Township of Huron-Kinloss

Fire & Emergency Services Strategy Plan

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EXECUTIVE SUMMARY

This Strategic Plan encompasses a comprehensive review of the Huron-Kinloss Fire & Emergency Services (HKFES) strengths, weaknesses, opportunities, and challenges. It also consists of a review of the community, through the development of a separate Community Risk Assessment (CRA) report, along with identifying current and future population statistics and anticipated community growth. By conducting these reviews, the Emergency Management Group (EMG) developed this 10-year strategic plan for the HKFES.

Benefits of Strategic Planning:

The benefits of planning are many, but the key advantages are:

- Having a clearer vision of what future needs are to be implemented and when,
- A guide that includes options and budgetary estimates for implementation,
- Prioritization of each project, and
- The ability to communicate with staff and internal and external stakeholders about the organization's future goals.

The recommendations within this Strategic Plan document have been submitted to provide a set of strategies and goals for implementation that are aimed at assisting the Council in making decisions relating to the efficient allocation of HKFES resources and staffing. The recommendations provided by EMG have been broken down into the following timelines:

- Immediate: 0 – 1 year, which should be addressed urgently due to legislative or health and safety requirements, or other immediate needs
- Short-term: 1 – 3 years
- Mid-term: 4 – 6 years
- Long-term: 7 – 10 years

Ultimately, the implementation of the recommendations will depend on the direction that the Township Council provides, as well as the allocation of associated resources and the ability to move forward with the related recommendations contained within the document.

Scope of Requirements

The scope of the project work is to include the following:

- Consultation and engagement (stakeholders, volunteer firefighters, staff, council)
- Current state analysis
- Needs assessment.
- Road map development
- Final report and recommendations
- Performance measures and outputs

Deliverables

The goal for the consultant is to develop, design and produce a fiscally responsible Fire Services Review and Roadmap document. The Plan will define user needs and reflect the current and future needs of the Township of Huron-Kinloss. The following are key deliverables which should be outlined in the proposal:

Current State Analysis

- Gain a clear understanding of current fire protection services provided.
- Review current service boundaries.
- Review existing standards relating to operations, facilities, apparatus, and equipment.
- Evaluate and review the current fire stations, including location, use, capacity and response times.
- Review existing Fire Prevention programs, identifying strengths, gaps, and areas for growth and improvement.

Needs Assessment

- Undertake a comprehensive needs assessment to identify gaps and opportunities with respect to emergency services, fire prevention, education programs, etc.
- Assess the need for additional equipment or facilities based on a review of existing data while considering emerging and future industry and societal trends.

Road Map and Final Report Development

The road map will drive the development of the final report – Fire Services Review and roadmap, and should include:

- Based on the findings, prepare recommendations for developing the existing stations
- and/or suitable locations for future stations which address the growth of the Township.
- Prepare recommendations for fleet and equipment management.
- Recommend strategies for implementation of cost efficiencies.
- Recommend new technologies that could be used to reduce operating costs and enhance operational efficiencies.

Community Engagement

Engage Council, Senior Municipal Staff, Fire Chief and Fire Department members.

- An engagement and stakeholder communication plan and schedule will be submitted within two weeks of the project kick-off meeting.
- The proposal should detail estimated level of effort to engage with the Fire Chief one-on-one and to also engage rank and file firefighters in an appropriate forum. Costing shall allow for these meetings to be conducted in person and after hours. Staff and Council engagement meetings can be a combination of in-person and virtual.

Performance Measurements and Output

Provide a list of key performance indicators for each action item in the road map.

Final Report and Presentation

The final report will include information gathered from all parts of this project, including:

- Key findings from sections A-E.
- Recommendations and Road Map.
- The final report will be presented to staff and Council on an agreed-upon date.
- Prepare a draft final report and review project findings and proposed.
- Recommendations, including detailed implementation and/or phasing in plans, with the Chief Administrative Officer (CAO) and the Senior Management Team prior to finalizing the report.
- Prepare and present the final report to Staff and Council.

Summary Overview of Recommendations

Below is a summary of the recommendations within each essential category. Greater detail surrounding each recommendation can be found within the section from which it is derived.

Public Fire Safety Education

- Assessment by HKFES to set realistic fire prevention and public education goals based on available resources.
    - Conduct a demands analysis of the fire prevention initiatives with the development of an annual fire prevention program and report upon completion
- Consider greater utilization of volunteer firefighters for public education efforts
- Partnerships within the community to ensure fire safety education is relevant and delivered based on identified community needs (i.e., school fire safety education, seniors, new Canadians fire safety education).

Emergency Response

- Review of response data and areas for improvement based on response zones.

Department Facilities (fire stations) and Vehicles

- Fire station general assessments and needs, such as diesel exhaust systems
- Station locations and suggestions for a future third fire station (in the long term)
- Inclusion of both a wildland-urban interface firefighting vehicle and an elevated device
- Need for a spare pumper truck in the HKFES fleet
- Vehicle life cycles and reserve apparatus.

Staff/Personnel Development

- Increase in Fire Prevention and training staffing.

Strategic Priorities

- Consideration for By-law updates
- Development and utilization of training opportunities
- Obtaining the FUS tanker shuttle accreditation.

***Note: A quick reference recommendations chart entailing all the recommendations can be found in Section 10. This chart has also included brief rationale comments to assist the reader with justification for each recommendation.*

TABLE OF CONTENTS

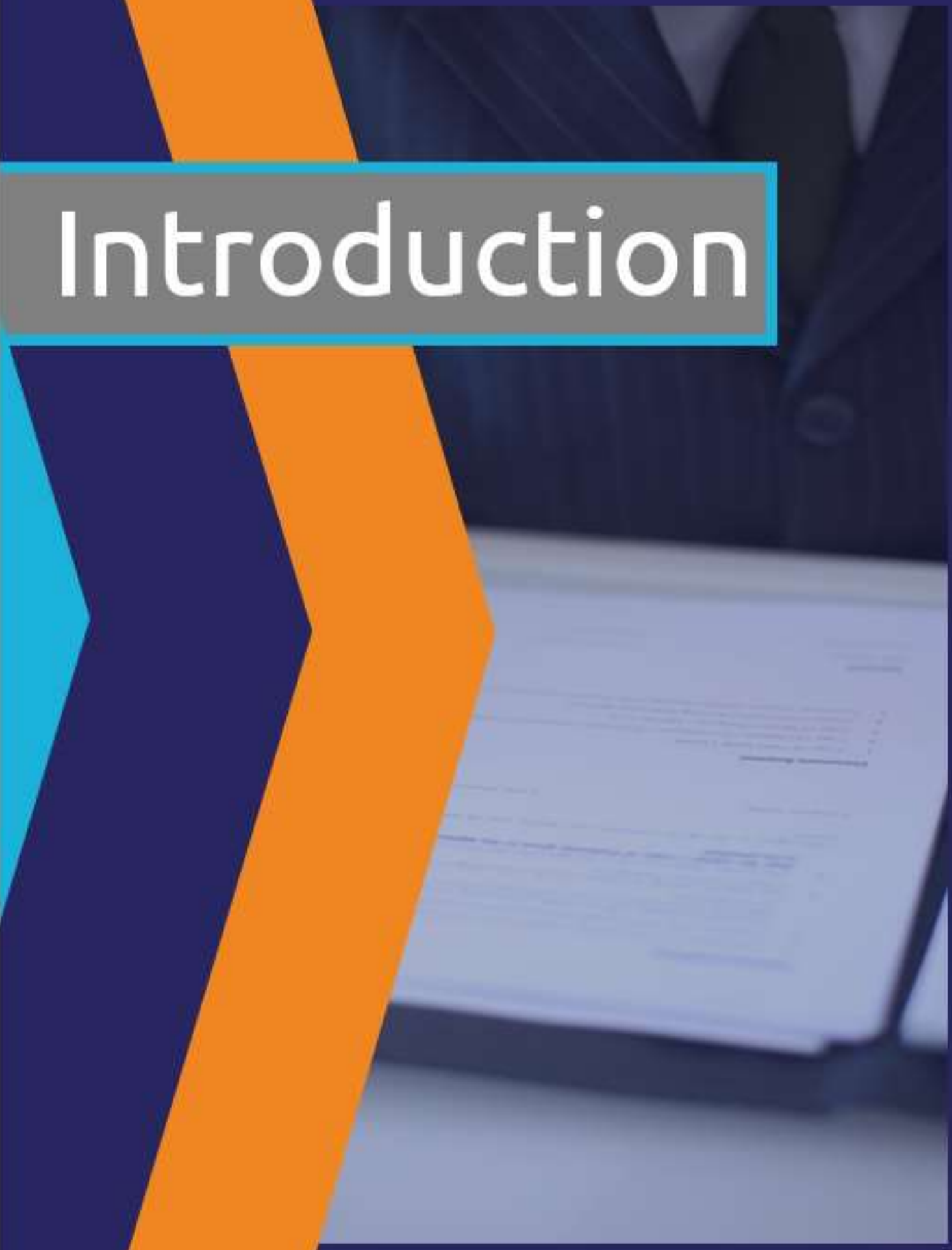
DEFINITION OF ACRONYMS

AED	Automatic External Defibrillator
AHJ	Authority Having Jurisdiction
ASHER	Active Shooter/Hostile Event Response [Program]
AVL	Automatic Vehicle Locators
BLS	Basic Life Support
CAD	Computer Aided Dispatch
CAFC	Canadian Association of Fire Chiefs
CAFI	Canadian Association of Fire Investigators
CEMC	Community Emergency Management Coordinator
CRA	Community Risk Assessment
CRTC	Canadian Radio-television and Telecommunications Commission
DGR	Deep Geological Repository
DPG	Dwelling Protection Grade
E&R	Establishing & Regulating By-law
EAP	Employee Assistance Program
EMC	Emergency Management Coordinator
EMG	Emergency Management Group
EMP	Emergency Management Plan
EOC	Emergency Operation Centre
ERP	Emergency Response Plan
ESA	Electrical Safety Authority

EVT	Emergency Vehicle Technician
FESO	Fire and Emergency Services Organization
FPO	Fire Prevention Officer
FPPA	Fire Protection & Prevention Act
FUS	Fire Underwriters Survey
GIS	Geographic Information System
HFSC	Home Fire Sprinkler Coalition
HKFES	Huron Kinloss Fire & Emergency Services
IAAI	International Association of Arson Investigators
IAFC	International Association of Fire Chiefs
IFSTA	International Fire Service Training Association
IMCA	International Municipality/County Management Association
IMS	Incident Management System
IP	Internet Protocol
KPI	Key Performance Indicator(s)
MERP	Municipal Emergency Response Plan
MLFTU	Multi-Live Fire Training Unit
NIOSH	National Institute for Occupational Safety & Health
NIST	National Institute of Standards and Technology
NFPA	National Fire Protection Association
NWMO	Nuclear Waste Management Organization
OAFC	Ontario Association of Fire Chiefs

OFM	Office of the Fire Marshal (Ontario)
OHSA	Occupational Health and Safety Act
PPE	Personal Protective Equipment
PFPC	Public Fire Protection Classification
PSAP	Public Safety Answering Point
PTSD	Post-Traumatic Stress Disorder
RFP	Request for Proposal
RTT	Real Time Texting
SCBA	Self-Contained Breathing Apparatus
SOG	Standard Operating Guideline
SOP	Standard Operating Policy
SRA	Simplified Risk Assessment
STA	Short-term Accommodations
STSA	Superior Tanker Shuttle Accreditation
SWOT	Strengths, Weaknesses, Opportunities, and Threats
WSIB	Workplace Safety & Insurance Board

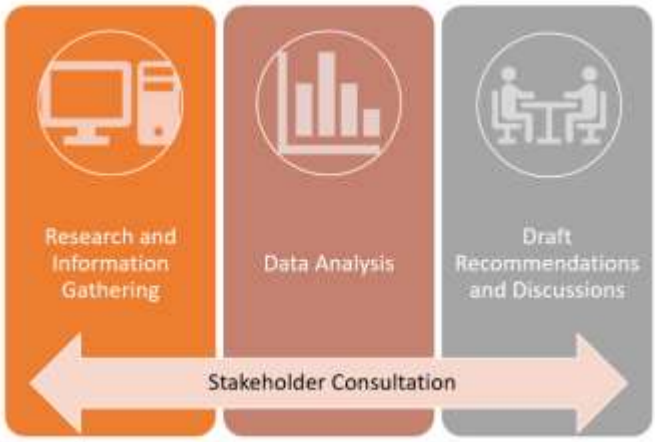
Introduction



INTRODUCTION

Project Methodology

The Emergency Management Group (EMG) has based its review process on the Township of Huron-Kinloss' initial Request for Proposal (RFP) and the response document submitted by EMG. The specific scope of work noted, within the RFP, was reviewed and included in each section of this document. The Strategic Plan review was completed utilizing best practices, current industry standards, and applicable legislation as the foundation for all work undertaken.



EMG also utilized quantitative and qualitative research methodologies to develop a strong understanding of the community's current and future needs and circumstances.

Overall, the methodology involves a considerable amount of research, documentation review, data analysis, along with stakeholder consultation. Next comes the submission of draft reports and related recommendations. The final product is a living document that provides a high-level strategic direction for Township Council and the Huron-Kinloss Fire & Emergency Services (HKFES).

To accomplish the scope of requirements, EMG has:

- Reviewed the Establishing and Regulating (E&R) by-law.
- Reviewed applicable municipal, provincial, and federal legislations.
- Reviewed planning department documents regarding community and areas of growth projections.
- Reviewed any previous risk assessment, council's strategic priorities and other pertinent documents.
- Conducted a general risk assessment based on the information supplied and garnered during interviews and site visit.
- Reviewed current service agreements with neighbouring municipalities and any other current documents.

- Gathered information on operational requirements, including past and current response statistics (call volumes/response times) to analyze trends, staff availability/needs and response capabilities, etc.
- Reviewed service administration including staffing, organizational structure, policies and procedures, administrative support, record keeping and information management/technology, purchasing and inventory control, public and media relations and customer service.
- Toured the Township of Huron-Kinloss fire stations conducting a location/response analysis.
- Examined fire vehicles, apparatus and equipment including the maintenance program.
- Reviewed fire service policies, procedures, emergency response operational guidelines, training programs and records.
- Collected information on the fire prevention program including education programs, inspection reports/data, enforcement data, and investigations.
- Identified and compared industry best practices relating to fire and emergency services performance measurement.
- Reviewed current job descriptions, staff recruitment and retention practices, promotional policy, succession planning and demographics.
- Reviewed the operational and capital budgets along with reserves and current revenue generation programs within the emergency services and the Township (development fees).

Based on the previously noted criteria, through meetings with members of Council, the Township's Senior leadership Team, Firefighters, and community stakeholders, the consulting team completed a thorough review of elements that are working well and areas requiring improvement within the HKFES. Data provided by HKFES was reviewed in relation to all the previously noted items contained in the Huron-Kinloss RFP. This review culminated in a total of 29 recommendations.

Performance Measures and Standards

This SP has been based upon (but not limited to) key performance indicators that have been identified in national standards and safety regulations, such as:

- The Fire Protection and Prevention Act
- The Office of the Fire Marshal (OFM) Communiques
- The Ontario Occupational Health and Safety Act (OHSA), with reference to the National Institute for Occupational Safety and Health (NIOSH)
- The Ontario Fire Service, Section 21, Advisory Committee Guidance Notes
- The National Fire Protection Association (NFPA) standards, and

- The Fire Underwriters Survey technical documents.

Project Consultants

Although several staff at EMG were involved in the collaboration and completion of this SP, the overall review was conducted by (in order of involvement):

- Lyle Quan, Fire Service Consultant/ VP of Operations - Project Lead
- Larry Brassard, Fire Service Consultant
- Rick Monkman, Fire Service Consultant
- Dan Hefferton, Fire Service and Emergency Management Consultant
- Darryl Culley, President

Together, the team has amassed a considerable amount of experience in all areas of fire and emergency services program development, review, and training. The EMG team has worked on projects that range from fire service reviews to the creation of strategic and master fire plans and the development of emergency response programs for clients.

SECTION 1

Community & Fire Department Overview

SECTION 1: COMMUNITY & FIRE DEPARTMENT OVERVIEW

1.1 Community Overview

The Township of Huron-Kinloss was formed in 1999, amalgamating the former Townships of Huron and Kinloss and the Village of Lucknow. Located within the County of Bruce, situated in southern Ontario along the shores of Lake Huron. The Township is bordered by the Townships of Ashfield-Colborne-Wawanosh, and North Huron to the south in Huron County, the Municipalities of South Bruce and Brockton to the east and the Municipality of Kincardine to the north.

The Township consists of an area of approximately 443 square kilometres (44,253 hectares) and has a permanent population of approximately 7,723 people, as reported in the 2021 Census.

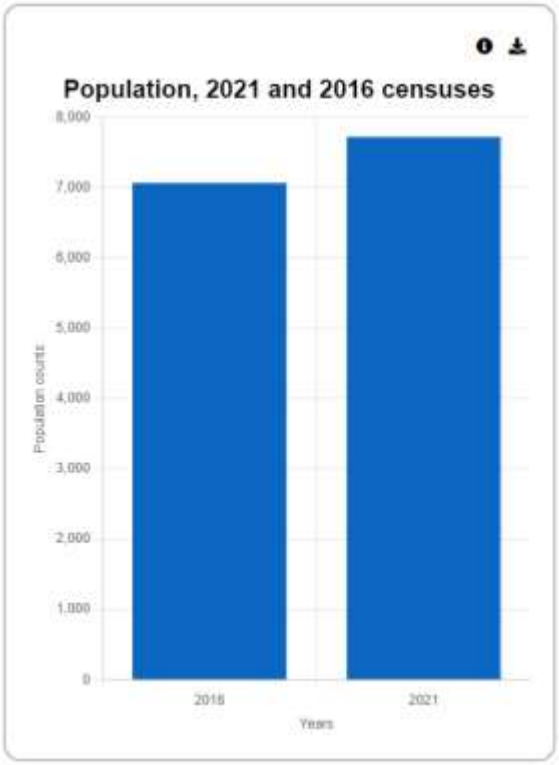
The primary urban communities of the Township are Lucknow and Ripley. The majority of new growth is directed to these Villages where full municipal services and a variety of land uses exist to help create a complete community. The Lakeshore Settlement Area follows the Lake Huron shoreline and consists of an evolving community whereby residents are converting the use of their seasonal dwellings to permanent dwellings. Growth within the Lakeshore Settlement Area is intended to be through infill development and minor rounding within the existing settlement area boundaries.

There are six Hamlet communities within the Township: Amberley, Holyrood, Kinloss, Kinlough, Pine River and Whitechurch. The Hamlets are recognized as local service centres and are intended to accommodate a more limited range of uses compared to Lucknow and Ripley. Growth and development in Hamlets will be limited and intended to serve the needs of the agricultural/rural communities surrounding these hamlets.

The location of the Township, nestled along the shores of Lake Huron, plays a significant role in the development of tourism within the Township. The shoreline is a natural feature and of great importance to the Township's growth and development.

The Bruce Nuclear Generating Station is located north of the Township and is a significant employer to residents of the Township and provides economic opportunities that the Township supports.

FIGURE #1: HURON-KINLOSS POPULATION



183

Provincial population rank: 183

National population rank: 530 of 4,831

9.3%

In 2021, the enumerated population of Huron-Kinloss, Township (CSD) was 7,723, which represents a change of 9.3% from 2016. This compares to the provincial average of 5.8% and the national average of 5.2%.

9.0%

In 2021, there were 3,026 private dwellings occupied in Huron-Kinloss, which represent a change of 9.0% from 2016.

17.5

The land area of Huron-Kinloss is 440.73 square kilometres and the population density was 17.5 people per square kilometre.

***Note:** The above data has been taken from Statistics Canada website.*

TABLE #1: POPULATION & EMPLOYMENT PROJECTIONS FOR THE TOWNSHIP (2016 – 2036)[1]

Year	Population (persons)	Employment (jobs)
2016	7,189	647
2021	7,397	666
2026	7,770	693
2031	8,008	721
2036	8,321	749

[1] Accessed, December 5, 2022. Township of Huron-Kinloss Official Plan (huronkinloss.com)

FIGURE #2: BOUNDARIES OF THE TOWNSHIP OF HURON-KINLOSS

1.2 Fire Service Overview

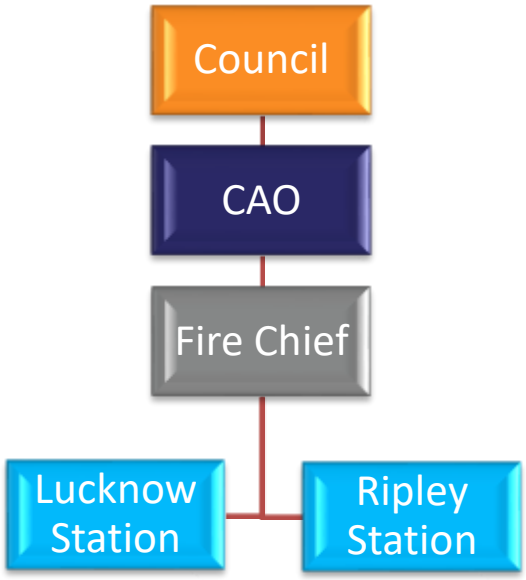
The HKFES provides emergency response and fire prevention programs from two stations in Ripley and Lucknow. There is a combined staff that consists of a full-time fire chief, a full-time emergency services/health and safety coordinator and 52 volunteer firefighters.

The organizational makeup of each fire station includes one district chief, one deputy district chief, two training officers, four captains and 18 firefighters, all of whom help carry out the Fire Department's goals and objectives. On average, the Department responds to 261 calls for service per year (as noted over the past four years 2019 - 370, 2020 - 246, 2021- 268, 2022 - 270).

Reporting Structure:

The fire chief reports to the CAO for all fire service-related matters. The organizational chart noted in Figure #2 reflects the general reporting structure that EMG is recommending. This updated reporting structure will help to streamline the organizational structure within the HKFES and that of the fire chief to the CAO and Township Council.

FIGURE #3: EMERGENCY SERVICES RECOMMENDED ORGANIZATIONAL CHART



1.3 Governance and Establishing & Regulating By-Law

The Establishing & Regulating By-Laws (E&R) is Council's direction to the HKFES and prescribes what services to provide. The municipal Council is responsible for setting the level of service within a municipality; these E&R by-laws fulfill this requirement.

Several parts of an E&R By-Law must align with the expectations of the *Fire Protection and Prevention Act, 1997*. To assist the fire administration in meeting the needs and expectations of the Council, the E&R By-law was recently reviewed and updated in 2020, to identify changes in the needs of the Township and the overall operation of the fire department.

To ensure that the HKFES is meeting the community's needs and the Council's expectations, it is recommended that fire department-related By-Laws that affect fire operations be reviewed annually, or as significant changes occur within the Township. Doing so will ensure that the service levels, expectations, and authority are properly aligned with the community's needs.

As part of any by-law update process, drafts should be vetted by the Town's Solicitor before going to Council.

The fire chief should also consider bringing the E&R by-law forward to newly sitting councils every four years. Doing so will provide new members of the council with an understanding of the services provided by HKFES to the community.

In collaboration with the fire chief, the Council needs to establish an objective, definitive response time to be included in the E&R By-law. The NFPA recommends that some type of assessment be completed to evaluate a baseline for a department's response time goal. This review will offer an understanding of how the Department has been performing, along with identifying areas for possible improvement in relation to station location and vehicle and staffing distribution.

The E&R By-law should reflect new legislation, changes in the types and level of response, and training expectations. Consideration should also include reference to such guidelines and standards as:

- *Occupational Health and Safety Act* - Section 21 Firefighter Guidance Notes
- OFMEM Guidelines concerning staffing and response recommendations.
- Related NFPA Standards that deal with:
    - Training
    - Fire prevention and public safety programs
    - Fire department response goals and objectives
    - Communications and vehicle dispatching
    - Response times
    - Fleet and maintenance

By incorporating these guidelines and standards, HKFES will ensure that staffing, training programs, fire prevention, public education initiatives, and response to the community adhere to industry best practices. The current by-law includes the Department's vision, values, and mission statement. These, too, should be reviewed and updated so they align with current fire service trends.

Other notables found within the current by-law for consideration to be changed include:

Paragraph 3 – Change the names of the stations to:

- Huron-Kinloss Fire and Emergency Services, Ripley Station #15-0,
- Huron-Kinloss Fire and Emergency Services, Lucknow Station #16-0
- Removing references to these stations as Fire Departments will reduce confusion caused by there being two fire departments referred to in the document instead of just one, and that being HKFES.

Paragraph 17 – While reference to leaving the municipality is an appropriate section, many municipalities implement a stand-alone by-law regarding the Fire Department's participation in that County's Mutual Aid Plan and Program.

Paragraph 24 – Should include reference to the use of an outside Fire Department or third party in mitigating all technical rescues at full cost recovery. This too, should also be in the Fees and Charges By-Law.

Paragraph 27 – While it speaks to the property owner as being charged a fee, this should be updated to identify that whoever is charged the fee is also responsible to ensure that the charge is paid. Some municipalities have changed all by-laws that speak to charges to also identify those responsible for ensuring the invoice is paid.

Fire Department Health and Safety – Add "Provide training to members of the Joint H & S Committee training in Workplace Safety & Insurance Board's Certifications in Part I Basic Certification and Part II Workplace – Specific Hazard Training."

Schedule A – Have one Organizational Chart for the HKFES by eliminating the Lucknow and District Fire Board, which will be discussed further in this document. Many municipalities no longer have Fire Boards/Committees, which eliminates the extra step in the reporting structure.

Schedule B, Paragraph 18 – While the firefighters are trained in HAZMAT response, to meet NFPA 472 as a requirement for NFPA 1001, I and II at the Operations Level. This should be amended to reflect that they are responding at the Awareness Level, which offers limited response capabilities. HKFES lacks the necessary response, containment, and decontamination equipment to provide that level of service.

Schedule B, Paragraph 19 – Reference to the firefighters entering, or onto, water or ice, should be removed unless the training, SOGs, Policies, and equipment are in place that meet NFPA and the Ministry of Labour, Section 21 Guidance Notes. Consider entering into a response agreement with another fire department that does respond to ice/water rescues at the Operations or Technician Level.

Schedule B – Emergency Planning – Paragraph 37a – Refers to "Collaborating with the development, review, revision, and implementation of the Approved Town of Lincoln Emergency Plan."

Schedule B – Fire Department Administration – Add a section regarding Asset Management Services.

Schedule B, Paragraph 50d - Add "Succession planning program for promoting firefighters through the ranks of the fire department."

Schedule B – Maintenance – Paragraph 51b – Change to read "Provide periodic inspection and testing of ancillary equipment in accordance with NFPA, Section21 Guidance Notes and manufacturers specifications."

Schedule B – Maintenance – Paragraph 51e – Remove this line as HKFES does not have an aerial device.

Schedule B – Maintenance – Paragraph 51f – Add "in accordance with NFPA 1901, ULC S-515, Fire Underwriters, and Section 21 Guidance Notes.

1.4 Assessment of Current Fire Services By-Laws

The by-laws reviewed for this SP include:

- Automatic Aid By-Law 2017-41 (With Municipality of Kincardine) *(Discussed in Section 6)*.
- Development Charges By-Law 2019-133
- Fees and Charges By-Laws 2018-134 and 2022-15
- Fire Dispatch Services By-Law 2022-36 *(Discussed in Section 3.5)*.
- Joint Fire Service Agreement By-Law 2020-90 (With the Township of Ashfield-Colborne-Wawanosh) *(Discussed in Section 6)*.
- Noise By-Law 2005-101 (Re: Fireworks)
- Open Air Burning By-Law 2017-12
- Tiered Medical Response By-Law 2020-74, *(Discussed in Section 3.4)*.

1.4.1 Open Air Burning By-Law – 2017-12

The Open-Air Burning By-Law stipulates the parameters for outdoor burning within Huron-Kinloss, which came into effect in 2017. This by-law is five years old and as such, should be reviewed and updated in preparation for being presented to Council for consideration.

The following needs to be considered for inclusion in the revised by-law:

- The amended by-law should reference the Ontario Fire Code Article 2.4.4.4.
- Should also reference, O. Reg 256/14, amendments to the *Ontario Fire Protection and Prevention Act.*

- By-Law should also reference Ontario Regulation 207/96, *Outdoor Fires, from the Forest Fires Prevention Act.*
- With the increase in residential occupancies and population, consider expressly prohibiting the burning leaves and grass clippings.
- Should note in the by-law about wood-burning outdoor furnaces, which are becoming quite popular.
- By-Law must include approved manufactured burning appliances with spark arrestors, as found in Chimineas.
- It should also state that manufactured appliances cannot be placed and used on wooden surfaces such as decks and porches.

1.4.2 Noise By-Law – 2005-101 (Discharge of Fireworks)

Huron-Kinloss Noise By-Law is used the regulate the discharge of fireworks. Within the by-law, the following clauses mention fireworks:

- *3.2 The detonation of fireworks or explosive devices not used in construction shall be prohibited at all times.*
- *6.1 allows for exemptions in part d) that allows "Fireworks in association with Canada Day or Victoria Day celebrations."*

Most municipalities have a stand-alone by-law specific to the sale of and discharge of fireworks. They include specifics regarding recreational usage, public high hazard displays, and those discharged during a show or music concert (pyrotechnics).

The municipal authority to control fireworks rests within the Ontario Fire Code O. Reg. 213/07, Division B, Part 5, ss 5.2.

The following needs to be considered for inclusion in a stand-alone Fireworks By-Law:

- Referencing the actual federal regulation regarding the training required to set off commercial and pyrotechnic fireworks should be included in the document. Doing so will direct those who need this training and education and assist them in locating the supporting information. The by-law should list the differentiation between the consumer, display, and pyrotechnic fireworks, as listed in the *Explosives Act, R.S. c. E-15*.

- The by-law should include the importance of fire safety while setting off fireworks. Therefore, it would also be appropriate to have safety information on the proper method of setting off fireworks and the equipment worn by those setting off consumer fireworks. Along with this document, it will also be essential to outline the need for some form of extinguishment that should be readily available such as a pail of water and a fire extinguisher or garden hose.
- While the Noise By-Law states that fireworks may be discharged on Victoria Day and Canada Day only. This list should be expanded to include a list of holiday seasons in which fireworks would be allowed; it should consider all religious-based celebrations and rituals along with New Year's Eve.
- The beaches are a very popular location for parties in the summer, and there should be a section that speaks to discharging fireworks along the beach areas year-round.
- Include a requirement that all those involved in discharging high-hazard fireworks have completed the National Fireworks Certification Program (NFCP) on discharge.
- The document should include when fireworks, such as during winds, over a pre-determined speed, should not be discharged.
- A guide on how to set off "Family Fireworks" be written, i.e., use a pail of sand to place the firework in, have a charged garden hose close by or a fire extinguisher, keep children away from the discharge area, etc.
- For discharging high-hazard ordinances, the HKFES should conduct a pre-event inspection of the site to ensure it complies with the application by a member of HKFES that has completed the NFCP course.
- Include in the by-law that a fire apparatus with four firefighters stands by at the site of high-hazard firework displays. (Four firefighters are recommended in case an initial and immediate response is required).
- There should be at least two post-event inspections of the area adjacent to the discharge zone to look for unexploded ordinances. One takes place the night of the display, and the second the morning of the following day during daylight hours.
- The Fees and Services By-Law to include pre-and post-discharge inspections and the stand-by fire crew.

***Note:** More and more, communities and their Fire Chiefs are recommending prohibiting the sale and use of all "consumer" fireworks. This is because of the dangers associated with consumer fireworks. Enforcement is the key element here. Few municipalities have by-law enforcement officers working when these are most problematic – late evenings and weekends.*

1.4.3 Registry for Accessory Apartments (Second Suites) & Garden Suites By-Law

The Province of Ontario's Housing Supply Action Plan supports second suites to relieve some affordable housing shortages. Second, suites are an essential part of Ontario's rental housing landscape. They offer affordable housing solutions throughout the province. Second Suites are self-contained residential units generally allowed in single detached, semi-detached, and row houses. The Plan also states that second suites may also be in ancillary structures (i.e., garage, laneway house, or garden suite).

All second suites built in Ontario must also meet health, safety, housing, and maintenance standards. These standards include but are not limited to the Ontario Building Code (OBC), the Ontario Fire Code (OFC), and municipal property standards by-laws. These changes, however, do not automatically legalize existing second suites, and they do not allow new units without a building permit.

A by-law is required to establish a registry and license the identified living quarters, allowing the Township to inspect renovations or new constructions involving a second suite.

Huron-Kinloss should also review opportunities to implement a means of reporting unregistered or illegally built second suites, such as an anonymous tip line.

1.2.4 Second Suites and Short-Term Accommodations By-Law

Huron-Kinloss does not have a stand-alone by-law on accessory apartments, also known as second suites or garden suites registry, or a by-law governing short-term accommodations.

A few points to be considered about accessory apartments/second suites or garden suites and short-term accommodations:

- An unidentified number of second-unit apartments in a house.
- An unknown number of short-term accommodations operate in Huron-Kinloss.
- Combustible furnishings.
- An increase in housing within the municipality increases demands on the fire service.
- Detached dwellings used as lodging for multiple students with bedrooms in basements.
- Students or tenants on limited budgets may discover dwellings that may not meet the requirements of the OBC and OFC (i.e., not having proper exits, adequately sized basement windows, smoke alarms, CO alarms, fire extinguishers, fire escape plans, etc.).

    - May lack a direct route to the outside from the basement.
    - Windows that are too small for a person to escape through in the event of a fire.
- Property owners may not understand their responsibilities regarding fire safety and Fire Code.
    - HKFES should review its fire prevention and enforcement resources regarding adequate staffing to inspect all the accessory/second units and short-term accommodations in the municipality for OFC violations.
    - Due to the number of second units and short-term accommodations, HKFES may not have the resources in place to be able to correctly complete these inspections along with the other inspection requirements of the Township.
    - HKFES and the Building Department, in cooperation with By-Law enforcement, should establish and advertise a method (reporting line) to identify possible illegal locations.
    - Inground-related dwellings (basements) must meet OBC and Ontario Fire Code standards under the *Strong Communities through Affordable Housing Act*, 2011.

Most fires occur in residential units.

- Many short-term accommodations may have wood-burning appliances installed. Consideration should be given to requiring a Wood Energy Technology Transfer (WETT) inspection.
- Huron-Kinloss Building By-Law 2019-16 does not require a building permit for the installation of wood-burning appliances, and consideration should be given to its inclusion.

With these points in mind, the Planning and Building Departments should bring forth a by-law that regulates these units, including the licensing of these locations. The document should identify the responsibilities of the fire department.

1.4.5 Development Charges By-Law 2019-133

A Development Charges By-Law follows the Province of Ontario's *Development Charges Act*, S.O. 1997, c27. The Act's purpose is to allow municipalities to collect a fee for new construction to offset the costs incurred in enhancing service provision levels. The payments are allocated to fire protection, roads, recreation facilities, upgrades to water and sewer systems, paramedic services, Public Works, etc.

Council approved the current By-Law in 2019, and the fees charged vary compared to other municipalities. The amount designated towards the Fire Department seems to be lower than most found in table #2.

TABLE #2: COMPARATORS OF FUNDING FOR FIRE PROTECTION FROM DEVELOPMENT CHARGES

Municipality		Residential				
		Total $ of Development Invoiced for Single/ Semi Detached	Single/ Semi Detached – $ to FD	Apartments 2-bedroom – $ to FD	Apartments 1-bedroom – $ to FD	Other Multiples – $ to FD
Huron-Kinloss	Lucknow	$4,104.16	$319.05	$187.67	$187.67	$262.74
	Ripley	$4,499.72	$132.84	$78.14	$78.14	$109.40
	Lakeshore	$2,086.55	$132.84	$78.14	$78.14	$109.40
	Rural Huron Area	$1,123.74	$132.84	$78.14	$78.14	$52.09
	Rural Kinloss Area	$377.64	$319.05	$187.67	$187.67	$262.74
	Finlay St. Service Area	$58,247.71	$132.84	$78.14	$78.14	$109.40
South Huron		$2,801	$207	$143	$787	$403

Municipality	Residential				
	Total $ of Development Invoiced for Single/ Semi Detached	Single/ Semi Detached – $ to FD	Apartments 2-bedroom – $ to FD	Apartments 1-bedroom – $ to FD	Other Multiples – $ to FD
Innisfil	$36,752	$1,554	$1,120	$856	$1,347
The Blue Mountains (Craigleith)	$33,070*	$491	$293	$293	$392
Lucan Biddulph	$6,400	$310	$179	$131	$251
Meaford	$9,975	$751	--	--	$504
Middlesex Centre	$10,567	$1,614	$1,033	$652	$1,060
Thames Centre	$11,693	$1,122	$600	$510	$828
West Grey	$6,176	$549	$370	$247	$352
Springwater	$14,559	$2,480	$1,405	$981	$1,912
Saugeen Shores (with water and wastewater)	$23,357.59	$884.76	$544.96	$378.27	$580.22

Municipality	Residential				
	Total $ of Development Invoiced for Single/ Semi Detached	Single/ Semi Detached – $ to FD	Apartments 2-bedroom – $ to FD	Apartments 1-bedroom – $ to FD	Other Multiples – $ to FD
Kincardine	$18,077	$1,318	$690 / unit	$690 / unit	$921
Southgate	4,988	$253	$162	$104	$177
South Bruce Peninsula	$10,708	$0.00	$0.00	$0.00	$0.00
Grey Highlands	$11,364.41	$319.42	$185.75	$185.75	$205.41
Owen Sound	$8,000	$0.00	$0.00	$0.00	$0.00
Clearview (Stayner)	$26,652.51	$1,252.46	$720.58	$503.58	$1,000.08
Wasaga Beach	$27,585	$1,076	$613	$613	$894
Collingwood	$35,386	$1,142	$685	$397	$860

***Note:** TMB's total charge varies between locations in the Town. Total charges range from $17,436 to $60,707, but the amount dedicated for each service, except for sanitary sewer, remains constant.*

1.4.6 Fees and Charges By-Law 2022-15

A means of fire services generating revenue to offset the operating costs of the fire department is through a Fees and Charges By-Law for services provided. The Township of Huron-Kinloss is permitted to charge for services provided, as outlined in the *Municipal Act* of Ontario (2001), Part XII.

The Township has by-laws in place for the charging of fees for several municipal services provided, primarily in the form of agreements with partner entities and agencies. During this review, it was found that the list of fees for service currently being charged should be reviewed and enhanced. Doing so will capture more invoicing opportunities for the services provided by the fire department. The opportunity of generating revenue could be expanded with the review and update of the current fee schedule to meet standards.

Another form of revenue generation is the invoicing of all fire responses to the property owners' insurance companies through a third-party company specializing in these services. Many fire services in the province have implemented such means to aid in offsetting the cost of operating the fire service. Within insurance policies for both vehicles and structures, there are provisions for the payment of services provided by fire departments.

The following are some services that fire services may charge for:

***Note:** Current MTO rate is $488.40 per apparatus, per hour.*

****Note:** These are charges already in place with the HKFES.*

1. COMMERCIAL PERMITS AND INSPECTION FEES

- Single occupancy of fewer than 20,000 ft^2
- Single occupancy greater than 20,000 ft^2
- Multi-tenant building. The fee covers the first three units. A fee of half the current hourly rate will be charged for each additional unit.
- Fireworks & pyrotechnics display inspections.

2. RESIDENTIAL PERMITS AND INSPECTION FEES

- Multi-tenant (up to and including 12 units).
- Multi-tenant (over 12 units).
- Two-unit house registration OFC inspection - The fee covers the cost of the initial inspection and follow-up inspection to a maximum of two working hours.

- If subsequent inspections are required, the current hourly rate will be billed to the applicant.

3. OTHER INSPECTIONS

- Liquor licence **
- Day care, foster care, and group homes.
- Business licence inspection fee (hourly rate) **
- Fire inspection fee (hourly rate)
- Shows, exhibitions, and special events (hourly rate).
- 3rd or subsequent review of fire safety plans.

4. FIRE APPARATUS STANDBY

- Shows, exhibitions, demonstrations: Current overtime rates per hour for the entire time the fire department is in attendance and includes all assigned apparatus at the scene. $200 per apparatus per hour. Full cost recovery for one Captain and three Firefighters, minimum of three hours per apparatus.
- Respond to all vehicle fires: (vehicles as described in the OFM Standard Fire Report). No charges to permanent residents and businesses. Current MTO* hourly rate per hour.
- Fire watch: Current rates per hour for the entire time the fire department is in attendance and includes all assigned apparatus at the scene. $200 per apparatus per hour. Full cost recovery for one captain and four firefighters, minimum of three hours per apparatus.

5. TECHNICAL RESCUE

- Technical rescue (such as ice/water rescue, confined space, high angle, trench, elevator,
- Hazmat and vehicle extrication. Full Cost Recovery.
- Motor vehicle collisions (MVCs), cost equally divided by all parties involved. No charges to permanent residents and businesses. Current MTO* hourly rate per hour.

6. MISCELLANEOUS FEES

- Administrative charge for invoices
- File search
- Fire report (copy) **

- Training other fire departments and agencies, by the hour per trainer plus course materials and expenses, i.e., fire extinguisher training
- Environmental - service calls (i.e., propane, natural gas leaks, and hazmat): Permanent residents and businesses. If the fire department is required on the scene for greater than two hours, or failure of companies for persons to obtain service locates. Current MTO* rates per hour per apparatus.
- Environmental - service calls: non-residents - fee charged from the time the fire department receives the call. *Current MTO hourly rate per hour
- Burn permit – annually, for trailer parks.
- Outdoor Solid Fuel Burning Appliances Annual Permit **
- Review and approval of Risk and Safety Management Plans submitted by propane operators related to the storage and handling of propane (hourly rate)

7. ADDITIONAL EXPENSES

- If it is necessary to retain a private contractor, rent special equipment not normally carried on a fire apparatus to determine the origin and cause, suppress, or extinguish a fire, preserve property, prevent fire spread, make safe or otherwise eliminate an emergency (actual costs).

By exploring additional opportunities for revenue generation/cost recovery, the HKFES can ensure resources required to support effective and efficient fire service delivery remain available.

1.5 Policies, Directives, & Standard Operating Procedures

Fire department policies and guidelines have immense value for a department. They are the critical foundation of a fire department's success. The backbone of any fire service is its policies, SOPs, and SOGs, which govern and provide direction on its operations.

- Policy - a high-level statement that expects consistent compliance. It is very little to no flexibility permitted with a policy.
- Guideline - a standard with an acceptable level of quality or attainment. It provides direction on how to act in each situation with non-mandatory controls.
- Procedure - a requirement with an acceptable level of quality or accomplishment in a series of detailed steps to accomplish an end. There are step-by-step instructions for execution and completion.

The HKFES has many standard operating guidelines (SOGs) in place and to ensure all the SOGs are current, they need to be reviewed and revised on an ongoing basis as circumstances change. To the HKFES credit they completed a full review of the SOGs in 2021.

To make this task more manageable, some fire departments review a third of their SOGs annually. Adopting this procedure provides the entire set of documents to receive a full review every three years.

Reviewing the SOGs can be an incredibly detailed and very involved process. Writing new SOGs and maintaining existing ones is a daunting task to leave to just the fire chief to look after, even though the district chiefs and members of the Joint Health & Safety Committee review them. Establishing a committee that meets regularly to develop new SOGs and review older ones would relieve some of the pressures placed on the chief officers. The development of a structured SOG Committee that creates its Terms of Reference would be a great benefit to the HKFES in several ways:

- Updated and current SOGs
- Staff would be more involved in the fire department operations.
- Safer environment for members to work.

The Section 21 Committee is part of the OHSA initiative for firefighter safety. A good source of information is Section 21 Guidance notes which are kept current by a provincial team of fire service personnel. The many NFPA Standards are also a good resource for developing SOGs.

For a fire department to operate safely and efficiently, all members must adhere to all policies, SOGs, and standard operating polices (SOPs), and those that fail to do so be held accountable.

EMG notes that the HKFES has a relatively complete set of contemporary Operating Guidelines, and as "living documents" these are being regularly modified, refined, and updated. In our experience, this is not standard, and our compliments are extended in this regard.

Section 1: Recommendations

Rec #	Recommendation	Estimate Cost	Suggested Timeline	Rationale
1	The Fire Administration brings forth a revised version of the E&R By-Law for the Council's approval and ensures its annual review and updates. • This should confirm the updated reporting structure as noted by EMG.	Staff time	Short-term (1-3 years) ongoing	Maintaining an up-to-date E&R By-Law will guide the HKFES' operations and identify response guidelines, fire prevention, and public education programs and levels of training.
2	That fire administration reviews by-laws that affect the daily operations of the fire department to ensure training and resources are adequate to meet the by-law.	Staff time	Short-term (1-3 years)	Understanding the expectations of any by-law will assist the fire chief in ensuring proper training and resources are adequate to meet the expectations of any fire-related by-law.
3	Establish a SOG Committee representing all divisions of the HKFES that develops new SOGs and reviews current ones regularly.	Most costs will be in relation to time spent by the paid-on-call firefighters.	Short-term (1-3 years)	Establishing a SOG committee will aid in maintaining the information in the database to be current while allowing the participation of HKFES members to determine the fire department's operations.

SECTION 2

Risk Assessment

SECTION 2: RISK ASSESSMENT

2.1 Strengths, Weaknesses, Opportunities, and Threats (SWOT)

The strengths and weaknesses portion of a SWOT analysis are based on an internal review that identifies what is working well, along with recognizing areas for improvement. The opportunities and threats portion of the SWOT are related to external influences and how these influences affect the operations and response capabilities of an emergency service.

2.1.1 Strengths

- Huron-Kinloss benefits from having two fire stations that are arranged into two response zones, which has worked well for the Fire Department in relation to responding to calls for service within the community.
- The HKFES has strong relationships with its partner emergency services (police and EMS), along with automatic aid agreements in place with other fire services to assist with general response needs.

2.1.2 Weaknesses

- HKFES, as with many volunteer fire services, depends on its team of dedicated volunteer firefighters (for response to calls). But at times it can be challenging when it comes to having enough volunteer firefighters for these responses.
    - Due to other commitments, such as their full-time jobs and family obligations, there is no guarantee the volunteer firefighters will be available to respond as needed, which in turn can create a condition where possible low numbers of on-scene staffing levels may occur.
- The Ripley fire station is at full capacity for the storage of vehicles and equipment.
    - However, during the initial site visit, it was noted that plans for a new fire station close to the present location are already in the planning. This will go a long way to meeting the future capacity needs of the Department.
- Presently, the fire chief is responsible for managing administration, training, and fire prevention. There are volunteer firefighters (VFFs) who assist with ensuring training topics are being delivered at their respective fire stations. However, it is a struggle to ensure that training needs and expectations outlined in such documents as the NFPA, and the *Occupational Health and Safety Act* are being delivered and documented on a consistent basis.

- And with the OFM implementation of the training standards and certification requirements for all positions within the fire service, even more training will be required (by all fire departments in Ontario).

2.1.3 Opportunities

- HKFES should continue engaging in partnerships with bordering departments for such things as joint training, cross border responses, mutual aid and fire service agreements that benefit both communities.
    - Continuing to build on these partnerships will improve available options in relation to meeting future training and certification requirements.
- HKFES has a training ground that is very well set up, with even more plans on expanding.
    - Greater promotion of this facility to encourage joint training initiatives will improve cross border response coordination, and
    - Promoting it more for rental/training opportunities to fire departments that do not have access to such a facility will help to cover the costs of upkeep for the facility.

2.1.4 Threats/Challenges

- Major emergencies stressing the availability and perhaps even greater dependence on volunteer suppression staffing resources and equipment must be considered as the community's population continues to grow and age.
- The threat of climate change and its impact on weather patterns is an increasing challenge for communities to deal with inclement weather incidents, such as freezing rain/ice storms. As they are becoming more commonplace, they need to be part of the emergency response program for each community.
    - These changes in climate conditions, along with the resulting frequency and severity of incidents, has also predicated the need for a larger response component to these emergencies.

All the noted weaknesses and challenges will be addressed within this document (within the related section(s).

2.2 Stakeholder Surveys

As part of the SWOT, and risk assessment; to get a complete understanding of how well HKFES is meeting the needs of the community and its VFFs, both community and staff input were requested in the form of an online survey. This input was helpful in developing recommendations to assist Huron-Kinloss Council with future strategic decision making as it relates to the fire service.

8.1.1 External Surveys

There was a total of 118 external survey participants. Based on the information received the following areas were categorized as being the top four response/services:

1. Response to firefighting incidents
2. Response for rescue and motor vehicle incidents
3. Response to medical assistance
4. Response to hazardous materials incidents

Additional information collected included:

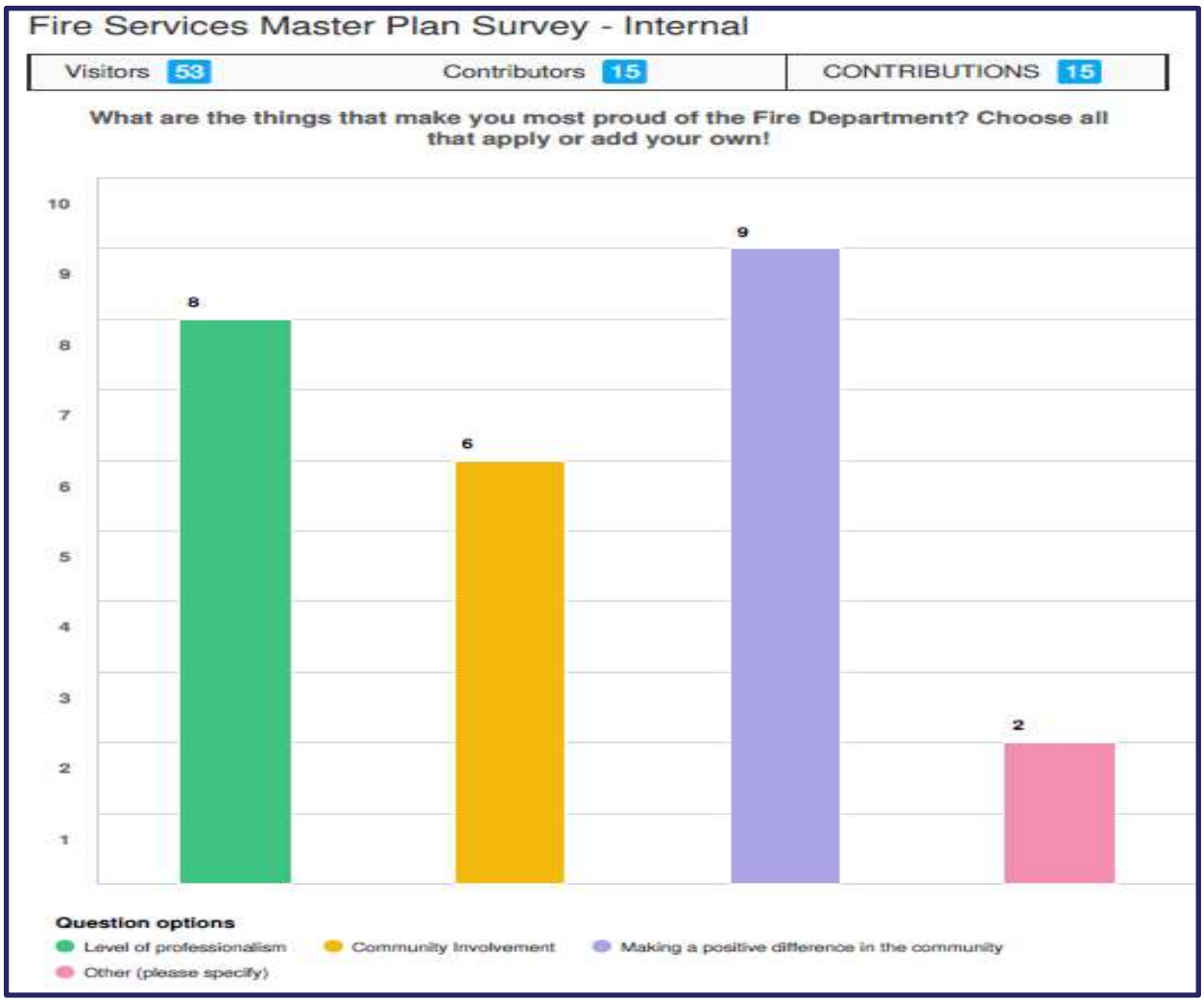
- The Fire Department is viewed as professional, "good to top-notch", and a good community partner.
- Some suggestions that the external stakeholders would like to see an increase:
    - A fire station in the Lakeshore/Point Clark area – this is addressed in the section 4 on facilities.
    - More fire safety education and safety programs – this is addressed in section 3 on fire department divisions.
- In relation to top issues/challenges:
    - Cost of supplying the services to the community
    - Hiring of volunteers and keeping their skills current
    - Continue to meet the needs of a growing population.

8.1.2 Internal Surveys

A total of 15 internal surveys were completed (by the firefighters). Much of the information received from the internal surveys identified the following:

- As seen in the following chart, staff are proud of the service they offer to the community and believe that the community feels that they are served by a professional and dedicated group of firefighters.

FIGURE #4: INTERNAL SURVEY RESULTS



- The top challenges put forward are the continued need to retain volunteer staff, ensuring properly trained and equipped staff in meeting response challenges.

FIGURE #5: SURVEY RESULTS ON RANKING PRIORITY OF SERVICES

There are eight core services that the Fire Department delivers. Which services do you believe are the most valued by the community? Please rank in order of importance from 1-8; 1 being highest value, 8 being lowest value.

OPTIONS	AVG. RANK
Medical assistance and response	1.80
Firefighting	1.87
Rescue (ex. water, ice, motor vehicle, off-road)	3.07
Fire prevention and safety inspections	4.93
Hazardous materials (ex. gas or chemical spills)	5.53
Community outreach and public education	6.07
Public assistance and non-emergency responses	6.13
Emergency management and planning	6.60

Mandatory Question (15 response(s))

Question type: Ranking Question

Ranking of Services:

The top ranking for services supplied by HKFES are:

- Medical response
- Firefighting
- Rescue
- Fire prevention and public safety

2.3 Community Risk Assessment Profile

Risk assessment is the process used to identify the level of fire protection required within the boundary of the Township of Huron-Kinloss. It measures the probability and consequence of an adverse effect on health, property, organization, environment, or community due to an event, activity, or operation. Council has the authority to establish fire protection within their Municipality. The fire chief is responsible for informing the Council of all risks existing within the community. Based on this information, Council can make an informed decision on the level of service to be achieved.

The Province of Ontario Regulation 378/18 Community Risk Assessment (CRA) states, *"a community risk assessment is a process of identifying, analyzing, evaluating and prioritizing risk to public safety to inform decisions about the provision of fire protection."* Effective July 1st, 2019, the Regulation states that every Municipality shall complete a Community Risk Assessment (CRA) by 2024, with renewal to occur every five years. The Township is required to review their document annually.

***Note:** The Township has opted to complete the Strategic Plan first with a full CRA to be completed in 2023. As such, the following information is a high-level overview of risks within the community. The CRA document will supply the Township with a more comprehensive document.*

The Regulation states the following requirement in relation to conducting a community risk assessment:

"Mandatory use

1. Every municipality, and every fire department in a territory without municipal organization, must,

(a) complete and review a community risk assessment as provided by this Regulation; and

(b) use its community risk assessment to inform decisions about the provision of fire protection services.

What it is

2. (1) A community risk assessment is a process of identifying, analyzing, evaluating, and prioritizing risks to public safety to inform decisions about the provision of fire protection services.

(2) A community risk assessment must include consideration of the mandatory profiles listed in Schedule 1. (NOTE: see appendix "F" of this MFP for OFM-related Guideline)

(3) A community risk assessment must be in the form if any, that the Fire Marshal provides or approves.

When to complete (at least every five years)

3. (1) The municipality or fire department must complete a community risk assessment no later than five years after the day its previous community risk assessment was completed.

(2) If a municipality, or a fire department in a territory without municipal organization, comes into existence, the municipality or fire department must complete a community risk assessment no later than two years after the day it comes into existence.

(3) A municipality that exists on July 1, 2019, or a fire department in a territory without municipal organization that exists on July 1, 2019, must complete a community risk assessment no later than July 1, 2024.

(4) Subsection (3) and this subsection are revoked on July 1, 2025.

When to review (at least every year)

4. (1) The municipality or fire department must complete a review of its community risk assessment no later than 12 months after,

(a) the day its community risk assessment was completed; and

(b) the day its previous review was completed.

(2) The municipality or fire department must also review its community risk assessment whenever necessary.

(3) The municipality or fire department must revise its community risk assessment if it is necessary to reflect,

(a) any significant changes in the mandatory profiles.

(b) any other significant matters arising from the review.

(4) The municipality or fire department does not have to review its community risk assessment if it expects to complete a new community risk assessment on or before the day it would complete the review."

The accumulation and analysis of the following factors will assist in applying this information in identifying potential risk scenarios. It is during the assessment of the information gathered, which includes the likelihood of these scenarios occurring and subsequent consequences, that will assist in answering the following questions:

- What could happen?
- When could it happen?
- Where could it happen?
- To whom could it happen?
- Why could it happen?
- How likely could it happen?
- How bad would it be if it happened?
- What programs can be developed to mitigate or prevent any or all of the above?

Once answered, these questions will frame the basis for formulating and prioritizing risk management decisions to reduce the likelihood of these incidents and mitigate their impact. The completed CRA may identify gaps and areas where actual conditions vary from the desired outcomes. Data to be reviewed for each mandatory Profile include:

Demographics Profile – age, gender, educational attainment, socioeconomic makeup, vulnerable individuals or occupancies, transient population, ethnic and cultural considerations.

Critical Infrastructure Profile – the facilities and services that contribute to interconnected networks, services and systems that meet vital human needs, sustain the economy, and protect public safety and security.

Geographic Profile – waterways, highways, canyons and other landforms, railroads, wildland-urban interface, bridges, and other specific features of the community.

Building Stock Profile – potential high-risk occupancies, whether residential, commercial, or industrial, building density, building code classifications, age of the structure(s), occupancies that could be a high life safety risk, historic buildings.

Public Safety Response Profile – how resources are distributed within the community, their deployment and usage, types of incidents responded to and the frequency of such incidents, including the seasonal variations and time of day.

Community Service Profile – existing planning and zoning committees, schools, seniors' organizations, ratepayers' associations, mental health organizations, faith-based groups, and cultural/ethnic groups.

Hazard Profile – human, technological, or natural hazards.

Economic Profile – infrastructure, local employers and industries, institutions, community's tax base, local attractions.

Past Loss/Event Profile – consideration of the impact and frequency of an event; identify significant acute events with a low frequency but a high impact or small chronic events with a high frequency with a low impact.

The Huron-Kinloss CRA, once completed, will be a separate document from the Strategic Plan. When the fire chief has reviewed its contents and discussed it with Council and the CAO, a Community Risk Reduction Plan should be developed and implemented.

2.3.1 Provincial Community Risk Statistics

The fire chief and his staff can work with the municipal team to obtain an updated listing of building stock within the community, along with identifying other hazards such as Industry and commercial outlets, major highways, and the introduction of any high-rise structures.

The first set of statistics noted is the most recent provincial data provided by the Office of the Fire Marshal (OFM) compared with the most recent HKFES statistics.

***Note:** Unfortunately, the 2022 Provincial Statistics were not available at the time of completing this section.*

Provincial - Loss fires by Property Class

From 2016 to 2021, 53,337 fires with a dollar loss were reported to the OFM.

- 73% of these fires occurred in Residential occupancies.
- 28% occurred in vehicles.
- 7% of loss fires occurred in Industrial occupancies.5% occurred on structures/properties not classified by the OBC – this includes many non-structure property types – land, outdoor storage, and some structures ranging from barns to weather stations.

- 3% in assembly occupancies.
- 3% in mercantile occupancies
- 3% in business and personal services occupancies.
- 3% in occupancies classified under the National Farm Building Code
- 1% in care and detention occupancies.

The distribution of fire occurrence across property types has been relatively unchanged.

Provincial - Loss Fires Property class: Structures only

From 2016 to 2021, 34,327 Structure fires with losses reported to the OFM.

- Fires in residential occupancies account for 73% of structure loss fires.
- Properties not classified by the OBC – 5%
- Industrial occupancies – 7%
- Assembly occupancies – 3%
- Mercantile – 3%
- Business and personal Services – 3%
- Occupancies classified under the National Farm Building Code – 3%
- Care and detention occupancies – 1%

This distribution of fire incidents across structure property types has been consistent over many years.

Provincial - Structure Loss Fires: Ignition sources

Notably, 9% of the structure loss fires were suspected to be arson or vandalism (intentionally set).

Between 2016 and 2021 the ignition sources in other (not intentionally set) structure loss fires were:

- 24% undetermined
- 16% cooking
- 14% open flame tools, smoker's articles
- 10% miscellaneous
- 8% electrical distribution equipment – wiring
- 7% heating equipment, chimney, etc.

- 5% other electrical, mechanical
- 4% appliances4% Exposure fires
- 3% lighting - excluding candles
- 1% processing equipment
- 0% unknown, not reported

2.3.2 Township of Huron-Kinloss Fire Loss Statistics

The OFM provided the following information and documents received and taken from the past reports supplied to EMG. The following data is an overview of concerns within Huron-Kinloss and from the highest to the lowest level for ease of review. This information will assist in formulating and implementing fire prevention and public safety awareness initiatives.

Township of Huron-Kinloss Fire Loss by Property Classification

Based on the information received, the following building classifications for property loss are listed based on the number of fires in each occupancy from 2017 to 2021:

- Group C – Residential occupancies
- Structures/Properties not classified by Ontario Building Code
- Classified under National Farm Building Code
- Group F – Industrial
- Group D – Business and Personal Services

Township of Huron-Kinloss Reported Fire Cause

Assessing the possible cause of the fires is essential when identifying potential trends or areas to be considered for introducing additional public education on fire prevention initiatives as part of the community fire protection plan.

The leading causes of fires were:

- Misuse of ignition source/materials first ignited.
- Unintentional undetermined
- Mechanical/electrical failure
- Design/construction/maintenance deficiency
- Other unintentional

- Other
- Undetermined
- Arson

Township of Huron-Kinloss Ignition Source Class

The leading causes of ignition sources were:

- Undetermined
- Miscellaneous
- Heating equipment, chimney, etc.
- Cooking equipment
- Electrical distribution equipment
- Open flame tools, smokers' articles
- Other electrical, mechanical
- Appliances

2.4 Community Risk Assessment

The following list outlines risks to life safety and property. Once the CRA is completed in 2023, the fire chief will be able to put forward strategies to address the risks, including public education and Fire Code enforcement, within the level of fire service provision. The Council will set the level of service. These decisions will form the basis of the Township of Huron-Kinloss community risk mitigation strategies.

A thorough review coupled with sound strategic planning will garner successes in the form of fewer fires, reduced fire-related injuries, and lower dollar property loss through ongoing fire prevention initiatives. These fire prevention initiatives would include early warning detection systems (i.e., smoke alarms), proactive inspections, and public education.

***Note:** The following are risks that will be discussed at length in the CRA, and not in the order of their level of risk.*

Bodies of Water – With Lake Huron bordering Huron-Kinloss, the body of water presents its own set of risks. These include storm surges, vessel incidents such as fires or taking on water and ice/water rescues. There may also be incidents involving aircraft outfitted with pontoons landing on the bay. The

HKFES will need to have its Policies, SOGs equipment and Training to align with its level of response to these types of incidents as determined by the Council in the E&R by-law.

At present, the HKFES level of response is shore-based only, which means firefighters do not leave the land to conduct a rescue. The fire chief should develop mitigation strategies on how best to respond to water-related incidents beforehand so that a predetermined plan has already been established. This may include response agreements with outside fire services or third parties.

Radio System – There were some upgrades to the radio system in 2021. This did not include the replacement/upgrade of all the radio transmitting equipment to the digital platform from the current analogue. It is suggested that a radio system audit be completed so that HKFES may begin moving toward the digital platform. Some radio manufacturing companies are no longer supporting their products with older technologies. This changeover will expose the Township to a significant investment, and HKFES should begin the budgeting process by placing funds in a reserve account for future use.

Fire Stations – An assessment of the current and future needs of the fire stations is being conducted within this Strategic Plan. When planning for new fire stations, they should be designed for future growth, including additional apparatus such as tankers, aerial devices, and career firefighters (if deemed necessary). Depending on the land available, an addition to existing fire stations may be all that is required, and in some cases moving the fire station to a new location may improve service response times. The current stations lack post-disaster engineering components, exhaust extraction systems, and in some cases, negative pressure bunker gear storage rooms and proper fitness room components, exhaust extraction systems, and in some cases, negative pressure bunker gear storage rooms and proper fitness rooms.

Hazardous Material Incidents – Under the E&R by-law, the HKFES responds to hazardous materials (HAZMAT) incidents in accordance with NFPA 472, *Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents,* at the operations level. This requires the firefighters to meet mission-specific competencies for controlling specific chemical leaks. This restricts response levels to HAZMAT incidents as, in some situations, the firefighters are not trained in handling all chemicals. This may delay the incident's control and/or mitigation, as outside resources may need to be called in.

The HKFES should develop a mitigation strategy for handling HAZMAT incidents in which the Department does not have the equipment and training for handling such leaks. This strategy may include entering into response agreements with either outside fire service or third parties.

Technical Rescues –Trench, confined space, high and low angle, and elevator. The mitigation of technical rescues requires that SOGs, policies and procedures, equipment, and training specific to each discipline are in place. HKFES currently responds at the awareness level for each call type which restricts their level of participation in completing the rescue. A response mitigation strategy that includes response agreements needs to be developed and receive Council's approval.

Elevator rescues should not be initiated until SOGs, equipment acquisition, and training are in place. The firefighters need to be trained to the standards as established by the Technical Standards and Safety Authority (TSSA).

Weather Events – This area of Southern Ontario is known to receive severe weather events. These range from snowstorms, namely snow squalls, and wind events, including tornadoes during thunderstorms.

The severity of some weather events may require the Township's Emergency Operations Centre (EOC) to be activated. Preparations in handling such events should include either tabletop or real-time training exercises that include participation by members of the Township's Control Group and allied agencies.

Domestic Terrorism - The threat of domestic terrorism exists in Canada, with numerous incidents producing havoc and terror among the populace. Situations have occurred in serval Canadian cities with catastrophic consequences. Active shooter incidents may occur in factories, schools, supermarkets, seasonal facilities and within the family home.

NFPA 3000 – Standard for an Active Shooter/Hostile Event Response (ASHER) Program, defines ASHER as "*an incident where one or more individuals are or have been actively engaged in harming, killing, or attempting to kill people in a populated area by means such as firearms, explosives, toxic substances, vehicles, edged weapons, fire, or a combined thereof."*

It further describes the ASHER Program as "*a community-based approach to preparedness, mitigation, response, and recovery from an ASHER incident, including public or private partnerships, emergency management, the medical community, emergency responders, and the public."*

Too often, communities wait until an event has occurred with catastrophic consequences and loss of life before identifying the need for public education and preparedness to handle such incidents. Terrorism attacks quite often focus on those of religious faith.

Industries – The Bruce Power Generating, which uses nuclear technologies to generate power, presents industry-specific risks. These include radiological exposure and injuries. Even though the plant is not in Huron-Kinloss, the effects of a radiation leak could drift toward Huron-Kinloss by way of the prevailing winds. In extreme cases, evacuation orders may need to be put in place.

Waste material, including radiation-contaminated items from the site, may be stored in the Huron-Kinloss area in storage facilities deep in the earth. A deep geological report is included within this document. Huron-Kinloss should conduct training exercises that include members of the Community Control Group, its allied agencies, and representatives of Bruce Power.

Demographics – Demographic statistics are constantly growing and forecasted to grow between 25 to 40% in Bruce County between 2021 and 2046.[2] With this anticipated growth, there will be an increase in call volume, demands placed on fire prevention for inspections, and the need for enhanced levels of public education.

To meet the community's needs, the HKFES may need to review their current capacity to meet the required number of inspections and public education events versus the need for additional resources, including the acquisition of a full-time fire prevention officer/public fire life safety educator FPO/PFLSE.

Building Stock - With existing and new residents living in the Township, there could be illegal second units and apartments. While permitted, secondary dwelling units and garden suites must be built to OBC and OFC requirements. A requirement should be in place to have every second unit and garden suite registered and licensed with the Township and inspected by HKFES.

There is also an unknown number of short-term accommodations in the Township. No by-law regulates these accommodations. Owners of these businesses must be aware that they must comply with Municipal by-laws such as Property Standards and Open-Air Burning.

A short-term accommodations by-law should regulate this industry which also calls for the registry of fire inspections of these locations.

A requirement should be put in place for those with wood-burning appliances to have a Wood Energy Technology Transfer (WETT) inspection completed to ensure compliance with building and manufacturers' installation requirements.

[2] Ontario population projections | ontario.ca, Accessed December 06, 2022, https://www.ontario.ca/page/ontario-population-projections

Building Stock – The OFM has identified the risks associated with occupancies using lightweight construction (LWC) practices. Municipalities are to inventory all building stock, including LWC practices. HKFES and the Building Department should collaborate to develop an ongoing list of all building stock based on the OBC occupancy classifications. Failure to comply with this requirement is illegal and exposes the Township to significant fines.

2.5 Next Steps

As the community grows, the frequency of calls and the need for service will grow. Based on this growth, there may be a future need for additional staff in the Fire Prevention Office, the Fire Suppression Division, and training. Supporting information relating to the staffing needs of each division can be found in the associated sections within this Strategic Plan.

The provincial government has recently introduced updates to the *Fire Protection and Prevention Act*, which outlines the responsibilities of a community and its fire department concerning service level expectations. The updates to the *Act* are:

- Certification for firefighters, fire service instructors (training officers), and fire service inspectors (fire prevention inspectors)
- Mandatory reporting requirements
- Mandatory community risk assessments review annually, and a new one is to be completed every five years.
- Mandatory inventory of all building stock, including the identification of those with lightweight construction components.

These four additions will put an even more significant strain on fire departments to ensure proper training, reporting, and completion of CRAs.

2.6 Fire Underwriters Survey

As part of a community risk assessment, a review by the Fire Underwriters Survey (FUS) group, will provide another component to understanding possible service gaps within the community. The FUS is a national organization that provides data on public fire protection for fire insurance statistical work and underwriting purposes of subscribing insurance companies. Subscribers of FUS represent approximately 90% of the private sector property and casualty insurers in Canada.

FUS Certified Fire Protection Specialists conduct detailed field surveys of the fire risks and fire defences maintained in built up communities including incorporated and unincorporated communities of all types across Canada. To complete this task, the specialists at FUS perform a detailed analysis of

the overall fire protection by assessing four key areas: fire department, water supplies, fire prevention and emergency communications.

The results of these surveys are used to establish a Public Fire Protection Classification (PFPC) for each community. While the FUS is not involved in setting rates, the information provided through the Fire Insurance Grading Index is a key factor used in the development of commercial lines property insurance rates. The PFPC is also used by underwriters to determine the amount of risk they are willing to assume in each community or section of a community.

The overall intent of the PFPC system is to provide a standardized measure of the ability of the protective facilities of a community to prevent and control the major fires that may be expected to occur. This is done by evaluating, in detail, the adequacy, reliability, strength, and efficiency of the protective facilities and comparing the level of protection against the level of fire risk in the built environment.

The FUS also uses PFPC information to develop the Dwelling Protection Grade (DPG), which is used by personal lines insurers in determining property insurance rates for detached dwellings, with not more than two dwelling units. The DPG is a measure of the ability of the protective facilities of a community to prevent and control the structure fires in detached dwellings by evaluating the adequacy, reliability, strength, and efficiency of the protective facilities and comparing the level of protection against the level of fire risk associated with a typical dwelling.

The fire insurance grading system used does not consider past fire loss records, but rather fire potential based on the physical structure and makeup of the built environment. When a community improves its PFPC or DPG, insurance rates may be reduced while the underwriting capacities may increase. Every insurance company has its own formula for calculating their underwriting capacities and insurance rates; however, the PFPC and DPG classifications are extremely useful to insurers in determining the level of insurable risk present within a community.

The FUS has also introduced the FUS Municipal Fire Portal that would provide HKFES with the ability to access and update data relevant to HKFES and forward updates in a timely fashion. By accessing this system regularly, the HKFES can provide frequent updates from which FUS Specialists will analyze and publish grade updates as deemed necessary. It is recommended that once a FUS assessment is complete, the Fire Chief regularly accesses and provides input to the FUS Municipal Fire Portal.

HKFES has not incorporated best practices as outlined by FUS to achieve and maintain the superior tanker shuttle service accreditation. Although EMG believes that the HKFES has the experience and capability to pursue better results as per the industry standards and best practices as outlined by FUS assessments. It is recommended that a review of the Fire Department's operations to improve its FUS

grading in the measurement of the ability of the protective facilities of the community to prevent and control the major fires that may be expected to occur.

Section 2: Recommendations

Rec #	Recommendation	Estimated Costs	Suggested Timelines	Rationale
4	The HKFES should work with the FUS group to obtain their superior tanker shuttle accreditation.	Staff time and cost for assessment	Short-Term (1-3 years)	A Fire Underwriters assessment provides an opportunity for a fire department to apply for its superior tanker shuttle accreditation which the HKFES has not completed yet and should consider obtaining this accreditation. It offers insurance savings through some insurance companies. But more important, it can develop a more efficient tanker shuttle process for the Department.
5	A review (by FUS) of the Fire Department operations to improve its FUS grading in the measurement of fire service operations and abilities be undertaken.	Staff time	Short-term (1-3 years)	No recent copy of an FUS review was available. As such, the Township should apply for a review by FUS, which will provide even more valuable information as to what fire protection is required by the Township.

SECTION 3

Fire Department Divisions

SECTION 3: FIRE DEPARTMENT DIVISIONS

Within the scope of work noted in the original RFP document, staffing and divisional needs was identified as a priority in which EMG was to review the capabilities of existing staffing and identify future needs for each of the divisions including Administration, Fire Prevention, Training, Suppression, and Communications.

3.1 Community Safety – Four Lines of Defence

Even though the Office of the Fire Marshal (OFM) community safety model revolves around three specific lines of defence - Public Education, Safety Standard and Enforcement, and Emergency Response. EMG views Emergency Management as the fourth, inclusive line of defence, and have added this into the overall concept of community safety.

i. Public Education – educating residents has proven to be the most effective means in reducing and preventing the incidences of fire and property damage. Reducing the number of fires before they start and identifying how the Township will continue to meet the fire education needs while the Township grows.

ii. Safety Standards and Enforcement – ensuring that the inspection and enforcement of Fire Codes occur so buildings meet the required safety standards.

iii. Emergency Response – the availability of well trained and well-equipped firefighters to respond and effectively mitigate the incident is the last defence. The staff, equipment and fire station locations impact how the emergency is mitigated.

iv. Emergency Management – a Township is legislated to have an emergency preparedness program to ensure the safety of the residents of the community by having a training, education, response, and mitigation plan in place for any possible emergency the community may encounter. More information on this topic can be found in section 5.

Along with these four lines of defence, the following industry best practices help to inform a fire department of industry expectations. Neither the NFPA and/or the FUS are legislated requirements, and do not have to be followed, but utilizing them to improve a community's fire service is encouraged by EMG.

3.2 National Fire Protection Association (NFPA) 1201

The National Fire Protection Association Standard 1201 – *Standard for Providing Fire and Emergency Services to the Public* makes note of the services that should be offered and how they are to be delivered based on the composition of an emergency service.

Section 4.3.5 notes:

- *" The Fire and Emergency Services Organization (FESO) shall provide customer service-oriented programs and procedures to accomplish the following:*
    1. Prevent fire, injuries and deaths from emergencies and disasters.
    2. Mitigate fire, injuries, deaths, property damage, and environmental damage from emergencies and disasters.
    3. Recover from fires, emergencies, and disasters.
    4. Protect critical infrastructure.
    5. Sustain economic viability.
    6. Protect cultural resources.

To accomplish this, an FESO must ensure open and timely communications with the CAO and governing body (council), create a masterplan for the organization, and ensure there are mutual aid and automatic aid programs in place, along with an asset control system and maintenance program."

To provide an emergency service clearer focus on what the ultimate goals for emergency response criteria are, the NFPA suggests that response times should be used as a primary performance measure in emergency services. NFPA 1720 refers to goals and expectation for volunteer emergency services that has been incorporated into the evaluation of the emergency services' response and staffing needs. More discussion in relation to the 1720 standard will be presented within this section and Section 4.

3.3 Administration Division

A Fire Chief's role, in a large or small fire department, requires regular interaction of council, and senior corporate management. Responsibility for Fire Protection Services found in Part 2, section 2, paragraph 6 (3), of the Fire Protection and Prevention Act, 1997, S.O. 1997, states that *"A Fire Chief is the person who is ultimately responsible to the council of a Township that appointed him or her for the delivery of fire protection services".* It is based on this provincial legislation that the Fire Chief needs to communicate directly and regularly with the council of a Township to satisfy the requirements of the role.

The Administration Division in Huron-Kinloss includes the fire chief, and an administrative assistant who also fulfills the role of community emergency management coordinator (CEMC) and health and safety. Although the fire chief is doing an admirable job at managing the day-to-day operations of the department. There is no doubt that more resources are required.

With the OFM training and certification requirements to meet NFPA standards for all positions within the Department (implemented in 2022), the training demands on all positions within the HKFES will increase based on the services the Department will be supplying. The additional training requirements and subsequent workload, will most likely require a review of the position responsibilities and identify the following:

- The future need for a part-time or even full-time training officer position to handle the new legislated training requirements, or at the very least ensuring that the new deputy chief has the resources and time to implement the required training, and
- There will be a need for more administrative support to ensure proper records management of training and certification records (which is currently a mix of paper-based records and certificates, along with the use of the Fire Pro program) to ensure that all required documentation is available if requested by the Office of the Fire Marshal (to verify certification of fire staff based on level within the fire department).

3.4 Fire Prevention And Public Education

Many fire departments in Ontario subscribe to the provision of fire protection services through three specific overarching strategies as ascribed by the Office of the Fire Marshal - a) the delivery of public education programs intended to educate the community about fire risks, b) the enforcement of applicable legislation (the FPPA) through applied inspection and enforcement actions, and c) the delivery of effective fire suppression capabilities in accordance with the unique needs and circumstances of each particular community. Huron-Kinloss has embraced these strategies and has embedded them within the fire department's E&R By-law (By-law 2020-120).

This section of the report focuses on the "Fire Prevention Division" activities which can be characterized as including not only public education and code enforcement (the first two "lines of defence"), but also inherently the function of fire cause determination since it follows that an understanding of a community's own fire "experience" is necessary to construct proactive measures intended to reverse developing trends in respect of fires. While many communities share common themes in this respect (i.e., careless smoking caused fires), the local reaction to these trends can be driven by influences specific to each community.

In the case of Huron-Kinloss, a comprehensive review of the fire prevention program and the activities being conducted has identified several opportunities to develop actions that will ultimately serve to

reduce the level of risk to the Corporation of the Township of Huron-Kinloss, but also reduce the impact of unwanted fires on the community itself.

This analysis included a review of the Township's "Fire Prevention Program Policy" dated August 30, 2022. This document is an example of what a comprehensive fire safety program for a community *should* include, but in reality, the fire department is not adequately resourced to fulfil the full extent of the goals and objectives included in it. It, therefore, stands as a potential liability as it is written.

Subsections 1.3, 1.5, 1.6. and 1.7 are not being addressed as the document purports due to time constraints on existing staff. EMG has been advised that this policy document is actively being updated.

3.4.1 Public Education Activity Opportunities

An informed and well-educated public is the cornerstone of a fire-safe community and when departmental resources are focused on activities that support ongoing educational initiatives, the reliance on fire suppression and its inherent costs can be mitigated to a degree. By legislation, and as a minimum, every municipality must establish a program of public education with respect to fire safety[3] and include certain components such as a smoke alarm program. Other content of the public education program is largely left up to the local fire department to determine based on its "unique needs and circumstances".

The Huron-Kinloss Fire and Emergency Services currently includes in its smoke alarm initiative, the provision of smoke alarms to the public where the Department finds these are outdated or lacking altogether. In many cases these smoke alarms are provided "free" or on a "loan" basis until the owner can install their own updated alarms. Occasionally these are provided on a "cost recovery" basis when circumstances warrant (*see* - HKFES Standard Operating Guideline 10-3, dated January 2021).

Many fire services provide targeted messaging to their communities through poster and print and/or social media campaigns, fire prevention week open houses, and community fairs or similar events. Community awareness initiatives are an important part of a comprehensive public education program, an area that the Township should pursue with additional vigour.

[3] *Fire Protection and Prevention Act*, Subsection 2.(1)

Enforcement of Provincial legislation requiring smoke alarms is often utilized too when landlords or tenants are negligent with their duties as prescribed by the Fire Code. Proactive community messaging when such opportunities arise can be an important component of smoke alarm awareness programming.

Many communities develop additional comprehensive public education programs with a variety of elements designed to target specific segments of the community, and as an example, the Emergency Management Group (EMG) points to the following programs that can be offered as part of a comprehensive public education program:

- Older and wiser – Designed with seniors and some of the unique hazards they face in mind.
- Farm safety – Generally for communities with significant agricultural risks.
- Fire prevention week programming – Many communities utilize this annual North American wide event to target schools.
- Carbon monoxide awareness – National awareness campaigns usually occur in November every year as heating season comes into focus.
- Apartment safety – Utilised in communities where multi-unit apartment buildings present specific hazards to residents.
- Fire extinguisher training – Often provided on a cost-recovery basis for businesses and their employees.
- Heating safety/burning with wood safety – Usually provided in the fall and winter months to emphasise the importance of maintaining heating equipment, cleaning chimneys, etc.
- Electrical safety – Often utilised in communities with a large inventory of older buildings that may not have contemporary electrical installations.
- Home escape planning – Frequently used to supplement smoke alarm messaging, though some departments utilize E.D'I.T.H. (Exit Drills in the Home) specific programming.
- Home and building renovation safety – Commonly offered in conjunction with local building officials and utility providers to promote safe renovation practices and permit promotion.
- Basement Apartment Program – To promote a municipal inter-departmental approach to basement apartment conversions (zoning, property standards, by-law, health, and fire department specific issues).
- Juvenile Fire Setters Program (formerly known as TAPP-C, the Arson Prevention Program for Children) – can be cofacilitated by police, local health services, and child and family services agencies.
- Learn Not to Burn – promotes the use of a comprehensive fire safety-based curriculum for use by teachers in an elementary school setting.



While some of these programs are noted in the Township's policy, very few appear to have been integrated into regular fire department programming in any regular or scheduled manner.

Several organizations exist to support local fire departments with their public education initiatives. These include the National Fire Protection Association (NFPA.), the Ontario Municipal Fire Prevention Officers Association (OMFPO), the Fire Marshal's Public Fire Safety Council (FMPFSC) and the Ontario Association of Fire Educators (OAFE) amongst others. Departmental memberships in organizations such as these ensure that local service providers are kept abreast of current and emerging trends in fire safety.

As discussed in other areas of this report, the professional competencies of those practicing public education activities have become vital. The NFPA 1035 standard sets out the minimum qualifications for those engaged in public education activities and EMG understands that the HKFES has been very proactive at positioning itself for compliance with this standard by training 10 volunteer firefighters to this standard.

The importance of a properly designed and supported media relations program cannot be overstated. Without the active support of local print and electronic media outlets, the full potential of public education efforts cannot be fully realized. Inherent in this is the use of social media channels by the department as a way to reach as broad a consumer base as possible. The use of Facebook, Instagram, and Twitter (amongst others) is a critical element in the development of an effective media strategy, and public education program, for the department.

Ultimately, it should be the goal of any public education initiative to change or alter *behaviours* such that community members - regardless of their age – are better informed about the fire safety risks they face personally, and how to make changes in their lives to better manage, control, and react to those risks.

In January of 2022, the Township engaged a full-time emergency services and health and safety coordinator, and while this individual conducts *some* fire department specific public education activities (including making use of social media opportunities), these are sporadic and lack continuity. VFFs have some involvement with public education program delivery, but this is reportedly minimal.

Based on the information obtained, it is recommended that the HKFES expand and formalize its public education activities by identifying and appointing two of its existing volunteer firefighters to supplement (expand) the public education program in concert with the full-time coordinator noted previously. These two (each representing one of the two stations) could be selected based on their certification to the NFPA 1035 standard as made available by the Ontario Fire College.

The public education team should work collaboratively and with a dedicated budget and weekly programming expectations to more fully develop and deliver local programming, notably in the area of smoke alarm awareness, home escape planning and carbon monoxide alarm awareness, along with specific fire cause prevention messaging. As the community grows, transitioning the public education role to a dedicated full-time position should be considered – likely beyond the mid-term horizon.

3.4.2 Fire Cause Determination Activity Opportunities

The *Fire Protection and Prevention Act* (*FPPA*) requires the fire chief to report all fires to the Fire Marshal and provides specific powers for THE FIRE CHIEF and certain other members of the department who have been appointed as "assistants to the Fire Marshal" to enter on land or premises where a fire has occurred or is likely to occur. These are generally described in Subsection 14. (2) of the *FPPA* as follows:

14. (2) – Upon entering on land or premises, the fire chief may:

> *(a) close, and prevent entry to, the land or premises for the length of time necessary to complete the examination of the land or premises;*
>
> *(b) in the case of an entry under clause (1)(a), remove from the land or premises, retain and examine any article or material, and take such samples or photographs, make videotapes and other images electronic or otherwise that in his or her opinion may be of assistance in determining the cause of the fire under investigation;*
>
> *(c) make such excavations on the land or premises as he or she considers necessary;*
>
> *(d) require that any machinery, equipment or devices be operated, used or set in motion under specific conditions; and*
>
> *(e) make any reasonable inquiry of any person, orally or in writing.*

Beyond this mandate, it's in the interest of the community and department to initiate an investigation as to the origin and cause of each fire that occurs for a variety of reasons – a) to inform fire prevention

and public awareness campaigns; b) to identify faulty consumer goods that may give rise to other fires; and c) to determine whether a fire was accidental in nature or human-caused and therefore potentially a criminal act.

In the case of the latter, stopping a serial arsonist/vandal may be of crucial importance to the community in terms of safety and property conservation, and otherwise, it's proper to seek out persons who would commit crimes so that they may be prosecuted following the legal principles of general and specific deterrence.

EMG reviewed the singular HKFES standard operating guideline (SOG 10-2, dated January 2021) on the subject of fire investigations, and found it to be a very well-written, concise and accurate document reflective of current operational considerations in the Township.

For Huron-Kinloss, the fire chief as the chief fire official (CFO) is qualified to undertake fire cause determination efforts based on his completion of the requisite NFPA 1033 training course and certification process. Currently, one other NFPA certified staff member supplements the Chiefs work in this regard, and while each fire is investigated to the degree possible, extended investigations undertaken by staff anecdotally number less than half a dozen on an annual basis. In many departments, the fire investigation function falls to dedicated fire prevention officers or similarly qualified staff members.

Due to the nature, extent, and complexity of some fire investigations, it would seem prudent to have other individuals properly trained to augment the existing qualified staff members and provide alternate in-house capabilities in the event these resources are unavailable or that an investigation becomes a multi-day event. Indeed, the Office of the Fire Marshal now routinely sends a minimum of two investigators to incidents under their purview. This not only serves to add a "second set of eyes" to an investigative effort, but it also provides for a greater degree of safety for the investigators. Additionally, it also allows the appropriate development of potential alternate fire cause hypotheses - critical to the fire cause determination effort.

EMG recognizes and acknowledges that certain specialized courses, such as the NFPA 1033 course that is the subject of this particular discussion, are not readily available and when offered, typically are conducted at only selected locations in the province. This makes attendance at these courses more challenging for many departments. The HKFES may want to discuss hosting a course locally to allow their neighbouring fire departments a local training opportunity, which could reduce staff training costs for all involved.

Alternately, consideration should be given to formalizing agreements with neighbouring fire services who have qualified staff available for such activities, perhaps on a reciprocal basis.

The Office of the Fire Marshal is mandated to conduct the investigation of serious fire incidents in the province. These incidents include fatal fires, fires that cause serious injuries, intentionally set fires, explosions, large loss fires, fires in multi-unit dwellings that spread beyond the unit of origin and fires that may give rise to public attention or concerns.

In these situations, a multi-agency team approach is often employed involving representatives from police agencies, the Coroner's Office, Provincial Ministries such as Labour, and entities such as the TSSA, the Electrical Safety Authority (ESA), and utility providers. Representatives of the insurance industry are most often involved in these investigations and therefore it's important from a risk management perspective for the HKFES to be a full and active participant in these complex investigations as well. Often these investigations take several days to complete, while others can take weeks and months.

Several organizations exist to further the science and practice of fire cause determination. These include the Canadian Association of Fire Investigators (CAFI) and the International Association of Arson Investigators (IAAI). Departmental memberships in each will assist local investigators with keeping abreast of current trends and scientific developments in the field.

It is recommended that the HKFES continue to invest in its fire cause and determination program by developing a continuing education program. This would comprise of additional qualified staff members that attends subject-focused seminars and memberships with the CAFI, and IAAI. This would also require that the number of NFPA 1033 qualified investigators be increased.

The Department should further develop and refine specific operational guidelines that dictate the scope and limitations of fire cause determination activities; the engagement of the OFMEM Fire Investigation services staff; the protocols to be followed when fatal fires or criminal actions result in fires; when clandestine drug labs or illegal grow operations are encountered; and the follow-up notifications that should be undertaken in a post-fire environment including, the local health unit, local building and property standards officials, agencies charged with enforcing "child in need of protection" issues, local utilities, regulatory agencies - the TSSA and the ESA - Conservation Authorities, the Ministry of Labour, the Ministry of the Environment and Climate Change and other agencies that potentially may have interest in any response undertaken by the fire department.

As noted in a previous section, EMG observed that the HKFES has a relatively complete set of contemporary Operating Guidelines, and as "living documents" these are being regularly modified, refined, and updated. Our compliments are extended in this regard.

3.4.3 Fire Code Inspection and Enforcement Activity Opportunities

An effective and proactive inspection and code enforcement strategy is necessary for every community in Ontario. This stands as the "second line of defence" against unwanted fires. In Ontario, the Office of the Fire Marshal has mandated that all fire departments conduct building inspections on a "request or complaint" basis as an absolute minimum. Best practices, however, suggest that an effective inspection program be much more encompassing.

The safety of the residents of Huron-Kinloss, and its firefighters can be greatly impacted by a program that focuses on code-compliant buildings that perform well under fire conditions, and often this can only be accomplished by building owners who are knowledgeable about the fire safety features of their buildings, and who are properly motivated to maintain them in good condition. Many lives have been lost in Ontario fires due to non-functioning alarm systems, defective fire separations, blocked exits and poorly designed or maintained building systems.

The inspection of existing buildings by properly qualified inspectors can greatly reduce the risk of exposure of a municipality, and conversely, a poorly or inadequately conducted inspection that fails to identify a hazard can greatly increase the risk of liability for a municipality when a fire does occur under the "joint and severable" liability environment that exists here in Ontario.

Generally, when a building is inspected and a violation of the Fire Code is noted, fire departments will work with an owner to move the building toward a state of compliance based on the severity of the deficiency found. It follows that simple corrections can be done quickly; however, more complex deficiencies may take a longer period of time to correct. Fire departments have some latitude when issuing orders to correct a deficiency in terms of the time frame allotted to make the correction. These time frames should be policy-driven and approved by the fire chief.

When property owners do not agree with the content of the orders issued by an inspector, or the particulars of an order, they can apply to the Ontario Fire Safety Commission for a review. The Commission will decide whether to uphold the order of the Inspector based on the law, or may direct that the order be revised, or that it be nullified altogether.

Where a property owner refuses to comply with an order, enforcement action must be initiated by the Township. Some municipalities employ their own legal representatives to undertake these actions in support of the local inspector, but many small municipalities such as Huron-Kinloss employ third party lawyers to do this on their behalf. All of these services should be included as part of the cost recovery within the fess by-law.

EMG has reviewed the fire inspection program and notes that apart from the Provincially mandated annual inspection in the six vulnerable occupancies (retirement homes, homes providing long-term care, and homes for those in community living settings) located in the community, inspections are being conducted on a complaint or request basis only.

Currently, there is no action plan to inspect Assembly-type occupancies (schools, theatres, churches, restaurants), higher-risk residential occupancies (apartment buildings, multi-unit dwellings), commercial occupancies, industrial occupancies, or agricultural occupancies.

The FUS is an organization which assists the insurance industry but examines the effectiveness of fire departments (and other impacting factors) as they serve their communities in Canada and the impact that their programs and preparedness/effectiveness have on fire losses (building values destroyed or damaged by fire. The FUS provides advice and guidance to many insurance companies who in turn use this advice to set insurance rates paid by consumers in each community.

In terms of inspection programs that have an impact on fire rates, the FUS recommends inspection intervals for various community elements based on the following table (provided for illustrative purposes only):

Occupancy Type	Inspection Frequency Benchmark
Assembly (Class A)	3 to 6 months
Institutional (Class B)	12 months
Single Family Dwellings (Class C)	12 months
Multi-Family Dwellings (Class C)	6 months
Hotel/Motel (Class C)	6 months
Commercial (Class E)	12 months
Industrial (Class F)	3 to 6 months

Each classification of building has its own inherent risks and degree of complexity, and in many large departments, Fire inspectors specialize in one particular classification of building. For example, multi-unit dwellings can take the form of a legacy home converted to a four-unit apartment, while another might encompass a six-story mid-rise building of non-combustible construction. Each building has its own unique characteristics and differing Fire Code requirements based on size, occupant load, construction etcetera.

Importantly, EMG notes that the only person conducting fire inspections currently is the fire chief. While the fire chief is currently trained to the NFPA 1031 Level I standard, training to the Level II standard is desirable. Noteworthy is the fact that five of the volunteer firefighters have begun training in the NFPA 1031 Level 1 inspection stream, however the process to obtain initial certification requires the completion of four additional courses, plus successful completion of the requisite assignments and testing. Overall, this is not a quick process and completion is largely driven by a combination of course and student availability.

The fire department currently receives on average, one complaint or request inspection per month, but also conducts an additional 40-50 limited-purpose inspections annually for burn permits and the like. While a single complaint inspection does not, on the surface, seem onerous, the research and preparation of technical orders that often follow can take days or even weeks to properly prepare. The one per month inspection frequency also does not take into account the follow-up site visits that

need to be completed in order to ensure compliance has been achieved by the property owner. Beyond that, where a property owner refuses to comply with an order, the follow-on actions required of the inspector (including prosecutions under the Fire Code) can take months to complete.

EMG notes that the HKFES regularly utilises the "ticketing" (Part I) provisions of the legislation which allows for the payment of set fines outside of the court process, it has yet to institute charges using a Part III process (Summons to Court) under the *Provincial Offences Act* for a Fire Code violation as reportedly, the need for this has yet to arise. These charges under the Part III process generally result in higher fines upon conviction.

Regardless, the unique and specialized nature of the work conducted by a Fire Inspector combined with the elevated risk exposure to the Corporation for omissions or mistakes that might be made by that individual suggests that a dedicated person with the requisite advanced training be assigned to the duties that are associated with it.

A sub-set of the Inspector's role includes the review of plans submitted to the Township for approval. These include site plans for new subdivisions or commercial/industrial developments (fire department access, hydrant locations, roadway configurations etc.) and individual building plan submissions (for compliance or input regarding sprinkler systems, fire alarm systems, water supply for firefighting, exiting requirements, location of fire suppression system components, fire separations, closures, etc.). In large communities, these duties typically fall to a municipally staffed Fire Protection Engineer, however, few small communities have the luxury of such a person on staff. Typically, municipal building officials' welcome input from fire inspectors or prevention officers as well as a way to ensure that complex building codes are being properly interpreted and applied in a practical, pragmatic manner.

Based on this review it is recommended that the HKFES further develop its capacity and capabilities respecting the Fire Code and enforcement activities by identifying and appointing a full-time career fire inspector (fire prevention officer) who is fully trained and certified (or obtains certification within a reasonable time frame) to the NFPA 1031 Level II standard as made available by the Ontario Fire College.

The fire inspector should develop a work plan that includes the ability to conduct regular inspections in "vulnerable occupancies"; schools, multi-unit dwellings, key industrial or commercial facilities and as requested or by complaint as a minimum. The department should additionally further develop operating guidelines that clearly articulate all aspects of the inspection process including issuing orders, and the prosecutorial process to be followed when compliance with Fire Code requirements is not achieved within reasonable time frames. The recommended position could also be a "shared" one – that is an inspector who serves two or more departments in a geographical area on a cost-sharing basis or could be a function of another career person such as a deputy fire chief if such a position is created – though this is not recommended.

3.5 Facts About Home Fire Sprinklers

Fire chiefs, fire inspectors and firefighters are in a unique position to advocate for the wider use and implementation of sprinkler systems as well. Though not mandated by law in certain instances, sprinkler systems are simply the best way to prevent catastrophic and deadly losses due to fire. There has never been a documented case of a multiple fire fatality occurring in a building equipped with a properly designed and maintained sprinkler system, and any municipality would do well to position itself as a support to this life-saving technology.

The National Fire Protection Association (NFPA) along with the Ontario Association of Fire Chiefs (OAFC) are strong supporters of residential sprinkler systems to reduce the risk to life and property from fire. In a recent NFPA on-line article, it was noted that because fire sprinklers react so quickly, they can dramatically reduce the heat, flames, and smoke produced in a fire. Properly installed and maintained fire sprinklers help save lives, reduce damage, and make it safer for firefighters.

Unfortunately, in the absence of Canadian statistics, the fire service is forced to rely on U.S. statistics for reliable data points. However, since there are so many similarities between the built Canadian and U.S. environment in terms of building construction, the statistics can be viewed as an accurate reflection of the Canadian experience.

Automatic sprinklers are highly effective and reliable elements of total system designs for fire protection in buildings. According to an American housing survey, 10% of occupied homes (including multi-unit) had sprinklers in 2010-2014, up from 4.6% in 2009.

Source: U.S. Experience with Sprinklers[4]

- 85% of all U.S. fire deaths occur in the home.
- The civilian death rate of 1.4 per 1,000 reported fires was 81% lower in homes with sprinklers.
- The civilian injury rate of 25 per 1,000 reported fires was 31% lower in homes with sprinklers. Many of the injuries occurred in fires that were too small to activate the sprinkler or in the first moments of a fire before the sprinkler operated.
- The average firefighter injury rate of 13 per 1,000 reported home fires was 79% lower where sprinklers were present.
- Where sprinklers were present, flame damage was confined to the room of origin in 97% of the fires compared to 74% of fires without sprinklers.

In 2021 some additional fire safety statistics[5] were released which note:

- Fire sprinklers reduce the risk of death in a home fire by 80%.
- The risk of property loss is reduced by 70% in homes with sprinklers.
- A sprinkler installation typically costs 1-2% of a home's total construction cost. In Canada it has been found that due to the high costs of building materials due to the pandemic and pushback from some trades, the estimated costs vary from $5 to $10 / sq. ft.
- Fire sprinklers activate on an individual basis.
- Fire sprinklers release less water than fire hoses.

The Home Fire Sprinkler Coalition (HFSC) is a leading resource for accurate, non-commercial information and materials about home fire sprinklers for consumers, the fire service, builders, and other professionals.

By working with the developers and the public in promoting the installation of home sprinkler systems, the HKFES could demonstrate a pro-active approach to educating the public on another viable option for homeowners to help reduce the risk in the event of a fire. This initiative could easily supplement public education initiatives.

4 NFPA report - U.S. Experience with Sprinklers, Accessed November 15, 2022, https://www.nfpa.org/News-and-Research/Data-research-and-tools/Suppression/US-Experience-with-Sprinklers

5 The Latest Fire Safety Statistics - Stay Safe in 2021 (safeatlast.co), Accessed November 15, 2022, https://safeatlast.co/blog/fire-safety/

3.6 Training Division and Staff Development

The third line of defence utilized to deliver fire protection services in Ontario is the ability to effectively suppress unwanted fires and respond to other emergencies that occur with some predictability in a particular community. This section of the report focuses on staff training and development.

A fire department can only provide effective community safety through the delivery of Council approved service levels if firefighters are properly trained and equipped to deliver those services. As fire departments work to keep pace with the changing needs of the community they serve, it follows that their training must keep pace.

In Ontario, industry standards and legislation are in place to safeguard the health and safety of firefighters while they work to develop and maintain the critical skill sets that are necessary to deliver effective fire, rescue, and emergency response services, and to ensure that firefighters are trained to an acceptable standard.

Beyond the firefighter safety and community well-being components of this equation, lies the important risk management considerations that are a reality for every organized community. It is important to note that volunteer (paid-on-call) firefighters must be provided with the same minimum training certifications as their career-based, full-time firefighter counterparts.

Within the last couple of years, Ontario has moved to mandate minimum standards for the training and certification of various fire service disciplines based on several NFPA standards.

Ontario Regulation 343/22 came into full effect on July 1, 2022, and provides for mandatory minimum certification standards and corresponding job performance requirements of firefighters delivering specific fire protection services, together with a compliance deadline (a four or six-year timeline depending on the fire protection service). Certain firefighters are exempt from these certification standards based on their prior knowledge, training, and skills under the “grandfathering” provisions of the Regulation.

Current certification standards in Ontario include the following:

- NFPA 1001 Standard for Fire Fighter Professional Standard Qualifications, Levels I & II.
- NFPA 1002 Standard for Fire Apparatus Driver/Operator Professional Qualifications.
- NFPA 1006 Standard for Technical Rescue Personnel Professional Qualifications.
- NFPA 1021 Standard for Fire Officer Professional Qualifications, Levels I, II, III and IV.

- NFPA 1031 Standard for Professional Qualifications for Fire Inspector and Plan Examiner, Levels I, II and III.
- NFPA 1033 Standard for Professional Qualifications for Fire Investigator.
- NFPA 1035 Standard on Fire and Life Safety Educator, Public Information Officer, Youth Firesetter Intervention Specialist and Youth Firesetter Program Manager Professional Qualifications.
- NFPA 1041 Standard for Fire and Emergency Services Instructor Professional Qualifications, Levels I and II.
- NFPA 472 Standard for Competence of Responders to Hazardous Materials/Weapons of Mass Destruction Incidents.

Additional Ontario-specific Fire Code courses designed for Fire Prevention Officers and Inspectors are available through the Ontario Fire College. These include:

- Legislation
- Courtroom Procedures
- Fire Code Division B Part 2 and 6 – Fire Safety and Fire Protection Equipment
- Fire Code Division B Part 3 and 5 – Industrial, Commercial, Hazardous Materials: Process and Operations
- Fire Code Division B Part 4 – Flammable and Combustible Liquids
- Fire Code Division B Part 9 – Retrofit

Beyond the fire prevention stream noted above, the Ontario Fire College also provides specialized courses including:

- Chainsaw Operations
- Community and Environmental Impact of Fire
- Commercial Cooking
- Fire Dynamics
- Alternate Energy Source Firefighting (Solar and Wind)
- Railroad Emergency Response Management (partnership with CN Rail)
- Flammable Liquids Firefighting (partnership with CP Rail)
- Fire Service Driver Training Certification
- Industrial Firefighting

It should be noted that while the Office of the Fire Marshal no longer maintains a "physical" campus, it does continue to offer programming at strategically located Regional Training Centres owned by local municipalities throughout the province. The Ontario Fire College retains a core group of fire service instructors and delivers training programs with the assistance of approximately 200 Associate Instructors who remain employees of their local fire department. In 2022, over 3000 Ontario firefighters received training in this manner in various communities in Ontario.

With the closure of the Ontario Fire College physical campus and training grounds, the Office of the Fire Marshal introduced mobile live fire training to smaller fire departments through the use of two dedicated trailers. Live fire training is an essential part of the NFPA 1001-II training syllabus, and so these trailers are available to any fire department on a pre-booked, first come, first served basis.

3.6.1 Training Division

While many Ontario fire departments resisted the certification process, the Huron-Kinloss Fire & Emergency Services has embraced the change through action, including the creation of its own dedicated training facility. Though this facility is still in development, it stands as a tangible demonstration of the commitment to, and importance of, firefighter training in the Township.

As the facility is further developed, consideration should be given to providing a dedicated budget to facilitate a planned approach to Capital investments at the site to increase the functionality of this noteworthy asset.

EMG conducted a comprehensive review of the training program currently being conducted by the fire department and notes:

- All recruit (auxiliary/intern) firefighters have been and are being trained to the NFPA 1001-1 (firefighter) and 1001-2 standard during their first two years of employment through the Department implemented "Pager Ready" Program (a training program specifically designed

for the needs of the HKFES)

- All fire line officers (district chiefs, deputy district chief and captains) are trained to the NFPA 1021, *Fire Officer Level I Training* standard, and several are trained to the NFPA 1021, *Officer Level II* standard.
- There are two training officers assigned at each station (total of four), each of whom has attained the NFPA 1041*, Fire Service Instructor Level* I standard.
- Several firefighters at each station are trained to the NFPA 1035*, Fire and Life Safety/Public Education Officer* standard.
- The Fire Chief is trained to the NFPA 1031, *Fire Inspector Level I*, and NFPA1033, *Standard for Professional Qualifications for Fire Investigator* standards.

With respect to the "Pager Ready" Program, the department should consider re-establishing a stand-alone schedule for this that is separate from regular "all-staff" training nights.

Regular in-service training is conducted on a bi-weekly basis at each station in order to maintain and hone the various skill sets firefighters need to fulfil their mandated activities. EMG found that the department provides quality training opportunities for its volunteer firefighters through its training program and that the department maintains training records employing a flexible syllabus framework based on identified individual station needs. The Department should consider enhancing the level of detail documented in these records going forward.

The training and overall staff development funding for third-party service providers is currently funded to the sum of $10,000.00 per station per year. This is currently meeting the needs of the Department; however, each budget should be increased incrementally on an annual basis to keep up with the rising costs of providing this training.

Examples of outside training opportunities and organizations that can support Huron-Kinloss in its training efforts include:

- The Ontario Association of Fire Training Officers (OAFTO)
- The Firefighters Association of Ontario (FFAO)
- Fire Department Instructors Conference (FDIC)
- Southwestern Fire Academy – amongst others

With the implementation of the new training and certification standards, it would be beneficial to have a full-time training position to ensure that the Department keeps abreast of the current and future demands that will come in the form of new training requirements. Importantly, there is an opportunity to improve current documentation practices as they relate to training activities.

Community growth, increase in call volumes, increase in training requirements and oversite, and training records management also add to the workload of the present part-time training officers, and there was some concern expressed about the limited time availability that these individuals must complete all these duties. Therefore, the present positions should be supplemented by a full-time position of 35 to 40 hours per week within a suggested timeline of the next three to six years. It is noted that this is not to suggest anything other than a capacity issue because of increasing responsibilities and the "busyness" of life today.

The part-time training officers' positions should be retained and actively supported as they bring unique insights to the needs of each station because they see, first-hand, fireground and rescue operations and are often in the best position to identify opportunities for focused training needs.

Consideration for this full-time training position would have to be given not only to the general hours of work but also in relation to such things as:

- Expectations for involvement in emergency response both during normal work hours and outside of scheduled hours.
- Evening training programs and practical evaluations.
- Attendance at outside courses off-site.

Options for the introduction of this staff person include:

- Hiring a dedicated training officer.
- Hiring a Deputy Fire Chief with hybrid duties to include those of a training officer as well as other duties – i.e., fire inspections.
- Work in partnership with other county fire departments to hire a shared training officer.

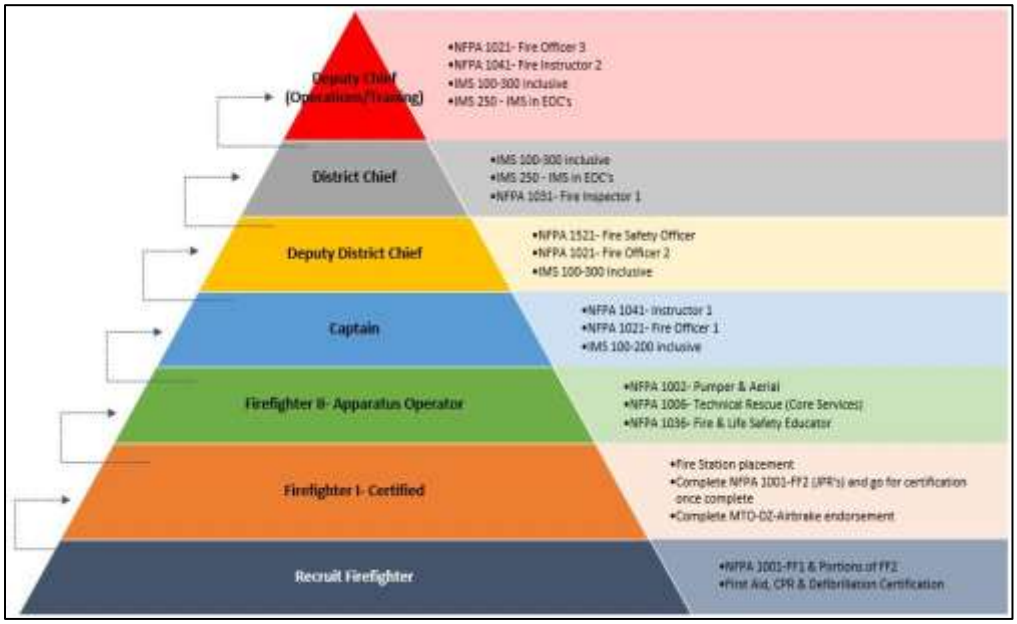
It is recommended that the HKFES further develop its capacity and capabilities respecting firefighter training and certification by identifying and appointing a full-time career training officer who is fully qualified and certified (or obtains certification within a reasonable time frame) to the NFPA 104, *Fire Instructor Level II* standard as made available by the Ontario Fire College.

The training officer should develop a work plan that includes the ability to coordinate the delivery of recruit and regular in-service training for all firefighters and to ensure certification to the relevant NFPA standards as detailed in this report.

It is recommended that the HKFES continues to make capital improvements in its local training centre in order to meet the current and future training needs of its personnel.

3.5.2 Staff Development and Succession Planning

For staff to obtain the necessary knowledge, skills, and abilities it is helpful to have a clear understanding of how the progression through the rank structure normally occurs. With the adoption of the NFPA standards, the training program and succession path should be clearly outlined by the Township for current and proposed positions.



The image above illustrates a typical rank structure and the associated educational levels based on the NFPA standards.

***Note:** The training officer and fire prevention officer/inspector ranks are not illustrated, though these are typically positioned at the captain level with the added NFPA certifications associated with each position.*

EMG notes that currently, the training officers are distinguished within the HKFES by way of an orange-coloured helmet, but consideration should be given to providing them with the rank (and hence, authority level) of a suppression division captain.

As noted elsewhere in this report, it is the sole responsibility of Council as the authority having jurisdiction (AHJ) to determine the level of service provided to the ratepayers by HKFES based on information and advice provided by the fire chief.

New firefighters hired by the department at the auxiliary/intern level are required to complete a theoretical and practical program covering all elements of the NFPA 1001, *Firefighter Level I and II*, standard as well as first aid, CPR, and defibrillator certification.

Emergency response personnel who drive and operate fire apparatus shall obtain the general knowledge, skills, and job performance requirements addressed for each level or position of qualification. It is an industry best practice for emergency response personnel who drive and operate fire apparatus to remain current with practices and applicable standards and shall demonstrate competency on a regular basis. All firefighters who drive and operate Township apparatus should complete certification to the NFPA 1002, *Standard for Fire Apparatus Driver/Operator Professional Qualification.*

Additional specialized services such as confined space rescue, water/ice rescue, rope rescue, and hazardous materials response. These specialized services are not currently provided by the HKFES outside the staff awareness levels. However, if these services are required, they are available through mutual aid agreements with the Kincardine Fire Department, the Bruce Nuclear Fire Response team or through the Provincial Specialized Response Program administered by the Office of the Fire Marshal. It should be noted that HKFES firefighters provide specialized vehicle rescue services based on elements of the NFPA 1006, *Standard for Technical Rescue Professional Qualifications*.

The position of captain for the fire department is one that represents the first level as a supervisory position within the organization. With this position comes great responsibility, tactical leadership, and a proven ability to meet and exceed expectations. A superior level of knowledge and experience in fire ground operations, delivery of training programs and ability to supervise a platoon of firefighters is all-encompassing. There may be times when a Captain may need to assume command of an incident in the absence of a senior officer.

For qualification at NFPA 1021, *Fire Officer Level I*, the candidate shall meet the requirements of Fire Fighter II as defined in NFPA 1001, Fire Instructor I as defined in NFPA 1041, and complete the job performance requirements of the NFPA 1021 standard.

As a pre-requisite for certification to NFPA 1021, *Fire Officer Level I* requires the completion of the NFPA 1041, *Fire Instructor Level I*. A fire and emergency services instructor who has demonstrated the knowledge and ability to deliver instruction effectively from a prepared lesson plan, including instructional aids and evaluation instruments; adapt lesson plans to the unique requirements of the students and satisfaction of the AHJ – in this application, the HKFES/fire chief. They must organize the learning environment so that learning and safety are maximized and meet the record-keeping requirements of the department as well.

For the position of captain, emergency management training is an essential element of their training. This is currently addressed through the addition of the IMS-100 "Introduction to the Incident Management System (IMS) for Ontario" and IMS-200 "Basic Incident Management System for Ontario" to their standard training regime.

The position of deputy district chief and district chief for the Department are ones that represent elevated levels of supervision within the organization. With these positions comes the greatest responsibility at the volunteer or part-time level. Working with the fire chief with strategic leadership in mind they provide oversight, status updates, repair needs and recommendations to improve operations, training, apparatus and equipment and station needs. EMG believes that there are great opportunities for synergies with a Fire Leadership Team composed of all the line officers and the continuation of the current arrangement of bi-monthly meetings is encouraged.

Though the HKFES does not currently include the position of deputy fire chief, the Township should consider the creation of such a full-time position as a back-up to the fire chief – this is recommended.

This position would represent a senior level of supervision within the organization, having oversight of the two stations and in particular emergency operations, providing respite to the fire chief who currently is expected to be available essentially on a 24/7 basis. The need for redundancy at this level becomes increasingly important as the organisation continues to evolve.

This current situation does not provide for a healthy work-life balance for the fire chief and is contrary to the principles of Ontario's recently implemented "Working for Workers Act" [6] .

The fire chief is essentially on call 24/7, their role is uniquely different, and this must be recognized. The role requires constant awareness and active monitoring of ALL departmental emergency responses, and a series of back-to-back or simultaneous incidents can create an extraordinary – and sometimes, untenable – workload. Real respite is required for mental and physical wellness, and the

[6] Retrieved from Bill 27, *Ontario's Working for Workers Act, 2021. Retrieved November 20, 2023, from* Working for Workers Act, 2021, S.O. 2021, c. 35 - Bill 27 (ontario.ca)

addition of a full-time (that can start as a part-time position) deputy chief position is a viable solution to this challenge.

This new strategic leadership role could focus on department training development and delivery, fire prevention matters, station operational support and conduct departmental data analysis, operational guideline development and maintenance duties while at the same time providing shared "on-call" duties with the fire chief. Assigning the deputy chief to conduct inspection and training duties could be used as an interim measure in place of hiring these two dedicated full-time staff members as previously described and recommended.

Logically, the implementation of a deputy chief position can also serve as a viable succession planning strategy for the replacement of the fire chief if they retire, become incapacitated or seek employment elsewhere.

Succession planning is the process of identifying key roles in a fire department and determining the level of readiness that potential members possess to fill these roles. Occasionally, a fire department may prepare a single individual for a particular role, but rather will prepare several persons in the spirit of building a talent-rich pool in the fire department and allowing for the promotion of the best candidate for the role to be filled.

Succession planning creates employee involvement as training, mentoring, education, and coaching are utilized to prepare the employee. A succession plan takes time and resources and creates the foundation for members to possess the knowledge, skills, and abilities to be promoted and take on formal management and leadership roles in the fire department.

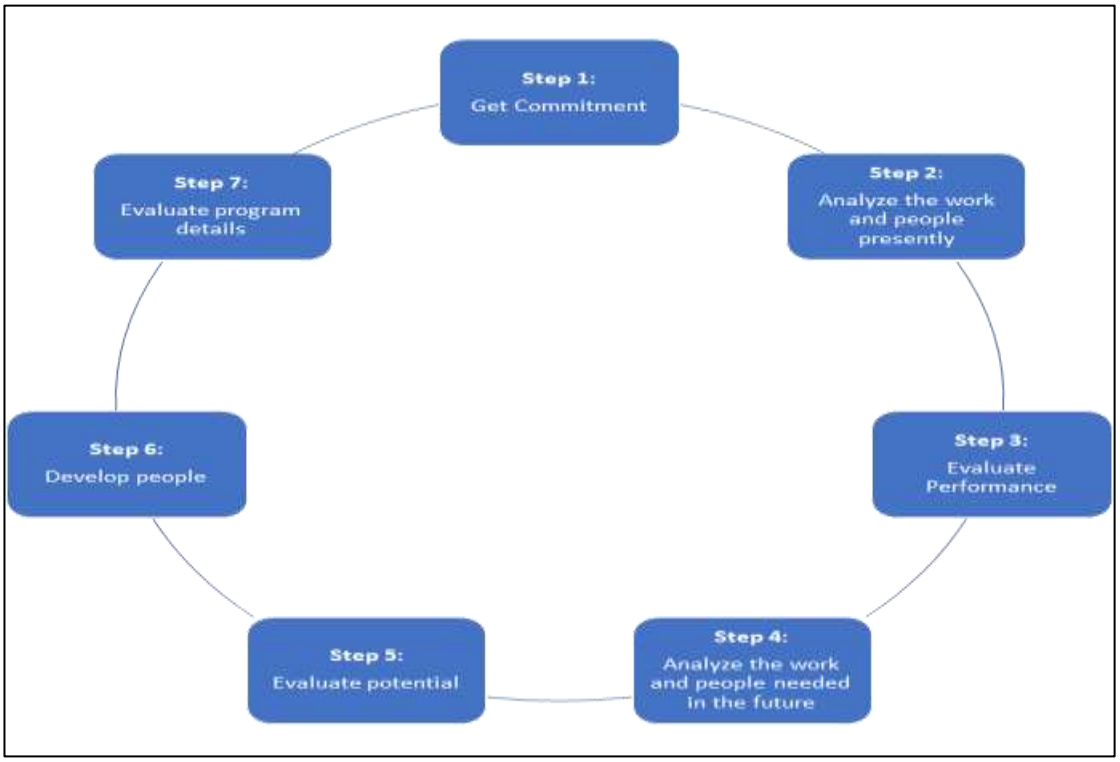
A key component of succession planning is recognizing and providing the necessary education, training, mentoring, and coaching to those that do want to be promoted to a higher-ranking chief officer position. EMG suggests that succession planning become a priority for the fire department and that it become an area of focus for the leadership team for all ranks and positions.

The following steps outline a roadmap to successful succession planning.

Step 1: Get Commitment

Fire management and the human resources staff must agree upon why succession planning is necessary for the fire department and how to implement training components to prepare personnel for future chief officer promotional opportunities in the department. A commitment must be made by the department in terms of budget allocation and a commitment must be made by individuals that they are willing to put in the time and energy into their education and training.

FIGURE #6: SUCCESSION PLANNING MODEL



Step 2: Analyze the work and people

Ensuring that job descriptions identify the required competencies and qualifications for chief officer positions.

Step 3: Evaluate performance

The ongoing evaluation of the individuals, what the results are that they are expected to achieve, and the competencies and behaviours they are expected to demonstrate.

Step 4: Analyze the work and people needed in the future

Fire department management staff must anticipate the future qualifications and needs of the department based upon its strategic objectives and the competencies required to meet those objectives. This will require regularly scheduled reviews of the qualifications and competencies required for the chief officer positions.

Step 5: Evaluate potential

The assumption cannot be made that successful performance in the past guarantee's successful performance in the future. The department must look at objective ways to evaluate individuals to determine how well they will function at a higher level of responsibility.

Step 6: Develop people

This step is carried out by a formal career development plan that identifies what individuals must do in terms of education and training to increase their chances of success for promotion in the future.

Step 7: Evaluate program results

The success of the program is indicated by the support and positive results in terms of budgetary program support, participation, and successful promotions.

A well thought out and implemented succession planning process takes time and resources to develop, but the result is the development of a fire department's talent pool with members actively participating in their own career development. A formal organization development program can be created that identifies technical competencies and core (corporate) competencies and qualifications for fire chief, deputy fire chief, district chief, captain, and firefighter and be formally implemented.

As noted in the following excerpts, three international organizations are in full support of succession planning and career development. This is for both volunteer and career personnel.

- The International Fire Service Training Association (IFSTA) stated, *"Successful chief officers depend upon their experience and their experiences to guide them. Their experience can be defined as the positions they have held while their experiences are the things they have done and the situations to which they have been exposed. Experience and exposure are not the same thing. Seniority does not necessarily equate to experience*."[7]
- The International Municipality/County Management Association (IMCA) notes that the work experience is often conflated with tenure or "time on the job." While seniority generally offers more opportunities for exposure to different challenges, perhaps a better focus is on the experiences accumulated by a firefighter during his or her tenure in the department.[8]

[7] Retrieved from IFSTA (2014) Chief Officer, Third Edition, p. 29

[8] Retrieved from ICMA (2012) Managing Fire and Emergency Services, p. 266

- The International Association of Fire Chiefs (IAFC) recognizes that the fire services training budget is generally focused on front line-level personnel and far less effort is focused on the development of potential officers. As such, officers rarely get the development they need.[9] The IAFC identifies what works well in getting the right experience to individuals that have the ability to learn from experience and identified a new way to look at officer development. Below is the model identified by the IAFC on what works best for the development of employees according to organizational development data.

The dynamics of today's fire service require a high level of education and experience to meet the demands placed upon the position. A career development program should consider the importance of both education and experience as both go hand in hand.

Currently, the Township Human Resource policies guide promotional processes, but the hiring manager within each department has wide latitude in defining processes on an ad hoc basis. Based upon the review of the training program and the departmental SOGs, the absence of a formal document for a promotional process suggests that technical skills have been a focus for the department and an opportunity exists to design a HKFES specific development process.

3.7 Fire Suppression/Emergency Response

HKFES is a composite fire department in that it has both career and volunteer personnel. The career contingent consists of the fire chief, and an administrative assistant whose focus is on emergency management and health and safety. The fire suppression division consists of volunteer firefighters dispersed amongst the two fire stations.

3.7.1 Suppression Staffing

At present the Department responds to a total of 240 - 370 calls per year. Which equates to an average of 261 calls per year, which is an acceptable level and expectation for a volunteer fire department to handle. Research has identified that volunteer stations that respond to more than 350 calls per year are on the cusp of moving towards a semi-full time or wholly full-time type of staffing (within a specific area or station). This could be in the form of having a minimum level of (three or four) full-time firefighters on duty five days a week, during the daytime hours, with the evenings and weekends being covered by the volunteer firefighters. As call volumes increase so will the full-time staffing requirements.

[9] Retrieved from International Association of Fire Chiefs (2010) Officer Development Handbook

The HKFES is not at this level of call volume per fire response district, but this does not mean that the fire chief should not be monitoring call volumes, response times and number of volunteer firefighters that are responding to these calls (as they are presently doing). An increase in response times and/or decrease in the numbers of volunteer firefighters that are responding to the calls could be an indication of possible burnout of the volunteers. As such, this is something that the fire chief should continue to monitor and report to Council on an annual basis.

Based on its staffing model, for HKFES, the standard that relates to the emergency response of the Department is 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.* This NFPA standard notes the following operational goals:

Staffing and Deployment.

- *4.3.1 The fire department shall identify minimum staffing requirements to ensure that the number of members that are available to operate are able to meet the needs of the department.*

4.6 Initial Firefighting Operations.

- *4.6.1 Initial firefighting operations shall be organized to ensure that at least four members are assembled before interior fire suppression operations are initiated in a hazardous area.*
- *4.6.2 In the hazardous area, a minimum of two members shall work as a team.*
- *4.6.3* Outside the hazardous area, a minimum of two members shall be present for assistance or rescue of the team operating in the hazardous area.*

NFPA 1720 section 4.10.3 identifies other types of companies that are utilizing specialized equipment and apparatus, to assist Engine (pumper) and Ladder (aerial) companies as per the fire departments SOGs. "*Special operations shall be organized to ensure that the fire department's special operations capability includes the personnel, equipment, and resources to deploy the initial arriving company and additional alarm assignments providing such services."*

The overall goal of any fire department is to arrive at the scene of the incident as quickly and as effectively as possible. If a fire truck arrives on scene in four minutes or less with a recommended crew of four or more firefighters, there is increased opportunity to contain the fire by reducing further spread to the rest of the structure. Alternatively, if the first fire attack team arrives with fewer than four firefighters on board, it is limited to what operations it can successfully attempt.

Based on studies and evaluations conducted by the National Institute of Standards and Technology (NIST) and the NFPA, no interior attack is to be made by the firefighters until sufficient personnel arrive on scene. The expectation is that a minimum of three firefighters and one officer arrive on scene to make up the initial fire suppression team. This team of four can effectively do an assessment of the scene, secure a water source (e.g., fire hydrant), ensure the fire truck is ready to receive the water and get the fire pump in gear, as well as unload and advance the fire hose in preparation for entry into the structure.

In 2010 and 2020, the NIST in the United States conducted a study on fire crew efficiencies and the tasks that may be completed during a residential structure fire with different sized crews.

The following research questions guided the experimental design of the low-hazard residential fireground experiments documented in this report:

- How does crew size and stagger affect overall start-to-completion response timing?
- How does crew size and stagger affect the timings of task initiation, task duration and task completion for each of the 22 critical fireground tasks?
- How does crew size affect elapsed times to achieve three critical events that are known to change fire behavior or tenability within the structure?
    - Entry into structure?
    - Water on fire?
    - Ventilation through windows (three upstairs and one back downstairs window and the burn room window).
- How does the elapsed time to achieve the national standard of assembling 16 firefighters at the scene vary between crew sizes?

The experiments were conducted in a burn prop designed to simulate a low-hazard fire in a residential structure described as typical in NFPA 1710. A low-hazard occupancy is defined in the NFPA Standard as a one, two or three-family dwelling and some small businesses. Medium hazard occupancies include apartments, offices, mercantile and industrial occupancies not normally requiring extensive rescue or firefighting forces. High-hazard occupancies include schools, hospitals, nursing homes, explosive plants, refineries, high-rise buildings and other high life hazard or large fire potential occupancies.

The study found that four-person crews were able to complete 22 essential firefighting and rescue tasks in a typical residential structure fire 30% faster than a two-person crew and 25% faster than a three-person crew[10]. Having crews of four firefighters lessens the risk of injury as more personnel are available to complete assignments.

3.7.1 National Fire Protection Association (1720)

Chapter 4 of the NFPA 1720 (2020) Standard identifies the number of response personnel for the deployment of volunteer firefighters:

- Section 4.3.1: "the Fire Department shall identify minimum staffing requirements to ensure that the number of members that area available to operate are able to meet the needs of the department.
    - In Urban areas with a population greater than 1,000 per square mile or 2.6 km^2, there should be a minimum response of 15 staff within 9 minutes, 90%of the time.
    - In Suburban areas with a population of 500 – 1,000 per square mile or 2.6 km^2, there should be a minimum response of 10 staff within 10 minutes, 80% of the time.
    - In Rural areas with a population of less than 500 per square mile or 2.6 km2, there should be a minimum response of 6 staff within 14 minutes, 80% of the time.
    - In Remote areas with a travel distance of greater than or equal to 8 miles or 12.87 km, there should be a minimum response of 4 staff directly dependent on travel distance, 90% of the time.

With a current permanent population of approximately 7,723 within approximately 443 km^2 (171 m^2), the HKFES community falls into the rural standard with approximately 45 residents per 2.6 km^2 (1 m^2). Even with taking into consideration the seasonal residents, this would still have less than 500 population for the noted square kilometres (or square mile).

The HKFES would require six firefighters on scene within 14 minutes 80% of the time.

[10] "Report on Residential Fireground Field Experiments," Averill, Jason D. et all, April 2010, https://tsapps.nist.gov/publication/get_pdf.cfm?pub_id=904607

***Note: To accomplish the NFPA Standard, a fire department should endeavour to meet the stated minimum response standards based on responding to a 2,000-sq. ft. single family dwelling. The dwelling (noted in the Standard) does not have a basement or other exposures (buildings close enough to each other to create a greater possibility for fire spread). Most homes have basements, however, and these homes are often built close enough to each other to create that "exposure" for potential fire spread, which must be considered by the fire department in its response efforts.*

Fire Response Curve:

When considering the response times and needs of a community, the fire response curve (Figure #3) presents the reader with a general understanding of how fire can grow within a furnished residential structure over a short period of time. Depending on many factors, the rate of growth can be affected in several different ways, which can increase or suppress the burn rate through fire control measures within the structure. As an example, some older legacy homes, fire spread, and flashover may progress slower than newer homes due to the type of construction and contents. Some older homes may not witness flashover for up to 25 minutes. Whereas newer homes could incur flashover in as little as four minutes within the room or origin.

***Note: Flashover is a situation in which the entire contents of a room ignite due to the extreme high heat conditions. This situation is not survivable by unprotected occupants that may be caught in this type of situation. Even firefighters are at great risk of severe injury and/or death due to the extreme fire and heat conditions within the area of the flashover.*

The response time of a fire department it is a function of various factors including, but not limited to:

- The distance between the fire stations and response location
- The layout of the community
- Impediments such as weather, construction, traffic jams, lack of direct routes (rural roads)
- Notification time
- Assembly time of the firefighters, both at the fire station and at the scene of the incident.
    - Assembly time includes dispatch time, turnout time to the fire station and response to the scene. It should be noted that assembly time can vary greatly due to weather and road conditions along with the time of day.

As illustrated in the following fire propagation diagram the need for immediate initiation of fire suppression activities is critical. HKFES responds to more than just fires; motor vehicle collisions can create a medical or fire emergency that also needs immediate response. Thus, it is imperative to be as efficient and effective as possible in responding to calls for assistance.

FIGURE #7: FIRE RESPONSE/PROPAGATION CURVE

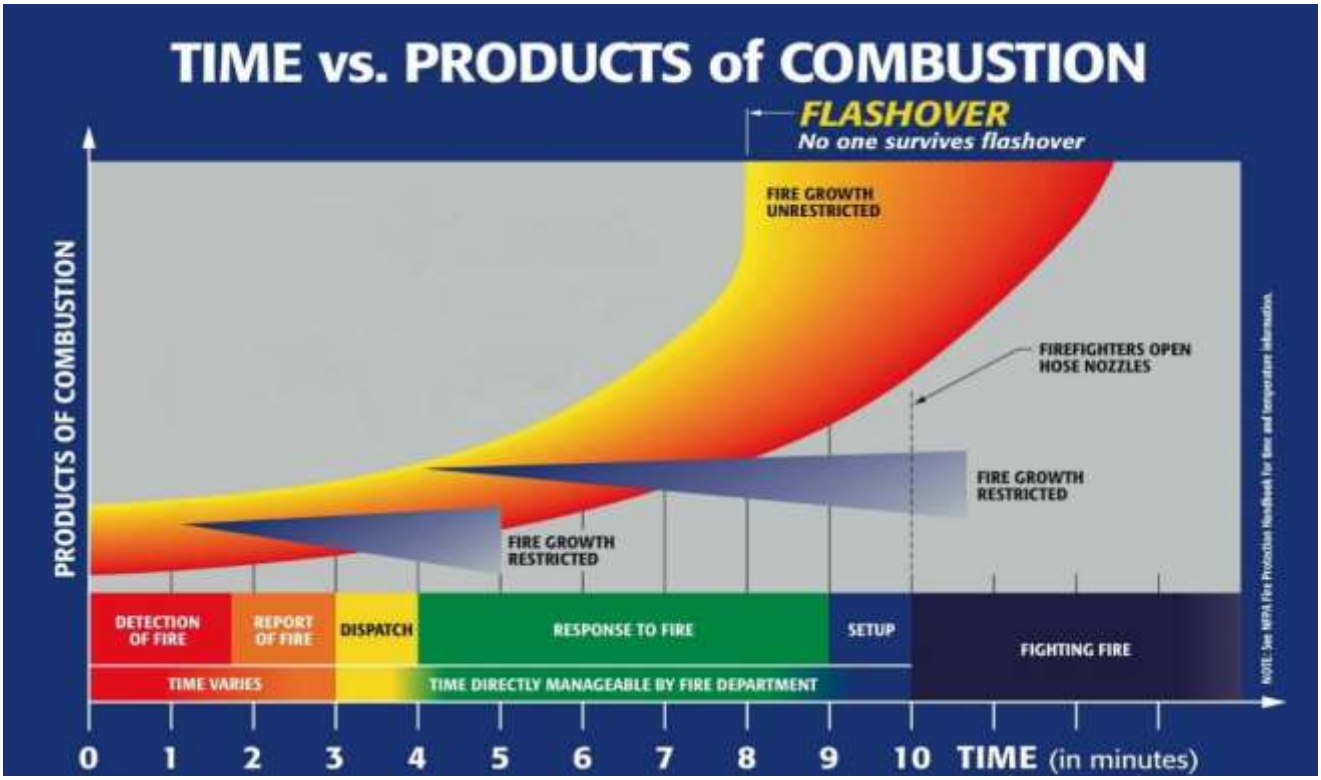


Figure #3 notes the following time variables:

- Detection of fire – this is when the occupant discovers that there is a fire. For the purposes of this chart, detection time is noted as being within one to one and half minutes – this could in fact be shorter or longer. The fire may be in a very early stage or could have been burning for quite some time before being detected.
- Report of fire – this is when someone has identified the fire and is calling HKFES for help.
- Dispatch – the time it takes the dispatcher to receive the information and dispatch the appropriate resources.
- Response to the fire – response time is a combination of the following:
    - Turnout time – how long it takes the career firefighters to get to the fire truck and respond or how long it takes the volunteer firefighters to get to the fire station to respond on the fire truck.
    - Drive time – the time from when the crew advises dispatch that they are responding until the time that they report on scene.
- Setup time – the time it takes for the fire crews to get ready to fight the fire.

- Fighting the fire – actual time it takes to extinguish the fire on scene.

The overall goal of any fire department is to arrive at the scene of the incident as quickly and as effectively as possible. If a fire truck arrives on scene in ten minutes or less, there is increased opportunity to contain the fire by reducing further spread to the rest of the structure.

In relation to on scene staffing, based on studies and evaluations conducted by the National Institute of Standards and Technology (NIST) and the NFPA, no interior attack is to be made by the firefighters until sufficient personnel arrive on scene. The expectation is that a minimum of three firefighters and one officer arrive on scene to make up the initial fire suppression team. This team of four can effectively do an assessment of the scene, secure a water source (e.g., fire hydrant), ensure the fire truck is ready to receive the water and get the fire pump in gear, as well as unload and advance the fire hose in preparation for entry into the structure. A team of four also allows for adherence to the recommended "two-in, two-out" rule, referring to the presence of two firefighters inside the structure with two outside ready to go in as back-up.

The Fire Chief does ensure that each station has a complement that allows for an initial full crew response to incidents. To accomplish this, a response protocol is in effect that ensures whenever a station and its firefighters are dispatched to any type of call where back-up may be required, the other station is automatically dispatched to the same incident.

3.7.2 Response Data

Based on a review of the response data supplied, along with discussions with the Fire Chief, HKFES is achieving a varying level of success in meeting the NFPA response criteria. By utilizing this information in conjunction with the supplied response maps created by EMG, we can see the effect of road networks on response times by emergency responders.

HKFES response times should be monitored based on the NFPA 1720 standards which is from "dispatch time to time of arrival at the incident", from the time the call is received, to when the fire station tones activate, to when the firefighters get on the fire trucks and arrive at the emergency scene location.

***Note:** In monitoring time measurements, the 80th percentile criterion is the recommended practice that is endorsed by the NFPA. This data is more accurate since it is evaluating the times based on 80% of the calls as opposed to averaging the times at the 50th percentile. For example:*

- *8 out of 10 times the fire department arrives on scene in 10 minutes or less, which means that only 10% of the time they are above that 10-minute mark,*
- *as opposed to 5 out of 10 times (average) the fire department arrives on scene in 10 minutes*

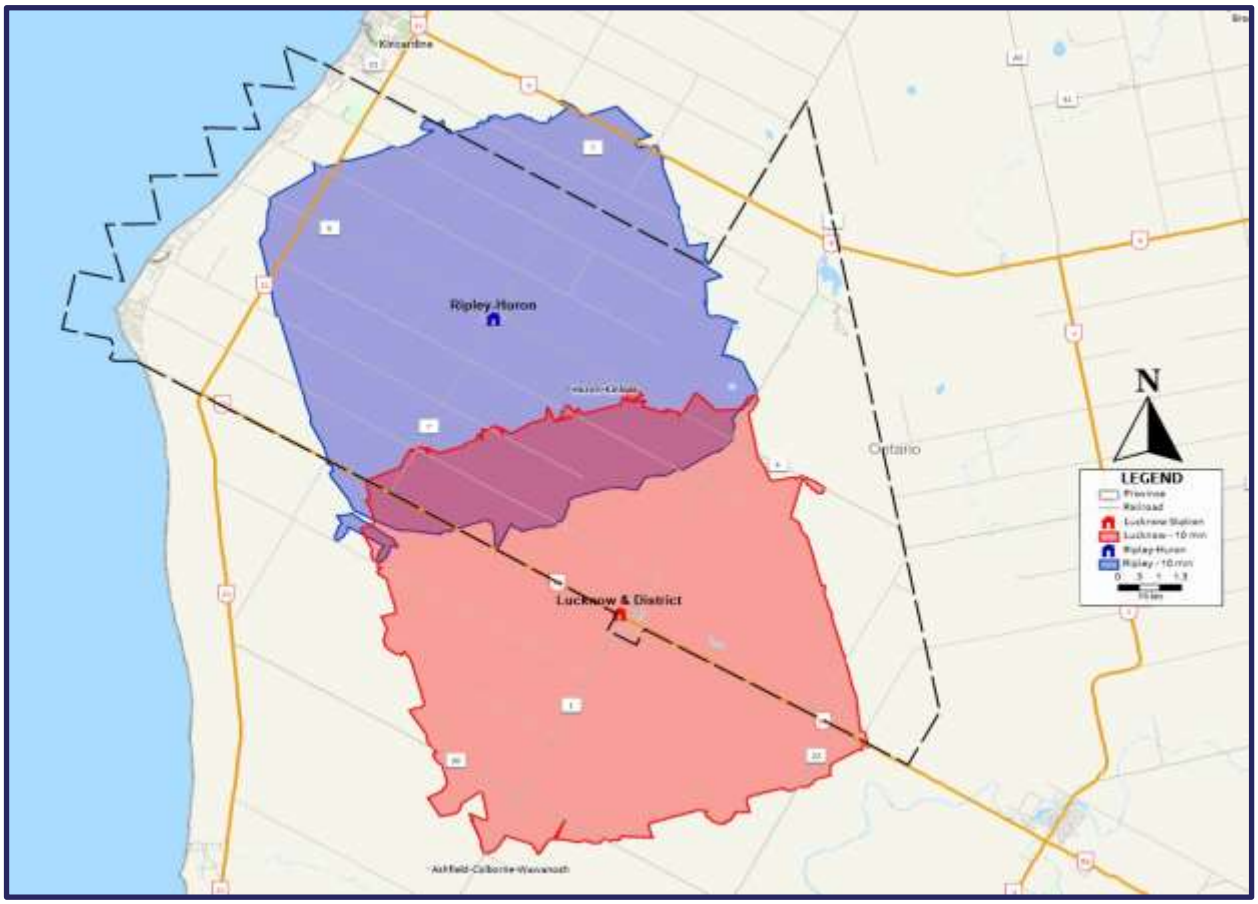
or less, which means that 50% of the time they are above the 10-minute mark.

The travel time grids highlighted in Figures 4 and 5 is calculated using the GIS software Caliper Maptitude, which uses the road network with the posted speed limits, factoring in direction of travel, traffic lights and stop lights. Figure 4 is where the present fire stations are located (in particular, the Ripley station), and 5 is identifying the response coverage with the new Ripley fire station location inserted.

While the posted speed limit is used, it is understood that at times fire apparatus responding to calls may exceed the speed limit if it is safe to do so, thus reducing the response time. Correspondingly, there will be times due to weather conditions, construction, and traffic congestion that the fire apparatus will be travelling at speeds lower than the posted speed limit (even using emergency lights and sirens). Therefore, using the posted limit is a reasonable calculation in determining travel distance.

***Note:** even though the overall recommended response time for a rural area like Huron-Kinloss is 14 minutes. EMG has factored in a four-minute response time to the fire station, which allows for a 10-minute drive time. This is why the maps are depicting a 10-minute zone around each fire station*.

FIGURE #8: LOCATION OF THE CURRENT FIRE STATIONS – OUTLINING 10 MINUTE DRIVE TIME GRIDS



Deciding on where a fire station is located varies upon several factors:

- Relative fire risk values for various areas, occupancies, or properties.
- Desired response times for each identified fire risk.
- Information regarding the road network in the community including reasonable travel speeds, one-way streets, rail crossings, etc.
- Emergency vehicles and personnel necessary to assemble fire attack teams.

With the program tailored to the specific needs of a community, many fire response factors may be analyzed including:

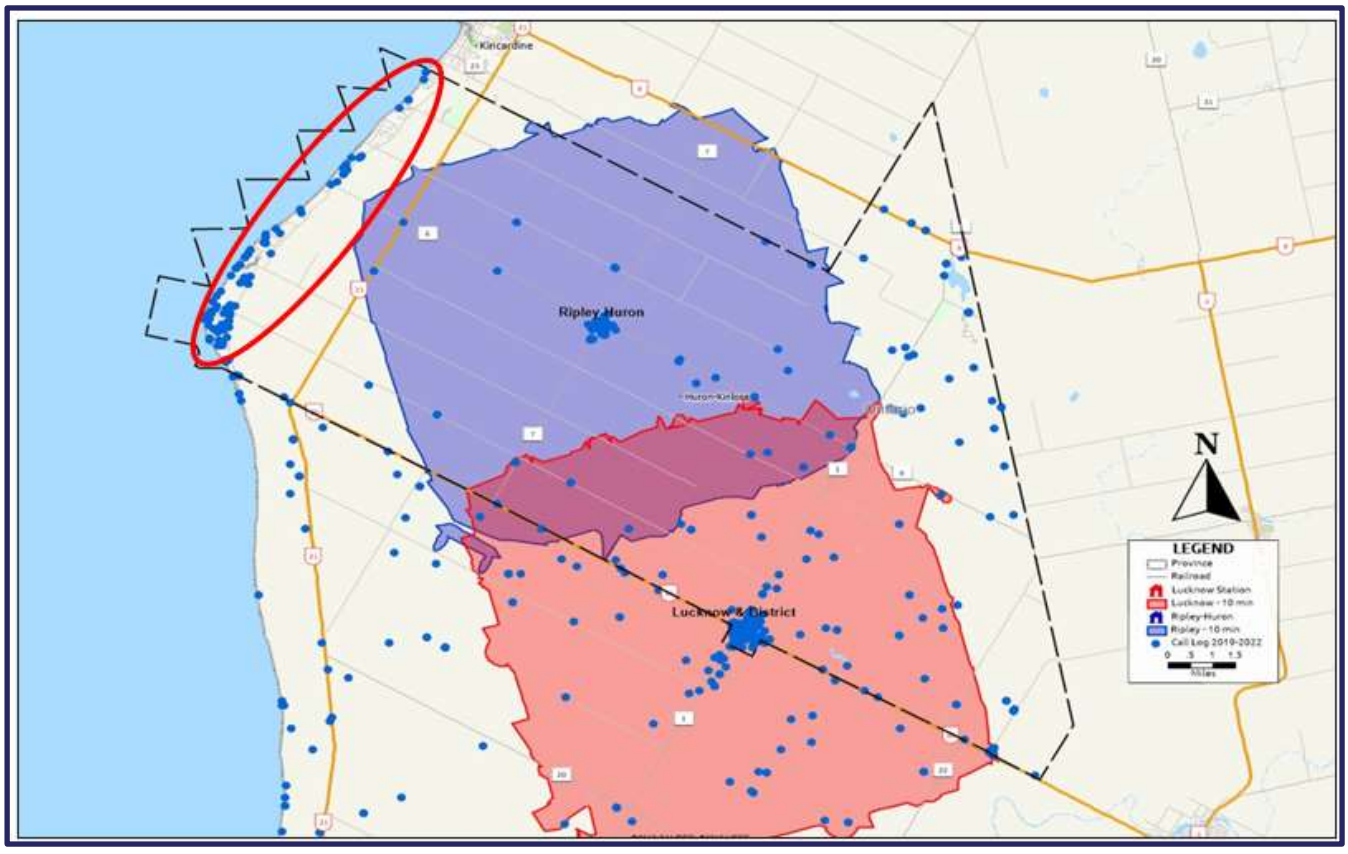
- Existing and proposed station locations based on desired response times.
- Best and alternate emergency response routes to specific locations.

- Ability of pumper, aerial, rescue, and support crews to cover all parts of the community based on desired response times.
- Emergency response times for first, second and additional vehicles and personnel.
- Areas for potential automatic aid responses.

Fire stations should be located where they can serve the community in a timely manner by meeting NFPA Standards for response times. Although the NFPA response times are not mandated, it would be beneficial for the Fire Chief to have a response time goal supported by Council as a benchmark. It is recommended that the Fire Chief present a response time goal for the approval of council, which may reference NFPA 1720 (2020 Edition) – the expectation of 6 staff in 14 minutes, 80th percent of the time as a start.

The following map is a depiction of where the calls have been occurring within the Township over the past three years. This type of information can assist the Fire Chief in assessing present and future fire station locations in relation to improving response capabilities.

FIGURE #9: CALL CLUSTER MAP



The following chart (through the use, of the supplied data) helps to identify the types of calls that are creating the bulk of response demands. As can be seen in the map, the bulk of the calls are clustered around the Ripley, Lucknow and the Lakeshore areas.

A situation to be monitored is the amount of growth and related call volume in the Lakeshore area. This area noted by a red circle around it presently falls outside of the 10-minute drive time zone.

FIGURE #10: CALL TYPES FOR 2021

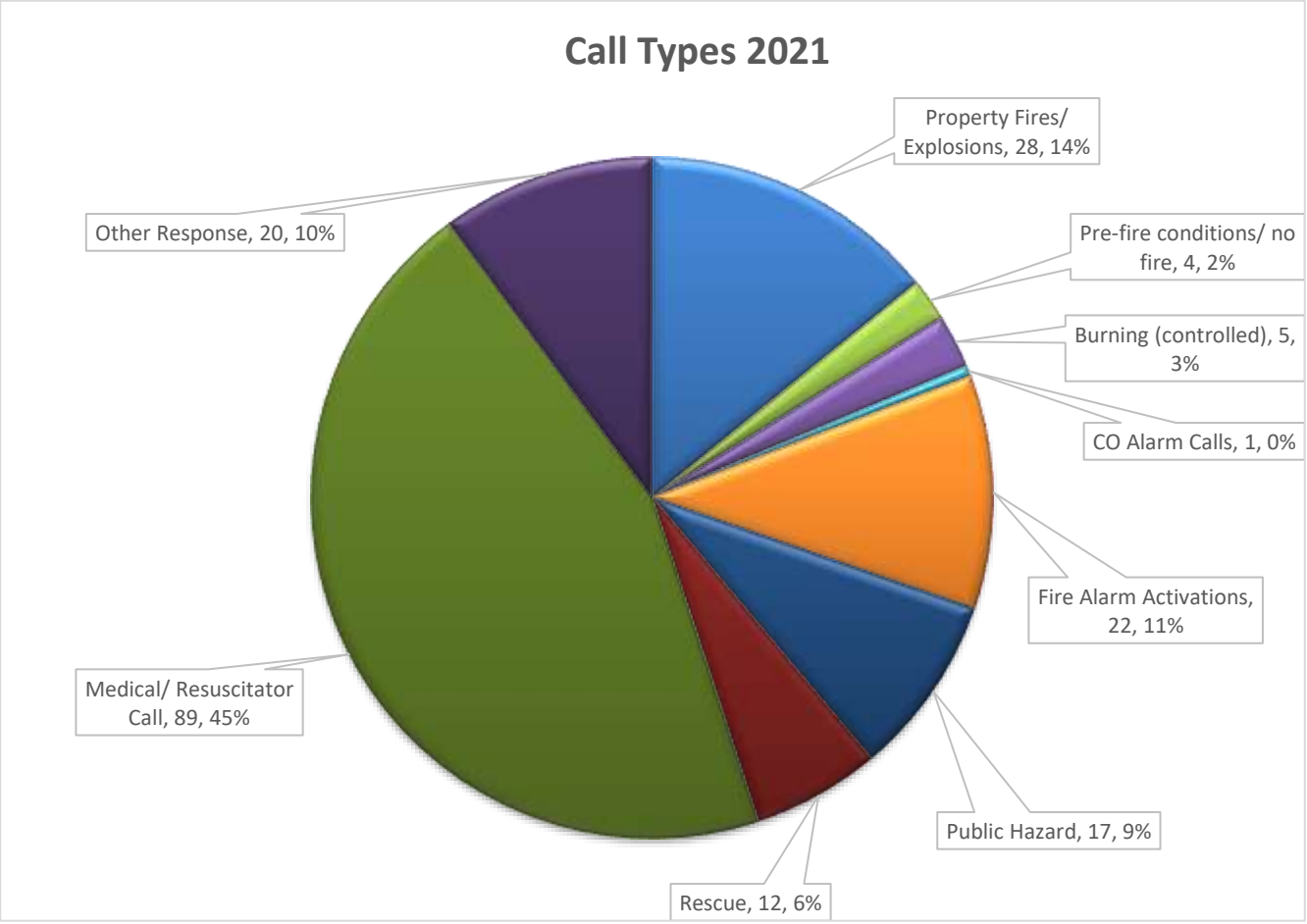
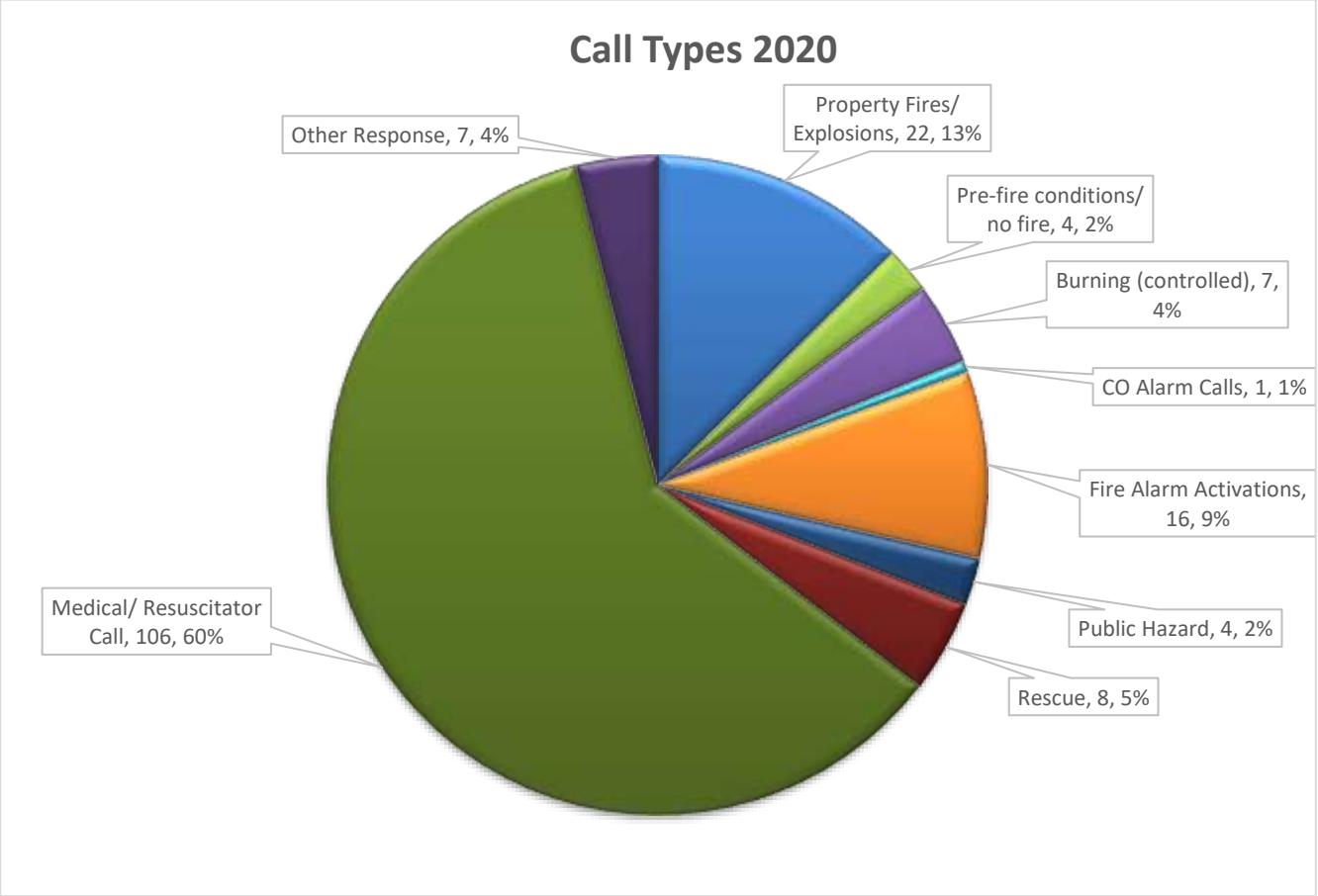


FIGURE #11: CALL TYPES FOR 2020



As noted in the two years depicted above, the three key types of responses by the HKFES are:

- Medical/Resuscitator – at approx. 53%
- Property fire/Explosions – at approx. 13%, and
- Fire Alarm Activations – at approx. 10%.

As for overall response times, it would appear that HKFES 80th percentile (that is recommended by the NFPA) is an average of between 9 to 13 minutes, which would indicate that any in-town calls (for the most part) fall within the NFPA recommended timelines, whereas in the Lakeshore and other outlying areas, they are more apt to see a 14 to 15 minute response time (or more, on average), depending on time of day and weather and road conditions.

3.8 Communications

The HFKES receives its dispatching services from the Tillsonburg Fire Department. Tillsonburg dispatch is responsible for activating the pagers that alert the firefighters to respond to an incident. The HKFES uses the app, "I Am Responding" to communicate with the firefighters that there is a call.

The fire chief noted that they are quite pleased with the service they receive from Tillsonburg. Since they are a fire department, the Tillsonburg dispatchers will be required to become certified to the required NFPA standard 1225, *Standard for Emergency Services Communications*. The dispatch centre should operationally meet the requirements of NFPA 1225.

There were no concerns raised in relation to the dispatching agreement.

3.8.1 Radio System

Radio communications is a paramount lifeline for firefighters and complete coverage is a must for firefighter safety. As previously mentioned, HKFES has implemented the "I Am Responding" program; many volunteer fire departments have implemented such a program because it helps to improve overall response, while at the same time, the program can track who is available, who is responding and even who is not available due to vacation or other commitments.

HKFES radio system is operating on analogue technology, with repeater sites. This is a county wide system that allows all the mutual aid partners interconnectivity with each other. HKFES, does have it own tactical channel that it can switch over to as needed.

All is working well, and no concerns were noted. However, with the upcoming Next Generation - NG 9-1-1 program coming into place, the Township should be preparing for radio system upgrades to a digital platform. At this time, no actual cost estimates have been announced by the Canadian Radio-Television and Telecommunications Commission (CRTC). Therefore, the fire chief should keep in contact with their dispatching partner (Tillsonburg) and the Ontario Association of Fire Chiefs (OAFC) executive to identify actual implementation dates along with estimated cost to Huron-Kinloss.

3.8.2 Next-Generation Communications (NG 9-1-1)

The 9-1-1 Central Emergency Reporting Bureau (CERB) for Huron-Kinloss is in Sudbury. Emergency 9-1-1 calls are directed to the answering service and then directed to the emergency service that is required by the caller (i.e., police, ambulance, or fire).

In June of 2017, the CRTC created regulations regarding the next-generation communications for 9-1-1 centres. This modern technology will *"…enable Canadians to access new, enhanced, and innovative 9-1-1 services with Internet Protocol (IP)-based capabilities, referred to as next-generation 9-1-1 (NG*

9-1-1) services. For example, Canadians could stream video from an emergency incident, send photos of accident damage or a fleeing suspect, or send personal medical information, including accessibility needs, which could greatly aid emergency responders."[11]

The following is an excerpt from the CRTC website regarding the program and its benefits for enhancement to public safety communications.

Establishment of new deadlines for Canada's transition to next-generation 9-1-1

The Commission sets out determinations in relation to new deadlines and other matters for the implementation and provision of next-generation 9-1-1 (NG 9-1-1) networks and services in Canada, so that Canadians can access new, improved, and innovative emergency services with Internet Protocol-based capabilities. The Commission aims to maintain the NG 9-1-1 framework roadmap for the establishment of NG 9-1-1 networks and the introduction of NG 9-1-1 Voice, albeit with new, extended deadlines.

Specifically, the Commission directs NG 9-1-1 network providers, by 1 March 2022, to, among other things, establish their NG 9-1-1 networks, complete all NG 9-1-1 production onboarding activities, and be ready to provide NG 9-1-1 Voice, wherever public safety answering points (PSAPs) have been established in a particular region.

The Commission also directs telecommunications service providers (TSPs) to (i) make the necessary changes to support NG 9-1-1 Voice in their originating networks that are technically capable of supporting NG 9-1-1 Voice, including completing all NG 9-1-1 production onboarding activities and testing activities, by 1 March 2022; and (ii) begin providing, by 1 March 2022, NG 9-1-1 Voice to their customers served by networks that are technically capable of supporting NG 9-1-1 Voice, wherever PSAPs have been established in a particular region.

With respect to the implementation and provision of real-time text (RTT)-based NG 9-1-1 Text Messaging (NG 9-1-1 Text Messaging), the Commission is not establishing new deadlines as part of this decision. Instead, the Commission requests that, once standards are sufficiently advanced with respect to RTT callback and bridging, the CRTC Interconnection Steering Committee (CISC) file a report with the Commission with recommendations related to the provision of NG 9-1-1 Text Messaging for all stakeholders.

[11] Government of Canada, Canadian Radio-television and Telecommunications Commission, "Telecom Regulatory Policy CRTC 2017-182, Next-generation 9-1-1 – Modernizing 9-1-1 networks to meet the public safety needs of Canadians", last modified June 1, 2017, https://crtc.gc.ca/eng/archive/2017/2017-182.htm

Further, the Commission directs, among other things, incumbent local exchange carriers (ILECs) to decommission their current 9-1-1 network components that will not form part of their NG 9-1-1 networks by ***4 March 2025*** *or earlier if all the TSPs and PSAPs in an ILEC's operating territory have completed their transition to NG 9-1-1.*[12]

3.8.3 NG 9-1-1 Considerations

- As noted in the CRTC excerpt, March 4, 2025, is the revised key date to work with. The Fire Chief must ensure that Huron-Kinloss is a stakeholder at the steering committee table through direct involvement or as part of the regional committee for this implementation plan.
- The municipalities must understand that there will be significant expenses for the fire dispatch to implement NG 9-1-1 and the Tillsonburg Fire Department will likely increase fees for all fire departments it dispatches to cover these additional costs. It was evident in their invoicing that funds are already being obtained for NG 9-1-1, but for what purpose, remains unknown.
- Currently there is no firm understanding as to the costs that are going to be incurred with the implementation and annual costs of NG 9-1-1.
- Some fire services that have a communications centre have budgeted as much as $1M for the upgrades to 9-1-1.

3.9 Use of Personal Vehicles for Response:

It was also noted that the firefighters can respond to an emergency scene in their own vehicles, but they are not allowed to carry their firefighting gear in their vehicles (the gear is located at each station). Which, at the very least ensures that no contaminated gear is carried in a personal vehicle.

Many fire departments in Ontario have ceased the practice of allowing firefighters to respond to an emergency scene in their personal vehicles. All firefighters are required to attend at the fire station, don their gear and leave as a team. Or at the very least, some fire departments allow the captains/officers to go to the scene to assess the situation, while the firefighters respond to the fire station to ensure all necessary gear and equipment is brought to the fire/emergency scene.

By doing this, the department accomplishes three key things; the first being that no contaminated gear is transported in a private vehicle. The second, is that an emergency scene is not impeded with

[12] Government of Canada, Canadian Radio-television and Telecommunications Commission, "Telecom Decision CRTC, Establishment of new deadlines for Canada's transition to next-generation 9-1-1", last modified June 4, 2021, https://crtc.gc.ca/eng/archive/2021/2021-199.htm

firefighters' personal vehicles. And third, it ensures full accountability of who is responding and how many firefighters are on the scene. When firefighters respond in their personal vehicles, there is an opportunity for "freelancing", which means that firefighters are working without direct supervision and support (of other firefighters and emergency vehicles).

By having all firefighters respond to the fire station first, this creates full accountability and supervision of staff. It is true that there are advantages of having firefighters go to the scene as opposed to passing it (the scene) to get to the fire station. But personal vehicles are not emergency vehicles and should not be used in such a manner.

HKFES should develop policies and procedures that reflect the following. That contaminated structural firefighting gear (PPE) is not to be:

- Transported inside the cabs of fire department vehicles.
- Transported inside personal vehicles.
- Taken into living quarters of a fire station (this should include any areas of the fire station other than the apparatus bays).
- Taken into the firefighter's home.

3.10 Health, Fitness, & Wellness

Health and wellness of staff is a key focus for all municipalities and Huron-Kinloss is no exception. Due to the nature of firefighters maintaining a separate primary vocation, a focus on fitness can be overlooked. The inherit nature of firefighting is both stressful and physically demanding. During the review by EMG, it was noted that there is fitness equipment at the Ripley and Lucknow stations, but the Lucknow fitness equipment is located on the apparatus floor, where it is exposed to diesel exhaust contaminates. This equipment should be relocated to a room away from diesel contamination.

To support the fitness of the firefighters, the Fire Department should work towards standardizing the fitness equipment at all stations and having a fitness instructor work with the volunteers to set up a proper workout program and/or at the very least demonstrate the proper and safe way to use the exercise equipment. The Department should also have SOGs relating to the proper use of the fitness equipment.

Many fire departments routinely test their firefighters to meet occupational fitness tests delivered internally or by a third party. NFPA 1582 details basic expectations placed upon firefighters. HKFES is encouraged to review these and incorporate them into both candidate testing and firefighter fitness

and functionality. It is recommended that, as part of a larger commitment to firefighter health and wellness, HKFES review the physical expectations of a firefighter for use in training and recruiting.

NFPA 1582 *Standard on Comprehensive Occupational Medical Program for Fire Departments* identifies 14 essential job tasks that detail the physical and physiological strains placed on firefighters. The standard outlines the requirements for a department medical program including certain conditions that may pose a risk to firefighting. As the core determination for the physicality of firefighting, it is important for HKFES to understand the expectations they are placing on their personnel.

The 14 essential job tasks explained in NFPA 1582 lay the groundwork for NFPA 1583 *Standard on Health-Related Fitness Programs (HRFP) for Fire Department Members*. NFPA states that "this standard outlines a complete HRFP for members of fire department involved in emergency operations to enhance their ability to perform occupational activities and reduce the risk of injury, disease, and premature death". The applicable portion of the standard comes from section 4.1 wherein it states:

3.10.1 Program Overview

The fire department shall establish and provide a HRFP that enables members to develop and maintain a level of health and fitness to safely perform their assigned functions.

The occupational health and safety program provides direction on performing assigned functions in a safe manner. The HRFP allows members to enhance and maintain their optimum level of health and fitness throughout their tenure with the fire department. Education, one provision of a health-related fitness program, allows a means for improving health and fitness throughout the organization. The organization needs to provide the recognition and support to ensure the promotion and success of this process. Health and fitness needs, to become a value within the organization just as safety is a value.

Data suggests a correlation between the following:

- A proactive approach to health and fitness and a decrease in debilitating occupational injuries.
- A reduction in workers compensation claims and a decrease in acute and chronic health problems of firefighters.

Combining the health-related fitness program with a proactive occupational safety and health program provides a fire department with the level of quality needed for its members. It is suggested that, as part of a larger commitment to firefighter health and wellness, HKFES review the 14 essential

job tasks from NFPA 1582 as they pertain to their recruitment and testing process and seek options for offering personnel the ability to exercise and maintain fitness levels as explained in NFPA 1583.

3.11 Cancer Prevention

In recent years there has been a more intensive review of cancer prevention and a correlation of the disease to firefighting. The focus has been on contamination control surrounding fire incidents. From pre-fire, incident duration, to cleaning and decontamination post-fire, all aspects of prevention are currently under review by all levels of fire service management. The Department does have some decontamination equipment, which is a definite positive, but more is required. It is suggested that, as part of a larger commitment to firefighter health and wellness, HKFES begin work on a cancer prevention program. This may include items such as, but not limited to:

- Post-fire decontamination of personal protective equipment (PPE)
- Firefighter hygiene at fire scenes
- PPE during handling of contaminated gear/equipment
- Documenting potential exposures
- Reducing exposures to diesel exhaust

Section 21 Guidance Note – Firefighters Cancer Prevention Checklist[13], would be a good reference in developing such a program along with Section 21 Guidance Note 6-1,[14] on Hygiene and Decontamination.

The fire stations are not equipped with "at source" diesel exhaust extraction systems (that attach to a vehicles exhaust pipe) to reduce exposure to vehicle exhaust. Diesel exhaust has been contributed to health issues when people are exposed to it over long duration. By having these systems in the station, the health concern is greatly reduced. This would be a positive feature towards cancer prevention by having a system installed in the station. This is also supported by the Section 21 Guidance Note 3-1 in relation to controlling exposure to diesel exhaust.

In reviewing the personal protective equipment (PPE) program, also known as structural firefighting ensemble, it was noted a plan has been established to review PPE inventories and forecasted replacements are identified so that budgetary submissions are effectively managed. This is important

[13] Firefighter's cancer prevention checklist | ontario.ca, Accessed January 15, 2023, https://www.ontario.ca/page/firefighters-cancer-prevention-checklist

[14] 6-1 Hygiene and decontamination | Section 6: Procedures | ontario.ca, Accessed January 15, 2023, https://www.ontario.ca/document/firefighter-guidance-notes/6-1-hygiene-and-decontamination

to note as NFPA 1851 Standard on *Selection, Care and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting* states in Chapter 10:

- 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.

The appendices, to that section also references that "…*it is imperative that the protective elements be routinely inspected to ensure that they are clean, well maintained, and still safe*". HKFES has a program that PPE is inspected and cleaned in-house, and that there is a cache of used gear that can accommodate a portion of the Department.

HKFES has standard operating guidelines on PPE/bunker gear inspections and cleaning. There is a need for ongoing/refresher instructions ensuring the correct re-assembly of the ensemble.

Cancer prevention may begin at the scene of a structure fire. The bunker gear becomes laden with contaminants and smoke, and off gas for some time after a fire. By decontaminating the firefighters at the scene of the fire and ensuring they do not wear their dirty gear back to the station or transporting it in the cab of the truck, is the step in the right direction of cancer prevention. The Department should also invest in some specialized bio-degradable bags for transporting the contaminated bunker gear back to the station as opposed to using regular type garbage bags.

Cancer prevention does not stop at just taking off and bagging the bunker gear for cleaning at the fire station, the individuals clothing may also contain cancerous contaminants. The hygiene and decontamination program should also address the firefighters personal clothing or uniform worn in the fire. This may see the necessity of the firefighters in their personal vehicle, available for them to change into after they have a shower at the station. This clothing should also be washed at the fire station (with the extractor) and not taken to the residence to be washed as they are then introducing the contaminants to members of their family.

A fire department exposure report should be completed each time a firefighter is exposed to the products of combustion.

3.12 Mental Well Being

Like law enforcement, paramedics, and military personnel, firefighters are regularly exposed to critical incidents. A critical incident can be described as:

- A near miss that threatened the health and safety of a member of the Department. This can include a situation where a member of the department experienced an event that could have resulted in significant harm or was a close call where they escaped significant harm.
    - The suicide or attempted suicide of a co-worker.
    - The sudden death of a fellow firefighter.
    - The loss of a patient after a rescue attempt.
    - The death or a critical incident involving a child.
    - A prolonged rescue or incident with excessive media coverage.

Being regularly exposed to horrific events can lead to critical incident stress. A critical incident can best be described as a normal reaction to an abnormal traumatic incident. Exposures to critical incidents can impact firefighters later in life and it is critical to have a formal record of critical incidents to assist a firefighter for a workplace injury if they are struggling due to post traumatic stress disorder (PTSD).

Mental health takes on a critical importance in high-stress, high-risk work settings, such as those in which first responders operate, where their own functioning has serious implications for the health, safety, and security of the public they serve. A mental health well-being plan should include:

- An introduction about the plan.
- Goals and objectives
- Prevention and education focus areas
- Screening and initial intervention focus areas
- Support, WSIB claims management, recovery and return to work focus area.
- An overview of PTSD, risk factors, signs, and symptoms.
- Legal requirements of the Township under the OH&S Regulations.
- Organizational PTSD practices (promoting good mental health).
- Organizational anti-stigma practices.
- Roles and responsibilities for prevention, intervention, recovery, and return to work.
- Training on awareness and anti-stigma, recognising the signs and symptoms and responding to signs of PTSD, post-exposure education and awareness.

- Develop a handbook that identifies what PTSD is, and its signs and symptoms, for family members to reference which also includes agencies, EAP program or peer support groups that may be of assistance.
- Consider initiating a chaplaincy program for the department as another form of support for members and their families, not only for situations involving PTSD, but everyday life, and the situations that may arise.

3.12.1 Post Traumatic Stress Disorder (PTSD)

In 2017, emergency services organizations were required by the Ontario, Ministry of Labour to submit a PTSD Prevention Plan. This was to coincide with PTSD and occupational stress injuries (OSI) to be considered as workplace injuries and compensable through the Workplace Safety & Insurance Board. The HKFES has a package available to its members outlining what PTSD is, the dangers it presents, training, on-going support, early intervention, WSIB claims management, recovery, and return to work.

HKFES has included all its fire department staff in the Employee Assistance Program (EAP) offered through Volunteer Firefighters Insurance Services (VFIS) as an initial contact. This is part of their PTSD program, however, ensuring that the firefighters have full EAP coverage for all related needs is an important piece of employee wellness. The fire chief should meet with municipal staff who oversee EAP and related programs to ensure that firefighting personnel are fully aware of what benefits the EAP offers, should they need it. This may require a more inclusive package. As an opportunity to improve retention of the volunteer firefighters, this EAP could be offered as a family package.

3.13 Recruitment and Retention of Volunteer Firefighters

Recruitment and retention of volunteers is becoming more of a challenge within the fire service with the increased training that must be committed to on an annual basis and with staff turnover. As with many volunteer fire departments, the daytime hours from Monday to Friday are the greatest challenge for volunteer response due to the fact that many volunteer firefighters are either at work, school, or taking care of family. In some instances, members have had to leave the department to move closer to their work location, education facilities, or family needs.

As noted in the previous training section, the Fire Marshal has implemented mandatory training and certification for firefighters. As of July 2022, all firefighters and officers are now required to meet the upcoming training/certification requirements and related timelines noted in the new regulation. Based on this, fire departments will need to conduct a full evaluation of their present training programs and implement whatever improvements are necessary to meet the new training and certification requirements. This increase in training will also add to the recruitment, and training of new recruits, along with the retention of present volunteers.

Retention Issues:

In a nationwide survey, the leading reasons why people stop volunteering include the following:

- No time to volunteer.
- Conflicts within the organization.
- Organizational leadership created an adverse atmosphere.
- Too much training.
- Attitude of existing personnel towards newcomers.
- Criticism received from officers/ older members.
- Lack of camaraderie.

While some issues may be uncontrollable, other issues can be mitigated, such as conflicts within the organization, leadership, training, attitudes, criticism, and camaraderie.

The issue of retention has been identified as a challenge with just about every volunteer fire service in Canada. There are numerous reasons for leaving, including the firefighters not feeling appreciated by the Township, the time and effort required for both training and response to calls, and firefighter families are not being recognised for "loaning" their family member to the community.

***Note: the previously listed items are not a direct reflection on the status of the HKFES, they have only been listed for consideration in the department's recruitment and retention initiatives.*

Opportunities to increase retention may include:

- Family nights at the fire station that would include a movie and activities for the children.
- Assign a seasoned member to mentor each rookie when a new member joins the department.
- Conduct a firefighter appreciation events (e.g., dinner, BBQ) where members are recognised by council for their long term, outstanding service, or something exceptional they did at a call.
- Council take time to acknowledge, the employers, of the firefighters for permitting their participation in the fire department and/or permitting them to leave work to attend fire calls.
- Survey other fire services to compare pay rates and adjust the honorarium accordingly.

- Implement a service recognition pay incentive. This might include paying extra in the form of a 5 to 10% pay increase for every 5 years they have been on the department; this would prevent the loss of years of experience.
- Performance pay, for those who reach high percentages of attendance at training sessions and fire calls.
- Offer benefit packages as many may not have benefits at their place of employment, and some are self employed. Such packages would include basic dental, drug, and eyewear coverage.
- Purchase a wellness benefit package for the firefighters such as mental, financial, and family counseling.
- Engage in treating Post Traumatic Stress Disorder (PTSD), which is a common illness among fire responders.
- Offer a RRSP/pension savings plan with contributions from the Town after they have been a member of the department for a predetermined length of time.
- Provide excellent training opportunities to make them want to remain a member of the fire department. Make the training sessions fun and memorable.
- Recognition and support of those who want to attend Fire College or regional courses, which sometimes requires firefighters using their vacation time from their full-time employers.
- The implementation of an “on call or platoon” program that would pay a week or weekend stipend to the volunteer firefighters s who commit to being available by signing up for weekdays and/or weekends.
- Education assistance programs to support staff in their professional development.
- Maintain and improve morale by providing modern trucks, equipment, and stations.
- Endorse that each station designs their own logo for their station promoting their region of the town or the services they provide. They could include a tasteful mascot character. These could be placed on t-shirts and perhaps the apparatus as a sense of pride.
- Provide strong leadership that focusses on the Mission, Vision and Values of the department while resolving conflict resolution in a timely manner.
- Conduct exit interviews with those that leave the department to understand their reasons for leaving. While there may be simple reasons, there could be a deep-rooted issue that administration may not be aware was occurring such as taunting, bullying, harassment, a feeling of not being welcome, etc.

- Foster the history of each fire station by creating displays of pictures of past members, events, apparatus, to instill a sense of pride on how far the department has grown.

The HKFES is already implementing some of these noted recommendations. As such, they should be commended for their retention efforts. This list is simply intended for the fire chief to review and confirm what is being done and what may still be required. Some of these suggestions may imply an expense, but the value of keeping trained personnel longer, which in the end saves on the ongoing training of new firefighters is worth the effort.

The Canadian Association of Fire Chiefs (CAFC) have also published a program – "Answer the Call" that is available on their website www.answerthecall.ca. It uses messaging and imagery to reflect the local challenges. Free of charges, there is a set of images that can be used as well as documentation that can be personalized to the organization. The "canned" images can, and do, reflect volunteers across all demographics, and the local community could add additional ones specific to their department. It has received significant support and it does not require considerable time or monetary investment.

VFF recruitment is a challenge in virtually every jurisdiction of Canada and utilizing resources available to promote recruitment and retention is always advisable.

Another indicator for the need for more firefighters is tracking the number of volunteer firefighters that arrive at the fire station to respond. If, for example, the standard set by a fire department is that three or more VFFs must arrive at the station before the fire truck can respond, this should be monitored along with how many times the department is unable to assemble the needed personnel to effectively respond based on time of day, and day of the week. Continued monitoring of this data will assist with future fire service needs.

It costs the Township a large sum of money to train and equip new firefighters, therefore it is important that ongoing support to retain and maintain their investment is continued. To support the longevity of the volunteer firefighters with HKFES, it would be of benefit for the fire chief to review the following chart comparing present HKFES pay scale to that of other comparable fire departments.

This review will identify if the Township is paying comparable rates to its CAFC (compared to other similar sized communities).

TABLE #3 - VOLUNTEER FIREFIGHTER WAGE COMPARISONS

Municipality	Population Served (2021 Census)	Community's Geographical Area	# of Stations	Firefighter Staffing Volunteer and Full-time	Wages/Stipends	Annual Incidents (Including Medical)	Population to Firefighter Ratio
Huron-Kinloss	7,723	443km²	2	54	To be completed with information from the fire chief	70	143
Clearview	14,814	556.37 km²	5	90	**Firefighter**: Response or training facilitator: **Level 1** - $26.33 **Level 2** - $27.72 **Level 3** - $29.18 **Level 4** - $ 30.71 **Firefighter**: Training, fire prevention, and extra duties: **Level 1** - $18.43 **Level 2** - $19.40 **Level 3** - $20.43 **Level 4** - $21.50	940	164

Municipality	Population Served (2021 Census)	Community's Geographical Area	# of Stations	Firefighter Staffing Volunteer and Full-time	Wages/Stipends	Annual Incidents (Including Medical)	Population to Firefighter Ratio
					Captain: Fore response and training facilitator: **Level 1** - $29.96 **Level 2** - $31.54 **Level 3** - $33.20 **Level 4** - $34.94 **Captain**: Training, fire prevention and extra duties: **Level 1** - $20.97 **Level 2** – 22.08 **Level 3** - $20.43 **Level 4** - $24.46 ***Note:** Officers do not receive an additional stipend.*		

Municipality	Population Served (2021 Census)	Community's Geographical Area	# of Stations	Firefighter Staffing Volunteer and Full-time	Wages/Stipends	Annual Incidents (Including Medical)	Population to Firefighter Ratio
The Blue Mountains	9,390	284.65 km²	2	20 VFF 8 FT (Council permits 44 POC FFs)	Recruit - $20.00 Prob. - $23.00 Step 3 Certified FF-1- $31.64 Step 4 – Certified FF-2 - $33.40 Step 5 Gen Level Certification - $35.16 Weekend on-call - $86.13 /weekend	334	353
Township of Brock	12,567	422.64 km²	3	79 VFF 2 FT 1 PT	Minimum of 2 hrs/call. District Chief - $35.39 Captain - $33.98 Acting Captain - $30.00 1st Class - $28.30 2nd Class - $25.47 3rd Class (Prob) - $22.64 Maintenance and Training – All $19.22	335	155

Municipality	Population Served (2021 Census)	Community's Geographical Area	# of Stations	Firefighter Staffing Volunteer and Full-time	Wages/Stipends	Annual Incidents (Including Medical)	Population to Firefighter Ratio
Perth East	12,595	711.93 km²	3	68 VFF	Firefighters - $34.99 Firefighters: $2,479.96 annually (on call (6pm Friday to 6pm Saturday) for 13 weekends). Captains: $34.99 for responses. Receive $3,666.17 to be on call for 13 weekends. Deputy Station Chiefs: $34.99 for responses and receive $5,866.17 annual honorarium. Station Chiefs: $34.99 for responses and receive $9,866.17 annual honorarium. Training nights Two to three hours – Flat rate of $46.64/night.	266	185

Municipality	Population Served (2021 Census)	Community's Geographical Area	# of Stations	Firefighter Staffing Volunteer and Full-time	Wages/Stipends	Annual Incidents (Including Medical)	Population to Firefighter Ratio
Centre Wellington	31,093	409.41 km²	2	60 VFF 4 FT		636	485
Strathroy-Caradoc	23,871	270.86 km²	3	78 VFF	Point system at $15.90 /point	1,371	306
Scugog	21,581	474.38 km²	2	58 VFF 5 FT 2 PT	2022 rates for emergency response and public education events range from $20.84 - $45.45, with 1st Class rate being $37.88 per hour. (FFs are assigned, classes) The 2022 training rate was $24.82 per hour. The summer standby rate was $110.60 per day.	526 (2022)	342

Municipality	Population Served (2021 Census)	Community's Geographical Area	# of Stations	Firefighter Staffing Volunteer and Full-time	Wages/Stipends	Annual Incidents (Including Medical)	Population to Firefighter Ratio
					Captains and District Captains are paid at a higher rate for their participation in emergency response and public education events. The 2022 rate for Captain was $41.66 and for District Captain was $45.45.		

Section 3: Recommendations

Rec #	Recommendation	Estimated Cost	Suggested Timelines	Rationale
6	That the HKFES expand and formalize its public education activities by identifying and appointing two part-time (volunteer) public education officers (one in each of its two stations) from within their existing staff compliment to work collaboratively with the full-time Emergency Services and health and safety coordinator to develop a comprehensive and focused fire safety education program for the community.	Staff Time and cost (wage adjustment) for related training and certification	Immediate to Short-term (0-3 years)	The two "new" public educators should work collaboratively and with a dedicated budget and weekly programming expectations to more fully develop and deliver local programming, notably in the area of smoke alarm awareness, home escape planning and carbon monoxide alarm awareness, along with specific fire cause prevention messaging. As the community grows, transitioning the public education role to a dedicated full-time position should be considered – likely beyond the mid-term horizon.
7	That the HKFES continue to invest in its fire cause and determination program by developing a continuing education program for additional qualified staff members that includes training, and attendance at subject-focused seminars and membership in the CAFI, and the IAAI. Also, the number of NFPA 1033 qualified investigators be increased.	Staff Time and cost (+/- $2000 annually) for related training and certification	Short-term (1-3 years)	Having additional fire department members qualified in fire investigations will create a good level of support for the existing staff conducting these activities while creating a higher level of origin a cause awareness throughout the Department. Alternately, the Department could consider formalising an agreement with neighbouring departments who have the requisite capabilities.

Rec #	Recommendation	Estimated Cost	Suggested Timelines	Rationale
8	That the HKFES establishes a regular budget line for capital improvements at its local training centre in order to meet the current and future training needs of its personnel.	Costs depend on the level of upgrades (+/- $5000 annually)	Short-term (1-3 years)	Continued improvements will ensure a robust training centre that will allow for the proper hands-on training of the HKFES firefighters. It will also promote possible revenue from other bordering fire departments.
9	That, in consultation with human resources staff, the HKFES develop a succession planning strategy that focuses on career development for all ranks and positions within the service.	Staff time for program training and execution	Short-term (1-3 years)	Engages staff and prepares them for future supervisory and leadership roles.
10	That the HKFES further develop its capacity and capabilities respecting Fire Code and enforcement activities by identifying and appointing a full-time career fire inspector (fire prevention officer) who is fully trained and certified (or obtains certification within a reasonable time frame) to the NFPA 1031 Level II standard as made available by the Ontario Fire College.	Estimated initial salary cost of $60,000.00 to $90,000.00 per year	Mid-term (4-6 years)	By creating the full-time position of fire inspector, a more consistent level of inspections and code enforcement can be obtained reducing risk exposure for the Township due to potential errors or omissions.

Rec #	Recommendation	Estimated Cost	Suggested Timelines	Rationale
11	That the HKFES further develop its capacity and capabilities respecting firefighter training and certification by identifying and appointing a full-time career training officer who is fully qualified and certified (or obtains certification within a reasonable time frame) to the NFPA 1041 Level II standard as made available by the Ontario Fire College.	Estimated initial cost of $60,000.00 to $90,000.00 per year	Mid-term (4-6 years)	By creating the full-time training officer position, a more consistent level of training and records management can be obtained. ***Note**: This does not imply that other support volunteer/part-time training officers may not be required to assist with the OFMs training and certification requirements or are providing less than adequate training currently.*

Rec #	Recommendation	Estimated Cost	Suggested Timelines	Rationale
12	That, as an alternate to hiring the two full-time positions noted in recommendations 10 and 11, the HKFES consider the hybrid approach to workload management by hiring a full-time career deputy fire chief to conduct administrative support, training, and fire prevention officer duties.	Approximate initial cost of $75,000.00 to $95,000.00 per year	Mid-term (4-6 years)	The hiring of additional full-time staff is almost always met with a degree of resistance within some municipalities, however the hiring as described will substantially reduce risk to the municipality by provided a properly trained individual to perform key functions and serve as a back-up to the fire chief. EMG wishes to recognise the existing volunteer district chiefs as doing an admirable job of providing excellent mid-level supervision and command functionality, however because of the very nature of their employment restrictions as volunteers, neither position is able to guarantee attendance or availability due to their full-time employment status, family considerations and their own need for time away from their duties.
13	The Fire Chief, review the present recruitment and retention programs and enhance them based on the information noted in the Master Plan document (as required).	Staff time, but some costs may be incurred	Immediate to Short-term (0-3 years) ongoing	Volunteer Firefighters are the most valuable resource for the Fire Department. Ongoing recruitment and retention of Firefighters is critical to the success of the Fire Department.

Rec #	Recommendation	Estimated Cost	Suggested Timelines	Rationale
14	To support the retention of the volunteer firefighters, a full review of their compensation (pay per hour), along with pay incentives for those taking on more duties and responsibilities, needs to be conducted (based on the chart supplied within the section).	Depending on the review outcome	Immediate to Short-term (0-3 years) ongoing	To ensure the longevity of the volunteer firefighters with the HKFES, a full review of pay and incentives should be conducted to ensure that the Township is in line with what other similar communities are doing.

SECTION 4

Facilities, Vehicles & Equipment

SECTION 4: FACILITIES, VEHICLES, EQUIPMENT & WATER SUPPLY

4.1 Fire Station Review

A review of the existing fire stations was conducted by EMG and will be addressed in this section. It should be noted that the walkthrough of the fire stations was a visual inspection; no destructive testing or engineering assessment was conducted.

Fire stations should be positioned to offer the most efficient and effective response to the community they serve. Centering them within a determined response zone that is simply based on "timed" responses is not necessarily the best option to implement. Fire station location depends on many factors such as key risks within the response zone, future growth of the community, and the response team composition (full-time vs. volunteer firefighters). Another consideration is the geographical layout of the community that can include natural barriers or divides, such as water, that may make it necessary to have some stations located within proximity of each other.

Distance and travel time may be a primary consideration; however, if a basic expectation of response time is set by the community's decision makers, then a more realistic level of service and fire station location criteria can be identified.

The following maps, depict where each station is located throughout the Township, the stations that are presently closed or not operational, with the third map indicating a response time zone based on the NFPA recommended 14-minute overall response. The zones around each station represents 10-minute drive time, minus 4-minutes for volunteers to arrive at the station and then respond in an emergency services vehicle. Even though the firefighters are allowed to respond directly to the location in their personal vehicles, no actual firefighting procedures (such as extinguishment) will occur until the fire trucks arrive. The 4-minute response to the fire station is used in overall averaging.

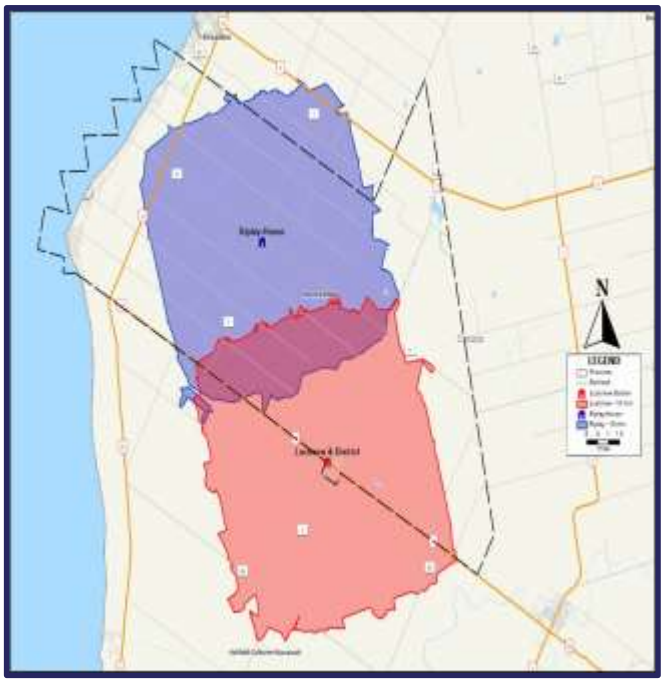
The response mapping and related response data supplied in this document should not be taken in isolation. A full in-depth study along with an annual report submitted to Council by the Fire Chief with an update on the key performance measures and expectations is required.

4.2 Fire Station Location and Response Capabilities

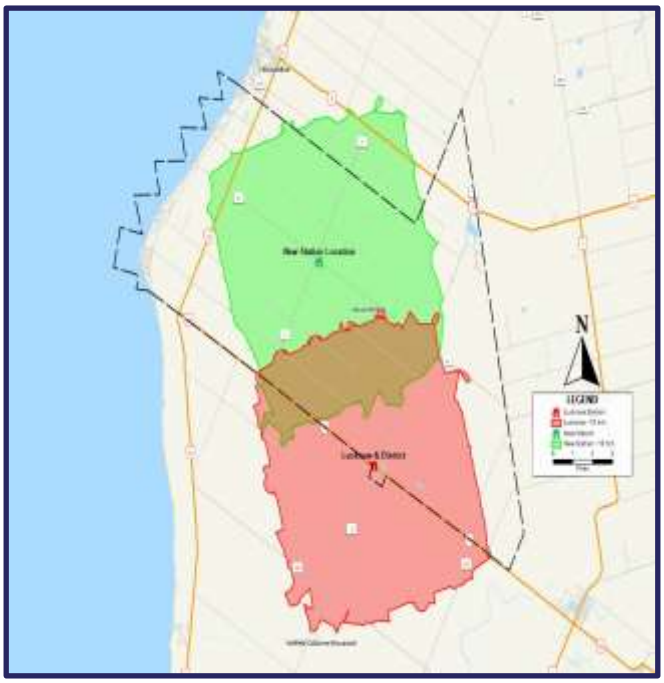
The HKFES responds to calls for assistance from two fire stations that are in Ripley and Lucknow. During the review of the fire stations, there was a brief discussion about a new fire station to be built in Ripley to replace the present station located on the main street in the town. However, no formal plans have been approved or presented.

The following two maps identify the 10-minute drive time response zones for the present station locations and what the response zones will look like if a new Ripley station is built in the Industrial Park as discussed.

FIGURE #12: LOCATION OF THE FIRE STATIONS AND MAP SHOWING NEW RIPLEY STATION LOCATION



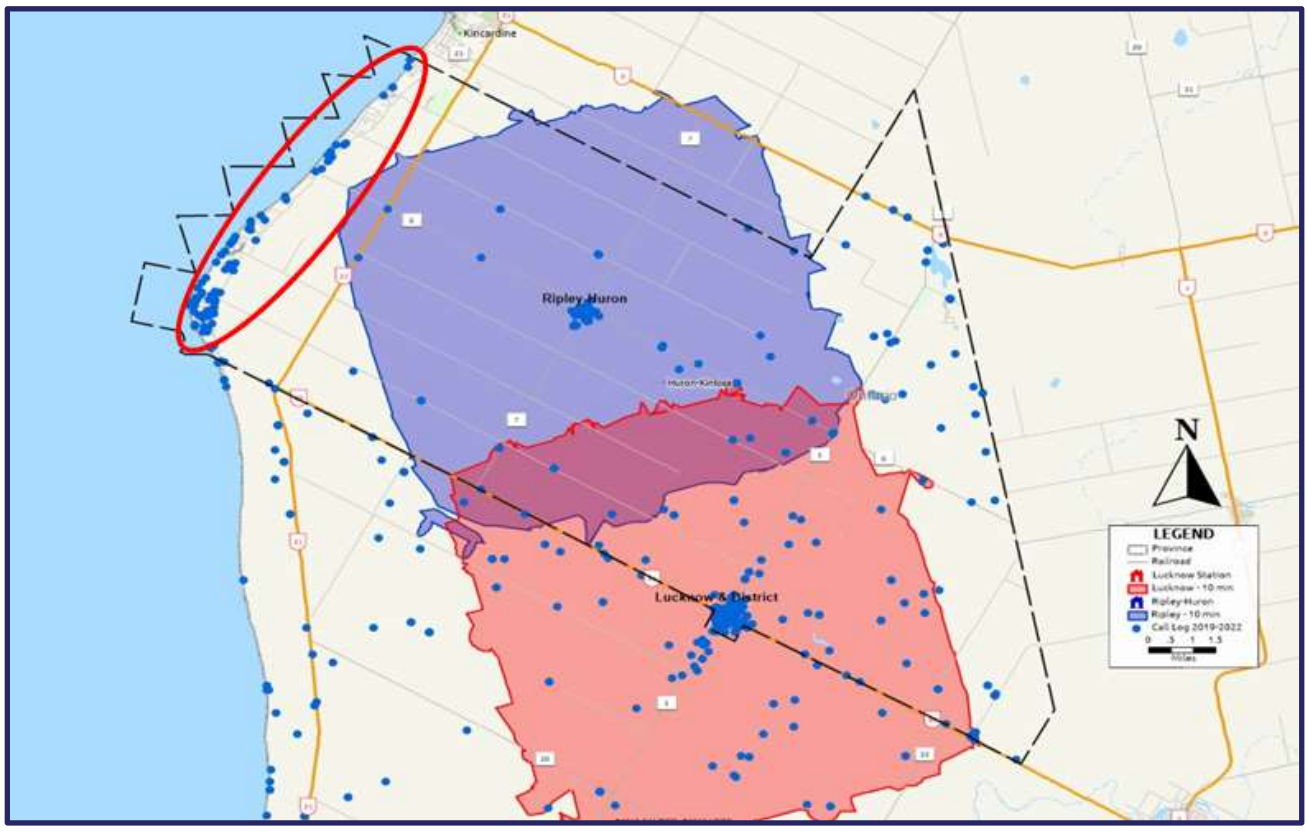
Present Fire Station Locations



Location of Planned (new) Ripley Station (in Green)

As can be seen in the two maps, the location of the new Ripley fire station does not have a negative impact on response service (for the areas already covered by the present Ripley location). However, as noted in the next figure (#9) that indicates call locations, the Lakeshore area, which does have a considerable percentage of calls, does fall outside of the 10-minute drive time (response) zones.

FIGURE #13: 10-MINUTE DRIVE TIME WITH CALL CLUSTER AND LAKESHORE AREA



With the increase in full time residents and seasonal short-term residents, this is an area where a third fire station may eventually be required in the long term. This requirement for a third fire station would need to be tempered with the following input:

- What is the planned growth for this area?
    - What is the timing of this growth, and what type of growth (i.e., residential, commercial, or industrial).
- Call volumes (percentages of increase, if any), along with overall response times.

A review of three years of response data for the Lakeshore area (as noted in the follow chart) confirms that most of the calls are related to medical assist.

Due to the number of calls in the Lakeshore area; 23 – 47 per year, a basic pumper truck would serve this area well. And due to the lower number of calls, this station could utilize one of the present pumper trucks with a newer pumper being assigned to a station with a larger number of calls (if desired).

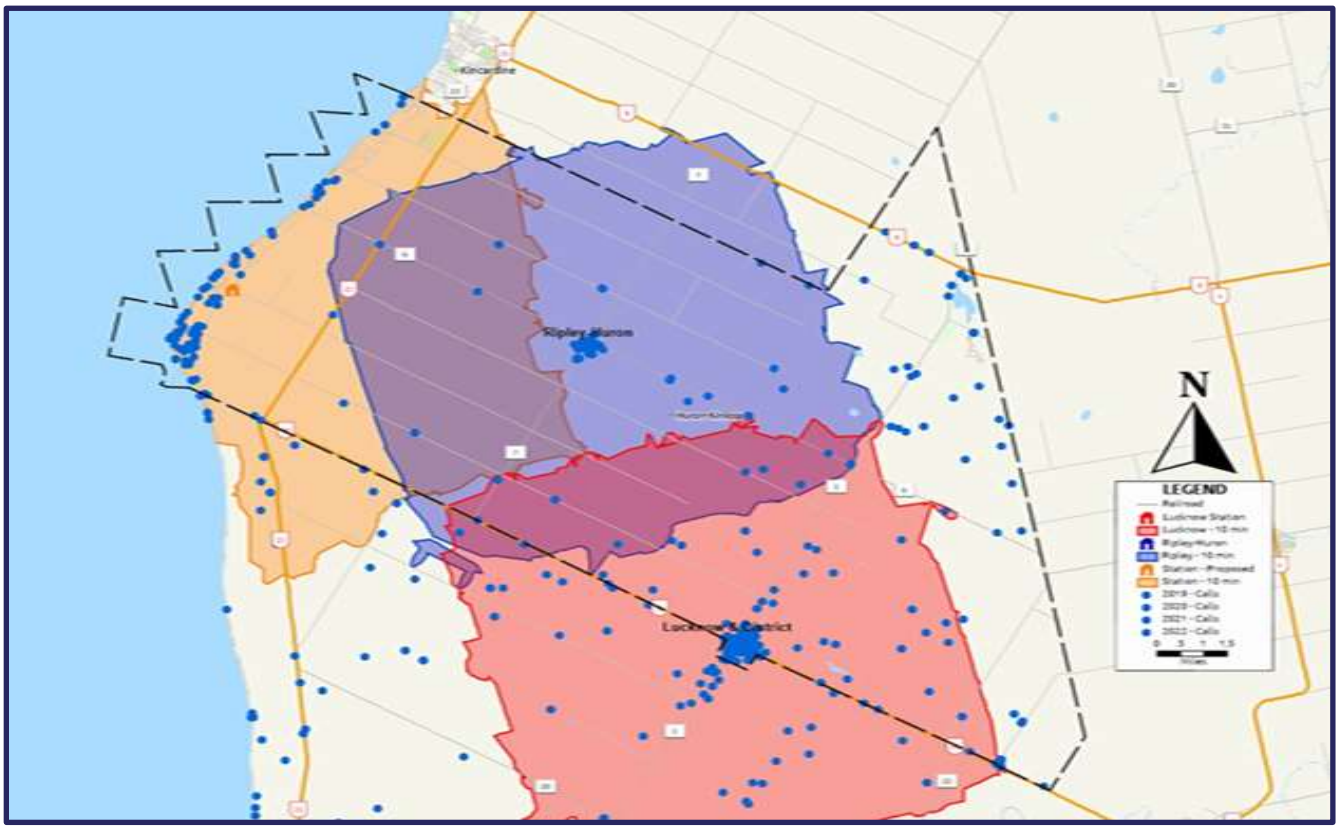
FIGURE #14: CALL TYPES BY YEAR

Call Types – Lakeshore Communities	2020	2021	2022
Fires/Explosions (Structures & Vehicles)	0	6	0
Outdoor Fires	0	2	0
Pre-Fire Conditions	1	1	0
Burning (Controlled)	2	1	0
False Alarms	0	2	6
Public Hazards (Co, Gas, Wires)	2	10	6
Rescues	1	1	1
Medical Assist	17	22	22
Other Responses (Mutual Aids)	0	2	0
3 Year Totals	23	47	35

By identifying the above noted points, the Township can plan for any future expansion of the Fire Department in the Lakeshore area.

Figure #10 has been included to demonstrate how the response coverage for the Township would improve with the inclusion of a third (future) fire station in the Lakeshore area.

FIGURE #15: COVERAGE WITH NEW LAKESHORE FIRE STATION INCLUDED



The cost of constructing a new fire station can range from $2 million dollars upwards to $5 million (or even more) depending on the size of the fire station, and services to be located at the facility. To assist with deciding on possible design, some supplementary information on fire station design and options has been included within this document in Section 4.2. Township staff may find this information of value when deciding on the type and/or construction of the new Ripley fire station.

4.1.1 Huron-Kinloss Fire Stations

Huron-Kinloss Fire Department has two fire stations in its inventory.

***Notes:*

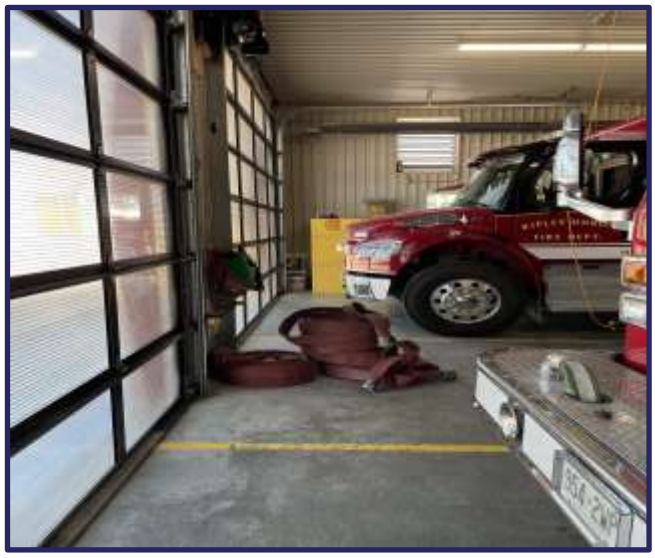
- *The station reviews in this report are general in nature. Therefore, if more in-depth structural analysis is desired by the Township, then a comprehensive station/facility review should be undertaken.*
- *Any health and safety related items have been bolded and italicized.*
- *A further overview of general health and safety related issues is also included at the end of this station review section.*

Ripley Fire Station

The Ripley fire station is a two-storey building that has two bays for fire apparatus. This is not a drive through station. This station has a total of 26 volunteer firefighters (one district chief, one deputy district chief, four captains and 20 firefighters).

This station also serves as the main Emergency Operations Centre (EOC) for the Township and is equipped with emergency back up power.

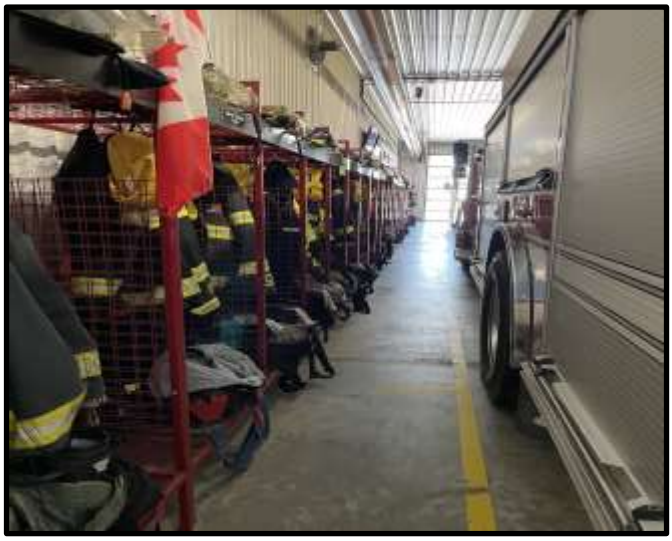
Apparatus Bays



Training and Office Areas

Washroom and Fitness Areas

Kitchen and Bunker Gear Storage



SCBA Filling Station and Back up Power

Observations:

The Ripley station is in good shape; however, it is at its limits for the storage of any new vehicles and equipment. The installation of proper storage racking would help to alleviate this equipment storage challenge. To costing of such racks can range from $2,000 to $5,000 depending on storage needs.

As already noted in a prevous section, there is a plan in place for this station to be relocated to the industrial area (which is not far for the present main street location). This relocation will not have a negative impact on response times to the community.

Concerns:

- Firefighting gear exposed to exhaust contamination
- There is no diesel exhaust removal system in the station
- Any loose equipment should be stored in/on a proper storage racking system.

Lucknow Fire Station

The Lucknow station has three front bays and one side bay for fire apparatus.

This station has a total of 26 volunteer firefighters (one district chief, one deputy district chief, four captains and 20 firefighters).

This station also serves as the back-up/alternate Emergency Operations Centre (EOC) for the Township and is equipped with emergency back up power.

Apparatus Bays

Firefighter gear stored (separate room) and Washroom area with shower

Office Area and Kitchen

Training Room and SCBA Filling Station

Observations:

The station was found to be in good condition, with ample room for vehicle and equipment storage. The Firefighters gear is stored in a separate area from the apparatus floor; the washrooms have shower facilities for proper cleaning. And the station is supplied with emergency back up power.

Station Concerns:

- There is no diesel exhaust removal system in the station.
- Execise equipment should be removed from the apparatus floor due to diesel exhaust contamination

4.3 Type of Buildings and Options for Fire Stations

Traditionally, fire stations have been stand-alone structures. Many municipalities have been shifting to integrating services into shared-use buildings with emergency service response stations being built into community centres, libraries, public works buildings, etc. When building a new fire station, this is something to consider for Huron-Kinloss.

It is common across Canada to have different emergency services co-located; this has included fire and police, fire and paramedics, or all three in the same building. These stations normally have separate quarters within the same building, with separate entrances and facilities. This permits each service to operate independently while taking advantage of the efficiencies of a single structure.

As technology, community demographics, and operational requirements evolve, maintaining an ability to be flexible in the station design, construction, and location will benefit the community in the long-term. Leasing of a facility reduces the initial capital outlay, placing building maintenance responsibility on the landlord and allows the Township the flexibility to move, should there be a change in community development.

The City of Barrie has leased the end unit of a commercial strip mall as a fire station *(pictured below)*. The unit was constructed by the landlord to meet the city's requirements.

EXTREME fire stations are a new concept that is a Canadian built product out of Lethbridge, Alberta. It is a modular-based building, built to seismic and building code standards, using high efficiency, energy code compliant HVAC systems and fire suppression systems; these are standard on EXTREME stations.

The positive aspects about EXTREME fire stations are that they are custom built at a factory and transported to the site where they are quickly placed onsite and ready for occupancy.

Extreme Fire Station Assembly (On-Site)

A typical fire station has a life expectancy of approximately 50 years before the cost/benefit ratio starts to work against the Township in terms of maintenance, basic function, and design. The EXTREME fire stations have, the ability to meet that life cycle because they are made from steel and aluminum and additional modules can also be added if the station needs to expand its footprint.

Extreme Fire Station (Multi-Bay Example)

The West Conrad station is an example of the diversity of EXTREME fire station designs and how they can be designed and expanded to meet the customer's needs.

A partnership with non-profit organizations, EMS, or leasing of available space in a new fire station are options as municipalities become more innovative in how they incorporate a fire station into the community. This model may not work or be a fit in every community, but these options are worth exploring to decrease costs while simultaneously increasing the fire department's response capacity.

Calgary Fire Department Waldon Station

Prior to March 2021 a two-bay EXTREME fire station with appliances, diesel extraction system, exercise room and administration space, was estimated to be $2.4 million. Unfortunately, the construction industry is experiencing unprecedented spikes in building materials like wood, cement, and steel which creates challenges in projecting final price.

4.4 Fire Apparatus - New and Replacement Schedules

Reliability of fire apparatus is critical to the successful operation of a fire service. Over the long-term, delaying the replacement of a vehicle is inadvisable as it will add to the overall maintenance costs of the apparatus and can influence insurance costs based on the emergency service's Fire Underwriters Survey rating.

The HKFES is well-equipped with pumper trucks, tankers and support vehicles required for primary response to calls within the Township. The replacement plan is for a 15 - 20-year cycle which keeps all the vehicles within the NFPA and FUS recommendations.

4.4.1 Fire Underwriters Survey – Vehicle Replacement Recommendations

When assessing an emergency service's ability to respond and meet the needs of the community, the Fire Underwriters Survey considers the age of a fire truck as one of its guidelines.

The Small Communities and Rural Centres section (outlined in blue) is the recommendation for vehicle replacement for a Township the size of Huron-Kinloss. This allows for up to a 20-year replacement cycle, in which the fire vehicle can be utilized as 2nd Line response status. It is, however, recommended that all First Line units be replaced by a new or younger unit when it reaches 15 years of age.

Based on the population of Huron-Kinloss, the community falls within the "medium sized communities."

TABLE #4: FUS VEHICLE REPLACEMENT RECOMMENDATIONS[15]

Apparatus Age	Major Cities [3]	Medium Sized Cities [4] or Communities Where Risk is Significant	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

[15] TECHNICAL BULLETIN, FIRE UNDERWRITERS SURVEY™, A Service to Insurers and Municipalities, INSURANCE GRADING RECOGNITION OF USED OR REBUILT FIRE APPARATUS, accessed January 31, 2022, file:///C:/Users/EmergencyLT/Downloads/FUS-TechnicalBulletin-InsuranceGradingRecognitionofUsedorRebuilt%20(1).pdf

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 a recognized testing agency on an annual basis to be eligible for grading recognition (NFPA 1071).

[2] Exceptions to age status may be considered in small to medium sized communities and rural centres conditionally, when apparatus condition is acceptable, and the 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
    - 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.

FUS definition of First Line Duty, 2nd Line Duty, and Reserve is:

- 1st line is the first fire truck utilized for response at the fire station.
- 2nd line is the next truck to be used if the 1st line unit is tied up at a call, and
- Reserve is the vehicle kept in the fleet to be put into service if a 1st line or 2nd line vehicle is out of service.

The FUS is reviewed by insurance companies. Provided that the emergency services adhere to the recommended replacement timelines through an approved capital replacement schedule, the department will retain its fire rating for vehicle replacement. By ensuring that the vehicles are being replaced on a regular schedule, Huron-Kinloss would be demonstrating due diligence towards ensuring a dependable response fleet for the emergency services and the community it serves through a vehicle replacement schedule.

4.4.2 National Fire Protection Association – Vehicle Replacement Recommendations

The NFPA 1911, *Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Automotive Fire Apparatus* also supports a regular replacement schedule of fire vehicles. This standard includes guidance on retirement criteria for fire apparatus. NFPA 1911 recommends that all front-run vehicles are replaced on a 15 to 20-year cycle, depending on the community size.

For emergency services that are considering refurbishing their vehicles to extend the in-service life, reference can be made to the NFPA 1912, *Standard for Apparatus Refurbishing*. It should be noted that although the FUS do take refurbishment of vehicles into consideration, no credit rating is assigned to vehicles over 30 years of age.

Having noted all of the previous FUS information, it must again be noted that Huron-Kinloss has a 15-to-20-year replacement schedule in place for it fire vehicles. As such, the Township should be commended for this endeavour.

4.4.3 Spare Fire Vehicles

Based on the Fire Underwriters recommendations, there should be a spare pumper truck for every eight vehicles. So, if a department has eight or less pumper trucks it should have a spare pumper truck in its fleet. If the department has more than eight pumper trucks, then it should have two spare trucks in its fleet.

Presently, HKFES does not have any spare pumper trucks in its fleet. As such, it is recommended that this be rectified by reviewing its replacement cycle to identify how a present pumper truck that may be ready for replacement can be kept in the fleet after the delivery of a new truck. The key here is to ensure that the replacement is not older than the FUS recommended age as noted in the previous FUS chart. There is one key stipulation that will assist the HKFES in relation to having a spare truck in its fleet that might be past the recommended replace age. The following excerpt is from the FUS replacement chart (Table #9):

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

4.4.4 Wildland/Bush Firefighting Unit

Another consideration for the Township is the inclusion of a wildland firefighting vehicle. Due to the rural makeup of the community, there are many locations in which a fire could occur, but the present full sized, 2-wheel drive vehicles are unable to access.

Obtaining a four-wheel drive wildland/brush type vehicle would provide HKFES the ability to access their "off-road" areas in a safe and efficient manner.

As noted in the following two pictures, these wildland vehicles can vary greatly in size and of course cost. EMG is not recommending a full-sized pumper truck type of unit (as noted in the photo on the left), more of a one-ton 4x4 unit that has good pumping capacity and at least a 200 litre (approximately 50 gallon) water tank on board (as noted in the photo on the right).

Cost of this type of vehicle (again depending on size and capabilities) can range from approximately $150,000.00 up to as much as $800,000.00.

4.5 Maintenance

HKFES does not have its own mechanical division, all work is handled by a 3rd party shop. This is quite common for smaller communities. And based on the information received from the Fire Chief, this present arrangement is working for the Department.

4.4.1 Vehicle Technology

The HKFES presently utilizes tablets on all of the trucks, and as such, they should be commended for the utilization of this technology. These units are data enabled and permit the responding crews to acquire information about the incident they are responding to directly from the Communications Centre including mapping, responding apparatus, pre-incident plans, hydrant locations and access to the internet.

The tablets will have the capability to provide any pre-incident plans that are completed for a particular location. These plans will provide information such as a footprint of the structure, man and overhead doors, electrical panels, gas valves, hazardous materials storage area, sprinkler and fire hose connections, fire hose cabinets, etc. The Incident Commander will use this information to direct their crews to specific areas of a structure to perform an assigned task and improve the situational data.

4.4.2 Pre-Incident Plans

HKFES should initiate and develop a pre-incident plan program with the completion of plans. HKFES currently has no pre-incident plans completed. Resources should be allocated that enable the quality and quantity required of the plans developed to be consistent and current.

Focus should be on industry, main streets with commonly joint buildings, marinas, assembly occupancies, campgrounds, fuel storage and retail such as propane and gasoline and any structures with known hazardous materials. It would aid in the completion of additional plans if an individual were to be the co-ordinator of the program and direct crews on which structures to complete. They would also be responsible for drawing the diagrams and uploading information into the computer system. All pre-incident plans should be completed in compliance with NFPA 1620, *Standard for Pre-Incident Planning*.

4.6 Bunker Gear

Every year, firefighters in ever-increasing numbers are being diagnosed with cancer. A contributing factor to their illness has been proven to be the contaminants that adhere to the structural firefighting gear during fire fighting operations. After a fire, the structural firefighting gear should be packaged and sent for cleaning to reduce this risk. The HKFES fire stations do not have a commercial extraction washing machine made specifically for this type of cleaning. Any contaminated gear is sent out to a third party to have it cleaned and inspected before returning to the Department.

While structural firefighting gear is being cleaned, the firefighter requires a replacement set so they do not go without clean gear to wear. Ensuring that the cleaning of gear is a high priority after fires, and that firefighters have access to properly fitting bunker gear during the cleaning process will assist

the Department in meeting its decontamination and hygiene program. The HKFES does not presently issue a second set of bunker gear to each firefighter, but it does have an inventory of spare gear that can be utilized for the short term, unit the original gear is returned from cleaning and inspection.

When used for interior structural firefighting, bunker gear has a life span of 10 years as stated in NFPA 1851, *Standard on Selection, Care and Maintenance of Protective Ensembles for Structural Fire Fighting and Proximity Fire Fighting*. HKFES is following this replacement standard if the gear is compromised in any way.

Further to contaminating the bunker gear, toxins also contaminate the firefighter's uniform/personal clothing. Each firefighter should have a clean uniform/personal clothing available to wear so that the uniform/personal clothing they wore into a fire is cleaned and the contaminants not taken home with them, where others could become exposed to the toxins. The risk of toxin exposure is not just to firefighting personnel, full-time or volunteer, but to their at-home families as well.

HKFES SOGs pertaining to the cleaning, inspection and maintenance of bunker gear are current and meet manufactures requirements. Special attention should be taken when reinstalling the drag rescue device (DRD) if equipped, which may also require an SOG to provide guidance on the procedure.

4.7 New Technologies

Technology is ever-evolving within the fire service, with new pieces of equipment being added to the resources used by an incident commander. One such technology which has proven to be a valuable tool is the use of drones (Transport Canada refers to these as remotely piloted aircraft systems. Police services have been using them for some time to locate missing persons or document accidents and crime scenes.

The use of drones in the fire service is a growing trend as a multi-purpose tool that can assist with large scale assessments of fireground and hazardous material incidents, enhance search and rescue functions, and be used in pre-incident planning.

Drones can cover a lot of ground thus allowing valuable fire services personnel to be utilized elsewhere. They have proven beneficial for hazardous materials incidents, forest fires, and large-scale emergencies as the drone can be quickly deployed and give the Incident Commander a live view of the incident. The reduction of risk to firefighting personnel is a significant benefit of drone technology, along with the live view capabilities that provides invaluable information to the Incident Commander.

Drone pilots must follow the Canadian Aviation Regulations Part IX-Remotely Piloted Aircraft Systems which contain the rules for drones up to 25 kilograms. Advanced operations include flying in controlled airspace, flying over bystanders, or flying within 30 meters of bystanders.

New technologies are being developed each year to protect the firefighters; these include the use of robotics to fight fires, which are being actively used in Europe and Asia.

New SCBA has built-in telemetry systems that, like some portable radios, identify the location of the firefighter. New technology SCBAs can transmit GPS data, the amount of air in the SCBA cylinder, monitor the heart rate, level of exertion the firefighter is being exposed to, and body temperature.

As the technology progresses it is important to monitor the benefits and opportunities to integrate these devices into the fire service.

4.8 Elevated Device

Although the HKFES would benefit from having an elevated device (aerial or tele-squirt) within its fleet. EMG is not recommending one be purchased at this time. However, as vehicles are being replaced, the Fire Chief should consider the option of purchasing an elevated device to replace one of its pumpers. This would still provide the Department with a response vehicle, while at the same time providing the Department with more options in dealing with above-ground fires. As an alternative option, there is the possibility of entering into a response agreement with a fire department that does have an elevated device. The main concern with this type of agreement is that there is no guarantee that the elevated device will be available when needed (due to the other fire department already utilizing it at a fire/emergency scene).

Appendix "B" has some information on the Fire Underwriters' recommendations relating to the need for an elevated device. The Township does have some large homes and other structures that do exceed the reach of the average (fire department) ground ladder of 10 meters (approximately 30 feet). But it has not recorded a recent fire in one of the large structures.

At this time, EMG is suggesting that future consideration be given to the purchase of an elevated. But for now, there is also the option of requesting one through an agreement with a bordering fire department. However, it must be kept in mind that requesting an elevated device from a bordering community may take as much as 30 to 60 minutes for it to arrive if it is even available at all.

The cost of an elevated device such as a tele-squirt or aerial can range from $800,000.00 to as much as $2 million dollars. EMG has recommended to other small sized communities the option of purchasing such a device as used. There are many quality used elevated devices on the market that are less than 10 years of age and can be purchased for less than $500,000.00. This option is worth considering for the HKFES.

Tele squirt Fire Truck

Aerial Truck

4.9 Commercial Cab vs. Custom Cabs

In our current economic climate, fire departments looking to purchase fire apparatus will likely be restrained in upcoming purchases due to the added financial burden. While there are benefits and drawbacks to both the custom and commercial chassis platforms, it is up to the fire department – through research and evaluation – to rationalize and justify the appropriate chassis in the face of funding limitations. Therefore, the Fire Chief and the apparatus committee must enter the evaluative process with as open a mind as possible.

The apparent difference between custom and commercial chassis is the design. Custom chassis offer shorter wheelbases, larger interiors with seating for up to ten firefighters and more latitude when designing compartments and other features.

Where the space in the apparatus bay in the fire station is limited, a custom chassis may be the only alternative to meet the expectations of the apparatus's purpose, such as a pumper-tanker with a larger tank capacity requiring a tandem axle.

Most commercial chassis have a forward-engineered design which requires a longer wheelbase minimum. The maximum number of firefighters it may carry is five, with a smaller interior which limits the placement of cabinets in the cab or the mounting of tools.

Many questions come to mind before serious deliberations on chassis type may begin, to be answered by the fire chief and members of the apparatus committee, and these may include:

- How many calls does that station respond to each year?
- Does the department purchase a new truck or look for a used apparatus that is affordable, in excellent condition, not older than 5-10 years, and most importantly, well maintained?

- What is the primary function of the truck? Is it a pumper, a pumper/tanker, tanker, or a pumper-rescue?
- What ancillary equipment will it carry?
- What size water tank and water pump will it need?
- What length will it be, and will it fit in the fire station?
- What optional safety features are available, and what are their costs?
- How high would it be, and can clear the overhead door with plenty of extra space?
- The biggest question is funding. Once built conventional cab apparatus range in price from $450,000 to $650,000. In contrast, custom chassis apparatus could range in price from $600,000 to $1,000,000 depending on the options and if special features are needed, such as specialty compartments, pull-out tool boards, adjustable shelves, onboard generator, foam tanks, electrical cord reels, front bumper suction port, and light tower.

Ten key comparison questions must be answered before the final decision is made and the purchase order is issued to the vendor. These include:

1) *Price* – A conventional cab chassis costs substantially less than an entry-level custom chassis. The Original Equipment Manufacturer (OEM) often upcharges for installing NFPA 1901-compliant features, typically standard equipment on a custom chassis. An Original Equipment Manufacturer (OEM) is traditionally defined as a company whose goods are used as components in another company's products, which then sells the finished item to users. The added labour to prepare the chassis for modifications and wire control switching can increase the cost substantially.

2) *Seating Space* – A conventional cab chassis typically seats five firefighters. A negative note is that modifying the captain's seat to accept a self-contained breathing apparatus (SCBA) is difficult due to legroom for passengers. In most cases, the maximum number of air packs is three in forward-facing seats. Custom cabs often accommodate up to six firefighters, five with SCBA seating. Having SCBA mounted inside the seats of the cab saves on the amount of space taken up by the SCBA if they were mounted elsewhere on the apparatus.

3) *Turning Radius (Cramp Angle)* – Having the axle behind the driver, such as on a custom cab, will aid the turning radius and reduce the wheelbase. The front axle on the commercial chassis is further forward, which leads to a longer wheelbase and a more expansive (worse) turning radius.

4) *Length* – Most commercial four-door chassis require two to three feet in overall length due to the engine's forward configurations. Custom chassis is a more compact fire apparatus.

5) *Fire Apparatus Height* – The average entry-level custom chassis with a 10" to 12" (25 to 30 cm) raised roof will be under ten feet high overall. Accessing the engine in a custom cab will require the cab to be tilted upwards, which requires additional overhead space in the station. Commercial chassis frames are six to eight inches (15 to 20 cm) lower and can aid in lowering the overhead where height may be an issue.

6) *Service* – Commercial chassis generally provide more service facilities, which often means their service facilities are closer. The negative side is that commercial chassis service companies do not usually offer mobile repair services, whereas most custom manufacturers do.

7) *Paint Finish* – The paint quality on commercial chassis has improved over the years, and vendors offer a wide range of custom colours. Some departments with a unique colour may have to pay additional costs for the entire chassis to be repainted due to their colour not being available at the factory the chassis was built at.

8) *Safety and Innovation Features* – Custom chassis typically have higher crash test standards and offer more safety features, such as airbags all around the cab. Both commercial and custom chassis manufacturers offer electronic stability control. Some bespoke chassis manufacturers conduct anti-rollover testing for added safety.

   It must be noted that a custom chassis is designed, engineered, and built to be used specifically as a fire truck. A commercial chassis is meant for everyday use and does not have the robust features of a custom chassis. Most custom cab manufacturers offer clean cab technologies and specially manufactured compartments for transporting soiled bunker gear so that the ensemble is not transported in the cab, with the firefighters risking their exposure to cancer-causing agents.

9) *Construction, Balance, and Weight* – Most custom chassis are made with bent or extruded aluminum, while commercial chassis are more likely to utilize formed metal panels and fibreglass. The custom chassis will be more durable, but there will be added weight and may require heavier axles or larger tire sizes than a commercial chassis. To aid in lowering the center of gravity and preventing a rollover, the water tank is built to lay inside the frame of the chassis.

10) *Drive Systems* – The purpose of the apparatus comes into play when choosing an engine and the driveline. For example, custom chassis are usually unavailable with four-wheel drive as an option, whereas commercial chassis are. Custom chassis may require additional distance from the back of the cab to a driveline component due to the transmission's location within the frame rails. In some models, a transmission power takeoff (PTO) driven pump vs a mid-ship driven pump can be compromised.

When appropriately maintained, each chassis will have a minimum 15-year life cycle, though the custom chassis will likely last up to 20 years or more without significant refurbishment. Fire departments must remember that when a fire truck surpasses the 20-year mark according to Fire Underwriter's apparatus replacement schedule, it may negatively affect insurance premiums in the community.

Further considerations on chassis selection include:

Custom Chassis Overview	Commercial Chassis Overview
• More expensive • Built for the fire service. • Logical choice for aerial • Greater seating and storage options • Chassis storage design options • Greater GVWR for multi-purpose • ECE-R29 crash testing* • Warranty repair may be limited. • Proprietary parts • Friendly for daily checks • Custom is the fire service tradition	• Price Competitive • Fits most applications. • Engine limitations • Seating limitations • Customization limitations • Good off-road use • Longer wheelbase • Parts and service availability • Maintenance friendly • Engineered for other vocations

***Note:** ECE R29 describes a series of test conditions to which **truck cabins should comply**. However, these tests do not consider the occupant directly. ECE-R29 uses prescribed limits of cabin crush to ensure occupant protection rather than measuring occupant injury based on Anthropomorphic Test Devices (ATDs) or dummies.*

ECE R29 regulation covers three test descriptions: front impact, roof strength and rear wall strength. During a frontal collision, the risk of injury or death to the vehicle's occupants is much higher than in the case of rear-end collisions, rollovers, and collisions between a passenger car and a heavy commercial vehicle.

It must be noted that whether either chassis is selected, the apparatus's construction and features need to follow NFPA 1901, Standard for Fire Apparatus, and ULC S-515-12, *Standard for Automotive Fire Fighting Apparatus*. If a used truck is chosen, Fire Underwriters Standard Technical Bulletin for

used or rebuilt fire apparatus. Once in service, NFPA 1911, *Standard for the Inspection, Maintenance, Testing, and Retirement of In-Service Emergency Vehicles,* should be followed.

Many fire departments in Canada are looking into purchasing used rather than new apparatus. For years, fire departments in the United States have been leasing their apparatus as a cost-saving measure and more aggressive turnover rate. These apparatuses become available at a fraction of the cost of new ones. Recently in a used fire truck ad, a seven-year-old custom cab fire truck was for sale for USD 165,000, which equates to approximately $222,750 CDN. This apparatus, new in CDN dollars, would be up to four times that.

A fire department in southwestern Ontario acquired a custom rescue from the United States at approximately 25-35% of a new one, which would be close to $1 M. Purchasing in the United States, does not include shipping, mechanical fitness inspections, additional import taxes, and outfitting, which add extra costs but remains a viable option for some fire departments when the age could be seven to ten years old and could be in-service for another ten or greater years.

Of course, the downside to purchasing a used vehicle is that there may not be any warranties left on the vehicle, and if purchased from the U.S., it may need to be Canadianized (i.e., gauges), and it will have a shorter lifecycle.

Section 4: Recommendations

Rec #	Recommendations	Estimated Cost	Suggested Timeline	Rationale
15	That the Inclusion of a spare pumper truck in the HKFES fleet be implemented to allow for a backup in the case of a breakdown of the front-run trucks.	Extend the life of a vehicle slated for replacement	Short to Mid-term (1-6 years)	Even though both fire stations are well equipped with first response vehicles, there is no backup/replacement vehicle in the Department's inventory. FUS recommends that for every eight units, there should be at least one spare truck ready to be put into service as needed.
16	Purchase a wildland/brush fire truck to increase HKFES' ability to deal with the off-road type of fires	Depending on the type of truck, $150,000 - $800,000	Short-term (1-3 years)	HKFES does not have full wildland/brush fire, and off-road capabilities for firefighting. The purchase of such a vehicle will provide this type of ability.
17	Inclusion of a third fire station to be built in the Lakeshore area	Approx. $2 - $5 million	Long-term (6-10 years)	A considerable number of calls by the HKFES occur in the Lakeshore area. This area falls outside of the 10-minute drive time response criteria, as noted in the NFPA recommendations. Consideration for a fire station in the Lakeshore area is a reality as more of the seasonal homes are being turned into permanent residences.

Rec #	Recommendations	Estimated Cost	Suggested Timeline	Rationale
18	Purchase of an elevated device (new or used) based on the FUS-related recommendation.	Approx. $200,000 to 1.5 million	Short to Mid-term (1-6 years)	HKFES does not have the capability of fighting and/or initiating a rescue at buildings that are more than 30 feet (9 metres) in height.

SECTION 5

Emergency Management

SECTION 5: EMERGENCY MANAGEMENT

5.1 Emergency Management Program

As mandated by the *Emergency Management and Civil Protection Act* (EMCPA), all municipalities in Ontario must have a Municipal Emergency Response Plan (MERP) and an emergency planning program. The *Act* also stipulates that municipalities are to conduct an annual training exercise. For every community in Ontario, there must also be an identified CEMC. Currently, this duty falls to the Fire Chief until the fall of 2022, when it will be transferred to the Emergency Services Health & Safety Coordinator., with the Director of Community Services as the alternate. as the Alternate.

While the latest version of the MERP was completed in 2018, it is a requirement for them to be reviewed and updated each year. This may require minor changes and not a complete document update. A recommended means of cataloging such changes is the insertion of a few pages at the front of the document to record the following:

- The date changes were completed.
- The Corresponding By-Law and Number
- A brief outline of the changes and the sections involved.
- Name of individual completing the updates.
- Whether the revised document requires Council approval.

It was noted that Huron-Kinloss has an update log in place, but it lacks any notations regarding changes to the document. EMG was advised during this review that the document is reviewed annually as legislated; as such, this needs to be noted in the log. After a review of the current MERP, consideration should be given to the inclusion of emergency plans of outside agencies being included in the appendices. These agencies may include conservation authorities, major industries, airports, Bruce Power, and Bruce County Paramedic Service (BCPS).

With so many acts of domestic terrorism occurring each year throughout the world, including Canada, a municipality must plan for such an event within its own community. The MERP should have a section dedicated to domestic terrorism. The section should include an integrated response program comparable to NFPA 3000, *Standard for an Active Shooter/Hostile Event Response (ASHER) Program*. Partnerships could be achieved with outside agencies such as the OPP and BCPS to develop and deliver a presentation to the public and include local businesses as sponsors, to assist in offsetting any expenses. Aside from the risks, the township has its own infrastructure risks that are listed in its

Critical infrastructure and the Hazard Identification and Risk Assessment (HIRA) lists, which should also be taken into consideration as possible targets.

The Maitland Valley Conservation Authority and the Saugeen Conservation Authority own and maintain several dams throughout their watersheds. There are privately owned and operated dams in the Lucknow area. Flooding events are controlled and mitigated by the Township in coordination with the conservation authorities, by way of their Flood Emergency Plans. Prior to the spring melt, Huron-Kinloss should receive direction on what could occur, the resulting effects to expect, what they should be prepared for in the event of significant flooding, and ways to self-prepare for such events. This could be achieved through social media, public messaging on radio and television stations, and print media.

One of the most significant challenges in emergency planning is the notification system that there is a pending or active emergency in the community. Communication is essential for any large-scale incident; a mass notification system sends messages via personal cell phones to communicate to the public during an emergency. Several alerting apps are available using text messaging or an actual app that is installed on cell phones, tablets, and/or computers. In Canada, the Alert Ready notification system is used for notifying the public of emergency situations. Environment Canada uses some of these apps as do police services. Apps such as Alertable and Voyent Alert are operated by, and available through a third party.

Many communities will also use the mass notification system to communicate local issues like a water main break to advise residents in the affected area. Huron-Kinloss should explore the feasibility of a proprietary warning system to alert citizens in the event of an actual or possible catastrophic event.

Some communities in Ontario have reached out to third parties to develop an app that meets the needs and circumstances of their communities. Some communities in Southern Ontario either have or are now seriously considering installing storm sirens, such as those found throughout the United States, as another means of notification of a pending emergency, as not everyone may own or have a cell phone with them. It would be unreasonable to install them throughout the entire Township, but the focus should be on the populated areas such as Lucknow, and Ripley. The sirens located at the fire stations could be converted into storm sirens since these are no longer used to notify the firefighters there is a fire call.

As noted, there are several means of notifying the public of a pending or active emergency. There have been several tornado events each year in Ontario. The Township of Huron-Kinloss experienced a tornado in 2020 in the Point Clark area that measured an EF-0. The Township, and the other municipalities of Bruce County, should lobby the County of Bruce in a joint opportunity to enhance its means of warning its citizens of pending emergencies.

The County of Bruce and its eight municipalities have entered into Mutual Assistance Agreements. This agreement would come into play during an emergency that has been declared. A municipality may require a building official's equipment and staff to mitigate a situation such as flooding or a natural disaster. The current agreement is dated 2007 and should be reviewed and updated by those involved.

5.2 IMS & EOC

Interagency, multi-jurisdictional, multi-government, and multi-disciplinary are terms used when operating in a large-scale emergency environment. On May 1, 2016, a wildfire seven kilometres outside of Fort McMurray became the worst wildfire incident in Canadian history with losses and economic impacts to the community of close to $10 billion.[16] The Incident Management System (IMS) was implemented during this serious event in Canadian history and was a valuable tool during the decision-making processes taking place. Agencies understood their roles while making sound judgments during the establishment of a plan for the fire's control and mitigation.

The Incident Command System (ICS) is based on best practices in Canada and the United States and is used for both small or large emergency and non-emergency planned events. It identifies roles and responsibilities to improve resource and interagency communications for a common purpose. This is referred to as the IMS in the Province of Ontario.

During some emergencies, there is a likelihood of the IMS being expanded into a Unified Command. The type of incident, complexity, and location of an incident may require a Unified Command structure. The Unified Command "is a management structure that brings together the 'Incident Commanders' of all major agencies and organizations involved in the incident to coordinate an effective response while at the same time carrying out their own jurisdictional or functional responsibilities."[17]

The Emergency Operations Centre (EOC) for the Township of Huron-Kinloss is where members of the Township's Municipal Emergency Control Group (MECG) will assemble and operate during the emergency. The primary EOC is in the Fire Station in Ripley, with the secondary location at the Fire Station in Lucknow.

Both the primary and secondary EOCs have automatic standby generators. Although the EOC may not operate often, they should be maintained in a state of readiness including updates to the information

[16] "Forged by fire: Fort McMurray 5 years after the disaster," Jamie Malbeuf, CBC News, May 3, 2021, https://newsinteractives.cbc.ca/longform/fort-mcmurray-five-years-on-from-disaster

[17] "What is Unified Command?" Accessed October 14, 2022, https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=101258&inline

technology (IT) system. It is recommended that EOCs should be in a facility other than the fire stations. During an emergency, the fire stations will be busy with firefighters and apparatus coming and going, and with the extra traffic in the area, this may impede their response.

EOCs should not be accessible to the public and have security card access. To ensure uninterrupted operations public access needs to be monitored and controlled. Evacuation centers and EOCs need to be compliant with the Accessibility for Ontarians with Disabilities (AODA) Act.

Some communities have established a tertiary EOC that is further away from the existing primary and secondary EOCs.

During a wildfire, severe weather, or earthquake, there is a high likelihood of the implementation of a Unified Command structure. Additional agencies to consider for the EOC include:

- OFM
- EMO
- Bruce County Paramedic Service
- OPP
- Conservation Authority
- Social services
- Red Cross and/or Salvation Army

The EOC is critical for providing coordination, resource management, communications, and critical assessments of the event with the Incident Commander.

The strength of the IMS is in making sure that the safety of responders and other personnel is a priority and that effective use of resources or elimination of the duplication of services is achieved. Individuals that are expected to be a part of the EOC should have training in IMS, including designated alternates.

There are four different types of Incident Management levels, and Emergency Management Ontario (EMO) identifies the following levels:

- IMS 100: The awareness level training that introduces the participant to IMS topics and concepts.
- IMS 200: The awareness level training that is designed to help people function within the IMS. This level of training provides a greater depth regarding the functional areas and positions in the IMS.
- IMS 300: The level that is directed for supervisory functions and provides exposure to setting objectives, unified command, planning, demobilization, and termination of command. This

level is focused on developing skills through practical exercises.

- IMS 400: The level that is directed for supervisory functions and is orientated to developing skills for complex incidents and the coordination of multiple incidents.

Members of the Huron-Kinloss MECG have completed the Basis Emergency Management Course (BEM) and IMS 100. Most incidents are routinely dealt with without activating the EOC and it must be noted that the EOC is activated when an event is expected to expand in complexity and duration requiring efficient coordination among departments or responding agencies.

5.3 Emergency Planning, Training, & Exercises

Emergency planning and IMS are skills that need to be used regularly. Several training options will be identified to assist the Township of Huron-Kinloss to plan and exercise in IMS and their emergency plan activation.

EOC Activation: Planning for a practice activation of the primary and secondary EOC keeps staff orientated to their roles and all staff members that are expected to have a role in the EOC should participate in these practice sessions.

Discussion-Based Exercise: In discussion-based exercises, the primary intent is to have dialogue regarding the emergency plan, procedures, by-laws, and any policies that could impact an emergency. The discussion sessions are low-key, low-pressure, and a great tool for familiarization. The secondary intent of discussion-based exercises is to build confidence through familiarization amongst team players in the application of the plan. These discussion-based exercises are great tools to facilitate the learning process for the staff designated as alternates expected to fill a role in the EOC.

Discussion-based training is a great way to orientate new staff or existing staff that have not had a real opportunity to familiarize themselves with the emergency plan or organizational plans, by-laws, procedures, and policies.

Tabletop Exercise: These exercises are low cost with minimal stress, but preparation can require some time to create a scenario that is relevant to the Town. A tabletop exercise is generally led by one facilitator depending on the complexity of the scenario. Tabletop exercises are great ways to identify gaps in plans, policies, and procedures in post-exercise discussions. To complete the exercise, an After-Action Report is completed to identify any shortcomings or deficiencies that need to be addressed. The Huron-Kinloss CEMC conducts tabletop exercises as legislated.

Operations-Based: The primary intent is to deploy personnel and equipment in a drill, functional exercise, or full-scale exercise. The disadvantage of an operations-based exercise is that they require a significant amount of time to plan and prepare for as resources will be required from multiple

agencies. Operations-based exercises generally reveal gaps and weaknesses in training, inter-agency communications, resource allocation, and operational procedures. Operations-based exercises include:

- Drills - These are exercises that are intended to evaluate a specific operation. For example, The Huron-Kinloss Fire & Emergency Services and Bruce County Paramedics may conduct a drill for a carbon monoxide leak in a long-term care facility.

- Functional exercises - These exercises can be complex with a high degree of realism and are used to test plans, procedures, and policies in the training scenario, which is at a single site. These exercises are used by agencies to test their capabilities of performing multiple functions in a scenario that is located at a single site.

- Full-scale exercises - A complex exercise that tests multiple agencies in a single scenario at multiple sites. These exercises are in real-time, highly realistic, and usually stressful for agency personnel participating in the exercise. A full-scale exercise can take from 6-10 months to prepare for and require a significant investment in resources and funds. Several facilitators are required to ensure safety and compliance with the storyline of the exercise. A full-scale exercise is developed with clear objectives to test multiple agencies. Upon completion of the exercise, a hot wash is conducted which is a formal discussion of the involved agencies' performance during the exercise. An After-Action Report and a formal Improvement Plan are prepared and distributed that identify actions required to address and improve performance.

To date, Huron-Kinloss has not conducted a real-time exercise and should begin preparing for one to be completed.

Section 5: Recommendations

Rec #	Recommendation	Estimated Costs	Suggested Timeline	Rationale
19	Huron-Kinloss to review partnership opportunities in the delivery of an ASHER program to the community.	Staff time plus incidental costs that local sponsorships may cover.	Short-Term (1 to 3 years)	Domestic terrorism is occurring all too frequently in Canada. Providing a program on what to do in such an event will enhance public safety by proactively providing pertinent information before an occurrence.
20	The Township of Huron-Kinloss to review the feasibility of acquiring an emergency notification system, or at least gain access to messaging on the Alert Ready app.	Costs associated with the development of an app are unknown.	Short-Term (1 to 3 years)	Another means of communicating with the community before and during an emergency. Warnings may be issued in a timely manner of a pending event.
21	Huron-Kinloss to review opportunities for installing storm sirens in the built-up areas of the municipality. This should include opportunities of applying for funding in the form of grants made available by upper levels of government. The alternative is converting the decommissioned fire station sirens to storm sirens.	Cost per siren approx. $30,000 - $50,000 depending on model(s). Computer program required.	Short to Mid Term (1 to 6 years)	Provides another means of warning the public, especially those that do not carry a cell phone, of a pending weather event with possibly catastrophic consequences.

Rec #	Recommendation	Estimated Costs	Suggested Timeline	Rationale
22	That a review of the locations of the Township's EOCs be undertaken to see if another suitable location may be designated as an EOC.	Amenities at the possible new location should be undertaken to identify the feasibility of moving locations.	Short-Term (1 to 3 years)	Moving the EOCs to another location will allow operations at the fire stations to carry on unimpeded by the public wanting to enter and traffic coming and going from the parking lot.
23	Due to the importance of staff understanding their roles and responsibilities in the EOC, it is recommended that a policy be implemented that identifies IMS 200 as the minimum standard for staff required to be in the EOC with IMS 300 as the goal for all department heads.	Staff time, as all IMS courses are available online at no cost to the Municipality.	Short-term (1 to 3 years)	Many of the senior management team may have very little experience in how to manage an emergency, especially when the MERP is enacted. This type of training also provides consistency to the level of expertise among the members of the EOC.
24	The Huron-Kinloss CEMC prepares a three-year schedule to identify EOC activation orientation and annual tabletop, and operations-based exercises for the Huron-Kinloss Fire & Emergency Services, the Township of Huron-Kinloss, and external agencies.	Staff time	Short to Mid Term (1 to 6 years)	Identifies any deficiencies beforehand and permits the CEMC to address these ahead of time. Also provides the CEMC the opportunity to plan their budget, makes participants aware of what to expect, and what is expected of them and allows the CEMC the opportunity to acquire supplies required in advance of the exercises.

SECTION 6

Mutual Aid, Automatic Aid, and the Fire Service Agreements

SECTION 6: MUTUAL AID, AUTOMATIC AID AND FIRE SERVICE AGREEMENTS

6.1 Mutual Aid Plan and Fire Service Agreements

In fire and emergency services, mutual aid is an agreement among emergency responders to lend assistance across jurisdictional boundaries. This may occur due to an emergency response that exceeds local resources, such as a disaster or a multiple-alarm fire. Mutual aid may be an unplanned request when such an emergency occurs. It may also be a continuous formal standing agreement or cooperative emergency agreement, that ensures resources are dispatched from the nearest fire station, regardless of which side of the jurisdictional boundary the incident is on. Agreements that send the closest resources are regularly referred to as *automatic aid agreements*.

Mutual aid, automatic aid, and fire protection agreements are programs used to:

- Support a community's fire department at times when local resources are exhausted.
- Offer quicker response coverage to areas that may be closer to a bordering fire department's response area than that of the host department.
- Create an automatic response by bordering fire departments to properties that are closer to their fire stations than that of the host fire department.

A mutual aid plan provides the framework by which assistance can legally be provided by all parties identified within the plan. The Township of Huron-Kinloss is a member fire department of the Bruce County Mutual Aid Plan and has entered into various service agreements with the following partners:

- By-Law No. 2017-41 – Automatic Aid Agreement with the Municipality of Kincardine to provide fire services in Huron-Kinloss
- By-Law No. 2020-73 – Tiered Medical First Response Agreement with the County of Bruce, and its Paramedic Services
- By-Law No. 2020-90 – Joint Fire Service Agreement with the Township of Ashfield-Colborne-Wawanosh
- By-Law No. 2022-36 – Fire Services Dispatch Agreement with the Town of Tillsonburg.

It is best practice to review all Automatic Aid and Response Agreements on an annual basis to ensure they remain current and adjusted accordingly to meet the ever-changing needs of the municipality.

6.2 Mutual Aid

The Provincial Mutual Aid Program is a borderless and reciprocal agreement that allows fire departments to come to the assistance of other fire departments who have overstretched their own local resources in dealing with emergency events. Under this plan, assistance is at no direct cost to the department requesting the assistance. Section 7 of the *FPPA*, 1997, S.O. 1997, c. 4, provides the authority for the Fire Marshal to appoint Fire Coordinators who in turn establish and maintain the Mutual Aid Plan. The local Mutual Aid Plan has been established within the County of Bruce and is known as the Bruce County Mutual Aid Plan.

EMG notes that in support of mutual aid efforts across the Province of Ontario, the OFM requires fire departments to update their equipment lists as to what apparatus they have and could be available for mutual aid purposes. However, it is incumbent upon each participating fire department to also have a clear understanding of what resources are available from its neighbouring fire department(s) and how to access these during times of need.

The intent behind a mutual aid agreement is that it be reciprocal. When one fire department calls upon a neighbouring fire department for tankers to assist at a large fire, in return the receiving department would have tankers available for when their neighbour calls upon them for assistance. When a fire department requires a specialized piece of equipment that a neighbouring fire department has in service such as an aerial device, but they themselves do not have one, then that should not be considered mutual aid as the request is not reciprocal. In these instances, a response agreement should be established between the two municipalities and their fire departments. Doing so will eliminate any delays in responding.

During this review, it was observed that the HKFES has positive working relationships with the other fire departments in the surrounding jurisdictions. As such, mutual aid and other required agreements are current and meet the needs of Huron-Kinloss.

The fire services of Bruce County are currently in the process of reviewing their existing Mutual Aid Plan and a draft document has been circulated to the Fire Chiefs of the County for their consideration. It is anticipated that this document will be finalized in Q-4 of 2022 or Q-1 of 2023.

6.3 Automatic Aid and Fire Protection Agreements

Automatic aid and fire protection agreements exist between fire departments and communities when time and resources are a factor in responding to an emergency. Many times, these agreements identify the personnel and equipment that will be dispatched automatically in

certain conditions These agreements may also reference specific geographic areas to which resources will be deployed.

These agreements are like the Mutual Aid Plan but differ as there is an expectation that a call for service will occur regularly and is thereby expected. It is also established within the agreement what level of service will be provided. Some examples are strictly for structure fires, whereas others may be an all-encompassing service. These are written agreements enacted through the Council in the form of a by-law.

For clarity, the benefits of an automatic aid agreement in contrast to a mutual aid agreement mean that the necessary equipment and resources will automatically be dispatched for suppression services, rescue, and other identified emergencies that fall within the parameters of the automatic agreement, thereby saving critical time. Oftentimes, these automatic aid agreements involve a reciprocal arrangement between two or more agencies. Typically, fire protection agreements, in contrast, follow this same model in terms of response, however, the arrangement is often weighted more heavily towards one agency providing a service rather than being focused on reciprocity.

EMG has reviewed the one agreement and observed that while it was enacted in 2017, remains in place. This agreement has been in place for five years and should be reviewed by the Fire Chiefs of both Huron-Kinloss and Kincardine Fire Departments, to ensure its accuracy and relevance to the needs of each municipality. The effort that goes into maintaining these relationships has a direct benefit to the citizens being served, to protect lives, homes, and infrastructure, and to keep firefighters safe. This one agreement covers services provided by each fire department in providing fire protection for areas of the other's municipality.

The standard review process seeks to identify considerations for improvements that support and strengthen the provision of fire protection services. With that said, a greater level of clarity is generally achieved for all parties by following a standard template around wording and structure for the various agreements.

The agreement is for each fire department to respond to only:

- All fires – any structure type, but not motor vehicles.
- All emergency calls reporting "smoke showing or visible", and
- Tiered medical responses.

All other call types shall be handled by the fire department in which the protected area is located.

The agreement, states that matters of Fire Prevention and Public Education are the responsibility of the AHJ. In this instance, as defined in the agreement, *"AHJ means the municipality responsible for providing services to its residents."*

Additionally, it is also in the best interest that fire departments in a fire protection agreement, automatic aid agreement, or mutual aid plan identify annual training sessions where firefighters get acquainted with the equipment of other departments. These combined training sessions also build the working relationship and morale between fire departments. Automatic aid and protection agreements bring fire departments together to work as a team for the benefit of the public, but without combined training sessions to practice as a team, the team cannot effectively function, and breakdowns can occur.

Another benefit of the mutual training session is the identification of gaps in equipment, communications, or training prior to a real emergency. It is highly recommended that when the current agreements are revised and updated, a defined commitment to regular training be included that designates the position accountable for the completion of this task. In addition, the agreements should lay out a commitment to ongoing meetings with senior fire department leadership. These mutual aid/automatic aid meetings allow fire chiefs and chief officers from the participating departments to discuss issues or gaps in response protocols and to identify a collaborative path forward that enhances fire protection for all participating agencies and communities.

6.4 Joint Fire Service Agreement

There is a Joint Fire Service Agreement in place between the Township of Huron-Kinloss and the Township of Ashfield-Colborne-Wawanosh which includes the establishment of a fire board which is known as the Lucknow and District Fire Board.

During the master planning process, it was noted that there is in fact one fire department, operated by two municipalities while being managed by one administrator – the fire chief of Huron-Kinloss. The agreement has identified the reporting structure to be through a Joint Fire Services Board (JFSB) which in turn would report back to their respective Council.

Some communities, such as in this instance, the Board, are made up of an equal number of members of the Council from each community. This agreement identifies that there shall be equal representation in the form of three members of each Council. These members can then report back to their own councils on the status of the fire service, along with any recommended improvements.

Municipalities are moving towards dissolving Fire Committees/Boards and eliminating that reporting structure. Since it is members of the Council on the Board, the Fire Chief could report directly to his Council which is in line with the FPPA Article 6 (3) which states: *A Fire Chief is the person who is ultimately responsible to the council of the municipality that appointed him or her for the delivery of fire protection services.*

This agreement could be changed from a JFSB to a Response Agreement whereby, the Township of Huron-Kinloss provides fire protection services to the Township of Ashfield-Colborne-Wawanosh for a set fee. Doing this change may identify cost savings and reduces the reporting structure.

Confusion may arise when reading the agreement's document when it refers to two fire departments, the Township of Huron-Kinloss Fire Department and the Lucknow and District Fire Department. Huron-Kinloss is responsible for the operation of the Lucknow Fire Department. To reduce this confusion in this instance, a reference to a fire department could be the Township of Huron-Kinloss Fire Department – Lucknow Station.

Section 6: Recommendations

Rec #	Recommendation	Estimated Costs	Suggested Timeline	Rationale
25	The Huron-Kinloss Fire Department conducts an annual review of all response and automatic aid agreements.	Staff time	Short-term (1-3 years)	Maintaining an up-to-date agreement will ensure that the communities involved are receiving fire service protection that meets current and future needs.
26	A review is conducted to evaluate the elimination of the Lucknow and District Fire Board, in favour of changing the agreement to a Response Agreement from the current Joint Fire Service Agreement.	Staff time	Short-term (1-3 years)	Reduce the reporting structure to the Fire Chief reporting directly to his Council, and not to a Fire Board which would be following the FPPA.

SECTION 7

Finance, Budgeting, Fees & Cost Recovery Mechanisms

SECTION 7: FINANCE, BUDGETING, FEES, & COST RECOVERY MECHANISMS

The current methodology of establishing budgets for the HKFES includes the important involvement of the Lucknow and District Fire Services Board working with the Township Council. The Fire Chief reports that the arrangement is working well, and no changes are recommended to this structure at the current time.

7.1 Operating Budget

The 2022 operating budget for the department was established at approximately $628,000 and while this was an increase over the 2021 budget of approximately $565,000, the department ended the fiscal year 2021 in a budget deficit situation of almost $110,000.

EMG reviewed the 2021 actuals and note that firefighter wages, firefighter benefits, dispatch costs, fuel costs, vehicle maintenance, and insurance costs were major drivers of the deficit. To a degree, incident volume and importantly, incident duration are virtually impossible to predict with any accuracy beyond generalized trends, much akin to forecasting snow removal costs.

Data analysis of five-year actuals can be more helpful in determining future budget allocations, however, the impact of Covid-19-driven pricing on cost forecasting is extremely difficult when supply chain issues, delivery costs and generally higher than expected municipal price index increases are considered.

A full financial analysis of the performance of all cost centers is more appropriate within the realm of Corporate Services staff other than to suggest that continued improvements in service provision by the HKFES are sure to have an impact on tax rates.

In the end, ratepayers get what they pay for, and fire services are almost always a value proposition when one considers the per capita cost of fire protection in relation to the cost of other household consumer goods on a monthly basis such as internet or cable TV service. There simply is no better value for one's money than can be realized through the use of a primarily volunteer-dominant firefighting force. Consider that within minutes of dialling 9-1-1, dozens of firefighters and hundreds of thousands of dollars worth of equipment will be mobilized to respond anywhere in Huron-Kinloss 24 hours a day, 365 days of the year – this level of service is unparalleled!

Virtually no other municipal entity uses volunteer, or "part-time" employees to the same effectiveness as a fire department. The key to retaining volunteers and therefore cost control is

to make sure they are treated well, respected in the community, and actively supported through the creation of a small number of selected staff positions who can ease the burden on their work (firefighting)/life balance.

EMG submits that ANY investment in the local fire service is an investment in the very social fabric of the Township and contributes a quality of life that is the envy of many.

7.2 Capital Budget

The ten-year capital budget forecast for the fire department is well laid out and comprehensive in that it addresses apparatus and equipment needs for most items. EMG notes however that the apparatus replacement costs do not reflect the reality of current replacement costs and we recommend adjustments be made to the line items reflecting these. Also, each specific apparatus should be included and identified in the Capital Forecast based on the Council approved replacement cycle (generally 7-10 years for small vehicles, 15-20 years for front-line apparatus such as Pumpers, Tankers, and Rescue trucks).

Lucknow Tanker truck, and Rescue truck with Pumper in the background.

In addition, facility improvements are generally not identified, and particularly with respect to the aging Ripley fire station, are inadequate.

No projects or line items are identified for Training Facility improvements, gas detection equipment, hose replacement, compressor/air fill station replacement, pagers/radio's (leasing should be pursued as an option to purchase), or small vehicles. EMG suggests that these be added to the 10-Year Capital forecast.

It is recommended that the HKFES ten-year capital budget forecast be updated to include a more contemporary reflection of apparatus replacement costs, and that Training Facility

improvements, gas detection equipment, hose replacement, compressor/air fill station replacement, pagers/radio replacement and small vehicle acquisition and replacement be included on a go-forward basis.

7.3 Revenue Opportunities

New construction and redevelopment of buildings attract more people to live and work in Huron-Kinloss. As a result, the population and employment grow, and the Township must undertake more infrastructure projects and continue to provide a stable level of service.

The money the Township collects from development charges pays for part of the capital costs due to more people using Township infrastructure. These are also known as "growth-related capital costs". Examples of capital projects development charges could help to fund that are specific to fire services include:

- Building a new fire station
- Purchasing new additional fire apparatus
- Purchasing new bunker gear for an expanded firefighting force

Council approves capital projects every year during the annual budget process and directs the use of development charges to fund capital projects that benefit the whole City, not just the area from where they are collected.

Without these charges, the Township would have to pay for growth-related capital costs from property taxes or another source of revenue.

Aside from increasing tax rates and collecting monies through fees for service, municipalities have very few ways to generate additional revenues to keep tax increases to a minimum. The assessment of development charges on new residential and commercial/industrial development is one of the few other ways, the notion being that the developer should pay for the extra costs (demands on existing services) the growth they are facilitating will create.

It's been long and often said that "new development should pay for itself", however, this is seldom the case. Ultimately, it's the taxpayer who is left to underwrite the new costs placed on municipalities due to development, especially when development charges are less than optimal.

EMG reviewed the Township of Huron-Kinloss Development Charges By-law (number 2019-133) and noted different rates are applied to differing neighborhoods. A blended approach to calculating development charges might be fairer given that the delivery of fire protection services is consistent throughout the Township. During the next DC review process, it would

seem prudent to review the fire department specific costs that are anticipated with a view to identifying those costs which could be considered as growth related.

EMG also reviewed schedule "E" of the rates and fees by-law (2022-15) and note the following comments and additional revenue or cost recovery mechanisms:

- The term "extraordinary expenses" as contained in the schedule is not well defined and while this leaves some great latitude for interpretation and therefore application by Township administrators, it also could be the subject of a grievance by a ratepayer or other person/entity receiving an invoice.
- There is currently no specific fee identified for the review of Risk and Safety Management Plans (R.S.M.P.'s) submitted by the operators of propane filling sites. These can be onerous to complete and may take hours of staff time to review and assess correctly. A suitable fee based on actual time needed for the review should be assessed to the owner of the site.
- There is currently no specific fee identified for the response to a hazardous materials incident such as the inadvertent release of natural gas due to a supply line rupture. A suitable fee in line with other response costs based on time committed should be assessed to the property owner or contractor creating the hazard.
- There is currently no fee attached to the recovery of costs such as may be necessary when the fire department issues an order under the Fire Code (i.e. - Immediate threat to life situation where the Department has to facilitate short term accommodations for persons displaced by their order). Cost recovery should be assessed to the property owner.
- There is currently no fee attached to the recovery of costs for heavy equipment (or other services) needed for the investigation of fires in badly damaged buildings. A suitable fee covering actual costs incurred should be assessed to the property owner.
- The recovery of fire department response costs by Fire Marquee Inc. where an insured individual sustains a loss should be assessed to the property owner or party insured. (Note – Fire Marquee Inc. is a third-party service provider that assists the fire service on a fee for service basis to recover costs associated with a fire response at no cost to the ratepayer).

It is recommended that Schedule E of the Townships rates and fees by-law be updated at the next scheduled review to reflect each of the revenue opportunities identified in this Report.

7.4 Reserves

Based on information provided by the Treasurer, as of late September 2022, The Township of Huron-Kinloss had accumulated $100,00.00 in the Lucknow Fire Reserve, and $412,800.00 in the Ripley Fire Reserve accounts. New fire apparatus is forecasted for the year 2025 and so a funding strategy to address any acquisition shortfalls should be identified.

It is recommended that the HKFES ten-year capital forecast contribution to reserves be increased by an amount that reflects contemporary vehicle replacement costs and that this amount is increased incrementally on an annual basis. Alternately, funding strategies should be developed to address any vehicle or equipment acquisitions that cannot be addressed using reserve funds.

Section 7: Recommendations

Rec #	Recommendations	Estimated Cost	Suggested Timelines	Rationale
27	That the HKFES ten-year capital budget forecast be updated to include a more contemporary reflection of apparatus replacement costs, and that Training Facility improvements, gas detection equipment, hose replacement, compressor/air fill station replacement, pagers/radio replacement and small vehicle acquisition and replacement be included on a go-forward basis.	Costs would depend on improvements and equipment replacement costs.	Short-term (1-3 years)	Ensuring a standard equipment replacement schedule will allow for a more defined equipment replacement plan.
28	That Schedule E of the Townships rates and fees by-law be updated at the next scheduled review to reflect each of the revenue opportunities identified in this Report.	No Costs	Short-term (1-3 years)	An updated review of revenue opportunities will assist the Township in its efforts to support the Fire Department.
29	That the HKFES ten-year capital forecast contribution to reserves be increased by an amount that reflects contemporary vehicle replacement costs and that this amount is increased incrementally on an annual basis. Alternately, funding strategies should be developed to address any vehicle or equipment acquisitions that cannot be addressed using reserves funds.	No Costs	Short-term (1-3 years)	Planning for contributions to reserve for vehicle and equipment replacement will help to secure/replace HKFES equipment.

SECTION 8

Deep Geological Repository (DGR)

SECTION 8: DEEP GEOLOGICAL REPOSITORY (DGR)

As part of the plan, Huron-Kinloss retained EMG to conduct an assessment of the risks associated with a Deep Geological Repository (DGR) for buried nuclear waste.

This risk assessment utilized a layered approach to provide key details relating to the South Bruce proposed site, due to its proximity to Huron-Kinloss. Data was gathered from community and Nuclear Waste Management Organization (NWMO) sources.

8.1 DGR Project Overview

Nuclear power supplies half of the electricity in Ontario. Currently, power plants securely store used nuclear fuel in temporary above-ground facilities at seven sites across Canada. The Nuclear Waste Management Organization has been tasked with finding a safe, permanent solution.The safest long-term option considered globally is to store waste in reinforced facilities deep underground.

Other countries are conducting similar plans with Finland and Sweden having approved sites for their planned deep geological repositories.[18]

8.1.1 DGR Project Safety Objective

To protect humans and the environment, including water, from the effects of radioactive or hazardous substances present in the used fuel.[19]

The deep geological repository is a network of underground tunnels and placement rooms for used nuclear fuel containers. It is designed to safely contain, and isolate Canada's used nuclear fuel over the long term.[20]

[18] Municipality of South Bruce, "South Bruce Nuclear Exploration Project: Deep Geological Repository Conceptual Design", June 2022, https://pub-huronkinloss.escribemeetings.com/filestream.ashx?DocumentId=9192, About the Project Page 4

[19] Nuclear Waste Management Organization, "Confidence in Safety – South Bruce", NWMO TR-2022-15 March 15, , Executive Summary Page iii.

[20] Nuclear Waste Management Organization. "Deep Geological Repository: NWMO", 2022, https://www.nwmo.ca/en/A-Safe-Approach/Facilities/Deep-Geological-Repository

8.1.2 Proposed DGR Locations

Local stakeholders (Municipalities, First Nations and Metis communities) have been working with NWMO as part of the selection process. There are two candidate repository sites which have been identified in Ontario. The Revell Site in northwestern Ontario and the South Bruce Site in southern Ontario.[21] Only the South Bruce candidate site will be included in this section due to the close proximity to Huron-Kinloss.

***Note:** Neither of the two sites have yet to be identified as the preferred site.*

8.1.3 Proposed DGR Layout

The surface facilities that run the DGR will be located in the 1 km^2 above-ground area. This will include shafts for ventilation and underground placement of the used nuclear fuel as well as a Centre of Excellence and Support Facilities which are detailed below.

- A Centre of Excellence: This facility will focus on multi-year testing of the site and include public viewing galleries to showcase the technlogy, science and engagement efforts made during this project
- Support Facilities: These will include security, quality control laboratories, sealing materials production plants and all the other functions required to support the safe receipt and storage of used fuel bundles, as well as support the repackaging and transfer of used fuel bundles to the underground repository.

The underground facilities will include six kilometers' worth of access tunnels and emplacement rooms will make up the proposed DGR. The DGR is detailed below. A deep geological repository will be used to contain and isolate Canada's used fuel over the long term. Used fuel containers containing the secured nuclear fuel bundles will be enclosed in bentontite clay and stored in repository rooms within the Cobourg Formation about 660 metres underground.

About half of the waste that will be stored in this facility is expected to come from within Bruce County.[22] The final layout will depend of a number of factors, including: location, the type of rock in the area, indengious knowledge and local community input. As the exact location of the DGR has not been identiified, the design work is not site-specific.

[21] NWMO, "Confidence in Safety – South Bruce", Executive Summary Page iii.

[22] Nuclear Waste Management Organization. "Facilities: NWMO", 2022, https://www.nwmo.ca/en/A-Safe-Approach/Facilities

8.2 DGR Health and Safety

Health and safety are the primary priorities during the site selection process.The public's and workers' safety, as well as the environment's protection, must be ensured by transportation, construction, and operational procedures.

Multi-Barrier System

The DGR uses a combination of five engineered and natural barriers which work together to isolate the nuclear fuel for safe and secure storage.[23]

First Barrier – Fuel Pellet

The fuel pellet is made of solid ceramic material and is very stable. It is baked into a cylinderal shape to fit in the fuel bundle. Fuel pellets are mined in Canada.

Second Barrier – Fuel Bundle

The fuel bundle is made of a ziracaloy alloy and is corrision resistent. It is wielded into a cyclinderal shape to optimize nuclear reactions and produce electricity.

Third Barrier – Used Fuel Container

The used fuel container is made up of three components:

1. Structured steel vessel – A cylindural shell with two hemispherical heads
2. External corrision barrier – Copper coated
3. Internal insert – Holds the fuel bundle

In 2014, this container was made. The copper coating shields it from corrosion and chemical degradation.It can withstand 3000 meters of snow, ice, and melt water;It can withstand pressure from 800 meters of rock and dirt, groundwater, and the surrounding clay; It can withstand pressure equivalent to being 4500 meters below the surface.

[23] Nuclear Waste Management Organization. "How a Multi-Barrier System Works to Contain Used Nuclear Fuel? Jan. 13, 2021. https://www.youtube.com/shorts/H_yHbwoXMBc

Fourth Barrier – Bentonite Clay Buffer Box

Bentonite powder that has been cold isostatically pressed into rectangular forms is what makes up the bentonite clay buffer box. The forms are sent to the Penn State Advanced Research Lab, where they are pressurized to a pressure of up to 100 megapascals, which is equivalent to being 10,000 meters below the surface of the water. A robotic shaping cell developed in collaboration with Novika Solutions is used to shape the rectagular forms. Bentonite clay is an effective barrier against water flow and has a high level of stability. It is a natural chamber that prevents the growth of bacteria. By moistening its surface, bentonite can repair cracks. Bentonite clay buffer boxes are currently produced as needed.

Fifth Barrier – Rock Geosphere

The last barrier for the spent nuclear fuel is the rock geosphere.Rock surrounds the fuel, which is buried 500 meters below the surface.

8.3 Proof Test Facility

The proof test facility provides a space to bring communties, industries, and international visitors together for tours and conferences to share their work. It is located in Oakville, Ontario.[24]

8.3.1 Objectives:

- Optimizing repository design
- Demonstrating the safety of the engineered and natural barrier system
- Developing safe and secure transportation system
- Preparing to use the facility as a manufacturing facility for the engineered components of the multi-barrier system

Universities and waste management organizations from all over the world are involved in the facility's ongoing research and collaboration program.The work will be reviewed by internationally renowned specialists at the facility to ensure:

- Work is in line with the current state of knowledge worldwide;

[24] Nuclear Waste Management Organization. "NWMO's Oakville proof test facility", Nov 5, 2021. https://www.youtube.com/watch?v=SrvJpokvD6c&t=93s

- There are appropriate methods for science and engineering in place;
- Suitable scientific and technical responses to put Canada's plan into action;

8.3.2 Full Scale Emplacement Simulation

The facility will carry out full-scale emplacement simulations in addition to manufacturing engineered and natural barrier systems to guarantee that the processes and systems will function as required. This will require the construction of a room with faux rock tiling and dimensions comparable to those of the underground rooms.Utilizing prototypes of emplacement equipment, the manufactured prototypes of used fuel containers, buffer boxes made of bentonite clay, and materials made of granular bentonite will be placed once the simulation room is finished.

8.3.3 Prototype Emplace Equipment

The prototype emplacement equipment is a forklift with a custom handling attachment that can lift the buffer boxes made of bentonite clay that hold the used fuel containers.
This autonomic piece of equipment can be operated from outside the room by a remote operator.

8.3.4 Secondary Emplacement Equipment

Secondary emplacement equipment will use smaller, compacted bontonite blocks to fill the remaining space once all of the bentonite clay buffer boxes are in place.Between the rock walls and the boxes, there will still be gaps.The granular bontonite chips will be pushed by a bespoke screw conveyor or auger system (similar to limestone screening).

The rooms will simply be filled with used fuel containers and bontonite clay buffer boxes when those operations are finished.

8.4 Transportation Safety and Regulations

To ensure the safety for the people in the communties along the transpoetation routes as well as the staff transporting the used fuel containers, several factors were considered:

- Transportation Highlights
- Transportation Communication Plan
- Transportation Safety
- Transportation Regulations

- International Transportation

8.4.1 Transportation Highlights

- Transportion plans will reflect the interests of citizens and groups who may potentially be affected by future transportation and have questions or concerns regarding the process
- Transportation routes will prioritize safety and secure to ensure transportation from interim storage facilities to the deep geological repositories is technically feasible.
- Transportation is subject to comprehensive regulation and oversight by the Canadian Nuclear Safety Commission (CNSC) and Transport Canada. CNSC's regulations are based the International Atomic Energy Agency which is the international standard.
- International transportation is a well-established practice with over 50 years of worldwide shipments with no serious injuries, health effects, and/or environmental consequences relating to radiological exposure.[25]

8.4.2 Transportation Communication Plan

Adaptive Phased Management, or APM, is the name of Canada's strategy for the long-term management of used nuclear fuel.This plan was developed through a dialogue with Canadians that lasted three years, from 2002 to 2005. It reflects best international practice and features that citizens deem important.In June 2007, APM was chosen as the strategy for Canada by the federal government. The document titled: "Safe and Secure Transportation of Canada's Used Nuclear Fuel" provides full details on nuclear used fuel transportation to address questions and involve critical stakeholders in the process.[26]

Transportation Planning

Depening on the future operating experience of Canada's existing reactors, there could be an estimated 4.6 million bundles to transport. The repository will only store used nuclear fuel from within Canada.

The NWMO Transportation of used nuclear fuel to the deep geological repository will begin in the 2040s. It is estimated to take up to 40 years to complete. Prior to transportation, the

[25] Nuclear Waste Management Organization. "Safe and Secure Transportation of Canada's Used Nuclear Fuel." May 2015. Page 3. 2620_safe_and_secure_transportation_of_canadas_used_nuc.pdf

[26] NWMO. "Safe and Secure Transportation of Canada's Used Nuclear Fuel." May 2015. Page 5-6.

NWMO must conduct evaluations of potential siting areas for the repository. This includes confirmation if the necessary transporation infrastructure exists or if it can be developed, further detailed exploration, and mode, route and logistics studies.[27]

8.4.3 Transportation Safety

The transportatation packages which contain the used fuel containers have been engineered to withstand extreme conditions without releasing their contents. This includes accident scenarios.

The Dry Storage Container Transportation Package (DSC-TP) and the Used Fuel Transportation Package (UFTP) are both certified for use in Canada.

Currently, used nuclear fuel is being stored in dry storage containers (DSC) at Ontario Power Generation Waste Management Facilities.

Dry Storage Container Transportation Package Design

The DSC has two components: the body and lid. Both are made of high-density concrete encased in a carbon steel skin and are welded closed after being filled with used fuel. The DSC-TP consists of a DSC fitted with impact limiters on each end which are fastened using steel cables. The reusable impact limiters are made of stainless steel shells filled with rigid polyurethane foam. The DSC provides containment and shielding, and the impact limiters are designed to protect the DSC in the event of an accident. Fully loaded it can hold 384 used fuel bundles and weighs approximately 100 tonnes.[28]

Used Fuel Transportation Package Design

The UFTP has three components: The body, lid, and an impact limiter. The body and lid are made of solid stainless steel. The impact limiter's outer shell is made of steel and is filled with wood designed to absorb impact energy. In the event of a fire, it could also serve as a heat shield. Fully loaded it can hold 192 used fuel bundles and weighs approximately 35 tonnes.[29]

[27] NWMO. "Safe and Secure Transportation of Canada's Used Nuclear Fuel." May 2015. Page 8.

[28] NWMO. "Safe and Secure Transportation of Canada's Used Nuclear Fuel." May 2015. Page 14-15.

[29] NWMO. "Safe and Secure Transportation of Canada's Used Nuclear Fuel." May 2015. Page 14-15.

Transportation Package Testing

Transportation packages tests are designed to exceed the severe consequences of an accident scenario in the real world. These tests includes the following tests:[30]

- Free Drop Test – This involves dropping the package from nine metres (30 feet) onto a flat, unyielding surface.
- Puncture Test – Following the drop test, this involves dropping the package onto a 15-centimetre (six-inch) diameter steel at least 20 centimetres (8 inches) long.
- Thermal Test – This involves subjecting the package to external pressure of being immersed under 15 metres (50 feet) of water for at least eight hours. An enhanced water immersion test will also be conducted at 200 metres (650 feet).

8.4.4 Emergency Response

In order to prepare for an emergency, provincial and local first responders participate in training, drills, and exercises. Even in the event of an accident, these transportation packages have been developed and tested to safely store all of their radioactive contents. Like other conventional accidents, first responders can respond to emergencies because they have been trained and prepared for them. All used nuclear fuel shipments are tracked vis GPS through a central transportation command centre. This provides emergency responders with up to date locations and status of transportation packages.[31]

Radiation Doses[32]

To limit exposure from nuclear-related activities, the Canadian Nuclear Safety Commission's (CNSC) Radiation Protection Regulations have established a one milliSievert (mSv) annual radiation dose limit for the general public. This radiation dose is approximately half of the background radiation dose that Canadians typically receive annually (1.8 mSv).

Note: A millisievert is one-thousandth of a Sievert, a unit of dose that reflects the relative biological effects of various types of radiation.

[30] NWMO. "Safe and Secure Transportation of Canada's Used Nuclear Fuel." May 2015. Page 17.

[31] NWMO. "Safe and Secure Transportation of Canada's Used Nuclear Fuel." May 2015. Page 25.

[32] NWMO. "Safe and Secure Transportation of Canada's Used Nuclear Fuel." May 2015. Page 19-20.

Radiation Dose to the Public During Transportation

The NWMO will be required to demonstrate that the potential exposure of members of the public along the transportation routes is below the regulatory limit of one mSv per year prior to the authorization of any shipment of used fuel for either the Used Fuel Transportation Package (UFTP) or the Dry Storage Container Transportation Package.

Potential exposure to individuals along the transportation routes is anticipated to be lower than the regulatory limit, taking into account the planned annual number of shipments and the current design of the UFTP.

Radiation Dose to Transportation Workers

A subsequent study provided a general assessment of the potential occupational dose to transportation workers involved in used fuel transportation using the UFTP, building on the public dose assessment.

This study looked at worker activities from the time a shipment of used nuclear fuel leaves the interim storage facilities until it arrives at the repository site. Workers would receive doses that were lower than the annual public dose limit of 1 mSv, as demonstrated by the study.

8.4.5 Transportation Regulations

The Canadian Nuclear Safety Commission (CNSC) and Transport Canada oversee the transportation of used nuclear fuel. CNSC's regulations are based the International Atomic Energy Agency which is the international standard. Transport Canada regulates all hazardous materials, including radioactive materials.

The used fuel transportation package will need to be certified by the CNSC before transportation can begin. This involves the demonstration of the security and safety of the transportation system as well as meeting the safety requirements from the federal, provincial, and local levels in order to meet compliance requirements.[33]

[33] NWMO. "Safe and Secure Transportation of Canada's Used Nuclear Fuel." May 2015. Page 21-23.

International Transportation

Over the past 50 years, there have been over 20,000 shipments worldwide of used nuclear fuel by road, rail, and water. During transportation, there have been no serious injuries, health effects, and/or environmental consequences relating to radiological exposure.
To ensure Canada's plan is based on the best science and research, the NWMO collaborates internationally and share their knowledge with the world. As such, the transportation packages used by NWMO are similar to other countries.[34]

8.5 South Bruce Site

In the process of selecting a site, South Bruce Municipality is one of two. A federal licensing and Impact Assessment process will begin once the NWMO has reached an agreement with a host community that is well-informed and willing.

The South Bruce site is in the western St. Lawrence Lowland, a glacial sediment-covered low relief, gently undulating land surface that covers much of southwestern Ontario. The land surface is anywhere from a minimum elevation of 176 meters along the shore of Lake Huron in the Township of Huron-Kinloss to a maximum elevation of 249 meters in the southeast corner of the Municipality of South Bruce.[35]

8.5.1 Confidence in Safety Report Highlights

The Confidence in Safety report developed by NWMO in March 2022 provided characteristics of the deep geological repository approach, regional geological information and South Bruce Site specific results. The highlights listed below contain the key points found in the executive summary which provide evidence that the South Bruce Site will be a safe, long-term approach to storing nuclear fuel. Links to the full report can be found in the footnotes.[36]

These key points are described in more detail within the Confidence in Safety report referenced above.

[34] NWMO. "Safe and Secure Transportation of Canada's Used Nuclear Fuel." May 2015. Page 27-28.

[35] NWMO, "Confidence in Safety – South Bruce", 1.3 South Bruce Area. Page 4.

[36] NWMO, "Confidence in Safety – South Bruce", Executive Summary Pages iii - vi.

Geological Setting:

- The preferred rock host is the Cobourg Formation at a depth of approximately 650 m, overlain by 200 m of confining low-permeability shale formations
- The site is stable with no active geological features or unfavourable heterogeneities to date.
- The hydrogeology is simple with no indication of permeable Cambrian Formation, based on the first two boreholes.
- There is low groundwater flow at the repository depth which was measured below 325 m depth.

Geophysical and geomechanical testing is currently underway to confirm if host rock is capable of removing the decay heat from the fuel and withstand the natural and thermal stresses induced in the repository

The stability of the geological setting.

- At the South Bruce Site, the Cobourg Formation and the related formations above and below it are between 360 and 485 million years old.
- Rock core from the South Bruce Site is currently being tested for porewater chemistry. Measurements made on rock core taken at the Bruce nuclear site from the Cobourg Formation have shown that fluids like water and gases have been in the rock's tiny pores for hundreds of millions of years. At the South Bruce Site, similar conditions are anticipated, which would favor long-term stability.
- The location of the South Bruce Site is favorable for long-term stability. It is far from tectonic plate boundaries which creates a stable and seismically quiet setting overlying the Precambrian rocks of the Canadian Shield.
- At this time, there is no indication that the South Bruce Site will experience extreme rates of erosion, uplift, or subsidence that would significantly alter the earth's surface over the next million years.

The low risk of inadvertent future human intrusion into the repository.

Preliminary data from the first two boreholes at the site have not indicated economically significant concentrations of known economically exploitable mineral resources, hydrocarbon resources, or salt resources other than surficial aggregate resources. This reduces the risk of inadvertent future human intrusion into the repository.

The site is amenable to geological characterization.

The lateral homogeneity of the sedimentary rock formations in southern Ontario makes it easier to predict the overall host rock structure and characteristics from existing and planned research.

The robustness of the multiple barrier system.

- The repository includes a number of engineered barriers, particularly the fuel itself, long-lasting containers, and seals made of bentonite clay, in addition to the favourable geosphere mentioned earlier.
- The fuels that are still in use are mostly solid ceramics made of durable uranium oxide.
- Under repository-appropriate geological conditions, natural analogues demonstrate that the engineered barrier materials, such as copper, clay, and uranium oxide, are long-lasting.

For a number of decades, research in Canada and other parts of the world has provided a solid scientific foundation for the safety of deep geological repositories built around these barriers.

The ability to safely construct and operate the repository.

- At a depth of about 650 meters, the Cobourg Formation is thought to be the repository's host rock.The Cobourg Formation is primarily composed of calcite, also known as limestone, according to analyses of its minerals carried out at the Bruce nuclear site.At the South Bruce Site, a mineralogy similar to that of this rock formation across southern Ontario is anticipated.This mineral composition makes it ideal for building a repository.
- The excavated rock management area and DGR surface facilities can be constructed and operated on a surface that is suitable for the South Bruce Site.
- The South Bruce Site has an underground area that is suitable for storing all of Canada's anticipated used fuel.
- The repository facilities have a preliminary conceptual design that adheres to international best practices.It is currently being tailored to the particular conditions of the site.

- The NWMO Proof Test program is demonstrating that underground fuel containers can be constructed, handled, and placed.It is supported by related tests conducted in other nations.
- The South Bruce Site can be found about 10 kilometers to the south of Ontario Highway 9.About 50 kilometers to the south, a rail line runs along the Goderich-Exeter Railway. Natural gas distribution and electrical transmission are available in the region.The regional infrastructure is highly regarded as capable of supporting the repository's construction, operation, and closure.

The used fuel can be safely transported to the site.

- Used fuel has been safety transported in Canada as well as other countries for the past 50 years. There is a licensed transport package already available for CANDU used fuel which the NWMO has access to.
- A combination of road/rail and all road transportation systems are technically feasible for the site as the South Bruce site is within 15 km of an existing highway supported by the local road network. Direct rail transport is not feasible due to the lack of rail infrastructure within 50 km.

Facility performance will meet regulatory criteria for safety and the protection of the environment.

- A deep geological repository is planned for the long-term management of used fuel in all nations that have chosen this option.
- The licensing process for a repository is clearly defined in the Canadian regulatory framework.It conforms to international guidelines.
- Safety assessment studies that have been conducted at other locations with sedimentary rocks have shown that a repository in these rocks can work well and not harm human health.A South Bruce Site-specific assessment is currently being developed, but preliminary indications seem to be consistent with these other studies.
- Existing or ongoing baseline monitoring includes seismic and meteorological monitoring as well as biodiversity, surface water, shallow groundwater, and borehole monitoring.
- Before closing the repository, the site will be monitored for decades during characterization, preparation, construction, and operation.This monitoring will ensure that the repository is not causing harm to people or the environment, including water, as well as support the construction and operation of the repository.

8.6 Risks to Huron-Kinloss

Based on the 2017 Township of Huron-Kinloss Emergency Plan, there were two main hazard categories which have a higher frequency and impact on the Township.[37]

Natural Hazards

- Winter Storm – Winter storms occur with regular frequency with occasional severe storms which impact the Township.
- Tornado – Downbursts have caused significant damage in the Township in densely populated areas.
- Flooding – The Township is prone to flooding within both the Maitland Valley Conservation Authority and Saugeen Valley Conservation Authority.
- Human Health Emergencies and Epidemics – A Covid-19 pandemic occurred in 2020 which impacted the Township.

Technological Hazards

- Hazardous Materials – Transportation / Delivery Incident – There is potential for spill or explosion incidents in densely populated areas including Village of Ripley or near a municipal well head.
- Future Hazard Potential – The increased frequency of hazardous material transportation along routes near the Township will create the potential for cascading hazards. A winter storm or tornado alone will cause significant damage. When combined with a nuclear used fuel spill, the severity is compounded.

8.6.1 Nuclear Waste Spill / Release Scenario

All incidents/accidents relating to nuclear waste transportation are the responsibility of the CNSC. This section provides an overview of the role and responsibilities if a nuclear waste

[37] Township of Huron-Kinloss. "Emergency Management Response Plan." Pages 4-5. Sept 2017. https://www.huronkinloss.com/en/townhall/resources/Documents/Emergency-Management-Response-Plan.pdf

spill/release occurs. Further details can be found in CNSC's Packaging and Transport of Nuclear Substances Regulations, 2015 (PTNSR 2015).[38]

Under the PTNSR 2015 and the Transportation of Dangerous Good Regulation, the consignor and carrier must have emergency response procedures in place to ensure emergency responders have immediate support should an incident occur. This includes:

Transport documents must display a 24-hour telephone number on the transport document that accompanies a shipment of dangerous goods.

- Emergency Response Plan which outlines the following:
- The response actions to be taken;
- The resources available to mitigate the situation;
- How to return the accident area to normal conditions;

Huron-Kinloss Nuclear Spill / Release Role and Responsibilities

- Report the nuclear waste spill/release incident to the CNSC.
- Cordon off the area to keep people away from the contaminated area and inform residents that a spill has occurred.
- Maintain communications with CNSC during the response and cleanup operations.

CNSC Nuclear Spill / Release Role and Responsibilities

Upon notification of a transport incident involving nuclear waste, CNSC will:

- Deploy staff to provide technical information and advice to responders on site and assist with managing the incident site. This will include:
    - Accident Investigation to conduct assessments to determine the severity of the spill / release and the level of contamination control required.
    - Response Team to conduct clean-up, recovery and restoration. Contamination would be localized to the immedate area because used nuclear fuel is a solid material.
    - Provide funding required for response and cleanup operations.

[38]Canadian Nuclear Safety Commission. "Transport FAQs on used nuclear fuel." Aug 29, 2022. http://nuclearsafety.gc.ca/eng/waste/faq/transport-of-used-nuclear-fuel/index.cfm

The South Bruce site is one of two candidate repository sites which have been identified in Ontario. Only the South Bruce candidate site was included due to the close proximity to Huron-Kinloss. Neither of the two sites has yet to be identified as the preferred site.

The proposed repository site will include several surface facilities for public viewing and repository operations and underground facilities for access tunnels and nuclear-used fuel emplacement.

8.7 DGR Mitigation Overview

Health and safety are a high priority for this project. There are several layers of mitigation to ensure the transportation and storage of used nuclear fuel is safe and secure which include:

- Multi-barrier system which will act as safe guards for the transportation and storage of used nuclear fuel.
- Proof test facility in Oakville which will provide comprehensive manufacturing and testing.
- Transportation package testing and emergency response drills and training.
- Regulatory compliance with national and international nuclear safety standards.
- Transportation emergency response procedures which enable CNSC to deploy teams to investigate the incident and provide response and cleanup operations.

Potential risk to Huron-Kinloss will be based on the sustainability of the safeguards detailed in this section in combination with emergency response for current and future emergencies defined in their HIRA. The addition of a used nuclear fuel spill and corresponding emergency response procedures would be a consideration as the transportation schedule is estimated to be 40 years, starting in 2040.

8.7.1 Impact to Fire and Emergency Services

Based on the Emergency Services study conducted by GHD Limited in October 28, 2022, the following concerns were brought forward: [39]

1. Gaps in Emergency Response Plan: There are no nuclear transportation hazards or response sections listed in the emergency response plan for stakeholders in the study area. This creates a gap in emergency preparedness for potential nuclear incidents.

2. Increase in Special Provisions Needed: Due to vulnerability concerns, the following facilities and populations may require extra provisions:

- Hospitals
- Schools
- Senior Residences
- Daycares
- Huron-Kinloss Mennonite Community
    - Schools
    - Churchs
    - Houses and farms with no phone or internet access / motorized vehicles
    - Other special needs facilities/populations

3. Increase in Potential Emergency Incidents: Due to the complexity of the construction and operations phases of the Project, there is a potential for an increase in potential emergency incidents. Incidents are identified on the next page.

4. Increase in Equipment, Human Resources, and Training Needed: Due to the potential increase in emergency incidents during the construction and operations phases of the Project, there will be a need for additional fire apparatus, staffing, and training for nuclear or radiological emergencies.

[39] South Bruce Nuclear Exploration Project. "Emergency Services Study" October 28, 2022. https://www.southbruce.ca/en/municipal-government/studies-and-reports.aspx#Emergency-Services-Study

5. MAAs and MOUs Needed: If they are not already in place, there is a need for MAAs and MOUs to be signed with NWMO to ensure the host community and NWMO understand the expectations, and roles and responsiblities during constructio and opeartions phases of the Project.

Construction and Operations Phase Potential Incident Types

Incident Type	Construction Phase	Operations Phase
Transportation accidents	X	X
Fuel fire / Electrical Fire	X	X
Equipment fire, spill of hydrocarbons	X	X
Equipment accident, including fire, rollover	X	X
Unplanned use of explosives during construction	X	X
Used fuel drop with breach		X
Facility fire		X
Accidential exposure		X
Underground fire		X
Residential emergencies		X
Active waste release		X
Spill of hazardous waste / materials		X
Electrical fire		X
Helicopter crash		X

Conclusion

NWMO will initiate further studies and engage with host communities to develop, update, and/or implement ERPs, and sign MAAs and MOUs in order to be prepared prior to the scheduled 2033 construction start date. The NWMO will ensure that, in the event of an accident, all emergency services agencies in the areaa of concern have access to the necessary information, resources, training, and clear understanding of roles and responsibilities.

Since this process is still in the evaluation stage, EMG does not have any recommendations at this time. However, our research has identified that the host organization will ensure that all first responders will be made aware of any challenges and receive the required training enter the site in as safe a manner as possible.

SECTION 9

Recommendations, Timelines & Associated Costs

SECTION 9: RECOMMENDATIONS, TIMELINES, AND ASSOCIATED COSTS

9.1 Conclusion

During the review conducted by EMG, it was demonstrated that the full-time staff and volunteer firefighters are truly dedicated to the community they serve. The Council, Chief Administrative Officer, and Fire Chief are sincerely committed to ensuring the safety of the community and the firefighters.

Based on the present staffing, equipment, and fire station locations, Huron-Kinloss Fire Department is endeavoring to offer the most efficient and effective service possible, but as noted within this document, more is still required.

All costs and associated timelines noted in this report are approximate estimates that can be implemented through prioritization between the Fire Chief, CAO, and Council.

This Strategic Plan (SP) is a long-range planning document; however, it is recommended that annual updates be completed, along with a full review to be conducted at the five-year mark.

9.2 Recommendations, Estimated Costs and Rationale

The following chart provides a detailed overview of the recommendations found throughout this report along with any estimated costs and suggested timelines for implementation. A section has also been added to the chart identifying potential efficiencies upon implementation of the recommendations presented by EMG.

This SP document is a culmination of 29 recommendations.

Recommendations Chart: Huron – Kinloss Fire & Emergency Services

Rec #	Recommendation	Estimated Cost	Suggested Timeline	Rationale
SECTION 1 - Community & Fire Department Overview				
1	The Fire Administration brings forth a revised version of the E&R By-Law for the Council's approval and ensures its annual review and updates.	Staff time	Short-term (1-3 years) ongoing	Maintaining an up-to-date E&R By-Law will guide the HKFES' operations and identify response guidelines, fire prevention, and public education programs and levels of training.
2	That Fire Administration reviews By-Laws that affect the daily operations of the fire department to ensure training and resources are adequate to meet the by-law.	Staff time	Short-term (1-3 years)	Understanding the expectations of any by-law will assist the Fire Chief in ensuring proper training and resources are adequate to meet the expectations of any fire-related by-law.
3	Establish a SOG Committee representing all divisions of the HKFES that develops new SOGs and reviews current ones regularly.	Most costs will be in relation to time spent by the paid-on-call firefighters.	Short-term (1-3 years)	Establishing a SOG committee will aid in maintaining the information in the database to be current while allowing the participation of HKFES members to determine the fire department's operations.

Rec #	Recommendation	Estimated Cost	Suggested Timeline	Rationale
SECTION 2 - Risk Assessment				
4	The HKFES should work with the FUS group to obtain their Tanker Shuttle Accreditation.	Staff time and cost for assessment	Short-Term (1-3 years)	A Fire Underwriters assessment provides an opportunity for a fire department to apply for its Superior Tanker Shuttle Accreditation which the HKFES has not completed yet and should consider obtaining this accreditation. It offers insurance savings through some insurance companies. But more important, it can develop a more efficient tanker shuttle process for the Department.
5	A review (by FUS) of the Fire Department operations to improve its FUS grading in the measurement of fire service operations and abilities be undertaken.	Staff time	Short-term (1-3 years)	No recent copy of an FUS review was available. As such, the Township should apply for a review by FUS, which will provide even more valuable information as to what fire protection is required by the Township.

Rec #	Recommendation	Estimated Cost	Suggested Timeline	Rationale
SECTION 3 – Fire Department Divisions				
6	That the HKFES expand and formalize its Public Education activities by identifying and appointing two part-time (volunteer) public education officers (one in each of its two stations) from within their existing staff compliment to work collaboratively with the full-time Emergency Services and Health and Safety Coordinator to develop a comprehensive and focused fire safety education program for the community.	Staff Time and cost (wage adjustment) for related training and certification.	Immediate to Short-term (0-3 years)	The two "new" public educators should work collaboratively and with a dedicated budget and weekly programming expectations to more fully develop and deliver local programming, notably in smoke alarm awareness, home escape planning and carbon monoxide alarm awareness, along with specific fire cause prevention messaging. As the community grows, transitioning the public education role to a dedicated full-time position should be considered – likely beyond the mid-term horizon.
7	That the HKFES continue to invest in its fire cause and determination program by developing a continuing education program for additional qualified staff members that includes training, and attendance at subject-focused seminars and membership in the Canadian Association of Fire Investigators (C.A.F.I.), and the International Association of Arson investigators (I.A.A.I.). such that the number of NFPA 1033 qualified investigators be increased.	Staff Time and cost (+/- $2000 annually) for related training and certification.	Short-term (1-3 years)	Having additional fire department members qualified in fire investigations will create a good level of support for the existing staff conducting these activities while creating a higher level of origin a cause awareness throughout the Department. Alternately, the Department could consider formalising an agreement with neighbouring Departments who have the requisite capabilities.

Rec #	Recommendation	Estimated Cost	Suggested Timeline	Rationale
8	That the HKFES establishes a regular budget line for Capital improvements at its local training centre to meet the current and future training needs of its personnel.	Costs depend on the level of improvements (+/- $5000 annually)	Short-term (1-3 years)	Continued improvements will ensure a robust training centre that will allow for the proper hands-on training of the HKFES firefighters. It will also promote possible revenue from other bordering fire departments.
9	That, in consultation with Human Resources staff, the HKFES develop a succession planning strategy that focuses on career development for all ranks and positions within the service.	Staff time for program development and implementation	Short-term (1-3 years)	Engages staff and prepares them for future supervisory and leadership roles.
10	That the HKFES further develop its capacity and capabilities respecting Fire Code and Enforcement activities by identifying and appointing a full-time career Fire Inspector (Fire Prevention Officer) who is fully trained and certified (or obtains certification within a reasonable time frame) to the NFPA 1031 Level II standard as made available by the Ontario Fire College.	Approximate initial salary cost of $60,000.00 to $90,000.00 per year	Mid-term (4-6 years)	By creating the full-time position of Fire Inspector, a more consistent level of inspections and code enforcement can be obtained reducing risk exposure for the Township due to potential errors or omissions.

Rec #	Recommendation	Estimated Cost	Suggested Timeline	Rationale
11	That the HKFES further develop its capacity and capabilities respecting firefighter training and certification by identifying and appointing a full-time career training officer who is fully qualified and certified (or obtains certification within a reasonable time frame) to the NFPA 1041 Level II standard as made available by the Ontario Fire College.	Approximate initial cost of $60,000.00 to $90,000.00 per year	Mid-term (4-6 years)	By creating the full-time training officer position, a more consistent level of training and records management can be obtained. ***Note:** This does not imply that other support volunteer/part-time Training Officers may not be required to assist with the OFMs training and certification requirements or are providing less than adequate training currently.*

Rec #	Recommendation	Estimated Cost	Suggested Timeline	Rationale
12	That, as an alternate to hiring the two full-time positions noted in Recommendations 10 and 11, the HKFES consider the hybrid approach to workload management by hiring a full-time career deputy fire chief to conduct administrative support, training, and fire prevention officer duties.	Approximate initial cost of $75,000.00 to $95,000.00 per year	Mid-term (4-6 years)	The hiring of additional full-time staff is almost always met with a degree of resistance within some municipalities, however the hiring as described will substantially reduce risk to the municipality by provided a properly trained individual to perform key functions and serve as a back-up to the Fire Chief. EMG wishes to recognise the existing volunteer District Chiefs as doing an admirable job of providing excellent mid-level supervision and command functionality, however because of the very nature of their employment restrictions as volunteers, neither position can guarantee attendance or availability due to their full-time employment status, family considerations and their own need for time away from their duties.

Rec #	Recommendation	Estimated Cost	Suggested Timeline	Rationale
13	The fire chief, review the present recruitment and retention programs and enhance them based on the information noted in the Master Plan document (as required).	Staff time, but some costs may be incurred	Immediate to Short-term (0-3 years) ongoing	VFFs are the most valuable resource for the fire department. Ongoing recruitment and retention of firefighters is critical to the success of the Fire Department.
14	To support the retention of the volunteer firefighters, a full review of their compensation (pay per hour), along with pay incentives for those taking on more duties and responsibilities, needs to be conducted.	Depending on the review outcome	Immediate to Short-term (0-3 years) ongoing	To ensure the longevity of the volunteer firefighters with the HKFES, a full review of pay and incentives should be conducted to ensure that the Township is in line with what other similar communities are doing.
SECTION 4 – Facilities, Vehicles and Equipment				
15	That the Inclusion of a spare pumper truck in the HKFES fleet be implemented to allow for a backup in the case of a breakdown of the front-run trucks.	Extend the life of a vehicle slated for replacement.	Short to Mid-term (1-6 years)	Even though both fire stations are well equipped with first response vehicles, there is no backup/replacement vehicle in the Department's inventory. FUS recommends that for every eight units, there should be at least one spare truck ready to be put into service as needed.

Rec #	Recommendation	Estimated Cost	Suggested Timeline	Rationale
16	Purchase a wildland/brush fire truck to increase HKFES' ability to deal with the off-road type of fires	Depending on the type of truck, $150,000.00 to $800,000.00	Short-term (1-3 years)	HKFES does not have full wildland/brush fire, and off-road capabilities for firefighting. The purchase of such a vehicle will provide this type of ability.
17	Inclusion of a third fire station to be built in the Lakeshore area	Approx. $2 to $5 million	Long-term (6-10 years)	A considerable number of calls by the HKFES occur in the Lakeshore area. This area falls outside of the 10-minute drive time response criteria, as noted in the NFPA recommendations. Consideration for a fire station in the Lakeshore area is a reality as more of the seasonal homes are being turned into permanent residences.
18	Purchase of an elevated device (new or used) based on the FUS-related recommendation.	Range from approx. $250,000.00 to $2 million	Short to Mid-term (1-6 years)	HKFES does not have the capability of fighting and/or initiating a rescue at buildings that are more than 30 feet (9 metres) in height.

Rec #	Recommendation	Estimated Cost	Suggested Timeline	Rationale
SECTION 5 – Emergency Management				
19	Huron-Kinloss to review partnership opportunities in the delivery of an ASHER program to the community.	Staff time plus incidental costs that local sponsorships may cover	Short Term (1 to 3 years)	Domestic terrorism is occurring all too frequently in Canada. Providing a program on what to do in such an event will enhance public safety by proactively providing pertinent information before an occurrence.
20	The Township of Huron-Kinloss to review the feasibility of acquiring an emergency notification system, or at least gain access to messaging on the Alert Ready app.	Costs associated with the development of an app are unknown.	Short Term (1 to 3 years)	Another means of communicating with the community before and during an emergency. Warnings may be issued in a timely manner of a pending event.
21	Huron-Kinloss to review opportunities for installing storm sirens in the built-up areas of the municipality. This should include opportunities of applying for funding in the form of grants made available by upper levels of government.	Cost per siren approx. $30,000 - $50,000 depending on model(s). Computer program required.	Short to Mid Term (1 to 6 years)	Provides another means of warning the public, especially those that do not carry a cell phone, of a pending weather event with possibly catastrophic consequences.

Rec #	Recommendation	Estimated Cost	Suggested Timeline	Rationale
22	That a review of the locations of the Township's EOCs be undertaken to see if another suitable location may be designated as an EOC.	As part, of the review of the amenities at the possible new location should be undertaken to identify the feasibility of moving locations.	Short-Term (1 to 3 years)	Moving the EOCs to another location will allow operations at the fire stations to carry on unimpeded by the public wanting to enter and traffic coming and going from the parking lot.
23	Due to the importance of staff understanding their roles and responsibilities in the EOC, it is recommended that a policy be implemented that identifies IMS 200 as the minimum standard for staff required to be in the EOC with IMS 300 as the goal for all department heads.	Staff time, as all IMS courses are available online at no cost to the municipality	Short-Term (1 to 3 years)	Many of the senior management team may have very little experience in how to manage an emergency, especially when the MERP is enacted. This type of training also provides consistency to the level of expertise among the members of the EOC.

Rec #	Recommendation	Estimated Cost	Suggested Timeline	Rationale
24	The Huron-Kinloss CEMC prepares a three-year schedule to identify EOC activation orientation and annual tabletop, and operations-based exercises for the Huron-Kinloss Fire & Emergency Services, the Township of Huron-Kinloss, and external agencies.	Staff time	Short to Mid Term (1 to 6 years)	Identifies any deficiencies beforehand and permits the CEMC to address these ahead of time. Also provides the CEMC the opportunity to plan their budget, makes participants aware of what to expect, and what is expected of them and allows the CEMC the opportunity to acquire supplies required in advance of the exercises.
SECTION 6 – Mutual Aid				
25	The Huron-Kinloss Fire Department conducts an annual review of all response and automatic aid agreements.	Staff time	Short-term (1-3 years)	Maintaining an up-to-date agreement will ensure that the communities involved are receiving fire service protection that meets current and future needs.
26	A review is conducted to evaluate the elimination of the Lucknow and District Fire Board, in favour of changing the agreement to a Response Agreement from the current Joint Fire Service Agreement.	Staff time	Short-term (1-3 years)	Reduce the reporting structure to the fire chief reporting directly to his Council, and not to a Fire Board which would be following the FPPA.

Rec #	Recommendation	Estimated Cost	Suggested Timeline	Rationale
SECTION 7 – Finance Section				
27	That the HKFES ten-year capital budget forecast be updated to include a more contemporary reflection of apparatus replacement costs, and that Training Facility improvements, gas detection equipment, hose replacement, compressor/air fill station replacement, pagers/radio replacement and small vehicle acquisition and replacement be included on a go-forward basis.	Costs would depend on improvements and equipment replacement costs.	Short-term (1-3 years)	Ensuring a standard equipment replacement schedule will allow for a more defined equipment replacement plan.
28	That schedule E of the Townships rates and fees by-law be updated at the next scheduled review to reflect each of the revenue opportunities identified in this report.	No Costs	Short-term (1-3 years)	An updated review of revenue opportunities will assist the Township in its efforts to support the Fire Department.
29	That the HKFES ten-year capital forecast contribution to reserves be increased by an amount that reflects contemporary vehicle replacement costs and that this amount is increased incrementally on an annual basis. Alternately, funding strategies should be developed to address any vehicle or equipment acquisitions that cannot be addressed using reserve funds.	No Costs	Short-term (1-3 years)	Planning for contributions to reserve for vehicle and equipment replacement will help to secure/replace HKFES equipment.

Appendices

Appendix A: Five-Step Staffing Process

Appendix B: Fire Underwriters Survey Technical Document on Elevated Devices

Appendix C: 2019 Response Information

SECTION 10: APPENDICES

Appendix A – Five-Step Staffing Process

Step 1: Scope of Service, Duties, and Desired Outputs

Identify the services and duties that are performed within the scope of the organization. Outputs should be specific, measurable, reproducible, and time limited. Among the elements can be the following:

- Administration
- Data collection, analysis
- Delivery
- Authority/responsibility
- Roles and responsibilities
- Local variables
- Budgetary considerations
- Impact of risk assessment

Step 2: Time Demand

Using the worksheets in Table C.2.2(a)-(d), quantify the time necessary to develop, deliver, and evaluate the various services and duties identified in Step 1, considering the following:

- Local nuances
- Resources that affect personnel needs

Plan Review - Refer to Plan Review Services Table A.7.9.2 of the standard to determine Time Demand.

Step 3: Required Personnel Hours

Based on Step 2 and historical performance data, convert the demand for services to annual personnel hours required for each program *[see Table C.2.3(a) through Table C.2.3(e)]*. Add any necessary and identifiable time not already included in the total performance data, including the following:

- Development/preparation

- Service
- Evaluation
- Commute
- Prioritization

Step 4: Personnel Availability and Adjustment Factor

Average personnel availability should be calculated, considering the following:

- Holiday
- Jury duty
- Military leave
- Annual leave/vacation
- Training
- Sick leave
- Fatigue/delays/other

Example: Average personnel availability is calculated for holiday, annual, and sick leave per personnel member (see Table C.2.4).

Step 5: Calculate Total Personnel Required

Branch of the unassigned personnel hours by the adjustment factor will determine the amount of personnel (persons/year) required. Any fractional values can be rounded up or down to the next integer value. Rounding up provides potential reserve capital; rounding down means potential overtime or assignment of additional services conducted by personnel. (Personnel can include personnel from other agencies within the entity, community, private companies, or volunteer organizations).

Correct calculations based on the following:

- (1) Budgetary validation
- (2) Rounding up/down
- (3) Determining reserve capital
- (4) Impact of non-personnel resources (materials, equipment, vehicles) on personnel

More information on this staffing equation can be found within the National Fire Protection Association 1730 standard. The Fire Prevention should assess the previous five steps and evaluate their present level of activity and the future goals of the Branches.

APPENDIX B– FIRE UNDERWRITERS SURVEY TECHNICAL DOCUMENT ON ELEVATED DEVICES

Fire Underwriters Survey™

TECHNICAL BULLETIN

FIRE UNDERWRITERS SURVEY™

A Service to Insurers and Municipalities

LADDERS AND AERIALS: WHEN ARE THEY REQUIRED OR NEEDED?

Numerous standards are used to determine the need for aerial apparatus and ladder equipment within communities. This type of apparatus is typically needed to provide a reasonable level of response within a community when buildings of an increased risk profile (fire) are permitted to be constructed within the community.

Please find the following information regarding the requirements for aerial apparatus/ladder companies from the Fire Underwriters Survey Classification Standard for Public Fire Protection.

Fire Underwriters Survey

Ladder/Service company operations are normally intended to provide primary property protection operations of

1.) Forcible entry;
2.) Utility shut-off;
3.) Ladder placement;
4.) Ventilation;
5.) Salvage and Overhaul;
6.) Lighting.

Response areas with 5 buildings that are 3 stories or 10.7 metres (35 feet) or more in height, or districts that have a Basic Fire Flow greater than 15,000 LPM (3,300 IGPM), or any combination of these criteria, should have a ladder company. The height of all buildings in the community, including those protected by automatic sprinklers, is considered when determining the number of needed ladder companies.
When no individual response area/district alone needs a ladder company, at least one ladder company is needed if the sum of buildings in the fire protection area meets the above criteria."

The needed length of an aerial ladder, an elevating platform and an elevating stream device shall be determined by the height of the tallest building in the ladder/service district (fire protection area) used to determine the need for a ladder company. One storey normally equals at least 3 metres (10 feet). Building setback is not to be considered in the height determination. An allowance is built into the ladder design for normal access. The maximum height needed for grading purposes shall be 30.5 metres (100 feet).

Exception: When the height of the tallest building is 15.2 metres (50 feet) or less no credit shall be given for an aerial ladder, elevating platform or elevating stream device that has a length less than 15.2 metres (50 feet). This provision is necessary to ensure that the water stream from an elevating stream device has additional "reach" for large area, low height buildings, and the aerial ladder or elevating platform may be extended to compensate for possible topographical conditions that may exist. See Fire Underwriters Survey - Table of Effective Response (attached).

Furthermore, please find the following information regarding communities' need for aerial apparatus/ladder companies within the National Fire Protection Association.

NFPA

Response Capabilities: The fire department should be prepared to provide the necessary response of apparatus, equipment and staffing to control the anticipated routine fire load for its community.

NFPA *Fire Protection Handbook, 20th Edition* cites the following apparatus response for each designated condition:

HIGH-HAZARD OCCUPANCIES (schools, hospitals, nursing homes, explosive plants, refineries, high-rise buildings, and other high-risk or large fire potential occupancies):

*At least four pumpers, **two ladder trucks** (or combination apparatus with equivalent capabilities), two chief officers, and other specialized apparatus as may be needed to cope with the combustible involved; not fewer than 24 firefighters and two chief officers.*

MEDIUM-HAZARD OCCUPANCIES (apartments, offices, mercantile and industrial occupancies not normally requiring extensive rescue or firefighting forces):

*At least three pumpers, **one ladder truck** (or combination apparatus with equivalent capabilities), one chief officer, and other specialized apparatus as may be needed or available; not fewer than 16 firefighters and one chief officer.*

LOW-HAZARD OCCUPANCIES (one-, two-, or three-family dwellings and scattered small businesses and industrial occupancies):

At least two pumpers, one ladder truck (or combination apparatus with equivalent capabilities), one chief officer, and other specialized apparatus as may be needed or available; not fewer than 12 firefighters and one chief officer.

In addition to the previous references, the following excerpt from the 2006 BC Building Code is also important to consider when selecting the appropriate level of fire department response capacity and building design requirements with regard to built-in protection levels (passive and active fire protection systems).

Excerpt: National Building Code 2012

A-3 Application of Part 3.

In applying the requirements of this Part, it is intended that they be applied with discretion to buildings of unusual configuration that do not clearly conform to the specific requirements, or to buildings in which processes are carried out which make compliance with particular requirements in this Part impracticable. The definition of "building" as it applies to this Code is general and encompasses most structures, including those which would not normally be considered as buildings in the layman's sense. This occurs more often in industrial uses, particularly those involving manufacturing facilities and equipment that require specialized design that may make it impracticable to follow the specific requirements of this Part. Steel mills, aluminum plants, refining, power generation and liquid storage facilities are examples. A water tank or an oil refinery, for example, has no floor area, so it is obvious that requirements for exits from floor areas would not apply. Requirements for structural fire protection in large steel mills and pulp and paper mills, particularly in certain portions, may not be practicable to achieve in terms of the construction normally used and the operations for which the space is to be used. In other portions of the same building, however, it may be quite reasonable to require that the provisions of this Part be applied (e.g., the office portions). Similarly, areas of industrial occupancy which may be occupied only periodically by service staff, such as equipment penthouses, normally would not need to have the same type of exit facility as floor areas occupied on a continuing basis. It is expected that judgment will be exercised in evaluating the application of a requirement in those cases when extenuating circumstances require special consideration, provided the occupants' safety is not endangered.

The provisions in this Part for fire protection features installed in buildings are intended to provide a minimum acceptable level of public safety. It is intended that all fire protection features of a building, whether required or not, will be designed in conformance with good fire protection engineering practice and will meet the appropriate installation requirements in relevant standards. Good design is necessary to ensure that the level of public safety established by the Code requirements will not be reduced by a voluntary installation.

Firefighting Assumptions

The requirements of this Part are based on the assumption that firefighting capabilities are available in the event of a fire emergency. These firefighting capabilities may take the form of a paid or volunteer public fire department or in some cases a private fire brigade. If these firefighting capabilities are not available, additional fire safety measures may be required.

Firefighting capability can vary from municipality to municipality. Generally, larger municipalities have greater firefighting capability than smaller ones. Similarly, older, well established municipalities may have better firefighting facilities than newly formed or rapidly growing ones. The level of municipal fire protection considered to be adequate will normally depend on both the size of the municipality (i.e., the number of buildings to be protected) and the size of buildings within that municipality. Since larger buildings tend to be located in larger municipalities, they are generally, but not always, favoured with a higher level of municipal protection.

Although it is reasonable to consider that some level of municipal firefighting capability was assumed in developing the fire safety provisions in Part 3, this was not done on a consistent or defined basis. The requirements in the Code, while developed in the light of commonly prevailing municipal fire protection levels, do not attempt to relate the size of building to the level of municipal protection. **The responsibility for controlling the maximum size of building to be permitted in a municipality in relation to local firefighting capability rests with the municipality. If a proposed building is too large, either in terms of floor area or building height, to receive reasonable protection from the municipal fire department, fire protection requirements in addition to those prescribed in this Code, may be necessary to compensate for this deficiency.** Automatic sprinkler protection may be one option to be considered.

Alternatively, the municipality may, in light of its firefighting capability, elect to introduce zoning restrictions to ensure that the maximum building size is related to available municipal fire protection facilities. This is, by necessity, a somewhat arbitrary decision and should be made in consultation with the local firefighting service, who should have an appreciation of their capability to fight fires.

The requirements of Subsection 3.2.3. are intended to prevent fire spread from thermal radiation assuming there is adequate firefighting available. It has been found that periods of from 10 to 30 minutes usually elapse between the outbreak of fire in a building that is not protected with an automatic sprinkler system and the attainment of high radiation levels. During this period, the specified spatial separations should prove adequate to inhibit ignition of an exposed building face or the interior of an adjacent building by radiation. Subsequently, however, reduction of the fire intensity by firefighting and the protective wetting of the exposed building face will often be necessary as supplementary measures to inhibit fire spread.

In the case of a building that is sprinklered throughout, the automatic sprinkler system should control the fire to an extent that radiation to neighbouring buildings should be minimal. Although there will be some radiation effect on a sprinklered building from a fire in a neighbouring building, the internal sprinkler system should control any fires that might be ignited in the building and thereby minimize the possibility of the fire spreading into the exposed building. NFPA 80A, "Protection of Buildings from Exterior Fire Exposures," provides additional information on the possibility of fire spread at building exteriors.

The water supply requirements for fire protection installations depend on the requirements of any automatic sprinkler installations and also on the number of fire streams that may be needed at any fire, having regard to the length of time the streams will have to be used. Both these factors are largely influenced by the conditions at the building to be equipped, and the quantity and pressure of water needed for the protection of both the interior and exterior of the building must be ascertained before the water supply is decided upon. Acceptable water supplies may be a public waterworks system that has adequate pressure and discharge capacity, automatic fire pumps, pressure tanks, manually controlled fire pumps in combination with pressure tanks, gravity tanks, and manually controlled fire pumps operated by remote control devices at each hose station.

For further information regarding the acceptability of emergency apparatus for fire insurance grading purposes, please contact:

Western Canada	Quebec	Ontario	Atlantic Canada
Fire Underwriters Survey	Fire Underwriters Survey	Fire Underwriters Survey	Fire Underwriters Survey
3999 Henning Drive	255, boul. Crémazie E	175 Commerce Valley Drive, West	238 Brownlow Avenue, Suite 300
Burnaby, BC V5C 6P9	Montreal, Quebec H2M 1M2	Markham, Ontario L3T 7P6	Dartmouth, Nova Scotia B3B 1Y2
1-800-665-5661	1-800-263-5361	1-800- 268-8080	1-877-634-8564

APPENDIX C – 2019 RESPONSE DATA