated PPE shall not be allowed in personal clothing lockers or in areas used for the following: Food preparation and cooking, Recreation, Personal hygiene, general business areas* Note:		✓
Contaminated Storage. • *Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal shall be separated physically from members in facilities or on vehicles.* • *Such areas or containers shall not be used for any other purpose.* Note:		✓
• **Is there proper indoor storage of flammables & combustibles?** • *(Desired Characteristics- Provided Listed and Prominently Labeled Flammable & Combustible storage containers & lockers)* Note: (Ref: photo 34)		✓
• **Are Emergency vehicle aprons & driveways separate from driveways for business travel?** • *(Desired Characteristics-Entrance and apron sized large enough to permit bi-directional flow of traffic. Adequate direction signage where appropriate?)* Note:		✓
LIFE SAFETY CONSIDERATIONS	**Yes**	**No**
• **Is there proper ventilation for all areas of the building?** Note:		✓
• **Does the fire station have a security key system or coded locks?** o For exterior access Yes o Internally between public and fire station facilities?		✓

	Yes	No
Note:	✓	
• **Is the building vulnerable to break and enter; leading to theft of equipment or supplies?** o Ground floor windows in unsupervised areas (e.g., the rear, sides) o Poor quality doors or securing systems, especially at the rear, sides o Lack of security devices, e.g., for windows and doors at grade o Bushes and signs, etc., close to the building creating blind spots o Doors do not latch and lock automatically o Poor practices in securing the building o No security system, or monitoring system o Lack of security lighting, motion detection devices and lamps o Unsecure lobbies n/a Note: Building was secure at time of visit	✓ ✓ ✓ ✓ ✓	
• **Does the fire station have a video security system?** a) External b) Internal c) Can the security system be monitored remotely? Note:		✓
LIGHTING & POWER		
• **Electrical service for the fire Station from Public Mains (i.e., NSPC)?** o Voltage: 120/240, 208, 400, 600 o Single or 3-phase? o Rated Amperage of Fire Station Service: 60 / 100 / 200 / 400 / 800 o Is their solar or wind power on site? No o If more than one power supply, note those and total Amps above N/A Note: (see photos)	 ✓	

	Yes	No
• **Are there 20 amp drops (for etc.)?** • **(Or higher) electrical for apparatus shore-lines battery charges, accessories, air pumps,**  Note: Small trickle charger		✓
HEATING & COOLING		
• **What is the main heating source for the Fire Stations?** a) Fuel oil, ducted forced air **Efficiency**: low / high (condensing) ✓ b) Fuel oil, hot water radiators/unit heaters **Efficiency**: low / high (condensing) c) Propane, forced air **Efficiency**: low / high (condensing) d) Propane, hot water radiators/unit heaters **Efficiency**: low / high (condensing) e) Electric, unit heaters and base board heaters f) Natural gas (NG), forced air **Efficiency**: low / high (condensing) g) NG, hot water radiators/unit heaters **Efficiency**: low / high (condensing) h) Ducted Heat Pump, i.e., forced air HVAC i) High Efficiency “mini-split” un-ducted heat pumps j) Bio-Mass (wood, etc.) k) If a mixture, circle all that apply and note below Note: (Ref: See photos 42 & 58)	✓	
SIZE and CONFIGURATION of PROPERTY		
• **Does the building set-back allow for sufficient visitor and responder parking?** Note: •	✓	

	Yes	No
• **Does the property depth allow for a rear training area?** Note: •	✓	
• **Are there enough parking spaces for training classes?** Note:	✓	
Additional NOTES:		
Two separate buildings (Ref: photos 20 & 21) <u>Building NO. 1 All sizes approximate - Comfort Centre</u> • Bay 1: 27.65 ft. L, • Bay 2: 31.5 L • NOTE: Bay 1 & 2 Front 28.9 Feet W • NOTE: Bay 1 Rear 16.9 w, Bay 2: 12 W • Bay Doors 12 w by 10 Ft h • 1 Single Axle Engine • 1 Utility Vehicle 4 WD (see photo 34) • Portable Gas driven generator for Power outages for Bldg. • Community /FD Training Hall 38.9 l by 29.5 wide • Water Supply Well - Not aware of any water tests <u>Building NO. 2 All sizes approximate</u> • Bay doors 12 H 14 wide • 1 Rescue Single Axle • 1 Engine Single Axle • 1 utility trailer and all track area 12 by 6.5 • Bay Area 42.5 l by 38.7 W		

	Yes	No
• SCBA Air compressor not in own room as per best practices and Manufacturer's recommendations • Air Quality checked October 2021 • 1 small office 5.8 by 11.7 • GENERATOR Not known		

PHOTOS

Photo 20

Photo 21

Photo 25

Photo 26

Photo 32

Photo 33

Photo 46

Photo 52

Photo 54

Advocate
Property Lines

Apple River
Property Lines

FIRE STATION ASSESSMENT

APPLE RIVER (Advocate Substation)

Address: Apple River Branch Road

Ownership: APPLE RIVER COMMUNITY ASSOCIATION

Date of construction: 2009

Date of last major renovation: Unknown

Total Square feet: 600

	Yes	No
FIRE STATION PROPERTY – IDEAL DESIGN		
• **Is the fire station properly identified (*i.e., fire department name, address on exterior etc.?)*** • Note: Exterior signage in front of building. (Ref: photo 02) •	✓	
• **Fire Stations constructed post 2005 are designated Post Disaster Readiness structures. Do these stations comply with Part 4 of the NBC?** Note: Wood frame construction, Vinyl siding. (Ref: photos 03 & 08)		✓
• **Does the fire Station comply with NFPA Firewise recommendations for set back?** • *(Desired characteristics- maintain 100 feet of defensible space around structures to increase chance of withstanding a wildfire, no burning debris traps that could ignite structure, e.g., wood decks, gutters, outbuildings near main structure, etc.).* Note: House, two story wood frame structure exposure to the right 40 feet away. Tree lined <100 ft. (Ref: photos 01 & 03)		✓
FUNCTIONS and USE CONSIDERATIONS	Yes	No
• **Is the fire station designed for quick and safe response by personnel and apparatus?** • *(Desired characteristics – minimum internal travel distances; doors swinging in the right direction of travel to the apparatus floor without encroaching on walkways; minimum conflict*		

	Yes	No
in cross circulation; good proximity of all spaces to apparatus floor and other rooms, conflict between arriving firefighters and apparatus leaving) Note: < 3 ft. between overhead door and front of apparatus. (Ref: photo 10)		✓
• **Does the fire station have an office area for department administration?** • *(Desired characteristics – ample space for desks, file cabinets, computers, private meetings with personnel, etc.)*		✓
• **Is the fire station training area adequately designed?** • *(Desired characteristics – sufficient classroom space for FD personnel, space for training (inside and outside); storage space for files, audio-visual equipment provided, and other training aids)* Note:		✓
• **Is the fire station designed to include public use of the building?** • *(Desired Characteristics – to be used as a Public Reception Center during disasters or other community-based emergencies, or other municipal events; are there ample public (separate from fire department use) facilities such as washrooms, parking areas etc. without conflict of normal fire station operations, adequate signage?)* Note:		✓
• **What is the Fire Station water Supply?** ❖ Municipal Water Supply ❖ Cistern ➢ Capacity ____ ❖ Well(s) ➢ Capacity ____ Note: NO WATER SUPPLY		✓
• **If Well or Cistern, does the Fire Station have a water treatment system and sanitation system (i.e., UV)? Is it serviced at least annually?** Note:		✓
• **If the water supply is not Municipal, is the water supply tested as per Nova Scotia Standards?** a) Every 6 months for bacteria (PASS/FAIL) b) Every 12 months for chemical and mineral contaminants (PASS/FAIL) c) Is there a log kept of all testing and maintenance on the non-municipal system(s)		✓

	Yes	No
d) Is the certificate for testing posted prominently? e) Is the certificate of testing readily available? f) If not tested, or is a FAIL as potable, is there prominent and permanent signs displayed at all water source points indicating it's not fit for consumption? Note: Information not available.		
• **Does the fire station have emergency power supply during power outages and when used as a community reception center?** • *Desired Characteristics – Ideally there should be an on-site standby by generator with ample fuel supply that automatically starts on loss of power, alternative is to have an external connection to be used when a portable generator is brought to site.* • *The amperage required during loss of power should be sufficient to operate the necessities of a station i.e., radio communications, heat and sufficient lighting, water treatment and movement systems, life safety systems, mechanical systems, overhead apparatus bay doors, station lighting etc.* • *Is the generator located inside the building in a separate room? No* Note: *Portable generator 5500w manual start*	✓	✓
• **Generator /Emergency power unit.** • Amperage of Generator Panel: _____ • Wattage of Generator: 5500w • Generator Powered by: a) Diesel: Tank size: _____ b) Gasoline:✓ Tank size: 5 gallon c) Propane: Tank size: _____ d) Natural Gas Note:	✓	
• **Does the fire station design allow for flexibility for the future?** • *(Desired Characteristics- designed for future changes in systems and methods, apparatus bay or other facility expansion)* Note: (The lot will allow for expansion of the building)	✓	
• **ROOMS and ROOM CONSIDERATIONS** • *(Could be combined, depending on priorities, philosophies)*	**Yes**	**No**

	Yes	No
• **Is there an office for the fire chief/senior chief officers?** • *(Desired Characteristics- Space for desk, chair, worktable, filing cabinet and two side chairs, minimum recommended space 12 ft X 16 ft)* Note:		✓
• **Is there an office space for Training officers and Fire Safety Coordinator?** • *(Desired Characteristics- Space for desk, chair, worktable, computer, printer, filing cabinet(s) duplicating machine and storage area)* Note:		✓
• **Does the fire station have sufficient storage room(s)?** • *(Desired Characteristics-Fire Safety, Training and administration space for audio visual equipment and supplies; training aids, and printed materials and public education materials, cleaning tools and supplies)* Note:		✓
• **Is there a meeting/lecture room?** • *(Desired Characteristics-Space large enough for Training purposes; give consideration to storage space for chairs, tables, lecterns, projector/storage room, will this room be used as a community reception center or an EOC?)* Note:		✓
• **Is there a Kitchen?** • *(Desired Characteristics-Space for cooking and food preparation; enough space should be provided so several people can work in the area at the same time; appliances sized to accommodate, department fund raisers, social events firefighter rehab/feeding, or community reception center needs if required; sufficient electrical service capacity; ventilation and exhaust systems meeting code.)* Note:		✓
• **Is there an Eating Area?** • *(Desired Characteristics-Space large enough to seat anticipated maximum number of volunteer fire fighters – meeting room could be used for this function)* Note:		✓

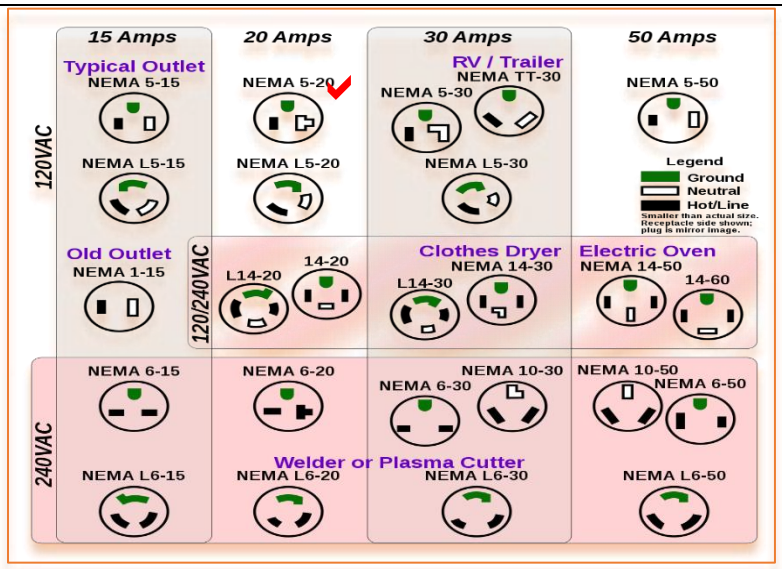
	Yes	No
• **Does the station contain a dispatch/Communications room?** • *(Desired Characteristics- Space for radio equipment, emergency telephones, computers, maps, bulletin boards etc.)* Note:		✓
• **Are there male & female or unisex washrooms?** • *(Desired Characteristics- Toilet and shower facilities should be available for the volunteer firefighters along with individual lockers separate from public facilities, if designated as a reception center, public washroom should be handicap accessible washrooms should have insulated walls for privacy.)* Note:		✓
• **Is there a provision for the decontamination showers?** • *(Desired Characteristics-should be located in a partially (3 sides) enclosed area, with a high flow over head spray and in floor large quick drain with retention tanks)* Note:		✓
APPARATUS BAY		
• **Are there measures to reduce vehicle exhaust fumes?** • *(Desired Characteristics- there are a few options: (a) capture at point of source, (b) CO/H_2S monitors in apparatus areas that activate overhead scrubbers or (c) CO monitor triggered fume exhaust and fresh air replacement fan systems in roof/walls. Apparatus bays are sealed from other parts of the station?)* *a)* Note: Meets recommended Standards or Best Practices *b)* Does not meet recommended Standards or Best Practices✓		✓
OTHER ROOMS		
• **Is there sufficient space for PPE and firefighting equipment?** • *(Desired Characteristics- A large room closed off but adjacent to the apparatus floor, that requires ventilation to the out of doors, another room to be vented and separated for SCBA filling and maintenance, one room for general maintenance and tool storage, an additional vented room for hazardous materials (oil, fuel etc.) and contaminated equipment, a room for PPE washer & dryer, an area off the apparatus floor for the storage of spare equipment i.e., hose, SCBA cylinders)*		✓

	Yes	No
Note:		
• **Is there a SCBA compressor & Filling Station?** a) Is the air intake located in a safe and appropriate location? b) Is the fill station separated from the air compressor? c) Does the fill station incorporate a defrag chamber? Note:		✓
• **Does the fire station have a washer or dryer in a separate room for cleaning of contaminated PPE?** Note:		✓
• **Is there an exercise Room?** • *(Desired Characteristics-A small area should be considered for volunteers to exercise and stress reduction)* Note:		✓
LIFE SAFETY CONSIDERATIONS		
• **Is the fire station sprinklered throughout?** Note:		✓
• **Does the fire station have a fire detection system throughout?** • **Is the detection system remotely monitored?** Note:		✓
• **Does the fire station have emergency lighting where required?** Note:		✓
• **Are illuminated exit signs in the direction of exit travel where required?** Note:		✓

	Yes	No
• **Are Carbon Monoxide detectors/alarms installed where required?** Note:		✓
• **Potentially Contaminated Personal Protective Equipment.** • *Potentially contaminated personal protective equipment shall be stored in a dedicated, well-ventilated area or room.* • *Potentially contaminated PPE shall not be allowed in personal clothing lockers or in areas used for the following: Food preparation and cooking, Recreation, Personal hygiene, general business areas* Note:		✓
Contaminated Storage. • *Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal shall be separated physically from members in facilities or on vehicles.* • *Such areas or containers shall not be used for any other purpose.* Note:		✓

• **Is there proper indoor storage of flammables & combustibles?** • *(Desired Characteristics- Provided Listed and Prominently Labeled Flammable & Combustible storage containers & lockers)* Note:		✓
• **Are Emergency vehicle aprons & driveways separate from driveways for business travel?** • *(Desired Characteristics-Entrance and apron sized large enough to permit bi-directional flow of traffic. Adequate direction signage where appropriate?)* Note:		✓
• **Is there effective pathway lighting both inside and outside of the station?** • *(Desired Characteristics-All perimeter lighting to be down lighting and reduce light pollution and glare.)* Note:		✓

• **Is there proper ventilation for all areas of the building?** Note:		✓
• **Does the fire station have a security key system or coded locks?** o For exterior access✓ o Internally between public and fire station facilities? Note:	✓	
• **Is the building vulnerable to break and enter; leading to theft of equipment or supplies?** o Ground floor windows in unsupervised areas (e.g. the rear, sides) o Poor quality doors or securing systems, especially at the rear, sides o Lack of security devices, e.g. for windows and doors at grade o Bushes and signs, etc., close to the building creating blind spots o Doors do not latch and lock automatically o Poor practices in securing the building o No security system, or monitoring system o Lack of security lighting, motion detection devices and lamps o Unsecure lobbies Note: This is a Windowless building with one secured entry door.		✓
• **Does the fire station have a video security system?** a) External b) Internal c) Can the security system be monitored remotely? Note:		✓
LIGHTING & POWER		
• **Electrical service for the fire Station from Public Mains (i.e., NSPC)?** o Voltage: 120/240, 208, 400, 600 o Single or 3-phase? o Rated Amperage of Fire Station Service: 60 / 100 / 200 / 400 / 800 o Is their solar or wind power on site? No o If more than one power supply, note those and total Amps above Note:	✓	

• **Are there 20 amp (or higher) electrical drops for apparatus shore-lines (for battery charges, accessories, air pumps, etc.)?** Note: (Small 110 trickle charger)  		✓
HEATING & COOLING		
• **What is the main heating source for the Fire Station?** a) Fuel oil, ducted forced air **Efficiency**: low / high (condensing) b) Fuel oil, hot water radiators/unit heaters **Efficiency**: low / high (condensing) c) Propane, forced air **Efficiency**: low / high (condensing) d) Propane, hot water radiators/unit heaters **Efficiency**: low / high (condensing) e) Electric, unit heaters and base board heaters f) Natural gas (NG), forced air **Efficiency**: low / high (condensing) g) NG, hot water radiators/unit heaters **Efficiency**: low / high (condensing) h) Ducted Heat Pump, i.e., forced air HVAC i) High Efficiency "mini-split" un-ducted heat pumps j) Bio-Mass (wood, etc.) k) If a mixture, circle all that apply and note below. Note: Small unit heater (See photos 15 & 16)	✓	
SIZE and CONFIGURATION of PROPERTY		
• **Does the building set-back allow for sufficient visitor and responder parking?** Note:	✓	
• **Does the property depth allow for a rear training area?** Note:		✓

• **Are there enough parking spaces for training classes?** Note:	✓	
Additional Notes:		
Apple River - Advocate FD Sub-station: • Outside Bldg. measurements approximately 20 ft. w by 30 ft. • 1 Engine single axle • Wood Frame, Vinyl siding • House, two story wood frame structure exposure to the right 40 feet away. Bay Doors 12 by 12 ft.		

PHOTOS

Photo 01

Photo 02

Photo 03

Photo 08

Photo 10

Apple River
Property Lines

FIRE STATION ASSESSMENT

COLLINGWOOD

Address: 59 Wentworth-Collingwood Rd, Collingwood, NS

Ownership: Cumberland County

Date of construction: 2018

Date of last major renovation: N/A

Total Square feet: 5673 sq. ft.

	Yes	No
FIRE STATION PROPERTY – IDEAL DESIGN		
• **Is the fire station properly identified (*i.e., fire department name, address on exterior etc.?)*** Note: Hwy. fire station warning signs & exterior signage on building. (Ref: photo 605)	✓	
• **Fire Stations constructed post 2005 are designated Post Disaster Readiness structures. Do these stations comply with Part 4 of the NBC?** • Note: fire station was added on to an existing Community Hall both of wood frame construction.		✓
• **Does the fire Station comply with NFPA Firewise recommendations for set back?** • *(Desired characteristics- maintain 100 feet of defensible space around structures to increase chance of withstanding a wildfire, no burning debris traps that could ignite structure, e.g., wood decks, gutters, outbuildings near main structure, etc.).* Note: building set back>100 ft. from tree line with brook running behind station. (Ref: Photo 608)	✓	

	Yes	No
FUNCTIONS and USE CONSIDERATIONS	Yes	No
• **Is the fire station designed for quick and safe response by personnel and apparatus?** • *(Desired characteristics – minimum internal travel distances; doors swinging in the right direction of travel to the apparatus floor without encroaching on walkways; minimum conflict in cross circulation; good proximity of all spaces to apparatus floor and other rooms, conflict between arriving firefighters and apparatus leaving* Note: Good access to apparatus floor. (Ref: photo 628)	✓	
• **Is the fire station training area adequately designed?** • *(Desired characteristics – sufficient classroom space for FD personnel, space for training (inside and outside); storage space for files, audio-visual equipment provided, and other training aids)* Note: Community Hall service as training area (Ref: photo 619)	✓	
• **Is the fire station designed to include public use of the building?** • *(Desired Characteristics – to be used as a Public Reception Center during disasters or other community-based emergencies, or other municipal events; are there ample public (separate from fire department use) facilities such as washrooms, parking areas etc. without conflict of normal fire station operations, adequate signage?)* Note: Community Hall and warming center.	✓	
• **What is the Fire Station water Supply?** ❖ Municipal Water Supply ❖ Cistern ➢ Capacity ____ ❖ Well(s) ➢ Capacity ____ Note:	✓	
• **If Well or Cistern, does the Fire Station have a water treatment system and sanitation system (i.e., UV)? Is it serviced at least annually?** Note:		✓
• **If the water supply is not municipal, is the water supply tested as per Nova Scotia Standards?** a) Every 6 months for bacteria (PASS/FAIL) b) Every 12 months for chemical and mineral contaminants (PASS/FAIL) c) Is there a log kept of all testing and maintenance on the non-municipal system(s) d) Is the certificate for testing posted prominently?		✓

	Yes	No
e) Is the certificate of testing readily available? f) If not tested, or is a FAIL as potable, is there prominent and permanent signs displayed at all water source points indicating it's not fit for consumption? Note:		
• **Does the fire station have emergency power supply during power outages and when used as a community reception center?** • *Desired Characteristics – Ideally there should be an on-site standby by generator with ample fuel supply that automatically starts on loss of power, alternative is to have an external connection to be used when a portable generator is brought to site.* • *The amperage required during loss of power should be sufficient to operate the necessities of a station i.e., radio communications, heat and sufficient lighting, water treatment and movement systems, life safety systems, mechanical systems, overhead apparatus bay doors, station lighting etc. Is the generator located inside the building in a separate room?* Note: 7500 W Portable generator will not supply all electrical needs (Ref: photo 638)	✓	
• **Generator /Emergency power unit.** • Amperage of Generator Panel: _____ • Wattage of Generator: 7500 • Generator Powered by: a) Diesel: Tank size: _____ b) Gasoline: Tank size: __5 gal_ c) Propane: Tank size: _____ d) Natural Gas Note:	✓	
• **Does the fire station design allow for flexibility for the future?** • *(Desired Characteristics- designed for future changes in systems and methods, apparatus bay or other facility expansion)* Note: Building set back on lot with brook running behind, little if any room for expansion.		✓
• **ROOMS and ROOM CONSIDERATIONS** • *(Could be combined, depending on priorities, philosophies)*	**Yes**	**No**
• **Is there an office for the fire chief/senior chief officers?** • *(Desired Characteristics- Space for desk, chair, worktable, filing cabinet and two side chairs, minimum recommended space 12 ft X 16 ft)*	✓	

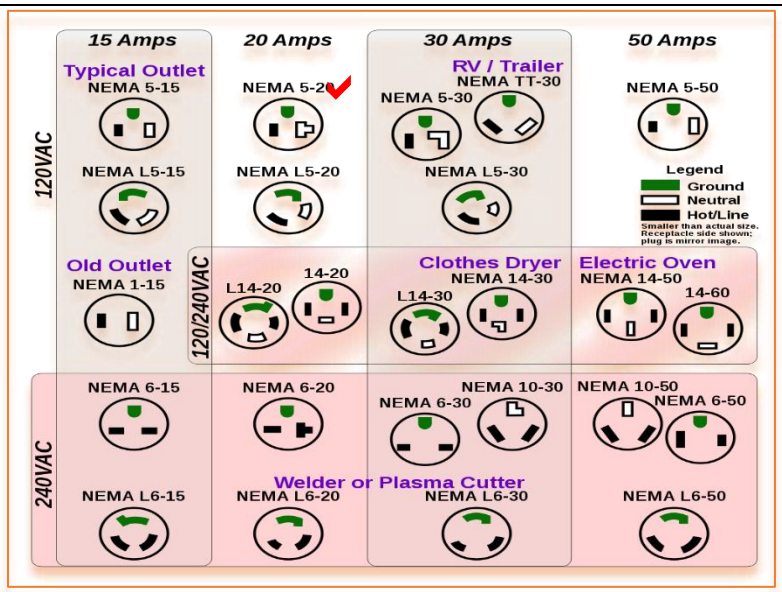
	Yes	No
Note: Office: small office of main lobby 11.5 X 10.2 = 117.3 sq. ft.		
• **Is there an office space for Training officers and Fire Safety Coordinator?** • *(Desired Characteristics- Space for desk, chair, worktable, computer, printer, filing cabinet(s) duplicating machine and storage area)* Note:		✓
• **Does the fire station have sufficient storage room(s)?** • *(Desired Characteristics-Fire Safety, Training and administration space for audio visual equipment and supplies; training aids, and printed materials and public education materials, cleaning tools and supplies)* Note: Some storage space in community hall & off apparatus floor not sufficient for required storage. (Ref: photo 652)		✓
• **Is there a meeting/lecture room?** • *(Desired Characteristics-Space large enough for Training purposes; give consideration to storage space for chairs, tables, lecterns, projector/storage room, will this room be used as a community reception center or an EOC?)* Note: Community Hall (See photo 619)	✓	
• **Is there a Kitchen?** • *(Desired Characteristics-Space for cooking and food preparation; enough space should be provided so several people can work in the area at the same time; appliances sized to accommodate, department fund raisers, social events firefighter rehab/feeding, or community reception center needs if required; sufficient electrical service capacity; ventilation and exhaust systems meeting code.)* Note: Large kitchen with 2 propane range which can be used during power outage. (Ref: photo 622)	✓	
• **Is there an Eating Area?**	✓	

	Yes	No
• *(Desired Characteristics-Space large enough to seat anticipated maximum number of volunteer fire fighters – meeting room could be used for this function)* • Note: Community Hall is used as an eating area.		
• **Does the station contain a dispatch/Communications room?** • *(Desired Characteristics- Space for radio equipment, emergency telephones, computers, maps, bulletin boards etc.)* Note: (Ref: photo 613)	✓	
• **Are there male & female or unisex washrooms?** • *(Desired Characteristics- Toilet and shower facilities should be available for the volunteer firefighters along with individual lockers separate from public facilities, if designated as a reception center, public washroom should be handicap accessible washrooms should have insulated walls for privacy.)* Note: ✱Male & female washrooms, no lockers Washroom in Community Hall and a m/f washroom with shower off apparatus floor (Ref: photos 620 & 650)	✓✱	
• **Is there a provision for the decontamination showers?** • *(Desired Characteristics-should be located in a partially (3 sides) enclosed area, with a high flow over head spray and in floor large quick drain with retention tanks)* Note:		✓
APPARATUS BAY		
• **Is the apparatus area of appropriate area and size to allow safe parking of apparatus, and minor maintenance?** *(Reference bay size standard as a guide)* • • **Length: 57.3 Width: 51.4 NO. of UNITS: 4** a) Meets recommended Standards or Best Practices *b)* Does not meet recommended Standards or Best Practices✓ Note: PPE Stored on apparatus floor		

	Yes	No
• **Are there measures to reduce vehicle exhaust fumes?** • *(Desired Characteristics- there are a few options: (a) capture at point of source, (b) CO/H_2S monitors in apparatus areas that activate overhead scrubbers or (c) CO monitor triggered fume exhaust and fresh air replacement fan systems in roof/walls. Apparatus bays are sealed from other parts of the station?)* Note: Exhaust fan with Carbon Monoxide monitoring. (Ref: 608 & 634)	✓	
OTHER ROOMS		
• **Is there sufficient space for PPE and firefighting equipment?** • *(Desired Characteristics- A large room closed off but adjacent to the apparatus floor, that requires ventilation to the out of doors, another room to be vented and separated for SCBA filling and maintenance, one room for general maintenance and tool storage, an additional vented room for hazardous materials (oil, fuel etc.) and contaminated equipment, a room for PPE washer & dryer, an area off the apparatus floor for the storage of spare equipment i.e., hose, SCBA cylinders)* Note: PPE is stored on the apparatus floor (See photo 635)		✓
• **Is there a SCBA compressor & Filling Station?** a) Is the air intake located in a safe and appropriate location? b) Is the fill station separated from the air compressor? c) Does the fill station incorporate a defrag chamber? Note:		✓
• **Does the fire station have a washer or dryer in a separate room for cleaning of contaminated PPE?** Note:		✓
• **Is there an exercise Room?** • *(Desired Characteristics-A small area should be considered for volunteers to exercise and stress reduction)* Note:		✓
LIFE SAFETY CONSIDERATIONS		

	Yes	No
• **Is the fire station sprinklered throughout?** Note:		✓
• **Does the fire station have a fire detection system throughout?** • **Is the detection system remotely monitored?** Note:		✓
• **Does the fire station have emergency lighting where required?** Note:	✓	
• **Are illuminated exit signs in the direction of exit travel where required?** Note:	✓	
• **Are Carbon Monoxide detectors/alarms installed where required?** Note:	✓	
• **Potentially Contaminated Personal Protective Equipment.** • *Potentially contaminated personal protective equipment shall be stored in a dedicated, well-ventilated area or room.* • *Potentially contaminated PPE shall not be allowed in personal clothing lockers or in areas used for the following: Food preparation and cooking, Recreation, Personal hygiene, general business areas* Note:		✓
Contaminated Storage. • *Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal shall be separated physically from members in facilities or on vehicles.* • *Such areas or containers shall not be used for any other purpose.* Note:		✓
• **Is there proper indoor storage of flammables & combustibles?** • *(Desired Characteristics- Provided Listed and Prominently Labeled Flammable & Combustible storage containers & lockers)* Note:		✓

	Yes	No
• **Are Emergency vehicle aprons & driveways separate from driveways for business travel?** • *(Desired Characteristics-Entrance and apron sized large enough to permit bi-directional flow of traffic. Adequate direction signage where appropriate?)* Note:		✓
• **Is there effective pathway lighting both inside and outside of the station?** • *(Desired Characteristics-All perimeter lighting to be down lighting and reduce light pollution and glare.)* Note:	✓	
• **Is there proper ventilation for all areas of the building?** Note:	✓	
• **Does the fire station have a security key system or coded locks?** o For exterior access o Internally between public and fire station facilities? Note:	✓	
• **Is the building vulnerable to break and enter; leading to theft of equipment or supplies?** o Ground floor windows in unsupervised areas (e.g., the rear, sides) o Poor quality doors or securing systems, especially at the rear, sides o Lack of security devices, e.g., for windows and doors at grade o Bushes and signs, etc., close to the building creating blind spots o Doors do not latch and lock automatically o Poor practices in securing the building o No security system, or monitoring system o Lack of security lighting, motion detection devices and lamps o Unsecure lobbies Note: Limited access points into building.		✓
• **Does the fire station have a video security system?** a) External b) Internal c) Can the security system be monitored remotely? Note:		✓

	Yes	No
LIGHTING & POWER		
• **Electrical service for the fire Station from Public Mains (i.e., NSPC)?** ○ Voltage: 120/240, 208, 400, 600 ○ Single or 3-phase? ○ Rated Amperage of Fire Station Service: 60 / 100 / 250 / 400 / 800 ○ Is their solar or wind power on site? ○ If more than one power supply, note those and total Amps above Note: (See Photo 649)	✓	
• **Are there 20 amp (or higher) electrical drops for apparatus shore-lines (for battery charges, accessories, air pumps, etc.)?** Note: 20 amp, (See photo 654) 	✓	
HEATING & COOLING		
• **What is the main heating source for the Fire Station?** a) Fuel oil, ducted forced air **Efficiency**: low / high (condensing) b) Fuel oil, hot water radiators/unit heaters **Efficiency**: low / high (condensing) c) Propane, forced air **Efficiency**: low / high (condensing) d) Propane, hot water radiators/unit heaters **Efficiency**: low / high (condensing) e) Electric, unit heaters and base board heaters f) Natural gas (NG), forced air **Efficiency**: low / high (condensing) g) NG, hot water radiators/unit heaters **Efficiency**: low / high (condensing) h) Ducted Heat Pump, i.e., forced air HVAC i) High Efficiency "mini-split" un-ducted heat pumps j) Bio-Mass (wood, etc.) k) If a mixture, circle all that apply and note below	✓	

	Yes	No
Note: Ref: Photo 629)		
SIZE and CONFIGURATION of PROPERTY		
• **Does the building set-back allow for sufficient visitor and responder parking?** Note:		✓
• **Does the property depth allow for a rear training area?** Note:		✓
• **Are there enough parking spaces for training classes?** Note:		✓
Additional NOTES:		
Outside Measurements approximately "- 63 ft. long by 90 =5673 sq. ft. Bay Doors - 12 X 10 – 4 Bay Doors Bay Area - 2936. Sq feet <u>Apparatus:</u> 1 Rescue 1 Pumper Tanker (1000 gal) 1 Engine 1 Tanker tandem (2800) Bays have a CO monitor that connects to a single exhaust fan on an exterior wall		

	Yes	No
NO hose storage - No hose dryer - Hose is dried at old station - owned by the Society takes days even a week or two for some hose to dry. Station is a Warming center - Have a portable 7220 W start-up generator only runs part of the community hall, attached to the station. Nothing for the fire station FD Dispatch office: 41.34 sq. ft. Admin Office: 117.3 sq. ft.		

PHOTOS

Photo 605

Photo 608

Photo 613

Photo 619

Photo 620

Photo 622

Photo 628

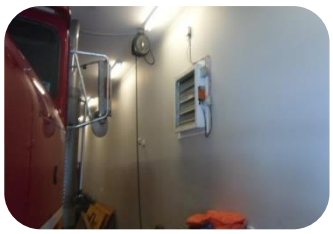


Photo 634

Photo 635

Photo 638

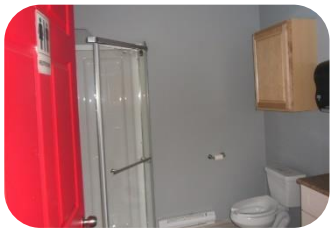


Photo 650

Photo 652

Collingwood
Property Lines

Collingwood
Property Lines

FIRE STATION ASSESSMENT

FPW (Fox River, Port Greville, Wards Brook)

Address: 8484 Hwy 209, Port Greville, NS

Ownership: FPW Fire Department

Date of construction: 1973

Date of last major renovation: 2007

Total Square feet: Apparatus bay area 1996

	Yes	No
FIRE STATION PROPERTY – IDEAL DESIGN		
• **Is the fire station properly identified (*i.e., fire department name, address on exterior etc.?)*** Note: Hwy. fire station warning signs & exterior signage on building. (See photo 61)	✓	
• **Fire Stations constructed post 2005 are designated Post Disaster Readiness structures. Do these stations comply with Part 4 of the NBC?** Notes: Community Hall &Fire Hall wood frame construction. Fire station add to older community hall in 2007		✓
• **Does the fire Station comply with NFPA Firewise recommendations for set back?** • *(Desired characteristics- maintain 100 feet of defensible space around structures to increase chance of withstanding a wildfire, no burning debris traps that could ignite structure, e.g., wood decks, gutters, outbuildings near main structure, etc.).* Note: (Ref: photos 62,64,67 and 70)		✓
FUNCTIONS and USE CONSIDERATIONS		
• **Is the fire station designed for quick and safe response by personnel and apparatus?** • *(Desired characteristics – minimum internal travel distances; doors swinging in the right direction of travel to the apparatus floor without encroaching on walkways; minimum conflict*	✓	

	Yes	No
in cross circulation; good proximity of all spaces to apparatus floor and other rooms, conflict between arriving firefighters and apparatus leaving) Note: Building is designed to provide quick& safe access, but lack of storage space and housekeeping impair safety movement (Ref: photos 72 to 76)		
• **Does the fire station have an office area for department administration?** • *(Desired characteristics – ample space for desks, file cabinets, computers, private meetings with personnel, etc.)* Note: Small office off apparatus floor. (Ref: photos 81 &108)	✓	
• **Is the fire station training area adequately designed?** • *(Desired characteristics – sufficient classroom space for FD personnel, space for training (inside and outside); storage space for files, audio-visual equipment provided, and other training aids)* Note: Training area in Community Hall (Ref: photo 91)	✓	
• **Is the fire station designed to include public use of the building?** • *(Desired Characteristics – to be used as a Public Reception Center during disasters or other community-based emergencies, or other municipal events; are there ample public (separate from fire department use) facilities such as washrooms, parking areas etc. without conflict of normal fire station operations, adequate signage?)* Note:	✓	
• **What is the Fire Station water Supply?** ❖ Municipal Water Supply ❖ Cistern ➢ Capacity ____ ❖ Well(s) ➢ Capacity ____ Note: Well Water tested every six months	✓	
• **If Well or Cistern, does the Fire Station have a water treatment system and sanitation system (i.e., UV)? Is it serviced at least annually?** Note:		✓

	Yes	No
• **If the water supply is not municipal, is the water supply tested as per Nova Scotia Standards?** a) Every 6 months for bacteria (PASS/FAIL) b) Every 12 months for chemical and mineral contaminants (PASS/FAIL) c) Is there a log kept of all testing and maintenance on the non-municipal system(s) d) Is the certificate for testing posted prominently? e) Is the certificate of testing readily available? f) If not tested, or is a FAIL as potable, is there prominent and permanent signs displayed at all water source points indicating it's not fit for consumption? Note:	✓	
• **Does the fire station have emergency power supply during power outages and when used as a community reception center?** • *Desired Characteristics – Ideally there should be an on-site standby by generator with ample fuel supply that automatically starts on loss of power, alternative is to have an external connection to be used when a portable generator is brought to site.* • *The amperage required during loss of power should be sufficient to operate the necessities of a station i.e., radio communications, heat and sufficient lighting, water treatment and movement systems, life safety systems, mechanical systems, overhead apparatus bay doors, station lighting etc. Is the generator located inside the building in a separate room?* Note: Portable generator 7500 W gas (See Photo 74 & 99)	✓	
• **Generator /Emergency power unit.** • Amperage of Generator Panel: _____ • Wattage of Generator: • Generator Powered by: a) Diesel: Tank size: _____ b) Gasoline: Tank size: _5 gal_ c) Propane: Tank size: _____ d) Natural Gas Note:	✓	
• **Does the fire station design allow for flexibility for the future?** • *(Desired Characteristics- designed for future changes in systems and methods, apparatus bay or other facility expansion)* Note: Building is set back on lot close to property line limiting room for expansion (Ref: Property Lines)		✓

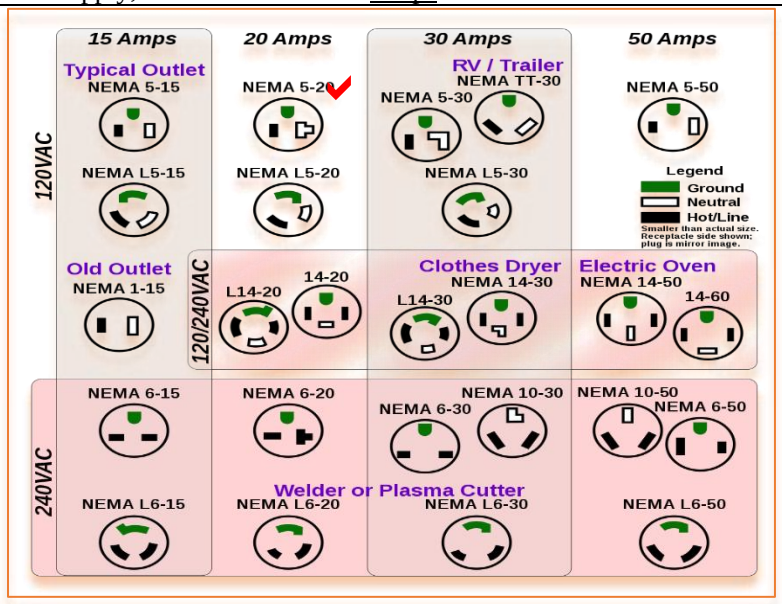
	Yes	No
• **ROOMS and ROOM CONSIDERATIONS** • *(Could be combined, depending on priorities, philosophies)*		
• **Is there an office for the fire chief/senior chief officers?** • *(Desired Characteristics- Space for desk, chair, worktable, filing cabinet and two side chairs, minimum recommended space 12 ft X 16 ft)* Note: Small office off apparatus floor. (Ref: photos 81 &108)	✓	
• **Is there an office space for Training officers and Fire Safety Coordinator?** • *(Desired Characteristics- Space for desk, chair, worktable, computer, printer, filing cabinet(s) duplicating machine and storage area)* Note:		✓
• **Does the fire station have sufficient storage room(s)?** • *(Desired Characteristics-Fire Safety, Training and administration space for audio visual equipment and supplies; training aids, and printed materials and public education materials, cleaning tools and supplies)* Note: There is storage in the Community Hall basement but it is hard to access from the apparatus floor. (Ref: photo 86)		✓
• **Is there a meeting/lecture room?** • *(Desired Characteristics-Space large enough for Training purposes; give consideration to storage space for chairs, tables, lecterns, projector/storage room, will this room be used as a community reception center or an EOC?)* Note: Community Hall (Ref: Photo 91)	✓	
• **Is there a Kitchen?** • *(Desired Characteristics-Space for cooking and food preparation; enough space should be provided so several people can work in the area at the same time; appliances sized to accommodate, department fund raisers, social events firefighter rehab/feeding, or community reception center needs if required; sufficient electrical service capacity; ventilation and exhaust systems meeting code.)* Note: Ref: (Photos: 92 & 93)	✓	

	Yes	No
• **Is there an Eating Area?** • *(Desired Characteristics-Space large enough to seat anticipated maximum number of volunteer fire fighters – meeting room could be used for this function)* Note: Community Hall	✓	
• **Does the station contain a dispatch/Communications room?** • *(Desired Characteristics- Space for radio equipment, emergency telephones, computers, maps, bulletin boards etc.)* Note: In Chief's office.	✓	
• **Are there male & female or unisex washrooms?** • *(Desired Characteristics- Toilet and shower facilities should be available for the volunteer firefighters along with individual lockers separate from public facilities, if designated as a reception center, public washroom should be handicap accessible washrooms should have insulated walls for privacy.)* Note: * Male & female washrooms in community hall, shower in unisex washroom in basement no lockers. (Ref: Photos 84 & 95)	✓*	
• **Is there a provision for the decontamination showers?** • *(Desired Characteristics-should be located in a partially (3 sides) enclosed area, with a high flow over head spray and in floor large quick drain with retention tanks)* Note:		✓
APPARATUS BAY		
• **Is the apparatus area of appropriate area and size to allow safe parking of apparatus, and minor maintenance?** *(Reference bay size standard as a guide)* • **Length: 49.9 Width: 40 No of Units: 3** a) Meets recommended Standards or Best Practices b) Does not meet recommended Standards or Best Practices ✓		

	Yes	No
Note:		
• **Are there measures to reduce vehicle exhaust fumes?** • *(Desired Characteristics- there are a few options: (a) capture at point of source, (b) CO/H_2S monitors in apparatus areas that activate overhead scrubbers or (c) CO monitor triggered fume exhaust and fresh air replacement fan systems in roof/walls. Apparatus bays are sealed from other parts of the station?)* Note: Exhaust fan activated by CO monitor (Ref: Photos 82 & 104	✓	
OTHER ROOMS		
• **Is there sufficient space for PPE and firefighting equipment?** • *(Desired Characteristics- A large room closed off but adjacent to the apparatus floor, that requires ventilation to the out of doors, another room to be vented and separated for SCBA filling and maintenance, one room for general maintenance and tool storage, an additional vented room for hazardous materials (oil, fuel etc.) and contaminated equipment, a room for PPE washer & dryer, an area off the apparatus floor for the storage of spare equipment i.e., hose, SCBA cylinders)* Note:		✓
• **Is there a SCBA compressor & Filling Station?** a) Is the air intake located in a safe and appropriate location? N/a b) Is the fill station separated from the air compressor? N/a c) Does the fill station incorporate a defrag chamber?✓ Note: No compressor. 3 cylinder cascade system Ref: photos 78 to 80)		✓
• **Does the fire station have a washer or dryer in a separate room for cleaning of contaminated PPE?** Note:		✓
LIFE SAFETY CONSIDERATIONS		
• **Is the fire station sprinklered throughout?** Note:		✓

	Yes	No
• **Does the fire station have a fire detection system throughout?** • **Is the detection system remotely monitored?** Note:		✓
• **Does the fire station have emergency lighting where required?** Note:	✓	
• **Are illuminated exit signs in the direction of exit travel where required?** Note:	✓	
• **Are Carbon Monoxide detectors/alarms installed where required?** Note:	✓	
• **Potentially Contaminated Personal Protective Equipment.** • *Potentially contaminated personal protective equipment shall be stored in a dedicated, well-ventilated area or room.* • *Potentially contaminated PPE shall not be allowed in personal clothing lockers or in areas used for the following: Food preparation and cooking, Recreation, Personal hygiene, general business areas* • Note: Gear stored in open lockers at the rear of the apparatus floor (Ref: Photo 73)	✓	✓
Contaminated Storage. • *Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal shall be separated physically from members in facilities or on vehicles.* • *Such areas or containers shall not be used for any other purpose.* Note:		✓
• **Is there proper indoor storage of flammables & combustibles?** • *(Desired Characteristics- Provided Listed and Prominently Labeled Flammable & Combustible storage containers & lockers)* • Note: Flammable liquid containers stored on apparatus floor (Ref: photo 76)		✓
• **Are Emergency vehicle aprons & driveways separate from driveways for business travel?** • *(Desired Characteristics-Entrance and apron sized large enough to permit bi-directional flow of traffic. Adequate direction signage where appropriate?)*		✓

	Yes	No
Note:		
• **Is there effective pathway lighting both inside and outside of the station?** • *(Desired Characteristics-All perimeter lighting to be down lighting and reduce light pollution and glare.)* Note: (See photo 71)	✓	
• **Is there proper ventilation for all areas of the building?** Note:	✓	
• **Does the fire station have a security key system or coded locks?** o For exterior access o Internally between public and fire station facilities? Note:	✓	
• **Is the building vulnerable to break and enter; leading to theft of equipment or supplies?** o Ground floor windows in unsupervised areas (e.g. the rear, sides) o Poor quality doors or securing systems, especially at the rear, sides o Lack of security devices, e.g. for windows and doors at grade o Bushes and signs, etc., close to the building creating blind spots o Doors do not latch and lock automatically o Poor practices in securing the building o No security system, or monitoring system o Lack of security lighting, motion detection devices and lamps o Unsecure lobbies o Note: The building was secured at the time of our visit.	✓	
• **Does the fire station have a video security system?** a) External b) Internal c) Can the security system be monitored remotely? Note:		✓
LIGHTING & POWER		
• **Electrical service for the fire Station from Public Mains (i.e., NSPC)?** o Voltage: 120/240, 208, 400, 600 o Single or 3-phase? o Rated Amperage of Fire Station Service: 60 / 100 / 200 / 400 / 800 o Is their solar or wind power on site?	✓	

	Yes	No
○ If more than one power supply, note those and total Amps above		
• **Are there 20 amp (or higher) electrical drops for apparatus shore-lines (for battery charges, accessories, air pumps, etc.)?** Note: Small trickle chargers  		✓
HEATING & COOLING		
• **What is the main heating source for the Fire Station?** a) Fuel oil, ducted forced air **Efficiency**: low / high (condensing) b) Fuel oil, hot water radiators/unit heaters **Efficiency**: low / high (condensing) c) Propane, forced air **Efficiency**: low / high (condensing) d) Propane, hot water radiators/unit heaters **Efficiency**: low / high (condensing) e) Electric, unit heaters and base board heaters f) Natural gas (NG), forced air **Efficiency**: low / high (condensing) g) NG, hot water radiators/unit heaters **Efficiency**: low / high (condensing) h) Ducted Heat Pump, i.e., forced air HVAC i) High Efficiency "mini-split" un-ducted heat pumps j) Bio-Mass (wood, etc.) k) If a mixture, circle all that apply and note below Note:	✓	
SIZE and CONFIGURATION of PROPERTY		
• **Does the building set-back allow for sufficient visitor and responder parking?** Note:	✓	

	Yes	No
• **Does the property depth allow for a rear training area?** Note:		✓
• **Are there enough parking spaces for training classes?** Note: Lot was only partially cleared of snow.		✓
Additional NOTES:		
FPW (Fox River, Port Greville, Wards Brook) • Bay Doors 14 ft. High by 12 ft. Wide • Bay Area 48.9 ft. wide by 40 ft. long • 1 Engine single axle • 1 Tanker Single axle • 1 utility area 27 ft. Long by 8.4 ft. wide • CO Detection Bay area tied into auto exhaust fan • Community /Training hall - 41.7 ft. long, 35.1 ft. wide • Hall Capacity 180 people • 200 amp panel • 7500 w portable gas generator • 3 bottle cascade 2016 psi • Bldg. renovated 2007 • Water Supply = Well Water tested every six months • Small building next to main building, unable to gain access maybe used for storage?		

PHOTOS

Photo 62

Photo 64

Photo 67

Photo 72

Photo 73

Photo 74

Photo 75

Photo 76

Photo 78

Photo 79

Photo 80

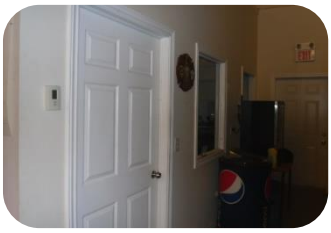


Photo81

Photo 82

Photo 84

Photo 91

PHOTOS

Photo 92

Photo 93

Photo 99

Photo 104

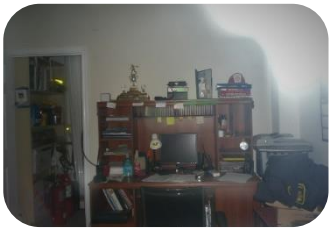


Photo 108

FPW Property Lines

FIRE STATION ASSESSMENT

JOGGINS

Address: **#2,** Hwy 242, Joggins, NS

Ownership: **Joggins Fire Department**

Date of construction: -1965

Date of last major renovation: - Single apparatus bay addition to original building year unknown.

Total Square feet: Apparatus Bay area 1290

	Yes	No
FIRE STATION PROPERTY – IDEAL DESIGN		
• **Is the fire station properly identified (*i.e., fire department name, address on exterior etc.?)*** Note: Hwy. fire station warning signs & exterior signage on building. (See photo 577) •	✓	
• **Fire Stations constructed post 2005 are designated Post Disaster Readiness structures. Do these stations comply with Part 4 of the NBC?** Note:		✓
• **Does the fire Station comply with NFPA Firewise recommendations for set back?** • *(Desired characteristics- maintain 100 feet of defensible space around structures to increase chance of withstanding a wildfire, no burning debris traps that could ignite structure, e.g., wood decks, gutters, outbuildings near main structure, etc.).* Note:	✓	
FUNCTIONS and USE CONSIDERATIONS	Yes	No
• **Is the fire station designed for quick and safe response by personnel and apparatus?** • *(Desired characteristics – minimum internal travel distances; doors swinging in the right direction of travel to the apparatus floor without encroaching on walkways; minimum conflict in cross circulation; good proximity of all spaces to apparatus floor and other rooms, conflict between arriving firefighters and apparatus leaving)*		✓

	Yes	No
Note: Building and addition poorly laid out.		
• **Does the fire station have an office area for department administration?** • *(Desired characteristics – ample space for desks, file cabinets, computers, private meetings with personnel, etc.)* Note: Small office second floor not easily accessible	✓	
• **Is the fire station training area adequately designed?** • *(Desired characteristics – sufficient classroom space for FD personnel, space for training (inside and outside); storage space for files, audio-visual equipment provided, and other training aids)* Note: Community and Bingo hall used as training area.		✓
• **Is the fire station designed to include public use of the building?** • *(Desired Characteristics – to be used as a Public Reception Center during disasters or other community-based emergencies, or other municipal events; are there ample public (separate from fire department use) facilities such as washrooms, parking areas etc. without conflict of normal fire station operations, adequate signage?)* Note:	✓	
• **What is the Fire Station water Supply?** ❖ Municipal Water Supply ❖ Cistern ➢ Capacity ____ ❖ Well(s) ➢ Capacity ____ Note: ✱Non-potable water (bottle water used for drinking)		✱
• **If Well or Cistern, does the Fire Station have a water treatment system and sanitation system (i.e., UV)? Is it serviced at least annually?** Note:		✓

	Yes	No
• **If the water supply is not municipal, is the water supply tested as per Nova Scotia Standards?** a) Every 6 months for bacteria (PASS/FAIL) b) Every 12 months for chemical and mineral contaminants (PASS/FAIL) c) Is there a log kept of all testing and maintenance on the non-municipal system(s) d) Is the certificate for testing posted prominently? e) Is the certificate of testing readily available? f) If not tested, or is a FAIL as potable, is there prominent and permanent signs displayed at all water source points indicating it's not fit for consumption? Note: ✱Water is discolored, non potable		✓✱
• **Does the fire station have emergency power supply during power outages and when used as a community reception center?** • *Desired Characteristics – Ideally there should be an on-site standby by generator with ample fuel supply that automatically starts on loss of power, alternative is to have an external connection to be used when a portable generator is brought to site.* • *The amperage required during loss of power should be sufficient to operate the necessities of a station i.e., radio communications, heat and sufficient lighting, water treatment and movement systems, life safety systems, mechanical systems, overhead apparatus bay doors, station lighting etc. Is the generator located inside the building in a separate room?* Note: Portable Generator 9000w on site.	✓	
• **Generator /Emergency power unit.** • Amperage of Generator Panel: _____ • Wattage of Generator: 9000w • Generator Powered by: e) Diesel: Tank size: _____ f) Gasoline: Tank size: __5 Gal g) Propane: Tank size: _____ h) Natural Gas Note:	✓	
• **Does the fire station design allow for flexibility for the future?** • *(Desired Characteristics- designed for future changes in systems and methods, apparatus bay or other facility expansion)*		✓

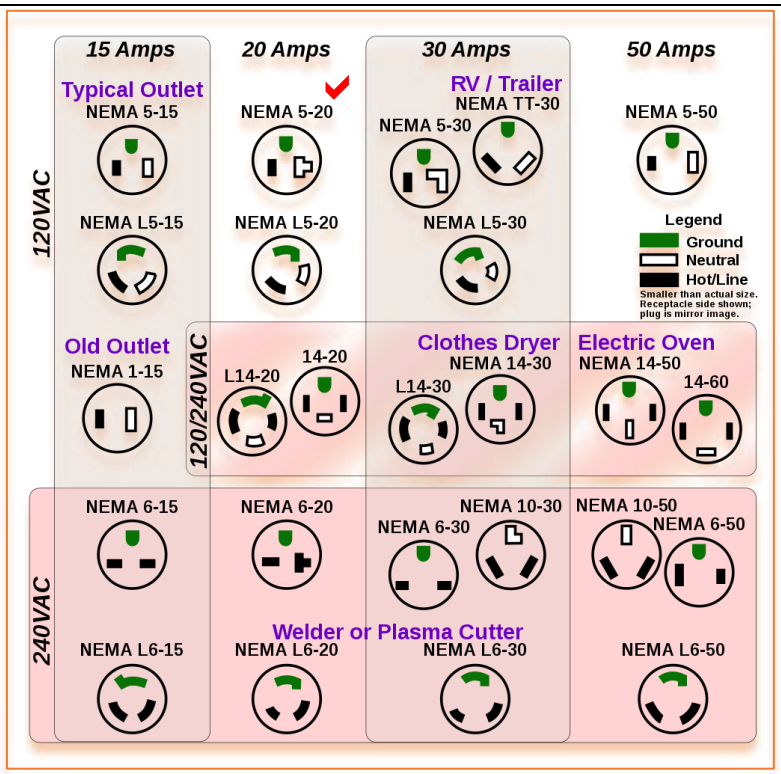
	Yes	No
Note:		
• **ROOMS and ROOM CONSIDERATIONS** • *(Could be combined, depending on priorities, philosophies)*	**Yes**	**No**
• **Is there an office for the fire chief/senior chief officers?** • *(Desired Characteristics- Space for desk, chair, worktable, filing cabinet and two side chairs, minimum recommended space 12 ft X 16 ft)* Note: Small office second floor does not meet recommended space requirements.	✓	
• **Is there an office space for Training officers and Fire Safety Coordinator?** • *(Desired Characteristics- Space for desk, chair, worktable, computer, printer, filing cabinet(s) duplicating machine and storage area)* Note:		✓
• **Does the fire station have sufficient storage room(s)?** • *(Desired Characteristics-Fire Safety, Training and administration space for audio visual equipment and supplies; training aids, and printed materials and public education materials, cleaning tools and supplies)* Note:		✓
• **Is there a meeting/lecture room?** • *(Desired Characteristics-Space large enough for Training purposes; give consideration to storage space for chairs, tables, lecterns, projector/storage room, will this room be used as a community reception center or an EOC?)* Note: (Ref: Photo 596)	✓	
• **Is there a Kitchen?** • *(Desired Characteristics-Space for cooking and food preparation; enough space should be provided so several people can work in the area at the same time; appliances sized to accommodate, department fund raisers, social events firefighter rehab/feeding, or community reception center needs if required; sufficient electrical service capacity; ventilation and exhaust systems meeting code.)*	✓	

	Yes	No
Note: (Ref: Photo 599)		
• **Is there an Eating Area?** • *(Desired Characteristics-Space large enough to seat anticipated maximum number of volunteer fire fighters – meeting room could be used for this function)* Note: As above	✓	
• **Does the station contain a dispatch/Communications room?** • *(Desired Characteristics- Space for radio equipment, emergency telephones, computers, maps, bulletin boards etc.)* Note: Small shelf on wall (Ref: Photo 592)		✓
• **Are there male & female or unisex washrooms?** • *(Desired Characteristics- Toilet and shower facilities should be available for the volunteer firefighters along with individual lockers separate from public facilities, if designated as a reception center, public washroom should be handicap accessible washrooms should have insulated walls for privacy.)* Note: ✱Male & female washrooms located at rear off hall off apparatus floor. There are, no showers or lockers	✓✱	
• **Is there a provision for the decontamination showers?** • *(Desired Characteristics-should be located in a partially (3 sides) enclosed area, with a high flow over head spray and in floor large quick drain with retention tanks)* Note:		✓
APPARATUS BAY		
• **Are there measures to reduce vehicle exhaust fumes?** • *(Desired Characteristics- there are a few options: (a) capture at point of source, (b) CO/H_2S monitors in apparatus areas that activate overhead scrubbers or (c) CO monitor triggered fume*	✓	

	Yes	No
exhaust and fresh air replacement fan systems in roof/walls. Apparatus bays are sealed from other parts of the station?) a) Meets recommended Standards or Best Practices *b)* Does not meet recommended Standards or Best Practices✓ Note:		
OTHER ROOMS		
• **Is there sufficient space for PPE and firefighting equipment?** • *(Desired Characteristics- A large room closed off but adjacent to the apparatus floor, that requires ventilation to the out of doors, another room to be vented and separated for SCBA filling and maintenance, one room for general maintenance and tool storage, an additional vented room for hazardous materials (oil, fuel etc.) and contaminated equipment, a room for PPE washer & dryer, an area off the apparatus floor for the storage of spare equipment i.e., hose, SCBA cylinders)* Note:		✓
• **Is there a SCBA compressor & Filling Station?** a) Is the air intake located in a safe and appropriate location? ✓ b) Is the fill station separated from the air compressor?✓ c) Does the fill station incorporate a defrag chamber?✓ Note: (Ref: Photos 587 & 589)	✓	
• **Does the fire station have a washer or dryer in a separate room for cleaning of contaminated PPE?** Note:		✓
• **Is there an exercise Room?** • *(Desired Characteristics-A small area should be considered for volunteers to exercise and stress reduction)* Note:		✓
LIFE SAFETY CONSIDERATIONS		

	Yes	No
• **Is the fire station sprinklered throughout?** Note:		✓
• **Does the fire station have a fire detection system throughout?** • **Is the detection system remotely monitored?** Note:		✓
• **Does the fire station have emergency lighting where required?** Note:	✓	
• **Are illuminated exit signs in the direction of exit travel where required?** Note:	✓	
• **Are Carbon Monoxide detectors/alarms installed where required?** Note:		✓
• **Potentially Contaminated Personal Protective Equipment.** • *Potentially contaminated personal protective equipment shall be stored in a dedicated, well-ventilated area or room.* • *Potentially contaminated PPE shall not be allowed in personal clothing lockers or in areas used for the following: Food preparation and cooking, Recreation, Personal hygiene, general business areas* Note:		✓
Contaminated Storage. • *Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal shall be separated physically from members in facilities or on vehicles.* • *Such areas or containers shall not be used for any other purpose.* Note:		✓
• **Is there proper indoor storage of flammables & combustibles?** • *(Desired Characteristics- Provided Listed and Prominently Labeled Flammable & Combustible storage containers & lockers)* Note: Flammable liquids stored on apparatus floor		✓

	Yes	No
• **Are Emergency vehicle aprons & driveways separate from driveways for business travel?** • *(Desired Characteristics-Entrance and apron sized large enough to permit bi-directional flow of traffic. Adequate direction signage where appropriate?)* Note:		✓
• **Is there effective pathway lighting both inside and outside of the station?** • *(Desired Characteristics-All perimeter lighting to be down lighting and reduce light pollution and glare.)* Note:		✓
• **Is there proper ventilation for all areas of the building?** Note:		✓
• **Does the fire station have a security key system or coded locks?** o For exterior access o Internally between public and fire station facilities? Note: Building was secure at the time of our visit.	✓	
• **Is the building vulnerable to break and enter; leading to theft of equipment or supplies?** o Ground floor windows in unsupervised areas (e.g. the rear, sides) o Poor quality doors or securing systems, especially at the rear, sides o Lack of security devices, e.g. for windows and doors at grade o Bushes and signs, etc., close to the building creating blind spots o Doors do not latch and lock automatically o Poor practices in securing the building o No security system, or monitoring system o Lack of security lighting, motion detection devices and lamps o Unsecure lobbies Note:	✓	
• **Does the fire station have a video security system?** a) External b) Internal c) Can the security system be monitored remotely? Note:		✓

	Yes	No
LIGHTING & POWER		
• **Electrical service for the fire Station from Public Mains (i.e., NSPC)?** ○ Voltage: 120/240, 208, 400, 600 ○ Single or 3-phase? ○ Rated Amperage of Fire Station Service: 60 / 100 / 200 / 400 / 800 ○ Is their solar or wind power on site? ○ If more than one power supply, note those and total Amps above Note:	✓	
• **Are there 20 amp (or higher) electrical drops for apparatus shore-lines (for battery charges, accessories, air pumps, etc.)?** Note:  		✓
HEATING & COOLING		
• **What is the main heating source for the Fire Station?** a) Fuel oil, ducted forced air **Efficiency**: low / high (condensing) b) Fuel oil, hot water radiators/unit heaters **Efficiency**: low / high (condensing) c) Propane, forced air **Efficiency**: low / high (condensing) d) Propane, hot water radiators/unit heaters **Efficiency**: low / high (condensing) e) Electric, unit heaters and base board heaters f) Natural gas (NG), forced air **Efficiency**: low / high (condensing)	✓	

	Yes	No
g) NG, hot water radiators/unit heaters **Efficiency**: low / high (condensing) h) Ducted Heat Pump, i.e., forced air HVAC i) High Efficiency "mini-split" un-ducted heat pumps j) Bio-Mass (wood, etc.) k) If a mixture, circle all that apply and note below Note:		
SIZE and CONFIGURATION of PROPERTY		
• **Does the building set-back allow for sufficient visitor and responder parking?** Note:		✓
• **Does the property depth allow for a rear training area?** Note:		✓
• **Are there enough parking spaces for training classes?** Note:		✓
Additional NOTES:		
JOGGINS F.D. • Bay Doors 10 ft. High by 10 ft. Wide • Bay Area 34.4 ft. wide by 37.5 ft. long = 1290 square feet • 1 Engine single axle • 1 Tanker Single axle • 1 utility • Community /Training hall - 37.7 ft. long, 30.4 ft. wide = 1146 square feet		

PHOTOS

Photo 577

Photo 576

FPW 596

Photo 599

Photo 592

FPW
Property Lines

Photo 587

Photo 589

FIRE STATION ASSESSMENT

LEICESTER

Address: **3460 Hwy 204, Leicester, NS**

Ownership: **Cumberland County**

Date of construction: 2017

Date of last major renovation: N/A

Total Square feet: **5045**

	Yes	No
FIRE STATION PROPERTY – IDEAL DESIGN		
• **Is the fire station properly identified (*i.e., fire department name, address on exterior etc.?)*** Note: Hwy. fire station warning signs & exterior signage on building. (Ref: Photo 374)	✓	
• **Fire Stations constructed post 2005 are designated Post Disaster Readiness structures. Do these stations comply with Part 4 of the NBC?** Note: (Wood frame, limited combustible, metal exterior cladding & roof. Ref: photos 374 to 377)		✓
• **Does the fire Station comply with NFPA Firewise recommendations for set back?** • *(Desired characteristics- maintain 100 feet of defensible space around structures to increase chance of withstanding a wildfire, no burning debris traps that could ignite structure, e.g., wood decks, gutters, outbuildings near main structure, etc.).* Note: Tree line > 100 ft. from building. (Ref: Photo 377)	✓	
FUNCTIONS and USE CONSIDERATIONS	Yes	No
• **Is the fire station designed for quick and safe response by personnel and apparatus?** • *(Desired characteristics – minimum internal travel distances; doors swinging in the right direction of travel to the apparatus floor without encroaching on walkways; minimum conflict in cross circulation; good proximity of all spaces to apparatus floor and other rooms, conflict between arriving firefighters and apparatus leaving)*	✓	

	Yes	No
Note: good access from the both the interior & exterior of the building.		
• **Does the fire station have an office area for department administration?** • *(Desired characteristics – ample space for desks, file cabinets, computers, private meetings with personnel, etc.)* Note: Office just inside main entrance. (Ref: Photo 394)	✓	
• **Is the fire station training area adequately designed?** • *(Desired characteristics – sufficient classroom space for FD personnel, space for training (inside and outside); storage space for files, audio-visual equipment provided, and other training aids)* Note: Training is conducted within the Community Hall & outside. (Ref: photos 381 & 395)	✓	
• **Is the fire station designed to include public use of the building?** • *(Desired Characteristics – to be used as a Public Reception Center during disasters or other community-based emergencies, or other municipal events; are there ample public (separate from fire department use) facilities such as washrooms, parking areas etc. without conflict of normal fire station operations, adequate signage?)* Note: (Ref: Photos 381 & 382)	✓	
• **What is the Fire Station water Supply?** ❖ Municipal Water Supply ❖ Cistern ➢ Capacity ____ ❖ Well(s) ➢ Capacity ____ Note:	✓	
• **If Well or Cistern, does the Fire Station have a water treatment system and sanitation system (i.e., UV)? Is it serviced at least annually?** Note: (Ref: Photos 388, 389 & 392)	✓	

	Yes	No
• **If the water supply is not Municipal, is the water supply tested as per Nova Scotia Standards?** a) Every 6 months for bacteria (PASS/FAIL) b) Every 12 months for chemical and mineral contaminants (PASS/FAIL) c) Is there a log kept of all testing and maintenance on the non-municipal system(s) d) Is the certificate for testing posted prominently? e) Is the certificate of testing readily available? f) If not tested, or is a FAIL as potable, is there prominent and permanent signs displayed at all water source points indicating it's not fit for consumption? Note:	✓	
• **Does the fire station have emergency power supply during power outages and when used as a community reception center?** • *Desired Characteristics – Ideally there should be an on-site standby by generator with ample fuel supply that automatically starts on loss of power, alternative is to have an external connection to be used when a portable generator is brought to site.* • *The amperage required during loss of power should be sufficient to operate the necessities of a station i.e., radio communications, heat and sufficient lighting, water treatment and movement systems, life safety systems, mechanical systems, overhead apparatus bay doors, station lighting etc. Is the generator located inside the building in a separate room?* Note: ✱ Portable generator 7500 W manual start on site. (Ref: Photo 420)	✓✱	
• **Generator /Emergency power unit.** • Amperage of Generator Panel: _____ • Wattage of Generator: • Generator Powered by: a) Diesel: Tank size: _____ b) Gasoline: Tank size: __5 gal c) Propane: Tank size: _____ d) Natural Gas Note:		
• **Does the fire station design allow for flexibility for the future?** • *(Desired Characteristics- designed for future changes in systems and methods, apparatus bay or other facility expansion)* • Note: Building does lend itself to expansion and there is land available.	✓	

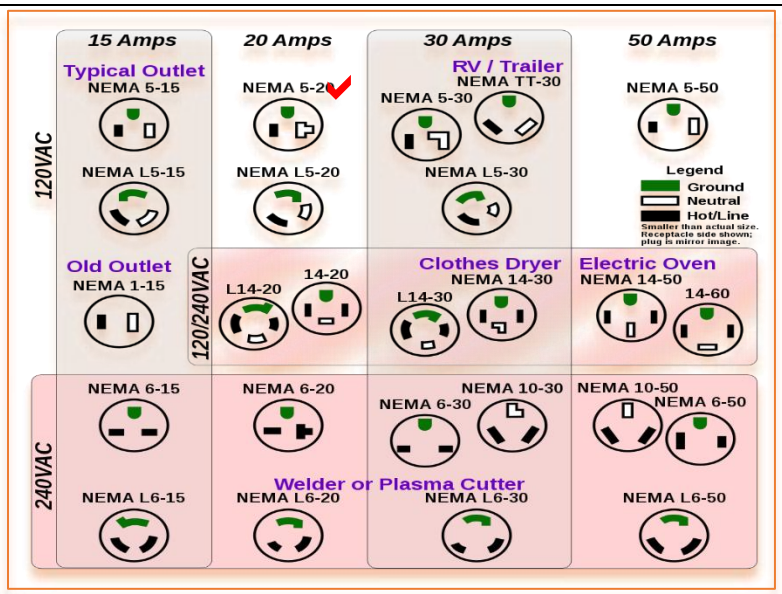
	Yes	No
• **ROOMS and ROOM CONSIDERATIONS** • *(Could be combined, depending on priorities, philosophies)*	**Yes**	**No**
• **Is there an office for the fire chief/senior chief officers?** • *(Desired Characteristics- Space for desk, chair, worktable, filing cabinet and two side chairs, minimum recommended space 12 ft X 16 ft)* Note: Office just inside main entrance. (Ref: Photo 394)	✓	
• **Is there an office space for Training officers and Fire Safety Coordinator?** • *(Desired Characteristics- Space for desk, chair, worktable, computer, printer, filing cabinet(s) duplicating machine and storage area)* Note: Training area only, no dedicated office.		✓
• **Does the fire station have sufficient storage room(s)?** • *(Desired Characteristics-Fire Safety, Training and administration space for audio visual equipment and supplies; training aids, and printed materials and public education materials, cleaning tools and supplies)* Note: There are storage rooms off the apparatus floor & Kitchen. (Ref: Photos 408 & 430)	✓	
• **Is there a meeting/lecture room?** • *(Desired Characteristics-Space large enough for Training purposes; give consideration to storage space for chairs, tables, lecterns, projector/storage room, will this room be used as a community reception center or an EOC?)* Note: Training room with desired characteristics. (Ref: Photos 381 & 395)	✓	
• **Is there a Kitchen?** • *(Desired Characteristics-Space for cooking and food preparation; enough space should be provided so several people can work in the area at the same time; appliances sized to accommodate, department fund raisers, social events firefighter rehab/feeding, or community reception center needs if required; sufficient electrical service capacity; ventilation and exhaust systems meeting code.)*	✓	

	Yes	No
Note: Large well equipped kitchen. (Ref: Photo 393 & 429)		
• **Is there an Eating Area?** • *(Desired Characteristics-Space large enough to seat anticipated maximum number of volunteer fire fighters – meeting room could be used for this function)* Note: Training room is also used as eating area when necessary.	✓	
• **Does the station contain a dispatch/Communications room?** • *(Desired Characteristics- Space for radio equipment, emergency telephones, computers, maps, bulletin boards etc.)* ✓ Note: Office off apparatus floor. (Ref: Photos 413 & 414)	✓	
• **Are there male & female or unisex washrooms?** • *(Desired Characteristics- Toilet and shower facilities should be available for the volunteer firefighters along with individual lockers separate from public facilities, if designated as a reception center, public washroom should be handicap accessible washrooms should have insulated walls for privacy.)* Note: ✱Two washrooms off training area no showers or lockers. (See photo 382)	✓✱	
APPARATUS BAY		
• **Is the apparatus area of appropriate area and size to allow safe parking of apparatus, and minor maintenance?** *(Reference bay size standard as a guide)* • **Length: 50 Width: 40 NO. of Units: 3** a) Meets recommended Standards or Best Practices *b)* Does not meet recommended Standards or Best Practices✓		
• **Are there measures to reduce vehicle exhaust fumes?** • *(Desired Characteristics- there are a few options: (a) capture at point of source, (b) CO/H_2S monitors in apparatus areas that activate overhead scrubbers or (c) CO monitor triggered fume exhaust and fresh air replacement fan systems in roof/walls. Apparatus bays are sealed from other parts of the station?)*	✓	

	Yes	No
Note: : Exhaust fan with CO monitoring. (Ref: Photos 396 & 424)		
OTHER ROOMS		
• **Is there sufficient space for PPE and firefighting equipment?** • *(Desired Characteristics- A large room closed off but adjacent to the apparatus floor, that requires ventilation to the out of doors, another room to be vented and separated for SCBA filling and maintenance, one room for general maintenance and tool storage, an additional vented room for hazardous materials (oil, fuel etc.) and contaminated equipment, a room for PPE washer & dryer, an area off the apparatus floor for the storage of spare equipment i.e., hose, SCBA cylinders)* Note: ✶PPE carried on Apparatus.	✓✶	
• **Is there a SCBA compressor & Filling Station?** a) Is the air intake located in a safe and appropriate location? b) Is the fill station separated from the air compressor? c) Does the fill station incorporate a defrag chamber? Note:✶ Cascade system on rescue unit with four bottles filing station and Defrag chamber. (Ref: Photos 418,419 & 426)	✓✶	
• **Does the fire station have a washer or dryer in a separate room for cleaning of contaminated PPE?** Note:		✓
• **Is there an exercise Room?** • *(Desired Characteristics-A small area should be considered for volunteers to exercise and stress reduction)* Note:		✓
LIFE SAFETY CONSIDERATIONS		

	Yes	No
• **Is the fire station sprinklered throughout?** Note:		✓
• **Does the fire station have a fire detection system throughout?** • **Is the detection system remotely monitored?** Note:		✓
• **Does the fire station have emergency lighting where required?** Note: (Ref: Photo 382)	✓	
• **Are illuminated exit signs in the direction of exit travel where required?** Note: Emergency lighting but no exit signs (Ref: Photo 406)		✓
• **Are Carbon Monoxide detectors/alarms installed where required?** Note:	✓	
• **Potentially Contaminated Personal Protective Equipment.** • *Potentially contaminated personal protective equipment shall be stored in a dedicated, well-ventilated area or room.* • *Potentially contaminated PPE shall not be allowed in personal clothing lockers or in areas used for the following: Food preparation and cooking, Recreation, Personal hygiene, general business areas* Note:		✓
Contaminated Storage. • *Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal shall be separated physically from members in facilities or on vehicles.* • *Such areas or containers shall not be used for any other purpose.* Note:		✓
• **Is there proper indoor storage of flammables & combustibles?** • *(Desired Characteristics- Provided Listed and Prominently Labeled Flammable & Combustible storage containers & lockers)* Note: ULC approved cabinet on apparatus floor. (Ref: Photo 400)	✓	

	Yes	No
• **Are Emergency vehicle aprons & driveways separate from driveways for business travel?** • *(Desired Characteristics-Entrance and apron sized large enough to permit bi-directional flow of traffic. Adequate direction signage where appropriate?)* Note:		✓
• **Is there effective pathway lighting both inside and outside of the station?** • *(Desired Characteristics-All perimeter lighting to be down lighting and reduce light pollution and glare.)* Note:(Ref: Photo 374)	✓	
• **Is there proper ventilation for all areas of the building?** Note: (Ref: Photo 421)	✓	
• **Does the fire station have a security key system or coded locks?** o For exterior access o Internally between public and fire station facilities? Note:	✓	
• **Is the building vulnerable to break and enter; leading to theft of equipment or supplies?** o Ground floor windows in unsupervised areas (e.g. the rear, sides) o Poor quality doors or securing systems, especially at the rear, sides o Lack of security devices, e.g. for windows and doors at grade o Bushes and signs, etc., close to the building creating blind spots o Doors do not latch and lock automatically o Poor practices in securing the building o No security system, or monitoring system o Lack of security lighting, motion detection devices and lamps o Unsecure lobbies Note: Windows are limited and set high.		✓
• **Does the fire station have a video security system?** a) External b) Internal✓ c) Can the security system be monitored remotely? Note: Security system was working at time of visit?	✓ ✓	

	Yes	No
LIGHTING & POWER		
• **Electrical service for the fire Station from Public Mains (i.e., NSPC)?** o Voltage: 120/240, 208, 400, 600 o Single or 3-phase? o Rated Amperage of Fire Station Service: 60 / 100 / 200 / 400 / 800 o Is their solar or wind power on site? o If more than one power supply, note those and total Amps above Note:	✓	
• **Are there 20 amp (or higher) electrical drops for apparatus shore-lines (for battery charges, accessories, air pumps, etc.)?** Note:20 amp NEMA L5-20 • **(See photo 402)**  	✓	
HEATING & COOLING		
• **What is the main heating source for the Fire Station?** a) Fuel oil, ducted forced air **Efficiency**: low / high (condensing) b) Fuel oil, hot water radiators/unit heaters **Efficiency**: low / high (condensing) c) Propane, forced air **Efficiency**: low / high (condensing) d) Propane, hot water radiators/unit heaters **Efficiency**: low / high (condensing) e) Electric, unit heaters and base board heaters✓ f) Natural gas (NG), forced air **Efficiency**: low / high (condensing) g) NG, hot water radiators/unit heaters **Efficiency**: low / high (condensing) h) Ducted Heat Pump, i.e., forced air HVAC i) High Efficiency “mini-split” un-ducted heat pumps✓ j) Bio-Mass (wood, etc.) k) If a mixture, circle all that apply and note below	✓ ✓	

	Yes	No
Note:		
SIZE and CONFIGURATION of PROPERTY		
• **Does the building set-back allow for sufficient visitor and responder parking?** Note:	✓	
• **Does the property depth allow for a rear training area?** Note: Area where old fire station was located provide training area on concrete slab.	✓	
• **Are there enough parking spaces for training classes?** Note:	✓	
Additional NOTES:		
LEICESTER Building length 101.3 x width 49.8 = 5044.74 sq. ft. Wireless security system with cameras monitored by member's cell phones. Apparatus Bay Houses: 1 engine, 1 Pumper/tanker, 1 rescue		

PHOTOS

Photo 374

Photo 375

Photo 376

Photo 377

Photo 378

Photo 381

Photo382

Photo 388

Photo 389

Photo395

Photo 396

Photo 400

Photo392

Photo 393

Photo 394

Photo 406

Photo 408

Photo 413

Photo 414

Photo 418

Photo 419

Photo 420

Photo 426

Photo 429

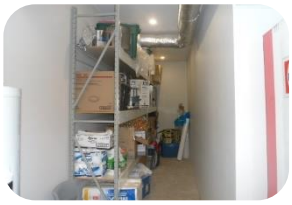


Photo 430

Property Lines (Old Station)

FIRE STATION ASSESSMENT

PARRSBORO

Address: **252 Willow St, Parrsboro, NS**

Ownership: **UNKNOWN**

Date of construction: 1989

Date of last major renovation: 1995

Total Square feet: **UNKNOWN**

	Yes	No
FIRE STATION PROPERTY – IDEAL DESIGN		
• **Is the fire station properly identified (*i.e., fire department name, address on exterior etc.?)*** Note: Hwy. fire station warning signs & exterior signage on building. (REF: Photos 110 & 112)	✓	
• **Fire Stations constructed post 2005 are designated Post Disaster Readiness structures. Do these stations comply with Part 4 of the NBC?** Note: Building wood frame construction, with wood exterior cladding. (Ref: Photo 116) Small garage to rear of main building for boat and ATV storage.		✓
• **Does the fire Station comply with NFPA Firewise recommendations for set back?** • *(Desired characteristics- maintain 100 feet of defensible space around structures to increase chance of withstanding a wildfire, no burning debris traps that could ignite structure, e.g., wood decks, gutters, outbuildings near main structure, etc.).* Note: tree line <100 ft. from building	✓	
FUNCTIONS and USE CONSIDERATIONS	Yes	No

	Yes	No
• **Is the fire station designed for quick and safe response by personnel and apparatus?** • *(Desired characteristics – minimum internal travel distances; doors swinging in the right direction of travel to the apparatus floor without encroaching on walkways; minimum conflict in cross circulation; good proximity of all spaces to apparatus floor and other rooms, conflict between arriving firefighters and apparatus leaving)* Note: Two access points to apparatus floor.	✓	
• **Does the fire station have an office area for department administration?** • *(Desired characteristics – ample space for desks, file cabinets, computers, private meetings with personnel, etc.)* Note: Secured unable to get access or take photos.	✓	
• **Is the fire station training area adequately designed?** • *(Desired characteristics – sufficient classroom space for FD personnel, space for training (inside and outside); storage space for files, audio-visual equipment provided, and other training aids)* Note: Large community hall used as training and outside area at rear of station, (See photo 139)	✓	
• **Is the fire station designed to include public use of the building?** • *(Desired Characteristics – to be used as a Public Reception Center during disasters or other community-based emergencies, or other municipal events; are there ample public (separate from fire department use) facilities such as washrooms, parking areas etc. without conflict of normal fire station operations, adequate signage?)* Note: (Ref: Photo 139)	✓	
• **What is the Fire Station water Supply?** ❖ Municipal Water Supply (Ref: Photo 121) ❖ Cistern ➢ Capacity ____ ❖ Well(s) ➢ Capacity ____ Note:	✓	

	Yes	No
• **If Well or Cistern, does the Fire Station have a water treatment system and sanitation system (i.e., UV)? Is it serviced at least annually?** Note:		N/A
• **If the water supply is not Municipal, is the water supply tested as per Nova Scotia Standards?** a) Every 6 months for bacteria (PASS/FAIL) b) Every 12 months for chemical and mineral contaminants (PASS/FAIL) c) Is there a log kept of all testing and maintenance on the non-municipal system(s) d) Is the certificate for testing posted prominently? e) Is the certificate of testing readily available? f) If not tested, or is a FAIL as potable, is there prominent and permanent signs displayed at all water source points indicating it's not fit for consumption? Note:		N/A
• **Does the fire station have emergency power supply during power outages and when used as a community reception center?** • *Desired Characteristics – Ideally there should be an on-site standby by generator with ample fuel supply that automatically starts on loss of power, alternative is to have an external connection to be used when a portable generator is brought to site.* • *The amperage required during loss of power should be sufficient to operate the necessities of a station i.e., radio communications, heat and sufficient lighting, water treatment and movement systems, life safety systems, mechanical systems, overhead apparatus bay doors, station lighting etc. Is the generator located inside the building in a separate room?* Note: The generator is located outside the building (Ref: Photos 112 & 115)	✓	
• **Generator /Emergency power unit.** • Amperage of Generator Panel: _____ • Wattage of Generator: • Generator Powered by: a) Diesel: Tank size: 100 gal. b) Gasoline: Tank size: _____ c) Propane: Tank size: _____ d) Natural Gas Note:	✓	
• **Does the fire station design allow for flexibility for the future?**	✓★	

	Yes	No
• *(Desired Characteristics- designed for future changes in systems and methods, apparatus bay or other facility expansion)* Note: ✶Limited space for expansion. Site Plan and (Ref: Photos 110 &116)		
• **ROOMS and ROOM CONSIDERATIONS** • *(Could be combined, depending on priorities, philosophies)*	**Yes**	**No**
• **Is there an office for the fire chief/senior chief officers?** • *(Desired Characteristics- Space for desk, chair, worktable, filing cabinet and two side chairs, minimum recommended space 12 ft X 16 ft)* Note: ✶ Secured unable to view or photo.	✓✶	
• **Is there an office space for Training officers and Fire Safety Coordinator?** • *(Desired Characteristics- Space for desk, chair, worktable, computer, printer, filing cabinet(s) duplicating machine and storage area)* Note:		✓
• **Does the fire station have sufficient storage room(s)?** • *(Desired Characteristics-Fire Safety, Training and administration space for audio visual equipment and supplies; training aids, and printed materials and public education materials, cleaning tools and supplies)* Note: Apparatus floor has limited storage in mezzanine area, difficult to access (Ref: Photo 136)		✓
• **Is there a meeting/lecture room?** • *(Desired Characteristics-Space large enough for Training purposes; give consideration to storage space for chairs, tables, lecterns, projector/storage room, will this room be used as a community reception center or an EOC?)* Note: Community Hall (Ref: Photo 139)	✓	
• **Is there a Kitchen?**	✓	

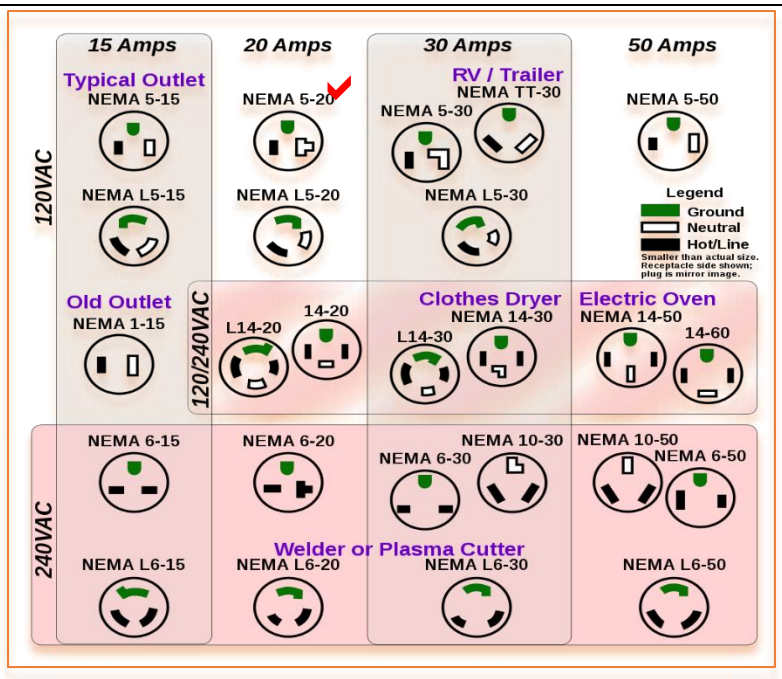
	Yes	No
• *(Desired Characteristics-Space for cooking and food preparation; enough space should be provided so several people can work in the area at the same time; appliances sized to accommodate, department fund raisers, social events firefighter rehab/feeding, or community reception center needs if required; sufficient electrical service capacity; ventilation and exhaust systems meeting code.)* Note: Off of the Community Hall.		
• **Is there an Eating Area?** • *(Desired Characteristics-Space large enough to seat anticipated maximum number of volunteer fire fighters – meeting room could be used for this function)* Note: Located in the Community Hall	✓	
• **Does the station contain a dispatch/Communications room?** • *(Desired Characteristics- Space for radio equipment, emergency telephones, computers, maps, bulletin boards etc.)* Note: In administration office unable to view or photo.		
• **Are there male & female or unisex washrooms?** • *(Desired Characteristics- Toilet and shower facilities should be available for the volunteer firefighters along with individual lockers separate from public facilities, if designated as a reception center, public washroom should be handicap accessible washrooms should have insulated walls for privacy.)* Note: ✱Male & female washrooms, no showers or lockers in community hall area of building (Ref: Photo 141)	✓✱	
• **Is there a provision for the decontamination showers?** • *(Desired Characteristics-should be located in a partially (3 sides) enclosed area, with a high flow over head spray and in floor large quick drain with retention tanks)* Note:		✓

	Yes	No
APPARATUS BAY		
• **Is the apparatus area of appropriate area and size to allow safe parking of apparatus, and minor maintenance?** *(Reference bay size standard as a guide)* • **Length: 35.67 Width: 38.6 NO. of Units: 3** a) Meets recommended Standards or Best Practices b) Does not meet recommended Standards or Best Practices✓ Note: Very tight at front and rear of apparatus. (Ref: Photos 117 & 119)		
• **Are there measures to reduce vehicle exhaust fumes?** • *(Desired Characteristics- there are a few options: (a) capture at point of source, (b) CO/H_2S monitors in apparatus areas that activate overhead scrubbers or (c) CO monitor triggered fume exhaust and fresh air replacement fan systems in roof/walls. Apparatus bays are sealed from other parts of the station?)* Note:		✓
OTHER ROOMS		
• **Is there sufficient space for PPE and firefighting equipment?** • *(Desired Characteristics- A large room closed off but adjacent to the apparatus floor, that requires ventilation to the out of doors, another room to be vented and separated for SCBA filling and maintenance, one room for general maintenance and tool storage, an additional vented room for hazardous materials (oil, fuel etc.) and contaminated equipment, a room for PPE washer & dryer, an area off the apparatus floor for the storage of spare equipment i.e., hose, SCBA cylinders)* Note:		✓
• **Is there a SCBA compressor & Filling Station?** a) Is the air intake located in a safe and appropriate location✓ b) Is the fill station separated from the air compressor✓ c) Does the fill station incorporate a defrag chamber✓ Note: (Ref: photos 122, 123 & 125)	✓	
• **Does the fire station have a washer or dryer in a separate room for cleaning of contaminated PPE?**		✓

	Yes	No
Note:		
• **Is there an exercise Room?** • *(Desired Characteristics-A small area should be considered for volunteers to exercise and stress reduction)* Note: Location is off of the community hall. (Ref: Photo 138)	✓	
LIFE SAFETY CONSIDERATIONS		
• **Is the fire station sprinklered throughout?** Note:		✓
• **Does the fire station have a fire detection system throughout?** • **Is the detection system remotely monitored?** Note:	✓	
• **Does the fire station have emergency lighting where required?** Note: (Ref: Photos 140 &142)	✓	
• **Are illuminated exit signs in the direction of exit travel where required?** Note: (Ref: Photos 140 &142)	✓	
• **Are Carbon Monoxide detectors/alarms installed where required?** Note:		✓
• **Potentially Contaminated Personal Protective Equipment.** • *Potentially contaminated personal protective equipment shall be stored in a dedicated, well-ventilated area or room.* • *Potentially contaminated PPE shall not be allowed in personal clothing lockers or in areas used for the following: Food preparation and cooking, Recreation, Personal hygiene, general business areas* Note:		✓

	Yes	No
Contaminated Storage. • *Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal shall be separated physically from members in facilities or on vehicles.* • *Such areas or containers shall not be used for any other purpose.* Note:		✓
• **Is there proper indoor storage of flammables & combustibles?** • *(Desired Characteristics- Provided Listed and Prominently Labeled Flammable & Combustible storage containers & lockers)* Note:		✓
• **Are Emergency vehicle aprons & driveways separate from driveways for business travel?** • *(Desired Characteristics-Entrance and apron sized large enough to permit bi-directional flow of traffic. Adequate direction signage where appropriate?)* Note:	✓	
• **Is there effective pathway lighting both inside and outside of the station?** • *(Desired Characteristics-All perimeter lighting to be down lighting and reduce light pollution and glare.)* Note:		✓
• **Is there proper ventilation for all areas of the building?** Note:		✓
• **Does the fire station have a security key system or coded locks?** o For exterior access o Internally between public and fire station facilities? Note:	✓	
• **Is the building vulnerable to break and enter; leading to theft of equipment or supplies?** o Ground floor windows in unsupervised areas (e.g. the rear, sides) o Poor quality doors or securing systems, especially at the rear, sides o Lack of security devices, e.g. for windows and doors at grade o Bushes and signs, etc., close to the building creating blind spots o Doors do not latch and lock automatically o Poor practices in securing the building o No security system, or monitoring system o Lack of security lighting, motion detection devices and lamps	✓ ✓ ✓	

	Yes	No
○ Unsecure lobbies Note:	✓ ✓	
• **Does the fire station have a video security system?** a) External b) Internal c) Can the security system be monitored remotely? Note:		✓
LIGHTING & POWER		
• **Electrical service for the fire Station from Public Mains (i.e., NSPC)?** ○ Voltage: 120/240, 208, 400, 600 ○ Single or 3-phase? ○ Rated Amperage of Fire Station Service: 60 / 100 / 200 / 400 / 800 ○ Is their solar or wind power on site? ○ If more than one power supply, note those and total Amps above Note: (See photo 124 & 135)	✓	
• **Are there 20 amp (or higher) electrical drops for apparatus shore-lines (for battery charges, accessories, air pumps, etc.)?** Note: 20-amp NEMA- 5-20 (Ref: Photo 119)	✓	



	Yes	No
HEATING & COOLING		
• **What is the main heating source for the Fire Station?** a) Fuel oil, ducted forced air **Efficiency**: low / high (condensing) b) Fuel oil, hot water radiators/unit heaters **Efficiency**: low / high (condensing) c) Propane, forced air **Efficiency**: low / high (condensing) d) Propane, hot water radiators/unit heaters **Efficiency**: low / high (condensing) e) Electric, unit heaters and base board heaters f) Natural gas (NG), forced air **Efficiency**: low / high (condensing) g) NG, hot water radiators/unit heaters **Efficiency**: low / high (condensing) h) Ducted Heat Pump, i.e., forced air HVAC i) High Efficiency "mini-split" un-ducted heat pumps j) Bio-Mass (wood, etc.) k) If a mixture, circle all that apply and note below Note: Twin oil-fired forced air furnaces off Apparatus floor. (Ref: Photos 129 & 132	✓	
SIZE and CONFIGURATION of PROPERTY		
• **Does the building set-back allow for sufficient visitor and responder parking?** Note:	✓	
• **Does the property depth allow for a rear training area?** Note:	✓	
• **Are there enough parking spaces for training classes?** Note:	✓	
Additional NOTES:		
Bay Doors 12 by 12 ft. Bay area 35.67 by 38.6		

	Yes	No
1 Recue/engine single axel, 1 Engine Single axle & 1 Pumper/tanker Single Axle SCBA compressor on apparatus floor directly behind fire unit not in separate room Air tested April 2021 Community Hall/Training Hall 63.5 Long by 42.6 Wide FD exercise Room 15.5 W by 19.7 Long Small garage to rear of main building for boat and ATV storage. (Ref: Photos 143 &145)		

PHOTOS

Photo 110

Photo 112

Photo 115

Photo 116

Photo 117

Photo 119

Photo121

Photo 122

Photo 123

Photo125

Photo 129

Photo 132

PHOTOS

Photo139

Photo 141

Photo 143

Photo 145

Parrsboro Property Lines

FIRE STATION ASSESSMENT

PUGWASH

Address: 11057 Hwy 6, Pugwash, NS

Ownership: Municipality of Cumberland County

Date of construction: 2009

Date of last major renovation: N/A

Total Square feet: Apparatus Bay area 3588 sq. ft.

	Yes	No
FIRE STATION PROPERTY – IDEAL DESIGN		
• **Is the fire station properly identified (*i.e., fire department name, address on exterior etc.?)*** Note: Hwy. fire station warning signs & exterior signage in front of and on the building. (Ref: Photos 256 & 357)	✓	
• **Fire Stations constructed post 2005 are designated Post Disaster Readiness structures. Do these stations comply with Part 4 of the NBC?** Note: Building is of non-combustible construction, but is not sprinklered or have fixed generator.		✓
• **Does the fire Station comply with NFPA Firewise recommendations for set back?** • *(Desired characteristics- maintain 100 feet of defensible space around structures to increase chance of withstanding a wildfire, no burning debris traps that could ignite structure, e.g., wood decks, gutters, outbuildings near main structure, etc.).* Note: (Ref: Property Lines)	✓	
FUNCTIONS and USE CONSIDERATIONS	Yes	No
• **Is the fire station designed for quick and safe response by personnel and apparatus?** • *(Desired characteristics – minimum internal travel distances; doors swinging in the right direction of travel to the apparatus floor without encroaching on walkways; minimum conflict*	✓	

	Yes	No
in cross circulation; good proximity of all spaces to apparatus floor and other rooms, conflict between arriving firefighters and apparatus leaving) Note: Good access to and within building.		
• **Does the fire station have an office area for department administration?** • *(Desired characteristics – ample space for desks, file cabinets, computers, private meetings with personnel, etc.)* Note:	✓	
• **Is the fire station training area adequately designed?** • *(Desired characteristics – sufficient classroom space for FD personnel, space for training (inside and outside); storage space for files, audio-visual equipment provided, and other training aids)* Note: (Ref: Photo 263)	✓	
• **Is the fire station designed to include public use of the building?** • *(Desired Characteristics – to be used as a Public Reception Center during disasters or other community-based emergencies, or other municipal events; are there ample public (separate from fire department use) facilities such as washrooms, parking areas etc. without conflict of normal fire station operations, adequate signage?)* Note:	✓	
• **What is the Fire Station water Supply?** ❖ Municipal Water Supply ❖ Cistern ➢ Capacity ____ ❖ Well(s) ➢ Capacity ____ Note:	✓	
• **If Well or Cistern, does the Fire Station have a water treatment system and sanitation system (i.e., UV)? Is it serviced at least annually?** Note:		N/A

	Yes	No
• **If the water supply is not municipal, is the water supply tested as per Nova Scotia Standards?** a) Every 6 months for bacteria (PASS/FAIL) b) Every 12 months for chemical and mineral contaminants (PASS/FAIL) c) Is there a log kept of all testing and maintenance on the non-municipal system(s) d) Is the certificate for testing posted prominently? e) Is the certificate of testing readily available? f) If not tested, or is a FAIL as potable, is there prominent and permanent signs displayed at all water source points indicating it's not fit for consumption? Note:		N/A
• **Does the fire station have emergency power supply during power outages and when used as a community reception center?** • *Desired Characteristics – Ideally there should be an on-site standby by generator with ample fuel supply that automatically starts on loss of power, alternative is to have an external connection to be used when a portable generator is brought to site.* • *The amperage required during loss of power should be sufficient to operate the necessities of a station i.e., radio communications, heat and sufficient lighting, water treatment and movement systems, life safety systems, mechanical systems, overhead apparatus bay doors, station lighting etc. Is the generator located inside the building in a separate room?* Note: ✶ Portable generator 12000 W electric start. (Ref: Photo 279)	✓✶	
• **Generator /Emergency power unit.** • Amperage of Generator Panel: _____ • Wattage of Generator: • Generator Powered by: a) Diesel: Tank size: _____ b) Gasoline: Tank size: 10 gal c) Propane: Tank size: _____ d) Natural Gas Note:		
• **Does the fire station design allow for flexibility for the future?** • *(Desired Characteristics- designed for future changes in systems and methods, apparatus bay or other facility expansion)* Note: Room at rear of building foe expansion	✓	

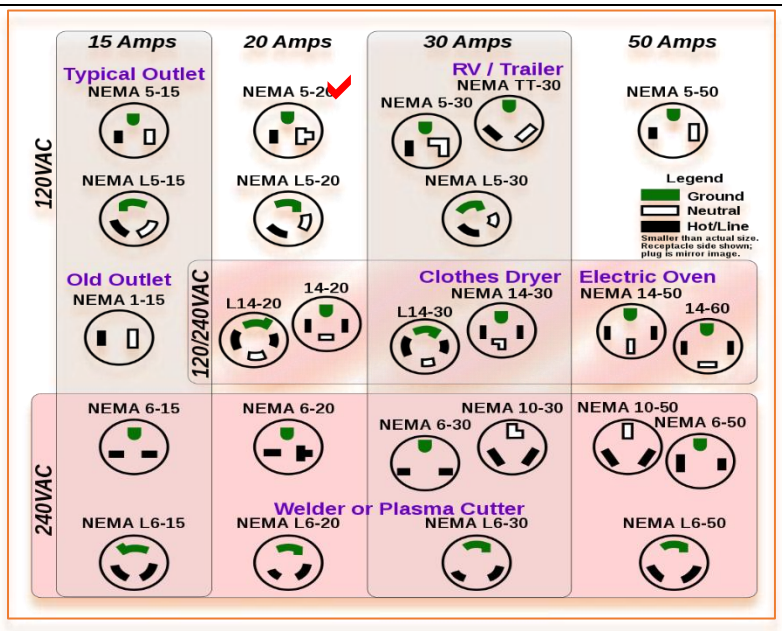
	Yes	No
• **ROOMS and ROOM CONSIDERATIONS** • *(Could be combined, depending on priorities, philosophies)*	**Yes**	**No**
• **Is there an office for the fire chief/senior chief officers?** • *(Desired Characteristics- Space for desk, chair, worktable, filing cabinet and two side chairs, minimum recommended space 12 ft X 16 ft)* Note:		
• **Is there an office space for Training officers and Fire Safety Coordinator?** • *(Desired Characteristics- Space for desk, chair, worktable, computer, printer, filing cabinet(s) duplicating machine and storage area)* Note: Unable to access or photo.	✓	
• **Does the fire station have sufficient storage room(s)?** • *(Desired Characteristics-Fire Safety, Training and administration space for audio visual equipment and supplies; training aids, and printed materials and public education materials, cleaning tools and supplies)* Note: Dedicated storage room off apparatus floor.	✓	
• **Is there a meeting/lecture room?** • *(Desired Characteristics-Space large enough for Training purposes; give consideration to storage space for chairs, tables, lecterns, projector/storage room, will this room be used as a community reception center or an EOC?)* Note: training room meeting above characteristics & space (Ref: Photo 263)	✓	
• **Is there a Kitchen?** • *(Desired Characteristics-Space for cooking and food preparation; enough space should be provided so several people can work in the area at the same time; appliances sized to accommodate, department fund raisers, social events firefighter rehab/feeding, or community reception center needs if required; sufficient electrical service capacity; ventilation and exhaust systems meeting code.)* Note: Undergoing renovation at time of visit.	✓	
• **Is there an Eating Area?**	✓	

	Yes	No
• *(Desired Characteristics-Space large enough to seat anticipated maximum number of volunteer fire fighters – meeting room could be used for this function)* Note: Training area services as eating area when required.		
• **Does the station contain a dispatch/Communications room?** • *(Desired Characteristics- Space for radio equipment, emergency telephones, computers, maps, bulletin boards etc.)* Note:	✓	
• **Are there male & female or unisex washrooms?** • *(Desired Characteristics- Toilet and shower facilities should be available for the volunteer firefighters along with individual lockers separate from public facilities, if designated as a reception center, public washroom should be handicap accessible washrooms should have insulated walls for privacy.)* Note: ✱Male & female washrooms, no showers or lockers (Ref: Photo 261)	✓✱	
• **Is there a provision for the decontamination showers?** • *(Desired Characteristics-should be located in a partially (3 sides) enclosed area, with a high flow over head spray and in floor large quick drain with retention tanks)* Note: (Ref: Photo 292)	✓	
APPARATUS BAY		
• **Is the apparatus area of appropriate area and size to allow safe parking of apparatus, and minor maintenance?** *(Reference bay size standard as a guide)* • **Length: 46.3 Width: 77.5 NO. of Units:** 5 units plus boat. a) Meets recommended Standards or Best Practices *b)* Does not meet recommended Standards or Best Practices✓		
• **Are there measures to reduce vehicle exhaust fumes?** • *(Desired Characteristics- there are a few options: (a) capture at point of source, (b) CO/H_2S monitors in apparatus areas that activate overhead scrubbers or (c) CO monitor triggered fume*	✓	

	Yes	No
exhaust and fresh air replacement fan systems in roof/walls. Apparatus bays are sealed from other parts of the station?) Note: Plymovent system for apparatus. (Ref: Photos 284 & 289)		
OTHER ROOMS		
• **Is there sufficient space for PPE and firefighting equipment?** • *(Desired Characteristics- A large room closed off but adjacent to the apparatus floor, that requires ventilation to the out of doors, another room to be vented and separated for SCBA filling and maintenance, one room for general maintenance and tool storage, an additional vented room for hazardous materials (oil, fuel etc.) and contaminated equipment, a room for PPE washer & dryer, an area off the apparatus floor for the storage of spare equipment i.e., hose, SCBA cylinders)* Note: PPE store on apparatus floor (Ref: Photos 278, 288 & 290)		✓
• **Is there a SCBA compressor & Filling Station?** a) Is the air intake located in a safe and appropriate location? b) Is the fill station separated from the air compressor? c) Does the fill station incorporate a defrag chamber? Note: ✶SCBA fill system on Rescue.	✓✶	
• **Does the fire station have a washer or dryer in a separate room for cleaning of contaminated PPE?** Note:		✓
• **Is there an exercise Room?** • *(Desired Characteristics-A small area should be considered for volunteers to exercise and stress reduction)* Note: (Ref: Photo 276)	✓	
LIFE SAFETY CONSIDERATIONS		
• **Is the fire station sprinklered throughout?** Note:		✓

	Yes	No
• **Does the fire station have a fire detection system throughout?** • **Is the detection system remotely monitored?** Note: (Ref: Photo 259)	✓	
• **Does the fire station have emergency lighting where required?** Note:	✓	
• **Are illuminated exit signs in the direction of exit travel where required?** Note:	✓	
• **Are Carbon Monoxide detectors/alarms installed where required?** Note:	✓	
• **Potentially Contaminated Personal Protective Equipment.** • *Potentially contaminated personal protective equipment shall be stored in a dedicated, well-ventilated area or room.* • *Potentially contaminated PPE shall not be allowed in personal clothing lockers or in areas used for the following: Food preparation and cooking, Recreation, Personal hygiene, general business areas* Note:		✓
Contaminated Storage. • *Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal shall be separated physically from members in facilities or on vehicles.* • *Such areas or containers shall not be used for any other purpose.* Note:		✓
• **Is there proper indoor storage of flammables & combustibles?** • *(Desired Characteristics- Provided Listed and Prominently Labeled Flammable & Combustible storage containers & lockers)* Note:		✓
• **Are Emergency vehicle aprons & driveways separate from driveways for business travel?** • *(Desired Characteristics-Entrance and apron sized large enough to permit bi-directional flow of traffic. Adequate direction signage where appropriate?)*		✓

	Yes	No
Note:		
• **Is there effective pathway lighting both inside and outside of the station?** • *(Desired Characteristics-All perimeter lighting to be down lighting and reduce light pollution and glare.)* Note:	✓	
• **Is there proper ventilation for all areas of the building?** Note:	✓	
• **Does the fire station have a security key system or coded locks?** o For exterior access✓ o Internally between public and fire station facilities? Note:	✓	
• **Is the building vulnerable to break and enter; leading to theft of equipment or supplies?** o Ground floor windows in unsupervised areas (e.g. the rear, sides) o Poor quality doors or securing systems, especially at the rear, sides o Lack of security devices, e.g. for windows and doors at grade o Bushes and signs, etc., close to the building creating blind spots o Doors do not latch and lock automatically o Poor practices in securing the building o No security system, or monitoring system o Lack of security lighting, motion detection devices and lamps o Unsecure lobbies Note: Secured building		✓
• **Does the fire station have a video security system?** a) External b) Internal c) Can the security system be monitored remotely? Note:		✓
LIGHTING & POWER		
• **Electrical service for the fire Station from Public Mains (i.e., NSPC)?** o Voltage: 120/240, 208, 400, 600 o Single or 3-phase? o Rated Amperage of Fire Station Service: 60 / 100 / 200 / 400 / 800	✓	

	Yes	No
○ Is their solar or wind power on site? ○ If more than one power supply, note those and total Amps above Note:		
• **Are there 20 amp (or higher) electrical drops for apparatus shore-lines (for battery charges, accessories, air pumps, etc.)?** Note: 20 amp. Drop cords Type NEMA-L5-15 	✓	
HEATING & COOLING		
SIZE and CONFIGURATION of PROPERTY		
• **Does the building set-back allow for sufficient visitor and responder parking?** Note:	✓	
• **Does the property depth allow for a rear training area?** Note:	✓	
• **Are there enough parking spaces for training classes?** Note:	✓	
Additional NOTES:		

	Yes	No
Pugwash Fitness Center: 15 ft. X 10 ft. Bay 1: Engine S/A – 46.3 ft. OAL Bay 2: Engine S/A – 46.3 ft. OAL Bay 3: Engine S/A 46.3 ft. OAL Bay 4: Drive through Bay, Tanker Single Axle Bay 5: Utility plus Rescue Boat 27 ft. long Overall Width of Bay Area 77.5 ft Total Sq. Footage = 3588.25 square feet.		

PHOTOS

Photo 256

Photo 257

Photo 259

Photo 261

Photo 263

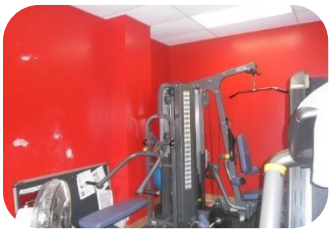


Photo 276

Photo 278

Photo 279

Photo 284

Photo 288

Photo 289

Photo 290

FIRE STATION ASSESSMENT

RIVER HEBERT

Address: 1495 Hwy 242, River Hebert, NS

Ownership: RIVER HEBERT FIRE DEPARTMENT

Date of construction: Unknown

Date of last major renovation: Unknown

Total Square feet: Building 4089

	Yes	No
FIRE STATION PROPERTY – IDEAL DESIGN		
• **Is the fire station properly identified (*i.e., fire department name, address on exterior etc.?)*** Note: Hwy. fire station warning signs & exterior signage on building. (Ref: Photo 529)	✓	
• **Fire Stations constructed post 2005 are designated Post Disaster Readiness structures. Do these stations comply with Part 4 of the NBC?** Note: Building of limited combustible construction is not sprinklered or have a fixed automatic generator.		✓
• **Does the fire Station comply with NFPA Firewise recommendations for set back?** • *(Desired characteristics- maintain 100 feet of defensible space around structures to increase chance of withstanding a wildfire, no burning debris traps that could ignite structure, e.g., wood decks, gutters, outbuildings near main structure, etc.).* Note: Tree line is > than 100 ft. from the building.	✓	
FUNCTIONS and USE CONSIDERATIONS	Yes	No

	Yes	No
• **Is the fire station designed for quick and safe response by personnel and apparatus?** • *(Desired characteristics – minimum internal travel distances; doors swinging in the right direction of travel to the apparatus floor without encroaching on walkways; minimum conflict in cross circulation; good proximity of all spaces to apparatus floor and other rooms, conflict between arriving firefighters and apparatus leaving)* Note: Good access to the building and apparatus floor (Ref: Photos 529 & 542)	✓	
• **What is the Fire Station water Supply?** ❖ Municipal Water Supply ❖ Cistern ➢ Capacity ____ ❖ Well(s) ➢ Capacity ____ Note:	✓	
• **If Well or Cistern, does the Fire Station have a water treatment system and sanitation system (i.e., UV)? Is it serviced at least annually?** Note:		✓
• **If the water supply is not municipal, is the water supply tested as per Nova Scotia Standards?** a) Every 6 months for bacteria (PASS/FAIL) b) Every 12 months for chemical and mineral contaminants (PASS/FAIL) c) Is there a log kept of all testing and maintenance on the non-municipal system(s) d) Is the certificate for testing posted prominently? e) Is the certificate of testing readily available? f) If not tested, or is a FAIL as potable, is there prominent and permanent signs displayed at all water source points indicating it's not fit for consumption? Note:		✓
• **Does the fire station have emergency power supply during power outages and when used as a community reception center?** • *Desired Characteristics – Ideally there should be an on-site standby by generator with ample fuel supply that automatically starts on loss of power, alternative is to have an external connection to be used when a portable generator is brought to site.* • *The amperage required during loss of power should be sufficient to operate the necessities of a station i.e., radio communications, heat and sufficient lighting, water treatment and*	✓✶	

	Yes	No
movement systems, life safety systems, mechanical systems, overhead apparatus bay doors, station lighting etc. Is the generator located inside the building in a separate room? Note: ✶Portable generator 7500 W manual start on site. Ref: Photo 562)		
• **Generator /Emergency power unit.** • Amperage of Generator Panel: _____ • Wattage of Generator: 7500 • Generator Powered by: a) Diesel: Tank size: _____ b) Gasoline: Tank size: 5gal. c) Propane: Tank size: _____ d) Natural Gas Note:	✓	
• **Does the fire station design allow for flexibility for the future?** • *(Desired Characteristics- designed for future changes in systems and methods, apparatus bay or other facility expansion)* Note: Building is located on very large lot sufficient room for further expansion.	✓	
• **ROOMS and ROOM CONSIDERATIONS** • *(Could be combined, depending on priorities, philosophies)*	**Yes**	**No**
• **Is there an office for the fire chief/senior chief officers?** • *(Desired Characteristics- Space for desk, chair, worktable, filing cabinet and two side chairs, minimum recommended space 12 ft X 16 ft)* Note: Administrative office (Ref: photo 536)	✓	
• **Is there an office space for Training officers and Fire Safety Coordinator?** • *(Desired Characteristics- Space for desk, chair, worktable, computer, printer, filing cabinet(s) duplicating machine and storage area)* Note:		✓

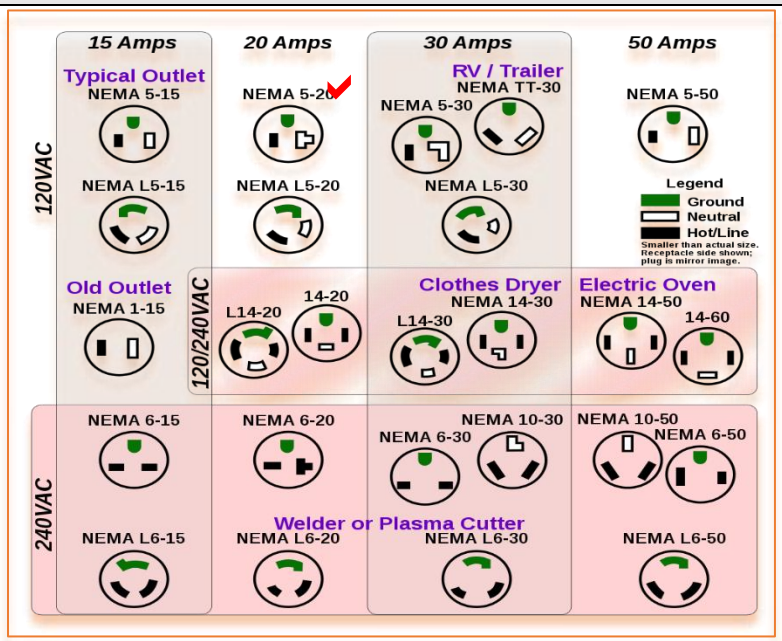
	Yes	No
• **Does the fire station have sufficient storage room(s)?** • *(Desired Characteristics-Fire Safety, Training and administration space for audio visual equipment and supplies; training aids, and printed materials and public education materials, cleaning tools and supplies)* Note: Large storage room in addition at the rear of the building (Ref: Photos 551 & 552)	✓	
• **Is there a meeting/lecture room?** • *(Desired Characteristics-Space large enough for Training purposes; give consideration to storage space for chairs, tables, lecterns, projector/storage room, will this room be used as a community reception center or an EOC?)* Note: Training room serves as meeting/lecture room.	✓	
• **Is there a Kitchen?** • *(Desired Characteristics-Space for cooking and food preparation; enough space should be provided so several people can work in the area at the same time; appliances sized to accommodate, department fund raisers, social events firefighter rehab/feeding, or community reception center needs if required; sufficient electrical service capacity; ventilation and exhaust systems meeting code.)* Note: Large kitchen off training/meeting room. (Ref: Photos 539 & 540)	✓	
• **Is there an Eating Area?** • *(Desired Characteristics-Space large enough to seat anticipated maximum number of volunteer fire fighters – meeting room could be used for this function)* Note: Training room serves as meeting/lecture room serves as eating area when required direct access to kitchen.	✓	
• **Does the station contain a dispatch/Communications room?** • *(Desired Characteristics- Space for radio equipment, emergency telephones, computers, maps, bulletin boards etc.)* Note: Shelf on wall off apparatus floor with radios. (See photo 556)		✓

	Yes	No
• **Are there male & female or unisex washrooms?** • *(Desired Characteristics- Toilet and shower facilities should be available for the volunteer firefighters along with individual lockers separate from public facilities, if designated as a reception center, public washroom should be handicap accessible washrooms should have insulated walls for privacy.)* Note: ✱Male & female washrooms, no showers or lockers, washrooms off training room.	✓✱	
• **Is there a provision for the decontamination showers?** • *(Desired Characteristics-should be located in a partially (3 sides) enclosed area, with a high flow over head spray and in floor large quick drain with retention tanks)* Note:		✓
APPARATUS BAY		
• **Is the apparatus area of appropriate area and size to allow safe parking of apparatus, and minor maintenance?** *(Reference bay size standard as a guide)* • **Length: 42.08 Width: 45.57 NO. of Units: 5 Apparatus & trailer with ATV** a) Meets recommended Standards or Best Practices b) Does not meet recommended Standards or Best Practices✓ Note: 2 pumpers, 2 tankers, 1 rescue.		
• **Are there measures to reduce vehicle exhaust fumes?** • *(Desired Characteristics- there are a few options: (a) capture at point of source, (b) CO/H_2S monitors in apparatus areas that activate overhead scrubbers or (c) CO monitor triggered fume exhaust and fresh air replacement fan systems in roof/walls. Apparatus bays are sealed from other parts of the station?)* Note:		✓
OTHER ROOMS		
• **Is there sufficient space for PPE and firefighting equipment?** • *(Desired Characteristics- A large room closed off but adjacent to the apparatus floor, that requires ventilation to the out of doors, another room to be vented and separated for SCBA filling and maintenance, one room for general maintenance and tool storage, an additional vented room for hazardous materials (oil, fuel etc.) and contaminated equipment, a room for*		✓

	Yes	No
PPE washer & dryer, an area off the apparatus floor for the storage of spare equipment i.e., hose, SCBA cylinders) Note: PPE is store on racks on apparatus floor, (Ref: Photos 547 &548)		
• **Is there a SCBA compressor & Filling Station?** a) Is the air intake located in a safe and appropriate location? b) Is the fill station separated from the air compressor? c) Does the fill station incorporate a defrag chamber? Note: On apparatus floor not in separate room. (Ref: Photos 549 & 550)	✓	
• **Does the fire station have a washer or dryer in a separate room for cleaning of contaminated PPE?** Note:		✓
• **Is there an exercise Room?** • *(Desired Characteristics-A small area should be considered for volunteers to exercise and stress reduction)* Note:		✓
LIFE SAFETY CONSIDERATIONS		
• **Is the fire station sprinklered throughout?** Note:		✓
• **Does the fire station have a fire detection system throughout?** • **Is the detection system remotely monitored?** Note:		✓
• **Does the fire station have emergency lighting where required?** Note:		✓
• **Are illuminated exit signs in the direction of exit travel where required?** Note:		✓
• **Are Carbon Monoxide detectors/alarms installed where required?**		✓

	Yes	No
Note:		
• **Potentially Contaminated Personal Protective Equipment.** • *Potentially contaminated personal protective equipment shall be stored in a dedicated, well-ventilated area or room.* • *Potentially contaminated PPE shall not be allowed in personal clothing lockers or in areas used for the following: Food preparation and cooking, Recreation, Personal hygiene, general business areas* Note:		✓
Contaminated Storage. • *Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal shall be separated physically from members in facilities or on vehicles.* • *Such areas or containers shall not be used for any other purpose.* Note:		✓
• **Is there proper indoor storage of flammables & combustibles?** • *(Desired Characteristics- Provided Listed and Prominently Labeled Flammable & Combustible storage containers & lockers)* Note:		✓
• **Are Emergency vehicle aprons & driveways separate from driveways for business travel?** • *(Desired Characteristics-Entrance and apron sized large enough to permit bi-directional flow of traffic. Adequate direction signage where appropriate?)* Note:		✓
• **Is there effective pathway lighting both inside and outside of the station?** • *(Desired Characteristics-All perimeter lighting to be down lighting and reduce light pollution and glare.)* Note:		✓
• **Is there proper ventilation for all areas of the building?** Note:		✓

	Yes	No
•		
• **Does the fire station have a security key system or coded locks?** o For exterior access ✓ o Internally between public and fire station facilities? Note:	✓	
• **Is the building vulnerable to break and enter; leading to theft of equipment or supplies?** o Ground floor windows in unsupervised areas (e.g. the rear, sides) o Poor quality doors or securing systems, especially at the rear, sides o Lack of security devices, e.g. for windows and doors at grade o Bushes and signs, etc., close to the building creating blind spots o Doors do not latch and lock automatically o Poor practices in securing the building o No security system, or monitoring system o Lack of security lighting, motion detection devices and lamps o Unsecure lobbies Note:		✓
• **Does the fire station have a video security system?** a) External b) Internal c) Can the security system be monitored remotely? Note: Was unable to determine if the system is monitored.	✓	
LIGHTING & POWER		

	Yes	No
• **Are there 20 amp (or higher) electrical drops for apparatus shore-lines (for battery charges, accessories, air pumps, etc.)?** Note: Drop to each apparatus • **20 amp NEMA 5-20** 	✓	
HEATING & COOLING		
• **What is the main heating source for the Fire Station?** a) Fuel oil, ducted forced air **Efficiency**: low / high (condensing) b) Fuel oil, hot water radiators/unit heaters **Efficiency**: low / high (condensing) c) Propane, forced air **Efficiency**: low / high (condensing) d) Propane, hot water radiators/unit heaters **Efficiency**: low / high (condensing) e) Electric, unit heaters and base board heaters f) Natural gas (NG), forced air **Efficiency**: low / high (condensing) g) NG, hot water radiators/unit heaters **Efficiency**: low / high (condensing) h) Ducted Heat Pump, i.e., forced air HVAC i) High Efficiency “mini-split” un-ducted heat pumps (single unit) j) Bio-Mass (wood, etc.) k) If a mixture, circle all that apply and note below Note: Oil furnace was not functioning and tank was empty (Ref: Photos 554 & 555)	✓ ✓	
SIZE and CONFIGURATION of PROPERTY		
• **Does the building set-back allow for sufficient visitor and responder parking?** Note:	✓	
• **Does the property depth allow for a rear training area?**	✓	

	Yes	No
Note:		
• **Are there enough parking spaces for training classes?** Note:	✓	
Additional NOTES:		
3 double bays **Overhead doors. Bay 1- 10 ft. x 12 ft.** **Overhead doors Bays 2 & 3 - 12 ft. x 12 ft.** **Apparatus:** **Bay 1 Rescue and Trailer c/w ATV.** **Bay 2 Engine & tanker.** **Bay 3 Engine & tanker.** **Building appears to be heated by a single unit heat pump.**		

PHOTOS

Photo 529

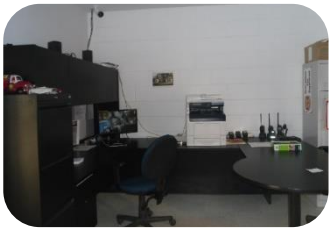


Photo 535

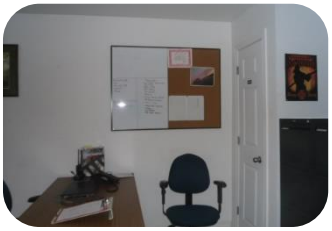


Photo 536

Photo 538

Photo 539

Photo 540

Photo 542

Photo 547

Photo 548

Photo 549

Photo 550

Photo 551

Photo 552

Photo 554

Photo 555

Photo 562

Photo 566

Photo 567

River Hebert
Property Lines

FIRE STATION ASSESSMENT

SHINIMICAS

Address: **4972 Highway 6, North Port, NS B0L 1E0**

Ownership: **Unknown**

Date of construction: **2022 (Currently under construction)**

Date of last major renovation:

Total Square feet: **110 ft. X 45.5 = 5,005 Approx.**

	Yes	No
FIRE STATION PROPERTY – IDEAL DESIGN		
• **Is the fire station properly identified (*i.e., fire department name, address on exterior etc.?)*** Note: ✶Will have same signage as other station of the same design.	✓✶	
• **Fire Stations constructed post 2005 are designated Post Disaster Readiness structures. Do these stations comply with Part 4 of the NBC?** Note: * Building is of limited combustible construction, does not have sprinkler system or fixed automatic generator.		✓✶
• **Does the fire Station comply with NFPA Firewise recommendations for set back?** • *(Desired characteristics- maintain 100 feet of defensible space around structures to increase chance of withstanding a wildfire, no burning debris traps that could ignite structure, e.g., wood decks, gutters, outbuildings near main structure, etc.).* Note: Does meet set back requirements.	✓	
FUNCTIONS and USE CONSIDERATIONS	Yes	No
• **Is the fire station designed for quick and safe response by personnel and apparatus?** • *(Desired characteristics – minimum internal travel distances; doors swinging in the right direction of travel to the apparatus floor without encroaching on walkways; minimum conflict in cross circulation; good proximity of all spaces to apparatus floor and other rooms, conflict between arriving firefighters and apparatus leaving)*	✓	

	Yes	No
Note: Will meet above characteristics.		
• **Does the fire station have an office area for department administration?** • *(Desired characteristics – ample space for desks, file cabinets, computers, private meetings with personnel, etc.)* Note: Will have an office area	✓	
• **Is the fire station training area adequately designed?** • *(Desired characteristics – sufficient classroom space for FD personnel, space for training (inside and outside); storage space for files, audio-visual equipment provided, and other training aids)* Note: Will meet above characteristics.	✓	
• **Is the fire station designed to include public use of the building?** • *(Desired Characteristics – to be used as a Public Reception Center during disasters or other community-based emergencies, or other municipal events; are there ample public (separate from fire department use) facilities such as washrooms, parking areas etc. without conflict of normal fire station operations, adequate signage?)* Note: Will meet above characteristics.	✓	
• **What is the Fire Station water Supply?** ❖ Municipal Water Supply ❖ Cistern ➢ Capacity ____ ❖ Well(s) ➢ Capacity ____ Note:	✓	
• **If Well or Cistern, does the Fire Station have a water treatment system and sanitation system (i.e., UV)? Is it serviced at least annually?** Note: Will have water treatment.	✓	
• **If the water supply is not Municipal, is the water supply tested as per Nova Scotia Standards?** a) Every 6 months for bacteria (PASS/FAIL) b) Every 12 months for chemical and mineral contaminants (PASS/FAIL) c) Is there a log kept of all testing and maintenance on the non-municipal system(s) d) Is the certificate for testing posted prominently? e) Is the certificate of testing readily available?		✓✶

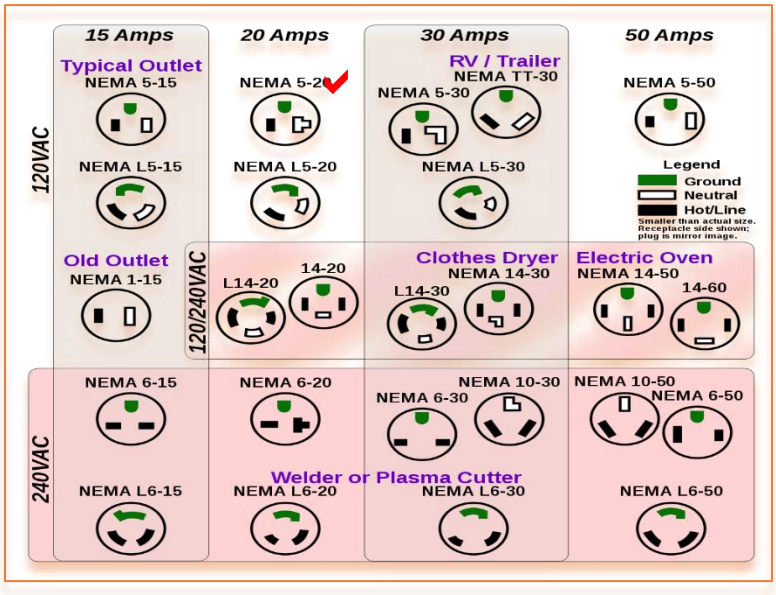
	Yes	No
f) If not tested, or is a FAIL as potable, is there prominent and permanent signs displayed at all water source points indicating it's not fit for consumption? Note: ✶Unknown at this time.		
• **Does the fire station have emergency power supply during power outages and when used as a community reception center?** • *Desired Characteristics – Ideally there should be an on-site standby by generator with ample fuel supply that automatically starts on loss of power, alternative is to have an external connection to be used when a portable generator is brought to site.* • *The amperage required during loss of power should be sufficient to operate the necessities of a station i.e., radio communications, heat and sufficient lighting, water treatment and movement systems, life safety systems, mechanical systems, overhead apparatus bay doors, station lighting etc. Is the generator located inside the building in a separate room?* Note: ✶The County EMO will supply a portable generator	✓✶	
• **Does the fire station design allow for flexibility for the future?** • *(Desired Characteristics- designed for future changes in systems and methods, apparatus bay or other facility expansion)* Note: Will meet above characteristics.	✓	
• ROOMS and ROOM CONSIDERATIONS • *(Could be combined, depending on priorities, philosophies)*	**Yes**	**No**
• **Is there an office for the fire chief/senior chief officers?** • *(Desired Characteristics- Space for desk, chair, worktable, filing cabinet and two side chairs, minimum recommended space 12 ft X 16 ft)* Note: ✶ Will be a shared Administration/Chief's office.	✓✶	
• **Is there an office space for Training officers and Fire Safety Coordinator?** • *(Desired Characteristics- Space for desk, chair, worktable, computer, printer, filing cabinet(s) duplicating machine and storage area)* Note:		✓
• **Does the fire station have sufficient storage room(s)?** • *(Desired Characteristics-Fire Safety, Training and administration space for audio visual equipment and supplies; training aids, and printed materials and public education materials, cleaning tools and supplies)*	✓	

	Yes	No
Note: Will have a large storage area and room at the rear of the apparatus floor.		
• **Is there a meeting/lecture room?** • *(Desired Characteristics-Space large enough for Training purposes; give consideration to storage space for chairs, tables, lecterns, projector/storage room, will this room be used as a community reception center or an EOC?)* Note:	✓	
• **Is there a Kitchen?** • *(Desired Characteristics-Space for cooking and food preparation; enough space should be provided so several people can work in the area at the same time; appliances sized to accommodate, department fund raisers, social events firefighter rehab/feeding, or community reception center needs if required; sufficient electrical service capacity; ventilation and exhaust systems meeting code.)* Note: Will meet above characteristics.	✓	
• **Is there an Eating Area?** • *(Desired Characteristics-Space large enough to seat anticipated maximum number of volunteer fire fighters – meeting room could be used for this function)* Note: The meeting/training are can be used as a eating area when required.	✓	
• **Are there male & female or unisex washrooms?** • *(Desired Characteristics- Toilet and shower facilities should be available for the volunteer firefighters along with individual lockers separate from public facilities, if designated as a reception center, public washroom should be handicap accessible washrooms should have insulated walls for privacy.)* Note: ✱ Will have unisex washrooms with showers. (Ref: Photo 475)	✓✱	
• **Is there a provision for the decontamination showers?** • *(Desired Characteristics-should be located in a partially (3 sides) enclosed area, with a high flow over head spray and in floor large quick drain with retention tanks)* Note: ✶Will have showers in each male and female washrooms, but no provision for Decon shower.		✓✶
APPARATUS BAY		

	Yes	No
• **Is the apparatus area of appropriate area and size to allow safe parking of apparatus, and minor maintenance?** *(Reference bay size standard as a guide)* • **Length: 62.088 Width: 45.005 NO. of Units: 4** a) Meets recommended Standards or Best Practices b) Does not meet recommended Standards or Best Practices✓ Note:		
• **Are there measures to reduce vehicle exhaust fumes?** • *(Desired Characteristics- there are a few options: (a) capture at point of source, (b) CO/H_2S monitors in apparatus areas that activate overhead scrubbers or (c) CO monitor triggered fume exhaust and fresh air replacement fan systems in roof/walls. Apparatus bays are sealed from other parts of the station?)* Note: Apparatus Bay will have exhaust system (Ref: Photo 467)	✓	
OTHER ROOMS		
• **Is there sufficient space for PPE and firefighting equipment?** • *(Desired Characteristics- A large room closed off but adjacent to the apparatus floor, that requires ventilation to the out of doors, another room to be vented and separated for SCBA filling and maintenance, one room for general maintenance and tool storage, an additional vented room for hazardous materials (oil, fuel etc.) and contaminated equipment, a room for PPE washer & dryer, an area off the apparatus floor for the storage of spare equipment i.e., hose, SCBA cylinders)* Note: No provisions for PPE room.		✓
• **Does the fire station have a washer or dryer in a separate room for cleaning of contaminated PPE?** Note:		✓
• **Is there an exercise Room?** • *(Desired Characteristics-A small area should be considered for volunteers to exercise and stress reduction*		✓
LIFE SAFETY CONSIDERATIONS		

	Yes	No
• **Is the fire station sprinklered throughout?** Note:		✓
• **Does the fire station have a fire detection system throughout?** • **Is the detection system remotely monitored?** Note: No provisions for fire alarm system.		✓
• **Does the fire station have emergency lighting where required?** Note: There are provisions for emergency lighting.	✓	
• **Are illuminated exit signs in the direction of exit travel where required?** Note: No provisions for exit lighting.		✓
• **Are Carbon Monoxide detectors/alarms installed where required?** Note: Detection will be provide for exhaust system for apparatus bay area.	✓	
• **Potentially Contaminated Personal Protective Equipment.** • *Potentially contaminated personal protective equipment shall be stored in a dedicated, well-ventilated area or room.* • *Potentially contaminated PPE shall not be allowed in personal clothing lockers or in areas used for the following: Food preparation and cooking, Recreation, Personal hygiene, general business areas* Note: No provisions for Storage of contaminated PPE.		✓
Contaminated Storage. • *Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal shall be separated physically from members in facilities or on vehicles.* • *Such areas or containers shall not be used for any other purpose.* Note: No provisions for Storage of contaminated materials and equipment.		✓
• **Is there proper indoor storage of flammables & combustibles?** • *(Desired Characteristics- Provided Listed and Prominently Labeled Flammable & Combustible storage containers & lockers)* Note: Unknown		✓

	Yes	No
• **Are Emergency vehicle aprons & driveways separate from driveways for business travel?** • *(Desired Characteristics-Entrance and apron sized large enough to permit bi-directional flow of traffic. Adequate direction signage where appropriate?)* Note:		✓
• **Is there effective pathway lighting both inside and outside of the station?** • *(Desired Characteristics-All perimeter lighting to be down lighting and reduce light pollution and glare.)* Note: There are provisions for exterior lighting. (See photo 463)	✓	
• **Is there proper ventilation for all areas of the building?** Note: There are provisions for ventilation systems Ref: Photo 471)	✓	
• **Does the fire station have a security key system or coded locks?** o For exterior access o Internally between public and fire station facilities? Note:	✓	
• **Is the building vulnerable to break and enter; leading to theft of equipment or supplies?** o Ground floor windows in unsupervised areas (e.g. the rear, sides) o Poor quality doors or securing systems, especially at the rear, sides o Lack of security devices, e.g. for windows and doors at grade o Bushes and signs, etc., close to the building creating blind spots o Doors do not latch and lock automatically o Poor practices in securing the building o No security system, or monitoring system o Lack of security lighting, motion detection devices and lamps o Unsecure lobbies Note: There are limited access points.		✓
LIGHTING & POWER		
• **Electrical service for the fire Station from Public Mains (i.e., NSPC)?** o Voltage: 120/240, 208, 400, 600 o Single or 3-phase? o Rated Amperage of Fire Station Service: 60 / 100 / 200 / 400 / 800 o Is their solar or wind power on site? o If more than one power supply, note those and total Amps above	✓	

	Yes	No
Note: There are provisions electric services (See Photo 470)		
• **Are there 20 amp (or higher) electrical drops for apparatus shore-lines (for battery charges, accessories, air pumps, etc.)?** Note: • **There are provision for electrical drops in Apparatus bay area.** 	✓	
HEATING & COOLING		
• **What is the main heating source for the Fire Station?** a) Fuel oil, ducted forced air **Efficiency**: low / high (condensing) b) Fuel oil, hot water radiators/unit heaters **Efficiency**: low / high (condensing) c) Propane, forced air **Efficiency**: low / high (condensing) d) Propane, hot water radiators/unit heaters **Efficiency**: low / high (condensing) e) Electric, unit heaters and base board heaters f) Natural gas (NG), forced air **Efficiency**: low / high (condensing) g) NG, hot water radiators/unit heaters **Efficiency**: low / high (condensing) h) Ducted Heat Pump, i.e., forced air HVAC i) High Efficiency “mini-split” un-ducted heat pumps j) Bio-Mass (wood, etc.) k) If a mixture, circle all that apply and note below Note: Provisions in place for both system above.	✓	
SIZE and CONFIGURATION of PROPERTY		
• **Does the building set-back allow for sufficient visitor and responder parking?**		

	Yes	No
Note: Unknown at this time.		
• **Does the property depth allow for a rear training area?** Note: Unknown at this time.		
• **Are there enough parking spaces for training classes?** Note: Unknown at this time.		
Additional NOTES:		
Building is under construction and all systems and components where not in place at time of visit. **Four overhead doors 12 x 12 (See photo 463)**		

PHOTOS

Photo 463

Photo 467

Photo 471

Photo 475

Shinimicas
Property Lines

FIRE STATION ASSESSMENT

SOUTHAMPTON

Address: **8845 Hwy 2, Southampton, NS**

Ownership: **Unknown**

Date of construction: Unknown

Date of last major renovation: Renovation ongoing at this time.

Total Square feet: **100 x 47 = 4700 Approx.**

	Yes	No
FIRE STATION PROPERTY – IDEAL DESIGN		
• **Is the fire station properly identified (*i.e., fire department name, address on exterior etc.?)*** Note: Exterior signage on building. (Ref: Photo 293)	✓	
• **Fire Stations constructed post 2005 are designated Post Disaster Readiness structures. Do these stations comply with Part 4 of the NBC?** Note Wood frame construction, no sprinkler system.		✓
• **Does the fire Station comply with NFPA Firewise recommendations for set back?** • *(Desired characteristics- maintain 100 feet of defensible space around structures to increase chance of withstanding a wildfire, no burning debris traps that could ignite structure, e.g., wood decks, gutters, outbuildings near main structure, etc.).* Note: Rear of building is > 100 ft. from tree line.	✓	
FUNCTIONS and USE CONSIDERATIONS	Yes	No
• **Is the fire station designed for quick and safe response by personnel and apparatus?** • *(Desired characteristics – minimum internal travel distances; doors swinging in the right direction of travel to the apparatus floor without encroaching on walkways; minimum conflict in cross circulation; good proximity of all spaces to apparatus floor and other rooms, conflict between arriving firefighters and apparatus leaving)* Note: Building is divided into three section making movement into and throughout difficult.		✓

	Yes	No
• **Does the fire station have an office area for department administration?** • *(Desired characteristics – ample space for desks, file cabinets, computers, private meetings with personnel, etc.)* Note: (Ref: Photo 307 & 308)	✓	
• **Is the fire station training area adequately designed?** • *(Desired characteristics – sufficient classroom space for FD personnel, space for training (inside and outside); storage space for files, audio-visual equipment provided, and other training aids)* Note: (Ref: Photo 298)	✓	
• **Is the fire station designed to include public use of the building?** • *(Desired Characteristics – to be used as a Public Reception Center during disasters or other community-based emergencies, or other municipal events; are there ample public (separate from fire department use) facilities such as washrooms, parking areas etc. without conflict of normal fire station operations, adequate signage?)* Note: Used as warming center during power outages.	✓	
• **What is the Fire Station water Supply?** ❖ Municipal Water Supply ❖ Cistern ➢ Capacity ____ ❖ Well(s) ➢ Capacity ____ Note: Water is supplied from attached Community Center not Controlled by Fire Department.	✓	
• **If Well or Cistern, does the Fire Station have a water treatment system and sanitation system (i.e., UV)? Is it serviced at least annually?** Note: ✶Unknown		✓✶
• **If the water supply is not municipal, is the water supply tested as per Nova Scotia Standards?** a) Every 6 months for bacteria (PASS/FAIL) b) Every 12 months for chemical and mineral contaminants (PASS/FAIL) c) Is there a log kept of all testing and maintenance on the non-municipal system(s) d) Is the certificate for testing posted prominently? e) Is the certificate of testing readily available?		✓✶

	Yes	No
f) If not tested, or is a FAIL as potable, is there prominent and permanent signs displayed at all water source points indicating it's not fit for consumption? Note: *Unknown.		
• **Does the fire station have emergency power supply during power outages and when used as a community reception center?** • *Desired Characteristics – Ideally there should be an on-site standby by generator with ample fuel supply that automatically starts on loss of power, alternative is to have an external connection to be used when a portable generator is brought to site.* • *The amperage required during loss of power should be sufficient to operate the necessities of a station i.e., radio communications, heat and sufficient lighting, water treatment and movement systems, life safety systems, mechanical systems, overhead apparatus bay doors, station lighting etc. Is the generator located inside the building in a separate room?* Note: ✶ Fixed generator, meets desired Characteristics. (Ref: Photo 303,305 & 306)	✓✶	
• **Generator /Emergency power unit.** • Amperage of Generator Panel: 100 AMP 16 Circuit Transfer Switch • Wattage of Generator: 10 KW • Generator Powered by: a) Diesel: Tank size: _____ b) Gasoline: Tank size: _____ c) Propane: Tank size: 2 x 440 d) Natural Gas Note:	✓	
• **Does the fire station design allow for flexibility for the future?** • *(Desired Characteristics- designed for future changes in systems and methods, apparatus bay or other facility expansion)* Note: Limited room for expansion (Ref: Fire Station property lines)		✓
• **ROOMS and ROOM CONSIDERATIONS** • *(Could be combined, depending on priorities, philosophies)*	**Yes**	**No**
• **Is there an office for the fire chief/senior chief officers?** • *(Desired Characteristics- Space for desk, chair, worktable, filing cabinet and two side chairs, minimum recommended space 12 ft X 16 ft)*		✓✶

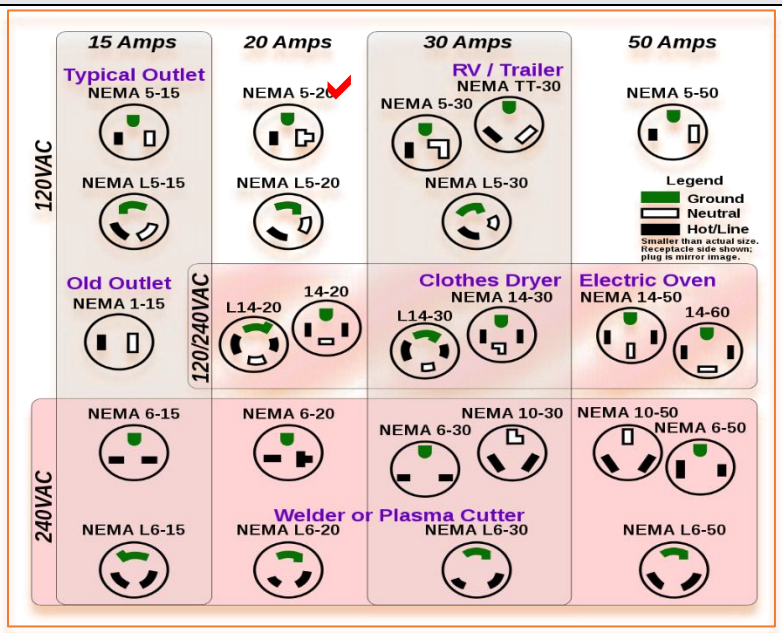
	Yes	No
Note: ✶Shares with administrative office.		
• **Is there an office space for Training officers and Fire Safety Coordinator?** • *(Desired Characteristics- Space for desk, chair, worktable, computer, printer, filing cabinet(s) duplicating machine and storage area)* Note:		✓
• **Does the fire station have sufficient storage room(s)?** • *(Desired Characteristics-Fire Safety, Training and administration space for audio visual equipment and supplies; training aids, and printed materials and public education materials, cleaning tools and supplies)* Note: One small storage area. (Ref: Photo 315)		✓
• **Is there a Kitchen?** • *(Desired Characteristics-Space for cooking and food preparation; enough space should be provided so several people can work in the area at the same time; appliances sized to accommodate, department fund raisers, social events firefighter rehab/feeding, or community reception center needs if required; sufficient electrical service capacity; ventilation and exhaust systems meeting code.)* Note: Kitchen in Community Hall next door not part of fire station.		✓✶
• **Is there an Eating Area?** • *(Desired Characteristics-Space large enough to seat anticipated maximum number of volunteer fire fighters – meeting room could be used for this function)* Note: ✶Training room used when food brought in.	✓✶	
• **Does the station contain a dispatch/Communications room?** • *(Desired Characteristics- Space for radio equipment, emergency telephones, computers, maps, bulletin boards etc.)* Note: Administration office serves as well as the Communications room		✓✶
• **Are there male & female or unisex washrooms?** • *(Desired Characteristics- Toilet and shower facilities should be available for the volunteer firefighters along with individual lockers separate from public facilities, if designated as a reception center, public washroom should be handicap accessible washrooms should have insulated walls for privacy.)*	✓✶	

	Yes	No
Note: ✱ Male & Female washrooms are directly off the apparatus floor. No lockers or showers. (Ref: Photo 304)		
• **Is there a provision for the decontamination showers?** • *(Desired Characteristics-should be located in a partially (3 sides) enclosed area, with a high flow over head spray and in floor large quick drain with retention tanks)* Note:		✓
APPARATUS BAY		
• **Is the apparatus area of appropriate area and size to allow safe parking of apparatus, and minor maintenance?** *(Reference bay size standard as a guide)* • **Length: 71 ft. Width: 59 ft. No. of UNITS: 6 units including trailer with ATV** a) Meets recommended Standards or Best Practices b) Does not meet recommended Standards or Best Practices✓ Note: Two apparatus bay areas, Bay 1 has 3 units the 2nd Bay houses 2 units and a trailer with ATV (Ref: Photo 309 & 312)		
OTHER ROOMS		
• **Is there sufficient space for PPE and firefighting equipment?** • *(Desired Characteristics- A large room closed off but adjacent to the apparatus floor, that requires ventilation to the out of doors, another room to be vented and separated for SCBA filling and maintenance, one room for general maintenance and tool storage, an additional vented room for hazardous materials (oil, fuel etc.) and contaminated equipment, a room for PPE washer & dryer, an area off the apparatus floor for the storage of spare equipment i.e., hose, SCBA cylinders)* Note: ✶PPE carried on rescue store in lockers (Ref: Photo 317)		✓✶
• **Is there a SCBA compressor & Filling Station?** a) Is the air intake located in a safe and appropriate location? b) Is the fill station separated from the air compressor? c) Does the fill station incorporate a defrag chamber?		✓✶

	Yes	No
Note: SCBA fill at Springhill Fire Department 17 minutes away.		
• **Does the fire station have a washer or dryer in a separate room for cleaning of contaminated PPE?** Note:		✓
• **Is there an exercise Room?** • *(Desired Characteristics-A small area should be considered for volunteers to exercise and stress reduction)* Note:		✓
LIFE SAFETY CONSIDERATIONS		
• **Is the fire station sprinklered throughout?** Note:		✓
• **Does the fire station have a fire detection system throughout?** • **Is the detection system remotely monitored?** Note: Security system includes smoke and heat detection, system is remotely monitored. (Ref: Photo 300)	✓	
• **Does the fire station have emergency lighting where required?** Note: (Ref: Photo 301 & 310)	✓	
• **Are illuminated exit signs in the direction of exit travel where required?** Note: (Ref: Photo 301 & 310)	✓	
• **Are Carbon Monoxide detectors/alarms installed where required?** Note:		✓

	Yes	No
• **Potentially Contaminated Personal Protective Equipment.** • *Potentially contaminated personal protective equipment shall be stored in a dedicated, well-ventilated area or room.* • *Potentially contaminated PPE shall not be allowed in personal clothing lockers or in areas used for the following: Food preparation and cooking, Recreation, Personal hygiene, general business areas* Note:		✓
Contaminated Storage. • *Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal shall be separated physically from members in facilities or on vehicles.* • *Such areas or containers shall not be used for any other purpose.* Note:		✓
• **Is there proper indoor storage of flammables & combustibles?** • *(Desired Characteristics- Provided Listed and Prominently Labeled Flammable & Combustible storage containers & lockers)* Note:		✓
• **Are Emergency vehicle aprons & driveways separate from driveways for business travel?** • *(Desired Characteristics-Entrance and apron sized large enough to permit bi-directional flow of traffic. Adequate direction signage where appropriate?)* Note:		✓
• **Is there effective pathway lighting both inside and outside of the station?** • *(Desired Characteristics-All perimeter lighting to be down lighting and reduce light pollution and glare.)* **Note: (Ref: Photo 293)**	✓	
• **Is there proper ventilation for all areas of the building?** Note:		✓
• **Does the fire station have a security key system or coded locks?** ○ For exterior access✓ ○ Internally between public and fire station facilities?	✓	

	Yes	No
Note:		
• **Is the building vulnerable to break and enter; leading to theft of equipment or supplies?** o Ground floor windows in unsupervised areas (e.g. the rear, sides) o Poor quality doors or securing systems, especially at the rear, sides o Lack of security devices, e.g. for windows and doors at grade o Bushes and signs, etc., close to the building creating blind spots o Doors do not latch and lock automatically o Poor practices in securing the building o No security system, or monitoring system o Lack of security lighting, motion detection devices and lamps o Unsecure lobbies Note: Building has limited access points.		✓
• **Does the fire station have a video security system?** d) External e) Internal f) Can the security system be monitored remotely? g) Note: Building has a functioning security system (Ref: Photo to 300)		✓
LIGHTING & POWER		
• **Electrical service for the fire Station from Public Mains (i.e., NSPC)?** o Voltage: 120/240, 208, 400, 600 o Single or 3-phase? o Rated Amperage of Fire Station Service: 60 / 100 / 200 / 400 / 800 o Is their solar or wind power on site? o If more than one power supply, note those and total Amps above Note:	✓	

	Yes	No
• **Are there 20 amp (or higher) electrical drops for apparatus shore-lines (for battery charges, accessories, air pumps, etc.)?** Note: • **✶ Trickle charges from 110 outlets.**  		✓✶
HEATING & COOLING		
• **What is the main heating source for the Fire Station?** a) Fuel oil, ducted forced air **Efficiency**: low / high (condensing) b) Fuel oil, hot water radiators/unit heaters **Efficiency**: low / high (condensing) c) Propane, forced air **Efficiency**: low / high (condensing) d) Propane, hot water radiators/unit heaters **Efficiency**: low / high (condensing) e) Electric, unit heaters and base board heaters f) Natural gas (NG), forced air **Efficiency**: low / high (condensing) g) NG, hot water radiators/unit heaters **Efficiency**: low / high (condensing) h) Ducted Heat Pump, i.e., forced air HVAC i) High Efficiency “mini-split” un-ducted heat pumps j) Bio-Mass (wood, etc.) k) If a mixture, circle all that apply and note below. Note: (Ref: Photo 302 & 312)	√ √	
SIZE and CONFIGURATION of PROPERTY		
• **Does the building set-back allow for sufficient visitor and responder parking?** Note: •	✓	

	Yes	No
• **Does the property depth allow for a rear training area?** Note:	✓	
• **Are there enough parking spaces for training classes?** Note:	✓	
Additional NOTES:		
<u>Apparatus store in two separate bays;</u> **Bay 1:** Three units: 1 engine, 1 pumper tanker & 1 rescue. **Bay 2:** Three Units: 1 utility/4 WD, 1 tanker & a trailer with an ATV. 1st bay area has 3 overhead doors 12 OAH x 12 OAW 2nd bay area has 2 overhead doors 10 OAH x 12 OAW		

PHOTOS

Photo 293

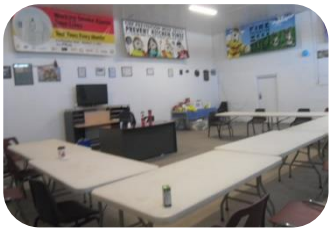


Photo 298

Photo 300

Photo 301

Photo 302

Photo 303

Photo 304

Photo 305

Photo 306

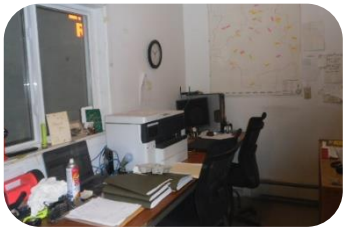


Photo 307

Photo 308

Photo 309

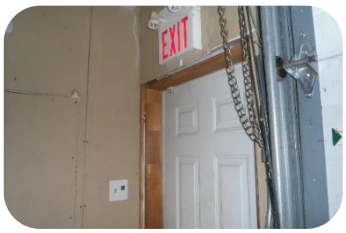
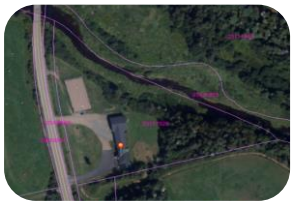


Photo 310

Photo 312

Photo 315



Southampton
Property Lines

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FIRE STATION ASSESSMENT

SPRINGHILL

Address: **5 Main St, Springhill, NS**

Ownership: **MCC**

Date of construction: 1972

Date of last major renovation: N/A

Total Square feet: 7,567.8 sq. ft. Approx.

	Yes	No
FIRE STATION PROPERTY – IDEAL DESIGN		
• **Is the fire station properly identified (*i.e., fire department name, address on exterior etc.?)*** • Note: Exterior signage on building. (Ref: Photo 319) •	✓	
• **Fire Stations constructed post 2005 are designated Post Disaster Readiness structures. Do these stations comply with Part 4 of the NBC?** Note: Building is of limited combustible construction, is not sprinklered.		✓
• **Does the fire Station comply with NFPA Firewise recommendations for set back?** • *(Desired characteristics- maintain 100 feet of defensible space around structures to increase chance of withstanding a wildfire, no burning debris traps that could ignite structure, e.g., wood decks, gutters, outbuildings near main structure, etc.).* Note:	✓	
FUNCTIONS and USE CONSIDERATIONS	Yes	No
• **Is the fire station designed for quick and safe response by personnel and apparatus?** • *(Desired characteristics – minimum internal travel distances; doors swinging in the right direction of travel to the apparatus floor without encroaching on walkways; minimum conflict in cross circulation; good proximity of all spaces to apparatus floor and other rooms, conflict between arriving firefighters and apparatus leaving)* Note: Movement to and around apparats is restricted, very tight quarters		✓

	Yes	No
(Ref: Photos 323 to 328)		
• **Does the fire station have an office area for department administration?** • *(Desired characteristics – ample space for desks, file cabinets, computers, private meetings with personnel, etc.)* Note: Meets above characteristics. (Ref: Photo 351)	✓	
• **Is the fire station training area adequately designed?** • *(Desired characteristics – sufficient classroom space for FD personnel, space for training (inside and outside); storage space for files, audio-visual equipment provided, and other training aids)* • Note: Inside training room with AV aids. (Ref: Photos 358 &361) Outside training carried out in station parking lot and nearby park.	✓	
• **Is the fire station designed to include public use of the building?** • *(Desired Characteristics – to be used as a Public Reception Center during disasters or other community-based emergencies, or other municipal events; are there ample public (separate from fire department use) facilities such as washrooms, parking areas etc. without conflict of normal fire station operations, adequate signage?)* Note: Public space is integrated into fire station. Accessible from outside entrance. (Ref: Photos 353 & 354)	✓	
• **What is the Fire Station water Supply?** ❖ Municipal Water Supply ❖ Cistern ➢ Capacity ____ ❖ Well(s) ➢ Capacity ____ • Note:	✓	
• **If Well or Cistern, does the Fire Station have a water treatment system and sanitation system (i.e., UV)? Is it serviced at least annually?** Note:		N/A

	Yes	No
• **If the water supply is not Municipal, is the water supply tested as per Nova Scotia Standards?** a) Every 6 months for bacteria (PASS/FAIL) b) Every 12 months for chemical and mineral contaminants (PASS/FAIL) c) Is there a log kept of all testing and maintenance on the non-municipal system(s) d) Is the certificate for testing posted prominently? e) Is the certificate of testing readily available? f) If not tested, or is a FAIL as potable, is there prominent and permanent signs displayed at all water source points indicating it's not fit for consumption? Note:		N/A
• **Does the fire station have emergency power supply during power outages and when used as a community reception center?** • *Desired Characteristics – Ideally there should be an on-site standby by generator with ample fuel supply that automatically starts on loss of power, alternative is to have an external connection to be used when a portable generator is brought to site.* • *The amperage required during loss of power should be sufficient to operate the necessities of a station i.e., radio communications, heat and sufficient lighting, water treatment and movement systems, life safety systems, mechanical systems, overhead apparatus bay doors, station lighting etc. Is the generator located inside the building in a separate room?* Note: Generator is a 100 kw fixed unit located in the station off apparatus floor. Manual start and transfer switch. Powers entire building. (Ref: Photos 347, 371 & 372)	✓	
• **Generator /Emergency power unit.** • Amperage of Generator Panel: __?___ • Wattage of Generator: 100 kw • Generator Powered by: a) Diesel: Tank size: _____ b) Gasoline: Tank size: _____ c) Propane: Tank size: _____ d) Natural Gas Note:	✓	
• **Does the fire station design allow for flexibility for the future?** • *(Desired Characteristics- designed for future changes in systems and methods, apparatus bay or other facility expansion)* Note: ✶Building occupies 90% of the lot, There is a vacant lot to the rear of the building and a lot to the north with a vacant building which may be available for expansion.		✓✶

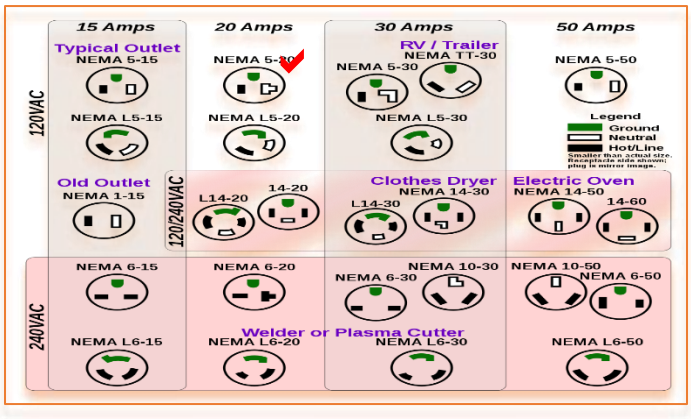
	Yes	No
• **ROOMS and ROOM CONSIDERATIONS** • *(Could be combined, depending on priorities, philosophies)*	**Yes**	**No**
• **Is there an office for the fire chief/senior chief officers?** • *(Desired Characteristics- Space for desk, chair, worktable, filing cabinet and two side chairs, minimum recommended space 12 ft X 16 ft)* Note: Unable to access same size as administration office. (Ref: Photo 351 & 352)	✓	
• **Is there an office space for Training officers and Fire Safety Coordinator?** • *(Desired Characteristics- Space for desk, chair, worktable, computer, printer, filing cabinet(s) duplicating machine and storage area)* Note:		✓
• **Does the fire station have sufficient storage room(s)?** • *(Desired Characteristics-Fire Safety, Training and administration space for audio visual equipment and supplies; training aids, and printed materials and public education materials, cleaning tools and supplies)* Note: Limited storage space, storage rooms are cluttered. (Ref: Photos 364 & 370)		✓
• **Is there a Kitchen?** • *(Desired Characteristics-Space for cooking and food preparation; enough space should be provided so several people can work in the area at the same time; appliances sized to accommodate, department fund raisers, social events firefighter rehab/feeding, or community reception center needs if required; sufficient electrical service capacity; ventilation and exhaust systems meeting code.)* Note: Kitchen meets desired characteristics. (Ref: Photo 355)	✓	
• **Is there an Eating Area?** • *(Desired Characteristics-Space large enough to seat anticipated maximum number of volunteer fire fighters – meeting room could be used for this function)* Note: Both the meeting and training rooms have direct access to the kitchen and can be used for dining areas.	✓	
• **Does the station contain a dispatch/Communications room?** • *(Desired Characteristics- Space for radio equipment, emergency telephones, computers, maps, bulletin boards etc.)* Note: Large dedicated dispatch room meeting desired characteristics (Ref: Photo 342)	✓	

	Yes	No
• **Are there male & female or unisex washrooms?** • *(Desired Characteristics- Toilet and shower facilities should be available for the volunteer firefighters along with individual lockers separate from public facilities, if designated as a reception center, public washroom should be handicap accessible washrooms should have insulated walls for privacy.)* Note: Male & female washrooms (No showers) off of training and meeting rooms as well as apparatus floor. Lockers on apparatus floor. (Ref: Photos 340 & 341)	✓	
• **Is there a provision for the decontamination showers?** • *(Desired Characteristics-should be located in a partially (3 sides) enclosed area, with a high flow over head spray and in floor large quick drain with retention tanks)* Note:		✓
APPARATUS BAY		
• **Is the apparatus area of appropriate area and size to allow safe parking of apparatus, and minor maintenance?** *(Reference bay size standard as a guide)* • **Length: 70.14 Width: 40.34 No. of UNITS: 5** a) Meets recommended Standards or Best Practices b) Does not meet recommended Standards or Best Practices✓ Note: Apparatus are parked in tandem, mechanical failure of front unit will prevent rear unit from exiting. (see photos 323 &324)		
OTHER ROOMS		
• **Is there sufficient space for PPE and firefighting equipment?** • *(Desired Characteristics- A large room closed off but adjacent to the apparatus floor, that requires ventilation to the out of doors, another room to be vented and separated for SCBA filling and maintenance, one room for general maintenance and tool storage, an additional vented room for hazardous materials (oil, fuel etc.) and contaminated equipment, a room for PPE washer & dryer, an area off the apparatus floor for the storage of spare equipment i.e., hose, SCBA cylinders)* Note:		✓

	Yes	No
• **Is there a SCBA compressor & Filling Station?** a) Is the air intake located in a safe and appropriate location✓ b) Is the fill station separated from the air compressor ✓ c) Does the fill station incorporate a defrag chamber✓ Note: Located in area at rear of building off apparatus floor, (Ref: Photos 332, 333 &334)	✓	
• **Does the fire station have a washer or dryer in a separate room for cleaning of contaminated PPE?** Note:		✓
• **Is there an exercise Room?** • *(Desired Characteristics-A small area should be considered for volunteers to exercise and stress reduction)* Note:		✓
LIFE SAFETY CONSIDERATIONS		
• **Is the fire station sprinklered throughout?** Note:		✓
• **Does the fire station have a fire detection system throughout?** • **Is the detection system remotely monitored?** Note: ULC listed and monitored fire alarm system (Ref: Photo 362)	✓	
• **Does the fire station have emergency lighting where required?** Note:	✓	
• **Are illuminated exit signs in the direction of exit travel where required?** Note:	✓	
• **Are Carbon Monoxide detectors/alarms installed where required?** Note:		✓

	Yes	No
• **Potentially Contaminated Personal Protective Equipment.** • *Potentially contaminated personal protective equipment shall be stored in a dedicated, well-ventilated area or room.* • *Potentially contaminated PPE shall not be allowed in personal clothing lockers or in areas used for the following: Food preparation and cooking, Recreation, Personal hygiene, general business areas* Note:		✓
Contaminated Storage. • *Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal shall be separated physically from members in facilities or on vehicles.* • *Such areas or containers shall not be used for any other purpose.* Note:		✓
• **Is there proper indoor storage of flammables & combustibles?** • *(Desired Characteristics- Provided Listed and Prominently Labeled Flammable & Combustible storage containers & lockers)* Note:		✓
• **Are Emergency vehicle aprons & driveways separate from driveways for business travel?** • *(Desired Characteristics-Entrance and apron sized large enough to permit bi-directional flow of traffic. Adequate direction signage where appropriate?)* Note:		✓
• **Is there effective pathway lighting both inside and outside of the station?** • *(Desired Characteristics-All perimeter lighting to be down lighting and reduce light pollution and glare.)* Note: (see photo 319)	✓	
• **Is there proper ventilation for all areas of the building?** Note: here is a ventilation system but it has not been functioning properly.		✓
• **Does the fire station have a security key system or coded locks?** o For exterior access o Internally between public and fire station facilities?		✓

	Yes	No
Note:		
• **Is the building vulnerable to break and enter; leading to theft of equipment or supplies?** o Ground floor windows in unsupervised areas (e.g. the rear, sides) o Poor quality doors or securing systems, especially at the rear, sides o Lack of security devices, e.g. for windows and doors at grade o Bushes and signs, etc., close to the building creating blind spots o Doors do not latch and lock automatically o Poor practices in securing the building o No security system, or monitoring system o Lack of security lighting, motion detection devices and lamps o Unsecure lobbies Note:	✓ ✓ ✓ ✓ ✓	✓
• **Does the fire station have a video security system?** a) External b) Internal c) Can the security system be monitored remotely? Note:		✓
LIGHTING & POWER		
• **Electrical service for the fire Station from Public Mains (i.e., NSPC)?** o Voltage: 120/240, 208, 400, 600 o Single or 3-phase? o Rated Amperage of Fire Station Service: 60 / 100 / 200 / 400 / 800 o Is their solar or wind power on site? o If more than one power supply, note those and total Amps above Note:✱ Department representative had major concerns in regard to the electrical system, advised of ground fault issues, non-functioning circuits and two electrical fires in main breaker panel. Repairs have been carried out but problem persists. (See photos 343 & 349)	✓✱	

	Yes	No
• **Are there 20 amp (or higher) electrical drops for apparatus shore-lines (for battery charges, accessories, air pumps, etc.)?** Note: 20 amp NEMA L5-20 Type (Ref: Photos 322 & 323**)** 	✓	
HEATING & COOLING		
• **What is the main heating source for the Fire Station?** a) Fuel oil, ducted forced air **Efficiency**: low / high (condensing) b) Fuel oil, hot water radiators/unit heaters **Efficiency**: low / high (condensing) c) Propane, forced air **Efficiency**: low / high (condensing) d) Propane, hot water radiators/unit heaters **Efficiency**: low / high (condensing) e) Electric, unit heaters and base board heaters f) Natural gas (NG), forced air **Efficiency**: low / high (condensing) g) NG, hot water radiators/unit heaters **Efficiency**: low / high (condensing) h) Ducted Heat Pump, i.e., forced air HVAC i) High Efficiency “mini-split” un-ducted heat pumps j) Bio-Mass (wood, etc.) k) If a mixture, circle all that apply and note below l) Note: ✶Department representative indicated that there had been a geothermal heating system installed in the building a number of years ago but it was taken out of service and electric unit heaters and baseboard heating was being used now but with the electric problems these units did not always function properly.	✓✱	
SIZE and CONFIGURATION of PROPERTY		
• **Does the building set-back allow for sufficient visitor and responder parking?** Note:	✓	

	Yes	No
• **Does the property depth allow for a rear training area?** Note:	✓	
• **Are there enough parking spaces for training classes?** Note:	✓	
Additional NOTES:		
3 Overhead doors 12 x 12 **Apparatus:** **1 mid ship single rear axle straight stick quint,** **1 engine.** **1 tandem axle pumper tanker,** **1 rescue,** **1 mini pumper and** **1 Trailer with an ATV.** **✶Department representative also indicated that there where major problems with leaks from the ceiling of the flat roof section of the building.**		

PHOTOS

Photo 319

Photo 322

Photo 323

Photo 324

Photo 325

Photo 324

Photo 327

Photo 328

Photo 332

Photo 341

Photo 342

Photo 347

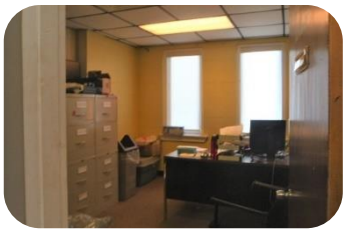


Photo 351

Photo 352

Photo 353

Photo 354

Photo 355

Photo 358

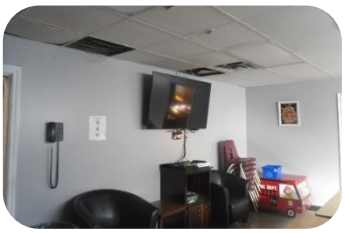


Photo 361

Photo 362

Photo 364

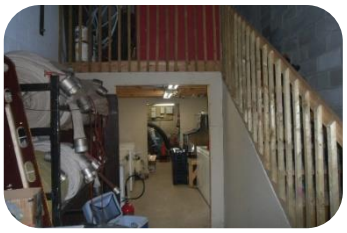


Photo 370

Photo 371

Photo 372

Springhill
Property Lines

.

FIRE STATION ASSESSMENT

TIDNISH BRIDGE

Address: 3581 Hwy 366 (Tyndal Rd), Tidnish Bridge, NS

Ownership: Cumberland County

Date of construction:

Date of last major renovation: 2014

Total Square feet: 105.4 x 41.75 = 4,400 Approx.

	Yes	No
FIRE STATION PROPERTY – IDEAL DESIGN		
• **Is the fire station properly identified (*i.e., fire department name, address on exterior etc.?)*** Note: Exterior signage on building. (Ref: Photo 523)	✓	
• **Fire Stations constructed post 2005 are designated Post Disaster Readiness structures. Do these stations comply with Part 4 of the NBC?** Note: Building is of limited combustible construction, does not have a generator capable of suppling full power to building and it is not sprinklered.		✓
• **Does the fire Station comply with NFPA Firewise recommendations for set back?** • *(Desired characteristics- maintain 100 feet of defensible space around structures to increase chance of withstanding a wildfire, no burning debris traps that could ignite structure, e.g., wood decks, gutters, outbuildings near main structure, etc.).* Note: Building is > 100 ft. from tree line	✓	
FUNCTIONS and USE CONSIDERATIONS	Yes	No
• **Is the fire station designed for quick and safe response by personnel and apparatus?** • *(Desired characteristics – minimum internal travel distances; doors swinging in the right direction of travel to the apparatus floor without encroaching on walkways; minimum conflict in cross circulation; good proximity of all spaces to apparatus floor and other rooms, conflict between arriving firefighters and apparatus leaving)* Note: Good access to and within building.	✓	
• **Does the fire station have an office area for department administration?**	✓*	

	Yes	No
• *(Desired characteristics – ample space for desks, file cabinets, computers, private meetings with personnel, etc.)* Note: ✱ Space has been provided, but is not been utilize as an administration office, not organized and poor housekeeping. (Ref: Photo 491)		
• **Is the fire station training area adequately designed?** • *(Desired characteristics – sufficient classroom space for FD personnel, space for training (inside and outside); storage space for files, audio-visual equipment provided, and other training aids)* Note: Inside training room with AV aids. (Ref: Photo 495) Outside training carried out in station parking lot.	✓	
• **Is the fire station designed to include public use of the building?** • *(Desired Characteristics – to be used as a Public Reception Center during disasters or other community-based emergencies, or other municipal events; are there ample public (separate from fire department use) facilities such as washrooms, parking areas etc. without conflict of normal fire station operations, adequate signage?)* Note: Public space is integrated into fire station. Accessible from outside entrance.	✓	
• **What is the Fire Station water Supply?** ❖ Municipal Water Supply ❖ Cistern ➢ Capacity ____ ❖ Well(s) ➢ Capacity ____ Note:	✓	
• **If Well or Cistern, does the Fire Station have a water treatment system and sanitation system (i.e., UV)? Is it serviced at least annually?** Note: ✱No treatment equipment found at time of visit.		✓✱
• **If the water supply is not municipal, is the water supply tested as per Nova Scotia Standards?** a) Every 6 months for bacteria (PASS/FAIL) b) Every 12 months for chemical and mineral contaminants (PASS/FAIL) c) Is there a log kept of all testing and maintenance on the non-municipal system(s) d) Is the certificate for testing posted prominently? e) Is the certificate of testing readily available? f) If not tested, or is a FAIL as potable, is there prominent and permanent signs displayed at all water source points indicating it's not fit for consumption?		✓✱

	Yes	No
Note: * Unknown		
• **Does the fire station have emergency power supply during power outages and when used as a community reception center?** • *Desired Characteristics – Ideally there should be an on-site standby by generator with ample fuel supply that automatically starts on loss of power, alternative is to have an external connection to be used when a portable generator is brought to site.* • *The amperage required during loss of power should be sufficient to operate the necessities of a station i.e., radio communications, heat and sufficient lighting, water treatment and movement systems, life safety systems, mechanical systems, overhead apparatus bay doors, station lighting etc. Is the generator located inside the building in a separate room?* Note: Portable 10,000 w generator (Ref: Photo 507)	✓	
• **Generator /Emergency power unit.** • Amperage of Generator Panel: _____ • Wattage of Generator: • Generator Powered by: a) Diesel: Tank size: _____ b) Gasoline: Tank size: _5 gal. c) Propane: Tank size: _____ d) Natural Gas Note:	✓	
• **Does the fire station design allow for flexibility for the future?** • *(Desired Characteristics- designed for future changes in systems and methods, apparatus bay or other facility expansion)* Note: Room at rear of building for expansion.	✓	
• **ROOMS and ROOM CONSIDERATIONS** • *(Could be combined, depending on priorities, philosophies)*	**Yes**	**No**
• **Is there an office for the fire chief/senior chief officers?** • *(Desired Characteristics- Space for desk, chair, worktable, filing cabinet and two side chairs, minimum recommended space 12 ft X 16 ft)* Note:		✓

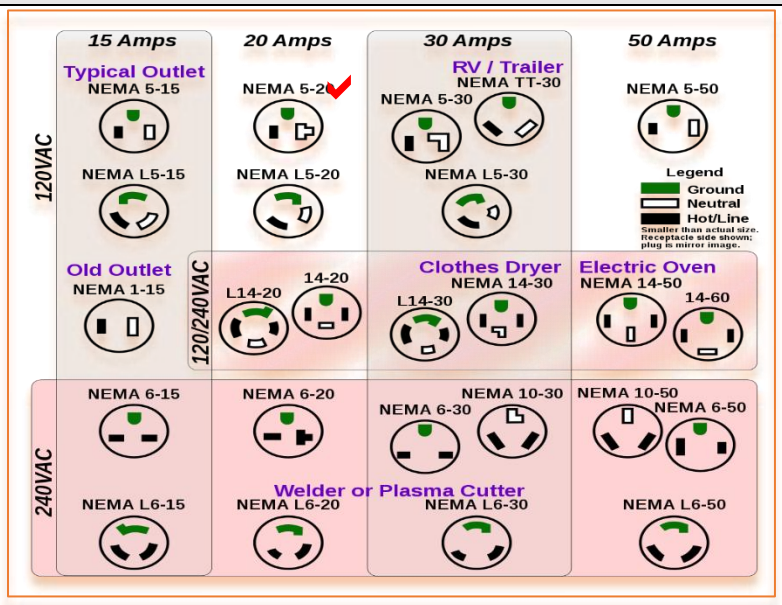
	Yes	No
• **Is there an office space for Training officers and Fire Safety Coordinator?** • *(Desired Characteristics- Space for desk, chair, worktable, computer, printer, filing cabinet(s) duplicating machine and storage area)* Note:		✓
• **Does the fire station have sufficient storage room(s)?** • *(Desired Characteristics-Fire Safety, Training and administration space for audio visual equipment and supplies; training aids, and printed materials and public education materials, cleaning tools and supplies)* Note: Large storage room has been provided, but is not been properly utilized (Ref: Photo 514 & 515)	✓	
• **Is there a meeting/lecture room?** • *(Desired Characteristics-Space large enough for Training purposes; give consideration to storage space for chairs, tables, lecterns, projector/storage room, will this room be used as a community reception center or an EOC?)* Note: Same area as training room. Meets desired characteristics.(Ref: Photo 495 & 499)	✓	
• **Is there a Kitchen?** • *(Desired Characteristics-Space for cooking and food preparation; enough space should be provided so several people can work in the area at the same time; appliances sized to accommodate, department fund raisers, social events firefighter rehab/feeding, or community reception center needs if required; sufficient electrical service capacity; ventilation and exhaust systems meeting code.)* • Note: Meets desired characteristics.(Ref: Photo 497 & 498)	✓	
• **Is there an Eating Area?** • *(Desired Characteristics-Space large enough to seat anticipated maximum number of volunteer fire fighters – meeting room could be used for this function)* Note: Same area as described above.	✓	
• **Does the station contain a dispatch/Communications room?** • *(Desired Characteristics- Space for radio equipment, emergency telephones, computers, maps, bulletin boards etc.)* Note: Space has been provided, (Ref: Photo 491)	✓	
• **Are there male & female or unisex washrooms?** • *(Desired Characteristics- Toilet and shower facilities should be available for the volunteer firefighters along with individual lockers separate from public facilities, if designated as a*	✓*	

	Yes	No
reception center, public washroom should be handicap accessible washrooms should have insulated walls for privacy.) Note: ✱Male and female washrooms, no showers or lockers. (Ref: Photos 489 & 490)		
• **Is there a provision for the decontamination showers?** • *(Desired Characteristics-should be located in a partially (3 sides) enclosed area, with a high flow over head spray and in floor large quick drain with retention tanks)* Note:		✓
APPARATUS BAY		
• **Is the apparatus area of appropriate area and size to allow safe parking of apparatus, and minor maintenance?** *(Reference bay size standard as a guide)* • **Length: 63.1 Width: 41.8 No. of UNITS: 4** • a) Meets recommended Standards or Best Practices b) Does not meet recommended Standards or Best Practices✓ Note:		
• **Are there measures to reduce vehicle exhaust fumes?** • *(Desired Characteristics- there are a few options: (a) capture at point of source, (b) CO/H_2S monitors in apparatus areas that activate overhead scrubbers or (c) CO monitor triggered fume exhaust and fresh air replacement fan systems in roof/walls. Apparatus bays are sealed from other parts of the station?)* Note:	✓	
OTHER ROOMS		
• **Is there sufficient space for PPE and firefighting equipment?** • *(Desired Characteristics- A large room closed off but adjacent to the apparatus floor, that requires ventilation to the out of doors, another room to be vented and separated for SCBA filling and maintenance, one room for general maintenance and tool storage, an additional vented room for hazardous materials (oil, fuel etc.) and contaminated equipment, a room for*		✓

	Yes	No
PPE washer & dryer, an area off the apparatus floor for the storage of spare equipment i.e., hose, SCBA cylinders) Note:		
• **Is there a SCBA compressor & Filling Station?** a) Is the air intake located in a safe and appropriate location? b) Is the fill station separated from the air compressor? c) Does the fill station incorporate a defrag chamber? Note: Cascade system is a mobile system located on the rescue truck. (Ref: Photo 521)	✓	
• **Does the fire station have a washer or dryer in a separate room for cleaning of contaminated PPE?** Note:		✓
• **Is there an exercise Room?** • *(Desired Characteristics-A small area should be considered for volunteers to exercise and stress reduction)* Note: Small room off apparatus floor. (Ref: Photo 506)	✓	
LIFE SAFETY CONSIDERATIONS		
• **Is the fire station sprinklered throughout?** Note:		✓
• **Does the fire station have a fire detection system throughout?** • **Is the detection system remotely monitored?** Note:		✓
• **Does the fire station have emergency lighting where required?** Note: Ref: Photo 493 & 494)	✓	
• **Are illuminated exit signs in the direction of exit travel where required?** Note:		✓
• **Are Carbon Monoxide detectors/alarms installed where required?**	✓	

	Yes	No
Note:		
• **Potentially Contaminated Personal Protective Equipment.** • *Potentially contaminated personal protective equipment shall be stored in a dedicated, well-ventilated area or room.* • *Potentially contaminated PPE shall not be allowed in personal clothing lockers or in areas used for the following: Food preparation and cooking, Recreation, Personal hygiene, general business areas* Note: Ref: Photo 514		✓
Contaminated Storage. • *Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal shall be separated physically from members in facilities or on vehicles.* • *Such areas or containers shall not be used for any other purpose.* Note: (Ref: Photo 504)		✓
• **Is there proper indoor storage of flammables & combustibles?** • *(Desired Characteristics- Provided Listed and Prominently Labeled Flammable & Combustible storage containers & lockers)* Note:		✓
• **Are Emergency vehicle aprons & driveways separate from driveways for business travel?** • *(Desired Characteristics-Entrance and apron sized large enough to permit bi-directional flow of traffic. Adequate direction signage where appropriate?)* Note:		✓
• **Is there effective pathway lighting both inside and outside of the station?** • *(Desired Characteristics-All perimeter lighting to be down lighting and reduce light pollution and glare.)* Note: (Ref: Photo 523)	✓	
• **Is there proper ventilation for all areas of the building?** Note: (Ref: Photo 512)	✓	
• **Does the fire station have a security key system or coded locks?** o For exterior access o Internally between public and fire station facilities?	✓	

	Yes	No
Note:		
• **Is the building vulnerable to break and enter; leading to theft of equipment or supplies?** o Ground floor windows in unsupervised areas (e.g. the rear, sides) o Poor quality doors or securing systems, especially at the rear, sides o Lack of security devices, e.g. for windows and doors at grade o Bushes and signs, etc., close to the building creating blind spots o Doors do not latch and lock automatically o Poor practices in securing the building o No security system, or monitoring system o Lack of security lighting, motion detection devices and lamps o Unsecure lobbies • Note: Building was secured at time of visit. Windows are limited and set high. (Ref: Photo 522)		✓
• **Does the fire station have a video security system?** a) External b) Internal c) Can the security system be monitored remotely? Note:		✓
LIGHTING & POWER		
• **Electrical service for the fire Station from Public Mains (i.e., NSPC)?** o Voltage: 120/240, 208, 400, 600 o Single or 3-phase? o Rated Amperage of Fire Station Service: 60 / 100 / 200 / 400 / 800 o Is their solar or wind power on site? o If more than one power supply, note those and total Amps above Note:	✓	

	Yes	No
• **Are there 20 amp (or higher) electrical drops for apparatus shore-lines (for battery charges, accessories, air pumps, etc.)?** Note: Electric & Air drops in each bay. 20 amp NEMA L5-20 	✓	
HEATING & COOLING		
• **What is the main heating source for the Fire Station?** a) Fuel oil, ducted forced air **Efficiency**: low / high (condensing) b) Fuel oil, hot water radiators/unit heaters **Efficiency**: low / high (condensing) c) Propane, forced air **Efficiency**: low / high (condensing) d) Propane, hot water radiators/unit heaters **Efficiency**: low / high (condensing) e) Electric, unit heaters and base board heaters f) Natural gas (NG), forced air **Efficiency**: low / high (condensing) g) NG, hot water radiators/unit heaters **Efficiency**: low / high (condensing) h) Ducted Heat Pump, i.e., forced air HVAC i) High Efficiency "mini-split" un-ducted heat pumps j) Bio-Mass (wood, etc.) k) If a mixture, circle all that apply and note below Note: Ceiling mounted unit heaters in apparatus bay area. Baseboard in all other rooms. (Ref: Photos 495, 517 & 518)	✓	
SIZE and CONFIGURATION of PROPERTY		
• **Does the building set-back allow for sufficient visitor and responder parking?** Note:	✓	

	Yes	No
• **Does the property depth allow for a rear training area?** Note:	✓	
• **Are there enough parking spaces for training classes?** Note:	✓	
Additional NOTES:		
4 -10 x 12 overhead doors at front of apparatus bay and **1 - 8 x 8 door at rear** **Training room, 42 ft. x 22 ft. approx.** **Apparatus:** **1 Engine,** **1 Tanker,** **1 Rescue and** **1 RIB rescue boat on trailer. (**Ref: Photo **508, 509, 518 &519)**		

PHOTOS

Photo 522

Photo 523

Photo 489

Photo 490

Photo 491

Photo493

Photo 494

Photo 495

Photo 497

Photo 498

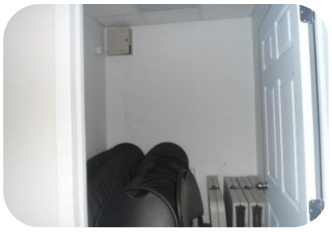


Photo 499

Photo 504

Photo 506

Photo 507

Photo 508

PHOTOS

Photo 509

Photo 512

Photo 514

Photo 515

Photo 517

Photo 518

Photo 519

Photo 521

Tidnish Bridge
Property Lines

FIRE STATION ASSESSMENT

LORNEVILLE (Tidnish Bridge sub-Station)

Address: **5849 Hwy 366, Tyndal Rd, Tidnish Bridge (Sub-Station)**

Ownership: **Tidnish Bridge Fire Department**

Date of construction: 2004

Date of last major renovation: N/A

Total Square feet: 927.8 square feet.

	Yes	No
FIRE STATION PROPERTY – IDEAL DESIGN		
• **Is the fire station properly identified (*i.e., fire department name, address on exterior etc.?)*** Note: Hwy. fire station warning signs & exterior signage on building. (Ref: Photo 484)	✓	
• **Fire Stations constructed post 2005 are designated Post Disaster Readiness structures. Do these stations comply with Part 4 of the NBC?** Note: Single story wood frame, vinyl siding		✓
• **Does the fire Station comply with NFPA Firewise recommendations for set back?** • *(Desired characteristics- maintain 100 feet of defensible space around structures to increase chance of withstanding a wildfire, no burning debris traps that could ignite structure, e.g., wood decks, gutters, outbuildings near main structure, etc.).* Note: (Ref: Photos 484 to 488	✓	
FUNCTIONS and USE CONSIDERATIONS	Yes	No
• **Is the fire station designed for quick and safe response by personnel and apparatus?** • *(Desired characteristics – minimum internal travel distances; doors swinging in the right direction of travel to the apparatus floor without encroaching on walkways; minimum conflict in cross circulation; good proximity of all spaces to apparatus floor and other rooms, conflict between arriving firefighters and apparatus leaving)* Note:	✓	

	Yes	No
• **Does the fire station have an office area for department administration?** • *(Desired characteristics – ample space for desks, file cabinets, computers, private meetings with personnel, etc.)* Note:		✓
• **Is the fire station training area adequately designed?** • *(Desired characteristics – sufficient classroom space for FD personnel, space for training (inside and outside); storage space for files, audio-visual equipment provided, and other training aids)* Note:		✓
• **Is the fire station designed to include public use of the building?** • *(Desired Characteristics – to be used as a Public Reception Center during disasters or other community-based emergencies, or other municipal events; are there ample public (separate from fire department use) facilities such as washrooms, parking areas etc. without conflict of normal fire station operations, adequate signage?)* Note:		✓
• **What is the Fire Station water Supply?** ❖ Municipal Water Supply ❖ Cistern ➢ Capacity ____ ❖ Well(s) ➢ Capacity ____ Note: No water system		✓
• **If Well or Cistern, does the Fire Station have a water treatment system and sanitation system (i.e., UV)? Is it serviced at least annually?** Note: No water system		✓
• **If the water supply is not municipal, is the water supply tested as per Nova Scotia Standards?** a) Every 6 months for bacteria (PASS/FAIL) b) Every 12 months for chemical and mineral contaminants (PASS/FAIL) c) Is there a log kept of all testing and maintenance on the non-municipal system(s) d) Is the certificate for testing posted prominently? e) Is the certificate of testing readily available? f) If not tested, or is a FAIL as potable, is there prominent and permanent signs displayed at all water source points indicating it's not fit for consumption?		✓

	Yes	No
Note: No water system ✓		
• **Does the fire station have emergency power supply during power outages and when used as a community reception center?** • *Desired Characteristics – Ideally there should be an on-site standby by generator with ample fuel supply that automatically starts on loss of power, alternative is to have an external connection to be used when a portable generator is brought to site.* • *The amperage required during loss of power should be sufficient to operate the necessities of a station i.e., radio communications, heat and sufficient lighting, water treatment and movement systems, life safety systems, mechanical systems, overhead apparatus bay doors, station lighting etc. Is the generator located inside the building in a separate room?* Note: No generator on site at time of visit.		✓
• **Generator /Emergency power unit.** • Amperage of Generator Panel: _____ • Wattage of Generator: • Generator Powered by: a) Diesel: Tank size: _____ b) Gasoline: Tank size: _____ c) Propane: Tank size: _____ d) Natural Gas Note:		✓
• **Does the fire station design allow for flexibility for the future?** • *(Desired Characteristics- designed for future changes in systems and methods, apparatus bay or other facility expansion)* Note: There is room for expansion at the rear the lot is very narrow no room for expansion on the sides.	✓	
• **ROOMS and ROOM CONSIDERATIONS** • *(Could be combined, depending on priorities, philosophies)*	**Yes**	**No**
• **Is there an office for the fire chief/senior chief officers?** • *(Desired Characteristics- Space for desk, chair, worktable, filing cabinet and two side chairs, minimum recommended space 12 ft X 16 ft)*		✓

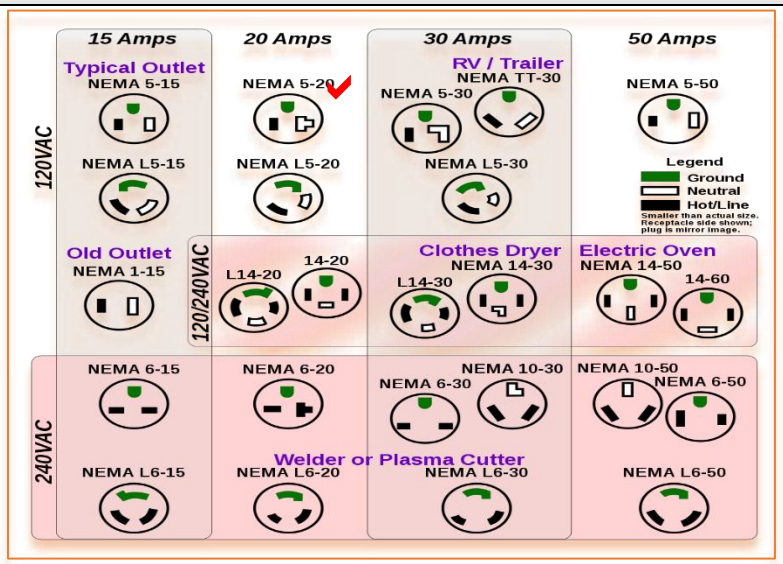
	Yes	No
Note:		
• **Is there an office space for Training officers and Fire Safety Coordinator?** • *(Desired Characteristics- Space for desk, chair, worktable, computer, printer, filing cabinet(s) duplicating machine and storage area)* Note:		✓
• **Does the fire station have sufficient storage room(s)?** • *(Desired Characteristics-Fire Safety, Training and administration space for audio visual equipment and supplies; training aids, and printed materials and public education materials, cleaning tools and supplies)* Note:		✓
• **Is there a meeting/lecture room?** • *(Desired Characteristics-Space large enough for Training purposes; give consideration to storage space for chairs, tables, lecterns, projector/storage room, will this room be used as a community reception center or an EOC?)* Note:		✓
• **Is there a Kitchen?** • *(Desired Characteristics-Space for cooking and food preparation; enough space should be provided so several people can work in the area at the same time; appliances sized to accommodate, department fund raisers, social events firefighter rehab/feeding, or community reception center needs if required; sufficient electrical service capacity; ventilation and exhaust systems meeting code.)* Note:		✓
• **Is there an Eating Area?** • *(Desired Characteristics-Space large enough to seat anticipated maximum number of volunteer fire fighters – meeting room could be used for this function)* Note:		✓
• **Does the station contain a dispatch/Communications room?** • *(Desired Characteristics- Space for radio equipment, emergency telephones, computers, maps, bulletin boards etc.)*		✓

	Yes	No
Note:		
• **Are there male & female or unisex washrooms?** • *(Desired Characteristics- Toilet and shower facilities should be available for the volunteer firefighters along with individual lockers separate from public facilities, if designated as a reception center, public washroom should be handicap accessible washrooms should have insulated walls for privacy.)* Note:		✓
• **Is there a provision for the decontamination showers?** • *(Desired Characteristics-should be located in a partially (3 sides) enclosed area, with a high flow over head spray and in floor large quick drain with retention tanks)* Note:		✓
APPARATUS BAY		
• **Is the apparatus area of appropriate area and size to allow safe parking of apparatus, and minor maintenance?** *(Reference bay size standard as a guide)* • **Length: 34.61 Width: 26.81 NO. of Units: 1 Pumper/Tanker 1 utility** • a) Meets recommended Standards or Best Practices b) Does not meet recommended Standards or Best Practices✓ Note:		
• **Are there measures to reduce vehicle exhaust fumes?** • *(Desired Characteristics- there are a few options: (a) capture at point of source, (b) CO/H_2S monitors in apparatus areas that activate overhead scrubbers or (c) CO monitor triggered fume exhaust and fresh air replacement fan systems in roof/walls. Apparatus bays are sealed from other parts of the station?)* Note:		✓
OTHER ROOMS		
• **Is there sufficient space for PPE and firefighting equipment?** • *(Desired Characteristics- A large room closed off but adjacent to the apparatus floor, that requires ventilation to the out of doors, another room to be vented and separated for SCBA*		✓

	Yes	No
filling and maintenance, one room for general maintenance and tool storage, an additional vented room for hazardous materials (oil, fuel etc.) and contaminated equipment, a room for PPE washer & dryer, an area off the apparatus floor for the storage of spare equipment i.e., hose, SCBA cylinders) Note:		
• **Is there a SCBA compressor & Filling Station?** a) Is the air intake located in a safe and appropriate location? b) Is the fill station separated from the air compressor? c) Does the fill station incorporate a defrag chamber? Note:		✓
• **Does the fire station have a washer or dryer in a separate room for cleaning of contaminated PPE?** Note:		✓
• **Is there an exercise Room?** • *(Desired Characteristics-A small area should be considered for volunteers to exercise and stress reduction)* Note:		✓
LIFE SAFETY CONSIDERATIONS		
• **Is the fire station sprinklered throughout?** Note:		✓
• **Does the fire station have a fire detection system throughout?** • **Is the detection system remotely monitored?** Note:		✓
• **Does the fire station have emergency lighting where required?** Note:		✓

	Yes	No
• **Are illuminated exit signs in the direction of exit travel where required?** Note:		✓
• **Are Carbon Monoxide detectors/alarms installed where required?** Note:		✓
• **Potentially Contaminated Personal Protective Equipment.** • *Potentially contaminated personal protective equipment shall be stored in a dedicated, well-ventilated area or room.* • *Potentially contaminated PPE shall not be allowed in personal clothing lockers or in areas used for the following: Food preparation and cooking, Recreation, Personal hygiene, general business areas* Note:		✓
Contaminated Storage. • *Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal shall be separated physically from members in facilities or on vehicles.* • *Such areas or containers shall not be used for any other purpose.* Note:		✓
• **Is there proper indoor storage of flammables & combustibles?** • *(Desired Characteristics- Provided Listed and Prominently Labeled Flammable & Combustible storage containers & lockers)* Note:		✓
• **Are Emergency vehicle aprons & driveways separate from driveways for business travel?** • *(Desired Characteristics-Entrance and apron sized large enough to permit bi-directional flow of traffic. Adequate direction signage where appropriate?)* Note:		✓
• **Is there effective pathway lighting both inside and outside of the station?** • *(Desired Characteristics-All perimeter lighting to be down lighting and reduce light pollution and glare.)* Note:		✓

	Yes	No
• **Is there proper ventilation for all areas of the building?** Note: Building was secured at time of visit		✓
• **Does the fire station have a security key system or coded locks?** o For exterior access o Internally between public and fire station facilities? Note:	✓	
• **Is the building vulnerable to break and enter; leading to theft of equipment or supplies?** o Ground floor windows in unsupervised areas (e.g. the rear, sides) o Poor quality doors or securing systems, especially at the rear, sides o Lack of security devices, e.g. for windows and doors at grade o Bushes and signs, etc., close to the building creating blind spots o Doors do not latch and lock automatically o Poor practices in securing the building o No security system, or monitoring system o Lack of security lighting, motion detection devices and lamps o Unsecure lobbies Note: Building is designed to reduce break and enter.		✓
• **Does the fire station have a video security system?** a) External b) Internal c) Can the security system be monitored remotely? Note:		✓
LIGHTING & POWER		
• **Electrical service for the fire Station from Public Mains (i.e., NSPC)?** o Voltage: 120/240, 208, 400, 600 o Single or 3-phase? o Rated Amperage of Fire Station Service: 60 / 100 / 200 / 400 / 800 o Is their solar or wind power on site? o If more than one power supply, note those and total Amps above Note:	✓	

	Yes	No
• **Are there 20 amp (or higher) electrical drops for apparatus shore-lines (for battery charges, accessories, air pumps, etc.)?** Note: Two Electrical drops 20 amp 	✓	
HEATING & COOLING		
• **What is the main heating source for the Fire Station?** a) Fuel oil, ducted forced air **Efficiency**: low / high (condensing) b) Fuel oil, hot water radiators/unit heaters **Efficiency**: low / high (condensing) c) Propane, forced air **Efficiency**: low / high (condensing) d) Propane, hot water radiators/unit heaters **Efficiency**: low / high (condensing) e) Electric, unit heaters and base board heaters f) Natural gas (NG), forced air **Efficiency**: low / high (condensing) g) NG, hot water radiators/unit heaters **Efficiency**: low / high (condensing) h) Ducted Heat Pump, i.e., forced air HVAC i) High Efficiency "mini-split" un-ducted heat pumps j) Bio-Mass (wood, etc.) k) If a mixture, circle all that apply and note below Note:	✓	
SIZE and CONFIGURATION of PROPERTY		
• **Does the building set-back allow for sufficient visitor and responder parking?** Note:		✓

	Yes	No
• **Does the property depth allow for a rear training area?** Note:		✓
• **Are there enough parking spaces for training classes?** Note:		✓
Additional NOTES:		
<u>Special Note:</u> There was a strong odor of gasoline on entry to the building, found a leak from the gas tank of a portable pump on pumper/tanker. Called Fire Chief to advise, he was sending someone to look after the problem (Ref: photo 482)		

PHOTOS

Photo 484

Photo 488

Photo 481

Photo 482

Photo 483.

FIRE STATION ASSESSMENT

TRUEMANVILLE

Address: **2389 Hwy 6, Truemanville, NS**

Ownership: **Truemanville Fire Department**

Date of construction:1970

Date of last major renovation: 1979 – 3 Truck Bays, 2002 (Addition of Community Centre)

Total Square feet: 104 x 60 = 6240 sq. ft. Approx.

	Yes	No
FIRE STATION PROPERTY – IDEAL DESIGN		
• **Is the fire station properly identified (*i.e., fire department name, address on exterior etc.?)*** Note: E Hwy. fire station warning signs & exterior signage on building. (Ref: Photo 527)	✓	
• **Fire Stations constructed post 2005 are designated Post Disaster Readiness structures. Do these stations comply with Part 4 of the NBC?** Note: Building is of combustible construction, does not have a generator capable of suppling full power to building and it is not sprinklered.		✓
• **Does the fire Station comply with NFPA Firewise recommendations for set back?** • *(Desired characteristics- maintain 100 feet of defensible space around structures to increase chance of withstanding a wildfire, no burning debris traps that could ignite structure, e.g., wood decks, gutters, outbuildings near main structure, etc.).* Note: Building is > 100 ft. from tree line.	✓	
FUNCTIONS and USE CONSIDERATIONS	Yes	No
• **Is the fire station designed for quick and safe response by personnel and apparatus?** • *(Desired characteristics – minimum internal travel distances; doors swinging in the right direction of travel to the apparatus floor without encroaching on walkways; minimum conflict in cross circulation; good proximity of all spaces to apparatus floor and other rooms, conflict between arriving firefighters and apparatus leaving)*	✓	

	Yes	No
Note: Good access to and within building.		
• **Does the fire station have an office area for department administration?** • *(Desired characteristics – ample space for desks, file cabinets, computers, private meetings with personnel, etc.)* Note: Small office are off apparatus floor. (Ref: Photo 447)	✓	
• **Is the fire station training area adequately designed?** • *(Desired characteristics – sufficient classroom space for FD personnel, space for training (inside and outside); storage space for files, audio-visual equipment provided, and other training aids)* Note: Inside training room with AV aids. Ref: Photo 495) Outside training carried out in station parking lot. (Ref: Photos 454, 455, & 463)	✓	
• **Is the fire station designed to include public use of the building?** • *(Desired Characteristics – to be used as a Public Reception Center during disasters or other community-based emergencies, or other municipal events; are there ample public (separate from fire department use) facilities such as washrooms, parking areas etc. without conflict of normal fire station operations, adequate signage?)* Note:	✓	
• **What is the Fire Station water Supply?** ❖ Municipal Water Supply ❖ Cistern ➢ Capacity ____ ❖ Well(s) ➢ Capacity ____ Note: (Ref: Photo 453)	✓	
• **If Well or Cistern, does the Fire Station have a water treatment system and sanitation system (i.e., UV)? Is it serviced at least annually?** Note:		✓
• **If the water supply is not Municipal, is the water supply tested as per Nova Scotia Standards?** a) Every 6 months for bacteria (PASS/FAIL) b) Every 12 months for chemical and mineral contaminants (PASS/FAIL) c) Is there a log kept of all testing and maintenance on the non-municipal system(s)		✓

	Yes	No
d) Is the certificate for testing posted prominently? e) Is the certificate of testing readily available? f) If not tested, or is a FAIL as potable, is there prominent and permanent signs displayed at all water source points indicating it's not fit for consumption? Note:		
• **Does the fire station have emergency power supply during power outages and when used as a community reception center?** • *Desired Characteristics – Ideally there should be an on-site standby by generator with ample fuel supply that automatically starts on loss of power, alternative is to have an external connection to be used when a portable generator is brought to site.* • *The amperage required during loss of power should be sufficient to operate the necessities of a station i.e., radio communications, heat and sufficient lighting, water treatment and movement systems, life safety systems, mechanical systems, overhead apparatus bay doors, station lighting etc. Is the generator located inside the building in a separate room?* Note: Meets highlighted characteristics. (Ref: Photo 442)	✓	
• **Generator /Emergency power unit.** • Amperage of Generator Panel: _?_ • Wattage of Generator: 100 kw • Generator Powered by: a) Diesel: Tank size: 100 gal b) Gasoline: Tank size: _____ c) Propane: Tank size: _____ d) Natural Gas Note: (See Photo 444 smaller tank on left)	✓	
• **Does the fire station design allow for flexibility for the future?** • *(Desired Characteristics- designed for future changes in systems and methods, apparatus bay or other facility expansion)* Note: ✱Limited room for expansion (Ref: Property Lines Image)		✓✱
• **ROOMS and ROOM CONSIDERATIONS** • *(Could be combined, depending on priorities, philosophies)*	**Yes**	**No**

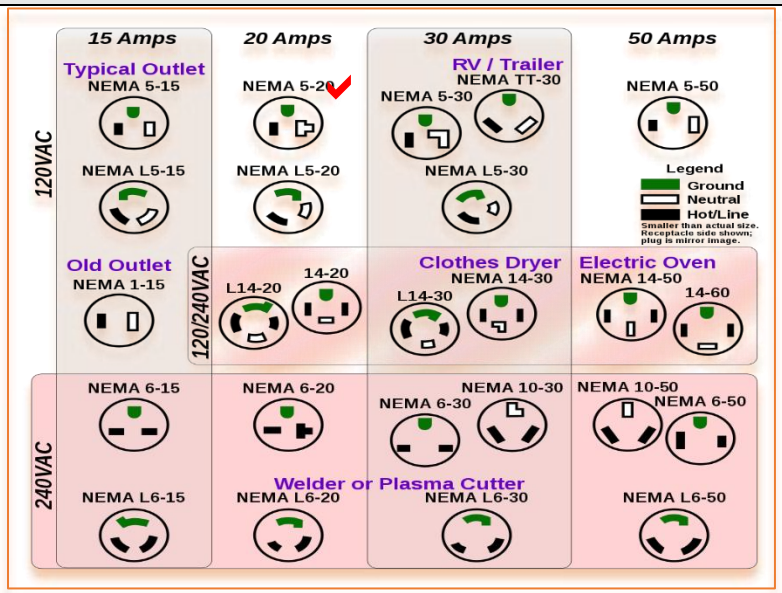
	Yes	No
• **Is there an office for the fire chief/senior chief officers?** • *(Desired Characteristics- Space for desk, chair, worktable, filing cabinet and two side chairs, minimum recommended space 12 ft X 16 ft)* Note: No dedicated office.		✓
• **Is there an office space for Training officers and Fire Safety Coordinator?** • *(Desired Characteristics- Space for desk, chair, worktable, computer, printer, filing cabinet(s) duplicating machine and storage area)* Note: No dedicated office.		✓
• **Does the fire station have sufficient storage room(s)?** • *(Desired Characteristics-Fire Safety, Training and administration space for audio visual equipment and supplies; training aids, and printed materials and public education materials, cleaning tools and supplies)* Note: Limited storage space off apparatus floor.		✓
• **Is there a meeting/lecture room?** • *(Desired Characteristics-Space large enough for Training purposes; give consideration to storage space for chairs, tables, lecterns, projector/storage room, will this room be used as a community reception center or an EOC?)* Note: Same area as training room. Meets desired characteristics.	✓	
• **Is there a Kitchen?** • *(Desired Characteristics-Space for cooking and food preparation; enough space should be provided so several people can work in the area at the same time; appliances sized to accommodate, department fund raisers, social events firefighter rehab/feeding, or community reception center needs if required; sufficient electrical service capacity; ventilation and exhaust systems meeting code.)* Note: Meets desired characteristics. (Ref: Photo 457 & 460)	✓	
• **Is there an Eating Area?** • *(Desired Characteristics-Space large enough to seat anticipated maximum number of volunteer fire fighters – meeting room could be used for this function)* Note: Same area as training room. Meets desired characteristics.	✓	

	Yes	No
• **Does the station contain a dispatch/Communications room?** • *(Desired Characteristics- Space for radio equipment, emergency telephones, computers, maps, bulletin boards etc.)* Note: Small window and shelf from office area. (Ref: Photo 448)		✓
• **Are there male & female or unisex washrooms?** • *(Desired Characteristics- Toilet and shower facilities should be available for the volunteer firefighters along with individual lockers separate from public facilities, if designated as a reception center, public washroom should be handicap accessible washrooms should have insulated walls for privacy.)* Note: ✱Male and female washrooms, no showers or lockers. (Ref: Photo 456)	✓✱	
• **Is there a provision for the decontamination showers?** • *(Desired Characteristics-should be located in a partially (3 sides) enclosed area, with a high flow over head spray and in floor large quick drain with retention tanks)* Note:		✓
APPARATUS BAY		
• **Is the apparatus area of appropriate area and size to allow safe parking of apparatus, and minor maintenance?** *(Reference bay size standard as a guide)* • **Length: 45.060 Width: 37.750 No. of UNITS: 3** a) Meets recommended Standards or Best Practices b) Does not meet recommended Standards or Best Practices✓ Note:		
• **Are there measures to reduce vehicle exhaust fumes?** • *(Desired Characteristics- there are a few options: (a) capture at point of source, (b) CO/H_2S monitors in apparatus areas that activate overhead scrubbers or (c) CO monitor triggered fume exhaust and fresh air replacement fan systems in roof/walls. Apparatus bays are sealed from other parts of the station?)* Note:		✓
OTHER ROOMS		

	Yes	No
• **Is there sufficient space for PPE and firefighting equipment?** • *(Desired Characteristics- A large room closed off but adjacent to the apparatus floor, that requires ventilation to the out of doors, another room to be vented and separated for SCBA filling and maintenance, one room for general maintenance and tool storage, an additional vented room for hazardous materials (oil, fuel etc.) and contaminated equipment, a room for PPE washer & dryer, an area off the apparatus floor for the storage of spare equipment i.e., hose, SCBA cylinders)* Note:		✓
• **Is there a SCBA compressor & Filling Station?** a) Is the air intake located in a safe and appropriate location? b) Is the fill station separated from the air compressor? c) Does the fill station incorporate a defrag chamber? Note:		✓
• **Does the fire station have a washer or dryer in a separate room for cleaning of contaminated PPE?** Note:		✓
• **Is there an exercise Room?** • *(Desired Characteristics-A small area should be considered for volunteers to exercise and stress reduction)* Note:		✓
LIFE SAFETY CONSIDERATIONS		
• **Is the fire station sprinklered throughout?** Note:		✓
• **Does the fire station have a fire detection system throughout?** • **Is the detection system remotely monitored?** Note:		✓
• **Does the fire station have emergency lighting where required?** Note: (See photo 439 & 455)	✓	

	Yes	No
• **Are illuminated exit signs in the direction of exit travel where required?** Note: (See photo 439 & 455)	✓	
• **Are Carbon Monoxide detectors/alarms installed where required?** Note:		✓
• **Potentially Contaminated Personal Protective Equipment.** • *Potentially contaminated personal protective equipment shall be stored in a dedicated, well-ventilated area or room.* • *Potentially contaminated PPE shall not be allowed in personal clothing lockers or in areas used for the following: Food preparation and cooking, Recreation, Personal hygiene, general business areas* Note:		✓
Contaminated Storage. • *Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal shall be separated physically from members in facilities or on vehicles.* • *Such areas or containers shall not be used for any other purpose.* Note:		✓
• **Is there proper indoor storage of flammables & combustibles?** • *(Desired Characteristics- Provided Listed and Prominently Labeled Flammable & Combustible storage containers & lockers)* Note:		✓
• **Are Emergency vehicle aprons & driveways separate from driveways for business travel?** • *(Desired Characteristics-Entrance and apron sized large enough to permit bi-directional flow of traffic. Adequate direction signage where appropriate?)* Note:		✓
• **Is there effective pathway lighting both inside and outside of the station?** • *(Desired Characteristics-All perimeter lighting to be down lighting and reduce light pollution and glare.)* Note: (Ref: Photo 526)	✓	

	Yes	No
• **Is there proper ventilation for all areas of the building?** Note: ✱Community hall area only, no mechanical ventilation for apparatus bay area.		✓✱
• **Does the fire station have a security key system or coded locks?** o For exterior access o Internally between public and fire station facilities? Note:		✓
• **Is the building vulnerable to break and enter; leading to theft of equipment or supplies?** o Ground floor windows in unsupervised areas (e.g. the rear, sides) o Poor quality doors or securing systems, especially at the rear, sides o Lack of security devices, e.g. for windows and doors at grade o Bushes and signs, etc., close to the building creating blind spots o Doors do not latch and lock automatically o Poor practices in securing the building o No security system, or monitoring system o Lack of security lighting, motion detection devices and lamps o Unsecure lobbies Note: Building was secured at time of visit. Windows are limited and set high. (Ref: Photo 525)		✓
• **Does the fire station have a video security system?** d) External e) Internal f) Can the security system be monitored remotely? Note:		✓
LIGHTING & POWER		
• **Electrical service for the fire Station from Public Mains (i.e., NSPC)?** o Voltage: 120/240, 208, 400, 600 o Single or 3-phase? o Rated Amperage of Fire Station Service: 60 / 100 / 200 / 400 / 800 o Is their solar or wind power on site? o If more than one power supply, note those and total Amps above Note:	✓	

	Yes	No
• **Are there 20 amp (or higher) electrical drops for apparatus shore-lines (for battery charges, accessories, air pumps, etc.)?** Note: Small trickle chargers from 110 and drops from air compressor for engine and tanker. 	✓	
HEATING & COOLING		
• **What is the main heating source for the Fire Station?** a) Fuel oil, ducted forced air **Efficiency**: low / high (condensing) b) Fuel oil, hot water radiators/unit heaters **Efficiency**: low / high (condensing) † c) Propane, forced air **Efficiency**: low / high (condensing) d) Propane, hot water radiators/unit heaters **Efficiency**: low / high (condensing) e) Electric, unit heaters and base board heaters f) Natural gas (NG), forced air **Efficiency**: low / high (condensing) g) NG, hot water radiators/unit heaters **Efficiency**: low / high (condensing) h) Ducted Heat Pump, i.e., forced air HVAC i) 2 High Efficiency "mini-split" un-ducted heat pumps †† j) Bio-Mass (wood, etc.) k) If a mixture, circle all that apply and note below Note: † In apparatus bay area. †† In community hall area.	✓ ✓	
SIZE and CONFIGURATION of PROPERTY		
• **Does the building set-back allow for sufficient visitor and responder parking?** Note:	✓	

	Yes	No
• **Does the property depth allow for a rear training area?** Note:	✓	
• **Are there enough parking spaces for training classes?** Note:	✓	
Additional NOTES:		
3 -10 x 10 overhead doors. **Training room approx. 42 ft. x 22 ft.** **Apparatus:** **1 engine,** **1 tanker,** **1 rescue** **(Ref: Photos 435, 436 & 437)** **PPE carried in members vehicles.** **SCBA filled from cascade system in rescue truck.**		

PHOTOS

Photo 527

Photo 526

Photo 495

Photo 447

Photo 448

Photo 454

Photo 455

Photo 456

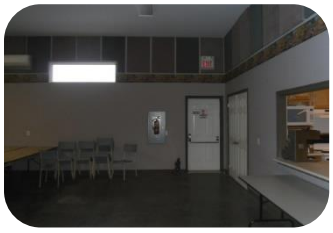


Photo 457

Photo 460

Photo 453

Photo 442

Photo 435

Photo 436

Photo 437

Truemanville
Property Lines

.

FIRE STATION ASSESSMENT

WALLACE

Address: **3760 Highway 307, Wallace, NS**

Ownership: **Cumberland County**

Date of construction: 2015

Date of last major renovation: N/A

Total Square feet: **122 ft. x 44 ft. = 5,368 sq. ft. Approx.**

	Yes	No
FIRE STATION PROPERTY – IDEAL DESIGN		
• **Is the fire station properly identified (*i.e., fire department name, address on exterior etc.?)*** Note: Exterior signage on building. (Ref: Photo 213)	✓	
• **Fire Stations constructed post 2005 are designated Post Disaster Readiness structures. Do these stations comply with Part 4 of the NBC?** Note: Building is of limited combustible construction, does not have a generator capable of suppling full power to building and it is not sprinklered.		✓
• **Does the fire Station comply with NFPA Firewise recommendations for set back?** • *(Desired characteristics- maintain 100 feet of defensible space around structures to increase chance of withstanding a wildfire, no burning debris traps that could ignite structure, e.g., wood decks, gutters, outbuildings near main structure, etc.).* Note: Building is > 100 ft. from tree line	✓	
FUNCTIONS and USE CONSIDERATIONS	Yes	No
• **Is the fire station designed for quick and safe response by personnel and apparatus?** • *(Desired characteristics – minimum internal travel distances; doors swinging in the right direction of travel to the apparatus floor without encroaching on walkways; minimum conflict in cross circulation; good proximity of all spaces to apparatus floor and other rooms, conflict between arriving firefighters and apparatus leaving)*	✓	

	Yes	No
Note: Good access to and within building meets desired characteristics.		
• **Does the fire station have an office area for department administration?** • *(Desired characteristics – ample space for desks, file cabinets, computers, private meetings with personnel, etc.)* Note: Office space is provided and meets desired characteristics. (Ref: Photo 240)	✓	
• **Is the fire station training area adequately designed?** • *(Desired characteristics – sufficient classroom space for FD personnel, space for training (inside and outside); storage space for files, audio-visual equipment provided, and other training aids)* Note: Training/Meeting Room 36.7 L X 21.3 Wide. Meets desired characteristics (Ref: Photo 242)	✓	
• **Is the fire station designed to include public use of the building?** • *(Desired Characteristics – to be used as a Public Reception Center during disasters or other community-based emergencies, or other municipal events; are there ample public (separate from fire department use) facilities such as washrooms, parking areas etc. without conflict of normal fire station operations, adequate signage?)* Note: Can be used as warning center.	✓	
• **What is the Fire Station water Supply?** ❖ Municipal Water Supply ❖ Cistern ➢ Capacity ____ ❖ Well(s) ➢ Capacity 20 gal storage tank Note: (Ref: Photo 247 & 249)	✓	
• **If Well or Cistern, does the Fire Station have a water treatment system and sanitation system (i.e., UV)? Is it serviced at least annually?** Note: Yes (Ref: Photos 246 & 249)	✓	
• **If the water supply is not Municipal, is the water supply tested as per Nova Scotia Standards?** a) Every 6 months for bacteria (PASS/FAIL)✓ b) Every 12 months for chemical and mineral contaminants (PASS/FAIL) c) Is there a log kept of all testing and maintenance on the non-municipal system(s) d) Is the certificate for testing posted prominently? e) Is the certificate of testing readily available?	✓	

	Yes	No
f) If not tested, or is a FAIL as potable, is there prominent and permanent signs displayed at all water source points indicating it's not fit for consumption? Note:	✓	
• **Does the fire station have emergency power supply during power outages and when used as a community reception center?** • *Desired Characteristics – Ideally there should be an on-site standby by generator with ample fuel supply that automatically starts on loss of power, alternative is to have an external connection to be used when a portable generator is brought to site.* • *The amperage required during loss of power should be sufficient to operate the necessities of a station i.e., radio communications, heat and sufficient lighting, water treatment and movement systems, life safety systems, mechanical systems, overhead apparatus bay doors, station lighting etc. Is the generator located inside the building in a separate room?* Note: Portable electric start generator 7500-W (Ref: Photos 251)	✓	
• **Generator /Emergency power unit.** • Amperage of Generator Panel: _____ • Wattage of Generator: • Generator Powered by: a) Diesel: Tank size: _____ b) Gasoline: Tank size: 5 gal. c) Propane: Tank size: _____ d) Natural Gas Note:	✓	
• **Does the fire station design allow for flexibility for the future?** • *(Desired Characteristics- designed for future changes in systems and methods, apparatus bay or other facility expansion)* Note: Building is designed to allow for an addition. There appears to be sufficient land around the building expansion. Ref: Photo "Property Lines")	✓	

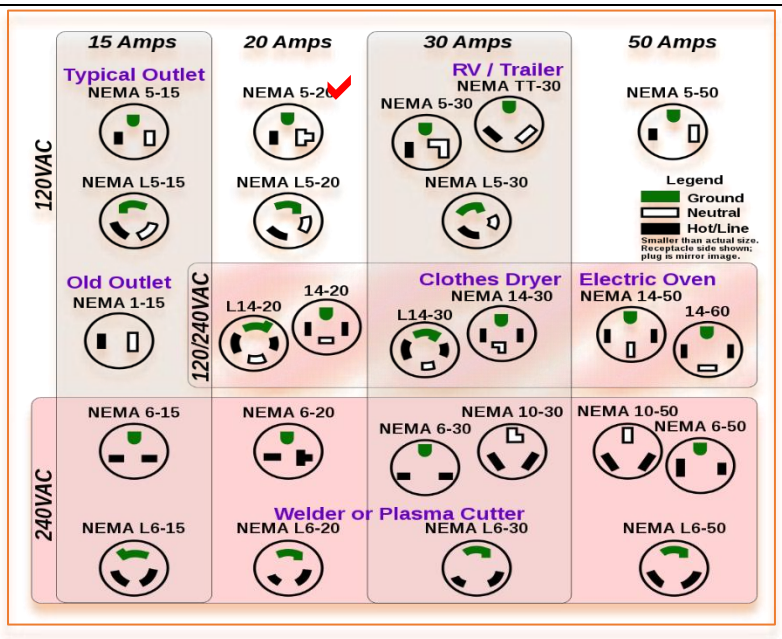
	Yes	No
• **ROOMS and ROOM CONSIDERATIONS** • *(Could be combined, depending on priorities, philosophies)*	**Yes**	**No**
• **Is there an office for the fire chief/senior chief officers?** • *(Desired Characteristics- Space for desk, chair, worktable, filing cabinet and two side chairs, minimum recommended space 12 ft X 16 ft)* Note: Secured unable to view.	✓	
• **Is there an office space for Training officers and Fire Safety Coordinator?** • *(Desired Characteristics- Space for desk, chair, worktable, computer, printer, filing cabinet(s) duplicating machine and storage area)* Note:		✓
• **Does the fire station have sufficient storage room(s)?** • *(Desired Characteristics-Fire Safety, Training and administration space for audio visual equipment and supplies; training aids, and printed materials and public education materials, cleaning tools and supplies)* Note: Storage rooms of apparatus floor and kitchen	✓	
• **Is there a meeting/lecture room?** • *(Desired Characteristics-Space large enough for Training purposes; give consideration to storage space for chairs, tables, lecterns, projector/storage room, will this room be used as a community reception center or an EOC?)* Note: Training/Meeting Room 36.7 L X 21.3 Wide. Meets desired characteristics. (Ref: Photo 242)	✓	
• **Is there a Kitchen?** • *(Desired Characteristics-Space for cooking and food preparation; enough space should be provided so several people can work in the area at the same time; appliances sized to accommodate, department fund raisers, social events firefighter rehab/feeding, or community reception center needs if required; sufficient electrical service capacity; ventilation and exhaust systems meeting code.)* Note: Meets desired characteristics. (Ref: Photo 243)	✓	

	Yes	No
• **Is there an Eating Area?** • *(Desired Characteristics-Space large enough to seat anticipated maximum number of volunteer fire fighters – meeting room could be used for this function)* Note: Training/Meeting room is used as eating area when necessary. Meets desired characteristics.	✓	
• **Does the station contain a dispatch/Communications room?** • *(Desired Characteristics- Space for radio equipment, emergency telephones, computers, maps, bulletin boards etc.)* Note: Administration office also serves dispatch/Communications room has window to observe apparatus floor. (Ref: Photo 240)	✓	
• **Are there male & female or unisex washrooms?** • *(Desired Characteristics- Toilet and shower facilities should be available for the volunteer firefighters along with individual lockers separate from public facilities, if designated as a reception center, public washroom should be handicap accessible washrooms should have insulated walls for privacy.)* Note: ✱Male & female washrooms, ,no showers or lockers	✓✱	
• **Is there a provision for the decontamination showers?** • *(Desired Characteristics-should be located in a partially (3 sides) enclosed area, with a high flow over head spray and in floor large quick drain with retention tanks)* Note:		✓
APPARATUS BAY		
• **Is the apparatus area of appropriate area and size to allow safe parking of apparatus, and minor maintenance?** *(Reference bay size standard as a guide)* • **Length: 56.1 Width: 65 No. of UNITS: 7- 1 engine, 2 pumper tankers, 1 rescue, 1 utility, 1 trailer c/w ATV and 1 trailer C/w boat. (Trailers counted as utility units.)** a) Meets recommended Standards or Best Practices **b)** Does not meet recommended Standards or Best Practices✓		

	Yes	No
• **Are there measures to reduce vehicle exhaust fumes?** • *(Desired Characteristics- there are a few options: (a) capture at point of source, (b) CO/H_2S monitors in apparatus areas that activate overhead scrubbers or (c) CO monitor triggered fume exhaust and fresh air replacement fan systems in roof/walls. Apparatus bays are sealed from other parts of the station?)* Note: • ✱ Co monitored exhausted fan from apparatus floor (See photos 225, 225 & 236)	✓✱	
OTHER ROOMS		
• **Is there sufficient space for PPE and firefighting equipment?** • *(Desired Characteristics- A large room closed off but adjacent to the apparatus floor, that requires ventilation to the out of doors, another room to be vented and separated for SCBA filling and maintenance, one room for general maintenance and tool storage, an additional vented room for hazardous materials (oil, fuel etc.) and contaminated equipment, a room for PPE washer & dryer, an area off the apparatus floor for the storage of spare equipment i.e., hose, SCBA cylinders)* Note: ✱ PPE carried on rescue truck, SCBA service room, PPE dryer and general storage all in one room. (Ref: Photo 229 to 232)		✓✱
• **Is there a SCBA compressor & Filling Station?** a) Is the air intake located in a safe and appropriate location✓ b) Is the fill station separated from the air compressor✓ c) Does the fill station incorporate a defrag chamber✓ Note: (Ref: Photo 229 & 252	✓	
• **Does the fire station have a washer or dryer in a separate room for cleaning of contaminated PPE?**		✓
• **Is there an exercise Room?** • *(Desired Characteristics-A small area should be considered for volunteers to exercise and stress reduction)* Note:		✓
LIFE SAFETY CONSIDERATIONS		

	Yes	No
• **Is the fire station sprinklered throughout?** Note:		✓
• **Does the fire station have a fire detection system throughout?** • **Is the detection system remotely monitored?** Note:		✓
• **Does the fire station have emergency lighting where required?** Note:	✓	
• **Are illuminated exit signs in the direction of exit travel where required?** Note:		✓
• **Are Carbon Monoxide detectors/alarms installed where required?** Note:	✓	
• **Potentially Contaminated Personal Protective Equipment.** • *Potentially contaminated personal protective equipment shall be stored in a dedicated, well-ventilated area or room.* • *Potentially contaminated PPE shall not be allowed in personal clothing lockers or in areas used for the following: Food preparation and cooking, Recreation, Personal hygiene, general business areas* Note:		✓
Contaminated Storage. • *Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal shall be separated physically from members in facilities or on vehicles.* • *Such areas or containers shall not be used for any other purpose.* Note:		✓
• **Is there proper indoor storage of flammables & combustibles?** • *(Desired Characteristics- Provided Listed and Prominently Labeled Flammable & Combustible storage containers & lockers)* Note:		✓

	Yes	No
• **Are Emergency vehicle aprons & driveways separate from driveways for business travel?** • *(Desired Characteristics-Entrance and apron sized large enough to permit bi-directional flow of traffic. Adequate direction signage where appropriate?)* Note:		✓
• **Is there effective pathway lighting both inside and outside of the station?** • *(Desired Characteristics-All perimeter lighting to be down lighting and reduce light pollution and glare.)* Note:	✓	
• **Is there proper ventilation for all areas of the building?** Note:	✓	
• **Does the fire station have a security key system or coded locks?** o For exterior access o Internally between public and fire station facilities? Note:	✓	
• **Is the building vulnerable to break and enter; leading to theft of equipment or supplies?** o Ground floor windows in unsupervised areas (e.g. the rear, sides) o Poor quality doors or securing systems, especially at the rear, sides o Lack of security devices, e.g. for windows and doors at grade o Bushes and signs, etc., close to the building creating blind spots o Doors do not latch and lock automatically o Poor practices in securing the building o No security system, or monitoring system o Lack of security lighting, motion detection devices and lamps o Unsecure lobbies Note: Building was secured at time of visit.		✓
• **Does the fire station have a video security system?** a) External b) Internal c) Can the security system be monitored remotely? Note:		✓

	Yes	No
LIGHTING & POWER		
• **Electrical service for the fire Station from Public Mains (i.e., NSPC)?** o Voltage: 120/240, 208, 400, 600 o Single or 3-phase? o Rated Amperage of Fire Station Service: 60 / 100 / 200 / 400 / 800 o Is their solar or wind power on site? o If more than one power supply, note those and total Amps above Note:	✓	
• **Are there 20 amp (or higher) electrical drops for apparatus shore-lines (for battery charges, accessories, air pumps, etc.)?** Note: 	✓	
HEATING & COOLING		
• **What is the main heating source for the Fire Station?** a) Fuel oil, ducted forced air **Efficiency**: low / high (condensing) b) Fuel oil, hot water radiators/unit heaters **Efficiency**: low / high (condensing) c) Propane, forced air **Efficiency**: low / high (condensing) d) Propane, hot water radiators/unit heaters **Efficiency**: low / high (condensing) e) Electric, unit heaters and base board heaters f) Natural gas (NG), forced air **Efficiency**: low / high (condensing) g) NG, hot water radiators/unit heaters **Efficiency**: low / high (condensing) h) Ducted Heat Pump, i.e., forced air HVAC i) High Efficiency “mini-split” un-ducted heat pumps j) Bio-Mass (wood, etc.) k) If a mixture, circle all that apply and note below		

	Yes	No
Note:	✓ ✓	
SIZE and CONFIGURATION of PROPERTY		
• **Does the building set-back allow for sufficient visitor and responder parking?** Note:	✓	
• **Does the property depth allow for a rear training area?** Note:	✓	
• **Are there enough parking spaces for training classes?** Note:	✓	
Additional NOTES:		
Bay Doors 12 X 12 Bay 1: 1 Rescue & 1 Utility Unit, Bay has rear door (12 x12) bay 54 L X 20 W Bay 2: 1 Engine 1 utility trailer /Rescue ATV, Bay 54 L NOTE Width for remaining bays 61.3 W. Bay 3: Length 33.2 Boat in back of Engine in calculations. Treated boat as a utility unit.		

	Yes	No
Bay 4: Engine 38 Ft Long Electrical Ceiling Drops Combined SCBA Compressor & Workshop – 30.8 L by 12 ft W (NOTE: SCBA should be separated from Workshop area. Air Quality Test for SCBA compressor – Expires March 2022. Training/Meeting Room 36.7 L X 21.3 Wide Office/Radio Room 10.38 X 11.34 Well with Water treatment system		

PHOTOS

Photo 213

Photo 229

Photo 232

Photo 240

Photo 242

Photo 243

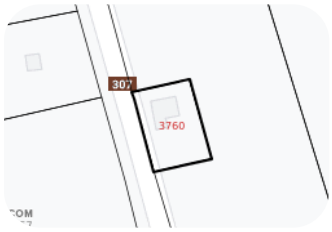
Photo 246

Photo 247

Photo 249

Photo 251

Photo 252



Wallace
Property Lines

FIRE STATION ASSESSMENT

WENTWORTH

Address: **13736 Hwy 4, Wentworth, NS**

Ownership:

Date of construction: 1974

Date of last major renovation: 2006 Additional Bay Added

Total Square feet: 52.7ft. x 51.4 ft. = 2,709 sq. ft. Approx.

	Yes	No
FIRE STATION PROPERTY – IDEAL DESIGN		
• **Is the fire station properly identified (*i.e., fire department name, address on exterior etc.?)*** Note: Hwy. fire station warning signs & exterior signage on building. (Ref: Photo 185)	✓	
• **Fire Stations constructed post 2005 are designated Post Disaster Readiness structures. Do these stations comply with Part 4 of the NBC?** Note: Building is of combustible construction, does not have a generator capable of suppling full power to building and it is not sprinklered.		✓
• **Does the fire Station comply with NFPA Firewise recommendations for set back?** • *(Desired characteristics- maintain 100 feet of defensible space around structures to increase chance of withstanding a wildfire, no burning debris traps that could ignite structure, e.g., wood decks, gutters, outbuildings near main structure, etc.).* Note:	✓	
FUNCTIONS and USE CONSIDERATIONS	Yes	No
• **Is the fire station designed for quick and safe response by personnel and apparatus?** • *(Desired characteristics – minimum internal travel distances; doors swinging in the right direction of travel to the apparatus floor without encroaching on walkways; minimum conflict in cross circulation; good proximity of all spaces to apparatus floor and other rooms, conflict between arriving firefighters and apparatus leaving)* Note:		✓

	Yes	No
• **Does the fire station have an office area for department administration?** • *(Desired characteristics – ample space for desks, file cabinets, computers, private meetings with personnel, etc.)* Note: Small office dispatch room off meeting room/kitchen.		✓
• **Is the fire station training area adequately designed?** • *(Desired characteristics – sufficient classroom space for FD personnel, space for training (inside and outside); storage space for files, audio-visual equipment provided, and other training aids)* Note: There is a small meeting/training room and room outside the station for training.	✓	
• **Is the fire station designed to include public use of the building?** • *(Desired Characteristics – to be used as a Public Reception Center during disasters or other community-based emergencies, or other municipal events; are there ample public (separate from fire department use) facilities such as washrooms, parking areas etc. without conflict of normal fire station operations, adequate signage?)* Note: *Could be used as warming Centre but would interfere with Department operations.	✓*	
• **What is the Fire Station water Supply?** ❖ Municipal Water Supply ❖ Cistern ➢ Capacity ____ ❖ Well(s) ➢ Capacity ____ Note:	✓	
• **If Well or Cistern, does the Fire Station have a water treatment system and sanitation system (i.e., UV)? Is it serviced at least annually?** Note:		✓
• **If the water supply is not Municipal, is the water supply tested as per Nova Scotia Standards?** a) Every 6 months for bacteria (PASS/FAIL) b) Every 12 months for chemical and mineral contaminants (PASS/FAIL) c) Is there a log kept of all testing and maintenance on the non-municipal system(s)		✓

	Yes	No
d) Is the certificate for testing posted prominently? e) Is the certificate of testing readily available? f) If not tested, or is a FAIL as potable, is there prominent and permanent signs displayed at all water source points indicating it's not fit for consumption? Note:		
• **Does the fire station have emergency power supply during power outages and when used as a community reception center?** • *Desired Characteristics – Ideally there should be an on-site standby by generator with ample fuel supply that automatically starts on loss of power, alternative is to have an external connection to be used when a portable generator is brought to site.* • *The amperage required during loss of power should be sufficient to operate the necessities of a station i.e., radio communications, heat and sufficient lighting, water treatment and movement systems, life safety systems, mechanical systems, overhead apparatus bay doors, station lighting etc. Is the generator located inside the building in a separate room?* Note: Gasoline generator onsite may not supply all electrical requirements	✓	
• **Generator /Emergency power unit.** • Amperage of Generator Panel: _____ • Wattage of Generator: 12,000 W • Generator Powered by: a) Diesel: Tank size: _____ b) Gasoline: Tank size: 5 gal c) Propane: Tank size: _____ d) Natural Gas Note:	✓	
• **Does the fire station design allow for flexibility for the future?** • *(Desired Characteristics- designed for future changes in systems and methods, apparatus bay or other facility expansion)* Note:		✓
• **ROOMS and ROOM CONSIDERATIONS** • *(Could be combined, depending on priorities, philosophies)*	**Yes**	**No**
• **Is there an office for the fire chief/senior chief officers?**		✓

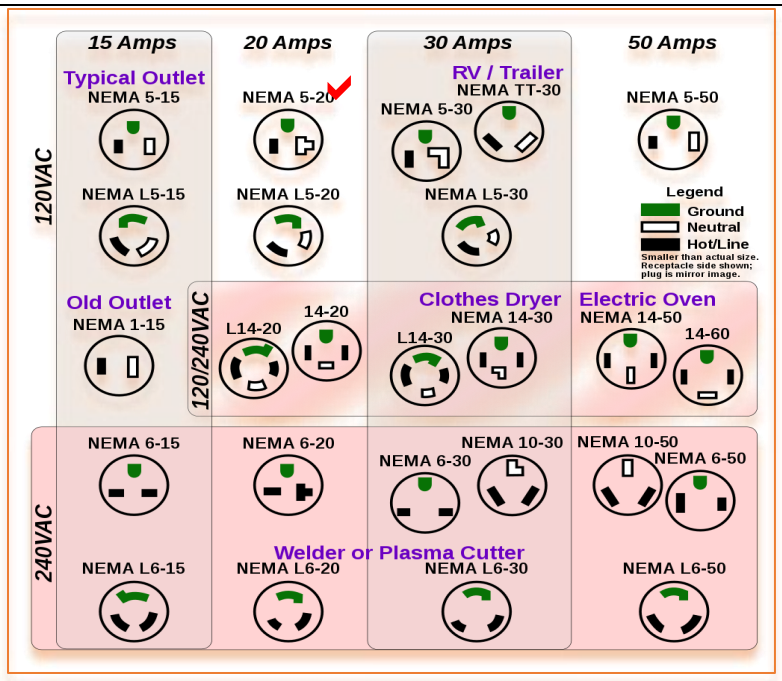
	Yes	No
• *(Desired Characteristics- Space for desk, chair, worktable, filing cabinet and two side chairs, minimum recommended space 12 ft X 16 ft)* Note:		
• **Is there an office space for Training officers and Fire Safety Coordinator?** • *(Desired Characteristics- Space for desk, chair, worktable, computer, printer, filing cabinet(s) duplicating machine and storage area)* Note:		✓
• **Does the fire station have sufficient storage room(s)?** • *(Desired Characteristics-Fire Safety, Training and administration space for audio visual equipment and supplies; training aids, and printed materials and public education materials, cleaning tools and supplies)* Note:		✓
• **Is there a meeting/lecture room?** • *(Desired Characteristics-Space large enough for Training purposes; give consideration to storage space for chairs, tables, lecterns, projector/storage room, will this room be used as a community reception center or an EOC?)* Note:✱Training Area/meeting room & kitchen 18.9 X 32.2 =606 sq. ft. **(Ref: Photo 209)**	✓✱	
• **Is there a Kitchen?** • *(Desired Characteristics-Space for cooking and food preparation; enough space should be provided so several people can work in the area at the same time; appliances sized to accommodate, department fund raisers, social events firefighter rehab/feeding, or community reception center needs if required; sufficient electrical service capacity; ventilation and exhaust systems meeting code.)* Note:✱ Small area in combined meeting /training room/ kitchen.	✓✱	
• **Is there an Eating Area?** • *(Desired Characteristics-Space large enough to seat anticipated maximum number of volunteer fire fighters – meeting room could be used for this function)* Note:✱ As above small area in combined meeting /training room/ kitchen.	✓✱	

	Yes	No
• **Does the station contain a dispatch/Communications room?** • *(Desired Characteristics- Space for radio equipment, emergency telephones, computers, maps, bulletin boards etc.)* Note: Combined office and dispatch room very small (Ref: Photo 210)	✓	
• **Are there male & female or unisex washrooms?** • *(Desired Characteristics- Toilet and shower facilities should be available for the volunteer firefighters along with individual lockers separate from public facilities, if designated as a reception center, public washroom should be handicap accessible washrooms should have insulated walls for privacy.)* Note: ✱ One washroom with shower no lockers.	✓✱	
• **Is there a provision for the decontamination showers?** • *(Desired Characteristics-should be located in a partially (3 sides) enclosed area, with a high flow over head spray and in floor large quick drain with retention tanks)* Note:		✓
APPARATUS BAY		
• **Is the apparatus area of appropriate area and size to allow safe parking of apparatus, and minor maintenance?** *(Reference bay size standard as a guide)* • **Length: 56.1 ft. Width: 65 Ft. No. of UNITS: 4 (Ref: Additional Notes)** a) Meets recommended Standards or Best Practices **b)** Does not meet recommended Standards or Best Practices✓ **Note: If front engine fails to start, there is on means to be able to get 2nd engine out.)** **(Ref: Photos 199, 201, 202)**		
• **Are there measures to reduce vehicle exhaust fumes?** • *(Desired Characteristics- there are a few options: (a) capture at point of source, (b) CO/H_2S monitors in apparatus areas that activate overhead scrubbers or (c) CO monitor triggered fume exhaust and fresh air replacement fan systems in roof/walls. Apparatus bays are sealed from other parts of the station?)* Note:		✓

	Yes	No
OTHER ROOMS		
• **Is there sufficient space for PPE and firefighting equipment?** • *(Desired Characteristics- A large room closed off but adjacent to the apparatus floor, that requires ventilation to the out of doors, another room to be vented and separated for SCBA filling and maintenance, one room for general maintenance and tool storage, an additional vented room for hazardous materials (oil, fuel etc.) and contaminated equipment, a room for PPE washer & dryer, an area off the apparatus floor for the storage of spare equipment i.e., hose, SCBA cylinders)* Note: ✱PPE store on apparatus floor & in apparatus (Ref: Photo 203)		✓✱
• **Is there a SCBA compressor & Filling Station?** a) Is the air intake located in a safe and appropriate location? b) Is the fill station separated from the air compressor? c) Does the fill station incorporate a defrag chamber? Note: ✱Small portable compressor & homemade defrag chamber (Ref: Photos 207 & 208)	✓✱	
• **Does the fire station have a washer or dryer in a separate room for cleaning of contaminated PPE?** Note:		✓
• **Is there an exercise Room?** • *(Desired Characteristics-A small area should be considered for volunteers to exercise and stress reduction)* Note:		✓
LIFE SAFETY CONSIDERATIONS		
• **Is the fire station sprinklered throughout?** Note:		✓
• **Does the fire station have a fire detection system throughout?** • **Is the detection system remotely monitored?** Note:		✓

	Yes	No
• **Does the fire station have emergency lighting where required?** Note:		✓
• **Are illuminated exit signs in the direction of exit travel where required?** Note:		✓
• **Are Carbon Monoxide detectors/alarms installed where required?** Note:		✓
• **Potentially Contaminated Personal Protective Equipment.** • *Potentially contaminated personal protective equipment shall be stored in a dedicated, well-ventilated area or room.* • *Potentially contaminated PPE shall not be allowed in personal clothing lockers or in areas used for the following: Food preparation and cooking, Recreation, Personal hygiene, general business areas* Note:		✓
Contaminated Storage. • *Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal shall be separated physically from members in facilities or on vehicles.* • *Such areas or containers shall not be used for any other purpose.* Note:		✓
• **Is there proper indoor storage of flammables & combustibles?** • *(Desired Characteristics- Provided Listed and Prominently Labeled Flammable & Combustible storage containers & lockers)* Note:		✓
• **Are Emergency vehicle aprons & driveways separate from driveways for business travel?** • *(Desired Characteristics-Entrance and apron sized large enough to permit bi-directional flow of traffic. Adequate direction signage where appropriate?)* Note:		✓
• **Is there effective pathway lighting both inside and outside of the station?**		✓

	Yes	No
• *(Desired Characteristics-All perimeter lighting to be down lighting and reduce light pollution and glare.)* Note:		
• **Is there proper ventilation for all areas of the building?** Note:		✓
• **Does the fire station have a security key system or coded locks?** o For exterior access o Internally between public and fire station facilities? Note: Building was secured at time of visit	✓	
• **Is the building vulnerable to break and enter; leading to theft of equipment or supplies?** o Ground floor windows in unsupervised areas (e.g. the rear, sides) o Poor quality doors or securing systems, especially at the rear, sides o Lack of security devices, e.g. for windows and doors at grade o Bushes and signs, etc., close to the building creating blind spots o Doors do not latch and lock automatically o Poor practices in securing the building o No security system, or monitoring system o Lack of security lighting, motion detection devices and lamps o Unsecure lobbies Note:	✓ ✓ ✓ ✓ ✓	
• **Does the fire station have a video security system?** a) External b) Internal c) Can the security system be monitored remotely? Note:		✓
LIGHTING & POWER		
• **Electrical service for the fire Station from Public Mains (i.e., NSPC)?** o Voltage: 120/240, 208, 400, 600 o Single or 3-phase? o Rated Amperage of Fire Station Service: 60 / 100 / 200 / 400 / 800 o Is their solar or wind power on site? o If more than one power supply, note those and total Amps above	✓	

	Yes	No
Note:		
• **Are there 20 amp (or higher) electrical drops for apparatus shore-lines (for battery charges, accessories, air pumps, etc.)?** Note: ✱ Engine & pumper tanker have 20 amp drops Mini pump & rescue have trickle chargers.  	✓✱	
HEATING & COOLING		
SIZE and CONFIGURATION of PROPERTY		
• **Does the building set-back allow for sufficient visitor and responder parking?** Note:	✓	
• **Does the property depth allow for a rear training area?** Note:	✓	
• **Are there enough parking spaces for training classes?** Note:	✓	
Additional NOTES:		

	Yes	No
Main Building Outside dimensions: 52.7 OAW w by 51.4 OAL Bay Doors 12 by 10 **Apparatus Bay 1** 1 Mini pumper, 1 Rescue Bay area 32 ft W – X 28.2 L (902 sq ft) **Apparatus Bay 2 (Add On):** 2 Engines parked nose-to-tail – NOTE: If front engine fails to start, there is on means to be able to get 2nd engine out.) (Ref: Photos, 199, 201, 202) Add On Bay for the two engines = 53.9 OAL by 15.75 OAW = Total sq Ft: 846.23 (Space required for the 2 engines = 2000 square feet. Total bay area = 1748 sq. feet Training Area/meeting room 18.9 X 32.2 =606 sq ft.		

PHOTOS

Photo185

Photo 199

Photo 199

Photo 202

Photo 203

Photo 207

Photo 208

Photo 209

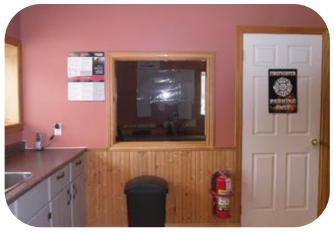


Photo 210

Wentworth
Property Lines

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FIRE STATION ASSESSMENT

WESTCHESTER

Address: **123 Valley Rd, Westchester, NS**

Ownership: **Westchester Fire Department.**

Date of construction: 1977

Date of last major renovation: Addition was added in 2005 (POWER was off at time of Visit)

Total Square feet: 35.6 l X 57.05 = 2,031 sq. ft. approx.

	Yes	No
FIRE STATION PROPERTY – IDEAL DESIGN		
• **Is the fire station properly identified (*i.e., fire department name, address on exterior etc.?)*** Note: Hwy. fire station warning signs & exterior signage on building.	✓	
• **Fire Stations constructed post 2005 are designated Post Disaster Readiness structures. Do these stations comply with Part 4 of the NBC?** Note: Building is of combustible construction, does not have a generator capable of suppling full power to building and it is not sprinklered.		✓
• **Does the fire Station comply with NFPA Firewise recommendations for set back?** • *(Desired characteristics- maintain 100 feet of defensible space around structures to increase chance of withstanding a wildfire, no burning debris traps that could ignite structure, e.g., wood decks, gutters, outbuildings near main structure, etc.).* Note: Building does not meet 100 ft. requirement.		✓
FUNCTIONS and USE CONSIDERATIONS	Yes	No
• **Is the fire station designed for quick and safe response by personnel and apparatus?** • *(Desired characteristics – minimum internal travel distances; doors swinging in the right direction of travel to the apparatus floor without encroaching on walkways; minimum conflict in cross circulation; good proximity of all spaces to apparatus floor and other rooms, conflict between arriving firefighters and apparatus leaving)*	✓	

	Yes	No
Note: Meets minimum requirements.		
• **Is the fire station training area adequately designed?** • *(Desired characteristics – sufficient classroom space for FD personnel, space for training (inside and outside); storage space for files, audio-visual equipment provided, and other training aids)* Note: ✱The fire station and community hall are not interconnected and secured separately, we were unable to access the hall at time of visit. A previous visit indicated that community hall would meet minimum design characteristics for inside training. There is sufficient area around the building for exterior training.	✓✱	
• **Is the fire station designed to include public use of the building?** • *(Desired Characteristics – to be used as a Public Reception Center during disasters or other community-based emergencies, or other municipal events; are there ample public (separate from fire department use) facilities such as washrooms, parking areas etc. without conflict of normal fire station operations, adequate signage?)* Note: Upper level of Fire Hall, only accessible from the upper level could be used by the public)	✓	
• **What is the Fire Station water Supply?** ❖ Municipal Water Supply ❖ Cistern ➢ Capacity ____ ❖ Well(s) ➢ Capacity ____ Note: (Ref: Photo 169)	✓	
• **If Well or Cistern, does the Fire Station have a water treatment system and sanitation system (i.e., UV)? Is it serviced at least annually?** Note:		✓
• **If the water supply is not Municipal, is the water supply tested as per Nova Scotia Standards?** a) Every 6 months for bacteria (PASS/FAIL) b) Every 12 months for chemical and mineral contaminants (PASS/FAIL) c) Is there a log kept of all testing and maintenance on the non-municipal system(s) d) Is the certificate for testing posted prominently? e) Is the certificate of testing readily available?		✓

	Yes	No
f) If not tested, or is a FAIL as potable, is there prominent and permanent signs displayed at all water source points indicating it's not fit for consumption? Note:		
• **Does the fire station have emergency power supply during power outages and when used as a community reception center?** • *Desired Characteristics – Ideally there should be an on-site standby by generator with ample fuel supply that automatically starts on loss of power, alternative is to have an external connection to be used when a portable generator is brought to site.* • *The amperage required during loss of power should be sufficient to operate the necessities of a station i.e., radio communications, heat and sufficient lighting, water treatment and movement systems, life safety systems, mechanical systems, overhead apparatus bay doors, station lighting etc. Is the generator located inside the building in a separate room?* Note: Portable generator on site 7200 W (Ref: Photos 174 & 176)	✓	
• **Generator /Emergency power unit.** • Amperage of Generator Panel: _____ • Wattage of Generator: • Generator Powered by: a) Diesel: Tank size: _____ b) Gasoline: Tank size: 5 gal c) Propane: Tank size: _____ d) Natural Gas Note:		
• **Does the fire station design allow for flexibility for the future?** • *(Desired Characteristics- designed for future changes in systems and methods, apparatus bay or other facility expansion)* Note: Building is set into the side of a hill with an access road to the rear entrance to the community hall make expansion of the building difficult. (Ref: Property Lines Photo)		✓
• ROOMS and ROOM CONSIDERATIONS • *(Could be combined, depending on priorities, philosophies)*	**Yes**	**No**
• **Is there an office for the fire chief/senior chief officers?**		✓

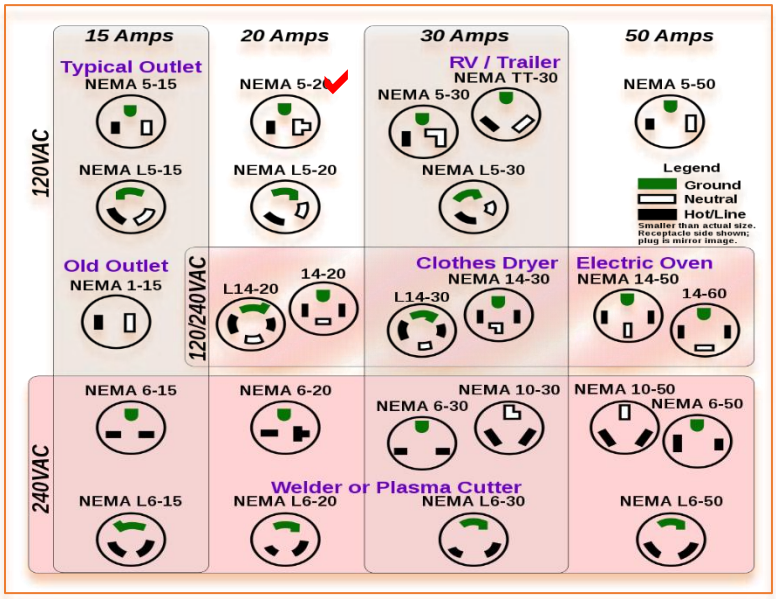
	Yes	No
• *(Desired Characteristics- Space for desk, chair, worktable, filing cabinet and two side chairs, minimum recommended space 12 ft X 16 ft)*		
• **Is there an office space for Training officers and Fire Safety Coordinator?** • *(Desired Characteristics- Space for desk, chair, worktable, computer, printer, filing cabinet(s) duplicating machine and storage area)*		✓
• **Does the fire station have sufficient storage room(s)?** • *(Desired Characteristics-Fire Safety, Training and administration space for audio visual equipment and supplies; training aids, and printed materials and public education materials, cleaning tools and supplies)* Note:		✓
• **Is there a meeting/lecture room?** • *(Desired Characteristics-Space large enough for Training purposes; give consideration to storage space for chairs, tables, lecterns, projector/storage room, will this room be used as a community reception center or an EOC?)* Note: 2nd floor community hall (not accessible from fire station on the 1st. floor)	✓	
• **Is there a Kitchen?** • *(Desired Characteristics-Space for cooking and food preparation; enough space should be provided so several people can work in the area at the same time; appliances sized to accommodate, department fund raisers, social events firefighter rehab/feeding, or community reception center needs if required; sufficient electrical service capacity; ventilation and exhaust systems meeting code.)* Note: 2nd floor community hall (not accessible from fire station on the 1st. floor)	✓	
• **Is there an Eating Area?** • *(Desired Characteristics-Space large enough to seat anticipated maximum number of volunteer fire fighters – meeting room could be used for this function)* Note: 2nd floor community hall (not accessible from fire station on the 1st. floor)	✓	
• **Does the station contain a dispatch/Communications room?** • *(Desired Characteristics- Space for radio equipment, emergency telephones, computers, maps, bulletin boards etc.)*		✓*

	Yes	No
Note: ✱There is no dedicated room, there is an area in a cabinet for the radio equipment & phones. (Ref: Photo 151)		
• **Are there male & female or unisex washrooms?** • *(Desired Characteristics- Toilet and shower facilities should be available for the volunteer firefighters along with individual lockers separate from public facilities, if designated as a reception center, public washroom should be handicap accessible washrooms should have insulated walls for privacy.)* Note: Single washroom off apparatus floor, no shower or locker	✓✱	
• **Is there a provision for the decontamination showers?** • *(Desired Characteristics-should be located in a partially (3 sides) enclosed area, with a high flow over head spray and in floor large quick drain with retention tanks)* Note:		✓
APPARATUS BAY		
• **Is the apparatus area of appropriate area and size to allow safe parking of apparatus, and minor maintenance?** *(Reference bay size standard as a guide)* • **Length: 32.31 Width: 57.05 No. of UNITS: 3** a) Meets recommended Standards or Best Practices b) Does not meet recommended Standards or Best Practices✓ Note:		
• **Are there measures to reduce vehicle exhaust fumes?** • *(Desired Characteristics- there are a few options: (a) capture at point of source, (b) CO/H_2S monitors in apparatus areas that activate overhead scrubbers or (c) CO monitor triggered fume exhaust and fresh air replacement fan systems in roof/walls. Apparatus bays are sealed from other parts of the station?)* Note:		✓
OTHER ROOMS		

	Yes	No
• **Is there sufficient space for PPE and firefighting equipment?** • *(Desired Characteristics- A large room closed off but adjacent to the apparatus floor, that requires ventilation to the out of doors, another room to be vented and separated for SCBA filling and maintenance, one room for general maintenance and tool storage, an additional vented room for hazardous materials (oil, fuel etc.) and contaminated equipment, a room for PPE washer & dryer, an area off the apparatus floor for the storage of spare equipment i.e., hose, SCBA cylinders)* Note: PPE carried on Rescue Truck.		✓
• **Is there a SCBA compressor & Filling Station?** a) Is the air intake located in a safe and appropriate location✓ b) Is the fill station separated from the air compressor✓ c) Does the fill station incorporate a defrag chamber✓ Note: Compressor not in Separate room, installed on apparatus floor. * (Ref: Photos 158,159 & 160)	✓*	
• **Does the fire station have a washer or dryer in a separate room for cleaning of contaminated PPE?** Note:		✓
• **Is there an exercise Room?** • *(Desired Characteristics-A small area should be considered for volunteers to exercise and stress reduction)* Note:		✓
LIFE SAFETY CONSIDERATIONS		
• **Is the fire station sprinklered throughout?** Note:		✓
• **Does the fire station have a fire detection system throughout?** • **Is the detection system remotely monitored?** Note:		✓

	Yes	No
• **Does the fire station have emergency lighting where required?** Note: (Ref: Photo 181)	✓	
• **Are illuminated exit signs in the direction of exit travel where required?** Note: ✱ None in fire station area of building		✓✱
• **Are Carbon Monoxide detectors/alarms installed where required?** Note:		✓
• **Potentially Contaminated Personal Protective Equipment.** • *Potentially contaminated personal protective equipment shall be stored in a dedicated, well-ventilated area or room.* • *Potentially contaminated PPE shall not be allowed in personal clothing lockers or in areas used for the following: Food preparation and cooking, Recreation, Personal hygiene, general business areas* Note:		✓
Contaminated Storage. • *Areas or containers for the temporary storage of contaminated medical supplies or equipment prior to disinfection or disposal shall be separated physically from members in facilities or on vehicles.* • *Such areas or containers shall not be used for any other purpose.* Note:		✓
• **Is there proper indoor storage of flammables & combustibles?** • *(Desired Characteristics- Provided Listed and Prominently Labeled Flammable & Combustible storage containers & lockers)* Note:		✓
• **Are Emergency vehicle aprons & driveways separate from driveways for business travel?** • *(Desired Characteristics-Entrance and apron sized large enough to permit bi-directional flow of traffic. Adequate direction signage where appropriate?)* Note:		✓
• **Is there effective pathway lighting both inside and outside of the station?**		✓

	Yes	No
• *(Desired Characteristics-All perimeter lighting to be down lighting and reduce light pollution and glare.)* Note:		
• **Is there proper ventilation for all areas of the building?** Note:		✓
• **Does the fire station have a security key system or coded locks?** o For exterior access o Internally between public and fire station facilities? Note:	✓	
• **Is the building vulnerable to break and enter; leading to theft of equipment or supplies?** o Ground floor windows in unsupervised areas (e.g. the rear, sides) o Poor quality doors or securing systems, especially at the rear, sides o Lack of security devices, e.g. for windows and doors at grade o Bushes and signs, etc., close to the building creating blind spots o Doors do not latch and lock automatically o Poor practices in securing the building o No security system, or monitoring system o Lack of security lighting, motion detection devices and lamps o Unsecure lobbies Note:	✓	
• **Does the fire station have a video security system?** a) External b) Internal c) Can the security system be monitored remotely? Note:		✓
LIGHTING & POWER		
• **Electrical service for the fire Station from Public Mains (i.e., NSPC)?** o Voltage: 120/240, 208, 400, 600 o Single or 3-phase? o Rated Amperage of Fire Station Service: 60 / 100 / 200 / 400 / 800 o Is their solar or wind power on site? o If more than one power supply, note those and total Amps above		

	Yes	No
Note: (Ref: Photo 172)	✓	
• **Are there 20 amp (or higher) electrical drops for apparatus shore-lines (for battery charges, accessories, air pumps, etc.)?** Note: 20 amp drops (Ref: Photo 154)  	✓	
HEATING & COOLING		
SIZE and CONFIGURATION of PROPERTY		
• **Does the building set-back allow for sufficient visitor and responder parking?** Note:	✓	
• **Does the property depth allow for a rear training area?** Note:	✓	
• **Are there enough parking spaces for training classes?** Note:	✓	
Additional NOTES:		

	Yes	No
Bay Doors: 12 X 12 Fire station apparatus floor area 35.6 l X 57.05 = 2,031 sq. ft. approx. Low Bay ceilings Apparatus: Bay 1: Rescue, Bay 2: Single Axle Engine Bay 3: Single axle pumper/tanker		

PHOTOS

Photo 149

Photo 147

Photo 151

Photo 153

Photo 154

Photo 158

Photo 159

Photo 160

Photo 169

Photo 172

Photo 174

Photo 176

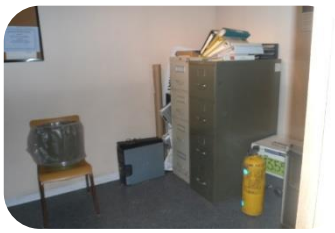


Photo 177

Photo 178

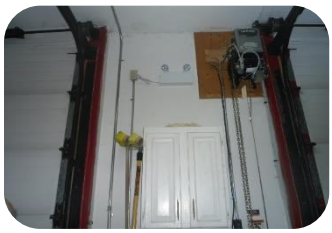


Photo 181

Westchester
Property Lines

.

APPENDIX 6: COMMUNICATIONS

This appendix provides background on Emergency Call Taking, Dispatching, and Fire Service Radio Communications. Also included are many details of the current radio equipment and deployment in MCC fire departments.

911 call taking and dispatching

The Emergency “911” Act 1992, c. 4, s. 1.

The purpose of this *Act* is to establish the number "911" as the primary emergency telephone number for use within the Province and to implement a Province-wide system for the reporting of emergencies to emergency service agencies.

"NS 911 service" means a Province-wide system for the coordination of emergency services, including emergency preparedness activities and the reporting of emergencies to emergency service agencies through a public safety answering point;

The following terms are defined in the *Act*:

3 In this Act,

> *“(h) "primary public safety answering point” means a communication centre that is normally the first point of reception of emergency calls;*
>
> *(i) "public safety answering point" means a communication centre that functions to receive emergency calls and to dispatch such calls to the appropriate emergency service agency;*
>
> *(k) "secondary public safety answering point" means a communication centre to which emergency calls are transferred from a primary public safety answering point that is normally the agency responsible for dispatching emergency personnel;”*

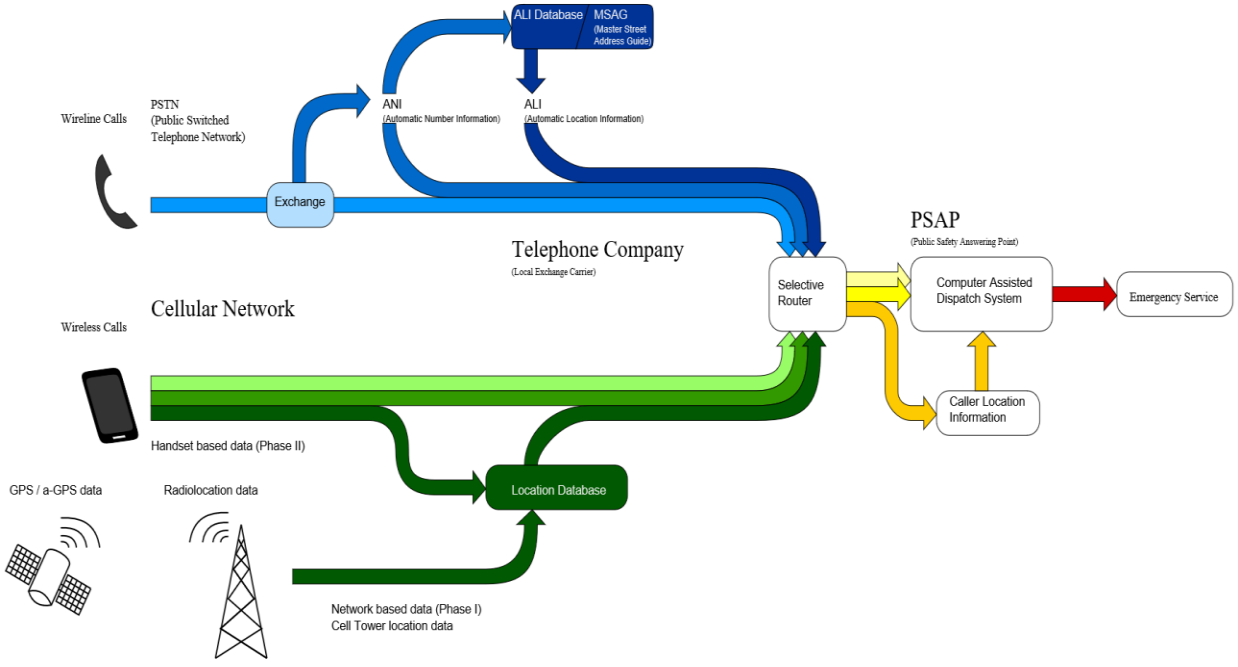
Regulations

> *“14 (1) The Governor in Council may make regulations*
>
> *a) respecting standards, locations and coverage areas for primary public safety answering points and secondary public safety answering points;*
>
> *(b) respecting emergency service agencies to which this Act applies;”*

The E-911 ('E' is for enhanced) service provided for the MCC fire departments commences with a caller in need of the fire service and or medical assistance by dialing 911. This 911 call is routed to the Primary Public Safety Answering Point (PSAP). The PSAP for MCC is the RCMP Operational Communications centre located at RCMP headquarters in Dartmouth.

Due to the technology of telephone and cellular service providers and the capabilities of the E-911 system, two key pieces of information are immediately provided, the telephone number from which the caller is calling from (called an ANI, Automated Number Identification) and the address and/or location (either the civic address if call is made by landline or the closest cellular tower if by cellular phone) from which the call is being made (called an ALI, Automated Location Identifier).The ANI/ALI is not available for cellular based communication devices. However, with the E-911 service and Bell Canada the caller's communication device will provide an estimated location by cellular towers triangulation.

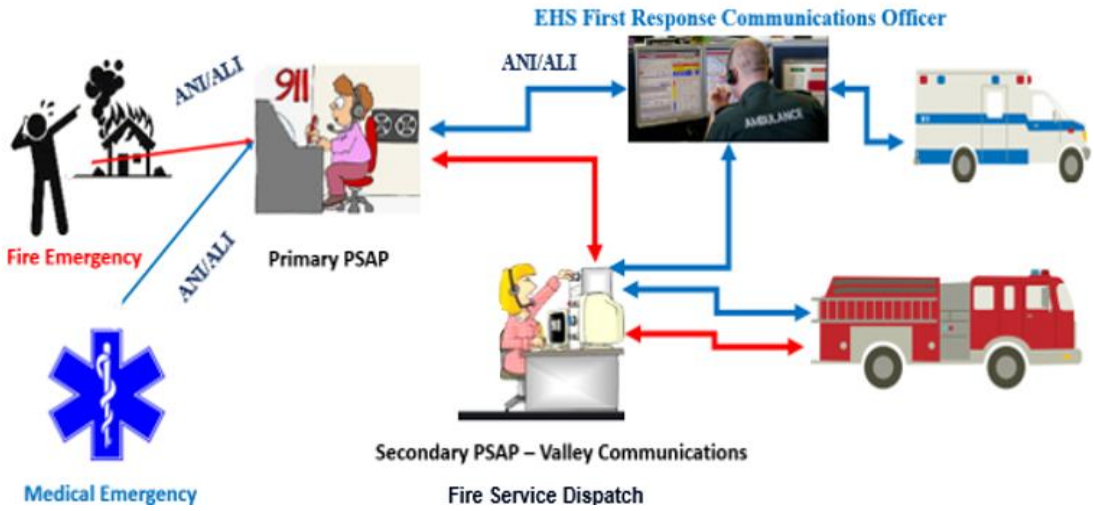
The ANI/ALI automated information assists the E-911 operator in determining to whom the call should be transferred to for the requested emergency services in a timelier fashion.



For fire incidents, once the Primary PSAP call taker determines the nature of the emergency and confirms the location against the ANI/ALI information, the call taker then transfers by voice communication, without the ANI/ALI information, the call to a second Primary PSAP/Dispatch centre to complete the emergency dispatch, requiring fire services. In Cumberland County this would be Valley Communications (VCI).

For medical emergencies, medical calls received by 911 Primary PSAP are transferred with the ANI/ALI information to an EHS First Response Communications Officer (FRCO) located in their communications center in Dartmouth, who then after triaging the nature of the medical emergency, will dispatch the closest ambulance and contact either a second Primary PSAP or a dedicated Fire Dispatch/Communications centre, without the ANI/ALI information, to send the closest fire department according to provincial EHS and local Fire Department Medical First Responder protocols.

Once VCI determines the nature of the service required, i.e., Medical First Responder, fire, or rescue, then they will dispatch the appropriate fire department(s).



ANI/ALI Information

As stated above there are two key pieces of information that are immediately provided when a person places a call to 911. The two pieces are the telephone number from which the caller is calling from (called an ANI, Automated Number Identification) and the address and/or location (either the civic address if call is made by landline or the closest cellular tower if by cellular phone) from which the call is being made (called an ALI, Automated Location Identifier).

These two very important pieces of automated information assists the E-911 operator in determining to whom the call should be transferred to for the requested emergency services in a timelier fashion, by reducing the 911 emergency process time and enhances emergency services delivery by reducing their response time to the emergency. In addition, it eliminates errors by eliminating the need to have the operator enter the information manually into a Fire Dispatch computer aided dispatch software system. This manual entry requirement for one of the three emergency services within the province (fire), in addition to delayed response every second counts (especially with a volunteer service) it also leads to incorrect data entry which can lead to wrong dispatches and unreliable data for service level analysis.

In conversation with 911-EMO, *GA* was advised that their policy is that once a primary PSAP receives the ANI/ALI information, then the data is already captured within their software and therefore is not required to be entered again. Unfortunately, a second Primary PSAP, i.e., VCI receives calls for fire emergency services requests from the Primary PSAP located in Dartmouth, who are RCMP Operations Control Center (OCC)), and for Medical First Responder incidents from the EHS dispatch center.

VCI receives the information about the emergency, the caller and address location of the emergency by voice. VCI now must manually transcribe the voice delivered emergency information such as name of caller, address and type of incident and enter the information into their fire dispatch Computer Aided dispatch software, which is capable of receiving ANI/ALI information, and then dispatch the appropriate fire services. What is interesting is that the EHS communications centre, an ambulance dispatch centre for province-wide medical emergencies, is

operated by a private company, EMCI, who is a subsidiary of Medavie Blue Cross, yet they receive the ANI/ALI information from primary PSAPs, whereas VCI does not.

Valley Communications Operations

Facility

The most recognized standard for communications facilities is NFPA-1225.[379] The purpose of this standard is to specify minimum requirements for systems, retransmissions, dispatching, performance levels and quality of installations for emergency services communications.

Standards for telecommunications is also provided in the Fire Services Association of Nova Scotia (FSANS) Dispatch Service Standards (2017) which is a minimum standards document that is based upon NFPA-1221: *Standard for the Installation, Maintenance, and Use of Emergency Services Communications Systems* which has since been replaced by NFPA-1225.

The current facility is a vintage converted residential above ground structure, featuring offices and the communications center, complete with a backup power generator.

It is located on 217 Belcher Street in Kentville, NS.

This communications center also is providing private telephone answering and messaging services, security alarm monitoring, employee check ins, paging services and fire dispatch services and serves as a 911 Public Safety Answering Point.

911 call taking for the province of Nova Scotia, is provided through a partnership between EMO Nova Scotia and public and privately owned emergency dispatch centers located in four locations across the province. VCI is one of the four 911 PSAPs (Public Safety Answering Points) in the province of Nova Scotia.

[379] NFPA-1225: Standard for Emergency Services Communications

Staffing

Valley Communications is a 24/7, 365-day operation. Workdays include days, nights, weekend, special events and statutory holidays. Currently the hours of work for part-time employees include weekdays (Monday to Friday) 4 p.m. to 8 p.m. shifts, and Saturday or Sunday 1-7 p.m. shifts. The full-time shifts consist of two 12-hour day shifts with twenty-four hours off followed with two 12-hour night shifts followed by four days off. These full time, 12-hour shift are Monday to Sunday, 7-a.m. to 7-p.m. day shifts and 7-p.m. to 7-a.m. night shifts. This provides two staff on duty from 8 p.m. till 7 a.m.

If the center gets extremely busy during office workday hours, some of the office administration staff are able to assist and VCI has the ability to call in off duty staff. During planned storms additional staff are placed on duty.

The staff on duty is required to provide primary and secondary PSAP services as well as processes and dispatches fire calls on behalf of 90 fire departments (20 to 30 calls per day), security alarms, and client paging services. Depending upon time of day and work volume, off hour staffing could become very challenged to meet demand in an effective and efficient manner.

Call Taker/Dispatcher Training

New Emergency Dispatchers will receive on the job training for Fire, Valley Alarms monitoring, and telephone answering provided at VCI. VCI developed their own training manual based upon Halifax Regional Municipality training.

Each new Call Taker is provided classroom training which includes one week of PSAP training conducted by EMO at their Dartmouth PSAP as well as Domestic Violence and suicide prevention training provided in HRM. Local training includes operation of communications equipment and related software. Every Two (2) years refresher training for all staff is required with E-911 for PSAP operations.

None of the staff have received training from a recognized, qualifications or certification program such as the Association of Public Safety Communication Officials (APCO), Such courses are offered in a number of colleges in Ontario. NFPA-1225 specifies the minimum job

performance requirements (JPRs) for service as Public Safety Telecommunications Personnel and specifies minimum requirements for systems, retransmissions, dispatching, performance levels and quality of installations for emergency services communications. Standards for training and qualifications of operators are also provided in the Fire Services Association of Nova Scotia (FSANS) Dispatch Service Standards

Backup Facility

FSANS Fire Dispatch Standard requires

> *"1) Every Comm Centre providing emergency dispatch or notification services shall have a reliable, fully functional backup facility sufficiently geographically separated from the primary facility so as to minimize dependence on the same electrical distribution, sanitation and transportation infrastructure.*
>
> *2) A backup facility shall be maintained in full standby mode such that dispatchers can be relocated to it on short notice and immediately resume full service to clientele.*
>
> *3)The backup facility communications equipment shall be tested at least once a month. At least once every six months the backup facility shall be operated for one full shift."*

VCI has a backup facility located in the Kentville Fire Station. According to the supplier, the facility has never been tested.

Computer Aided Dispatch

VCI uses a Computer Aided Dispatch (CAD) software program, developed in Nelson BC, called FirePro2 (FP2).[380]

As a result of VCI not receiving ANI/ALI data from the 911 system, all emergency information received from the Primary PSAP is by voice only. This requires the VCI call taker/dispatcher to re-enter the call information manually by typing the information in to their CAD system, which leads to many typographical errors, which in turns produces incomplete and erroneous incident data in later analysis or record keeping, requiring good auditing by the client of every incident to

[380] https://fp2.ca/about-fp2/

capture these errors. Recent review of current dispatch records revealed a continuous issue with typographical errors, or other inconsistencies.

The need for analytics in today's fire service delivery is of the utmost importance, in permitting factual timely data to review the trends developing within the municipal communities, so adjustments to the fire service based upon need can be factually determined in an efficient manner.

Other Call Taking and Dispatching Operational Issues

One of the issues occurs when dispatching multiple departments to a single incident. The dispatching of departments is conducted sequentially, rather than simultaneously. This process is called stacked dispatching and is ineffective and delays response. The fix for this issue is the programming of a single dispatch group for each Auto-aid response protocol. This has to be completed by programming the MCC fire services dispatch radio systems and pagers and is doable.

Overkill on Medical calls. Often 2, and sometimes 3 fire departments are paged for a single medical incident. Medical incidents require at best 3 persons to attend, in support of the 2-person paramedic ambulance.

Not notifying Department of Natural Resources as required for all Brush, Trees and Woods fires as per §26(4) of the Act.

Emergency Services Communication Networks

A radio communication network is a group of two or more radio users operating on the same frequency or talkgroup for the purpose of communicating information of mutual interest. In the emergency incident context, networks are used to pass information and instructions relating to the emergency situation, request assistance and support, and coordinate response efforts. A communication network can also be established using landline telephones or a combination of this with wireless technologies such as two-way radio, cellular phones and satellite phones.

Over the years as a result of major incidents that required a multiple agency i.e., large scale wildland fires, wide area flooding, wide area power outages as a result of environmental conditions, requiring muti-agency responses all with their own independent radio systems and differing radio frequencies did not permit interoperability amongst the various different disciplined agencies. The lack of interoperability created command and control inefficiencies and safety issues not only to the responders but to the public as well.

Minor incidents may need only a single channel or talkgroup, while larger scale events may need to use multiple talkgroups, repeater(s), and the interoperability and range offered by the Trunked Mobile Radio System (TMRS). The decision as to which network(s) will be used is made by the Incident Commander or the designated Communication Unit Leader. The important point is that management of communication networks must be applied early in the incident response stage or it will be very difficult to manage it at a later point.

As a general rule, emergency responders will use the Trunked Mobile Radio System (TMR 2) for their communications. Within this Network, the Incident Commander, Communications Unit Leader, or Dispatch will designate specific channels/ talkgroups for various purposes.

Within Nova Scotia, virtually all public safety agencies have access to TMR 2 radios. Nova Scotia's TMR system is shared by nearly all public safety organizations in the province. The network has multiple tower sites and provides coverage across nearly 95% of the province's landmass. All these tower sites are connected to a master controller at Bell in Halifax.

The TMR System (TMRS) uses a digital platform. Organizations will notice a sharp, crisp voice quality during radio transmissions in a digital environment. The digital conversion of a user's voice reduces external background noise and the digital technology platform is ideal for reducing environmental noise levels during transmission, such as emergency scenes or in windy conditions.

Trunked Mobile Radio (TMR) Service

The Trunked Mobile Radio Service is a communications network for public safety and public works services in Nova Scotia. It provides mobile and portable radio communications services to more than 9,000 users through dozens of organizations. The system is owned by Bell Mobility.

First implemented in 2001, the network consists of 69 radio tower sites located mostly within Bell's cellular tower network. In 2015, the Province and Bell Mobility transitioned users to the new TMR 2 network, which offers enhanced reliability, features and coverage across Nova Scotia. The network has expanded to 98 fixed tower sites and one mobile TMR unit.

On the TMR 2 network, Nova Scotia will have a single, province wide radio system used by all three levels of government plus volunteers. Each and every one of the 12,000 estimated users on the system will able to communicate with every other user, regardless of location, organization or level of government.

Nova Scotia Integrated Mobile Radio System

The Nova Scotia Integrated Mobile Radio System was the predecessor to the TMRS. It consists of 99 fixed radio tower sites spread around Nova Scotia and continues to host a number of services and meet infrastructure needs separate from the TMRS. These include:

- Government-owned repeaters supporting localized fire department radio communications
- Government-owned and volunteer fire department owned paging terminals supporting public safety paging and notification services
- Internet service provider-owned rural broadband fixed wireless broadcast equipment supporting commercial broadband services in rural Nova Scotia
- Commercial cellular equipment
- Private commercial digital microwave equipment
- Communications for school boards, municipalities and various utilities

MCC Fire Services Communications Systems

The various fire stations across the county basically use two types of radio systems, a) the NSIMRS, VHF and b) the province wide multiagency Trunk Mobile Radio 2 (TMR2).

TMR 2

The Maritime Public Safety Radio Network (MPSRN) covers the 3 Maritime Provinces of Nova Scotia, Prince Edward Island, and New Brunswick. In Nova Scotia, the system is normally referred to as “TMR 2”, in Prince Edward Island as "PICS 2" and in New Brunswick as "NBTMR".

Many emergency incidents require interoperability capabilities for multiple fire department and multi-agency response and to allow for effective response, scene management and personnel safety.

There are 6 repeaters in Cumberland and two in Colchester that MCC fire departments can access. All but one is owned by Bell Canada. Sand River is owned by the province. The locations[381] of towers are as follow;

- Amherst,
- Claremont,
- East Lynn (Lynn Mountain – Colchester),
- Londonderry, (Cobequid Pass)
- Pugwash,
- Sand River (PNS)
- Wentworth,
- Wharton

Even with the number of towers and the wide area coverage provided by the towers, due to the characteristics of the geographical area land mass, with mountainous ranges and accompanying

[381] Coverage maps for these towers is provided in *Appendix 9: TMR Tower Coverage Maps.*

valleys, there are radio frequency dead zones. These dead zones can prohibit any type of emergency service communications.

There is an additional TMR 2 piece of equipment available that will eliminate any TMR 2 communication dead zone. The equipment is known as a Digital Vehicular Repeater System (DVRS). A DVRS can be used to provide an onsite repeater at an incident where there isn't good TMR 2 coverage.

A DVRS is a ruggedized lower-powered radio base station, that, when used in conjunction with a TMR 'donor' mobile radio at a remote location, can extend radio coverage of the nearest radio system tower, providing radio system coverage where there usually isn't any. Currently many first response agencies use the DVRS as a vehicle-based repeater, such as Halifax Regional Municipality (HRM), Cape Breton Regional Municipality (CBRM), East Hants, and NS Public Safety Field Communications (PSFC). The DVR can be installed onboard a fire truck, a Rescue unit, or a utility vehicle that is at the scene. A portable suitcase model is also available. However, this model requires set up time for an antenna etc.

NS Integrated Mobile Radio System

In addition to the TMR 2 communication network, the fire services employ the former province-wide Nova Scotia, Integrated Mobile Radio System (NSIMRS) which is VHF communication radio system. The MCC fire services use this system for both voice communications and paging.

The Nova Scotia Integrated Mobile Radio System (NSIMRS) is now a network of 47 VHF repeater sites covering the province, providing local communications for volunteer fire departments, and acts as a back-up for provincial/municipal emergency measures organizations.

The NSIMRS, which dates from the 1980s, was originally the province's primary public safety communications system, used by fire departments, ambulance systems, the Royal Canadian Mounted Police (RCMP), provincial Departments of Transportation (DOT) and Natural Resources (DNR), and the Emergency Measures Organization. Each group had its own separate

'network' of repeaters at each site. The sites normally operated as standalone repeaters; however, they could be linked with distant sites via microwave links.

In the 2000s the majority of users of the VHF NSIMRS migrated to the new provincial Trunk Mobile Radio System. Simultaneously the province refurbished the existing NSIMRS sites and built new ones. At all sites the existing repeater and antenna infrastructure was replaced; in some cases, towers and/or equipment shelters were also replaced. A new microwave backhaul system was also put in place to once again connect the sites together when desired.

Today the NSIMRS has been expanded with new sites located at New Tusket, West Caledonia, Italy Cross (near Bridgewater), Sand River (covering western Cumberland County) and Fox Island (near Canso.) The fire network continues to see regular usage in some parts of the province by local departments, both for paging and dispatching. The EMO network continues to exist as a backup for provincial and municipal emergency operations, mostly as a backup to the trunked system, and therefore sees little day to day use. This makes the NSIMRS system and infrastructure available for fire department communications and paging.

Fire Services Communication and Issues

A very important issue with fire department communications is the transmission of relevant incident operational information that will form part the fire services incident report. This information is event driven and is often referred to as Key Performance Indicators (KPIs) or incident Benchmarks.

KPIs / Benchmarks.

To aid in fire service delivery program performance analysis, Key Performance Indicators (KPIs) are required during an incident by announcing and recording the pre-defined KPIs. This process is often referred to as benchmarking. Benchmarking also assists those in command and dispatch as to the status of the incident and helps determine if additional resources or a change in tactics is required.

A benchmark generally verifies that a major goal or task has been completed relative to life safety, incident stabilization, or property conservation. Once received by command, the time of completion needs to be recorded

A list of benchmarks may include the terms;

- Enroute time
- On scene time
- Mode of operation, Offensive or Defensive,
- Size up complete,
- Water applied
- Ventilation complete
- Rescue complete (if there is one)
- Primary search complete,
- Secondary search complete"
- PAR Complete
- Fire under control
- Overhaul complete.
- Units returning to station, (each individual unit announces)
- Units back at station, (each individual unit announces)
- Units back in service (each individual unit announces)

Enroute time is the time that each individual responding unit leaves the station enroute to the location of the emergency and announcing of how many firefighters are on board is also required. (As the wheels start turning)

On Scene is the time captured by the 911 operator as transmitted by the first arriving unit of a dispatched call. Each arriving unit must announce their arrival on scene. This is the time the unit is within approximately 100 feet of the location of the incident, not when you might first see smoke or relatively close to the incident. There have been reports of individual officers who have portable radios, responding to an incident being a fair distance from the incident reporting as if they were actually on scene. This is very a mission critical time which could lead to liability issues if not correct. This is known as clock stopping, as this becomes the time that the fire

department is at the incident location and being able to commence the delivery of fire and rescue services.

Conditions on arrival (Sit Rep), is a brief description of the incident upon arrival of the first unit. i.e., No signs, or house fully involved, heavy smoke showing etc. This provides the responders with an understanding of the situation upon their arrival and aids in determining if additional help is required. This information is recorded by dispatch and assists later with investigation or any query into response and report writing and filing.

Water Applied, this is important as it determines the time it took from arrival of the first crew(s) to start minimizing loss. This is important as there are many response time standards and bench marks used in litigation that consider time of call to time of intervention. This equates to service delivery performance standards being met.

PAR (Personnel Accountability) complete. At a routine incident, a personnel accountability report (PAR) should be conducted to assure command that all members are accounted for and are operating in their intended locations. During a PAR, company officers report their location, assignment and number of members under their watch, current air supply and their current health status. An accountability system is required by NFPA-1561,[382] Chapter 4.

To assist the incident commander with keeping track of PARs and incident tasking progress, The dispatch center shall notify the incident commander at every 10-minute increment with the time that resources have been on the incident until the fire is knocked down or the incident becomes static. Common procedure is for the dispatch center to announce “incident clock is 10 minutes,” “incident clock is 20 minutes,” “incident clock is 30 minutes,” and so forth.

Why is this necessary? This is an assistance to the incident commander as a reminder to ensure that the Incident Safety Officer conducts the PAR and to keep track of how long personnel are working in the hot zone and be mindful of air supply usage and overall firefighter fatigue and stress working in a hazardous area.

[382] NFPA-1561; *Standard on Emergency Services Incident Management System and Command Safety*

It is a safety valve for the Incident Commander to remind him/her what safety tasks and considerations must be made during a fire incident.

- There are three reasons why a fire service is desirous to have command post strategic benchmarks recorded:
- Legal — If there is any question about if or when an action or event took place, the time-stamped recording will provide evidence.
- Training — Recorded, time-stamped benchmarks provide valuable time-line information for conducting an after-action/post-incident review session.
- Redundancy — If anybody missed your benchmark announcement, they'll likely hear the dispatcher's clarification.

Data obtained during benchmark recording is invaluable in assessing and reviewing service delivery as measured against the appropriate service delivery standards and best practices.

Fire Departments Communications Inventory.

GA asked the individual fire departments to complete a radio inventory worksheet. Ten (10) fire departments submitted the requested radio inventory data. It is the data from these radio worksheets that *Table* 102, *Table 103*, and *Table 104* were developed and they provide a summary of the current inventory broken down by TMR and VHF radio types.

In addition to two-way radio hardware, based upon the ten (10) departments that provided radio inventory data, departments were asked to provide department pager data as MCCC operates a county wide VHF paging System for fire dispatching. The Town of Amherst does not use this system. Only four (4) fire departments provided any pager data. Of the four that reported, three reported using a VHF paging system, the fourth reported using an UHF[383] system. It is unclear whether or not the departments who did not provide paging data, simply did not provide the requested data or the departments do not use pagers at all and simply depend upon a web-based emergency notification program that sends electronic notification to individuals cell phones and other types of electronic devices.

[383] Since determined by GA to be a VHF system.

The fire dispatch and paging system is employing a single frequency across twelve (12) NSIMRS repeaters.

Of the departments that did provide pager information the majority were manufactured by Motorola. Even though there the majority were of one manufacturer, there were numerous different models of pagers. The Motorola pagers are ubiquitous in the fire service.

Industry Canada Licensing

The current licensee for all fire departments VHF mobile radios, bases, portables and paging systems is the responsibility of the Municipality of Cumberland County (MCC). The licensee for the Municipality's VHF paging system is the Municipality and the former Fire Services Coordinator (MCC/FSC). As shown in *Table 101* below, of a total of eighteen (18) MCC fire stations only ten (10), have VHF Industry Canada VHF licensing, for fire dispatching and paging.

The remainder are as follows:

- Three (3) stations have no license for either VHF radios or paging systems and related hardware.
- Three (3) stations do not have license for radio but do have licensing for the paging systems and related hardware.
- Two (2) stations have licenses for radio systems but no paging systems.

TABLE 101: SUMMARY OF RADIO LICENSING

Department	Advocate	Apple River	Collingwood	FPW	Joggins	Leicester	Lorneville	Parrsboro	Pugwash	River Hebert	Shinimicas	Southampton	Springhill	Tidnish Bridge	Truemanville	Wallace	Wentworth	Westchester
VHF Radio System License	✓	✓	✗	✗	✗	✓	✗	✗	✓	✓	✓	✗	✓	✓	✓	✓	✓	✓
Licensee	MCC	MCC				MCC			MCC	MCC	MCC		MCC	MCC	MCC	MCC	MCC	MCC
Paging License	✓	✓	✗	✗	✓	✓	✓	✗	✓	✗	✓	✓	✓	✗	✓	✓	✓	✓
Licensee	MCC/FSC	MCC/FSC			MCC/FSC	MCC/FSC	MCC/FSC		MCC/FSC		MCC/FSC	MCC/FSC	MCC/FSC		MCC/FSC	MCC/FSC	MCC/FSC	MCC/FSC

TMR Radio Equipment

According to Industry Canada, in 2020 about 85% of radios sold are either in the UHF, or higher frequencies like 700 mHz, (for Public Safety) or 900 mHz The TMR2 system in Nova Scotia is 700 mHz, P25 compatible (i.e., digital)

When the province moved to the Trunk Mobile Radio System (TMR), they seeded each fire department with a set number of mobile TMR radios and portable TMR radios. The agreement was that each fire department or municipality would cover the cost for the monthly system access fee for each radio to Bell Canada. A number of fire departments obtained additional TMR portable radios to add to their inventory beyond the seeded quantity.

MCC Fire Services have a mix of manufacturers, Kenwood and Motorola. Each two-way radio regardless of manufacture, has an end-of-life period in which the manufacturer will no longer provide support or parts.

The Motorola manufactured TMR Portable and Mobile radios End of Life occurred December 31, 2019. This translates into every Motorola TMR radio in the MCC fire Services radio inventory has no manufacturer support and parts will be a problem. The other issue is that parts may be available with aftermarket supplies, i.e., remote microphones, microphone cords, chargers and especially batteries. Batteries may reduce radio performance and may negate any CSA radio listings if any.

Conversations with Nova Scotia Public Safety Field Communications, (PSFC), have indicated that they have been aware of this dilemma and have obtained 80 digital screens that are part of the radio that often fail. These screens were the last available in North America. Other radio parts are not available. PSFC submitted a budget to Provincial Treasury to replace only the seeded TMR radio inventory that was originally provided to the fire departments.

Any and all TMR radios owned by the fire department beyond what was originally seeded will be responsibility of the individual fire departments. It is unknown at this time if the new replacement portables that will be provided by

the province will comply with NFPA 1802. However, PSFC advises that they are reviewing a new Motorola TMR 3 Portable radios that will be compatible with the new TMR 3 system, that will be intrinsically safe.

Motorola does offer TMR Fire Service model, (APX- 8000HXE).[384] This particular model is a multi-band radio that can do both VHF and TMR, At the time of this *Report* no decision has been made as to what direction the province will take in so far as end-of-life replacements.

In addition, it should be noted that all current TMR 2 portables do not comply with the CUL Can/CSA C22.2 No. 157-92 (R2016) for equipment used in hazardous locations. This is a safety issue.

Table 102 below, indicates the number of TMR radios that will need replacing in the very near future. The good news is that PSFC are planning, depending upon provincial treasury funding approval, in replacing all of the seeded Fire Department TMR radios.

TABLE 102: INVENTORY OF TMR RADIOS

Department	# of Portables	# of Mobiles
Collingwood	4	1
Parrsboro	0	1
Pugwash	28	2
Southampton	2	1
Springhill	5	1
Wallace	8	3
Westchester	2	0
Total	**49**	**9**

Based upon the Bell Canada inventory for all sixteen (16) fire departments, there are a total of fifty-eight (58) radios that are not seeded equipment, forty-nine (49) are TMR2 portable radios and nine (9) are TMR2 mobiles radios and are the full responsibility of the individual departments.

[384] NOTE: GA does not endorse any product. Any reference to any product is for illustrative purposes only.,

TABLE 103: PROVINCIALLY SEEDED RADIOS

Department	# Of Portables	# Of Mobiles	Department	# Of Portables	# Of Mobiles
Advocate	4	5	Shinimicas	4	3
Collingwood	5	3	Southampton	5	4
FPW	4	3	Springhill	5	4
Joggins	4	3	Tidnish Bridge	5	5
Leicester	4	3	Truemanville	4	3
Parrsboro	7	4	Wallace	4	4
Pugwash	5	5	Wentworth	4	4
River Hebert	7	5	Westchester	3	5
Total	**40**	**31**	**Total**	**34**	**32**

A review of the current all radio inventory of the various stations throughout the region indicates that the majority stations have a mix of two manufacturers' radio hardware, while one has a mixed blend of three manufacturers, all having a multitude of differing models by the same manufacturer.

Table 104, below, provides a summary of the current inventory as provided by the individual fire stations.

TABLE 104: TOTAL RADIO INVENTORY BY STATION

	Base	TMR	VHF	UHF	Mobile	TMR	VHF	Portables	#FFs	TMR	% of FF	VHF	% of FF	Pagers VHF	Pagers UHF	Marine
Collingwood	1	0	1	0	8	4	4	23	15	9	60	14	93	15	0	0
Leicester	1	0	1	0	5	3	2	17	22	4	18	13	59	0	0	0
Pugwash	2	1	1	0	11	5	6	47	33	33	100	14	42	0	0	1
River Hebert	1	0	0	1	9	5	4	18	20	7	35	11	55	0	20	0
Shinimicas	0	0	0	0	10	5	5	4	15	4	27	0	0	0	0	1
Southampton	1	0	1	0	10	5	5	15	14	6	43	9	64	16	0	0
Springhill	0	0	0	0	12	6	6	29	40	9	23	20	50	0	0	0
Truemanville	1	0	1	0	9	3	6	16	23	4	17	12	52	30	0	0
Wallace	2	1	1	0	9	7	2	33	31	12	39	21	68	33	0	0
Westchester	1	0	1	0	6	3	3	21	24	7	29	14	58	23	0	0
Totals	**10**	**2**	**7**	**1**	**89**	**46**	**43**	**223**	**237**	**95**		**128**		**117**	**20**	**2**

Data was provided by the fire departments listed. The percent of firefighters is based upon each department's membership count as determined by the Municipality's 2022 WCB remittance for the individual volunteer fire departments.

In the above table, there are columns to the right off the Portable column labelled % of FF (i.e., firefighters). There are two of these columns, one immediately to the right of the TMR column and one immediately to the right of the VHF Column.

The numbers in these columns represent the percent of firefighters in each department that would have access to the two differing radio systems.

Portable	Total FF*	TMR	% of FF	VHF	% of FF
	237	95	43	128	57

TABLE 105: RADIO SYSTEM ACCESS PERCENTAGES

Portables			Mobiles		
Total	223	Radio Type %	Total	89	Radio Type %
TMR	95	43	TMR	46	52
VHF	128	57	VHF	43	48

The TMR radio system data suggests that 43 percent of all firefighters of the ten departments who provided data, has access to a TMR system portable radio while 57 percent have access to a VHF system portable.

Why is this important?

In September 2003, NIOSH[385] released a report pertaining to firefighter radio communication Systems, on page 11. A common problem is the equipment's tolerance to hazardous environmental conditions, such as high heat, prolonged exposure to water, and rough handling. While radios are water resistant, not all models are waterproof. This is more of a problem with older radios, however, as newer models are more water resistant if not completely waterproof. "Equipment", where on page 13 it states: "*It is critical for firefighters to communicate with one another within a structure and with units operating outside the structure, regardless of the building construction.*" The best way this can be done when crews are separated or in trouble are through the use of a personal portable radio.[386]

[385] NIOSH: Current Status, Knowledge Gaps, and Research Needs Pertaining to Firefighter Radio Communication Systems, pp. 11, September 2003

[386] National Institute for Occupational Safety & Health prepared by TriData Corporation pp.11-13, September 2003,

In 2009 the International Association of Fire Chiefs (IAFC)[387] adopted the position that every firefighter operating on the fireground be equipped with a portable radio/two-way communications device (hereafter referred to as "portable radio"), preferably with an attached lapel microphone. Having a portable radio allows each firefighter to immediately report, or be notified of, hazardous conditions or emergencies such as a missing or injured firefighter or potential or impending structural collapse.

The National Fire Protection Association in 2018 based upon the NIOSH studies and the position of the IAFC, amended its Occupational Health and Safety standard to include the requirement that every firefighter working on hot or warm zone to have a portable radio.

NFPA-1500 Standard on Fire Department Occupational Safety, Health, and Wellness Program, requires as per 8.2.2, the following, "*While operating in a hot or warm zone, all personnel shall be equipped with a portable radio provided by the fire department*."

A firefighter(s) working in high hazard environments and needs immediate assistance, without a portable radio, has no means to call for rescue.

In January 2021 NFPA released a new standard NFPA-1802: "*Standard on Two-Way, Portable RF Voice Communications Devices for Use by Emergency Services Personnel in the Hazard Zone*". This standard establishes minimum requirements for portable devices and Remote Speaker Device/Microphones for use by firefighters in hot zones.

The impetus for the new NFPA-1802 Standard came, sadly, when two firefighters died in a residential structural fire in San Francisco, California. Lt. Vincent Perez and Firefighter/Paramedic Anthony Valerio were killed on June 2, 2011, when they became trapped while fighting a fire at a multilevel residence built into a hillside. The subsequent report from the National Institute for Occupational Safety and Health (NIOSH)[388] indicated that radio

[387] Crisis Communication Department Administration Safety & Health ADOPTED BY: IAFC Board of Directors on May 7, 2009.

[388] National Institute for Occupational Safety and Health Death in the Line of Duty…A summary of a NIOSH fire fighter fatality investigation, F2011-13, March 01, 2012

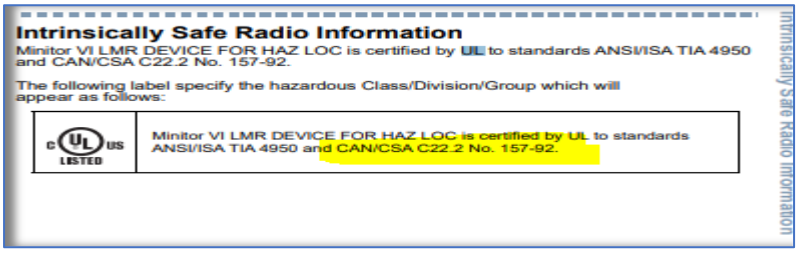
communications failures were one of several causes resulting in the firefighters' deaths. San Francisco (CA) Fire Department (SFFD) Assistant Deputy Chief Jose Velo, who was part of the internal investigation team, stated at the time that it appeared that the cords connecting the portable radios to the remote speaker microphones had burned through, making it impossible for the trapped firefighters to communicate with incident command.

NIOSH line-of-duty death reports have often cited radio communications as a factor. In 2014, the National Institute of Standards and Technology (NIST) had done some testing of portable radios under elevated temperature conditions of 320°F (160°C). Of the seven radios tested (from different manufacturers), none continued to operate properly after the high-temperature exposure.

MCC radios based upon the data provided, it appears that the majority of the portable radios are not serviceable for firefighting service nor safe to use in IDLH (Immediately Dangerous to Life and Health) environments.

Pagers too often accompany firefighters into hazardous area during operations as they forget to remove them from their waist band or belt prior to donning PPE. Pagers should be checked to determine if they have the listed certification as illustrated in *Figure 42*.

FIGURE 42: SAMPLE OF INTRINSIC SAFE LABELING OF RADIO EQUIPMENT



APPENDIX 7: MGA, FIRE AND EMERGENCY SERVICES GUIDE

Municipal Government Act
progressive powers for municipalities

Fire and Emergency Services Guide

Topic:	**Provisions of the *Municipal Government Act* respecting fire departments and emergency service providers.**
Legislation:	The *Municipal Government Act*
	Specific: Part X (Sections 293 to 302)
	Related: 3(ac), 3(af), 3(ag), 3(ah), 65(b), 65(h), 71(1)(c), 71(1)(d), 503(3), 504, 505.
Date Produced:	March 1999
Produced By:	The Nova Scotia Department of Housing and Municipal Affairs

INTRODUCTION

This guide is prepared for use by municipalities, villages, fire departments, fire district commissions, companies with their own fire brigades and others involved in the provision of fire or emergency services.

It is intended to provide these bodies with the background necessary to work with the *Municipal Government Act* (the "MGA") provisions respecting fire and emergency services. These provisions take effect April 1, 1999.

The *Municipal Government Act* recognizes the importance of the volunteer element in the provision of fire and emergency services. The Act has two principal objectives: to expand

municipal authority to assist in the provision of emergency services, and to protect those providing emergency services from liability. Part X of the Act is entitled "Fire and Emergency Services" and most of the provisions described in this Guide are found there.

"Fire services" are services related to the prevention and suppression of fires. "Emergency services" include fire services, but also include search and rescue, water rescue, emergency medical services, and assistance and protection for people and property in the event of disasters such as floods, hurricanes, motor vehicle accidents and chemical spills. Refer to clauses 3 (ac) and 3 (ah) of the MGA for the formal definitions.

Not every department must provide all services. Many fire departments will provide only fire services. Others will provide some additional emergency services. Some emergency service providers will provide one or more of these services, but not fire services. The important point is that it is **always** the decision of the department as to which services will be provided. A department cannot be told what services to provide.

In this bulletin the term "department" is used to apply to all emergency services providers, not just fire departments.

Municipalities and villages continue to be able to provide fire protection themselves or by assisting others to do so. The *Rural Fire District Act* continues to exist and existing fire protection commissions are continued. Volunteer fire departments are encouraged to be bodies corporate--those that are not bodies corporate may want to consider incorporating as a society under the *Societies Act*. Additional information respecting incorporation is provided below, under "**Resources**".

An important change the Act makes is to provide for a municipal registration process for fire departments and other emergency service providers. This guide will provide information on how a registration system might be set up and what type of information a department should consider in filing its registration. It includes a sample registration form (Addendum "A") and a document from the office of the Fire Marshal explaining the terms used in the form (Addendum "B").

Municipal Role in Registration

The objective of registration is to ensure the municipality knows who is providing emergency services and that the providers meet some minimum standards. It also lets the municipality know what emergency services are available in the municipality.

The municipality should establish a registration system for those who provide fire and other emergency services in the municipality by April 1, 1999. Fire departments and emergency service providers will probably want to take advantage of the benefits of registration (see below) as soon as possible. It may be a very simple registration system to begin with until the municipalities and the departments work together to develop a more complete system.

Since the municipality must be satisfied that the applicant is capable of providing the services it offers to provide, the municipality should adopt some criteria. The criteria could be as simple as a requirement that the department have basic equipment and, unless this is a new department, an established track record of providing the service. A council policy to establish the registry and adopt the criteria is required.

Fire Departments' Role in Registration

Every fire department must register in every municipality in which it provides emergency services on a regular basis. This provision covers all volunteer fire departments as well as fire departments of municipalities, villages and fire commissions such as rural fire districts.

The requirement to register does not apply to departments that are extending mutual aid pursuant to a mutual aid agreement, however, in order to avoid any problem about whether a written mutual aid agreement exists, it is best for a fire department or emergency services provider to register in all municipalities in which it anticipates it will ever provide services--the registration might indicate that for a certain area, the department will respond, if called, and provide the service until the department for the area arrives, at which time, it will provide assistance, if required.

In the case of rural fire districts and separate fire commissions, and perhaps villages and some municipalities, there may be a distinction between the commission, village or municipality and the fire department--that is, the fire department may be a separate incorporated body. If so, it is important for the fire department to register with all relevant municipalities in order to benefit from being a registered fire department. As well, the municipality, village or fire commission should join in the registration to ensure that everyone has the benefit of the provisions in the MGA.

Registration Process

In its simplest form, the municipality creates a record, such as a binder, of registered fire departments and registered emergency services providers. The criteria for registration could be as simple as a requirement that the department have basic equipment and, unless this is a new department, an established track record of providing the service. A council policy to establish the registry and adopt the criteria is required. A fire department might choose to be registered to provide additional emergency services. Not all emergency services providers will be fire departments. Ground search and rescue is an example.

An **application** for registration must include:

- name of the applicant department
- incorporated status (how it was incorporated, for example *Societies Act*)

- a list of the emergency services the applicant will endeavour to provide and the area in which it will endeavour to provide them.

- a list of the equipment, training or experience that enables the department to provide the service.

When the fire department and the sponsoring municipality, village or commission apply jointly, the same application form would simply be signed by both, and both would be shown as the named applicants.

One possibility for a more detailed application form is attached. It was developed by the Office of the Fire Marshal and the Fire Marshal will be talking with the fire departments about it and providing them with information about the standards that it uses.

The municipality must register an applicant if:

- it is a body corporate: normally this is a society under the *Societies Act*, but it includes a body corporate under special legislation (some fire departments are specially incorporated under their own statutes) and the municipality itself; it also includes some companies that have their own fire departments, other municipalities, rural fire districts and villages

- the municipality is satisfied it is capable of providing the services it intends to provide

- it carries the level of public liability insurance prescribed by the municipality

- it does not provide fire services for profit (although it may be in business for other purposes; this provision permits the registration of corporate fire departments such as those maintained by some large industries)

- the municipality does not itself provide the same services in the same area.

Registration continues in effect until withdrawn by the municipality for cause or on the request of the department. That is, once a department is registered it does not have to register again. It is a one-time application. Of course, every time a department changes the services it provides it should update its registration to ensure continuing liability protection, and other information may change and have to be updated.

Registered fire departments and other emergency service providers are not agents of the municipality and are not required to borrow from the Municipal Finance Corporation.

Benefits of Registration

Registration confers certain benefits on the fire department or other provider of emergency services. The municipality may, if it chooses to do so, grant money to, lend money to, or guarantee a loan for a registered department. A municipality may grant or lend assets to a registered department without charge. Thus, if a municipality owns a facility it could provide space for the fire department in it, and it could also buy fire fighting equipment and allow the department the use of it without charge. The same benefits apply to other emergency service providers.

In addition, registered fire departments and emergency service providers, and their members, are not liable for an act or omission in providing a service unless they are grossly negligent (S. 300). No one can sue any member of a registered fire department or emergency services provider for negligence in providing emergency services (S. 301). If there is any liability, it is up to the department to pay. *The individual members have no liability*. These protections extend to a municipality, village and fire protection district, as well.

Municipalities also have the discretionary power to grant an exemption from taxation for the property of a registered fire department that is used directly and solely for community purposes or fund raising activities of the fire department: 71 (1) (c). This benefit is available only to registered fire departments and registered emergency service providers (71 (1) (d).

Municipal Policies

Municipalities may establish policies for fire departments and emergency services providers within strict limits:

- requirements and procedures for registration, which may include whether it requires

  the department to carry liability insurance

- personnel policies (municipal employees only)

- the manner of accounting to the municipality for the use of funds provided by the municipality

- requiring every department to have an annual public meeting to report to the public respecting the services provided.

The council may require proof that the department has followed its policies before giving it any money. Only the registration process must be established by April 1. Other issues can be dealt with over time.

Municipalities have some expanded expenditure authority with respect to fire departments, including the power to pay for liability insurance for volunteer members of fire departments and

other volunteers and training expenses for volunteers: 65 (b), (h). Municipalities may exercise the same powers to assist emergency service providers.

Emergency Procedures

When a fire or other emergency occurs, the fire chief or other officer in charge, and those operating under that officer's direction, have the powers necessary to respond to the emergency. There does not have to be proof of a fire or other emergency if an alarm has been given or there is other reason to believe an emergency may exist.

Members of a fire department authorized by the fire chief may enter any premises for the purpose of determining if there are any unsafe conditions (S. 298). See Section 503 (3) for the general powers of inspectors, and 504 for limitations of liability in connection with inspections.

Interfering with any member of a department attempting to cope with an emergency, or with any emergency equipment, is an offence. Offences are punishable by fines of not less than $100.00 nor more than $10,000.00 (Ss. 299 and 505).

Mutual aid and similar cooperation agreements are authorized. When responding to a mutual aid call, pursuant to a mutual aid agreement, a fire department or other emergency services provider has the same protection against lawsuits as a registered department even if it is not registered in the municipality provided that the department it is coming to assist is registered. As noted, it would be prudent for a department to register with every municipality in which it is likely to provide services to save having to prove the existence of a mutual aid agreement.

Rural Fire District Commissions--Freedom of Information and Protection of Privacy

As indicated above, rural fire district commissions continue to exist. As bodies that are supported, at least in part, by taxes, they have been treated as public bodies under the new freedom of information and protection of privacy provisions that are included in the MGA.

Part XX of the *Municipal Government Act*, concerning Freedom of Information and Protection of Privacy, applies to "municipalities". For the purposes of Part XX, municipalities include service commissions. Rural fire district commissions and other fire protection commissions with taxing powers fall within the definition of service commissions in Section 3. Accordingly, they are municipalities for the purposes of Part XX and accordingly must respond to applications for access to their records in the same way as other municipalities. Part XX provides comprehensive rules for both freedom of information and protection of individual privacy.

Resources

Handbooks respecting Part XX of the MGA (freedom of information and protection of privacy) have been prepared. The handbooks will probably answer most common questions. Fire commissions are on the mailing lists for the handbooks. It is expected that municipal units will

receive more information requests than fire commissions will, so for assistance with a particular request, a fire commission may wish to contact the local municipal unit; or the commission may contact the Director of Communications at the Department of Housing and Municipal Affairs. Her phone number is (902) 424-6336.

Questions respecting registration as a society under the *Societies Act* should be directed to:

Registrar of Joint Stock Companies

P. O. Box 1529

Halifax, Nova Scotia

B3J 2Y4

Tel: (902) 424-7770 Fax: (902) 424-4633 web site address is: http://www.gov.ns.ca/bacs/rjsc

Please Note

The reader is cautioned that preparation of a guide containing practical suggestions must necessarily involve interpretation of legislation as it applies in general situations. Specific situations may require careful legal analysis and therefore reference should be made to the *Municipal Government Act*, other relevant statutes and to legal advisors.

Application for Registration as a Fire Department or Emergency Services Provider under the Municipal Government Act

Municipal Unit:

Department Name:

Contact/Address:

Incorporated body under:

Required Insurance Held:

Communities or area protected by this registration:

Please indicate the service that the department will endeavour to provide and the level of service by placing an X in the appropriate box.

		Structural	**Defensive**	**N/A**
1.	**Fire and Fire Related Emergencies**	☐	☐	☐

		Registered First Responder	**Medical Assistance**	
2.	**Medical Emergencies**	☐	☐	☐

		Technician	**Operational**	**Awareness**	
3.	**Vehicle Rescue**	☐	☐	☐	☐
4.	**Water Rescue**	☐	☐	☐	☐
5.	**Ice Rescue**	☐	☐	☐	☐
6.	**Structural /Excavation Collapse**	☐	☐	☐	☐

7.	**High Angle Rescue**	☐	☐	☐	☐
8.	**Hazardous Materials**	☐	☐	☐	☐
		Provider		**Assistance**	
9.	**Ground Search and Rescue**	☐		☐	☐

10. **Other**: Man made and natural disasters for which the service has the training, equipment and command system to undertake.

Please refer to the "Evaluation of Services Provided and Level of Service" Information attached, in answering the following questions:

11. Are there limits on the level of service that will be provided in respect to any of the services checked above? If so, please indicate:

12. Does the department have the equipment to perform the services checked above?

13. Does the department have the training or experience necessary to perform the services checked above?

Date:

Signature of Department Representative

Signature of Municipal Representative

Signature of Related Body Representative

(such as rural fire district, Town, village, if applicable)

Please note: Explanation of the terminology used in this registration form is provided in the attached message from the Fire Marshal (Addendum "B"). To register, a department must be incorporated and hold any valid liability insurance that is required by municipal policy. The department must operate on a not-for-profit basis. The registration does not make the

department an agent of the municipality. This registration may be modified by notifying the municipality thirty days in advance. The municipality may revoke this registration for cause.

Addendum "B"

Evaluation of Services Provided and Level of Service for Use with Application for Registration as a Fire Department or Emergency Services Provider under the Municipal Government Act

Information From the Office of the Fire Marshal

The registration of a fire department or emergency services provider is a replacement for the fire wards system. The process recognizes that fire departments may carry on a wider variety of services then under the previous Act.

The following is a direct quote from National Fire Protection Association Standard 1500:

Spelling out the specific parameters of services to be provided allows the fire department to plan, staff, equip, train, and deploy members to perform these duties. It also gives the governing body an accounting of the costs of services and allows it to select those services they can afford to provide. Likewise, the governing body should identify services it cannot afford to provide and that it cannot register the department to deliver.

There are a number of fire departments who have expressed concern that they could be prevented from attending at emergencies in their communities. The registration should not therefor be an all or nothing situation. The responding department may not have the training, equipment or command system to fully handle the situation. The department may, however, be able to provide assistance to the victims until more qualified help does arrive. This level of service can be indicated upon registering, in a letter form or on the registration form, by a note indicating a limit on the level of service to be provided, or by a note stating what, in the definitions provided below, will not be provided.

To assist the fire service and the municipal units, the Office of the Fire Marshal has developed a registration form that includes a check list for services and level of abilities. This check list was developed with the assistance of the Fire Officers Association[389] directors. The use of this form is not compulsory. Each municipality may develop its own registration process in accordance with the *Municipal Government Act*, although it is noted that it is the desire of the fire service advisory group that there should be one common system rather than 55.

The Office of the Fire Marshal will not be evaluating fire departments; the registration process is between the municipality and the fire department.

The standards selected are from the National Fire Protection Association 1500 standard for Firefighter Occupational Health and Safety. The key to this standard is that, " no activity is undertaken unless the benefit out weighs the risk", for example, items such as a minimum four

[389] This organization is no longer in existence.

person crew for interior attack should be followed except where a rescue of someone inside the building is possible. The NFPA 1500 document should be the corner stone upon which each fire department attempts to meet the highest standard of safety. There are sections such as physical fitness requirements and recruiting that may require a different approach by the fire department.

Definition of Terms Used in the Registration Form

1. **Fire and Fire Related Emergencies: Structural:** means the activities of rescue, fire suppression, and property conservation in buildings, enclosed structures, vehicles, vessels, or like properties that are involved in a fire or emergency situation. Departments should have firefighters trained to NFPA 1001, protective personal equipment, down alarms, accountability system, adequate water supply, pumping capacity and an incident command system. Departments should also have the proper training and protective clothing for wild land fires in accordance with the Department of Natural Resources' provincial standard. Shipboard firefighting, if provided, should be carried out following the NFPA standard 1405 1996 Edition Guide for Land-Based Fire Fighters Who Respond to Marine Vessel Fires. Protection of Aircraft at airports by volunteers, if provided, should be in accordance with Transport Canada guidelines.

   Defensive: means actions that are intended to control a fire by limiting its spread to a defined area, avoiding the commitment of personnel and equipment to dangerous areas. Defensive operations are generally performed from the exterior of structures and are based on a determination that the risk to personnel exceeds the potential benefits of offensive actions. Fire departments without the ability to carry out structural firefighting may register as providing property protection through defensive strategies. Rescue may be undertaken if the benefit warrants the risk. Departments should have proper training and protective clothing for wild land fires in accordance with the Department of Natural Resources' provincial standard.

   N/A: means the department does not respond to these calls.

2. Medical Emergencies: response to known medical emergencies.

Registered First Responder: means responders registered with the Department of Health through EHS first responder program and respond to medical calls or provide medical assistance at the scene of an incident.

Medical Assistance: means responders who have standard or emergency first aid and respond to medical emergencies or provide medical assistance at a response incident. Equipment includes a first aid kit.

3. to 7. The following terminology is used in respect to vehicle rescue, water rescue, ice rescue, structural/excavation collapse and high angle rescue:

These activities should be carried out in accordance with NFPA 1670 Standard for Rescue, 1999. Generally these terms mean:

Technician: First responders at the technicians level are those persons who respond, as either initial call out or as a mutual aid response to contain and control

the incident. This level of service usually will provide a high degree of intervention

Operations: First responders at the operations level are those persons who respond as the initial response to an incident for the purpose of protecting nearby persons, the environment, or property from the effects of the incident. First responders at the operations level are expected to respond in a defensive fashion to control, prevent a worsening of the incident and provide services within their capabilities.

Awareness: First responders at the awareness level are those persons who, in the course of their normal duties, could be the first on the scene of an emergency. First responders at the awareness level are expected to recognize the situation, call for trained personnel, secure the area and provide minimum intervention.

Refer to Standard 1670, but, for example, these terms mean:

3. **Vehicle Rescue**: means removal of victims from a vehicle following an accident. This may require elaborate or simple tools and knowledge depending upon the incident. The first responder should be aware of the departments abilities and when it is necessary to request a higher level of service. **Technician**: properly maintained complete set of heavy hydraulic extrication equipment and associated spreaders, cutters, rams, chains, cribbing etc. and trained as a team to use the equipment, recognize hazards and protect the victim.

   Operations: properly maintained hand tools, manual hydraulic tools, air tools and trained as a team to use the equipment, recognize hazards and protect the victim.

   Awareness: Does not have the equipment for extrication but does respond to motor vehicle accidents.

4. **Water Rescue:** means rescue of individuals from rivers, lakes, ponds, and may include body retrieval.

   Technician: survival suits, water rescue kit, if diving is provided-- appropriate equipment for conditions, a boat including life jackets. Training to a level for the service provided, either surface rescue or diving. Ropes and other similar equipment should meet NFPA 1983 Standard on Fire Service Life Safety Rope and System Components 1995 Edition.

   Operations: approved life jackets for each rescuer, throw ropes, life ring with rope, a boat. Training should include boating safety. Ropes and other similar equipment should meet NFPA 1983 Standard on Fire Service Life Safety Rope and System Components 1995 Edition.

Awareness: Responds but does not have the equipment or training.

5. Ice Rescue: Rescue of individuals from extremely cold water or ice

Technician: full ice rescue kit including floatation suit and ice board or equivalent. Training for cold water rescue. Ropes and other similar equipment should meet NFPA 1983 Standard on Fire Service Life Safety Rope and System Components 1995 Edition.

Operations: approved life jackets for each rescuer, throw ropes, life ring with rope. Trained respecting safety of rescuer and victim. Ropes and other similar equipment should meet NFPA 1983 Standard on Fire Service Life Safety Rope and System Components 1995 Edition.

Awareness: Responds but does not have the equipment or training.

6. Structural/ Excavation Collapse: rescue of persons for collapsed ditches, etc. or collapsed structures. There are five levels of service--each department should examine the document to determine their own level of ability.

Technician: providing this service should meet the full requirements of NFPA 1670.

Operations: provides a medium level of service in accordance to NFPA 1670.

Awareness: assists visible victims; prevents further collapse.

7. High Angle Rescue: Rescue of persons from building faces, cliffs trees or other locations where individuals must be lowered or raised by the rescuer.

Technician: equipment recommended by and training provided by a recognized high angle rescue organization.

Operations: Ropes and other similar equipment should meet the NFPA Standard, gloves, protective clothing required for the particular incident. Training on knot tying.

Awareness: secures the scene, stabilizes the incident.

8. Hazardous Materials: Response to chemical incidents.

All levels should be in accordance with NFPA 472 1997 Edition Standard on Professional Competence of Responders to Hazardous Materials Incidents. Fuel spills such as oil, gas and

diesel may be handled by all three levels if the spill is minor and stabilized. There is a wide range of service, from a domestic oil spill to an upset gasoline tanker. The important fact is knowing the departments limitations.

Technician: Hazardous materials technicians are those persons who respond to releases or potential releases of hazardous materials for the purpose of controlling the release. Hazardous materials technicians are expected to use specialized chemical protective clothing and specialized control equipment.

Operations: First responders at the operations level are expected to respond in a defensive fashion to control the release from a safe distance and keep it from spreading.

Awareness: First responders at the awareness level are those persons who, in the course of their normal duties, could be the first on the scene of an emergency involving hazardous materials. First responders at the awareness level are expected to recognize the presence of hazardous materials, protect themselves, call for trained personnel and secure the area.

9. Ground Search and Rescue: self explanatory.

Provider: meets the Nova Scotia Emergency Measures Organization's provincial standard for SAR teams.

Assistance: members are under the control of a SAR team.

APPENDIX 8: SAMPLE PROVINCIAL FIRE SERVICE REGISTRATION POLICY, 2019

Chapter [--]

[Fire Department and Emergency Services Provider Registration Policy]

---

1. The **[Municipality]** shall register a Fire Department or Emergency Services Provider, with or without conditions, in accordance with Section 294 or Section 295 of the *Municipal Government Act*, as applicable, if:

   (1) The applicant is a body corporate (a society under the *Societies Act* of Nova Scotia, a company under the *Companies Act* of Nova Scotia, or a body corporate pursuant to other legislation);

   (2) The Municipality is satisfied that the applicant is capable of providing the services being offered, based upon the information provided in the application and upon other information received by the Municipality;

   (3) The applicant carries a minimum of **[$5,000,000]** in liability insurance for the vehicles it owns or operates and a minimum of **[$5,000,000]** in liability for insurance for claims brought against it for wrongful acts or omissions respecting the fire services and/or emergency services which it provides;

   (4) The applicant does not provide fire response and/or emergency services for profit;

   (5) The Municipality does not otherwise provide, assist or work with others to provide the same services for the same coverage area unless the Municipality and two or more fire service and/or emergency service providers (one of which is the applicant) have expressly agreed to have overlapping primary service providers;

(6) The applicant has completed and signed an application in the form provided by the Municipality (Appendix A);

(7) The applicant has provided a list of its active volunteers and their training record in a format acceptable to the Municipality;

(8) The applicant has provided a schedule of mutual aid agreements with identification of approval details from the Municipality.

2. The CAO or their designate may approve the registration for the Fire Department or Emergency Services Provider to provide all of the services outlined in the application form, or may limit the services by making revisions to the application form. The Municipality may also include conditions to the approval.

3. The Municipality shall provide a copy of the approved and signed unamended or amended application form along with any conditions to the applicant, or if the application is not approved, shall notify the applicant accordingly.

4. Registration as a Fire Department or Emergency Services Provider is effective upon approval of the application by the CAO or their designate.

5. A registered Fire Department or Emergency Services Provider may provide the services outlined in its approved application, subject to any conditions imposed by the Municipality.

6. By no later than April 1 of each year, each registered Fire Department and Emergency Services Provider must apply to renew its registration by submitting a new application for registration in the form at Appendix A and providing the information required in paragraph 1 of this Policy. The CAO or their designate shall process the application in accordance with paragraphs 2 and 3 by no later than April 30.

7. If a registered Fire Department or Emergency Services Provider fails to apply to renew its registration as required by paragraph 6, its registration as a Fire Department or Emergency Services Provider shall be automatically be withdrawn for cause.

8. In the event an applicant is dissatisfied with a decision of the CAO or their designate to refuse a registration or a registration renewal, or to impose conditions or amendments upon the registration, the applicant may appeal to Council by written notice to the Municipality's Clerk within 15 days of receiving notification under paragraph 3.

9. In addition to any other cause for revoking registration, non-compliance with any conditions of registration or with the terms of this Policy, or failure or inability to perform the services to the standards established pursuant to this Policy or otherwise mandated by Council or other regulatory authorities, shall be cause for revocation of registration as a Fire Department or Emergency Services Provider, or for imposing additional conditions upon the registration.

Appendix A:

[Insert Name Here]

Application for Registration as a
Primary Fire Response or
Emergency Services Provider

Applicant: _____

Contact Person & Phone #: _____

Address: _____

Incorporated body under: *Societies Act* OR *Companies Act* (circle one)
Registry of Joint Stock Companies Registration # _____
Registration Expiry Date: _____
Number of Department members: _____

Insurance Provider: _____

Insurance Policy Period: _____

Motor Vehicle Liability Limit: _____

General Liability Insurance Policy Limit (minimum 2 million): _____

Complete financial statements from the previous fiscal year are required as part of the Application for Registration.

Boundaries of Primary Service Territory: _____

Please indicate the service that the department will endeavor to provide by placing an X in the appropriate box. N/A denotes a service not being provided by the Applicant.

	Structural Offensive	Structural Offensive with Mutual Aid	Structural Defensive	N/A
1. Fire and Fire Related Emergencies	☐	☐	☐	☐

** Registration as Structural Offensive requires your department to have a minimum of four (4) firefighters trained Level 1 with Fire Control. Alternatively, you do have the option to register as Structural Offensive with Mutual Aid. Please indicate the names of those trained to this standard below. If more space is required, please use the back of this page.*

1 _____ **6** _____

2 _____ **7** _____
3 _____ **8** _____
4 _____ **9** _____
5 _____ **10** _____

2. All Officers in your department are strongly encouraged to meet the minimum standards of the Nova Scotia Fire Service Officer Qualifications (attached). Please provide a list of Officers for your department and indicate if they meet the minimum Officer Qualifications.

Name	Position	Yes	No	If no, expected date
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	
		☐	☐	

3. Minimum Equipment Requirements

Please indicate equipment owned by your department by checking the box

- ☐ An initial attack apparatus. Please provide ULC number and date: _____
- ☐ Five (5) self-contained breathing apparatus (SCBA), with one spare bottle per pack, that meets the revision cycle standard.

4. Medical Emergencies

Please indicate the names of Medical First Responders (MFRs) in your department registered with the Department of Health through Emergency Health Services.

1 _____ 7 _____
2 _____ 8 _____
3 _____ 9 _____
4 _____ 10 _____
5 _____
6 _____

Please indicate the level of service that the department is equipped and trained to perform, and will endeavor to provide by placing an X in the appropriate box. N/A denotes a service not being provided by the Applicant.

Applicants should be aware of NFPA 1670 Standards for Rescue and limit the service they provide to the qualification they possess relevant to the technical categories of Technician, Operational, and Awareness skill categories. *This paragraph applies to all rescue services listed below.*

	Technician	Operational	Awareness	N/A
5. Vehicle Rescue	☐	☐	☐	☐
6. Water Rescue	☐	☐	☐	☐
7. Ice Rescue	☐	☐	☐	☐
8. Structural/Excavation Collapse	☐	☐	☐	☐
9. High Angle Rescue	☐	☐	☐	☐
10. Hazardous Materials	☐	☐	☐	☐
11. Other (1)	☐	☐	☐	☐
12. Other (2)	☐	☐	☐	☐

	Provider	Assistance	
13. Ground Search and Rescue	☐	☐	☐

14. Please indicate any other man-made and/or natural disasters for which your department has the training, equipment, and command system to undertake:

_____

_____

15. Are there limits to the level of service that will be provided (for example, limited number of responders at certain times, lack of equipment, lack of qualifications) in respect to any of the services checked above? If so, please indicate what these are:

APPLICANT

As Chief of the _____

(Name of Department)

I have read and understand the Departments' role in the registration process and the "Definitions of Terms Used in the Registration Form" in Appendix B, attached.

I understand by signing this I am not committing my department to any guaranteed level of service or response. [As a volunteer organization there may be circumstances where inadequate response to an emergency may occur. We do actively participate in an automatic mutual aid response, however, there is no assurance that mutual aid response will be adequate.]

I declare that the information provided in response to this Application for Registration as a Primary Fire Response or Emergency Services Provider under the *Municipal Government Act* with the [Name of Municipality] is true to the best of my knowledge, information, and belief.

Date: _____

_____

Name of Chief – ***Please Print***

_____

Signature of Chief

MUNICIPALITY

Date of Approval of Registration Application: _____

_____

Name of Chief Administrative Officer (CAO) – ***Please Print***

_____

Signature of CAO or his or her designate

Please note: Explanation of the terminology used in this registration form is provided in the Information from the Office of the Fire Marshal included as Addendum "B" in the Guide Respecting Fire and Emergency Services in the *Municipal Government Act* Resource Binder, a copy of which is attached for your reference. To register, a department must be incorporated and hold any valid liability insurance that is required by municipal policy. The department must operate on a not-for-profit basis. The registration does not make the department an agent of the **[Municipality]**. This registration may be modified by notifying the Municipality thirty days in advance. The **[Municipality]** may revoke this registration for cause.

Appendix B:

Evaluation of Services Provided and Level of Service for Use with Application for Registration as a Fire Department or Emergency Services Provider under the Municipal Government Act

Spelling out the specific parameters of services to be provided allows the fire department to plan, staff, equip, train, and deploy members to perform these duties. It also gives the governing body an accounting of the costs of services and allows it to select those services they can afford to provide. Likewise, the governing body should identify services it cannot afford to provide and that it cannot register the department to deliver.

To assist the fire service and the municipal units, the Department of Municipal Affairs has developed a sample registration form that includes a check list for key services and level of abilities. The use of this form is not compulsory. Each municipality should develop its own registration process in accordance with the *Municipal Government Act.*

The Office of the Fire Marshal will not be evaluating fire departments; the registration process is between the municipality and the fire department.

The industry standards most widely used and accepted for the fire service are from the National Fire Protection Association (NFPA). Standard 1500 for Firefighter Occupational Health and Safety is the cornerstone upon which each fire department attempts to meet a standard of safety. The key to this standard is that, "no activity is undertaken unless the benefit outweighs the risk." There are sections such as physical fitness requirements and recruiting that may require a different approach by individual fire departments.

NFPA standards are updated on a 3-6 year frequency and it is recommended that the most recent version of any particular standard be used when referenced.

Definition of Terms Used in the Registration Form

1 to 3. Fire and Fire Related Emergencies:

> **Structural Offensive**: means the activities of rescue, fire suppression, and property conservation **in** buildings, enclosed structures, vehicles, vessels, or like properties that are involved in a fire or emergency situation. Departments should have firefighters trained to NFPA 1001, protective personal equipment, man-down alarms, an accountability system, adequate water supply, adequate pumping capacity and an incident command system. Departments should also have the proper training and

protective clothing for wild land fires in accordance with the Department of Natural Resources' provincial standard. Shipboard firefighting, if provided, should be carried out following the NFPA standard 1405 Guide for Land-Based Fire Fighters Who Respond to Marine Vessel Fires. Protection of Aircraft at airports by volunteers, if provided, should be in accordance with Transport Canada guidelines.

Structural Defensive: means actions that are intended to control a fire by limiting its spread to a defined area, avoiding the commitment of personnel and equipment to dangerous areas. Defensive operations are generally performed from the exterior of structures and are based on determination that the risk to personnel exceeds the potential benefits of offensive actions.

Such determining factors may include, but not limited to, the extent of fire within the structure, existing water supply for fire load, number of trained personal on site and foremost, risk of personnel versus reward. Also, be advised that an attack strategy may change from defensive to offensive should any or all of the fore mentioned factors change. Fire departments without the ability to carry out structural firefighting may register as providing property protection through defensive strategies. Training for defensive fire operation personal is extensive but less rigorous than NFPA 1001 (a guideline is provided on the Fire Service Association of NS website). Rescue may be undertaken if the benefit warrants the risk. Departments should have proper training and protective clothing for wild land fires in accordance with the Department of Natural Resources' provincial standard.

N/A: means the department does not respond to these calls.

Structural Offensive with Mutual Aid: means that on its own, a fire department meets the requirements of Structural Defensive only and can meet the requirements of Structural Offensive with additional specific resources identified in through a Mutual Aid agreement. The expectation would be that upon arrival, such a department would conduct Defensive operations only and if required, could change to offensive once additional resources arrived on scene and were deployed.

4. Medical Emergencies: response to known medical emergencies.

Registered First Responder: means responders registered with the Department of Health through EHS first responder program and respond to medical calls or provide medical assistance at the scene of an incident.

Medical Assistance: means responders who have standard or emergency first aid and respond to medical emergencies or provide medical assistance at a response incident to that level only. Equipment includes a first aid kit.

5.to 9. The following terminology is used in respect to vehicle rescue, water rescue, ice rescue, structural/excavation collapse and high angle rescue:

These activities should be carried out in accordance with NFPA 1670 Standard for Rescue, 2017 edition or other comparable standard adopted by the municipal unit.

Generally, these terms mean:

> **Technician**: First responders at the technician level are those persons who respond, as either initial call out or as a mutual aid response to contain and control the incident. This level of service usually will provide a high degree of intervention.
>
> **Operations**: First responders at the operations level are those persons who respond as the initial response to an incident for the purpose of protecting nearby persons, the environment, or property from the effects of the incident. First responders at the operations level are expected to respond in a defensive fashion to control, prevent a worsening of the incident and provide services within their capabilities.
>
> **Awareness**: First responders at the awareness level are those persons who, in the course of their normal duties, could be the first on the scene of an emergency. First responders at the awareness level are expected to recognize the situation, call for trained personnel, secure the area and provide minimum intervention.

Refer to NFPA 1670 for specifics for each type of rescue.

10. Hazardous Materials: Response to chemical incidents.

> All levels should be in accordance with NFPA 1072 Standard on Professional Competence of Responders to Hazardous Materials Incidents. Fuel spills such as oil, gas and diesel may be handled by all three levels if the spill is minor and stabilized. There is a wide range of service, from a domestic oil spill to an upset gasoline tanker. The important fact is knowing the departments limitations.
>
> **Technician**: Hazardous materials technicians are those persons who respond to releases or potential releases of hazardous materials for the purpose of controlling the release. Hazardous materials technicians are expected to use specialized chemical protective clothing and specialized control equipment.
>
> **Operations**: First responders at the operations level are expected to respond in a defensive fashion to control the release from a safe distance and keep it from spreading. (Note: Firefighters trained to the Level 1 standard are required to be trained to the Operations Level of Hazardous Awareness)
>
> **Awareness**: First responders at the awareness level are those persons who, in the course of their normal duties, could be the first on the scene of an emergency involving hazardous materials. First responders at the awareness level are expected to recognize the presence of hazardous materials, protect themselves, call for trained personnel and secure the area.

13. Ground Search and Rescue: self-explanatory.

Provider: meets the Nova Scotia Emergency Management Office's provincial standard for SAR teams.[1]

Assistance: members are under the control of a SAR team.[2]

Fire Department and Emergency Services Provider Registration Policy - Editor's Annotations

Enabling Legislation

Municipal Government Act, R.S.N.S. 1998, c.18:

3 In this Act,

(ac) "emergency services" means services related to the provision of emergency services, including fire services, emergency medical services, search and rescue, water rescue and assistance and protection for people and property in the event of disasters including, but not limited to, floods, hurricanes, motor vehicle accidents and chemical spills;

(af) "fire department" means an incorporated body that provides fire services and that may, at its option, provide one or more other emergency services, and includes a fire or emergency services department of a municipality, village, fire protection district or other body corporate;

….

294 **(1)** A body corporate may apply to a municipality for registration as a fire department.

(2) A municipality shall not refuse to register a body corporate that complies with this Act if the

[1] EMO does not set standards for NG Ground Search and Rescue, the Red Cross, or any other volunteer organizations. It is the organization's decision to adhere to a standard if so desired. There is no legislative authority to impose anything on NS Ground Search and Rescue Teams.
NS GSAR is aspiring to meet the SARVAC CSA Z1620, Core competency standards for ground search and rescue operations: for Ground Search and Rescue (GSAR) in Canada.

[2] At present NS GSAR is tasked by an AHJ (Agency Having Jurisdiction), which is always the police for missing or lost persons. EMO NS does not have a legislative mandate for Search and Rescue. The Police under the *Missing Persons Act* have the legislative mandate and the responsibility. Some police agencies in Canada use police officers to search and some you volunteer teams such as GSAR. EMO NS continues to support NSGSAR administratively.

(a) municipality is satisfied that the body corporate is capable of providing the services it offers to provide;

(b) body corporate carries liability insurance, as required by the municipality;

(c) body corporate does not provide the fire services for profit; and

(d) municipality does not provide the same services for the same area.

(3) A fire department, including a fire department of a municipality, village or fire protection district, shall register in each municipality in which it provides emergency services.

(4) A registered fire department shall provide the municipality with a list of specific emergency services it will endeavour to provide and the area in which the services will be provided.

(5) Registration continues in force until withdrawn by the municipality for cause or the fire department requests that the registration be revoked.

(6) A municipality may grant or lend money to, or guarantee a loan for, a registered fire department for operating or capital purposes.

(7) A municipality may grant or lend assets, without charge, to a registered fire department.

(8) Registration does not make a fire department an agent of a municipality.

(9) A registered fire department is not a municipal enterprise pursuant to the *Municipal Finance Corporation Act*.

…

295 (1) A body corporate may apply to a municipality for registration an emergency services provider to provide emergency services other than fire services.

(2) A municipality shall not refuse to register a body corporate that complies with this Act if the

(a) municipality is satisfied that the body corporate is capable of providing the services it has undertaken to provide;

(b) body corporate carries liability insurance, as required by the municipality;

(c) body corporate does not provide the emergency services for profit; and

(d) municipality does not provide the same services for the same area.

(3) A body corporate that applies pursuant to subsection (1) shall register in each municipality in which it provides emergency services.

(4) A registered emergency services provider shall provide the municipality with a list of specific emergency services it will endeavour to provide and the area in which the services will be provided.

(5) Registration continues in force until withdrawn by the municipality for cause or the fire department requests that the registration be revoked.

(6) A municipality may grant or lend money to, or guarantee a loan for, a registered emergency services provider for operating or capital purposes.

(7) A municipality may grant or lend assets, without charge, to a registered emergency services provider.

(8) Registration does not make an emergency services provider an agent of a municipality.

(9) A registered emergency services provider is not a municipal enterprise pursuant to the *Municipal Finance Corporation Act*.

Important Notice

The reader is cautioned that editorial and drafting choices involve interpretation of the law. Municipal units should consult with their own legal advisors before relying upon, and applying to their own circumstances, the comments or drafts contained in this Manual.

Comment

- This Policy deals with municipal registration of bodies corporate as a fire department or emergency service provider.
- The *Municipal Government Act* s. 294(2) requires that a municipality register a body corporate as a fire department if the body corporate meets the requirements of the Act. Identical requirements are set out for emergency service providers by s. 295(2) of the Act. The Act requires that a body corporate:
    - be capable of providing the services it offers;
    - carry liability insurance;
    - that fire or emergency services be not-for-profit; and
    - not duplicate services provided by the municipality in the same area.

These requirements are incorporated into s. 1(2), (3), (4) and (5) of the model Policy. The municipality may set out minimum liability insurance requirements in s. 1(3) of this Policy.

- The Policy provides in s. 1(6) for the use of an application form. A model application form is included with the Policy as Appendix A.

- Section 6 of the Policy requires that a Service Provider register annually with the municipality. Although annual registration is not a requirement of the Act, it is recommended as a best practice. Annual registration helps to guarantee that the municipality has the information necessary to make informed decisions with respect to the safety of firefighters and the public. However, annual registration requires more diligence by both the Municipality and Service Providers, so be sure the resources are in place to manage annual registrations.

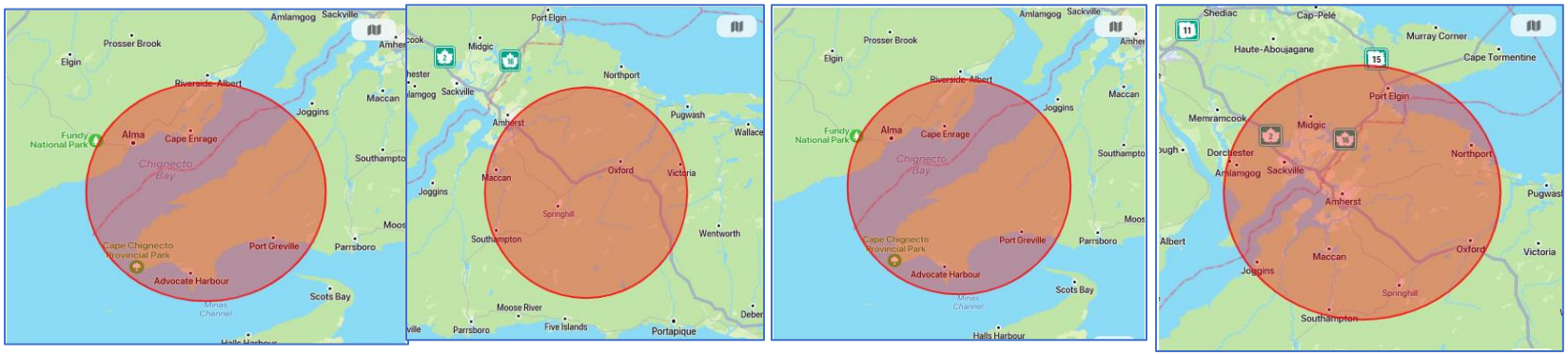
- Section 8 of the Policy is designed to provide the body corporate with an avenue for appeal to Council should the CAO decide to refuse to register the body corporate as a fire department or as an emergency services provider.

- The chapter # in the policy title bar should be replaced by each municipal unit with the chapter # it assigns to this Policy**.**

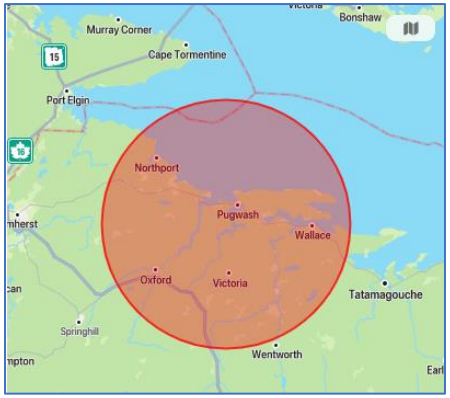
APPENDIX 9: TMR TOWER COVERAGE MAPS

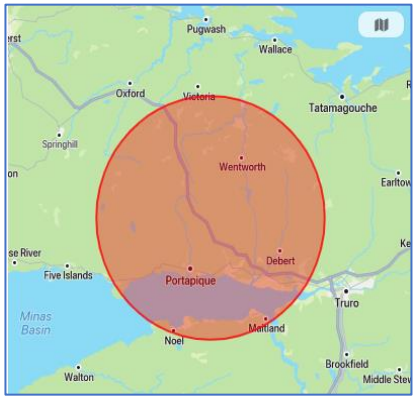
Source: RadioReference.Com (https://www.radioreference.com/apps/db/?sid=7924)

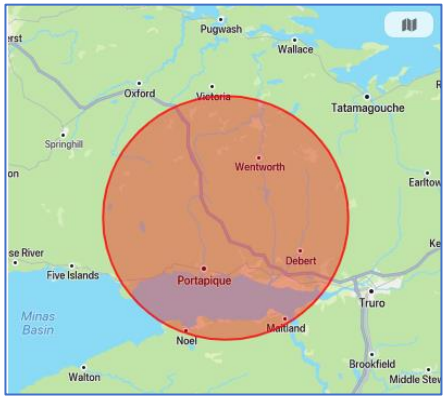
Sand River: Range 16 Miles Wharton: Range 18 miles Claremont: Range 15 miles Amherst: Range 18 miles



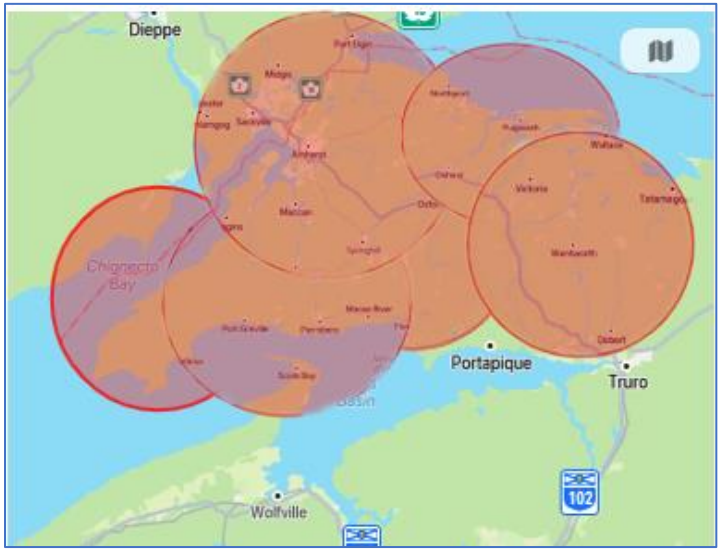
Pugwash: Range 15 miles Wentworth: Range 15 miles Londonderry: Range 15 miles East Lynn Mountian: Range 25 Miles







Total Coverage Area Cumberland County



APPENDIX 10: STANDARDS; FIREFIGHTER OCCUPATIONAL HEALTH AND SAFETY

- CGSB 155.1, "Fire Fighter's Protective Clothing for Protection Against Heat and Flame"
- CSA Z94.1 Industrial protective headwear — Performance, selection, care, and use
- CSA Standard Z180.1 Compressed breathing air and systems
- CSA Z195 Protective footwear
- Nova Scotia Occupational Safety General Regulations made under Section 82 of the Occupational Health and Safety Act, S.N.S. 1996, c.7
- Occupational Health and Safety Act S.N.S. 1996, c. 7, the Nova Scotia Fire Services Occupational Health & Safety Reference Guide, Effective Date: 25/04/2003.
- NFPA 1002: Standard for Fire Apparatus Driver/Operator
- NFPA 1071: Standard for Emergency Vehicle Technician ...
- NFPA 1500: Standard on Fire Department Occupational Safety, Health, and Wellness Program
- NFPA 1581: Standard on Fire Department Infection Control Program
- NFPA 1584: Standard on the Rehabilitation Process for Members During Emergency Operations and Training Exercises
- NFPA 1851: Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting
- NFPA 1852: Standard on Selection, Care, and Maintenance of Open-Circuit Self-Contained Breathing Apparatus (SCBA)
- NFPA 1855: Standard on Selection, Care, and Maintenance of Protective Ensembles for Technical Rescue Incidents
- NFPA 1877: Standard on Selection, Care, and Maintenance of Wildland Firefighting Protective Clothing and Equipment
- NFPA 1901: Standard for Automotive Fire Apparatus
- NFPA 1911: Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Emergency Vehicles
- NFPA 1932: Standard on Use, Maintenance, and Service Testing of In-Service Fire Department Ground Ladders
- NFPA 1962: Standard for the Care, Use, Inspection, Service Testing, and Replacement of Fire Hose, Couplings, Nozzles, and Fire Hose Appliances
- NFPA 1971: Standard on Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting
- NFPA 1989: Standard on Breathing Air Quality for Emergency Services Respiratory Protection

APPENDIX 11: PROFESSIONAL DEVELOPMENT PROFILE, CURRENT FIREFIGHTERS

Note: The data presented in this table was provided by the individual Fire Departments, For those departments who indicated certifications for NFPA subject matter, verification was not requested.
Those fire departments who chose not to provide data are greyed out.

TABLE 106: FIREFIGHTER KSA INVENTORY, ALL FIRE DEPARTMENTS

KEY TT = Trained To, Q = Qualified, C = Certified I = Level 1, II = Level 2, etc.	Advocate	Collingwood	FPW	Joggins	Leicester	Parrsboro	Pugwash	River Hebert	Shinimicas	Southampton	Springhill	Tidnish Bridge	Truemanville	Wallace	Wentworth	Westchester	Amherst	Five Islands	Oxford
FIREFIGHTING																			
Level I – TT		14					15		20	8	25			16		12	18		
Level I – Q		6			11		14	8	4	6	1		10	16		10	39	8	22
Level I – C		2					3	1	2				9	3		2	6	1	1
Level II – TT											10								
Level II – Q					5		16		1	1						5			
Level II – C									1				4	1				1	
APPARATUS DRIVER OPERATOR																			
Apparatus General TT		6				8	19				5								
Apparatus General Q		5			6		4	15	1	6			10	31			27	4	11
Apparatus General C		2					9						11						
Apparatus Pumper TT		3				8	4				5								
Apparatus Pumper Q		4			4			7		6			4	6			19	4	11
Apparatus Pumper C		2					11						5						
Apparatus Aerial TT											5								
Apparatus Aerial Q																	12		
Apparatus Aerial C																			
Apparatus Water Tanker TT		9				8	25				5								
Apparatus Water Tanker Q		4			6		7	11		6				6			27		
Apparatus Water Tanker C		2											11						
Apparatus Wildland TT						10	25				5								
Apparatus Wildland Q					6		7			20				20			27		
Wildland C																			
MEDICAL																			
Medical First Responder (MFR)		10			7	7	16	9	5	14	10		8	13		9	5	8	10
Standard First Aid		12							14					2					
LAND BASE MARINE																			
Marine Firefighter									1										
RESCUE																			
Tower Rescue																			
Rope Rescue																			
Structural Collapse																			
Confined Space Rescue TT						3													
Confined Space Rescue Q																	6	1	

KEY TT = Trained To, Q = Qualified, C = Certified I = Level 1, II = Level 2, etc.	Advocate	Collingwood	FPW	Joggins	Leicester	Parrsboro	Pugwash	River Hebert	Shinimicas	Southampton	Springhill	Tidnish Bridge	Truemanville	Wallace	Wentworth	Westchester	Amherst	Five Islands	Oxford
Confined Space C							4												1
Vehicle Rescue TT		9				9	18		20				7						
Vehicle Rescue Q									9	6			3	31				9	
Vehicle Rescue C		6					14						13						23
Animal Technical Rescue TT																			
Animal Technical Rescue Q					1									20					
Animal Technical Rescue C																			
Wilderness Search and Rescue TT																			
Wilderness Search and Rescue Q		2			2			1						2					
Wilderness Search and Rescue C																			
Trench Rescue TT						2													
Trench Rescue Q																			
Trench Rescue C																			
Machinery Rescue TT																			
Machinery Rescue Q					5														
Machinery Rescue C																			
Cave Rescue																			
Mine and Tunnel Rescue																			
Helicopter Rescue																			
Surface Water Rescue TT						7	10												
Surface Water Q								3										4	
Surface Water C							4												
Swiftwater Rescue TT						1													
Swiftwater Rescue Q																			
Swiftwater Rescue C							4												
Dive Rescue C																			
Ice Rescue TT						5	20			1									
Ice Rescue Q								3						15					
Ice Rescue C							6												
Surf Rescue TT										1									
Surf Rescue Q														5					
Surf Rescue C																			
Water Craft Rescue TT						7	10												
Water Craft Rescue Q							6							15					
Water Craft Rescue C																			
Floodwater Rescue TT																			
Floodwater Rescue Q																			
Floodwater Rescue C																			
Wilderness Search and Rescue TT																			
Wilderness Search and Rescue Q																			
Wilderness Search and Rescue C																			
Trench Rescue TT																			
Trench Rescue Q																			

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Trench Rescue C																			
Machinery Rescue TT																			
Machinery Rescue Q																			
Machinery Rescue C																			
Cave Rescue																			
Mine and Tunnel Rescue TT																			
Mine and Tunnel Rescue Q																			
Mine and Tunnel Rescue C													1						2
FIRE OFFICER																			
Fire Officer I TT						1					6								
Fire Officer I Q					4			3		4			1			7	12	1	
Fire Officer I C							1						6	1			2		
Fire Officer II TT					2	1					6								
Fire Officer II Q					2												12		
Fire Officer II C																	2		
Fire Officer III TT																			
Fire Officer III Q																			
Fire Officer III C																	2		
Fire Officer IV TT																			
Fire Officer IV Q																			
Fire Officer IV C																	2		
INCIDENT COMMAND																			
Incident Commander TT		5				1			20		6								
Incident Commander Q					4		6	3	6	4			1						
Incident Commander C							2						6	1			4		6
Safety Officer TT						3					10								
Safety Officer Q					2			4		4			11				5		
Safety Officer C																	21		
Public Information Officer TT											2		1						
Public Information Officer Q																			
Public Information Officer C																	3		
Liaison Officer TT											2								
Liaison Officer Q																	12		
Liaison Officer C																			
Operations Section Chief TT											2								
Operations Section Chief Q																	11		
Operations Section Chief C													1				1		
Staging Area Manager TT											2								
Staging Area Manager Q														3			12		
Staging Area Manager C																			
Planning Section Chief TT											2								
Planning Section Chief Q																	11		
Planning Section Chief C																	1		

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Logistics Section Chief TT											2								
Logistics Section Chief Q																	11		
Logistics Section Chief C																	1		
Finance/Admin Section Chief TT											2						1		
Finance/Administration Section Chief Q																	11		
Finance/Administration Section Chief C																	1		
Other Unit/Group Leader TT											2						1		
Other Unit/Group Leader Q																	11		
Other Unit/Group Leader C																			
FIRE INSPECTOR																			
Fire Inspector I TT						1													
Fire Inspector I Q		1																	
Fire Inspector I C													1				4		
Fire Inspector II TT																			
Fire Inspector II Q																	2		
Fire Inspector II C																			
Fire Inspector III TT																			
Fire Inspector III Q																			
Fire Inspector III C																			
Plan Examiner I																			
Plan Examiner II																			
FIRE INVESTIGATION																			
Fire Investigator TT		3								4	2								
Fire Investigator Q					2											1	2		
Fire Investigator C													2	2			1		
FIRE SAFETY EDUCATOR																			
Fire & Life Safety Educator I TT																			
Fire & Life Safety Educator I Q																	1		
Fire & Life Safety Educator I C																	1		
Fire & Life Safety Educator II TT																			
Fire & Life Safety Educator II Q																	1		
Fire & Life Safety Educator II C																	1		
Fire & Life Safety Educator III TT																			
Fire & Life Safety Educator III Q																			
Fire & Life Safety Educator III C																			
Public Information Officer TT																			
Public Information Officer Q																			
Public Information Officer C																	3		
Youth Fire setter Intervention Special TT																			
Youth Fire setter Intervention Specialist Q																			
Youth Fire setter Intervention Specialist C																			
FIRE INSTRUCTOR																			
Fire & Emergency Services Instructor I TT		2									1								

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Fire & Emergency Services Instructor I Q							6	4	1					1			3		
Fire & Emergency Services Instructor I C									1							1	2	1	
Fire & Emerg. Services Instructor II TT																			
Fire & Emerg. Services Instructor II Q								2									2		
Fire & Emerg. Services Instructor II C																			
Fire/ Emerg. Services Instructor III TT																			
Fire & Emerg. Services Instructor III Q																			
Fire & Emerg. Services Instructor III C																			
Live Fire Instructor TT																			
Live Fire Instructor Q								4						1			2		
Live Fire Instructor C																			
Live Fire Instructor in Charge TT																			
Live Fire Instructor in Charge Q								4									2		
Live Fire Instructor in Charge C																			
WILDLAND FIRE																			
Wildland Firefighter I TT							5	15			25			15		11			
Wildland Firefighter I Q							27										47	14	
Wildland Firefighter I C					11								9				1		30
Wildland Firefighter II TT																			
Wildland Firefighter II Q																			
Wildland Firefighter II C					1												1		
Wildland Fire Officer I TT							1						1						
Wildland Fire Officer I Q																			
Wildland Fire Officer I C					1												9		
Wildland Fire Officer II TT																			
Wildland Fire Officer II Q																			
Wildland Fire Officer II C					1														
Wildland/Urban Inter. Prot Specialist TT																			
Wildland/Urban Interface Prot Specialist Q																			
Wildland/Urban Interface Prot Specialist C					1														
HAZ MAT RESPONDER COMPETENCIES																			
Awareness Level TT		4				12			20		25								
Awareness Level Q								8		6				33			27	1	
Awareness Level C								3					13			1	21	1	
Operations Level TT											5								
Operations Level Q					4			3						2					
Operations Level C																1	21	1	
Operations Mission Specific TT																			
Operations Mission Specific Q																			
Operations Mission Specific C																			
Technician Level TT																			
Technician Level Q																			
Technician Level C																	3		

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H-M Incident Commander TT																			
H-M Incident Commander Q																	3		
H-M Incident Commander C																			
Specialist Level TT																			
Specialist Level Q																			
Specialist Level C																			
H-M Officer TT																			
H-M Officer Q																	5		
H-M Officer C																	16		
H-M Safety Officer TT																			
H-M Safety Officer Q																			
H-M Safety Officer C																			
Tank Car Specialty TT																			
Tank Car Specialty Q																			
Tank Car Specialty C																			
Cargo Tank Specialty TT																			
Cargo Tank Specialty Q																			
Cargo Tank Specialty C																			
Intermodal Tank Specialty TT																			
Intermodal Tank Specialty Q																			
Intermodal Tank Specialty C																			
Marine Specialty TT																			
Marine Specialty Q																			
Marine Specialty C																			
Flamm Liq Bulk Storage Specialty TT																			
Flammable Liq Bulk Storage Specialty Q																			
Flammable Liq Bulk Storage Specialty C																			
Radioactive Material Specialty TT																			
Radioactive Material Specialty Q																			
Radioactive Material Specialty C																			
Advanced Mon/Detection Specialty TT																			
Advanced Mon/Detection Specialty Q																			
Advanced Mon/Detection Specialty C																			
Consequence Analysis/Plan Spec. TT																			
Consequence Analysis/Planning Spec Q																			
Consequence Analysis/Planning Spec C																			
Advanced Product Control Specialty TT																			
Advanced Product Control Specialty Q																			
Advanced Product Control Specialty C																			
WMD Specialty TT																			
WMD Specialty Q																			
WMD Specialty C																			
Advanced Decon Specialty TT																			

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Advanced Decontamination Specialty Q																			
Advanced Decontamination Specialty C																			
HAZARDOUS MATERIALS RESPONDER - Qualifications																			
Awareness TT		4				12	14												
Awareness Q										6				33			27	1	4
Awareness C		3			1		18						13				21	1	
Operations TT																			
Operations Q							4							2					
Operations C					1												21	1	
Operations Mission Specific TT																			
Operations Mission Specific Q																			
Operations Mission Specific C																			
Technician TT																			
Technician Q																			
Technician C																	3		
Incident Commander TT																			
Incident Commander Q																	3		
Incident Commander C																			
TRAFFIC MANAGEMENT																			
Traffic Incident Mgt Personnel TT		5				5	24				5								
Traffic Incident Management Personnel Q					2		8							20			24	8	5
Traffic Incident Management Personnel C													13						
SAFETY OFFICER																			
Health & Safety Officer TT		5							20										
Health & Safety Officer Q																			
Health & Safety Officer C																			
Incident Safety Officer TT		5					10		4		5								
Incident Safety Officer Q					2								11	1			5		
Incident Safety Officer C																	16	1	4
NS OH&S ACT																			
Health & Safety Representative TT																			
Health & Safety Representative Q																1			
Health & Safety Representative C																	6		
OTHER																			
Executive Chief Fire Officer																	1		
Small Vessel Operator Proficiency									10										
Trunked Mobile Radio 2									20										
Emergency Wildland Firefighter									20										

APPENDIX 12: NS FIREFIGHTERS OCCUPATIONAL HEALTH AND SAFETY GUIDE

Nova Scotia Fire Services

Occupational Health & Safety Reference Guide

Effective Date: 25/04/2003

This Occupational Health and Safety Reference Guide, developed for the fire service of Nova Scotia is recommended to be considered a minimum standard for safe operations. It in no way is intended to restrict authorities having jurisdiction or individual fire service providers from exceeding the requirements set out in this guide.

The base document used for this guide is NFPA 1500 *Standard on Fire Department Occupational Safety and Health Program*. The committee consisting of representatives of career, volunteer, and composite fire services as well as representation from the Office of the Fire Marshal, The Nova Scotia Fire School and Environment and Labour OH&S have evaluated the base document and have recommended changes to reflect current law and regulations in effect in Nova Scotia and Canada today. This will be an ongoing process and the document may be amended from time to time.

The intent of this document is to provide a guideline to assist all Nova Scotia fire department/brigades to develop the safest possible operations and practices. The committee clearly understands there will be varying time frames for individual department compliance.

To follow is the noted amendments to the base document:

Note: *Wherever the term Standard Operating Procedure appears in NFPA 1500 change wording to "General Operating Guidelines".*

Chapter 1 Administration

1-1 Scope.

1-1.1 This reference guide contains minimum requirements for a fire-service-related occupational health and safety practice.

1- 1.2* These requirements are applicable to all "municipal fire departments/brigades " providing fire suppression, rescue, emergency medical service, hazardous material mitigation special operations or other emergency services, in the Province of Nova Scotia .

*Where Mutual Aid is provided by an organization or agency that falls outside the scope of this guide this document shall form part of the mutual aid agreement.

1-1.3 As in NFPA 1500.

1-2 Purpose.

1-2.1 The purpose of this Reference Guide is to specify the minimum requirements for an Occupational Health and Safety practice for a fire department and to specify safety guidelines for those members involved in emergency incidents as applicable to their municipal registration.

1-2.2 As in NFPA 1500

1-2.3 As in NFPA 1500

1-3 Implementation

1- 3.1* When this reference is adopted by a jurisdiction, the authority having jurisdiction shall set a date for achieving compliance with the requirements of this guide and shall be permitted to establish a phase-in schedule for compliance with specific requirements of this *guide.*

*Refer to appendix 1-3.1

1-3.2 As in NFPA 1500

1-4 Equivalency.

1-4.1 and 1-4.2 As in NFPA 1500

1-5 Definitions.

Advanced Life Support (ALS). Emergency medical treatment beyond basic life support level as defined by the medical authority having jurisdiction.(EHS Nova Scotia)

Aerial Device. An aerial ladder, elevating platform or water tower that is designed to position personnel, provide egress and discharge water.

Air Craft Rescue & Fire Fighting. The fire fighting action taken to rescue persons and control or extinguish fire involving in side or adjacent to aircraft on the ground.

Approved. Acceptable to the authority having jurisdiction.

Authority Having Jurisdiction. The organization, government body or individual responsible for approving establishment, operation and equipping of a fire department or emergency response agency.

Basic Life Support (BLS). Emergency medical treatment at a level defined by the medical authority having jurisdiction.(EHS Nova Scotia)

Closed-Circuit Self-Contained Breathing Apparatus (SCBA). A recirculating type SCBA in which the exhaled gas is re-breathed by the wearer after the carbon dioxide has been removed and the oxygen content has been restored from sources such as compressed breathing air, chemical oxygen and liquid oxygen, or compressed gaseous oxygen.

Communicable Disease. A disease that can be transmitted from one person to another. Also known as contagious disease.

Competent Person. A person who is,

a. Qualified because of that person's knowledge, training and experience to do the assigned

work in a manner that will ensure the health and safety of every person in the work place and,

b. Knowledgeable about the provisions of this guide that apply to the task assigned or

equipment used and about potential or actual danger to health or safety associated with assigned work.

Confined Space. An area large enough that a member can enter and perform assigned work and has limited or restricted means of entry and exit and is not designed for continuous human occupancy. A confined space is also further defined as having one of the following conditions.

(1) The area contains or has a potential to contain a hazardous atmosphere, including an oxygen-deficient atmosphere.
(2) The area contains a material with the potential to engulf a member.
(3) The area has internal configuration such that a member could be trapped by collapse due to structural instability

(4) The area contains any other recognized serious hazard.

Contaminant. A harmful, irritating or nuisance material foreign to the normal atmosphere.

CSA. Canadian Standards Association

Defensive Operation. Actions that are intended to control a fire by limiting its spread to a defined area, avoiding commitment of personnel and equipment to the dangerous area. Referred to as exterior attack.

Emergency Incident. The circumstances that give rise to a specific emergency operation.

Emergency Medical Service. The provision of treatment such as first aid, cardiopulmonary resuscitation(CPR), basic life support(BLS), advanced life support(ALS), and other pre-hospital care to patients.

Emergency Operations. All activities conducted by the fire department to mitigate an emergency incident, relating to rescue, fire suppression, emergency medical care and special operations.

Entry Fire Fighting. Extraordinary specialized fire fighting operations that can include the activities of rescue, fire suppression and property conservation at incidents involving fires producing very high levels of conductive, and radiant heat such as aircraft fires, bulk flammable gas fires, and bulk flammable liquid fires. These incident require highly specialized protective clothing and training due to the scope of these operations requiring direct entry in to flame. Entry fire fighting does not refer to interior fire attack for structural fire fighting. (See Interior Fire Fighting).

Fire Apparatus. Any vehicle operated by members during rescue, fire suppression, emergency medical service, hazardous material operation, wildland, or other department activities including department vehicles used for crew transport.

Fire Chief. The highest ranking officer in charge of a fire department or fire brigade.

Fire Department/Brigade. An organization providing rescue, fire suppression and related activities. The organization can provide emergency medical service, hazardous material operation and other special operations, as specified in their municipal registration.

Fire Department Facility. Any building or area owned, operated, occupied or used by a fire department on a routine basis.

Fire Suppression. The activity involved in extinguishing fires. This include all activities performed at the scene of a fire incident or training exercise that exposes members to the dangers of heat, smoke, flame, and other products of combustion.

Flame Resistance. The property of a material whereby the application of flame or non-flaming source of ignition and subsequent removal of the ignition source results in the termination of combustion.

Fully Enclosed Area. A cab or passenger compartment of fire apparatus providing total enclosure equipped with positive latching doors for entry and exit.

General Operating Guidelines. An organizational directive that establishes a normal course of action.

Guideline. Written indication or outline of department policy that allows flexibility in application.

Hazardous Area. The area where members might be exposed to a hazardous atmosphere. A particular substance, device, event or condition that presents a danger to members of the fire department.

Hazardous Atmosphere. Any atmosphere that is oxygen deficient or that contains a toxic or disease producing contaminant. A hazardous atmosphere can be immediately dangerous to life and health.

Hazardous Material. A substance that presents an unusual danger to persons due to properties of toxicity, chemical reactivity or decomposition, corrosivity, explosion or detonation, etiological hazards, or similar properties.

Hazardous Material Operations. All activities performed at the scene of a hazardous materials incident that exposes members to the dangers of hazardous material.

Health and Safety Officer. The member of the fire department assigned and authorized as the manager of the health and safety program. This individual performs the duties and responsibilities as stated in section 29 of the Nova Scotia Health & Safety Act.

Hot Zone. The area immediately surrounding a hazardous material incident that extends far enough to prevent adverse effects from the release of hazardous materials to personnel out side the zone.

Incident Commander (IC). The fire department member in overall command of an emergency incident.

Incident Management System(IMS). An organized system of roles, responsibilities and general operating guidelines.

Incident Safety Officer. An individual appointed or assigned by the incident commander to over see all safety issues at the scene of an emergency and to perform duties and responsibilities as specified in this Code of Practice.

Infectious Disease. An illness or disease resulting from invasion of a host by disease-producing organisms such as bacteria, virus, fungi or parasites.

Member. A person involved in performing the duties and responsibilities of a fire department. This person can be paid full-time, part-time, or un-paid volunteer and can hold any position within the fire department, and engage in emergency operations.

Occupational Illness. An illness or disease contracted or aggravated by performance of the duties, responsibilities and functions of a fire department member.

Occupational Injury. An injury sustained during performance of the duties, responsibilities and functions of a fire department member.

Personnel Accountability System. A system that readily identifies both location and function of all members operating at an incident scene.

Positive -Pressure SCBA. An SCBA in which the pressure inside the face piece, in relation to pressure surrounding the outside of the face piece, is positive during both inhalation and exhalation of air.

Procedure. An organizational directive issued by the authority having jurisdiction or the fire department that establishes a specific policy that must be followed.

Protective Clothing Ensemble. Multiple elements of clothing and equipment designed to provide a degree of protection for fire fighters from adverse exposures to the inherent risk of structural fire fighting operations and certain other emergency operations. The protective ensemble includes coats, trousers, coveralls, helmets, gloves, footwear and interface components.

Qualified Person. A person who is in possession of recognized degree, certificate, professional standing or skill, and who by knowledge, training and experience, has demonstrated the ability to deal with problems related to the subject matter, the work or project.

Related Activities. Any and all functions that fire department members can be called upon to perform in execution of their duties.

Rescue. Those activities directed at locating endangered persons at an emergency incident, removing those persons from danger, treating the injured and preparing for transport to a health care facility.

Risk. A measure of the probability and severity of adverse effects. These adverse effects result from an exposure to a hazard.

Risk Management. Identification and analysis of exposure to hazards, selection of appropriate risk management techniques to handle exposures, implementation of chosen techniques and monitoring results, with respect to the health and safety of members.

Self Contained Breathing Apparatus(SCBA). A respirator worn by the user that supplies a respirable atmosphere that is either carried in or generated by the apparatus and is independent of the ambient environment.

Shall. Indicates a mandatory requirement.

Should. Indicates a recommendation or that which is advised but not required.

Special Operations. Emergency incidents to which a fire department responds to that requires specific and advanced training and specialized tools and equipment.

Structural Fire Fighting. The activities of rescue, fire suppression and property conservation in buildings, enclosed structures, air craft interiors, vehicles, vessels or like properties that are involved in a fire emergency situation.

Vehicle Safety Harness. A restraint device for vehicle occupants designed to limit movement in the event of an accident , sudden stop or acceleration , by securing individuals safely to a vehicle either in a seated position or tethered to the vehicle.

Wildland Fire Fighting. Fire suppression and property conservation in vegetation such as forest, brush or grass not within structures and evolved in a fire situation.

Working Structure Fire. Any fire that requires use of a 1 ½ -in (3.8-cm) or larger fire attack hose and that also requires the use of SCBA for members entering the hazardous area.

Chapter 2 Organization

2-1 Fire Department Organizational Statement.

2-1.1 The fire department shall prepare and maintain a written statement or policy that establishes the existence of the fire department; the services that the department will provide; the basic organizational structure; expected number of members; the type of functions the members will perform and the type and frequency of the training to be provided for the members.

2- 1.2* The fire department organizational statement shall set forth the operational criteria for the various types of emergencies to which the department will respond. This written criteria for each type of incident shall contain and identify the following:

(1) The types of standard emergency functions or task, such as incident command, water supply, hose lay, forcible entry, search and rescue, ladder placement, ventilation, salvage and overhaul and all other functions required to safely complete the incident. The criteria should identify evolutions that must be done simultaneously for safe operations.

(2) The minimum number of members required to safely perform each function or evolution , based on written General Operating Guidelines including an Accountability System.

(3) The number and types of apparatus and members required for the initial response to each type of emergency, as well as the total complement of apparatus and members to be dispatched for each incident and that defines the total response for all incidents up to the level of a major incident for that jurisdiction.

(4) A description of a typical emergency operation, including alarm time, response time, arrival sequence, initiation of basic function and assignments and General Operating guidelines as these relate to firefighter safety and the requirement for members arriving late in their own or other vehicles to report to incident command for the accountability system.

2-1.3 The organizational statement and operational guidelines shall be available for inspection by members or their designated representative.

NOTE: A sample general operating guideline found in Appendix B

2-2 Risk Management Plan.

2-2.1 The fire department shall adopt an Official risk management plan as part of the organizational statement, this plan shall address all department policies and procedures.

2-2.2 As in NFPA 1500

2- 2.3* As in NFPA 1500 (Also refer to NFPA appendix 2-2.3)

2-3 Policy.

2-3.1 The fire department shall adopt an official Occupational Health and Safety Policy that should bean integral part of the Organizational Statement and Risk Management Plan. This policy shall identify specific goals for the prevention and elimination of accidents, injuries and fatalities. This policy shall meet the requirements of Section 27 of the Nova Scotia Occupational Health & Safety Act.

2-3.2 The fire department shall evaluate the effectiveness of the Occupational Health & Safety program

on an annual basis, and results of audits shall be reported to the chief and department OH&S Committee. (See section 2-6)

2-3.2.1 Occupational Health and Safety issues should be part of the departments annual report.

2-4 Roles and Responsibilities.

2-4.1 and 2-4.1.1 As in NFPA 1500

2-4.1.2 The fire department shall establish and enforce rules, regulations and general operating guidelines to reach the objectives of this reference manual.

2-4.2 As in NFPA 1500

2-4.2.1* All accidents , injuries, fatalities, illnesses, and known or suspected exposures involving members shall be investigated.

2-4.2.2, 2-4.2.3, & 2-4.2.4 As in NFPA 1500

2-4.3 & 2-4.3.1 As in NFPA 1500

2-4.4 The union or association, where such an organization exists, shall cooperate with the fire department by representing the interest and welfare of the members in the research, development, implementation and evaluation of occupational health and safety program.

2-4.4.1 As in NFPA 1500

2-5 Health and Safety Officer.

2-5.1 The fire chief shall appoint a designated fire department health and safety officer, who shall be responsible for the management of the occupational health and safety program.

2-5.2 The fire chief shall assign or make available such assistant safety officers and resources as may be required to fulfill the requirements of the OH&S program.

2-6 Occupational Health and Safety Committee.

2-6.1 An Occupational Health & Safety Committee shall be established by the fire department and shall serve in an advisory capacity to the fire chief. The committee shall include at least; the designated safety officer, who will chair all meetings, a representative senior officer, appointed by the chief, one active firefighter, elected by the members. In all cases at least half of the members of the OH*S committee shall be members who are not connected with management of the work place. Where union members are involved, such as paid drivers etc. one member appointed by that membership shall sit on the committee. In compliance with The Nova Scotia Occupational Health & safety Act, section 30 2-6.2 As in NFPA 1500 with the addition of as specified in section 31 of the Nova Scotia Occupational Health & Safety Act.

2-6.3 The committee shall hold regular scheduled meetings at least once a month and shall be permitted to hold special meetings whenever necessary. When requested to do so, in writing, the chief shall meet with this committee to discuss mutual safety concerns. Written minutes of each meeting shall be made available to the members with a copy forwarded to the chief within one week of the meeting. As in section 30 of the Nova Scotia Occupational Health & Safety Act.

2-6.1.1 Section 30 subsection (4) states: A committee shall meet at least once each month unless;

(A) a different frequency is prescribed by regulation; or

(B) the committee alters the required frequency of meetings in its rules of procedure.

2-7 Records.

2-7.1 The fire department shall maintain permanent records of all accidents, injuries, illnesses or deaths relative to department activities.

2-7.2 As in NFPA 1500, add *"Forms for reporting such occurrences should be in the departments operating guidelines. "The department incident call sheet shall include a complete list of all members who participated in a particular incident.*

2-7.3 Delete from NFPA 1500

2-7.4* As in NFPA 1500

2-7.5 As in NFPA 1500 with the addition of, *"The manufacture's specifications of all apparatus and equipment shall be kept on file for reference."*

Chapter 3 Training and Education

3-1 General Requirements.

3-1.1 to 3-1.5 As in NFPA 1500

3-1.6 Fire department training officers should at least meet the qualifications for Instructor 1 as specified in 10 41 Standard for Fire Service Instructor Professional Qualifications. However in all cases teaching shall be conducted by a competent person in the subject being taught.

3-1.7 to 3-1.10 As in NFPA 1500

3-2 Training Requirements.

3-2.1 to 3-2.5 As in NFPA 1500

3-2.6 As in NFPA 1500 with addition of, *"All members shall meet the requirements of the authority having jurisdiction."* 3-2.7 to 3-2.16 As in NFPA 1500 **3-3 Frequency.**

3-3.1 to 3-3.3 As in NFPA 1500

3-3.4 and 3-3.5 change 34 hrs. to "*36 hours"*.

3-3.6 Members who are assigned to operations other than firefighting operations shall meet the requirements of the authority having jurisdiction and shall be involved with training on those activities for al least 9 hours annually.

Chapter 4 Vehicles, Equipment and Drivers

4-1 Fire Department Vehicles.

4-1.1 As in NFPA 1500

4-1.2 As in NFPA 1500 with addition of *"or meets the requirements of CAN/ULC-S515 1998"*. Standard on Automobile Fire Fighting Apparatus.

4-1.3** All new wildland fire apparatus shall be specified and ordered to meet the requirements of the authority having jurisdiction.

** *In Nova Scotia the authority having jurisdiction on this issue is The Nova Scotia Department of Natural Resources.*

4-1.4 As in NFPA 1500

4-2 Drivers/Operators of Fire Department Apparatus.

4-2.1 to 4-2.10 As in NFPA 1500

4-3 Persons Riding in Fire Apparatus.

4-3.1 to 4-3.4 As in NFPA 1500

4-4 Inspection, Maintenance and Repair of Fire Apparatus.

4-4.1 to 4-4.7 As in NFPA 1500 **4-5 Tools and Equipment.**

4-5.1 to 4-5.11 As in NFPA 1500

Chapter 5 Protective Clothing and Protective Equipment

5-1 General

5-1.1 to 5-1.3 As in NFPA 1500

5-1.4 Structural firefighting protective clothing shall be periodically cleaned. This cleaning shall be to the manufacture's instruction and appropriate for the type of contaminates and material being cleaned.

5-1.5 As in NFPA 1500

5-1.6 Where station/work dress are worn by members who engage in structural firefighting activities, such station/work dress shall comply with or be equivalent to NFPA 1975 *Standard on Station/Work Uniforms for Firefighters.*

5-1.7 As in NFPA 1500

5-1.8 The fire department shall where practical provide facilities, training, and cleaning agent for decontamination of protective clothing. When fire service staff cannot perform such cleaning, said cleaning will be performed by a cleaning service that is familiar with and equipped to handle contaminated clothing.

5-2 Protective Clothing for Structural Firefighting.

5-2.1 As in NFPA 1500 with the addition of, *"or CGSB, CAN155.1-98 standard for Firefighters Protective Clothing for Protection from Heat and Flame.*

5-2.1.1 to 5-2.1.4 As in NFPA 1500

5-2.1.5 No firefighter shall enter any hazardous atmosphere without the protective clothing as specified in section 5-2 of this guide.

5-3 Respiratory Protection.

5-3.1 As in NFPA 1500

5-3.1.1 The respiratory protection program shall meet the requirements of CSA Standard Z94.4-93 Selection Use and Care of Respirators, with respect to:

a. The training of users of the self contained respiratory protective equipment; and

b. The use, maintenance and testing of respiratory protective equipment.

5-3.2 As in NFPA 1500

5-3.3 to 5-3.12.4 as in NFPA 1500

5-4 Protective Clothing for Proximity Fire-Fighting Operations.

5-4.1 to 5-4.6 As in NFPA 1500

5-5* Protective Clothing for Emergency Medical Operations.

5-5.1 to 5-5.5 As in NFPA

5-6* Chemical -Protective Clothing For Hazardous Chemical Emergency Operation.

5-6.1 to 5-6.4.2 As in NFPA 1500

5-7 Protective Clothing and Equipment for Wildland Firefighting.

5-7.1 As in NFPA 1500

5-7.2 Members who engage in or are exposed to the hazards of wildland firefighting operations shall be provided with and use protective ensemble that meets the requirements of the authority having jurisdiction.

Note: The authority having jurisdiction in Nova Scotia is the Department of Natural Resources.

5-7.3 to 5-7.9 not applicable to Nova Scotia , Department of Natural Resources protocols will be followed for this subject.

5-8 Personal Alert Safety System (PASS)

Nova Scotia OH&S General Regulations section #195 subsection (3) shall apply .

Regulation #195 /3 An employer shall ensure that self contained respiratory protective equipment used by a firefighter when engaged in structural firefighting or rescue is equipped with a personal distress alarm device that complies with or exceeds NFPA 1982 " Standard on Personal Alert Safety System (PASS) for Firefighters, 1993 edition.

5-9 Life Safety Rope and System Components.

5-9.1 All life safety ropes, harnesses and hardware used by fire departments shall meet the applicable requirements of CSA standard for Harness and Life Safety Rope, as in the Fall Protection section of the Nova Scotia Occupational Health & Safety Act.

5-9.2 As in NFPA 1500 except. change NFPA 1983 to shall meet the applicable requirements of CSA, Standard for Harness and Life Safety Rope, as in the Fall Protection section of the Nova Scotia Occupational Health & Safety Act.

5-9.3 to 5-9.5 As in NFPA 1500

5-10 Eye and Face Protection.

5-10.1 as in NFPA 1500 with the addition of *" or CSA/CAN Z94.3-92 Standard on* Industrial Eye and Face Protectors

5-10.2 and 5-10 .3 As in NFPA 1500

5-11 Hearing Protection.

5-11.1 to 5-11.3 As in NFPA 1500 with 90 dBA changed to 85dBA as in the Nova Scotia OH&S regulations.

5-12 New and Existing Protective Clothing and Protective Equipment.

5-12.1 to 5-12.2 As in NFPA 1500

Chapter 6 Emergency Operation

Where ever Standard Operating Procedures appears change to *" General Operating Guidelines"*

6-1 Incident Management.

6-1.1 to 6-1.6 As in NFPA 1500

6-2 Risk Management During Emergency Operations.

6-2.1 to 6-2.3 As in NFPA 1500

6-2.4 At civil disturbances or incidents where the situation is known to involve the risk for physical violence, the incident commander shall ensure that appropriate protective equipment (ie. body armour) is available and used before members are allowed to enter the hazard area. *Note: If this equipment is not available members will not go into the area.*

6-2.5 At terrorist incidents or other incidents where the situation is known to involve potential nuclear, biological and chemical exposure, the incident commander shall exercise risk management practice and ensure that appropriate protective equipment is available for and used by members at risk.

6-3 Accountability.

6-3.1 to 6-3.7 As in NFPA 1500

6-4 Members Operating at Emergency Incidents.

6-4.1 to 6-4.5.2 As in NFPA 1500

6-4.6 When members are operating from aerial devices they shall be secured to the aerial device by an approved body harness that meets NFPA 1983

6-4.7 to 6-4.7.2 As in NFPA 1500

6-5 Rapid Intervention for Rescue of Members.

6-5.1 to 6-5.6 As in NFPA 1500

6-6 Rehabilitation During Emergency Operations.

6-6.1 to 6-6.4 As in NFPA 1500

6-7 Civil Unrest/ Terrorism

6-7.1 to 6-7.8 As in NFPA 1500 **6-8 Post-Incident Analysis.**

6-8.1 to 6-8.5 As in NFPA 1500

Chapter 7 Facility Safety

7-1 Facility Safety

7-1.1 As in NFPA 1500 with the addition of a note ;

"This Shall apply to all work living and sleeping areas of the fire department facility."

7-1.2 and 7-1.3 As in NFPA 1500.

7-1.4 All new fire department facilities shall have carbon monoxide detectors installed in sleeping, living and working areas, set to sound though out the building at a level of 25 parts/million.

Note: The carbon monoxide detectors referred to in this section need only be installed in hazardous areas where there are engineering controls in place to deal with CO contamination.

Where there are no engineering controls in place CO detectors shall be required in all areas mentioned. In all cases the CO detectors shall be set to sound at 25 ppm and shall sound the alarm throughout the building.

7-1.5 All fire stations and fire department facilities shall comply with The Building Code and regulations of Nova Scotia and the National Fire Code of Canada

7-1.6 and 7-1.7 As in NFPA 1500

7-2 Inspections.

7-2.1 All fire departments shall have a full facility inspection at least annually to provide compliance with section 7-1 of this code.

7-2.1.1** All inspections shall be documented and recorded.

** Sample inspection form to be placed in appendix 7-2.1.1

7-2.2 As in NFPA 1500

Chapter 8 Medical and Physical

8-1 Medical Requirements.

Firefighters and emergency workers must be physically and mentally capable of undertaking tasks related to the emergency work they are assigned.

Note: *It is the responsibility of the individual firefighter to report any medical condition that may prohibit he/she from performing any duty expected of them.*

8-2 & 8-3 Physical Performance Requirements & Physical Fitness

The physical requirements will vary according to the policy of the authority having jurisdiction.

In this case the authority having jurisdiction is the municipality.

8-4 Confidential Health Data Base.

This requirement will fall under the policy of the authority having jurisdiction.

8-5 Infection Control.

8-5.1 and 8-5.2 As in NFPA 1500

8-6 Fire Department Physician.

It is strongly recommended that the authority having jurisdiction. (Town, City or Regional Municipality) have available a medical officer for advice and assistance with medical matters.

8-7 Post-Injury/Illness Rehabilitation.

All post-injury/illness rehabilitation will be based upon the advice of a medical doctor specializing in the specific medical problem the member is recovering from.

Chapter 9 Member Assistance & Wellness Program

9-1 Member Assistance Program.

9-1.1 to 9-1.3 As in NFPA 1500

9-2 Wellness Program

9-2.1 and 9-2.2 As in NFPA 1500

Note: *The IAFF has offered a copy of their Wellness Program and will make it available to the Nova Scotia Fire Service.*

Chapter 10 Critical Incident Stress Program

10 -1 General.

10 -1.1 to 10 -1.3 As in NFPA 1500

Note: The Nova Scotia Critical Incident Stress Committee is a committee of the Fire Officers Association[390] of Nova Scotia and is contacted through the Office of the Fire Marshal.

Chapter 11 Referenced Material

The material referenced in this document will follow the list provided in NFPA 1500, with the addition of the Nova Scotia Occupational Health & Safety Act and its Regulations. All CSA and other Canadian standards quoted will be noted and sources for these standards will be provided.

Nova Scotia Occupational Health & Safety Act: enclosed.

OH&S General Regulations: enclosed

[390] The fire officers association is no longer in existence. The team is now contacted through the Fire Service Association of Nova Scotia (FSANS).

All NFPA Standards: Available through the Nova Scotia Fire School as well as Fire Fighting in Canada magazine.

CAN/ULC-S515-1998 Standard on Automobile Firefighting Apparatus,

CAN/CSA155-98 Standard for Firefighters Protective Clothing for Protection from Heat

& Flame, CAN/CSA Z94.3-92 Standard on Industrial Eye and Face Protection, CAN/CSAZ259.10 -M90 Standard on Full Body Harness,

CAN/CSA standards are available through The Canadian Standard Association.

APPENDIX 13: SAMPLE SERVICE AGREEMENT

MUNICIPAL FIRE PROTECTION AGREEMENT dated this

_____ day of the week

_____, 200__.

BETWEEN:

THE MUNICIPALITY OF CUMBERLAND COUNTY

(herein called "Municipality MCC")

- and -

SAMPLE

THE TOWN OF XXX

(herein called "TOX")

WHEREAS MCC wishes to contract with for the purposes of receiving fire protection services within specified areas of MCC from TOX;

AND WHEREAS TOX operates fire protection services, has appointed a Fire Chief and owns fire protection assets through a fire department situated within the Town of XXX;

AND WHEREAS Part X (§293) of authorizes a municipality may maintain and provide fire and emergency services by providing the service, assisting others to provide the service, working with others to provide the service or a combination of means.

AND WHEREAS the councils of MCC and TOX have duly enacted any required by-laws or passed any required resolutions to authorize such an agreement between the parties;

NOW THEREFORE, in consideration of the mutual covenants and representations contained in this Agreement, MCC and TOX agree as follows:

SECTION 1.00 - DEFINITIONS AND SCHEDULES

1.01 In this Agreement,

(a) "Auto-Aid ", A formal written agreement, (plan), developed between two or more fire departments for immediate joint response for initial responses.

(b) "Employee", a volunteer and or paid, (albeit, part-time, casual or fulltime) firefighter, who is an active member of a registered fire department, who responds to fire and emergencies as outlined within this service agreement.

(c)"Fire and Emergency Response Area" means the fire area(s) of MCC as described in Schedule A hereto;

SAMPLE

(d) "Fire Chief" means the chief of the fire department of the Town of XXX Fire Department duly appointed by the council of the Town of XXX and, if provided for pursuant to the appointment, his or her designate;

(e) "Fire Department" means an organization providing rescue, fire suppression, and related activities by the Town of XXX Fire Department situated within the Town of XXX;

(f) "Fire Protection and Emergency Services" means those services that TOX agrees to provide to MCC, as described in Schedule B

(g)"Initial Response Area", is the area of the Municipality of Cumberland County that the Town of XXX has responsibility and accountability for fire and emergency service response.

(h)"MCC" the Municipality of Cumberland County

(i) "Mutual Aid", Reciprocal assistance by emergency services under a formal written agreement.

(j) "Structure fire", is any fire inside, on, under or touching a structure.

(k)"TOX" the Town of XXX

1.02 The following schedules are attached hereto and form part of this Agreement:

(a) Schedule A – Initial Response - Fire/Emergency Area of MCC

(b) Schedule B – Fire Protection and Emergency Services provided.

(c) Schedule C – Service Level(s)

(d) Schedule D – Mutual Aid & Auto-Aid Agreements

(e) Schedule E – Annual Report and Registrations

(f) Schedule F – Fees

2.0 TERM

2.1 This agreement commences on the 1st day of _____202_, The term of the agreement is for _____years, expiring on ____ the day of _____202_.

SAMPLE

3.0 TERMINATION

3.1 Neither party shall be able to withdraw during the term of the agreement. The agreement will be automatically extended year to year beyond the initial terms of the agreement unless either party has given at least twenty-four (24) months written notice to the other of its intention to withdraw.

4.0 CONSIDERATION

4.1 The County shall pay the Town of XXX as per the terms, amounts and schedule outlined in Schedule F.

5.0 GOVERNING LAW

5.1 This agreement shall be governed by the laws of Canada to the extent they apply and by the laws of Nova Scotia.

6.0 LIABILITY AND INDEMNIFICATION

6.1 MCC shall not be liable for any injury to the Town of XXX, or any officers, employees, volunteers, agents, residents, occupants or visitors of the Town of XXX. Or of the Initial Fire Response coverage area, or for any damage to or loss of property of the Town of XXX or any of its officers, employees, volunteers, agents, residents, occupants or visitors of the Town of XXX. or the Fire Area, caused by or in any way related to the performance of this Agreement, including (without limitation) failing to provide Fire Protection Services on any occasion to the Town of XXX or for any decision made by the Fire Chief pursuant to this agreement

6.2 The Town of XXX shall save harmless and fully indemnify MCC, its officers, employees, agents and volunteers from and against all claims, liabilities and demands arising directly or indirectly from such injury, damage or loss as referred to in section 6.1 and such indemnification shall survive the termination of this Agreement.

6.3 Sections 6.1 and 6.2 do not apply if the injury, damage or loss was caused by the omission or wrongful or negligent act of an officer, employee or volunteer of MCC while acting within the scope of his or her responsibilities.

6.4 The Town of XXX shall not be liable for any injury, damage or loss sustained by personnel, apparatus or equipment of MCC caused in any way related to the performance of this Agreement.

6.5 MCC shall save harmless and fully indemnify the Town of XXX", its officers, employees, agents and volunteers its officers, agents and volunteers from and against all claims, liabilities and demands arising directly or indirectly from such injury, damage or loss as referred to in section 6.4 and such indemnification shall survive the termination of this Agreement.

6.6 Sections 6.4 and 6.5 do not apply if the injury, damage or loss was caused by the omission or wrongful or negligent act of an officer, employee or volunteer of the Town of XXX while acting within the scope of his or her responsibilities.

7.0 DISPUTE RESOLUTION

SAMPLE

7.1 Any dispute or difference arising out of or in connection with this Agreement that cannot be resolved between the parties within a six-month period of time shall be resolved by binding arbitration in accordance with the terms of the Nova Scotia *Arbitration Act.* The parties shall be responsible for the costs incurred by the arbitration on an equal basis.

7.2 The "costs incurred by arbitration" shall include all costs directly attributable to the actions of the arbitrator(s) and/or panel, such as their fees and costs, costs for their support staff, costs, incurred conducting hearings, etc. All costs incurred by either of the parties in the course of preparation and presentation of their own case shall be the exclusive responsibility of the party incurring the expense, and no claim for the other party to pay or share in those costs shall be made regardless of the outcome of the arbitration.

THIS AGREEMENT SHALL be binding upon and inure to the benefit of the parties thereto, their successors and assigns.

IN WITNESS WHERE OF the parties have executed this Agreement by their duly authorized officers this ___ day of _____ 202__

SIGNED, SEALED AND DELIVERED)
in the presence of)
)
)
)
)
)
)

Schedule A – Fire and Emergency Response Area of MCC

The area in which the Town of XXX Fire Department will have responsibility and accountability to provide Initial Response is depicted in the following coverage area map.

INSERT MAP

Schedule B – FIRE AND EMERGENCY RELATED SERVICES PROVIDED

The Town of XXX agrees to the provision, (within their area of initial response), of fire and emergency services as outlined below and to the service levels outlined in Scheduled C - Service Level(s) to be provided.

1. FIRE RELATED Initial responses to the following service requests.
    a. ALL Calls of Fire, i.e., any and all structure types and occupancies, vehicles, grass, brush and woodlands,
    b. ALL fire alarms, any and all structure types and occupancies
    c. ALL calls for chimney fires
    d. ALL CO alarms any and all structure types and occupancies
    e. ALL Smoke and or odour investigations of any and all structure types and occupancies

2. FIRE INVESTIGATIONS As per the Fire Safety Act, Chapter 6:
    a. As per §32, sections 1 through 5, investigate or cause to investigate any and all fires as covered by the Fire Safety Act of Nova Scotia within the MCC initial response area as outlined in Schedule A

3. HAZARDOUS MATERIAL RESPONSE:

SAMPLE

    a. Within the MCC initial response area as outlined in Schedule A the Town of XXX Fire Department will respond to all calls that are of a nature that require a Hazardous Materials response in accordance with the agreed upon service level outlined in Schedule B within their initial response area and under the formal written Mutual Aid agreement with MCC.

4. MOTORIZED VEHICLE ACCIDENT

    a. Within the MCC initial response area as outlined in Schedule A the Town of XXX Fire Department will respond to all calls requiring responses to motor vehicle accidents with or with or without entrapment.

5. INDUSTRIAL ACCIDENTS

a. Within the MCC initial response area as outlined in Schedule A the Town of XXX Fire Department will respond to all calls for industrial accidents that may require the use of specialized equipment for extricating an injured worker.

6. SPECIAL SERVICE CALLS
   a. Within the MCC initial response area as outlined in Schedule A the Town of XXX Fire Department will respond to all requests for power lines down, public and police assistance, and requests for services under the municipalities, Emergency Measures plan.

Schedule C – FIRE AND EMERGENCY SERVICE LEVELS

1.0 **DEFINITIONS**

SAMPLE

1.1 ALARM:

1.1.1 A signal or message from a person or device indicating the existence of an emergency or other situation that requires action by an emergency response agency.

1.2 AREA: The geographic area outlined in *"Schedule A"* of this agreement.

1.3 INCIDENT COMMANDER(IC)

1.3.1 The individual responsible for all activities, including the development of strategies and tactics and the ordering and the release of resources.

1.4 INCIDENT MANAGEMENT SYSTEM (IMS)

1.4.1 An organized system that defines roles and responsibilities to be assumed by responders and the standard operating procedures to be used in the management and direction of emergency incidents and other functions.

1.5 INITIAL ATTACK

1.5.1 Firefighting efforts and activities that occur in the time increment between arrival and of the department on the scene of a fire and the tactical decision by the incident commander that the resources dispatched on the original response are sufficient to control and extinguish the fire or that the fire is extinguished.

1.6 STANDARD OPERATING PROCEDURES

1.6.1 A written organizational directive that establishes or prescribes specific operational or demonstrative methods to be followed routinely for the performance of designated operations or actions.

1.7 STRUCTURAL FIREFIGHTING:

1.7.1 The activities of rescue, fire suppression and property conservation in buildings or other structures.

2.0 STAFFING & DEPLOYMENT SAFETY

2.1 Service levels for all calls of fire as outlined in Schedule B section 1 will adhere to the Staffing and Response Time table 2.4

2.2 Upon assembling the necessary resources at the emergency scene, the fire department shall have the capacity to safely commence an **initial attack** within two (2) minutes ninety (90) percent of the time.

2.3 Mutual Aid and Auto-Aid may be used in determining service levels.

2.4 In keeping with NS OHS 086 Ruling of June 03, 2008 and NFPA-1500 section 8.5.7.(Ref Appendix "A")

2.5 Response Table

DEMAND ZONE	DEMOGRAPHICS	Min Staff to Respond	Response Time to Respond	Meets Objective (%)
Urban Area	>10 00 people/2.6 km2	15	9	90
Suburban Area	500-10 0 people /2.6 km2	10	10	80
Rural Area	<500 people /2.6 km2	6	14	80
Remote Area	Travel Distance > 12.87 km	4	Directly dependent on travel distance	90

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2.6 SUSTAINED FIREFIGHTING OPERATIONS

2.6.1 The TOX fire department shall have the capability to sustain operations, which include personnel, equipment and resources to conduct incident-specific operations. The TOX fire department shall be permitted to employ established automatic aid and mutual agreements to comply with this section.

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2.7 MOTOR VEHICLE ACCIDENTS

SAMPLE

Alarms for vehicle accidents shall consist of a rescue unit with the appropriate rescue equipment and tools to be able to make safe the scene, stabilize vehicles if required and if necessary, extricate occupants and a pumper tanker.

The minimum staffing for such alarms shall be six one officer and five firefighters.

Response area coverage shall be as defined in Schedule A of this agreement.

2.8 HAZARD MATERIAL RESPONSES This Section If Appropriate

2.8.1 TOX as part of this agreement will provide a "LEVEL B".

2.8.2 LEVEL B is defined as "An incident involving hazardous materials that is beyond the capabilities of the first responders. (MCC Fire Departments).

2.8.3 **SERVICE EXPECTATIONS**

2.8.3.1 First Responders at the Operations Level are individuals who can respond to an incident for the purpose of protecting nearby persons, environment and property from the effects of the release. They are only trained to act defensively to contain and confine the spill.

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2.8.4 **PROTECTIVE CLOTHING**

2.8.4.1 Level B – Second Highest Level of Protection; SCBA plus a hooded chemical resistant non-vapor tight suit. It requires chemical resistant inner/outer gloves as well as chemical resistant outer boots with steel toe/shank and intrinsically safe two-way radio.

SAMPLE

2.8.5 **RESPONSE EQUIPMENT**

2.8.5.1 The following minimum emergency response equipment will be made available for use by the trained responders:

- Shovel, Broom, Chemical Resistant Spill Boom, Poly Drum Over-pack, Drum Repair Kit, Oil Sorbent Pads, Hazardous Material Sorbent and Oil Sorbent.

2.8.6 **EQUIPMENT INSPECTIONS**

2.8.6.1 On a monthly basis the equipment will be inspected to ensure it is ready for use in an emergency. A record of these inspections will be retained for audit purposes.

2.9 RESPONSE TO HAZARDOUS MATERIALS ALARMS

2.9.1 The Fire Chief of the Town of XXX or designate will determine the appropriate response of apparatus and manpower based upon the nature and extent of the incident and upon any interagency SOG that is in effect between the MCC fire departments and the Town of XXX.

2.9.2 If the Fire Chief and/or designate is of the opinion that assistance from the Regional Special Hazards Response Unit (SHRU), located in Bible Hill, NS, is required, the authority rests with the XXX Fire Chief or designate to do so.

2.10 FIRE GROUND COMMAND & CONTROL

2.10.1 For all incidents within the MCC area as outlined in Schedule "A" in which TOX is the primary and initial responder, there shall be one qualified TOX responder who will take on the role and responsibility of Incident Commander, (IC).

2.10.2 The IC (TOX officer), will be responsible for the implementation of the IMS, employing any and all SOGs, scene safety, requesting and managing personnel and apparatus and equipment and has the authority to make requests for additional resources and expertise as the IC deems necessary.

3.0 FIRE INVESTIGATIONS

- The TOX shall have the Provincial Fire Marshal appoint under their authority their Fire Chief or designate as a Local Assistant to the Fire Marshal for the contracted service area as per Schedule A of this agreement.

3.1 As per §32 (1) of the Fire Safety Act, Subject to subsections (4) and (5), the local assistant shall immediately, and in no case later than twenty-four hours following a fire, investigate, or cause to be investigated, the cause, origin and circumstances of every fire by which property has been destroyed or damaged that occurs within the municipality or part thereof for which the person is a local assistant, unless otherwise directed by the Fire Marshal,

3.1.1 Where,

(a) there has been a loss of human life; or

(b) the local assistant investigating the fire believes that the fire is incendiary or of suspicious origin, the local assistant shall notify the police immediately and the Fire Marshal within twenty-four hours following the fire.

3.1.2 (3) Within seven days of completing the investigation of a fire, the local assistant shall furnish to the Fire Marshal, in a form acceptable to the Fire Marshal, a documented statement of the facts relating to the cause, origin and circumstances of the fire and such further information as the Fire Marshal requires.

3.1.3 Copies of all Fire Investigations shall be forwarded to the MCC's Director of Protective Services.

SAMPLE

4.0 INDUSTRIAL ACCIDENTS

4.1.1 The TOX Fire Department shall acquire and maintain the necessary equipment required to respond to and mitigate any industrial incident within the MCC area as defined in Schedule A

4.1.2 Staffing and deployment objectives shall mirror those outlined in Table 2.4.

5.0 SPECIAL SERVICE CALLS

5.1.1 Responses to Service Calls shall be determined based upon the nature and urgency of the Special Service call. Special Service Calls such as the likes of "Down Power Lines" or "Fuel Spills", shall be treated as any true emergency and response times outlined in Table 2.4 shall be adhered to.

6.0 TRAINING

6.1.1 The TOX and the TOX Fire Department agrees to train and qualify its fire department members to have the necessary knowledge, skills and abilities, to be able to carry out its obligations as outlined in this agreement.

7.0 MEETINGS

7.1.1 The TOX Fire Chief and/or designate shall meet as a minimum twice a year with the MCC Director of Protective Services to review current service delivery and issues that may impact on this agreement.

7.1.2 Further to the requirements of 7.1.1 either party may call for a meeting to discuss issues relative to this agreement at any time.

Schedule D – Mutual Aid & Auto-Aid Agreements

1.0 TOX Fire Department agrees to participate fully in the development, and/or amending Mutual Aid and Auto-Aid agreements with the MCC as required from time to time.

2.0 Further TOX Fire Department agrees to participate fully in the development, and/or amending of the appropriate SOGs to accompany the Mutual Aid and Auto-Aid agreements.

3.0 Both the TOX and MCC shall train all of their respective firefighting personnel in the requirements of both the Mutual Aid and Auto-Aid agreements as well as accompanying SOGs.

SAMPLE

4.0 Both parties agree to meet annually to review both the Mutual Aid and Auto-Aid Agreements and accompanying SOGs so as to keep current and any issues that may have arisen during the previous calendar year.

5.0 The Town, in cooperation with neighboring rural fire departments will maintain the Fire Underwriters Survey Superior Water Shuttle Accreditation for the Coverage Area as per Schedule A. The Town agrees to participate in exercises with County fire departments from time to time to obtain and maintain Superior Water Shuttle Accreditation in the "County Coverage Area as per Schedule A". The County recognizes the need for the cooperation of the surrounding County fire departments to maintain the Superior Water Shuttle Accreditation.

SCHEDULE "E"– REPORTS & REGISTRATIONS

SAMPLE

1.0 REPORTS

1.1.1 The TOX Fire Department shall employ the Fire Marshal of Nova Scotia's standardized reporting methodology.

1.1.2 The TOX Fire Department shall complete a Fire Marshal incident report for each incident that requires such a report and shall forward copies of all such reports to the MCC Director of Protective services.

1.2 ANNUAL EVALUATION and REPORT

1.2.1 The TOX fire department shall evaluate its level of service, deployment delivery and response time objectives on an annual basis.

1.2.2 The evaluation shall be based on data relating to level of service, deployment and the achievement of each response time objective in each demand zone within the service area as defined in Schedule A.

1.3 ANNUAL FIRE DEPARTMENT REGISTRATIONS

1.3.1 In keeping with the Municipal Government Act Part X, §294 (3) the TOX Fire Department shall register with the MCC on the Registration form provided by MCC no later than 1 April of each year.

Schedule F – Fees

DEFINITIONS

1.1 "County Coverage Area"- is that area for which the Oxford Fire Department has responsibility for providing fire protection services. It is graphically represented in Schedule "A".

1.2 "Direct Fire Protection Services Costs" equals the total operating budget of the Oxford Fire Department excluding the public fire protection charge (hydrant rental), administration allocations, and fire inspections costs.

1.3 The County shall pay the Town the sum of _____dollars ($$$) annually (the annual amount) in equal regular monthly payments. The annual amount shall be adjusted in each year subsequent to the initial year of the agreement on the 1st of April by a percentage based on the annual average increase in the consumer price index (CPI) for Nova Scotia for the preceding calendar year, (the base for CPI NS shall be calendar XXXX), i.e., XXXX/XX contribution shall be based on the annual average change in CPI NS, calculated by Statistics Canada for the period of January 1, 202__ to December 31, XXXX times $$$.

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1.4 The annual amount, as calculated above, includes operations and capital costs. No future claims will be made during the term of the agreement, except as provided for below.

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1.5 Should a change in provincial and/or federal regulation pertaining to fire procedures, practices, apparatus and equipment which impact the operational or capital cost of providing the service in the "County Coverage Area" as outlined in Schedule "A" occur, the parties agree that they will meet and determine an appropriate increase in the annual amount to address such change. These costs will be shared at the ratio of the County's contribution versus the direct fire protection services costs for the Town of XXX Fire Department times the net costs resulting from the change in regulation(s). This clause specifically excludes facility costs. Should the parties not be able to agree on the amount of an appropriate increase in the annual amount, the matter shall be submitted to arbitration in accordance with the provisions of paragraph 7 of this Agreement.

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APPENDIX A

SAMPLE

NFPA-1500 - 8.5.7

8.5.7* In the initial stages of an incident where only one crew is operating in the hazardous area at a working structural fire, a minimum of four individuals shall be required, consisting of two individuals working as a crew in the hazardous area and two individuals present outside this hazardous area available for assistance or rescue at emergency operations where entry into the danger area is required.

A.8.5.7 The assembling of four members for the initial fire attack can be accomplished in many ways. The fire department should determine in their response plan the manner in which they plan to assemble members. The four members assembled for initial fire-fighting operations can include an officer, chief officer, or any combination of members arriving separately at the incident. Members who arrive on the scene of a working structural fire prior to the assembling of four persons can initiate exterior actions in preparation for an interior attack. These can include, but are not limited to, actions such as the establishment of a water supply, the shutting off of utilities, the placement of ladders, the laying of the attack line to the entrance of the structure, or exposure protection. If members are going to initiate actions that would involve entering a structure because of an imminent life-threatening situation where immediate action can prevent the loss of life or serious injury, and four members are not yet on the scene, the members should carefully evaluate the level of risk that they would be exposed to by taking such action. If it is

determined that the situation warrants such action, incoming companies should be notified so that they will be prepared to provide necessary support and backup upon arrival.

A.8.5.11 The following examples show how a department could deploy a team of four members initially at the scene of a structure fire, regardless of how the team members are assembled:

(1) The team leader and one fire fighter could advance a fire-fighting hose line into the IDLH atmosphere, and one fire fighter and the pump operator become the standby members.

(2) The team leader could designate the pump operator to be the incident commander. The team leader and one fire fighter enter the IDLH atmosphere, and one fire fighter and pump operator remain outside as the standby members.

(3) Two fire fighters could advance the hose line in the IDLH atmosphere, and the team leader and pump operator remain outside as standby members

APPENDIX 14: SAMPLE MUTUAL AID AGREEMENT

THIS MUTUAL AID EMERGENCY RESPONSE AGREEMENT

made this _____day of _____ 20XX, effective the first day of _____ 20XX.

BETWEEN: The Municipality of the County of XXXX, (herein referred to as the "Municipality")

- and -

XXXXX FIRE DEPARTMENT, a body corporate pursuant to the *Societies Act* of Nova Scotia, Registry ID:

- and –

XXXXX FIRE DEPARTMENT, a body corporate pursuant to the *Societies Act* of Nova Scotia, Registry ID:

- and -

XXXXX FIRE DEPARTMENT, a body corporate pursuant to the *Societies Act* of Nova Scotia, Registry ID:

WHEREAS Fire Department are registered with the Municipality as primary fire response service providers under the *Municipal Government Act*, SNS 1998, c 18, to provide fire response service by providing the service, assisting others to provide the service, working with others, namely fire departments, to provide the service, or a combination of means;

AND WHEREAS a fire or emergency could affect any community in the Municipality to such a degree that the resources of a local volunteer fire department would be inadequate to cope with the situation;

AND WHEREAS the parties wish to make pre-arrangements for the quickest possible reaction in support of any Fire Department or community which may be affected or threatened by fire or emergency and require assistance;

NOW WITNESSETH that for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and the premises and mutual promises and covenants contained herein, the parties agree as follows:

Response to Call

1. Subject to the availability of emergency responders and equipment, the Fire Departments will respond to a call for assistance with such emergency responders and equipment as may be requested by any other Fire Department in a fire or emergency.

Chief's Authority – Responding Department

2. The Chief or the most senior officer of the Fire Department receiving a request for assistance shall have the sole discretion to determine what assistance can be given and what emergency responders and equipment can be made available, and shall have the right to request withdrawal of such assistance when and to the extent that, in his/her judgement, circumstances and his/her responsibilities require him/her to do so, and such request shall not be unreasonably refused by the Chief or the most senior officer of the Fire Department which requested the assistance.

Additional protocols may be established which outline generally which departments will be dispatched in any particular call and how those protocols get established or changed once established which protocols must be agreed upon by the participating Fire Departments.

Request for Assistance

3. Any call for emergency responder assistance purporting to be made by any Fire Department shall constitute a request for such assistance pursuant to this agreement, and such calls for mutual aid shall specify the type and extent of aid requested.

WCB Considerations

4. Any and all responding Mutual Aid departments and their personnel, in the event of an injury or accident remains the employee of the municipality in which the department of the injured party is a member of and

is geographically located and is registered with that municipality.

Line of Authority

5. At the fire or emergency scene, the assisting Fire Department shall remain under the direction of its Chief or the most senior officer at the emergency scene, who shall place himself at the disposal of the Chief or the most senior officer of the Fire Department requesting assistance.

Transfer of Command

6. Transfer of Command by the Fire Department/Fire chief, a senior officer or designate of the fire department (primary department) where the location of the emergency is located within the geographical area as approved by the Municipality to whom they are registered, may request a transfer of Command to the assisting department, or one of the assisting departments, if more than one responds, under one or more of the following conditions.
    a. Lack of responders by the primary fire department
    b. Non presence of any primary department officers.
    c. Lack of on scene resources by the primary fire department
    d. The primary department, is required to attend another emergency within their geographical area and there are sufficient assisting resources on scene to manage the current state of the emergency.
    e. Transfer will only take effect if the assisting department (s) chief officer(s) on scene agree to take on the responsibility of incident management.
    f. If transfer of command is agreed to, the responsibility, for fire investigation and fire reporting remains with the primary fire department.
    g. Within twenty-four (24) hours a supplementary report(s) of time of transfer of command, naming the fire department and individual who took on scene management responsibility, the reasons for transfer of command shall be recorded and a copy forwarded to the Director of Protective Services

7. **First to Arrive:**
There may be occasions where the mutual aid department may arrive prior to the primary fire department, in which case the assisting department will commence rescue and fire operations and be in command until such time the primary department arrives on scene and a transfer of command will take effect transferring command over to the primary department.
    a. The responsibility, for fire investigation and fire reporting in this situation will remain with the primary fire department.
    b. In the instance of the First to Arrive situation, within twenty-four (24) hours a supplementary report of time of transfer of command, naming the fire department and individual who took on scene management responsibility, the reasons for transfer of command shall be recorded and a copy forwarded to the Director of Protective Services.

Period of Assistance

8. For purposes of this agreement, the period of assistance shall be deemed to commence immediately upon receipt of the notification of the request for a response from the assisting Fire Department and end upon release or termination of duties, with the assisting Fire Department placed back in service, exclusive of any

period during which its equipment may be immobilized at the emergency scene by reason of accident or mechanical breakdown and during which it may be prevented by mechanical defects or deficiencies in its equipment from useful employment in fighting the fire or responding to the emergency.

Mutual Assistance Reciprocal

9. All parties agree that mutual assistance at emergency scenes is reciprocal and that no demand or claim will be made by any party against any other party for any damages, money or other compensation of any kind, other than for fuel costs for apparatus and other expendables such as foam agents and if of such duration requiring feeding and rehabilitation of response personnel.

No claims for Liability

10. No party shall have nor assert any claim against any other party for any loss, damage, or injury to persons or property of any kind attributable to the performance of this agreement.

Indemnity by Requesting Department

11. The Fire Department requesting assistance shall indemnify and save harmless any Fire Department rendering the assistance from and against any and every claim, cause of action or demand by a person not a party to this agreement that:
    a) is based on an event that occurs during a period of assistance as defined in paragraph 5, and,
    b) is attributable to or in any way connected with the performance by any party of its obligations under the agreement.

Chief – Expanded Meaning

12. In this agreement, the expression "Chief" shall mean, in the absence of such Officer, his/her designate, his/her Deputy or any other person discharging his/her duties or responsibilities for the time being.

Procedure for Termination

13. This agreement shall remain in force from the date first written above until it is terminated and may be terminated, with regard to the involvement of any specific Fire Department or Fire Departments, at any time by such Fire Department or Fire Departments upon giving to the Municipality written notice naming therein a date of at least three (3) months from the giving of such notice, upon which this agreement is to terminate, and on the date so named this agreement shall be at an end for that Fire Department or Fire Departments but otherwise shall remain in full force and effect with regard to the remaining Fire Departments and without prejudice to any right of any Fire Department arising hereunder prior to its termination. The same shall apply to *mutatis mutandis* to the Municipality.

    The Municipality shall upon receipt of such notice forthwith send a copy to all parties.

Responsibility of the Chiefs

14. The Chiefs of the Fire Departments shall be responsible for such mutual consultation and adoption of such measures as they deem expedient in order to familiarize the emergency responders of each Fire Department with the fire and emergency risks and the fire protection or emergency facilities available to meet them in

the area for which any other Fire Department is responsible.

Counterparts

15. This agreement may be executed in counter parts, and by faxed or scanned copies of the original, each of which counterpart or copy shall be deemed an original, but all of which shall together constitute one and same agreement.

IN WITNESSES WHEREOF this agreement has been executed and is effective as of the dates written above.

SIGNED, SEALED AND DELIVERED in the presence of:

The Municipality of the County of Richmond

Per: Warden _____

Clerk _____

NAME Fire Department _____

Per: _____

Name of Fire Chief (please print)

_____

Signature of Fire Chief

NAME Fire Department _____

Per: _____

Name of Fire Chief (please print)

_____

Signature of Fire Chief

NAME Fire Department _____

Per: _____

Name of Fire Chief (please print)

_____

Signature of Fire Chief

Etc. etc.

TABLE OF RECOMMENDATIONS

NOTE: Some recommendations unavoidably contain lists, and therefore are truncated in the below tabulations. For the full text of these few recommendations, use the hyperlink buried in the recommendation in the table to navigate to the entire recommendation in its original form.

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 1: GA recommends that all current fire apparatus be thoroughly reviewed by a competent person who is thoroughly familiar with the NFPA requirements for that Type of fire apparatus (i.e., pumpers, water supply, initial attack, special service, etc.). Equipment carried on all fire apparatus should be augmented as necessary to meet the minimum requirements for that Type of fire apparatus in order to ensure the proper tools are available for use and to ensure full credit as meeting that Type of fire apparatus.	177
Recommendation 2: GA recommends that complete inventories of all fire apparatus and auxiliary vehicles should be developed. Check-sheets should be developed for each apparatus; that include all carried equipment as well as including clear indication of which equipment is designated to meet minimum equipment requirements, for that Type. These check-sheets should be utilized for weekly visual and operational checks (aka truck-checks) in conformance to NFPA-1911 requirements. The results of these truck-checks should be filed weekly with the County. The County should consider supplementing the check-sheets with a computer database, county-wide, RMS system.	177
Recommendation 3: GA recommends that all MCC purchased fire apparatus be standardized in specification in order to speed the acquisition process and obtain better pricing. This should include a standard chassis, standard pump size and make/model, standard features and capability, and a standard body configuration, details as recommended in this Report.	187
Recommendation 4: GA recommends that the provided Standard Specification Outlines on page 183 of the *Report* be utilized as the starting point for developing detailed standard specifications for the replacement of all fire apparatus.	187
Recommendation 5: GA recommends that all fire apparatus when purchased new should be specified, constructed, tested, and accepted in conformance with the requirements of the latest edition of NFPA-1901. And CAN/ULC-S515. All should have a ULC label displayed on them.	187
Recommendation 6: GA recommends that when the new consolidated Standard, NFPA-1900, comes into effect that all recommendations made referencing the following noted Standards will refer, mutatis mutandis, to NFPA-1900 when it comes into effect; NFPA standards 1901, 1906, 414, and 1917.	187

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 7: GA recommends that all fire apparatus placed in service in Cumberland County, whether new or used, should meet a relevant section of NFPA-1901; consistent with its performance and mission, and be provided with the Standard's minimum equipment load. Purchase of new or used apparatus should fall under one of the Standard's Types of fire apparatus, conforming to the requirements that are relevant at the time of purchase, as follows;	187
Recommendation 8: GA recommends that the County should introduce a plan, whereby existing fire apparatus serving in the County should be upgraded as far as practical to meet the fundamentals of the NFPA-1901 Standard and should be equipped appropriately. NFPA-1911 and 1912 should be used to make the determinations on needed changes. Vehicles where it is not practical or economic to upgrade should be removed from service.	188
Recommendation 9: GA recommends that all fire apparatus in Cumberland County be Inspected, Maintained, Tested, Repaired, Modified, Refurbished, or Removed from service in accordance with the best practices contained in NFPA-1911 and 1912. All used vehicles purchased by the County should be upgraded as necessary to meet the requirements of these standards before being placed into service. Apparatus that do not meet the standards, in any substantive way, should not serve in the County for delivering fire services.	188
Recommendation 10: GA recommends that fire apparatus that does not meet, or cannot be reasonably made to meet, the basic requirements of the NFPA Standards be removed from service as soon as practical. Such vehicles should not be funded or condoned in any way by the County. This recommendation does not apply to pickup like non-emergency utility vehicles intended to assist with moving supplies, manpower, or loose equipment in support of fire station operations. Nor does it apply to SUV style vehicles intended for delivering MFR services nor to UTV type vehicles.	188
Recommendation 11: GA recommends that the County develop an Inspection, Maintenance, Testing, and Retirement program (Servicing Program) for all of its fire apparatus that is designed to meet the requirements contained in NFPA-1911 Standard, latest edition. Annex C of the Standard may be particularly helpful in establishing the program. Schedules for all required activities should be carefully developed and observed. Records of all activities should be diligently and consistently kept in a records management system (RMS) designed to support a compliant servicing program, and preferably computer based so it can be easily accessed from any fire station.	188
Recommendation 12: GA recommends that, unless the County chooses to undertake the fire apparatus servicing program, only one qualified and experienced fire apparatus maintenance service provider do all the fire apparatus component servicing on all fire fleet vehicles, in every fire department. This provider must have mobile servicing capability and should perform such services inside Cumberland County. Such servicing must meet the requirements of the County's fire apparatus servicing program.	189

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 13: GA recommends that only a certified Emergency Vehicle Technician meeting the requirements of NFPA-1071 should be servicing, inspecting, and testing all fire apparatus components. This includes the pump, pump transmission, all pump ancillary systems, emergency warning systems, electrical power systems, and all other components specified in NFPA-1901. This recommendation does not preclude the use of other skilled trades to work on vehicle components that are not specific to fire apparatus, for example; engines and power-trains, which can help ensure the EVT can focus on fire apparatus components.	189
Recommendation 14: GA recommends that Cumberland County investigate the provision of a suitable maintenance facility for undertaking the fire apparatus servicing program. Such a facility needs to simplify under frame access, as many components are only effectively serviced from below the vehicle. The testing and maintenance of speciality systems on the apparatus will require special provisions at the servicing facility.	189
Recommendation 15: GA recommends that mobile servicing capability be provided in order to speed minor routine servicing in the fire stations, and thus avoid taking the apparatus out of service for any extended period. Mobility also helps, where possible, to reduce the expenditure of significant amounts of the EVT's time in moving fire apparatus between service centre and fire station.	189
Recommendation 16: GA recommends that firefighters be trained to, and required to, do weekly/post trip visual and operational checks on all fire apparatus in accordance with Chapter 7 of NFPA-1911, and also in accordance with provincial pre-trip safety inspection guidelines. Methods for such checks should be standardized across the County, and the results of such checks should be filed upon completion with the Director.	189
Recommendation 17: GA recommends that Cumberland County develop and implement a standardized equipping and layout plan for all carried equipment on pumpers, pumper-tankers, mobile water supply apparatus, and initial attack apparatus; such that each apparatus has the minimum equipment for its Type of apparatus as specified in NFPA-1901, and that equipment is carried in the same or similar location on all apparatus in that Type, excepting only where that is not possible without major renovations to apparatus scheduled for short-term retirement. Such recommendation is not intended to restrict the equipping or carrying of additional or specialized equipment necessary to address specific requirements in a particular fire response district. Such additional equipment should be located so as not to unduly disrupt the standard layout plan.	189
Recommendation 18: GA recommends that complete servicing, inspection, testing, and maintenance records be securely kept, for every fire apparatus, for the life of the fire apparatus. Such records should be subject to regular evaluation to determine (in advance) trends and evidence of need for rebuilding, preventative maintenance, or possible predictable service failure.	190

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 19: GA recommends that MCC adopt through the Policy of Council process, a fire apparatus replacement schedule that meets best practices, and that helps to maintain fire insurance grading scores. The schedule in Table 23: Recommended Service Length for Fire Apparatus should be adopted for the purposes of determining fire apparatus suitability for continued service and as a budget planning tool for future fire apparatus replacement.	190
Recommendation 20: GA recommends that two older (no longer first-line) pumpers or pumper-tankers be kept serviceable/operational as maintenance reserves. The purpose of reserves is to be able to, on short notice, temporarily replace apparatus that are out of service for a day or more due to breakdown or maintenance. Reserve apparatus will also remain available for use at major incidents. Reserve apparatus should be placed and maintained in suitable fire stations where there is space and where there is the ability to adopt them into the visual and operation checks program for that station. They should be fully equipped as pumpers, ready to be placed into service at a moment's notice.	190
Recommendation 21: GA recommends that the Run-Card for deployment for any reported structure fire in a non-hydrant service area be; on the Initial Response (first alarm) a minimum of 3 Tankers and 3 Pumpers. Such resources are to be dispatched simultaneously from, typically, 3 fire stations that are closest to the fire incident location. One pumper is assigned as fire attack, one is assigned to a refill site, and one is assigned as a relay pumper at the drop-tank site.	196
Recommendation 22: GA recommends that Run-Cards for Second Alarm, and subsequent greater levels be developed. Each alarm level should include a task force of 3 additional tankers and 2 additional pumpers. Additional apparatus that the Incident Commander (IC) might require should be special called if not already provided for in the Run-Card for a specific pre-planned occupancy.	196
Recommendation 23: GA recommends that for every Rural Demand Zone fire that a sector officer, to be called the Water Supply Officer (WSO), be designated and assigned to coordinate water shuttle operations. Such coordination should be done on a dedicated operational radio channel or talk group that is not the same channel or talk group that fire attack is occurring on.	196
Recommendation 24: GA recommends that Accredited Superior Water Shuttle Service be accomplished for all Rural Demand Zones of Cumberland County, to accomplish at least the FUS Personal Lines level of 200 Igpm sustained water flow. This accreditation will require renewal every 5 years.	196

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 25: GA recommends that Cumberland County establish Policy, procedure, and guidelines for the required implementation of the basics of the Accredited Superior Water Shuttle Service (ASWSS) at all fire incidents in non-hydrant serviced areas, as is required to continue meeting the FUS requirements for the accreditation. This requirement ensures that the benefits of the ASWSS are delivered to fire incidents to help save lives and property.	196
Recommendation 26: GA recommends that in Rural Demand Zones where the standard (as recommended) Run-Card of three tankers and three pumpers on an Initial Response (first alarm) be modified as necessary for areas with long travel-times to water sources, or for other factors where all requirements for the Accredited Superior Water Shuttle Service criteria cannot be met.	196
Recommendation 27: GA recommends that for Remote Demand Zones that efforts be made to establish a best effective water shuttle program, that may not meet all the distance requirements of the Accredited Superior Water Shuttle test criteria.	196
Recommendation 28: GA recommends that the Run-Card for deployment for any reported structure fire in a hydrant service area be; on the First Alarm (initial response) a minimum of 2 Pumpers. Such resources are to be dispatched simultaneously from the suburban fire station but may include a pumper from another fire station that is the closest to the fire incident location. One pumper is assigned as fire attack and exposure protection, and the second pumper is assigned as a relay pumper at the fire hydrant.	198
Recommendation 29: GA recommends that Run-Cards for Second Alarm, and subsequent greater levels be developed. Each alarm level should include a task force of 2 additional pumpers. Additional apparatus that the Incident Commander (IC) might require should be special called if not already provided for in the Run-Card for a specific pre-planned occupancy.	198
Recommendation 30: GA recommends that each fire department that services a Rural/Remote demand zone fire district, as defined by NFPA-1720, should be equipped with one pumper and one tanker fire apparatus, only provided the fire department maintains a minimum level of appropriately trained staff to man the apparatus simultaneously. The determination of adequate trained staff should be based on the total active firefighter membership in the fire department, their skill levels, and the average turn-out percentage for the station.	202
Recommendation 31: GA recommends that the Springhill fire station, that services an Urban demand zone area, as defined by NFPA-1720, should be equipped with two pumpers, one of which is a combination Pumper/Aerial (Quint) fire apparatus. Providing this equipment should be dependant on the fire department maintaining a minimum level of appropriately trained staff to man the apparatus. The determination of adequate trained staff should be based on the total active firefighter membership in the fire department, their skill levels, and the average turn-out percentage for the station.	204

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 32: GA recommends that the Springhill fire station, that also services Rural/Remote demand zone areas, as defined by NFPA-1720, should be equipped with a tanker fire apparatus. Providing this equipment should be dependant on the fire department maintaining a minimum level of appropriately trained staff to man the apparatus. The determination of adequate trained staff should be based on the total active firefighter membership in the fire department, their skill levels, and the average turn-out percentage for the station.	204
Recommendation 33: GA recommends that the Parrsboro fire station, that services, in part, a Suburban demand zone area, as defined by NFPA-1720, should be equipped with two pumpers, one of which is a combination Pumper/Aerial (Quint) fire apparatus. Providing this equipment should be dependant on the fire department maintaining a minimum level of appropriately trained personnel to man the apparatus. The determination of adequate trained staff should be based on the total active firefighter membership in the fire department, their skill levels, and the average turn-out percentage for the station.	205
Recommendation 34: GA recommends that the Parrsboro fire station that also services Rural/Remote demand zone areas, as defined by NFPA-1720, should be equipped with a tanker fire apparatus. Providing this equipment should be dependant on the fire department maintaining a minimum level of appropriately trained staff to man the apparatus. The determination of adequate trained staff should be based on the total active firefighter membership in the fire department, their skill levels, and the average turn-out percentage for the station.	206
Recommendation 35: GA recommends that the Pugwash fire station, that services an Suburban demand zone area, as defined by NFPA-1720, should be equipped with two pumpers, one of which is a combination Pumper/Aerial (Quint) fire apparatus. Providing this equipment should be dependant on the fire department maintaining a minimum level of appropriately trained staff to man the apparatus. The determination of adequate trained staff should be based on the total active firefighter membership in the fire department, their skill levels, and the average turn-out percentage for the station.	207
Recommendation 36: GA recommends that the Pugwash fire station that also services Rural/Remote demand zone areas, as defined by NFPA-1720, should be equipped with a tanker fire apparatus. Providing this equipment should be dependant on the fire department maintaining a minimum level of appropriately trained staff to man the apparatus. The determination of adequate trained staff should be based on the total active firefighter membership in the fire department, their skill levels, and the average turn-out percentage for the station.	207
Recommendation 37: GA recommends that existing large format rescue trucks that exist in several of the fire departments be investigated for augmentation to support special operations County-wide, according to need. These services to include the following: SCBA Support, Rehabilitation and Decontamination, and Incident Command.	208

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 38: GA recommends that the County investigate coordinating the utilization of existing off-road vehicles that have wildland firefighting potential, and enhance them where possible by providing trailers and equipment, as determined, to be able to respond effectively County-wide to wildland fires, particularly in the wildland-urban interface. Appropriate training should be provided.	208
Recommendation 39: GA recommends that the County investigate the challenges of providing fire protection into areas in the response districts that have residents on private lanes in the Wildland Urban Interface; where conventional fire apparatus might not successfully operate. The County should develop operational pre-plans, and develop strategic plans to address budgeting and operational challenges discovered. Consideration for providing appropriate Initial Attack apparatus that can interface with existing structural fire apparatus and form an overall effective system for difficult access areas should be considered.	210
Recommendation 40: GA recommends that in the areas designated as Remote demand zone areas, where there are significant numbers of seasonal homes in the WUI, that the County investigate the practicality of establishing a small sub-station(s) that is seasonally equipped with an Initial Attack Apparatus and is manned in part by seasonal volunteer firefighters from the area.	210
Recommendation 41: GA recommends that the County investigate purchasing a four-wheel drive pumper with a 5-person cab when it comes time to replace the current pumper. The apparatus should be equipped with a traffic director warning light system on the rear of the apparatus and be fully safety marked with warning colours and format, especially on the front and rear, exceeding the minimum requirements of NFPA-1901.	211
Recommendation 42: GA recommends that the County consider replacing the Society owned miscellaneous vehicles currently being used as rescue character vehicles with a purpose designed and constructed rescue fire apparatus that includes substantial equipment carrying capacity, personnel capacity, and has good performance for all-weather response to any category of incident in a support role, and to MFR incidents in a primary role, and meets NFPA-1901 requirements as a Special Services Fire Apparatus.	211
Recommendation 43: GA recommends that current mobile water supply apparatus and Tanker/Pumpers be replaced as they age with a standardized mobile water supply apparatus meeting the requirements of NFPA-1901, in accordance with the *Standard Specification Outlines* provided in this Report.	212

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 44: GA recommends that where there is only one fire apparatus in a fire station, because it operates as a sub-station, then that fire apparatus should be equipped with a chassis mounted water pump of 625 lgpm, and that that apparatus should be configured as a pumper/tanker. That apparatus should meet all the requirements stipulated in NFPA-1901 both for a pumper and for a mobile water supply apparatus, and it should be provided with suitable equipment to perform the roles of both a pumper and a mobile water supply apparatus (i.e. a pumper/tanker).	212
Recommendation 45:GA recommends that full structural and energy assessments be conducted, by qualified professionals, of all fire stations; in preparation to developing strategic plans for improvements to current facilities, and for the design and construction of new facilities. Considerations of design characteristics contained in this Report should also be considered in conjunction with the results of these further assessments.	230
Recommendation 46: GA recommends that Cumberland County provide a potable water supply to all fire stations.	233
Recommendation 47: GA recommends that Cumberland County institute a program of testing for all well water or cistern sourced fire station water supplies in accordance with the Nova Scotia Department of the Environment guidelines.	233
Recommendation 48: GA recommends that all fire station wells be evaluated by a competent authority as to their overall condition and susceptibility to infiltration by contaminated surface water.	233
Recommendation 49: GA recommends that until all well water systems can be proved safe that; all sources of water in the fire stations and attached community halls be labeled as unsafe for consumption. Such safe determination should be made through regular testing conducted in conformance with Nova Scotia Department of Environment recommendations. Testing that shows the water safe from bacteria, and has also shown the water is in compliance with federal drinking water guidelines for minerals and other contaminants.	233
Recommendation 50: GA recommends that Cumberland County track and record water testing results for all fire stations and associated community halls.	234
Recommendation 51: GA recommends that where well water sources in fire stations do not meet federal and provincial standards as safe for consumption, that alternate safe sources of water be provided; in order to ensure that firefighters have safe water in adequate quantity and locations for consumption, cleaning, hand washing, and the decontamination of equipment and personnel, including a primary consideration of installing competent water treatment systems.	234

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 52: GA recommends that Cumberland County evaluate the needed capacity to provide stationary standby electrical power generators at all fire stations that currently do not have these systems; such that fire stations can continue substantially normal operations for at least 72 hours. GA further recommends that a capital investment plan be developed to upgrade fire stations and attached community halls with stationary generators fueled by propane.	239
Recommendation 53: Ga recommends that all fire stations be provided with potable water supplied safety showers and eye-wash stations. The water to these devices must be tempered in accordance with Regulation.	247
Recommendation 54: GA recommends that Cumberland County engage a qualified person to examine and report on recommendations related to the current installations of breathing air compressors, cascade systems, and filling stations that are installed in vehicles and fire stations.	250
Recommendation 55: GA recommends that all stations be provided with a direct source capture vehicle exhaust system to address the issue of harmful vehicle exhaust, especially diesel exhaust, in the fire stations.	257
Recommendation 56: GA recommends that that all stations that currently have detection operated exhaust fans be tested by an industrial hygienist familiar with vehicle diesel exhaust issues to ensure their effectiveness in removing vehicle exhaust and particulates, and that adjustment be made as necessary.	257
Recommendation 57: GA recommends that a review be conducted to determine the amount of flammable and combustible liquid stored in portable containers within the fire station and determine if a proper flammable liquids storage cabinet is required. This survey should take into consideration the benefits to good housekeeping and safety, in lieu of a focus on quantity.	258
Recommendation 58: GA recommends that Cumberland County assess the possibility of designating, and properly equipping, adequate space at existing fire stations for the handling of and decontamination of equipment, in accordance with NFPA-1500, 1581, 1851, and best practices.	261
Recommendation 59:GA recommends that Cumberland County investigate the possibility of designating a suitable storage area for firefighter Bunker Gear off the apparatus bay floor in each fire station, and in accordance with NFPA-1851.	261
Recommendation 60: GA recommends that Cumberland County further investigate the need for kitchen exhaust hoods that meet Building Code (NBCC) requirements, and that the Authority Having Jurisdiction review, as is required and intended by the NBCC, the circumstances of each community hall and fire station that is not using commercial cooking equipment and associated grease-laden vapour ventilation system, for conformance to the Building Code and to the requirements of NFPA-96. GA recommends that non-conforming facilities be either retrofitted or that procedures be put in place to restrict their use, or that the facilities be removed, all as appropriate.	264

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 61: GA recommends that Cumberland County conducted an audit to address station housekeeping and use practices by starting with a thorough fire code compliance inspection and health and safety inspection, of all stations. Areas of note should include; improper storage in furnace rooms, leaking furnace oil lines, improperly installed/maintained furnace room fire separation closures (aka doors), breaches in the fire separations, lack of automatic closing devices on the doors, doors tied open, improper storage in electrical and other service rooms. These areas and others found in the audit should all be considered for immediate corrective action. Such action will address many observed fire code issues, but will also reduce the risk of fire and protect the municipality's assets.	265
Recommendation 62: GA recommends that before any decision made vis-à-vis station upgrading or replacement; that a full structural condition assessment be conducted by a qualified structural engineer. This report along with the requirements outlined in this report will aid in determining priorities and establishing costs over a period of time and determine if upgrades such as expansions, modifications, or replacement are required; and which strategy is most cost effective based on extended or expected service-life and life-cycle total costs, that meets the needs of providing fire services over the longer term.	265
Recommendation 63: GA recommends that Cumberland County establish four designated zones for logistical support, and that one station in each of the zones be equipped to support logistical operations for the fire stations associated with that zone. The recommended zones are as follows:	271
Recommendation 64: GA recommends that each fire department and/or station appoint an individual who would be the contact person and coordinator for fire station's logistical needs.	271
Recommendation 65: GA recommends that Cumberland County move towards a Fire Dispatch Service Level Agreement that addresses the missing elements noted in this section of the Report.	278
Recommendation 66: GA recommends that only Chief officers should carry personally assigned radios. If the Chief officer(s) are not going to be available for a period of time then they should pass the radio off to another department officer during his/her absence.	278
Recommendation 67: GA recommends that Cumberland County equip each inshore rescue boat with a Marine VHF mobile radio with appropriate frequencies for their geographical area. In addition, one portable radio is also recommended per boat, for use by an officer coordinating from the shore, and equipped with the same frequencies as the boat marine radio.	281

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 68: GA recommends that Cumberland County take over full responsibility and ownership of all fire services emergency communications components, including; the dispatch services contract, any other related communications services contracts (e.g., repeater towers and radio agreements); the fire service emergency alerting software contracts (currently IamResponding); all communication equipment that is not provincially owned, including; base stations, mobile and portable radios, fire department pagers, and any related software programs and equipment. Independent purchasing and use of other than approved County equipment should be prohibited.	291
Recommendation 69: GA recommends that Cumberland County ensure that that all radio bases, mobile and portable radios are appropriately licensed with Industry Canada, as is required by Federal Regulation, and further that the former Fire Service Coordinator's name be removed as the contact authority from all licenses. It is recommended that the municipal clerk position be so named, or other suitable position.	291
Recommendation 70: GA recommends that all Cumberland County fire departments cease the utilization of VHF radio systems, except for the use of the paging services to alert firefighters and the use of Marine radio for marine incidents; and further that all fire service operations should convert exclusively to the use of the TMR system.	291
Recommendation 71: GA recommends that Cumberland County evaluate the need for TMR vehicular repeaters if there are TMR communications black spots. If their use is indicated, GA recommends that these be purchased and installed in appropriate vehicles, in the affected fire departments.	291
Recommendation 72: GA recommends that Cumberland County investigate and implement a contract for the servicing and inspection of all radio equipment on an annual basis, and as needed for breakdowns.	291
Recommendation 73: GA recommends that Cumberland County develop a capital replacement plan for the current TMR portable radios; to be replaced with portable radios that meet current standards for firefighter radios; and more specifically, ensure any and all future firefighter portable radio acquisitions meet the requirements as spelled out in NFPA 1802: Standard on Two-Way, Portable RF Voice Communications Devices for Use by Emergency Services Personnel in the Hazard Zone.	291

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 74: GA recommends that Cumberland County provide sufficient radios to meet the incident response needs of the fire departments, and that procedures and guidelines be established to ensure that each fire department deploys such radios to meet the needs as outlined in NFPA-1500 Standard on Fire Department Occupational Safety, Health, and Wellness Program - Chapter 8 Emergency Operations, which requires all personnel in the warm and hot zones have a portable radio. A starting basis for the required numbers of TMR portable radios is discussed in the section Radios Equipment Needs in this Report.	291
Recommendation 75: GA recommends that Cumberland County ensures that any and all VHF pagers and associated batteries that are purchased and placed in service for Cumberland firefighters are labeled (UL LISTED HOMOLOGUÉ) and comply with Standard CAN/CSA-C22.2 No. 157-92 (R2016) Intrinsically safe and non-incendive equipment for use in hazardous locations. This feature is an available option on current Motorola Minitor pagers and requires compliant replacement batteries.	291
Recommendation 76: GA recommends that Cumberland County implement a consistent and standardized radio/unit/officer ID system similar to what is proposed in this Report.	292
Recommendation 77: GA recommends that Cumberland County implement a radio parts inventory for appropriate spare radio and pager parts that are commonly needed and field serviceable. These parts are not generally quickly available and can cause avoidable down-time without quick access to parts such as batteries, chargers, remote microphones, and antennas, and etc.	292
Recommendation 78: GA recommends that Cumberland County require the fire dispatching services to copy the designated person at MCC fire administration with copies of all fire reports and communications sent to fire stations.	292
Recommendation 79: GA recommends that Cumberland County work with Valley Communications, EMO -911, and the Minister of Health, to facilitate changes needed to enable Valley Communications to receive all ALI/ANI digital 911 information that is currently being withheld and therefore requires the manual transfer of phone call information, possibly leading to avoidable errors and fire service delivery delays.	292
Recommendation 80: GA recommends that Cumberland County review with competent legal counsel, the potential risk to the Municipality by continuing support for the delivery of MFR service as it is currently structured.	317
Recommendation 81: GA recommends that Cumberland County engage the services of a qualified medical practitioner to act as Medical Director to provide oversight and quality assurance of the MFR program being provided by all 19 fire departments within its geographical boundaries.	317

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 82: GA recommends that Cumberland County stop the practice of automatic-aid dispatching two or more fire departments to a single patient MFR call. Not included in this recommendation are those incidents involving off road, or similar rescue where specialized equipment and significant manpower is needed/anticipated, or for incidents where there is the realistic potential of multiple patients requiring medical assistance.	317
Recommendation 83: GA recommends that Cumberland County request the fire departments to evaluate the possibility of implementing an on call or platoon system to eliminate excessive staffing responses to MFR calls and to reduce burn out and responder stress.	318
Recommendation 84: GA recommends that all fire departments be required to forward copies of all MFR response patient reports, and all other data related to MFR incidents to the Director of Protective services, as part of an initial quality assurance program.	318
Recommendation 85: GA recommends that Cumberland County develop policies, procedures, and protocols to collect the appropriate data, establish metrics, and perform analytics to determine the effectiveness of the delivery of MFR in the County. Considerations should include the various levels of MFR service delivery, and which ones are most appropriate for which areas of the County.	318
Recommendation 86: GA recommends that if the preceding recommendations on the MFR program are not achievable within a reasonable period of time as established by Council direction, and recommended to be not less than 2 years, that the appropriate steps should be undertaken to withdraw County support for the delivery of MFR services in Cumberland County. This recommendation is not intended to include the response to incidents where MFR is a secondary objective.	318
Recommendation 87: GA recommends that Cumberland County develop appropriate Policy and procedures that make it mandatory for every fire department to record the participation of every firefighter engaged in any firefighting, or any other activity, in which they may have been exposed to contaminants. The record should include their position or role at the incident or activity, and how long they were involved in the exposure. This record should be forward to the County for permanent record keeping.	327
Recommendation 88: GA recommends Cumberland County ensure that every fire department conducts annual fire hose (pressure and suction hoses) nozzle, and hose appliances annual inspections and testing. Every length of hose and nozzle and appliance must be uniquely identified and labelled, and permanent records kept of each item, including all inspection and testing, and any repair work. Hose that fails testing or inspection shall be repaired or if not repairable, have its couplings cut off so that is cannot be pressurized. All such as recommended shall be in conformance with NFPA-1962.	329

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 89: GA recommends that on every fire apparatus equipped with a pump, that every preconnected hose, complete with nozzle and any other connected appliance, be flow tested as a system at least annually in conformance with NFPA-1962.	329
Recommendation 90: GA recommends that Cumberland County ensure that all ground ladders be tested and inspected according to the manufacturer's recommendations and to the requirements established by NFPA 1932. A certified 3rd party contractor should be engaged to do annual inspections and testing, and should provide complete records of such tests and inspections in electronic form.	330
Recommendation 91: GA recommends that Cumberland County instruct fire departments on how to conduct monthly and after use inspections and maintenance and how to record inspections and findings as per NFPA-1932. MCC should develop procedures and a program to ensure that the Standard's requirements are met. All fire departments should commence a program of inspections and maintenance in accordance with this standard, and all records of such inspections should be submitted to MCC at least monthly.	330
Recommendation 92: GA recommends that Cumberland County ensures that bunker gear components of firefighter structural firefighter PPE that have expired and must be retired to meet NFPA-1851 requirements be prominently labeled as not fit for firefighting or firefighter training before being used for other purposes.	339
Recommendation 93: GA recommends that Cumberland County conduct a program of investigating and through trial settle on a make and model of rubber firefighter boot that fits well and is comfortable. This boot would then become the standard boot purchased, except in exceptional circumstances where a fit cannot be obtained.	341
Recommendation 94: GA recommends that Cumberland County, through consultation with the fire departments, determine a standard method of identifying volunteer firefighter capabilities through appropriate markings on their firefighter helmets or other appropriate protective headwear, and that this method be enforced through policy.	342
Recommendation 95: GA recommends that Cumberland County review currently used wildland firefighting PPE gear and if deficient provide protective garments, meeting the requirements of NFPA-1977, for each firefighter that is qualified and participates in wildland firefighting operations.	344

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 96: GA recommends that Cumberland County develop and implement a program that ensures that all structural firefighter protective ensembles are tested and maintained in accordance with the requirements of NFPA-1851. GA recommends that a qualified firm be engaged to perform testing, inspection, and deep cleaning work on at least an annual basis. GA further recommends that MCC maintain thorough records of the PPE element serial or ID numbers, descriptions, and condition audits obtained in these annual inspections and tests, in electronic format.	345
Recommendation 97: GA recommends that Cumberland County designate three fire stations to be established as PPE cleaning and decontaminating facilities; and be equipped with NFPA-1851 compliant extractors and dryers; to decontaminate, clean and dry fire services PPE. The recommended stations for these facilities are Parrsboro, Pugwash, and Springhill. Such facilities do not replace the need for annual expert cleaning and inspection of PPE, but only enable quick access to proper cleaning to remove contaminants, permitting rapid return to service.	346
Recommendation 98: GA recommends that Cumberland County specifically prohibit the home laundering, or laundering of PPE by commercial means, or through use of public laundromats. The risk of serious health impact to the public, to unsuspecting laundry personnel, or to a firefighter's family should not be tolerated. Contaminated firefighters' PPE is toxic and dangerous.	347
Recommendation 99: GA recommends that Cumberland County standardize on a single make and, as far as practical, model of Self Contained Breathing Apparatus (SCBA) as a priority Health and Safety initiative. A committee should be struck to investigate current inventories and makes/models, available options, conduct trials for practical aspects of each, and settle on a recommendation for consideration by the County. Cumberland County should enact Policy that will permit the continued purchase of standardized SCBA, if such action is not already permitted in the County purchasing by-law and procedures.	352
Recommendation 100: GA recommends that Cumberland County adopt a fifteen-year age limit on SCBA. All SCBA should be inventoried, all separable components permanently identified with a unique ID tag, and the age, condition, maintenance, and testing records for each component should be kept by MCC as part of a permanent record.	352
Recommendation 101: GA recommends that Cumberland County develop and implement a program of scheduled annual inspections of all SCBA cylinders in accordance with recommended procedures in NFPA-1852; Annex B, and take appropriate actions as recommended therein. Records of all such inspection and retirement activities should be recorded, and such records should be kept by MCC as part of permanent records.	353

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 102: GA recommends that Cumberland County establish and enforce a procedure and provide support for a program whereby all SCBA are cleaned and disinfected after use in accordance with the recommendation contained in NFPA-1852, unless other methods are specifically recommended by the SCBA manufacturer, in which case those recommendations or requirements shall be followed. Decontamination and disinfection facilities should be established at each fire station, in a designated area in the fire station, and using materials and tools that are not used for any other purpose. Any such tools and materials shall be clearly labeled as for SCBA USE ONLY.	353
Recommendation 103: GA recommends that a procedure and policy be developed and implemented that provides for inspection, maintenance, or retirement of all SCBA components in accordance with NFPA-1852. Records of all such inspection and maintenance and retirement activities should be recorded, and such records should be kept by MCC as part of permanent records.	353
Recommendation 104: GA recommends that Cumberland County continue the practice of annually, or more often as needed, bench testing of all SCBA units by a qualified supplier. The proper and permanent marking with unique IDs for each separable component of the SCBA will facilitate the keeping of permanent electronic records of these inspections, tests, and maintenance activities.	354
Recommendation 105: GA recommends annual quantitative fit-testing of all persons who will be required to wear SCBA or medical mask on an annual basis, in conformance to the latest amendment of NS Occupational Safety General Regulations N.S. Reg. 53/2013. Since not all firefighters will be able to wear breathing protection for various reasons; those firefighters who are not fit-tested and therefore not qualified to wear SCBA or medical masks should not be permitted to operate in IDLH atmospheres.	359
Recommendation 106: GA recommends that in order to comply with the intent of N.S. Reg. 53/2013, that every interior structural firefighter qualified to level 1 with fire control, be issued their own SCBA facepiece if they pass quantitative annual fit-tested as per NS Regulation.	359
Recommendation 107: GA recommends that Cumberland County provide a sufficient number of powered air purifying respirators (PAPP) for use by fire investigation personnel when SCBA is not practical or safe to use.	359
Recommendation 108: GA recommends that Cumberland County purchase a PortaCount quantitative fit-testing machine and train a staff member to operate it.	359
Recommendation 109: GA recommends that Cumberland County either takes steps to procure equipment and training of staff to conduct fit-testing “in-house,” or engages a competent contractor to at least annually, and more often as required, provide quantitative fit-testing on all firefighters who will be required to wear a respirator to protect their breathing.	359

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 110: GA recommends that Cumberland County engage a qualified breathing air system technician or engineer, familiar with the manufacturer's recommendations, and who has knowledge of the requirements of NFPA-1500 and 1901, CSA Z180.1:19 and B340-18, and Transportation of Dangerous Goods (TDG) Regulations; to investigate and make recommendations with respect to all fire station installed breathing air compressors, cylinder filling stations, cascade systems, air bottle storage systems, and vehicle mounted breathing air cascade and filling stations, or whatever other breathing air components are found during the investigation. GA further recommends that MCC take action on the recommendations that come out of this investigation.	365
Recommendation 111: GA recommends that Cumberland County take immediate steps to develop and implement procedures to properly secure for transport all SCBA cylinders and cascade cylinders on all vehicles, in conformance with the requirements of federal Regulation SOR/2001-286, and using guidance and best practices from NFPA-1901. GA further recommends that MCC purchase and require the installation of valve protection caps on all SCBA cylinder valve connections, and implement a procedure that requires their proper use.	365
Recommendation 112: GA recommends that Cumberland County develop and implement a policy requiring intake medical screening for volunteer firefighter applicants who will be participating in firefighting activities. Such screening should be based on a physical demands analysis developed with the guidance of NFPA-1582 and local requirements. Candidates who do not pass the medical screen should not be considered for a firefighting role.	368
Recommendation 113: GA recommends that Cumberland County support and encourage the development and implementation of a physical fitness and health promotion program for all fire department members, including a focus on maintaining the health and fitness of fire department members who participate in high physical demands activities. There are many good references available on which to base a suitable program.	369
Recommendation 114: GA recommends that Cumberland County develop a Policy requiring periodic medical re-evaluation for all firefighters who engage in high physical demands activities, as appropriate. These evaluations should focus on cardiac health, aerobic capacity and other life threatening medical conditions as identified in the Policy.	369
Recommendation 115: GA recommends that Cumberland County retain a physician knowledgeable on firefighter requirements to perform intake medical screening and for regular medical screening of existing volunteer firefighters who engage in high physical demands activities.	369

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 116: GA recommends that Cumberland County establish a formal program and develop effective Policy regarding mental health supports for volunteer firefighters, and regularly and effectively communicates the availability of that program and the availability of support, in every fire station. GA further recommends that a record be permanently kept by MCC of exposure to traumatic, or potentially traumatic, events; for each firefighter who attended such incident. Such recordings of exposure could be an adjunct to the recommended recording of chemical and biological exposures.	371
Recommendation 117: GA recommends that Cumberland County establish and support a fire services occupational health and safety committee with strong representation by firefighters and by MCC management. The purpose of this committee is to establish procedures and advise on policy regarding OH&S measures; encompassing facility maintenance and house-keeping, incident scenes, responding to incidents, and after incident activities.	372
Recommendation 118: GA recommends Cumberland County, through the recommended fire services occupational health and safety committee, develop and implement a Risk Management plan as per NFPA-1500, section 4.2.	373
Recommendation 119: GA recommends that Cumberland County reviews and amends as necessary, and then enforces MCC's Fire Equipment Standardization Policy FS-08-02.	373
Recommendation 120: GA recommends that Cumberland County establish and support a Standardization Committee composed of knowledgeable volunteer firefighters and knowledgeable MCC staff that will address research, testing, specification development, and promotion of standard specifications and purchasing processes for PPE ensembles and other key equipment such as SCBA, water rescue suits, rescue PFDs, wildland coveralls, and etc.. The results of this committee's work should be accepted and implemented as The Standards for purchase and provision to the fire departments, and no other should be supported by MCC; without strong justification and acceptance by the committee as one-time exceptions.	373
Recommendation 121: GA recommends that Cumberland County develop and implement a program for the care, and maintenance of structural firefighting personal protective ensembles and ensemble elements used by the members of the organization in the performance of their assigned functions. As per NFPA 1851: Standard on Selection, Care, and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting, latest edition.	373
Recommendation 122: GA recommends that only qualified firefighters are permitted to operate breathing air compressors, and to inspect, and to refill SCBA air cylinders. GA also recommends that records of all cylinder refills be made and maintained in accordance with best practices.	373

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 123: GA recommends that every qualified Level I structural firefighter should annually demonstrate their competence to don and to wear their PPE appropriately and thus re-qualify as structural firefighters. This process should meet the recommendation in NFPA-1500, and include the turnout-gear ensemble and a demonstration of PPE and SCBA pre-donning inspection, proper donning, and operation, all within established time targets. Records of all such annual re-qualifications should be filed with MCC and maintained in permanent records.	373
Recommendation 124: GA recommends that the purchasing, testing, inspection, maintenance, and retirement of; bunker gear, SCBA, fire hose, rescue rope and harness, life safety rope and harness, ground ladders, and flashlights be done in accordance with all requirements of NS occupational health safety and safety legislation, for all affected equipment, in all fire departments.	373
Recommendation 125: GA recommends that Cumberland County develop, authorize, promulgate, and implement an Establishing and Regulating bylaw that summarizes and details the County's intentions with respect to providing and governing the provision of fire and emergency services, and establishes expected standards, levels of service, and other related matters that fall within the County's powers under Legislation.	380
Recommendation 126: GA recommends that Cumberland County staff, as appropriate, review the comments and recommendations contained in Table 40: Summary of Existing Policies and Bylaws, with Comments, and take appropriate actions to repeal, amend, or replace fire service related bylaws and policies of Council as necessary.	385
Recommendation 127: GA recommends that Cumberland County, in addition to the registration of the corporate body, establish an accompanying service agreement between the volunteer fire departments and the County for the purposes of clarifying expectations of service provision and the conditions under which the County will accept the provision of these services by the fire department.	387
Recommendation 128: GA recommends that Cumberland County undertake a thorough review of all society by-laws of the Registered fire departments and require the removal of all components that infringe on the County's powers and responsibilities to establish fire services administrative and operational policies, rules and regulations, etc. Such removal should be a condition of the County consideration of acceptance of any application for registration as a fire service provider.	410
Recommendation 129: GA recommends that Cumberland County develop and implement an annual fire registration process that includes reviewing and ensuring that all required information is provided and all fields of the registration form are completed in full prior to accepting and approving the fire department application for registration as a fire services provider. And further that the subject fire department is currently in good standing with respects to its by-laws and registration under the Societies Act or under what ever legislation they are incorporated.	410

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 130: GA recommends that Cumberland County establish service delivery standards and expectations, administrative procedures between the County and the fire department, and to meet goals of transparency and accountability that include public meetings and disclosure of financial information; all that to form part of the requirements for accepting and approving the fire department application for registration as a fire services provider.	410
Recommendation 131: GA recommends that Cumberland County develop a service agreement between the corporate fire departments and the County that clarifies all key aspects with respect to administration needs and service delivery expectations and standards; and that such service agreement be implemented as an integral component of the requirements for registration as a fire services provider in the County.	411
Recommendation 132: GA recommends that Cumberland County investigate the Wallace District Volunteer Fire Department's inclusion in their incorporation bylaws the reference to them operating as part of a Rural Fire District; and to consider that if they do exist as part of a Rural Fire District, how that impacts on how they are currently being funded by the County and if it impacts the ability of the County to include the Wallace District Volunteer Fire Department in the standard application for registration as fire service provider in the County.	411
Recommendation 133: GA recommends that Cumberland County update their fire department Registration Policy to reflect the recommended changes in this Report, and to include an updated form to address the need to include clear understanding of the services being offered, the means to deliver those services, and the standards to which these services will endeavour to be provided; in other words, to incorporate current needs of both Parties who are signatory; and to include an annual submission for Registration, or more often if there is any change to service level expectations, either an increase or a decrease. The new form should be predetermined and not editable, except in areas where custom information is expected.	411
Recommendation 134: GA recommends that Cumberland County, through the office of the Director of Protective Services, develops a proposal to Council for the adoption of an Establishing and Regulating Bylaw for the delivery of fire protection services inside the boundaries of Cumberland County, and provides for mutual aid responses by MCC fire services outside of Cumberland County when called to assist its neighbours.	411
Recommendation 135: GA recommends that Cumberland County appoint the Director of Protective Services as the County Fire Chief and thereafter request the provincial Fire Marshal to appoint this position as a Local Assistant to the Fire Marshal. Such appointments will facilitate the Director in applying the various powers in the MGA and the Fire Safety Act as regards the provision of fire protection services in Cumberland County.	411

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 136: GA recommends that Cumberland County pursue the implementation of the Hybrid Fire Services Model as described in this Report, including the appointment of full-time and part-time staff as indicated in the proposed organizational chart in *Figure 39* of the Report.	425
Recommendation 137: GA recommends that Cumberland County include in their service agreements with the Town of Amherst and the Town of Oxford, when renewed, clauses that address the establishment of service levels, liabilities, responsibilities, lines of authority, and mechanisms for dispute resolution.	427
Recommendation 138: GA recommends that whereas Cumberland County has complete or partial ownership in capital equipment and other equipment used by the fire department to deliver mutual-aid assistance outside of and inside of the County; and funds the fire service operations almost to the exclusion of any other sources of funding; it is recommended that Cumberland County develop and require the fire departments to become signatories to a formal multi-party mutual-aid agreement between all the County fire departments, and with the three contract fire departments, and with any other municipality and fire department either inside the overall boundaries of Cumberland County, or with whom it is reasonable to anticipate that mutual-aid might be provided, including those fire departments in Colchester County and Westmoreland County. It is recommended that all mutual aid agreements also be signed by Cumberland County.	429
Recommendation 139: GA recommends that a committee comprised of the Director of Protective Services and a select number of local Fire Chiefs be established to develop, formal written Mutual Aid and Automatic Aid agreements. These agreements should be multi-party agreements and layout the framework of how multi-resource fire services will be delivered in the County. It is recommended that the framework of the agreement be approved by MCC Council and set in Policy.	432
Recommendation 140: GA recommends that Cumberland County consider moving the fire district boundary between Southampton and Parrsboro, along NS Trunk-2 and along the Newville Road, further southward from its current location to a suitable location just north of the Canaan Road.	461
Recommendation 141: GA recommends that Cumberland County consider relocating the FPW-Parrsboro fire district boundary along Highway-209 from its current location at the western boundary of the Diligent River community to a suitable location near the eastern boundary of the Diligent River community at the Diligent River-Wharton communities boundary. All roads leading off Highway 209 that are affected by this change would also have the effect of changing associated fire departments for the communities serviced by those roads, for example; Yorke Settlement, Pleasant Lake.	461

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Recommendation 142: GA recommends that Cumberland County consider adjusting the fire district response boundary between Shinimicas fire station and Lorneville fire station. The proposed modifications include; (1) moving the boundary southwards from Chapman Settlement to a location on the Greeno Road approximately at the Chapman Settlement/Lower Shinimicas communities boundary; (2) establishing the boundary at the bridge over Mud Creek (aka Mud Brook) on Mud Creek Road; and (3) moving the boundary eastwards from its current location adjacent to Amherst Shore Provincial Park to a location on NS Route-366 east of the intersection with Montague Cove Lane. All roads leading off any of these named roads that are affected by these changes would also have the effect of changing the primary response fire station responding into those communities serviced by those roads. GA further recommends that for pre-fire and fire incidents that Automatic-Aid protocols be instituted for any responses into the aforementioned boundary areas.	465
Recommendation 143: GA recommend that Cumberland County not consider establishing a new fire station mid-way between the current fire stations in River Hebert and Joggins. Establishing such a station would likely result in an additional approximate average response-time increase of up to 5 minutes vs the status quo for both communities.	468
Recommendation 144: GA recommends that Cumberland County consider that when the time comes to replace the River Hebert fire station; that the new station be positioned in the vicinity of the intersection of Boars Back Road and NS-Route 242. GA further recommends that if the above is implemented, then the fire district boundary between Joggins and River Hebert be adjusted from its current location to a sensible point approximately midway between the stations. Furthermore, that adjustments to the Amherst-River Hebert and to the River Hebert-Southampton fire district boundaries in the areas around Maccan and Chignecto, etc. should also be considered.	472
Recommendation 145: GA recommends that Cumberland County establish a standing committee, chaired by the Director of Protective Services or his designate, and including appropriate representatives from the individual fire departments, to complete a thorough review of all of the so called Operating Guidelines with the following objectives;	482
Recommendation 146: GA recommends that Cumberland County coordinate and sponsor a needs assessment in each fire department with the objective of matching staffing and skill needs with current membership. Consideration needs to be made to services committed on the fire departments' Registration, turnout percentage statistics, current membership numbers, current membership ages and physical fitness, and projections of future ability to maintain services. All task areas of fire department membership should be considered; i.e., those in supporting roles as well as front-line structural firefighters.	493
Recommendation 147: To ensure that discrimination and HR standards are met, and to ease the burden on individual stations, it is recommend that there be an annual recruitment process, managed municipally, with direct input and participation from each of the fire department stations.	494

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Recommendation 148: GA recommends that Cumberland County should take the lead role in providing administrative and human resource expertise for managing firefighter staffing resources.	494
Recommendation 149: GA recommends that Cumberland County consider the value of supporting and promoting a Junior Firefighter program for each of the volunteer fire departments.	494
Recommendation 150: GA recommends that Cumberland County promote and support the utilization of so called mutual-aid firefighters between the fire departments in MCC.	494
Recommendation 151: GA recommends that Cumberland County develop a volunteer retention policy and program, that includes providing managers and officers with the appropriate skills to effectively manage volunteer firefighters.	499
Recommendation 152 : GA recommends that Cumberland County annually recognizes volunteer firefighters for their contributions to the health and safety of their communities. MCC could do this by funding and assisting with the organization of local community annual awards banquets, as well as public recognition by Council of important milestones, including; service awards (federal/provincial), outstanding actions, service anniversaries, retirements, and achievement of qualifications.	499
Recommendation 153: GA recommends that Cumberland County review the current honourarium being provided to the district fire chiefs in consideration of whether or not such honourarium adequately addresses the expectations of the County for the perspective of the administrative duties that the County expects from the fire chiefs.	508
Recommendation 154: GA recommends that Cumberland County develop a recruitment and retention policy that utilizes a combination of honourarium, cost reimbursement, and firefighter and family benefits and incentives. Benefits could include access to firefighter EAP services, mental health coverage for members and families, life insurance, and enhanced accident and sickness benefits; among other concepts discussed in this Report.	508
Recommendation 155: GA recommends that Cumberland County establishes with each fire department a procedure and mechanism whereby, at least quarterly, a live list of active volunteer firefighters meeting the requirements to be classified as active, is submitted to the County on time and for the purposes of ensuring that the quarterly submission of the list of WCB qualified firefighters is current and correct.	509
Recommendation 156: GA recommends that Cumberland County conduct a full and complete training need analysis and establish a priority list for addressing gaps.	543

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Recommendation 157: GA recommends that Cumberland County review past downgrading incidents in the fire departments to determine if a targeted training program could enhance workplace safety and reduce the likelihood of future similar incidents.	543
Recommendation 158: GA recommends that Cumberland County engage either on a fulltime or part-time basis an individual(s) to provide training development, planning, and coordination. For new subject matter, this person could be a train-the-trainer resource.	543
Recommendation 159: GA recommends that Cumberland County engage on a part-time basis the available, qualified, and interested Certified Training Officers in Cumberland County fire department to assist those fire departments that do not have access to expert training leadership.	543
Recommendation 160: GA recommends that Cumberland County establish an education and training committee with fire department representation. The committee numbers should be at a level that the committee is manageable and effective, (i.e., Certified and Qualified Training officers), and be led by MCC staff. The purpose of the committee is to develop, recommend, research, and support a quality and appropriate training program for County firefighters. The first task is to develop an appropriate terms of reference.	543
Recommendation 161: GA recommends that Cumberland County establish a Policy that; as required by the Nova Scotia Occupational Health and Safety Reference Guide (25/04/2003) that all County firefighters who engage in structural firefighting shall meet the requirements of NFPA-1001; Standard for Fire Fighter Professional Qualifications, Level I or II, and shall have the demonstrated practical skills to engage in interior firefighting and fire control.	543
Recommendation 162: GA recommends that fire departments continue partnering with the NS *Department of Natural Resources* in obtaining practical skills in relation to *Emergency Wildland Firefighting Training*; and to facilitate fire officers participation in the DNR Commander courses, when they become available.	544
Recommendation 163: GA recommends that Cumberland County assess the feasibility and need for revitalizing and further developing the Oxford training facility, or some other centrally located facility.	544
Recommendation 164: GA recommends that Cumberland County conducts an audit of the Pugwash live burn site to determine if it complies with NPFA-1402; *Standard on Facilities for Fire Training and Associated Props*; and further recommends that there be a review of fire evolutions at that site to determine if they are conducted in compliance with NFPA-1403; *Standard on Live Fire Training Evolutions*. Failing either of these audits, it is recommended that the site be demolished or brought up to standard, or a moratorium on its use be implemented.	544

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Recommendation 165: GA recommends that Cumberland County implement an individual firefighter training-log booklet with sign off spaces. As the individual completes and learns each skill competency in a planned path of skill acquisition, a qualified trainer would sign off and date the firefighter log. The results of such a program is that over a period of time all of the competencies will become signed-off, and the individual can then decide to take on the qualification exam and/or challenge a certification exam if one exists, if they chose to do so. Such a log is also a proof of skills and competency.	544
Recommendation 166: GA recommends that Cumberland County investigate options to provide fire stations, who do not currently have adequate space and facilities to conduct classrooms training, with suitable facilities.	544
Recommendation 167: GA recommends that the individual fire department bylaws, as filed with the Registry of Joint Stocks, not address the provision of fire services in the County. Such bylaws should restrict themselves to the operations of the society as provided in the Societies Act, Schedule B, and not cross into areas where the County has jurisdiction under the Municipal Government Act.	546
Recommendation 168: GA recommends that fire departments should revise their bylaws to clearly define what constitutes unacceptable behaviours of members and should clearly indicate the consequences of such unacceptable behaviours, and where the authority lies and under what procedure that correction is to occur, for unacceptable behaviour. GA further recommends that for fire departments who do not act in accordance with their bylaws, the County may have Cause for the cancellation of the Registration of that fire department for the provision of fire and emergency services.	546
Recommendation 169: GA recommends that Cumberland County and representatives of the fire departments collectively and through a consensus process develop a comprehensive code of conduct and associated rules and regulations for fire service application County-wide. Such documents should be developed under the authority of the County as empowered in the Municipal Government Act, and application of the provisions therein will apply to all fire service members.	546
Recommendation 170: GA recommends that qualified fire-investigators meeting the requirements of NFPA-1033, and who are certified to conduct investigations in compliance with NFPA-921, be retained by the County for the purposes of investigating all fires for their origin, cause, and circumstances. These persons could be part-time and supported in obtaining and maintaining their qualifications.	549
Recommendation 171: GA recommends that MCC establish an effective Policy on post-fire and explosion incident investigation.	562

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Recommendation 172: GA recommends Cumberland County develop a program for County-wide post-fire and explosion investigation; effectively resourced and supported through the retaining of trained, qualified, and experienced on-call investigators (part-time), and through the provision of the associated appropriate equipment, ongoing training, and support for the reporting of findings.	562
Recommendation 173: GA recommends that MCC develop an effective program to assess the degree that working smoke alarms are present in dwellings in the County. This program should also establish and implement initiatives and measurable goals to achieving smoke alarm compliance with legislation and risk, and also include a follow-up assessment of program effectiveness. The main goal is to achieve a high percentage of dwelling units with functioning smoke alarms. The program should be by nature a sustained effort by the fire service.	566
Recommendation 174: GA recommends that a comprehensive and effective injury reporting system be developed and implemented to facilitate the identification, reporting, mitigation, and prevention of firefighter injuries while firefighters are engaged in all aspects of their duties.	567
Recommendation 175: GA recommends that MCC institute a procedure requiring estimation and reporting of fire losses and pre-fire values by incident commanders and fire investigators. MCC should develop a tool to assist with estimating building and contents losses. This tool should be incorporated into a standard incident report (SIR) that is accessed online after the incident is concluded. Follow-up with the insurance adjuster should be included in this procedure.	567
Recommendation 176: GA recommends that a comprehensive standard incident reporting (SIR) system be developed and implemented for all fire protection activities in MCC. As well as collecting emergency response data, this system should also provide policies, procedures and methods that include collecting key fire prevention metrics in the areas of inspection-code compliance, fire investigation, and public fire safety education.	569
Recommendation 177: GA recommends that MCC forge relationships with the NS-OFM and MCC Inspectors to obtain fire inspection reports for all properties from which critical information may be extracted and disseminated to the local fire chief as appropriate.	569
Recommendation 178: GA recommends that as part of information collection in the post-incident investigation, that key demographic and housing data be gathered and entered into a comprehensive records management system. Such information will be valuable in designing targeted fire safety education and fire prevention programs in future years.	583
Recommendation 179: GA recommends that information on commuting and work patterns be collected in each fire department catchment area. Such data will be helpful in successfully targeting and developing recruitment and retention programs for volunteer firefighting positions in the communities.	583

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 180: GA recommends that Cumberland County investigate methods and develop procedures and Policy to implement service fees for reasonable cost recovery from responses to Highway-104.	586
Recommendation 181: GA recommends that Cumberland County complete a thorough inventory and assessment of condition, age, and utility, of all minor capital equipment, in every fire department; and that this inventory be evaluated as sufficient, or not, to meet the service delivery commitment contained in the fire departments' Registration documents with the Municipality.	607
Recommendation 182: GA recommends that Cumberland County develop and implement a Policy requiring the signing of Beneficial Ownership Agreements with each corporate fire department to which public finds or services are provided for capital asset purchase, or maintenance, or improvement.	614
Recommendation 183: GA recommends the scheduled fire apparatus replacements contained in the Major Capital Projection table be undertaken through establishment of a Council policy and strategic financing plan.	626
Recommendation 184: GA recommends an annual contribution of approximately $1.9 million (2022 dollars) to a fire capital reserve account to reduce the annual capital fluctuations in the fire department budgets to a minimal amount. Adequate reserve funds would greatly reduce the need to debenture these predictable capital costs, thereby reducing the overall cost of capital purchases. This amount will need to be adjusted over time with inflation of fire apparatus costs, and the value of the Canadian dollar.	626
Recommendation 185: GA recommends that Cumberland County directly fund the expenditures associated with the purchase of all major capital assets, specifically; the acquisition of pumpers, mobile water supply, initial attack, and rescue fire apparatus, as part of MCC corporate capital acquisition plans. Such purchases should be separate from fire department operating expense needs.	626
Recommendation 186: GA recommends that the ownership, and all associated rights thereto, of all capital asset purchases for fire protection and made by funds derived from MCC, whether paid directly for the purchase of the asset by MCC or provided to the fire department for their purchase of the asset, be retained and secured by agreement to the benefit of Cumberland County in proportion to the funds provided for the asset purchase.	626

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 187: GA recommends that Cumberland County require that all purchases of capital or minor capital equipment or vehicles, be authorized in writing by the County prior to fund-raising or any other source of funding occurs, and prior to purchase or gift. GA further recommends that any such purchases that do not receive written authorization from the County will not receive any financial or otherwise support from the County, and may not be stored in or deployed from County owned fire stations, or with the use of County owned vehicles, or included in any insurance or liability protection coverage, nor considered as official use. The provision of such equipment or vehicles is material to the fire departments' Registration with the County for the provision of fire and emergency services. GA recommends that the County develop a procedure for authorizing such purchases, including a guideline, and in consultation with the fire departments, a strategic plan.	626
Recommendation 188: GA recommends that all fire departments be required to annually file with Cumberland County an audited financial statement of all revenues and expenses; in a standardized format that MCC specifies. Such filings should be a condition on fire departments receiving any publicly funded; grants, services, or capital assets, and a condition on continuing Registration.	627
Recommendation 189: GA recommends that all fire departments be required to monthly file with Cumberland County a report on incidents responded to, including type of incident, location of incident, benchmark times for the incident, and fire department staffing at each incident, accountability details, and firefighter exposure reports. Such filings should be a condition on fire departments receiving any publicly funded; grants, services, or capital assets. Such filings could be achieved through the implementation of an on-line records management system (RMS).	627
Recommendation 190: GA recommends that Cumberland County develop definitions, rules, and limits around the provision of funding, purchasing procedures, appropriate signing authorities, receiving requirements, reporting requirements, and ownership; to support the concept of Minor Capital equipment provisions for fire protection services.	627
Recommendation 191: GA recommends that Cumberland County include in the annual estimates for the fire protection services Operational Budget an annual amount of $375,000 to cover the Minor Capital purchasing program. GA further recommends that this amount be reviewed annually and adjusted basis a current live inventory of minor capital equipment in the fire departments, and the experienced service life of that equipment.	627
Recommendation 192: GA recommends that Cumberland County manage the purchasing of all minor capital equipment. With advice from the Fire Chiefs, the County should set priorities on what equipment will be purchased that year. Funding for these purchases should be managed by MCC directly.	627

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 193: GA recommends that Cumberland County have discretionary powers to make adjustments, within the approved minor capital annual budget, to determine the exact mix of minor capital purchases according to need. In this way, the fire departments will be able to more quickly reset priorities as unplanned needs arise (e.g. after a major fire incident), balanced with equipment expiry deadlines.	627
Recommendation 194: GA recommends that any surplus minor capital funds at the end of the fiscal year (if any) be placed into a revolving reserve account for the future purchase of minor capital equipment. This initiative will remove any pressure on the fire departments to spend all the available minor capital funds in a particular year, even if not immediately required by service needs in that particular year.	627
Recommendation 195: GA recommends that the surplus minor capital revolving reserve account have a set maximum amount of approximately $100,000. If in any given future year there is an unprecedented or emergency need to make minor capital purchases, and there are insufficient budgeted funds, a mechanism should be in place for the Director of Protective Services to request Council to release additional funds to cover the need, such funds to be withdrawn from the reserve.	627
Recommendation 196: GA recommends that the designated Cumberland County staff should manage the purchasing process. In this way municipal purchasing procedures will be followed, county-wide purchasing of standardized equipment will occur, and therefore best value for public funds should result.	628
Recommendation 197: GA recommends that Cumberland County should establish and coordinate the execution of service contract(s) for fire apparatus annual and other inspection, maintenance, and testing; for every piece of fire apparatus, in every fire department, where such service is indicated by NFPA standards and/or provincial/federal legislation. Such contracts to be funded and managed directly by MCC.	628
Recommendation 198: GA recommends that Cumberland County establish and coordinate the execution of service contract(s) for firefighting, rescue, and personal protective equipment annual inspection, maintenance, and testing; for every piece of affected equipment, in every fire department, where such service is indicated by NFPA standards and/or provincial/federal legislation. Such contracts to be funded and managed directly by MCC.	628
Recommendation 199: GA recommends that Cumberland County establish and coordinate the execution of service contract(s) for respirator fit-testing; for every eligible firefighter, in every fire department, to meet CSA standards and/or provincial/federal legislation. Such contracts to be funded and managed directly by MCC. Such contracts should be continued until such time as MCC decides to conduct these tests internally.	628

Recommendations (each recommendation and page number is a hyperlink to the original text in the Report)	Page Ref
Recommendation 200: GA recommends that Cumberland County require that every fire department cooperatively participate in fire apparatus and equipment inspection and testing, as well as firefighter fit-testing, that is coordinated by MCC. Fire services effectiveness, efficiency, and the safety of firefighters and the public depends on these activities.	628
Recommendation 201: GA recommends that Cumberland County investigate and identify services and occurrences suitable for cost-recovery, and develop a bylaw to set fees for service and the methods, penalties, and rights associated with setting and collecting such fees. Such fees are described in more detail starting on page *585* in this report.	628
Recommendation 202: GA recommends that Cumberland County investigate what is needed, source and implement a County-wide, computer based, on-line accessible, County fire service Records Management System (RMS) that addresses all areas where metrics are of value in determining the ongoing performance of the fire services. The RMS should keep track of key records and metrics associated with human resources, testing and inspection of fire apparatus and equipment, complete response statistics and other underlying data associated with emergency and non-emergency delivery of services, fire prevention components including fire code enforcement activities, public fire safety education activities, and post fire investigation activities. The RMS system should include a standardized incident reporting (SIR) component that guides input of all metrics and other information related to all incident responses, and that incorporates data from the Dispatch Services provider. The RMS must include a permanent and un-editable audit trail. The RMS should be accessible on-line by designated users at all fire stations, and its use should be a requirement of Registration as a fire service provider. The RMS system should include statistical analytics and report output (SQL) modules and a dashboard that will be of value to individual fire departments as well as to County administration.	629
Recommendation 203: GA recommends that monthly and annual reports that include key metrics associated with service delivery be prepared and submitted to Council, and as appropriate to the public, in support of better understanding and knowledge of fire service issues, successes, and challenges; resulting in more informed decision-making and enlightened support of firefighters and associated service delivery personnel.	629
Recommendation 204: GA recommends that Cumberland County annually coordinates with the individual fire departments to facilitate the application for grant funds through the Emergency Services Provider Fund, with the objective of furthering suitable projects that both the County and eligible fire department agree address fire protection needs in the community. Such coordination requires planning one to two years in advance of the application year as secured funding is required by the fire department before application.	630

end