December 7, 2020

The Township of Wilmot
and the
Wilmot Fire Department

Community Risk Assessment

Welcome to the Township of WILMOT

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Table of Contents

ACRONYMS **4**

INTRODUCTION **5**

DATES OF REVIEW AND UPDATES **7**

RISK SUMMARY **9**

OFMEM FIRE STATISTICS FROM 2016 TO 2018 ..... **11**

PRIORITIZING RISKS **13**

PROFILE WORKSHEETS **14**

WORKSHEET 1: GEOGRAPHIC PROFILE 14

Probability *17*

Consequences *17*

WORKSHEET 2: BUILDING STOCK PROFILE 20

WORKSHEET 3: CRITICAL INFRASTRUCTURE PROFILE 26

WORKSHEET 4A: DEMOGRAPHIC PROFILE 32

WORKSHEET 4B: DEMOGRAPHIC PROFILE 40

WORKSHEET 5: HAZARD PROFILE 43

WORKSHEET 6: PUBLIC SAFETY RESPONSE PROFILE 47

WORKSHEET 7: COMMUNITY SERVICES PROFILE 54

WORKSHEET 8: ECONOMIC PROFILE 55

WORKSHEET 9A: PAST LOSS AND EVENT HISTORY PROFILE 60

WORKSHEET 9B: PAST LOSS AND EVENT HISTORY PROFILE 69

WORKSHEET 10 - IDENTIFYING TREATMENT OPTIONS FOR THE TOP RISKS IN THE COMMUNITY 72

RISK ASSESSMENT, REVIEW AND FUTURE UPDATES 86

APPENDIX A: FIRE MARSHAL'S COMMUNIQUE **87**

CRA GUIDELINE OFMEM 88

APPENDIX B: DETERMINATION OF THE RISK LEVELS **106**

APPENDIX C: ONTARIO REGULATION 378/ 18 ..... **107**

APPENDIX D: COMMUNITY RISK ASSESSMENT FLOW CHART **110**

APPENDIX E: REFERENCES **111**

TABLE 1: PROBABILITY LEVELS **17**

TABLE 2: CONSEQUENCE LEVELS **18**

TABLE 3: DEMOGRAPHIC NUMBERS BY AGE **32**

TABLE 4: POPULATION DISTRIBUTION **34**

TABLE 5: BREAKDOWN OF POPULATION BY ETHNICITY **34**

TABLE 6: EDUCATION **35**

TABLE 7: HOUSEHOLD CHARACTERISTICS 37

TABLE 8: SOCIOECONOMIC BREAKDOWN OF INCOME 38

TABLE 9: WORKFORCE 39

TABLE 10: FIRE BY PROPERTY CATEGORY 60

TABLE 11: FIRES BY PROPERTY CLASSIFICATION 61

TABLE 12: SUMMARY OF TOTAL EMERGENCY CALLS (FIRES AND NON-FIRE CALLS) 63

TABLE 13: OVERVIEW PROPERTY CLASS, INJURIES, CAUSE, IGNITION SOURCE 63

TABLE 14: FIRES BY IGNITION SOURCE CLASS 66

TABLE 15: TOTAL NUMBER OF FIRE CALLS BY TYPE AND PERCENTAGE 68

ACRONYMS

AFFF	Aqueous Film Forming Foam
CEMC	Community Emergency Management Coordinator
CO	Carbon monoxide
CRA	Community Risk Assessment
D/N/A	Data not available
EOC	Emergency Operations Centre
ECG	Emergency Control Group
ERP	Emergency Response Plan
FPO	Fire Prevention Officer
FUS	Fire Underwriters Survey
HIRA	Hazard Identification Risk Assessment
IC	Incident Command
MNRF	Ministry of Natural Resources and Forestry
MTO	Ministry of Transportation Ontario
MVC	Motor vehicle collision
NFPA	National Fire Protection Association
OBC	Ontario Building Code
OFC	Ontario Fire Code
OFMEM	Office of the Fire Marshal and Emergency Management
PE	Public Education
SOG	Standard Operating Guideline
UPS	Uninterrupted Power Supply
WFD	Wilmot Fire Department

INTRODUCTION

This document has been completed in accordance with the Office of The Fire Marshal and Emergency Management, Regulation 378/18, that came into effect July 1st, 2019. This regulation requires that a new Community Risk Assessment (CRA) is to be completed by 2024, and every five years thereafter. The Regulation also requires fire departments to review their CRA every 12 months to ensure it accurately reflects the mandatory profiles and fire and emergency risks. The completion of a CRA will allow a municipality and its fire service to make sound decisions on the level of fire protection it will provide its residents.

Risk is the measure of the probability and possibility of an event occurring that will have adverse effects on the community including the health, property, organization, and/or environment.

It is this identification and prioritization of such fire and life safety risks that will provide a basis for how to prevent and mitigate such events from occurring. It is this assessment that also directs fire services in identifying the levels of service to be provided in relation to public fire safety education, Fire Code inspections and enforcement, and emergency response in preventing and mitigating the events identified.

The CRA profile is based on nine mandatory sections including:

1. Geographic Profile
2. Building stock profile
3. Critical infrastructure profile
4. Demographic profile
5. Hazard profile
6. Public safety response profile
7. Community services profile
8. Economic profile
9. Past loss and event history profile

The data worksheets for each profile are included in this document, and it is these worksheets that will assist in assigning risk levels to best treat each risk and the resources to do so. The different levels of treatment risks are:

- **Avoid the Risk** – *implementation of programs to prevent fires or emergencies from occurring*

- **Mitigate the Risk** - *Programs and initiatives implemented to reduce the probability and/or consequences of a fire or emergency*
- **Accept the Risk** – *after identifying and prioritizing a risk, it is determined that there are no specific programs or initiatives to be implemented to address this risk*
- **Transfer the Risk** – *the fire department has chosen to transfer the impact and/or management of the risk to another organization or body or outside agency.*

Fire departments should maintain documentation required by O. Reg. 378/18. This documentation should include:

- Any changes to any of the mandatory profiles
- Any changes to assigned risk levels or fire protection services that occur as a result of the review
- Any other information the fire department deems appropriate to the review or any resultant changes to fire protection services

If it is found upon completion of the review within the 12-month (annual review) period that no changes are required to any of the profiles or fire protection services, a review could consist of documentation that reflects these findings.

NOTE: Due to the confidential nature of some of the information contained within the CRA, access to the report should be controlled.

DATES OF REVIEW AND UPDATES

Year: 2021

Profile	Issues/Concerns	Treatment of Risk	Preferred Treatment Option

Year: 2022

Profile	Issues/Concerns	Treatment of Risk	Preferred Treatment Option

Year: 2023

Profile	Issues/Concerns	Treatment of Risk	Preferred Treatment Option

Year: 2024

Profile	Issues/Concerns	Treatment of Risk	Preferred Treatment Option

Year: 2025

Profile	Issues/Concerns	Treatment of Risk	Preferred Treatment Option

RISK SUMMARY

The following summary outlines the top risks to life safety and property along with the suggested means of reducing or mitigating the risks. It is the *Preferred Treatment Option(s)* in which Council and the Fire Chief will identify as areas that need to be addressed through either public education, Fire Code enforcement, or within the level of fire service provision. These will form the basis of the Township of Wilmot Community Risk Reduction Plan.

As with any plan, a thorough review coupled with sound strategic planning will reap successes in the form of fewer fires, reduced fire related injuries, lower dollar property loss through ongoing fire prevention initiatives, early warning detection systems and/or proactive inspections and public education.

Top Risk or Issues/Concerns	Preferred Treatment Option(s)

Community Services	• Currently, the WFD is not partnered with any service clubs or community groups to assist with promoting Fire Prevention and Public Education initiatives.
	  ○ This may be done by financial support, provision of a facility for the delivery of a program or assist by services in kind.
	  ○ This should go further to include their participation in assisting those affected by a fire and out of their residence. This may be in the provision of food, clothing, or temporary housing.

Flooding	• The Township to update Flood Response Plan annually. • After a flood has subsided, the Township should review their response to the situation and make changes accordingly for future responses. • Arrange for joint training on flood response protocols with the Grand River Conservation Authority.
Emergency Response Plan	• This should be reviewed and updated yearly. • Training and exercises to be scheduled in accordance with the Provincial Act.
Wilmot Fire Department	• Continue to monitor the causes for fires.

Top Risk or Issues/Concerns	Preferred Treatment Option(s)
	• Arson is one of the causes and WFD should work with the WPS and OFMEM on fire cause determination. • Most common cause over the past 3 years was the misuse of ignition sources/materials first ignited. A common cause is candles left unattended or chimney fires. • Majority of the fires occurred in residences. • Fire Prevention should focus on the causes and occupancy types and make those a priority in teaching fire safety to those citizens living in those occupancies. • Fire Department should promote advantages of installing residential sprinkler systems.
Wilmot Fire Department	• Review its response protocols, policies, SOGs when responding to any technical rescues. • Enter into automatic aid agreements with outside fire services that have the resources to mitigate such incidents. • Kitchener has agreed in principal to respond into Wilmot Township, if required. • A formal agreement should be completed at the earliest opportunity to ensure there will be no delay in responding as approvals may be required to respond from higher ranking chiefs. • Incidents include ice/water offshore, confined space, trench, low and high angle rope rescue, and hazardous materials.
Wilmot Fire Department	• Several trains travel through the municipality each day. • Should continue to arrange for joint training opportunities with the railway companies. • FD should review its current stock of Aqueous Film Forming Foam (AFFF) for use during a flammable liquid incident that could involve the rail lines, fuel tanker trucks, etc. ○ The Kitchener Fire Department has a cache of foam available, if required.

OFMEM FIRE STATISTICS FROM 2016 TO 2018

Year	**2016**
Number of Structure Fires	14
Number of Fire Fighter Injuries	1
Number of Civilian Injuries and Deaths	0
Total Dollar Loss	$2,074,000
Fire Cause Determination	• Arson • Design/Construction/Maintenance Deficiency • Mechanical/Electrical Failure • Misuse of Ignition Source/Materials First Ignited • Unintentional • Undetermined

Year	**2017**
Number of Structure Fires	7
Number of Fire Fighter Injuries	0
Number of Civilian Injuries and Deaths	0
Total Dollar Loss	$102,000
Fire Cause Determination(s)	• Arson • Design/Construction/Maintenance Deficiency • Mechanical/Electrical Failure • Misuse of Ignition Source/Materials First Ignited • Unintentional • Undetermined

Year	**2018**
Number of Structure Fires	5
Number of Fire Fighter Injuries	0
Number of Civilian Injuries and Deaths	0
Total Dollar Loss	$836,400
Fire Cause Determination(s)	• Arson • Design/Construction/Maintenance Deficiency • Mechanical/Electrical Failure • Misuse of Ignition Source/Materials First Ignited • Unintentional • Undetermined

The following tables represent the compilation of an in-depth analysis of the risks identified during the completion of the nine mandatory profiles. Each worksheet contains the related risks and associated information identified. Within each profile, the recommended level of treatment, and the suggested means of handling the risks have been included (where applicable).

Council, with the assistance of the Fire Chief, will be able to use this information in the formulation of the Community Risk Reduction Plan.

PRIORITIZING RISKS

The mandatory profiles allow fire departments to identify the features and characteristics of their community that may impact fire and life safety risks. Once risks have been identified, they should be prioritized. The following section discusses how risks can be prioritized based on the probability of the risk happening and the consequence if the risk occurs. **Table 1: Probability Levels** and **Table 2: Consequence Levels** can be used to help determine the probability and consequence of each risk identified on the worksheets. The probability and consequence of each risk can then be noted in the appropriate columns on the relevant worksheets in Appendix A.

As noted in the introduction, risk is defined as a measure of the probability and consequence of an adverse effect to health, property, organization, environment, or community as a result of an event, activity or operation.

PROFILE WORKSHEETS

Worksheet 1: Geographic Profile

The Township of Wilmot is 264 km^2 and has a large rural make-up with agricultural activities and natural settings. The Nith River has a large presence in the Township with significant wetlands and environmentally sensitive areas.

The majority of the populous live in urban settings such as New Hamburg and Baden. Throughout the Township are numerous smaller communities such as St. Agatha, Petersburg, Mannheim, New Dundee, Philipsburg, Shingletown, Wilmot Centre, Haysville, Luxemburg, Lisbon, Sunfish Lake, and Foxboro Green.

The land is made up of rolling hills, flat farmland with pockets of wilderness, and crown land which is mostly untouched forested areas.

Geographic Profile Risks

List the geographic features in your community and how they may influence the delivery of fire protection services.

Geographic Profile Risks	
Geographic Feature	**Potential Impact on the Delivery of Fire Protection Services**
Rivers	• Impacts training, equipment for response service delivery. • Impacts response/travel timelines to fire calls. • Recreational/tourist activities impact the delivery of public fire safety messaging. • Rivers and streams are prone to flooding in the spring impacting property, infrastructure, and response times. • Fast moving water in the spring creates very difficult rescue scenario for rescuers. • WFD is presently permitted to conduct only shore-based ice/water rescue. o A technical ice-water rescue team is being developed, which will enable the crew to deploy onto/into the ice/water to safely remove a victim.

Geographic Profile Risks	
Geographic Feature	**Potential Impact on the Delivery of Fire Protection Services**
	• Members should meet NFPA 1006 – Standard for Technical Rescue Personnel Professional Qualifications and NFPA 1670 – Standard on Operations & Training for Technical Search & Rescue. • When the Nith River overflows its banks in New Hamburg there is a significant risk that the fire station will become flooded as it is in the flood plane. • The Township should investigate options of moving the station to a new location away from the flood plain removing the ongoing risk of enduring flood damage.
Lakes and Wetlands/Environmentally Sensitive Areas	• Impacts training, equipment for response service delivery. • Impacts response times and travel routes to fire calls. • During summer months increased risk of boating accidents/drownings as tourists are not familiar with the lakes/rivers and their risks. • In the winter snowmobiles/ice fisherman may fall through the ice as they are not familiar with the thickness of the ice or water currents under the ice. • Response capabilities are hampered due to lack of access points or the parties involved are not familiar with their exact location. • Prone to rise over their banks in the spring. • Sunfish Lake area is fire protected through an automatic aid agreement between Wilmot Township and Waterloo and Wellesley Township fire services.
Highways/Regional Roads	• There are numerous Waterloo Regional Roads that transect Wilmot. • Highway 7/8 runs through the Township which meets up with Highway 401. • Roads are in good condition and are well maintained.

Geographic Profile Risks	
Geographic Feature	**Potential Impact on the Delivery of Fire Protection Services**
	• Most are paved or hard topped. • There are approx. 500 km of roads. • Roads are maintained by either the MTO. or Waterloo Regional Government.
Topography	• Low impact on travel routes. • Due to dense bush areas some visitors are not familiar with their exact location if assistance is required. • Poor or limited access points exists in areas of the community that can impact ability to respond in a timely manner. • Tourists are sometimes unfamiliar with where they are when calling for assistance. • Accessing injured parties may be a challenge at times depending on their location without the proper terrain related vehicle.
Township Road System	• There is a well-defined network of roads that are well maintained and in good condition. • Some roadways may be impeded by water during the spring due to flooding.
Forest, Brush Cover and Open Fields (Wildland)	• Large rural and environmentally sensitive wetlands and brush areas. • Prone to grass fires and flooding in the wetlands during the spring. • Large area of natural forests.

Note: The information on this worksheet should be considered in conjunction with the information on all other worksheets, and not in isolation. Worksheet 10 allows fire departments to consider all the information on all worksheets together to make decisions about the provision of fire protection services in their municipality/community.

Probability

The probability or likelihood of a fire or emergency within a community is often estimated based on the frequency of previous experiences. A review of past events involves considering relevant historical fire loss data, learning from the experiences of other communities, and consulting members of the community with extensive historical knowledge. Professional judgment based on experience should also be exercised in combination with historical information to estimate probability levels. The probability of an event can be categorized into five levels of likelihood:

TABLE 1: Probability Levels

Description	Specifics
Rare	• may occur in exceptional circumstances • no incidents in the past 15 years
Unlikely	• could occur at some time, especially if circumstances change • 5 to 15 years since the last incident
Possible	• might occur under current circumstances • 1 incident in the past 5 years
Likely	• will probably occur at some time under current circumstances • multiple or recurring incidents in the past 5 years
Almost Certain	• expected to occur in most circumstances unless circumstances change • multiple or recurring incidents in the past year

Consequences

The consequence of a fire or emergency is the potential losses or negative outcomes associated with the event. The application of professional judgment and reviews of past occurrences are important methods used for determining consequence levels. Estimating the consequence level of an incident or event should involve an evaluation of four components:

a. **Life Safety**: Injuries or loss of life due to occupant and firefighter exposure to life threatening fire or other situations.

b. **Property Loss**: Monetary losses relating to private and public buildings, property content, irreplaceable assets, significant historic/symbolic landmarks and critical infrastructure.

c. **Economic Impact**: Monetary losses associated with property income, business closures, a downturn in tourism and/or tax assessment value, and employment layoffs.

d. **Environmental Impact**: Harm to human and non-human (i.e. wildlife, fish and vegetation) species of life and a general decline in quality of life within the community due to air/water/soil contamination as a result of the incident and response activities.

The consequence of an event can be categorized into five levels based on severity:

TABLE 2: Consequence Levels

Description	Specifics
Insignificant	• no life safety issue • limited valued or no property loss • no impact to local economy, and/or • no effect on general living conditions
Minor	• potential risk to life safety of occupants • minor property loss • minimal disruption to business activity, and/or • minimal impact on general living conditions
Moderate	• threat to life safety of occupants • moderate property loss • poses threat to small local businesses, and/or • could pose a threat to the quality of the environment
Major	• potential for a large loss of life • would result in significant property damage • significant threat to large businesses, local economy and tourism, and/or • impact to the environment would result in a short term, partial evacuation of residents and businesses

Catastrophic	• significant loss of life • multiple property damage to a significant portion of the municipality • long-term disruption of businesses, local employment, and tourism, and/or • environmental damage that would result in long-term evacuation of residents and businesses

Assigning Risk Levels

Assigning a risk level assists fire departments in prioritizing risks, which helps to determine how to address or treat each risk. The **Risk Level Matrix** in this section can assist fire departments to determine risk levels based on the probability and consequence levels of each identified risk. Risks can be assigned as low risk, moderate risk, or high risk. The risk levels for each risk can be noted in the **Assigned Risk Level** column on the relevant worksheets.

The matrix below can be used to determine the assigned risk level.[1] Plot the assigned probability and consequence levels on the relevant worksheets to assign a risk level for each identified risk.

Risk Level Matrix

Probability	INSIGNIFICANT	MINOR	MODERATE	MAJOR	CATASTROPHIC
ALMOST CERTAIN	Moderate Risk	Moderate Risk	High Risk	High Risk	High Risk
LIKELY	Moderate Risk	Moderate Risk	Moderate Risk	High Risk	High Risk
POSSIBLE	Low Risk	Moderate Risk	Moderate Risk	Moderate Risk	High Risk
UNLIKELY	Low Risk	Low Risk	Moderate Risk	Moderate Risk	Moderate Risk
RARE	Low Risk	Low Risk	Low Risk	Moderate Risk	Moderate Risk

Consequence

Worksheet 2: Building Stock Profile

The building stock profile should consider the characteristics of the buildings in the community. This can include the use of the buildings, building density, building age and construction, and building height and area. This information will assist fire departments to identify the issues/concerns that will impact the delivery of fire protection services.

Building Stock Profile Risks

List the building stock/occupancy types in your community and the fire and other emergency issues/concerns for each.

Assign probability, consequence and risk levels to each.

Building Stock Profile Risks

Occupancy Classification		Issues/Concerns	Probability (refer to Table 1)	Consequence (refer to Table 2)	Assigned Risk Level (refer to the Risk Level Matrix)
Group A	**Assembly**	• Heavy timber construction • High fire load • High occupancy • Historical significance • May have poor housekeeping practises	Possible	Major	Moderate
Group B	**Detention Occupancies**	• Youth Detention Centre (Ray of Hope)	Possible	Major	Moderate

Building Stock Profile Risks

Occupancy Classification		Issues/Concerns	Probability (refer to Table 1)	Consequence (refer to Table 2)	Assigned Risk Level (refer to the Risk Level Matrix)
	Care and Treatment / Care	• Elderly residents with mobility and cognitive behavioral issues • Homes may not have been required to be upgraded with sprinklers • May be a lack of on-duty staff during the night	Possible	Major	Moderate
Group C	**Single family**	• May lack smoke and CO alarms • May lack a home escape plan • May lack fire extinguishers • May lack residential sprinklers • Many structures of an older age (balloon construction) • May be hoarding or poor housekeeping practices	Almost Certain	Major	High

Building Stock Profile Risks

Occupancy Classification		Issues/Concerns	Probability (refer to Table 1)	Consequence (refer to Table 2)	Assigned Risk Level (refer to the Risk Level Matrix)
		• Many homes in remote areas of the Township • Highest incidents of fires in the Township			
	Multi-unit residential	• High occupancy • May lack an escape plan • May lack or have inoperable fire extinguishers and knowledge on their operation • May not be constructed to OBC or OFC Standards • New high-rise structures being built • Some buildings are seniors focussed occupancies	Likely	Major	High
	Hotel / Motel	• Transient population may not familiar with the building's safety features	Possible	Major	Moderate

Building Stock Profile Risks

Occupancy Classification		Issues/Concerns	Probability (refer to Table 1)	Consequence (refer to Table 2)	Assigned Risk Level (refer to the Risk Level Matrix)
		(i.e. emergency exits, location of pull station, location of fire extinguishers) • Include Bed and Breakfast facilities in this category			
	Mobile Homes & Trailers	• High combustibility due to construction materials • High fire loads and in some cases hoarding • Seasonal usage • Trailer parks with limited access routes	Possible	Moderate	Moderate
	Other	N/A	N/A	N/A	N/A
Groups D & E	**Business & Personal Service / Mercantile**	• Small local business • Possibly heavy timber construction or common basements	Possible	Major	Moderate

Building Stock Profile Risks

Occupancy Classification		Issues/Concerns	Probability (refer to Table 1)	Consequence (refer to Table 2)	Assigned Risk Level (refer to the Risk Level Matrix)
		• Main street businesses with the lack of a fire wall to stop the spread of a fire • Poor housekeeping practises			
Group F	**Industrial**	• Unknown chemicals on-site • May lack current emergency plan • Manufacturing is the top industrial sector in the Township • High fire loads • Lack of sprinklers and alarm systems (not required by (Ont. Bldg. Code) • Second most likely occupancy to experience a fire in Wilmot	Possible	Major	Moderate
Other	**Occupancies not classified in OBC such**	• Very old construction of heavy timbers	Likely	Moderate	Moderate

Building Stock Profile Risks					
Occupancy Classification		**Issues/Concerns**	**Probability (refer to Table 1)**	**Consequence (refer to Table 2)**	**Assigned Risk Level (refer to the Risk Level Matrix)**
	as farm buildings.	• High fire loads (i.e. hay, straw, farm equipment) • Risk to livestock • Open concept in driving sheds and barns • Lack of fire stops • Poor housekeeping • Vacant abandoned structures • Farm structures being used for non-intended purposes (i.e. illegal drug operations) • Farms experience several fires during the year			

Note: The information on this worksheet should be considered in conjunction with the information on all other worksheets, and not in isolation. Worksheet 10 allows fire departments to consider all the information on all worksheets together in order to make decisions about the provision of fire protection services in their municipality/community.

Worksheet 3: Critical Infrastructure Profile

Consider the community's critical infrastructure including electricity distribution, water distribution, telecommunications, hospitals, and airports and how they relate to fire and other emergency risks in the community.

Critical Infrastructure Profile Risks

List the critical infrastructure in your community and the fire and other emergency issues/concerns relating to each.

Critical Infrastructure Profile Risks	
Identified Critical Infrastructure	**Issues/Concerns**
Electricity transmission and distribution	• Hydro lines go down • Fires within transformer stations and on poles • Adverse effect to commerce if power is out • Transformer stations failing
Radio Communications	• Loss of communication effects multiple departments of the Township • Lack of means to notify first responders • Lack of communications if communications centre must be evacuated and moved to back up location • Lack of back-up power supply to radio systems (i.e. on-site generators/battery packs)
Telecommunications	• Telephone lines/cell towers go down • Lack of means of notifying first responders • Commerce relies on operating telephone lines to complete transactions • Lack of cellphone coverage throughout the Township where any areas do not have any coverage at all

Critical Infrastructure Profile Risks	
Identified Critical Infrastructure	**Issues/Concerns**
Wireless Telecommunications	• Towers damaged during an event and out of service • Loss of power, battery back up for how long? On-site generators? • Numerous providers • System becomes overtaxed when landline service goes down
Regional Roads/Highways/Municipal Streets	• Impacted by weather events, traffic accidents, volume of traffic, damage due to significant environmental events • Roads department not able to fulfill its responsibilities due to unforeseen circumstances • Large number of vehicles use them daily • Long duration closures • Infrastructure (i.e. culverts and bridges) in good condition? • Storm water drainage adequate? • Any flood plains for storm water storage?
Natural Gas	• Concerns are leaks in transmission lines • Gas company infrastructure failures • Lack of natural gas could affect areas of commerce such as restaurants • Lack of gas would affect heating appliances • Pressure control sites • Any mercaptan injection sites into the pipelines?
Continuity of Government	• Municipal government closed due to extreme weather events, computer hacking, health emergency, disrupted power supply

Critical Infrastructure Profile Risks	
Identified Critical Infrastructure	**Issues/Concerns**
	• Do employees have the ability to work from home? • Require essential services • IT systems have back up servers and power (i.e. Uninterrupted Power Supply (UPS) packs) • Protection against hackers wanting ransom?
Financial Institutions	• Financial institutional infrastructure • Access to cash withdrawals • Inter-Institution computer systems • Phone line breakdowns impeding commerce and financial transactions • Risk of computer systems cyber terrorism
Emergency Response Plan and the Emergency Operations Centre	• Emergency Response Plan and Flood Emergency Plan should be updated annually • Township has a Flood Emergency Plan in place • Both the Primary and Secondary locations have emergency stand-by power permanently installed. • The Emergency Response Plan lists the duties of the CEMC but not who is the current CEMC or their alternate(s). • If required, Township may call upon the Region of Waterloo for additional resources. • Yearly mandatory exercises and/or training sessions are completed.
Emergency Shelter	• Back-up stand-by generator is installed at this location to ensure the facilities maintains operations. • Activated due to hazardous materials incident, flooding, weather event, etc.

Critical Infrastructure Profile Risks	
Identified Critical Infrastructure	**Issues/Concerns**
	• Able to accommodate mass numbers of civilians • In operation for extended periods of time • Food and accommodations/sleeping arrangements • Lack of adequate quantities of potable water if not on municipal water system • May be inaccessible due to flooding and area roads closed, may require multiple centers activated
Water Treatment Plant	• Required to maintain potable water for the residents • Back-up stand-by emergency power is installed at this location to provide ongoing water treatment/supply • Hazmat situation due to numerous chemicals used in the treatment of water to make it safe to drink • Possible location of acts of sabotage or terrorism • Back up plan if system totally fails (i.e. availability of large quantities of bottled water)
Wastewater Treatment Plant	• Treats sewage, water run-off, and grey water • Unknown quantities of chemicals in treatment of wastewater • Back-up stand-by generator is installed at this location to ensure the treatment of wastewater and as such prevents untreated water from entering the environment • Discharging untreated matter into the water shed could be harmful to the eco-system

Critical Infrastructure Profile Risks	
Identified Critical Infrastructure	**Issues/Concerns**
	• Possible location of acts of sabotage or terrorism
Railways	• Fires along rail lines caused by trains • Freight and passenger train derailments are possible • Hazmat incidents and fires involving the payloads • Blocked roadways impeding fire apparatus • Large numbers of passengers on commuter trains
Food and Water Inspection & Monitoring	• Heath inspectors • Inspections systems in place • Mass notification and testing/advice
Flood Control	• Are flood plains designated and identified to the local residents? • Rising water level, monitoring procedures are in place • Flood plan implementation if required
Garbage Disposal	• Pick up and disposal after an event occurring • Location for large amounts of building materials to be separated/recycled
Municipal Water Supply	• Communities of New Dundee and St. Agatha lack a municipal water supply system, access to a water source that is close by, or a large underground reservoir for firefighting purposes. • Lack of a water supply hampers/delays firefighting operations.

Critical Infrastructure Profile Risks	
Identified Critical Infrastructure	**Issues/Concerns**
	• Tankers must travel a distance to refill therefore creating long durations of turn around time • There are some private dry hydrants and reservoirs but lack capacity of water for significant events • Risk of loosing structures due to having to travel to refill tankers

Note: The information on this worksheet should be considered in conjunction with the information on all other worksheets, and not in isolation. Worksheet 10 allows fire departments to consider all the information on all worksheets together to make decisions about the provision of fire protection services in their municipality/community.

Worksheet 4a: Demographic Profile

Consider the characteristics of your community's demographic profile to identify potential fire safety issues/concerns. This will help the fire department prioritize its overall risk and decisions about the provision of fire protection services. For example, traditionally older adults, young children, recent immigrants, and people with disabilities are at the highest risk of fire. Knowing if your community has a high number of people in any of these demographic groups helps your fire department prioritize your public fire safety education and Fire Code inspection and enforcement programs.

Demographic profile characteristics to consider include age, culture, education, socio-economics, transient populations, or other unique population characteristics in your community.

The following population distribution chart can assist with identifying high-risk or vulnerable demographic groups in your community.

TABLE 3: Demographic Numbers by Age

Ages of population	# of People	% of Total Population
0-4	1,305	6.35
5-9	1,385	6.74
10-14	1,365	6.64
15-19	1,255	6.10
20-24	1,050	5.11
25-29	935	4.55
30-34	1,265	6.15
35-39	1,345	6.54
40-44	1,365	6.64

Ages of population	# of People	% of Total Population
45-49	1,415	6.88
50-54	1,390	6.76
55-59	1,380	6.71
60-64	1,275	6.20
65-69	1,270	6.18
70-74	950	4.62
75-79	695	3.38
80-84	470	2.28
85 and over	430	2.09
Total Population	**20,545**	**100**

TABLE 4: Population Distribution

Total – Distribution (%) of the population by broad age groups – 100% data	100%	Male	Female
0 to 14 years	19.7	20.1	19.4
15 to 64 years	61.7	61.7	61.7
65 years and over	18.6	18.2	19.0
85 years and over	2.1	1.8	2.4
Average age	40.7	40.3	41.1
Median age	41.4	40.9	41.8

TABLE 5: Breakdown of Population by Ethnicity

Total – Visible minority for the population in private households – 25% sample data	**Total** 20,290	**Male** 10,035	**Female** 10,260
Total visible minority population	690	320	375
South Asian	145	75	56
Chinese	90	35	55
Black	115	60	55
Filipino	50	5	45
Latin American	80	35	45
Arab	10	N/A	N/A

Total – Visible minority for the population in private households – 25% sample data	Total 20,290	Male 10,035	Female 10,260
Southeast Asian	55	20	35
West Asian	80	35	40
Korean	15	10	5
Japanese	0	0	0
Visible minority (not identified elsewhere)	10	0	0
Multiple visible minorities	50	30	20
Not a visible minority	19,595	9,715	9,885

TABLE 6: Education

Total – Highest certificate, diploma or degree for the population aged 15 years and over in private households – 25% sample data	Total 16,250	Male 7,980	Female 8,265
No certificate, diploma or degree	2,855	1,480	1,370
Secondary (high) school diploma or equivalency certificate	4,355	2,145	2,215

Total – Highest certificate, diploma or degree for the population aged 15 years and over in private households – 25% sample data	Total 16,250	Male 7,980	Female 8,265
Postsecondary certificate, diploma or degree	9,035	4,360	4,680
Apprenticeship or trades certificate or diploma	1,510	1205	305
Trades certificate or diploma other than Certificate of Apprenticeship or Certificate of Qualification	510	325	180
Certificate of Apprenticeship or Certificate of Qualification	1,000	875	125
College, CEGEP or other non-university certificate or diploma	4,070	1,725	2,340
University certificate or diploma below bachelor level	265	135	130
University certificate, diploma or degree at bachelor level or above	3,195	1,295	1,905
Bachelor's degree	2,310	930	1,380

Total – Highest certificate, diploma or degree for the population aged 15 years and over in private households – 25% sample data	Total 16,250	Male 7,980	Female 8,265
University certificate or diploma above bachelor level	225	95	135
Degree in medicine, dentistry, veterinary medicine or optometry	60	40	20
Master's degree	520	185	335
Earned doctorate	80	45	35

TABLE 7: Household Characteristics

Total – Private households by tenure – 25% sample data	7,515
Owner	6,510
Renter	1,005
Condominium	780

TABLE 8: Socioeconomic Breakdown of Income

Total – Total income groups in 2015 for the population aged 15 years and over in private households – 100% data	Total 16,250	Male 8,010	Female 8,245
Without total income	470	240	230
With total income	15,780	7,765	8,015
Percentage with total income	97.1	96.9	97.2
Under $10,000 (including loss)	1,655	600	1,050
$10,000 to $19,999	2,000	715	1,285
$20,000 to $29,999	1,880	705	1,170
$30,000 to $39,999	1,800	760	1,040
$40,000 to $49,999	1,730	820	915
$50,000 to $59,999	1,480	775	710
$60,000 to $69,999	1,230	705	520
$70,000 to $79,999	920	565	350
$80,000 to $89,999	740	455	285
$90,000 to $99,999	645	375	270
$100,000 and over	1,700	1,285	410
$100,000 to $149,999	1,175	885	290
$150,000 and over	520	400	120

TABLE 9: Workforce

Total – Population aged 15 years and over by Labour force status – 25% sample data	Total 16,250	Male 7985	Female 8265
In the labour force	11,265	5,885	5,375
Employed	10,870	5,695	5,165
Unemployed	400	190	210
Not in the labour force	4,985	2,095	2,890
Participation rate	69.3	73.7	65.0
Employment rate	66.9	71.3	65.0
Unemployment rate	3.6	3.3	3.9

Worksheet 4b: Demographic Profile

Demographic Profile Risks

List the demographic groups of concern in your community and the fire and other emergency issues/concerns relating to each group.

Demographic Profile Risks	
Identified Demographic Group	**Issues/Concerns**
Immigrant population	• May have language barriers • Cultural traditions may present fire safety concerns • Of the total population of 20,290 in 2016, only 690 were immigrants • There is a significant Mennonite populous within the Township.
Students	• With numerous Community Colleges and Universities in this area of southwestern Ontario, bring many temporary residents, not only from outside this area of the Province, but the Country. • Some may have language/cultural challenges in understanding some of the fire safety messaging.
Permanent Residents	• Approximately 21,000 residents with many living in built up areas such as Baden, New Hamburg, and rural settings such as New Dundee, Mannheim, Petersburg, Philipsburg, St. Agatha, Shingletown, Sunfish Lake, Foxboro Green, Wilmot Centre, Luxemburg, Lisbon, and Haysville. • Forecasted to have 28,500 residents by 2029 which is a 36% increase. • Those living furthest from a fire station should receive PE on fire safety, home escape plans, smoke, and CO alarms, as a priority

Demographic Profile Risks	
Identified Demographic Group	**Issues/Concerns**
	• Promote the advantages to residential sprinkler systems
Seniors population	• There are several seniors living in the community • Of the total population, 21 – 25% are seniors over the age of 65 • Between 2018 and 2046 it is anticipated that there will be over a 30% increase in population in the Waterloo area. Of that, 25 to 30% will be over the age of 65. By the year 2046 that equates to a 100% growth from 2018 (based on data from the Province of Ontario's Population Projects 2018-2046 report completed in the summer of 2019). • Some of the seniors may have mobility and cognitive issues that may require constant care. • Require public education on having working smoke and CO alarms in their homes. • Have an escape plan in event of a fire • Public education on safe cooking practices (i.e. how to extinguish a grease fire, absence of loose clothing over an open flame) • Ensure knowledge of fire extinguisher operation
Large population of summer tourists	• How does the fire department reach this audience with fire safety messages if they do not live in the community? • Local natural attractions such as lakes, rivers, wetlands, campgrounds, and cottages bring non-permanent residents • Fire and Life Safety messaging will require many means of delivery such as signage, social media, pamphlets, ads in newspapers, etc. • Unknown number of seasonal residents

Demographic Profile Risks	
Identified Demographic Group	**Issues/Concerns**
	• Some may not know the property identification number or street/road name of where they are staying when they call 911 for assistance

Note: The information on this worksheet should be considered in conjunction with the information on all other worksheets, and not in isolation. Worksheet 10 allows fire departments to consider all the information on all worksheets together to make decisions about the provision of fire protection services in their municipality/community.

Worksheet 5: Hazard Profile

List potential hazards in the community including but not limited to hazardous materials spills, floods, freezing rain/ice storms, forest fires, hurricanes, tornadoes, transportation emergencies (i.e. air, rail or road), snow storms, windstorms, extreme temperature, cyber-attacks, human health emergencies, and energy supply (i.e. pipelines, storage and terminal facilities, electricity, natural gas and oil facilities).

Hazard Profile Risks

List the hazards in your community and the fire or other emergency risk of each.

Hazard Profile Risks

Identified Hazard	Probability (refer to Table 1)	Consequence (refer to Table 2)	Assigned Risk Level (refer to the Risk Level Matrix)
Ice storm (power interruptions/ disruptions in communications/ delayed access)	Possible	Moderate	Moderate
Flood (obstructed access/increased calls for rescue/assistance)	Likely	Major	High
Extreme Temperatures	Possible	Minor	Moderate
Wildland Urban-Interface Fires	Possible	Moderate	Moderate
Utility Disruption	Almost Certain	Moderate	Moderate
Communications Disruption	Possible	Minor	Minor
Snowstorm/Blizzard/Hail	Possible	Minor	Moderate
Severe Wind Event – Tornado	Possible	Catastrophic	High
Hazardous Materials Event	Possible	Moderate	Moderate

Hazard Profile Risks

Identified Hazard	Probability (refer to Table 1)	Consequence (refer to Table 2)	Assigned Risk Level (refer to the Risk Level Matrix)
Drought – Low Water	Possible	Minor	Moderate
Potable Water Emergency – Wells	Possible	Moderate	Moderate
Influenza Outbreak	Likely	Major	High
Cyber Attack on Municipal Servers	Possible	Major	Moderate
Earthquake/Landslide	Unlikely	Minor	Low
Severe Thunderstorm	Likely	Moderate	Moderate
Erosion	Minor	Possible	Moderate
Large Fire	Likely	Major	High
High Angle Rescue	Unlikely	Minor	Low
Technical Rescue – Trench, Confined Space (silos)	Possible	Major	Moderate
Special Events (i.e. Fire Scene Crowd Control, Stage/Viewing Stands Collapse)	Rare	Moderate	Low
Mail Delivery	Rare	Minor	Low
Motor Vehicle Collisions	Likely	Major	High
Aircraft Crash	Unlikely	Major	Moderate
Municipal Water Treatment	Possible	Major	Moderate
Waste-Water Treatment	Possible	Major	Moderate

Hazard Profile Risks

Identified Hazard	Probability (refer to Table 1)	Consequence (refer to Table 2)	Assigned Risk Level (refer to the Risk Level Matrix)
Large Explosion and Fire – (i.e. nat. gas lines, fuel storage depot, train derailments)	Possible	Major	Moderate
Train Derailment – Passenger and Freight	Possible	Major	Moderate
Acts of Terrorism and Sabotage	Unlikely	Major	Moderate
Fog	Possible	Minor	Moderate
Hurricane	Rare	Major	Moderate
Radioactive Emergency	Unlikely	Major	Moderate
Human Health – Epidemic/Pandemic	Possible	Major	Moderate
Building/Structural Collapse	Possible	Major	Moderate
War & International Emergency	Unlikely	Minor	Low
Plant Disease and Pest Infestation	Unlikely	Minor	Low
Farm Animal Disease	Unlikely	Major	Moderate
Geometric Storm/Solar Flares	Rare	Insignificant	Low
Flood Emergency Supply Shortage	Rare	Minor	Low
Landslide	Unlikely	Insignificant	Low
Space Object – Natural or Human Made	Rare	Insignificant	Low

Note: The information on this worksheet should be considered in conjunction with the information on all other worksheets, and not in isolation. Worksheet 10 allows fire departments to consider all the information on all worksheets together to make decisions about the provision of fire protection services in their municipality/community.

Worksheet 6: Public Safety Response Profile

Consider other public safety response agencies (i.e. police, EMS, rescue) that might be tasked with or able to assist in the response to emergencies or in mitigating the impact of emergencies. Also consider the types of incidents each can respond to and any issues or concerns that may impact fire department response.

Public Safety Response Profile Risks

List the other public safety response agencies in your community and the incidents they respond to.

Public Safety Response Profile Risks			
Identified Public Safety Response Agency	**Types of Incidents They Respond To**	**What is Their Role at the Incident**	**Issues/Concerns**
Ontario Provincial Police	• MVCs • Fire Scenes • Acts of crime/violence • Flood Emergencies • Events in which the Wilmot Township Emergency Plan has been activated	• Scene control, traffic control, investigations • Implementing the OPP Disaster Procedures Manual • Site security • Assisting with evacuation planning and maintain routes of travel • Controlling traffic in and out of emergency zone • Maintain law and order • Work in conjunction with Waterloo Regional police and other Emergency Responder Agencies	• None known

Public Safety Response Profile Risks			
Identified Public Safety Response Agency	**Types of Incidents They Respond To**	**What is Their Role at the Incident**	**Issues/Concerns**
		• Assign a representative to be a member of the ECG if the Emergency Plan is activated • Assist the Coroner if event is within their jurisdiction	
Waterloo Regional Police	• MVCs • Fire Scenes • Acts of crime/violence • Flood Emergencies • Events in which the Wilmot Township Emergency Plan has been activated	• Scene control, traffic control, investigations • Work with OPP during an emergency and other Emergency Response Agencies • Responsible for activation of the Emergency Alerting System of Wilmot Township • Notification of emergency municipal services • Participate as a member of the ECG if the ERP is activated • Establish command post at a large incident in which the Emergency Response Plan is activated • Communications link with ECG and on-site command post • Establish scene perimeters	• None known

Public Safety Response Profile Risks			
Identified Public Safety Response Agency	**Types of Incidents They Respond To**	**What is Their Role at the Incident**	**Issues/Concerns**
		• Assist with evacuation preparation, activation, traffic routes, scene security, control scene access • Designation of and opening of emergency evacuation centres • Notifications of supporting agencies • Providing police services where required • Notification of and work with the Coroner • Assist Emergency Site Co-ordinator	
Waterloo Paramedic Service	• Medical Emergencies • MVCs • Acts of Violence • Technical Rescues • Fire stand-by • Events in which the Wilmot Twp. Emergency Plan has been activated	• Take control and provide direction, upon arrival, in the treatment of the sick and injured. • Establishes a triage and command post • Liaison with local Hospital Emergency Departments • Report any issues to the Public Health Unit/Medical Officer of Health that may be of interest to them • Request assistance from the Ontario Ministry of Health and Long-Term Care, Emergency Health Services Branch	• None known

Public Safety Response Profile Risks			
Identified Public Safety Response Agency	**Types of Incidents They Respond To**	**What is Their Role at the Incident**	**Issues/Concerns**
		• Co-ordinate treatment and transport during evacuations of hospitals, nursing home, long-term care facilities, homes for the aged, etc. • Ensuring adequate number medical personnel and medial supplies are available on-site of emergency • Assist the on-site Emergency Co-ordinator and ECG	
Outside Fire Services	• Automatic or Mutual Aid Incidents • Respond to technical rescues/Hazmat incidents that are not considered as being Mutual Aid as there may be the need to recover costs from those involved • Assist during other emergencies as	• Fire Suppression • Cover stations directly involved with the incident • Technical Rescue – Ice/Water • Hazmat Mitigation • Trench Rescue • High Angle Rescue • Confined space rescue • Structural collapse • MVC Extrication (mass casualty)	• None known

Public Safety Response Profile Risks			
Identified Public Safety Response Agency	**Types of Incidents They Respond To**	**What is Their Role at the Incident**	**Issues/Concerns**
	required (i.e. flooding, hazmat incidents, etc.) • As required when the Wilmot Township Emergency Plan has been activated • Fire service may not need to provide full response, may provide more of a supporting response	• Initial response in rescue role during technical rescue incidents • Assist the IC of the fire service during hazardous materials and technical rescue incidents	
St John Ambulance	• Public events in which large number of people in attendance	• Supporting role for Waterloo Regional Paramedic Service • They are not permitted to transport casualties, but able to render medical aid to those injured or ill.	• None known
OFMEM	• Suspicious fires	• Investigation – lead agency working in conjunction with the police • Supporting role as required	• None known

Public Safety Response Profile Risks			
Identified Public Safety Response Agency	**Types of Incidents They Respond To**	**What is Their Role at the Incident**	**Issues/Concerns**
	• Any fire in which there is either a civilian or firefighter fatality • High dollar loss fires • Fires at retirement or nursing homes • Incidents that require the implementation of the Emergency Response Plan		
Wilmot Fire Department	• Fires • MVCs • Ice/Water rescues • Tiered medical • Hazardous Materials incidents at awareness level of operations • Technical rescues at awareness level of operation	• Operate out of 3 fire stations with numerous automatic agreements in place • Responds to between 700 and 800 calls for service per year • Suppress and extinguish fires • Fire cause determination • Act as lead agency during emergencies involving fire department operations • Technical Rescues (i.e. water, trench, confined space, structural collapse, etc.)	• Loss of the operation of New Hamburg Fire Station during flooding, may need to move apparatus and equipment to

Public Safety Response Profile Risks			
Identified Public Safety Response Agency	**Types of Incidents They Respond To**	**What is Their Role at the Incident**	**Issues/Concerns**
	• Flooding and evacuations • Public Education • Fire Prevention	• Property conservation • Vehicle extrication	another location • Lack of firefighters available during daytime hours
Grand River Conservation Authority	• Flooding	• Liaison with EOC regarding water levels and timelines • District Manager with the MNRF is the local flood response co-ordinator	• None known

Note: The information on this worksheet should be considered in conjunction with the information on all other worksheets, and not in isolation. Worksheet 10 allows fire departments to consider all the information on all worksheets together to make decisions about the provision of fire protection services in their municipality/community.

Worksheet 7: Community Services Profile

Consider community service agencies, organizations or associations that provide services that support the fire department in the delivery of public fire safety education, Fire Code inspection and enforcement and emergency response. This may include services in-kind, financial support, provisions of venues for training, increased access to high-risk groups in the community, and temporary shelter for displaced residents following an incident.

Community Services Profile Risks

List the community service agencies and the types of services they can provide.

Community Services Profile Risks		
Community Service Agencies	**Types of Assistance they Can Provide**	**Issues/Concerns**
Not Applicable	• None	WFD has not been receiving ongoing support from local service clubs/groups in the form of funding, facilities, service in kind, etc. Although there are no formal agreements in place, some groups/organizations in the community have generously provided donations to the Department in the past. The Department is missing great opportunities to promote fire prevention and public education initiatives in cooperation with community groups/organizations, as many are looking for projects to become involved with, to assist in promoting their community service.

Note: The information on this worksheet should be considered in conjunction with the information on all other worksheets, and not in isolation. Worksheet 10 allows fire departments to consider all the information on all worksheets together to make decisions about the provision of fire protection services in their municipality/community.

Worksheet 8: Economic Profile

Consider the industrial or commercial sectors that provide significant economic production and jobs to the local economy and the impact to the community's economy if a fire or other emergency occurred in occupancies housing those sectors.

Economic Profile Risks

List the industrial or commercial occupancies that provide significant economic production and jobs in the community. List the fire or other emergency risks in each occupancy. Assign probability, consequence, and risk levels for each risk identified.

Economic Profile Risks				
Identified Occupancy	**Key Risk**	**Probability (refer to Table 1)**	**Consequence (refer to Table 2)**	**Assigned Risk Level (refer to the Risk Level Matrix)**
Vulnerable Occupancies	Fire	Possible	Major	Moderate
	Weather Event	Possible	Minor	Moderate
Grocery Stores	Fire	Possible	Major	Moderate
	Weather Event	Possible	Minor	Moderate
	Power Outage	Likely	Major	High
	Flooding	Likely	Major	High
	Telecommunications Disruption	Possible	Moderate	Moderate

Economic Profile Risks				
Identified Occupancy	**Key Risk**	**Probability (refer to Table 1)**	**Consequence (refer to Table 2)**	**Assigned Risk Level (refer to the Risk Level Matrix)**
	Natural Gas Disruption	Unlikely	Minor	Low
Trucking Firms	Fire	Possible	Minor	Moderate
	Weather Event	Possible	Moderate	Moderate
Restaurants/Fast Food Outlets	Weather Event	Possible	Minor	Moderate
	Telecommunications Disruption	Possible	Moderate	Moderate
	Flooding	Likely	Major	High
	Power Outage	Likely	Moderate	Moderate
	Fire	Possible	Major	Moderate
Small Business	Fire	Possible	Major	Moderate
	Weather Event	Possible	Minor	Moderate
	Flooding	Likely	Major	High
	Power Outage	Likely	Moderate	Moderate

Economic Profile Risks				
Identified Occupancy	**Key Risk**	**Probability (refer to Table 1)**	**Consequence (refer to Table 2)**	**Assigned Risk Level (refer to the Risk Level Matrix)**
	Telecommunications Disruption	Unlikely	Minor	Low
Municipal Operations	Weather Event	Possible	Major	Moderate
	Flooding	Likely	Major	High
	Power Outage	Likely	Major	High
	Cyber Attack	Possible	Catastrophic	High
	Fire	Possible	Major	Moderate
Municipal Operations	Wildland Fires	Likely	Minor	Moderate
	Road Closure of Long Duration	Possible	Insignificant	Low
Municipal Operations – Water and Waste-Water Treatment Plants	Sabotage or Terrorism Attack	Unlikely	Major	Moderate
Municipal Arena	Power Outage	Possible	Insignificant	Low
	Weather Event	Possible	Moderate	Moderate

Economic Profile Risks				
Identified Occupancy	**Key Risk**	**Probability (refer to Table 1)**	**Consequence (refer to Table 2)**	**Assigned Risk Level (refer to the Risk Level Matrix)**
	Flooding	Likely	Major	High
	Natural Gas Disruption	Unlikely	Minor	Low
Schools	Fire	Possible	Major	Moderate
	Flooding	Likely	Major	High
	Weather Event	Possible	Moderate	Moderate
	Natural Gas Disruption	Unlikely	Moderate	Moderate
	Power Outage	Likely	Moderate	Moderate
	Potable Water Emergency	Unlikely	Moderate	Moderate
	Influenza Outbreak	Possible	Moderate	Moderate
Municipality	Hazardous Materials Incident	Possible	Moderate	Moderate
Campgrounds/Seasonal Lodging	Fire	Possible	Moderate	Moderate
	Flooding	Likely	Major	High

Economic Profile Risks				
Identified Occupancy	**Key Risk**	**Probability (refer to Table 1)**	**Consequence (refer to Table 2)**	**Assigned Risk Level (refer to the Risk Level Matrix)**
	Weather Event	Possible	Moderate	Moderate
Financial Institutions	Telecommunications Disruption	Possible	Moderate	Moderate
	Fire	Possible	Moderate	Moderate
	Flooding	Likely	Major	High
	Cyber Attack	Rare	Insignificant	Low
Railways	Derailment of either a freight or passenger train	Possible	Major	Moderate
Industrial/Manufacturing	Fire	Possible	Major	Moderate
	Flooding	Likely	Major	High
	Power Interruption	Possible	Minor	Moderate

Note: The information on this worksheet should be considered in conjunction with the information on all other worksheets, and not in isolation. Worksheet 10 allows fire departments to consider all the information on all worksheets together to make decisions about the provision of fire protection services in their municipality/community.

Worksheet 9a: Past Loss and Event History Profile

Consider previous response data to identify trends regarding the deaths, injuries, dollar loss, and causes of fire in various occupancy types. This assists in determining the leading causes of fires and high-risk locations and occupancies. In the absence of fire loss data, local knowledge may be the most reliable predictor of fire risk in your community. Also, provincial statistics can assist in determining the types of occupancies and locations where fire losses, injuries, and deaths most commonly occur.

TABLE 10: Fire by Property Category

D/N/A = Data Not Available

		2016	2017	2018
Total	Loss Fires	20	16	12
	Injuries	1	0	0
	Fatalities	0	0	0
	Est $ Loss	2,140,800	233,000	1,006,700
	No Loss Fires	16	7	11
Structure	Loss Fires	14	7	5
	Injuries	1	0	0
	Fatalities	0	0	0
	Est $ Loss	2,074,000	102,000	836,400
	No Loss Fires	0	0	0
Outdoor	Loss Fires	0	0	2
	Injuries	0	0	0
	Fatalities	0	0	0
	Est $ Loss	0	0	2,800
	No Loss Fires	2	0	0
Vehicle	Loss Fires	6	9	5
	Injuries	0	0	0
	Fatalities	0	0	0
	Est $ Loss	66,800	131,000	167,500
	No Loss Fires	0	0	0
No Loss – Outdoor Fires excluded	Loss Fires	0	0	0
	Injuries	0	0	0
	Fatalities	0	0	0
	Est $ Loss	0	0	0
	No Loss Fires	14	7	11

TABLE 11: Fires by Property Classification

		YEAR: **2016**					YEAR**: 2017**					YEAR: **2018**				
		# of Fires	**$ Loss**	**# of Injuries**	**# of Deaths**	**Causes**	**# of Fires**	**$ Loss**	**# of Injuries**	**# of Deaths**	**Causes**	**# of Fires**	**$ Loss**	**# of Injuries**	**# of Deaths**	**Causes**
Group A	Assembly	1	100,000	1	0	See Below	0	0	0	0	N/A	1	500	0	0	See Below
Group B	Detention	0	0	0	0	N/A	0	0	0	0	N/A	0	0	0	0	N/A
	Care & Treatment/ Care	0	0	0	0	N/A	0	0	0	0	N/A	0	0	0	0	N/A
Group C	Residential	7	424,000	0	0	See Below	3	80,500	0	0	See Below	2	25,900	0	0	See Below
	Mobile Homes & Trailers	0	0	0	0	N/A	0	0	0	0	N/A	0	0	0	0	N/A
Groups D & E	Business & Personal Service/Mercantile	1	600,000	0	0	See Below	0	0	0	0	N/A	0	0	0	0	N/A
Group F	Industrial	4	850,000	0	0	See Below	2	20,000	0	0	See Below	1	10,000	0	0	See Below
Other – Properties not classified by OBC		0	0	0	0	N/A	2	1,500	0	0	See Below	0	0	0	0	N/A
Properties classified under National Farm Building Code		1	100,000	0	0	See Below	0	0	0	0	N/A	1	800,000	0	0	See Below
TOTALS		**14**	**2,074,000**	**1**	**0**	**See Below**	**7**	**102,000**	**0**	**0**	**See Below**	**5**	**836,000**	**0**	**00**	**See Below**

Determined Fire Causes:

- Arson
- Design/Construction/Maintenance Deficiency
- Mechanical/Electrical Failure
- Misuse of Ignition Source/Materials First Ignited
- Unintentional
- Undetermined

TABLE 12: Summary of Total Emergency Calls (fires and non-fire calls)

	Total	Loss Fire Structure	Loss Fire Other	Loss Fire Vehicle	No Loss Fire	No Loss Fire - Excluded	Non-Fire Call
2016	738	14	0	6	2	14	702
2017	732	7	0	9	0	7	709
2018	767	5	2	5	0	11	744

TABLE 13: Overview Property Class, Injuries, Cause, Ignition Source

				2016	2017	2018
Structure	Total		Loss Fires	14	7	5
			Injuries	1	0	0
			Fatalities	0	0	0
			Est $ Loss	2,074,000	102,000	836,400
			No Loss Fires	0	0	0
	Intentional	Total	Loss Fires	2	2	0
			Injuries	1	0	0
			Fatalities	0	0	0
			Est $ Loss	400,000	1,500	0
			No Loss Fires	0	0	0
		Arson	Loss Fires	2	2	0
			Injuries	1	0	0
			Fatalities	0	0	0
			Est $ Loss	400,000	1,500	0
			No Loss Fires	0	0	0
	Unintentional	Total	Loss Fires	9	5	5

				2016	2017	2018
			Injuries	0	0	0
			Fatalities	0	0	0
			Est $ Loss	1,364,000	100,500	836,400
			No Loss Fires	0	0	
		Design / Construction / Maintenance Deficiency	Loss Fires	1	2	0
			Injuries	0	0	0
			Fatalities	0	0	0
			Est $ Loss	1,000	10,500	0
			No Loss Fires	0	0	0
		Mechanical / Electrical Failure	Loss Fires	2	1	2
			Injuries	0	0	0
			Fatalities	0	0	0
			Est $ Loss	600,000	30,000	825,000
			No Loss Fires	0	0	0
		Misuse of Ignition Source / Material First Ignited	Loss Fires	5	1	2
			Injuries	0	0	0
			Fatalities	0	0	0
			Est $ Loss	713,000	50,000	1,400
			No Loss Fires	0	0	0
		Other Unintentional	Loss Fires	0	1	1
			Injuries	0	0	0
			Fatalities	0	0	0
			Est $ Loss	0	10,000	10,000
			No Loss Fires	0	0	0
		Undetermined	Loss Fires	1	0	0
			Injuries	0	0	0

				2016	2017	2018
			Fatalities	0	0	0
			Est $ Loss	50,000	0	0
			No Loss Fires	0	0	0
	Other	Total	Loss Fires	2	0	0
			Injuries	0	0	0
			Fatalities	0	0	0
			Est $ Loss	70,000	0	0
			No Loss Fires	0	0	0
		Other	Loss Fires	2	0	0
			Injuries	0	0	0
			Fatalities	0	0	0
			Est $ Loss	70,000	0	0
			No Loss Fires	0	0	0
	Undetermined	Total	Loss Fires	1	0	0
			Injuries	0	0	0
			Fatalities	0	0	0
			Est $ Loss	240,000	0	0
			No Loss Fires	0	0	0
		Undetermined	Loss Fires	1	0	0
			Injuries	0	0	0
			Fatalities	0	0	0
			Est $ Loss	240,000	0	0
			No Loss Fires	0	0	0

TABLE 14: Fires by Ignition Source Class

			2016	2017	2018
Structure	Total	Loss Fires	14	7	5
		Injuries	1	0	0
		Fatalities	0	0	0
		Est $ Loss	2,074,000	102,000	836,000
		No Loss Fires	0	0	0
	Appliances	Loss Fires	0	1	0
		Injuries	0	0	0
		Fatalities	0	0	0
		Est $ Loss	0	500	0
		No Loss Fires	0	0	0
	Cooking Equipment	Loss Fires	3	1	0
		Injuries	0	0	0
		Fatalities	0	0	0
		Est $ Loss	243,000	50,000	0
		No Loss Fires	0	0	0
	Electrical Distribution Equipment	Loss Fires	1	1	3
		Injuries	0	0	0
		Fatalities	0	0	0
		Est $ Loss	100,000	30,000	35,500
		No Loss Fires	0	0	0
	Heating Equipment, Chimney etc.	Loss Fires	2	0	0
		Injuries	0	0	0
		Fatalities	0	0	0
		Est $ Loss	101,000	0	0

		No Loss Fires	0	0	0
	Open Flame tools, smoker's articles	Loss Fires	1	0	0
		Injuries	0	0	0
		Fatalities	0	0	0
		Est $ Loss	600,000	0	0
		No Loss Fires	0	0	0
	Other, electrical, mechanical	Loss Fires	2	0	1
		Injuries	0	0	0
		Fatalities	0	0	0
		Est $ Loss	550,000	0	800,000
		No Loss Fires	0	0	0
	Processing Equipment	Loss Fires	0	1	0
		Injuries	0	0	0
		Fatalities	0	0	0
		Est $ Loss	0	10,000	0
		No Loss Fires	0	0	0
	Miscellaneous	Loss Fires	1	1	0
		Injuries	0	0	0
		Fatalities	0	0	0
		Est $ Loss	10,000	10,000	0
		No Loss Fires	0	0	0
	Exposure	Loss Fires	2	0	0
		Injuries	0	0	0
		Fatalities	0	0	0
		Est $ Loss	70,000	0	0
		No Loss Fires	0	0	0

	Undetermined	Loss Fires	2	2	0
		Injuries	1	0	0
		Fatalities	0	0	0
		Est $ Loss	400,000	1,500	0
		No Loss Fires	0	0	0

TABLE 15: Total Number of Fire Calls by Type and Percentage

Call Type	2016		2017		2018	
	# of Calls	% of Total Calls	# of Calls	% of Total Calls	# of Calls	% of Total Calls
Outdoor Burning - Controlled	8	1%	12	2%	10	1%
CO False Alarms	30	4%	17	2%	23	3%
False Fire Calls	65	9%	69	9%	63	8%
Medical/Resuscitator Calls	336	46%	327	45%	360	47%
Other Response	169	23%	186	25%	169	22%
Pre-Fire Conditions	15	2%	6	1%	13	2%
Property Fire/Explosions	14	2%	7	1%	5	1%
Public Hazard	14	2%	17	2%	25	3%
Rescue	65	9%	75	10%	81	11%
Loss Fire - Vehicles	6	1%	9	1%	5	1%
Total	**738**	**100**	**732**	**100**	**767**	**100**

Worksheet 9b: Past Loss and Event History Profile

Past Loss and Event History Profile Risks

List the causes for each occupancy type identified on the previous worksheet.

Assign probability, consequence and risk levels to each cause identified.

Past Loss and Event History Profile

Occupancy Type/Location	Causes	Probability (refer to Table 1)	Consequence (refer to Table 2)	Assigned Risk Level (refer to the Risk Level Matrix)
Group A - Assembly	Electrical	Possible	Minor	Moderate
	Mechanical Deficiency	Possible	Minor	Moderate
	Arson	Possible	Major	Moderate
Group C - Residential	Accidental	Possible	Major	Moderate
	Electrical	Likely	Major	High
	Maintenance Deficiency	Likely	Major	High
	Arson	Possible	Major	Moderate
	Undetermined	Possible	Major	Moderate

Past Loss and Event History Profile

Occupancy Type/Location	Causes	Probability (refer to Table 1)	Consequence (refer to Table 2)	Assigned Risk Level (refer to the Risk Level Matrix)
Group D- Business / Personal Services	Electrical	Possible	Minor	Moderate
	Mechanical Deficiency	Possible	Minor	Moderate
	Arson	Possible	Major	Moderate
Group E - Mercantile	Electrical	Possible	Major	Moderate
Group E - Mercantile	Mechanical Deficiency	Possible	Major	Moderate
	Arson	Possible	Major	Moderate
Group F - Industrial	Electrical	Possible	Minor	Moderate
	Mechanical Deficiency	Possible	Minor	Moderate
Other – Farm Buildings	Arson	Possible	Major	Moderate
	Electrical	Possible	Major	Moderate
	Mechanical Deficiency	Possible	Major	Moderate

NOTE: The information on Worksheet 9b should be considered in conjunction with the information on all other worksheets, and not in isolation. Worksheet 10 allows fire departments to consider all the information on all worksheets together to make decisions about the provision of fire protection services in their municipality/community.

Worksheet 10 - Identifying Treatment Options for the Top Risks in the Community

When assessing and identifying treatment options, once risk levels have been assigned, fire departments can determine how best to treat each risk and the resources required to do so.

Options for treating risks include the following:

1. Avoid the Risk
2. Mitigate the Risk
3. Accept the Risk
4. Transfer the Risk

Avoid the Risk
Avoiding the risk means implementing programs and initiatives to prevent a fire or emergency from happening.

For example, public fire safety education initiatives aim to change people's behaviours so that fires may be prevented, and people react appropriately when fires occur. Fire Code inspections and enforcement help to ensure that buildings are compliant with the Ontario Fire Code.

Mitigate the Risk
Mitigating the risk means implementing programs and initiatives to reduce the probability and/or consequence of a fire or emergency.

For example, a routine Fire Code inspection and enforcement program to ensure Fire Code compliance helps to reduce the probability and consequence of a fire.

A pre-planning program involving fire suppression crews allows the fire department to gain knowledge about specific buildings in the community and their contents, fuel load, fire protection systems, etc. This information can be provided to the fire inspection staff who can ensure the building is compliant with the Fire Code. It can also assist suppression crews to plan fire suppression operations should a fire occur in a building. These activities can reduce the probability and consequence of a fire.

Accept the Risk
Accepting the risk means that after identifying and prioritizing a risk, the fire department determines that no specific programs or initiatives will be implemented to address this risk. In

this treatment option, the fire department accepts that the potential risk might happen and will respond if it occurs.

For example, typically fire departments do not implement programs to prevent motor vehicle collisions. It is generally accepted, however, that collisions will happen and that the fire department will respond when they do. Similarly, environmental hazards (e.g. ice storms) and medical calls cannot be prevented by a fire department program or initiative, yet fire departments typically respond when these emergencies occur.

When accepting risks, fire departments should consider their capacity (i.e. equipment, personnel, training, etc.) to respond.

Transfer the Risk

Transferring the risk means the fire department transfers the impact and/or management of the risk to another organization or body. Contracting public fire safety education, Fire Code inspection and enforcement, or emergency response services to a neighbouring municipality or another organization are examples of transferring the management of risks to another body.

For example, a community may enter into a fire protection agreement with a neighbouring community with respect to any, or all, of the Three Lines of Defence.

Setting the Type and Level of Fire Protection Services

When setting the type and level of fire protection services, all Three Lines of Defence should be considered in terms of the impact each will have on the probability or consequence of identified risks. Once fire departments have determined the preferred treatment option for each risk, they can plan and implement activities that address those risks. Things to consider include the fire department's current resources, staffing levels, training, equipment, and authority versus those that may be required to implement the preferred treatment options.

After considering these issues, the preferred treatment option (e.g. avoid the risk, mitigate the risk, accept the risk, or transfer the risk) can be noted in the *Preferred Treatment Option* column of worksheet 10 in Appendix A.

Fire departments should also ensure that operational policies and standard operating guidelines address the levels of service and activities required to address each risk. This includes setting goals and objectives and determining resources, training, equipment, activities, and programs required across each of the Three Lines of Defence.

The process of making informed decisions about the provision of fire protection services should include careful consideration of the following:

- Implementation of public fire safety education, Fire Code inspections and enforcement, and emergency response activities that are appropriate to address the causes, behaviours, or issues associated with identified risks.
- Capabilities and capacity of the fire department (e.g. financial and staffing resources, training, equipment, authority, etc.) that may be required to implement preferred treatment options.
- Strategic partners with common interests, available resources, or skill sets that could assist in addressing risks using the applicable risk assessment profiles.
- Establishing and Regulating By-laws, operational policies, and standard operating guidelines that reflect the fire protection services to be provided to address the identified risks.
- Establishment of goals and objectives, strategies, timelines, and evaluation for the proposed fire protection services to be provided.
- Communication with municipal council and the public to outline the types and levels of fire protection services that will be provided.

Mandatory Profiles	Top Risk or Issues/Concerns	Preferred Treatment Option
Geographic Profile	Body of water impacts training, equipment for response	**Avoid and Mitigate Risk** - Implement water/ice rescue training protocols, SOGs, policies and activities. Initiate automatic aid agreements for rescues offshore. Ice/water technical rescue team is being established.
	Body of water impacts response time	**Avoid Risk** - Implement appropriate response protocols, SOGs, and activities.
	Body of water – recreational/tourist activities	**Avoid and Mitigate Risk** – Public education programs required. Install signage at key locations of bodies of water identifying the risks of thin ice. Have pamphlets available at lodging locations warning of the dangers of thin ice and how a person may self rescue. List items persons should have when going on the ice such as ice picks, throw rope, whistle or a loud horn, cellphone in a waterproof kit. The use of social media networks will assist in educating the public on the dangers of being near/on water in both the summer and winter months. Educate seasonal residents on the importance of knowing their exact address to avoid delaying fire services response.
	Nith River	**Accept Risk** - Implement appropriate response protocols, SOGs, and activities during flooding season.
	Nith River	**Avoid and Mitigate Risk -** Implement appropriate response protocols, SOGs, and activities to mitigate an ice/water rescue from shore.
	Grass / Wildland / Forests	**Avoid and Mitigate Risk –** Promote no burning fire bans and review and update the outdoor burning by-law. Educate residents on importance of maintaining access routes into their property. Control vegetation growth along roadways.

Mandatory Profiles	Top Risk or Issues/Concerns	Preferred Treatment Option
		Promote safe campfire practices. Partner with MNRF on safe burning practices, through public education opportunities.
	Road Network	**Avoid Risk –** Control vegetation growth along roads. Some roads are closed for long duration due to extreme weather events. Landowners should be made aware of their responsibilities in maintaining any private roads. A long-term road improvement strategy to maintain the quality of the roads and monitor fire service response times.
Building Stock Profile	Fires	**Avoid and Mitigate Risk** - Increase public education on preventive maintenance due to design/construction/maintenance deficiencies, mechanical/electrical fires, misuse of ignition source/materials first ignited.
	Fires	**Avoid and Mitigate Risk** – Industrial/commercial (i.e. fires and the major impact they may cause to ongoing commerce in the area). Staff out of work, loss of business, other businesses see downturn in sales as residents could be out of work. Increase frequency of fire inspections, enforcement and public education may assist in reducing the risk of fire occurring.
	Fires	**Avoid and Mitigate Risk** – Aged buildings within older areas of rural communities. Heavier timber construction. Should be fire inspected annually and public education opportunities for building owners and staff on fire prevention, fire extinguisher use, etc. Base frequency on the standards of either the Fire Underwriters or NFPA 1730.
	Residential Dwellings – lack of smoke and CO alarms, home escape plans, fire	**Avoid and Mitigate Risk –** Implement aggressive public education initiatives promoting smoke/CO alarms, escape plans to school children, fire extinguishers, and residential sprinklers. Promote the need for well maintained wood burning chimneys and their cleaning before the season begins.

Mandatory Profiles	Top Risk or Issues/Concerns	Preferred Treatment Option
	extinguishers, vacant and derelict structures, poor housekeeping practices	The Fire Prevention Branch should monitor inspections for Fire Code violations and enforce non-compliance as required.
	Farmland – Vacant structures	**Avoid Risk –** Educate property owners to the risks and encourage fire plans for unused structures. Promote the need for safe structures including securing, enhancing the structural stability, or removing them.
	Heritage Structures	**Avoid Risk –** Conduct fire inspections on an annual basis if structure is occupied. Promote smoke alarms and fire extinguishers. Contact property owners to establish what the plans are for the vacant designated heritage structures. Promote the need to securing and making any vacant structures safe.
	Vulnerable Occupancies	**Avoid Risk –** Implement public education on safe cooking and smoking practices. Know and practice escape routes out of their building. Address the needs of those that may have mobility and/or cognitive behavioral issues in escaping a fire.
Critical Infrastructure Profile	Electricity	**Accept and Mitigate Risk** – Loss of power will adversely affect all forms of daily life. Businesses, schools, industries, residences, emergency services all rely heavily on power. Install permanent standby generators at key municipal buildings/services.
	Water	**Accept Risk** – Failure of maintaining potable drinking water from water supply system. Failure due to mechanical or human means will place the community at risk for public safety. Will affect healthcare, schools, commerce, etc.
	Telecommunications	**Accept Risk –** Loss of cell coverage throughout the Township or poor/no coverage in other areas. Township should work with cellphone communication companies to explore opportunities of improving coverage/long-term back-up power for long duration events.

Mandatory Profiles	Top Risk or Issues/Concerns	Preferred Treatment Option
	Natural Gas	**Accept Risk –** Loss of supply of natural gas in the event of transmission line breakages. Work with local service authorities in relation to public education initiatives in such events.
	Continuity of Government	**Avoid and Mitigate Risk –** During implementation of the emergency plan, staff unable to attend work locations due to weather event. Staff should have access to the Township's computer network to work from home.
Demographic Profile	Senior Citizens	**Avoid and Mitigate Risk** – It has been identified that seniors are looking at Wilmot Township as a great place to retire. They want a community that provides the services they may require, and ones that they could become involved in. This would be achieved by joining senior's groups and service clubs. There will be the requirement to provide public education to the new residents.
	Senior Citizens	**Avoid and Mitigate Risk** – Continue public education opportunities at fairs, club meetings, and promotional events (i.e. fire prevention week). Further Public Education opportunities should discuss the following topics of interest that relate to seniors: • Importance of working smoke and CO alarms • Safe cooking practices, dangers of using oils and grease for cooking • Develop and practise an escape plan for their place of residence • How to extinguish a cooking fire • How to operate a fire extinguisher (conduct clinics) • Prevent burns by not carrying burning pots and pans outside • Prevent clothing from catching fire by not wearing loose clothing near open flames

Mandatory Profiles	Top Risk or Issues/Concerns	Preferred Treatment Option
	Youth	**Avoid and Mitigate -** Fire education and career education programs focused on youth. Possibly initiate a junior firefighter program to promote interest in the emergency services to the Township's youth**.** As a means of students meeting their required hours of community service as part of the school curriculum, identify opportunities to assist the WFD (i.e. websites, public education, duties around the station, etc.).
	Schools	**Avoid and Mitigate –** Promote fire safety - develop and practice escape plan; discourage playing with ignition sources; conduct fire drills in the schools; promote fire prevention week (e.g. a contest for the best fire prevention poster or family escape plan); demonstrate how to crawl on the floor through smoke. Conduct a "Fire Chief for the Day" promotion in conjunction with a specific fire safety message (i.e. recording their family practicing their home escape plan).
	Seasonal Residents	**Avoid and Mitigate Risk –** Aggressive public education initiative promoting smoke and CO alarms, escape plans, fire extinguishers. Residents not aware of the address they are at; suggest it be written out and posted near a phone.
	Permanent Residents – lines of communications	**Avoid and Mitigate –** Enhance lines of communication regarding open air burning permits, fireworks by-laws, public education and fire prevention topics of interest. Provide updates on FD activities. Provide public education literature within the tax bills when they are sent out or via social media.
Hazard Profile	Fires	**Avoid and Mitigate Risk** – Through public education opportunities in schools by having children work on developing an escape plan in the home. Educating them on what to do when smoke alarms are activated. How to crawl on the floor through smoke.

Mandatory Profiles	Top Risk or Issues/Concerns	Preferred Treatment Option
	Fires	**Avoid and Mitigate Risk** - Due to the time it may take to respond to areas furthest from the fire stations, the Department should promote the Three Lines of Defence to those residents. This could be done through public education means along with the distribution of fire prevention educational material.
	Fires	**Avoid and Mitigate Risk** – Recommended that the Fire Prevention Division promote the value of residential sprinkler systems. Statistics show that residential sprinklers save lives and reduce the fire loss. In turn, property owners will reap savings on insurance costs and see an increase in the property value. With new residential developments, the Fire Prevention Division could work with the developer in promoting residential sprinklers as an “add on” in new home construction.
	Weather Event	**Accept Risk –** Tornadoes, ice and snowstorms, extreme heat and cold events, intense rainstorms, flooding. Although these cannot be completely avoided, they can, in most cases be predicted, which will allow for public awareness through media releases. Promote the need for families to maintain 72-hours worth of food and drinking water in the event of loosing power for long durations. They should also have some cash ready to use as may not be able to use electronic forms of payment.
	Motor Vehicle Collisions	**Accept Risk –** Mass casualties, road closures of long durations. Fire service to assess roads and frequency of events to ensure they are prepared for any type of event.

Mandatory Profiles	Top Risk or Issues/Concerns	Preferred Treatment Option
Public Safety Response Profile	Outside Fire Services	**Transfer Risk -** WFD does not provide advanced hazardous materials or technical rescue response and mitigation. As such the Department should enter into response agreements with outside fire services that do provide such service(s). Technical rescues could include confined space, high angle rope, trench, etc. Kitchener Fire Department has agreed in principal to respond into Wilmot Township to perform a technical rescue. A formal agreement should be developed and agreed upon.
	Wilmot Fire Department	**Avoid Risk –** WFD should embrace opportunities to interact with the community through Public Education and Fire Prevention programs. As the population grows, so does the necessity to meet the demands for additional Public Education and Fire Prevention initiatives. Complete an OFMEM Standard Incident Report for each Fire Prevention/Public Education event for statistical purposes.
	Wilmot Fire Department	**Avoid Risk –** With the potential increase of population of 36% and the likelihood of high-rise buildings being constructed in the community, an increase in the calls for service may require changes to response procedures and training when handling high-rise incidents. Policies, procedures, and training will be required to respond to high-rise incidents as well as sub-surface features of the building such as parking garages and storage areas.
	Wilmot Fire Department	**Avoid and Mitigate Risk** - Like so many other fire services in Ontario, WFD has problems with personnel being available to respond Mon to Fri from 8 a.m. to 5 p.m. The days of employers permitting an employee that belongs to the local fire

Mandatory Profiles	Top Risk or Issues/Concerns	Preferred Treatment Option
		department to leave work to attend a call, are, for the most part, over. Therefore, daytime availability of firefighters has diminished. The Fire Department should examine options for increasing firefighter reliability such as assign platoon shifts, immediate multi-station responses, or monitoring for requirement to add career firefighters Mon – Fri on dayshifts.
	Wilmot Fire Department - Mainstream Media / Social Media	**Avoid and Mitigate Risk –** Mainstream media such as radio/TV/newspapers could be used to the advantage of the fire service in sending out fire prevention and public education messaging. Social media such as Facebook, Instagram, Twitter are all acceptable avenues of sharing fire safety messaging.
	Wilmot Fire Department	**Avoid Risk –** WFD through a proactive program in conjunction with a building supply company, subdivision developers, along with a sprinkler installation company, promote the value of installing residential sprinkler systems in homes. It is suggested that it focus on installing them during major renovations or new builds. Sprinklers save lives and property and will save funds to the homeowner on insurance costs, while increasing the value of their property. The Canadian Automatic Sprinkler Association, a member of the Home Fire Sprinkler Coalition of Canada, states the installation of sprinklers will cost approx. $1.35 / ft^2 and add between 1 to 1.5% to the total building cost in new construction. Visit: http://homefiresprinklercanda.ca/

Mandatory Profiles	Top Risk or Issues/Concerns	Preferred Treatment Option
	Waterloo Paramedic Service	**Avoid and Mitigate Risk –** Fire Chief should monitor response/arrival times of paramedic services and communicate any concerns to the Paramedic Chief. The tiered medical agreement between the Wilmot Fire Department and the Paramedic Service should be reviewed and changes made accordingly to better serve the Township. WFD should promote and take advantage of any joint training opportunities.
	Kitchener Fire Dispatching Service	**Avoid Risk–** During the next contract renewal, discussions should include any areas of concern to meet NFPA 1221, Compliance for Fire Communications Centres as well as any other concerns there might be.
	Waterloo Regional 911 CERB	**Avoid Risk –** Region should review opportunities to provide advance notification to residents of significant events occurring that may have a direct effect on their way of life (i.e. mass evacuation). Notification through a reverse 911 phone system. Preparing for the Next Generation 911 and its affects on Waterloo Region emergency services. Early estimates are that the NG 911 system could cost between $250,000 and $500,000 which inevitably will be passed onto the clients. This may impact the FD's budget. • Other estimates are $80K/seat (+/ - 25%) • Annual operating costs of 25% of the capital expenses
Community Services Profile	Service Clubs	**Avoid and Mitigate Risk –** WFD should promote their fire prevention and public education initiatives to local service groups for future opportunities of financial support through partnerships. Service clubs are always looking for new ways and means of supporting their community anything to do with saving lives will find a sponsor.

Mandatory Profiles	Top Risk or Issues/Concerns	Preferred Treatment Option
		Presently the WFD does not have any formal support by way of finances, facilities, or link in kind from any Wilmot area service clubs or other outside organizations. Discussions are currently taking place with some community groups.
Economic Profile	Electricity	**Avoid and Mitigate Risk** – Promote to business owners the advantages of having a standby generator in the event they lose power. Having a generator could prevent the loss of food due to spoilage, lost sales due to inability to complete transactions, lack of power to operate equipment, no lighting in the place of business.
	Fires	**Accepted Risk** – Loss of business commerce and income to families due to fires. There is also the spin-off of loss of commerce to other non affected businesses.
	2020 Pandemic	**Accept Risk –** Current world events involving the Covid-19 pandemic has resulted in the temporary or permanent closure of many businesses resulting in job loss. Loss of financial income to the Township due to many recreation programs being cancelled, facilities being closed, staff being temporarily laid off. Residents may not have the funds to pay their property taxes as required. May take years to get out of the economic recession.
Fires Past Loss and Event History Profile	Fires	**Avoid and Mitigate Risk** – Through public education on dangers of unattended cooking, uncleaned or maintained chimneys, older electrical and mechanical equipment not upgraded, and lack of good housekeeping practices. Providing year-round education on the prevention of kitchen and cooking fires.

Mandatory Profiles	Top Risk or Issues/Concerns	Preferred Treatment Option
		During festive times of year, fires have occurred from dried out Christmas trees getting exposed to hot lights on the tree or an electrical failure of the strand of lights. Fires also caused by candles left burning when residents leave to go out for the night or forget to blow them out before going to bed.
	Fires	**Avoid Risk –** WFD should monitor all fires that the cause is undetermined or arson. The undetermined could have been missed as being an arson. When determining it as arson, they should look for reasons it could be, is it youth fire starters, insurance fraud, vandalism or just revenge for some unknown reason.
	Undetermined Causes for Fires	**Avoid and Mitigate –** Members of the Department have been trained to the NFPA Standard on Fire Cause Determination (NFPA 1033). Utilize the resources available through the OFMEM on determining causes. Note if there is a trend developing and act accordingly.
	Fires	**Avoid Risk –** Promote the advantages of upgrading electrical systems be it the wiring or fuse panel. Any residences or businesses using fuse panels should investigate replacing them with electrical breakers.

Risk Assessment, Review and Future Updates

O. Reg. 378/18 requires fire departments to complete a new community risk assessment at least every five years. The regulation also requires that fire departments review their community risk assessment at least once every 12 months to ensure it continues to accurately reflect the community and its fire and emergency risks. The purpose of this review is to identify any changes in the mandatory profiles that may result in a change in risk level, or a change in the type or level of fire protection services the fire department determines necessary to address the risks. This review is intended to ensure that the fire protection services provided continue to be evidence-based and linked to the identified risks.

This review process may or may not involve a close examination of all the nine community profiles, depending on whether any changes related to the profiles have occurred since the completion of the risk assessment or the last review. For example, changing demographic profiles (e.g. an aging population or an increase in the number of immigrants) or changing geographic profiles (e.g. the planned construction of a new highway) may impact the risks identified in the community risk assessment and the fire department activities and resources required to address them. A review may or may not result in any changes to the assigned risk levels or fire protection services. However, a review can provide evidence-based justification for decisions that may impact the delivery of fire protection services.

Fire departments should maintain documentation that the reviews required by O. Reg. 378/18 have been conducted. This documentation should include:

- Any changes to any of the mandatory profiles
- Any changes to assigned risk levels or fire protection services that occur as a result of the review
- Any other information the fire department deems appropriate to the review or any resultant changes to fire protection services.

If no significant changes occur in the community within a 12-month period, and no changes are required to the profiles or fire protection services, a review could simply consist of documentation to that effect.

APPENDIX A: FIRE MARSHAL'S COMMUNIQUE

Fire Marshal's
COMMUNIQUÉ
du commissaire des incendies

ONTARIO REGULATION 378/18
COMMUNITY RISK ASSESSMENT

Communiqué 2019-05
July 4, 2019

The Office of the Fire Marshal and Emergency Management (OFMEM) is pleased to announce that the **Ontario Regulation 378/18** that was filed on May 8, 2018 came into force on July 1, 2019. This regulation, made under the Fire Protection and Prevention Act, 1997 (FPPA) requires all municipalities and fire departments in territories without municipal organization to complete a community risk assessment and use its community risk assessment to inform decisions about the provision of fire protection services.

This regulation will ensure municipalities, and fire departments in territories without municipal organization, make evidence-based decisions on the provision of fire protection services based on the unique needs and circumstances of each of their communities in accordance with 2.(1) of the FPPA.

Ontario Regulation 378/18 can be viewed online at **www.ontario.ca/laws**
While the regulation came into effect on July 1, 2019, municipalities and fire departments may have up to July 1, 2024 to complete their community risk assessment.

The OFMEM is currently developing a guideline to assist municipalities and fire departments in completing their risk assessments in accordance with the regulation. The guideline will be made available to the fire service through a subsequent Communique and posted on the OFMEM website.

Enquiries regarding the Ontario Regulation 378/18 may be directed to Office of the Fire Marshal and Emergency Management via email **askofmem@ontario.ca**.

CRA Guideline OFMEM

Download the CRA Guideline [1.2 MB]
Sample Worksheets

TABLE OF CONTENTS

Abstract
1.0 SCOPE
2.0 INTRODUCTION
3.0 CONDUCTING A COMMUNITY RISK ASSESSMENT
3.1 Identifying Risks – Mandatory Profiles
4.0 PRIORITIZING RISKS
4.1 Probability
4.2 Consequence
5.0 ASSIGNING RISK LEVEL
6.0 RISK TREATMENT OPTIONS
6.1 Avoid the Risk
6.2 Mitigate the Risk
6.3 Accept the Risk
6.4 Transfer the Risk
7.0 SETTING THE TYPE AND LEVEL OF FIRE PROTECTION SERVICES
8.0 REVIEW
Appendix A: Profile Worksheets
Appendix B: How the Risk Levels in the Risk Level Matrix were Determined
Appendix C: ONTARIO REGULATION 378/18
Appendix D: Community Risk Assessment: Flow Chart
Appendix E: References
End Notes

July, 2019

OFMEM Section: Public Safety Education at 1-800-565-1842
The reproduction of this guideline for non-commercial purposes is permitted and encouraged. Permission to reproduce the guideline for commercial purposes must be obtained from the Office of the Fire Marshal and Emergency Management, Ontario.
Abstract

The Office of the Fire Marshal and Emergency Management (OFMEM) has developed this guideline to assist municipalities and fire departments in a territory without municipal organization, to conduct community risk assessments and use its community risk assessment to inform decisions about the provision of fire protection services, in accordance with *Ontario Regulation 378/18* (*O.Reg. 378/18*), and the *Fire Protection and Prevention Act 1997 (FPPA).*
For further information or assistance contact the Public Safety Education Manager at 1-800-565-1842.

This guideline provides:
An outline of recommended best practices to conduct a community risk assessment in order to make informed decisions about the provision of fire protection services.

Descriptions of the nine mandatory profiles outlined in *O. Reg. 378/18* that must be addressed in the community risk assessment, including examples of where this data and information can be obtained.

Worksheets that can be used or modified to document and analyze data/information related to the nine mandatory profiles that must be addressed in the community risk assessment in accordance with *O. Reg. 378/18*, and,
Worksheets that can be used or modified to assist in assigning risk levels and identifying preferred treatment options.

1.0 SCOPE
This document has been prepared by the Office of the Fire Marshal and Emergency Management to assist municipalities and fire departments in territories without municipal organization to conduct community risk assessments to meet the requirements of Ontario Regulation 378/18.

2.0 INTRODUCTION

Community risk assessments allow fire departments to make informed decisions about the types and levels of fire protection services they will provide based on identified risks.
Risk is defined as a measure of the probability and consequence of an adverse effect to health, property, organization, environment, or community as a result of an event, activity or operation.

By identifying all fire and life safety risks in their community and prioritizing them based on the probability of them occurring and the impact they would have if they occurred, fire departments are able to determine which risks to address and how best to address them. Risk assessments allow fire departments to ensure their levels of service, programs and activities for public fire safety education, Fire Code inspections and enforcement, and emergency response directly address the identified risks and are most effective at preventing and mitigating them. The *Fire Protection and Prevention Act, 1997 (FPPA)* mandates that every municipality in Ontario shall establish a program which must include public education with respect to fire safety and certain components of fire prevention, and provide such other fire protection services as it determines may be necessary in accordance with its needs and circumstances. In the fire service, these elements are commonly referred to as the Three Lines of Defence:

- Public Fire Safety Education
- Fire Safety Standards and Enforcement
- Emergency Response

In order to meet these obligations, municipalities need to make informed decisions with respect to the types and levels of fire protection services they provide. This requires an understanding of the risks facing the community that can be identified through a community risk assessment. Once identified, the risks can be prioritized to assist in making informed decisions about risk treatment options and the provision of fire protection services.

Ontario Regulation 378/18: Community Risk Assessments (O. Reg. 378/18) requires that every municipality and every fire department in a territory without municipal organization complete a community risk assessment and use it to inform decisions on the provision of fire protection services. The Community Risk Assessment is an in-depth and comprehensive assessment to inform fire protection service levels and requires the identification, analysis, evaluation and prioritizing of risk, based on nine mandatory profiles.

The regulation outlines a standard set of information profiles that must be considered when conducting a community risk assessment. The information and data gathered to address each

of the profiles will assist in determining and prioritizing the risks to public safety in the community, and determining the fire protection services to be provided by municipalities and fire departments in territories without municipal organization to address those risks.
The mandatory profiles identified in Schedule 1 of O. Reg. 378/18 were determined from examining various current industry models on risk assessment. Many of these models provide comprehensive coverage pertaining to identification of data and information relating to community risks. However, it should be noted that these risk assessment models may or may not include all of the nine mandatory profiles as identified in Schedule 1 of O. Reg. 378/18. Municipalities and fire departments in territories without municipal organization may use other tools, models or guidelines to conduct their community risk assessments provided that their final community risk assessment meets all the requirements outlined in O. Reg. 378/18., including consideration of each of the nine mandatory profiles identified in Schedule 1 of the regulation (see Appendix E).

The Guideline provides suggestions as to how to record and analyze the data/information using the sample worksheets that are provided in the Guideline. Municipalities and fire departments in territories without municipal organization have flexibility to include any additional information (e.g. maps, charts, diagrams) they deem appropriate to best assist them in analyzing their data and information in order to make informed decisions on fire protection services.

The Emergency Management and Civil Protection Act (EMCPA) requires every municipality to conduct an all-hazards risk assessment, which informs continuous improvement of emergency management programs and improves public safety. A completed Hazard Identification Risk Assessment (**HIRA**) may provide some of the information/data required to fulfil the needs of a Community Risk Assessment under O. Reg. 378/18, although there will be specific fire related information that is not contained in the HIRA that will be gathered as part of this process. The HIRA and the Community Risk Assessment are separate processes but should be viewed as complementary to one another.

Note: For the purposes of this guideline, the terms “fire department” and “fire departments” will be considered to include every municipality and every fire department without municipal organization.

3.0 CONDUCTING A COMMUNITY RISK ASSESSMENT

3.1 Identifying Risks – Mandatory Profiles

The first step in conducting a community risk assessment is to identify the various fire and life safety risks in the community. This can be done by gathering data about the make-up of the community and the activities occurring there.

O. Reg. 378/18 requires fire departments to consider the following profiles when completing their community risk assessment to ensure the risk assessment best considers all potential risks in the community:

- Geographic Profile
- Building Stock Profile
- Critical Infrastructure Profile
- Demographic Profile
- Hazard Profile
- Public Safety Response Profile
- Community Services Profile
- Economic Profile
- Past Loss and Event History Profile.

Fire departments need to gather and review data and information about each of these profiles to identify the fire and life safety risks that could impact the community.

Worksheets 1 to 9 in Appendix A of this guideline can be used to record and organize the data and information for each profile. The worksheets can be filled in electronically. Fire and emergency risks and issues/concerns can be noted in the appropriate columns of each worksheet as they are identified. These worksheets can be modified or adapted to suit local needs based on available data or information.

A description of each profile, including potential sources of data and information for each, is provided below.

3.1.1 Geographic Profile

Geographic profile refers to the physical features of the community, including the nature and placement of features such as highways, waterways, railways, canyons, bridges, landforms, and wildland-urban interfaces.

Physical features of the community may present inherent risks that need to be taken into account when determining the type and level of fire protection services that should be

provided by the fire department. Physical features may also impact emergency response access and response times.

Identifying any geographic features that might have implications with respect to risk or response allows fire departments to consider these issues when determining appropriate types and levels of fire protection services.

For example, a lake may have implications with respect to water and/or ice rescue services and the equipment and training that would be required to provide those services. The lake may also impact emergency response access and response times to certain areas within the community. Additionally, a lake may be a seasonal tourist attraction and the associated activities may present unique risks that could influence decisions on specific public fire safety education and Fire Code inspection and enforcement programs and activities.

Where to find/collect this information

Information related to the Geographic profile may be obtained from:
Local knowledge of the area and by using maps of the municipality's natural (i.e. lakes, rivers, etc.) and human-made (i.e. highways, bridges, railways, etc.) features, and
Local municipal departments (i.e. highways/roads, conservation authorities, etc.) who should have information about the location and uses of geographic and physical features of the community.

3.1.2 Building Stock Profile

Building Stock profile refers to the types, numbers, uses, and ages of the various buildings within the community.

Fire departments should consider the potential fire risks associated with different types/classifications or uses of buildings given their prevalence in the community and the presence of fire safety systems and equipment at the time of construction.

Older buildings typically do not contain the same fire safety and fire protection systems required in newer buildings. This may impact the fire risk in older buildings. Also, how buildings are used can influence the fire risks in each building. For example, industrial chemical storage facilities are likely to present higher fire risks than buildings containing commercial retail activities. The age and type of residential buildings (e.g. high-rise vs. single family dwelling vs. town/row houses) can influence the probability and consequence of fire in those buildings.

Past inspection practices and frequencies also can be a factor when considering risk associated with any particular building occupancy classification categories. For instance, a robust inspection program in higher risk occupancies can have a positive influence on mitigating some of the inherent risks associated with that particular type of building. Conversely, a lack of historical inspection data in relation to a particular occupancy classification category also should be considered when determining risk.

These building characteristics can have significant impact on the public fire safety education, Fire Code inspection and enforcement and emergency response activities the fire department may determine are necessary to address the risks.
Where to find/collect this information

O. Reg. 378/18 does not specify which source of this information has to be referenced to complete the risk assessment. Fire departments have the flexibility to choose which source they feel will provide the optimum level of detail they are most comfortable with as an accurate reflection of the building stock in their community. Consideration should be given to consistency in terms of data sources when conducting new risk assessments and annual reviews.

Information related to the Building Stock profile may be obtained from:
Categorizing buildings in accordance with the Standard Incident Report (SIR) property classification system which corresponds with the Ontario Building Code (OBC) occupancy classification system. As the Ontario Fire Code (OFC) requires that buildings be classified in accordance with the OBC, this approach makes it easy to consider issues like the type of construction and fire safety equipment/features that should be present in the different classifications of buildings, based on their size, age, design, and use;

Municipal building departments that have information regarding the age, number, types, uses, etc. of buildings in the municipality.

Municipal Property Assessment Corporation (MPAC – **www.mpac.ca**) data that assesses and classifies all properties within Ontario, and
Fire department pre-plans that identify uses and potential risks within specific buildings or areas of the community.

3.1.3 Critical Infrastructure Profile

Critical Infrastructure profile refers to the facilities or services that contribute to the interconnected networks, services, and systems that meet vital human needs, sustain the

economy, and protect public safety and security (i.e. electricity distribution, water distribution, telecommunications, hospitals, and airports).

Consideration of the presence, availability, capacity, and stability of infrastructure elements can help identify potential impacts that may result if any of these systems are compromised. Understanding how infrastructure impacts things like emergency services dispatch, communications, fire department emergency operations, overall health care or transportation can assist in determining preferred treatment options to address specific risks.

Where to find/collect this information

Information related to the Critical Infrastructure profile may be obtained from:
Local municipal departments (i.e. public works, water and sanitation departments, etc.) and other local utility companies that have information about the location, uses, capacity, etc. of the critical infrastructure in the community, and

A completed Hazard Identification Risk Assessment.

3.1.4 Demographic Profile

Demographic profile refers to the composition of the community's population considering such factors as population size and dispersion, age, gender, cultural background, level of education, socio-economic make-up, and transient population.

Awareness of the characteristics of the population in the community assists the fire department to determine if specific segments of the population are at high-risk of fire. This awareness allows fire departments to best identify high-risk behaviours that need to be changed, as well as specific techniques to communicate with high-risk groups.

Fire protection services, including public fire safety education and Fire Code inspections and enforcement programs, should be tailored to high-risk groups so that fire safety programs are delivered in the most relevant and meaningful ways and can have the greatest impact. For example, delivering fire safety messages using communications techniques popular with specific high-risk segments of the population increases the likelihood the messages are received by those segments and therefore are most effective at reducing the fire risk.

Where to find/collect this information

Information related to the Demographic profile may be obtained from:

Local municipal departments that keep information regarding the demographic make-up of their populations, including trends and projections regarding how the demographics may change in the coming years. The amount of this type of information that is available from municipal departments may vary between municipalities, and
Statistics Canada (**www.statscan.gc.ca**) census profiles of every community in Ontario, including demographic information.

3.1.5 Hazard Profile

Hazard profile refers to the hazards in the community, including natural hazards, hazards caused by humans, and technological hazards. This may include but not be limited to hazardous materials spills, floods, freezing rain/ice storms, forest fires, hurricanes, tornadoes, transportation emergencies (i.e. air, rail or road), snow storms, windstorms, extreme temperature, cyber-attacks, human health emergencies, and energy supply (i.e. pipelines, storage and terminal facilities, electricity, natural gas and oil facilities, etc.).
Fire departments should consider all potential hazards that pose a significant risk to or may have a significant impact on the community, and to which fire departments may be expected to respond.

<u>Where to find/collect this information</u>

Information related to the Hazard profile may be obtained from:
Local municipal or government departments (i.e. public safety, police, emergency management, etc.) with information about the natural and technological hazards within the community and the risk they pose.

Local historical incident data related to emergency incidents, and a completed Hazard Identification Risk Assessment.

3.1.6 Public Safety Response Profile

Public Safety Response profile refers to the agencies and organizations in the community (i.e. police, EMS, rescue) that may respond to certain types of incidents.
The fire department should consider other public safety response agencies (i.e. police, EMS, rescue) that might be tasked with or able to assist in the response to emergencies or in mitigating the impact of emergencies. This will assist the fire department to prioritize community risks and to determine the level of fire protection services it provides. For example, the presence of a private fire and rescue service at a local industrial facility may influence decisions about the type and the level of fire protection services a municipal fire department may provide to that facility.

Where to find/collect this information

Information related to the Public Safety Response profile may be obtained from:
Local municipal departments (i.e. police, EMS, emergency management, etc.), and
Private companies or industrial facilities who may have information about the response capabilities of other entities within the community.

3.1.7 Community Services Profile

Community Services profile refers to community agencies, organizations or associations that can provide services that support the fire department in the delivery of public fire safety education, Fire Code inspections and enforcement, or emergency response.
Community service agencies may be able to provide services in-kind, financial support, provisions of venues for training, increased access to high-risk groups in the community, or temporary shelter for displaced residents following an incident.

Where to find/collect this information

Information related to the Community Services profile may be obtained from:

- General local knowledge
- Local municipal departments (i.e. social services);
- Community service agencies (i.e. agencies providing English as a second language services, resettlement agencies, agencies working with older adults, the Canadian Red Cross, etc.) who have information about the various services provided by community organizations and their clients within the community.

3.1.8 Economic Profile

Economic profile refers to the economic sectors affecting the community that are critical to its financial sustainability.

When prioritizing risk in the community, the fire department should consider the impact of fire and other emergencies on the industrial or commercial sectors that provide significant economic production and jobs to the local economy. This will assist in determining the type and level of fire protection services provided in these sectors in the community.
For example, if a town has a large industrial or commercial occupancy that has a significant impact on the local economy, the fire department may consider increasing its public fire safety education and Fire Code inspection and enforcement activities to reduce the probability of a significant incident requiring a large-scale emergency response.

Where to find/collect this information

Information related to the Economic profile may be obtained from:
Local municipal departments (i.e. economic development, employment, and social services) that have information about the economic sectors that are critical to the community's economic well-being. This will help determine the economic impact (e.g. loss of business or jobs) if a fire occurs in a specific occupancy or area of the community.

3.1.9 Past Loss and Event History Profile

Past Loss and Event History profile refers to the community's past emergency response experience, including analyzing the following:

a) The number and types of emergency responses, injuries, deaths, and dollar losses.
b) A comparison of the community's fire loss statistics with provincial fire loss statistics.

Fire departments should evaluate previous response data to identify trends regarding the circumstances, behaviours, locations, and occupancy types of previous fires. This assists in determining the leading causes or behaviours resulting in fires, and high-risk locations and occupancies. Public fire safety education and Fire Code inspection and enforcement programs can then be designed to specifically target high-risk behaviours among various population groups and to focus prevention activities in high-risk neighbourhoods or locations. This targeted approach allows public fire safety education and Fire Code inspection and enforcement programs to directly address fire risks, thereby increasing their fire prevention effectiveness.

Where to find/collect this information

Information related to the Past Loss and Event History profile may be obtained from:
Standard Incident Reports completed by the fire department. These can be obtained through fire department records or by emailing the Office of the Fire Marshal and Emergency Management (OFMEM) at **OFMstatistics@ontario.ca**.;

Trends and statistics about fire causes and fire and life safety issues across the province located on the **OFMEM's website**, and
Information, available on request from the OFMEM, relating to fire losses in neighbouring communities.

For those communities where trends are not easily identifiable due to a lack of fire incidents, it may be helpful to look at trends across the province or in neighbouring municipalities that are similar in size and make-up.

It is suggested that a minimum of three (3) years' worth of data is analyzed in order to identify any potential patterns or trends and to avoid random events from unduly skewing the data.

4.0 PRIORITIZING RISKS

The mandatory profiles allow fire departments to identify the features and characteristics of their community that may impact fire and life safety risks. Once risks have been identified they should be prioritized. This section discusses how risks can be prioritized based on the probability of the risk happening and the consequence if the risk occurs. **Table 1: Probability Levels** and **Table 2: Consequence Levels** can be used to help determine the probability and consequence of each risk identified on the worksheets. The probability and consequence of each risk can then be noted in the appropriate columns on the relevant worksheets in Appendix A.

As noted in the introduction, risk is defined as a measure of the probability and consequence of an adverse effect to health, property, organization, environment, or community as a result of an event, activity or operation.

4.1 Probability

The probability or likelihood of a fire or emergency within a community is often estimated based on the frequency of previous experiences. A review of past events involves considering relevant historical fire loss data, learning from the experiences of other communities, and consulting members of the community with extensive historical knowledge. Professional judgment based on experience should also be exercised in combination with historical information to estimate probability levels. The probability of an event can be categorized into five levels of likelihood:

Table 1: Probability Levels

Description	Specifics
Rare	• may occur in exceptional circumstances • no incidents in the past 15 years
Unlikely	• could occur at some time, especially if circumstances change • 5 to 15 years since the last incident
Possible	• might occur under current circumstances • 1 incident in the past 5 years
Likely	• will probably occur at some time under current circumstances

	• multiple or recurring incidents in the past 5 years
Almost Certain	• expected to occur in most circumstances unless circumstances change • multiple or recurring incidents in the past year

Assign a probability level to each identified risk or hazard on the relevant worksheets in Appendix A.

4.2 Consequence

The consequence of a fire or emergency is the potential losses or negative outcomes associated with the event. The application of professional judgment and reviews of past occurrences are important methods used for determining consequence levels. Estimating the consequence level of an incident or event should involve an evaluation of four components:

Life Safety: Injuries or loss of life due to occupant and firefighter exposure to life threatening fire or other situations.

Property Loss: Monetary losses relating to private and public buildings, property content, irreplaceable assets, significant historic/symbolic landmarks and critical infrastructure.

Economic Impact: Monetary losses associated with property income, business closures, a downturn in tourism and/or tax assessment value, and employment layoffs.

Environmental Impact: Harm to human and non-human (i.e. wildlife, fish and vegetation) species of life and a general decline in quality of life within the community due to air/water/soil contamination as a result of the incident and response activities.

The consequence of an event can be categorized into five levels based on severity:

Table 2: Consequence Levels

Description	**Specifics**
Insignificant	• no life safety issue • limited valued or no property loss • no impact to local economy, and/or • no effect on general living conditions
Minor	• potential risk to life safety of occupants • minor property loss • minimal disruption to business activity, and/or

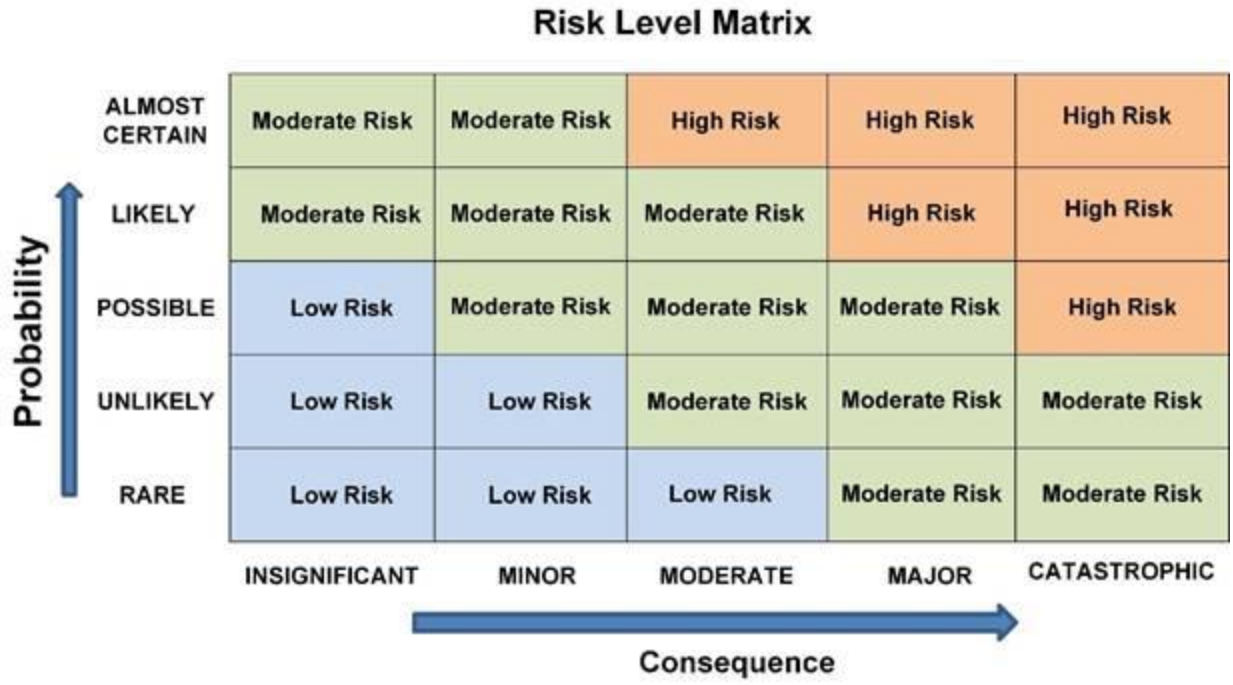
	• minimal impact on general living conditions
Moderate	• threat to life safety of occupants • moderate property loss • poses threat to small local businesses, and/or • could pose a threat to the quality of the environment
Major	• potential for a large loss of life • would result in significant property damage • significant threat to large businesses, local economy and tourism, and/or • impact to the environment would result in a short term, partial evacuation of local residents and businesses
Catastrophic	• significant loss of life • multiple property damage to a significant portion of the municipality • long-term disruption of businesses, local employment, and tourism, and/or • environmental damage that would result in long-term evacuation of local residents and businesses

Assign a consequence level to each identified risk or hazard on the relevant worksheets in Appendix A.

5.0 ASSIGNING RISK LEVEL

Assigning a risk level assists fire departments in prioritizing risks, which helps to determine how to address or treat each risk. The **Risk Level Matrix** in this section can assist fire departments to determine risk levels based on the probability and consequence levels of each identified risk. Risks can be assigned as low risk, moderate risk, or high risk. The risk levels for each risk can be noted in the **Assigned Risk Level** column on the relevant worksheets in Appendix A.

The following matrix can be used to determine the assigned risk level.**[1]** Plot the assigned probability and consequence levels on the relevant worksheets in Appendix A to assign a risk level for each identified risk.



6.0 RISK TREATMENT OPTIONS

Once risk levels have been assigned, fire departments can determine how best to treat each risk and the resources required to do so.

Options for treating risks include the following:

- Avoid the Risk
- Mitigate the Risk
- Accept the Risk
- Transfer the Risk

6.1 Avoid the Risk

Avoiding the risk means implementing programs and initiatives to prevent a fire or emergency from happening.

For example, public fire safety education initiatives aim to change people's behaviours so that fires may be prevented, and people react appropriately when fires do occur. Fire Code inspections and enforcement help to ensure that buildings are in compliance with the Ontario Fire Code.

6.2 Mitigate the Risk

Mitigating the risk means implementing programs and initiatives to reduce the probability and/or consequence of a fire or emergency.

For example, a routine Fire Code inspection and enforcement program to ensure Fire Code compliance helps to reduce the probability and consequence of a fire.

A pre-planning program involving fire suppression crews allows the fire department to gain knowledge about specific buildings in the community and their contents, fuel load, fire protection systems, etc. This information can be provided to the fire inspection staff who can ensure the building is compliant with the Fire Code. Also, it can assist suppression crews to plan fire suppression operations should a fire occur in a building. These activities can reduce the probability and consequence of a fire.

6.3 Accept the Risk

Accepting the risk means that after identifying and prioritizing a risk, the fire department determines that no specific programs or initiatives will be implemented to address this risk. In this treatment option, the fire department accepts that the potential risk might happen and will respond if it occurs.

For example, typically fire departments do not implement programs to prevent motor vehicle collisions. Yet it is generally accepted that collisions will happen and that the fire department will respond when they do. Similarly, environmental hazards (e.g. ice storms) and medical calls cannot be prevented by a fire department program or initiative, yet fire departments typically respond when these emergencies occur.

When accepting risks, fire departments should consider their capacity (i.e. equipment, personnel, training, etc.) to respond.

6.4 Transfer the Risk

Transferring the risk means the fire department transfers the impact and/or management of the risk to another organization or body. Contracting public fire safety education, Fire Code inspection and enforcement, or emergency response services to a neighbouring municipality or another organization are examples of transferring the management of risks to another body. For example, a community may enter into a fire protection agreement with a neighbouring community with respect to any or all of the three lines of defence.

7.0 SETTING THE TYPE AND LEVEL OF FIRE PROTECTION SERVICES

When setting the type and level of fire protection services, all Three Lines of Defence should be considered in terms of the impact each will have on the probability or consequence of identified risks. Once fire departments have determined the preferred treatment option for each risk, they can plan and implement activities that address those risks. Things to consider include the fire department's current resources, staffing levels, training, equipment and authority versus those that may be required to implement the preferred treatment options. After considering these issues, the preferred treatment option (e.g. avoid the risk, mitigate the risk, accept the risk, or transfer the risk) can be noted in the **Preferred Treatment Option** column of worksheet 10 in Appendix A.

Fire departments should also ensure that operational policies and standard operating guidelines address the levels of service and activities required to address each risk. This includes setting goals and objectives, and determining resources, training, equipment, activities, and programs required across each of the Three Lines of Defence.
The process of making informed decisions about the provision of fire protection services should include careful consideration of the following:

Implementation of public fire safety education, Fire Code inspections and enforcement, and emergency response activities that are appropriate to address the causes, behaviours or issues associated with identified risks.

Capabilities and capacity of the fire department (e.g. financial and staffing resources, training, equipment, authority, etc.) that may be required to implement preferred treatment options.
Strategic partners with common interests, available resources, or skill sets that could assist in addressing risks using the applicable risk assessment profiles.

Establishing and Regulating By-laws, operational policies and standard operating guidelines that reflect the fire protection services to be provided to address the identified risks.
Establishment of goals and objectives, strategies, timelines, and evaluation for the proposed fire protection services to be provided.

Communication with municipal council and the public to outline the types and levels of fire protection services that will be provided.

8.0 REVIEW

O. Reg. 378/18 requires fire departments to complete a new community risk assessment at least every five years. The regulation also requires that fire departments review their

community risk assessment at least once every 12 months to ensure it continues to accurately reflect the community and its fire and emergency risks. The purpose of this review is to identify any changes in the mandatory profiles that may result in a change in risk level, or a change in the type or level of fire protection services the fire department determines necessary to address the risks. This review is intended to ensure that the fire protection services provided continue to be evidence-based and linked to the identified risks.

This review process may or may not involve a close examination of all of the nine community profiles, depending on whether any changes related to the profiles have occurred since the completion of the risk assessment or the last review. For example, changing demographic profiles (e.g. an aging population or an increase in the number of immigrants) or changing geographic profiles (e.g. the planned construction of a new highway) may impact the risks identified in the community risk assessment and the fire department activities and resources required to address them. A review may or may not result in any changes to the assigned risk levels or fire protection services. However, a review can provide evidence-based justification for decisions that may impact the delivery of fire protection services.

Fire departments should maintain documentation that the reviews required by O. Reg. 378/18 have been conducted. This documentation should include:

- Any changes to any of the mandatory profiles;
- Any changes to assigned risk levels or fire protection services that occur as a result of the review, and
- Any other information the fire department deems appropriate to the review or any resultant changes to fire protection services.
- If no significant changes occur in the community within a 12-month period, and no changes are required to the profiles or fire protection services, then a review could simply consist of documentation to that effect.

APPENDIX B: DETERMINATION OF THE RISK LEVELS

The risk levels in the Risk Level Matrix in FIGURE 1 were determined using the following methodology. The probability and consequence levels outlined in Table 1: Probability Level (page 13) and Table 2: Consequence Level (pages 14-15) have different definitions, but are given the same weighted numerical values**[2]** (see the numerical values in red below) to reflect the fact that ***probability and consequence are equally important***. While it is human tendency to place more weight on consequence than probability, using the same weighted numerical values ensures that probability and consequence are given equal value. This approach is consistent with current risk management industry practices. The risk levels in the Risk Level Matrix were determined by multiplying the numeric values for probability and consequence.

Risk Level Matrix

Probability	INSIGNIFICANT 1	MINOR 10	MODERATE 100	MAJOR 1,000	CATASTROPHIC 10,000
ALMOST CERTAIN 10,000	Moderate Risk 10,000	Moderate Risk 100,000	High Risk 1,000,000	High Risk 10,000,000	High Risk 100,000,000
LIKELY 1,000	Moderate Risk 1,000	Moderate Risk 10,000	Moderate Risk 100,000	High Risk 1,000,000	High Risk 10,000,000
POSSIBLE 100	Low Risk 100	Moderate Risk 1,000	Moderate Risk 10,000	Moderate Risk 100,000	High Risk 1,000,000
UNLIKELY 10	Low Risk 10	Low Risk 100	Moderate Risk 1,000	Moderate Risk 10,000	Moderate Risk 100,000
RARE 1	Low Risk 1	Low Risk 10	Low Risk 100	Moderate Risk 1,000	Moderate Risk 10,000

Consequence

Low Risk:	probability x consequence = 1; 10; or 100
Moderate Risk:	probability x consequence = 1,000; 10,000; or 100,000
High Risk:	probability x consequence = 1,000,000; 10,000,000; or 100,000,000

APPENDIX C: ONTARIO REGULATION 378/ 18

ONTARIO REGULATION 378/18
made under the
FIRE PROTECTION AND PREVENTION ACT, 1997
COMMUNITY RISK ASSESSMENTS

Mandatory use
1. Every municipality, and every fire department in a territory without municipal organization, must, complete and review a community risk assessment as provided by this Regulation; and 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.
(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,
the day its community risk assessment was completed; and
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,
any significant changes in the mandatory profiles;
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.

Commencement
5. This Regulation comes into force on the later of July 1, 2019 and the day it is filed.
Schedule 1:
Mandatory Profiles
Geographic profile: The physical features of the community, including the nature and placement of features such as highways, waterways, railways, canyons, bridges, landforms and wildland-urban interfaces.

Building stock profile: The types of buildings in the community, the uses of the buildings in the community, the number of buildings of each type, the number of buildings of each use and any building-related risks known to the fire department.

Critical infrastructure profile: The capabilities and limitations of critical infrastructure, including electricity distribution, water distribution, telecommunications, hospitals and airports.
Demographic profile: The composition of the community's population, respecting matters relevant to the community, such as population size and dispersion, age, gender, cultural background, level of education, socioeconomic make-up, and transient population.
Hazard profile: The hazards in the community, including natural hazards, hazards caused by humans, and technological hazards.

Public safety response profile: The types of incidents responded to by other entities in the community, and those entities' response capabilities.

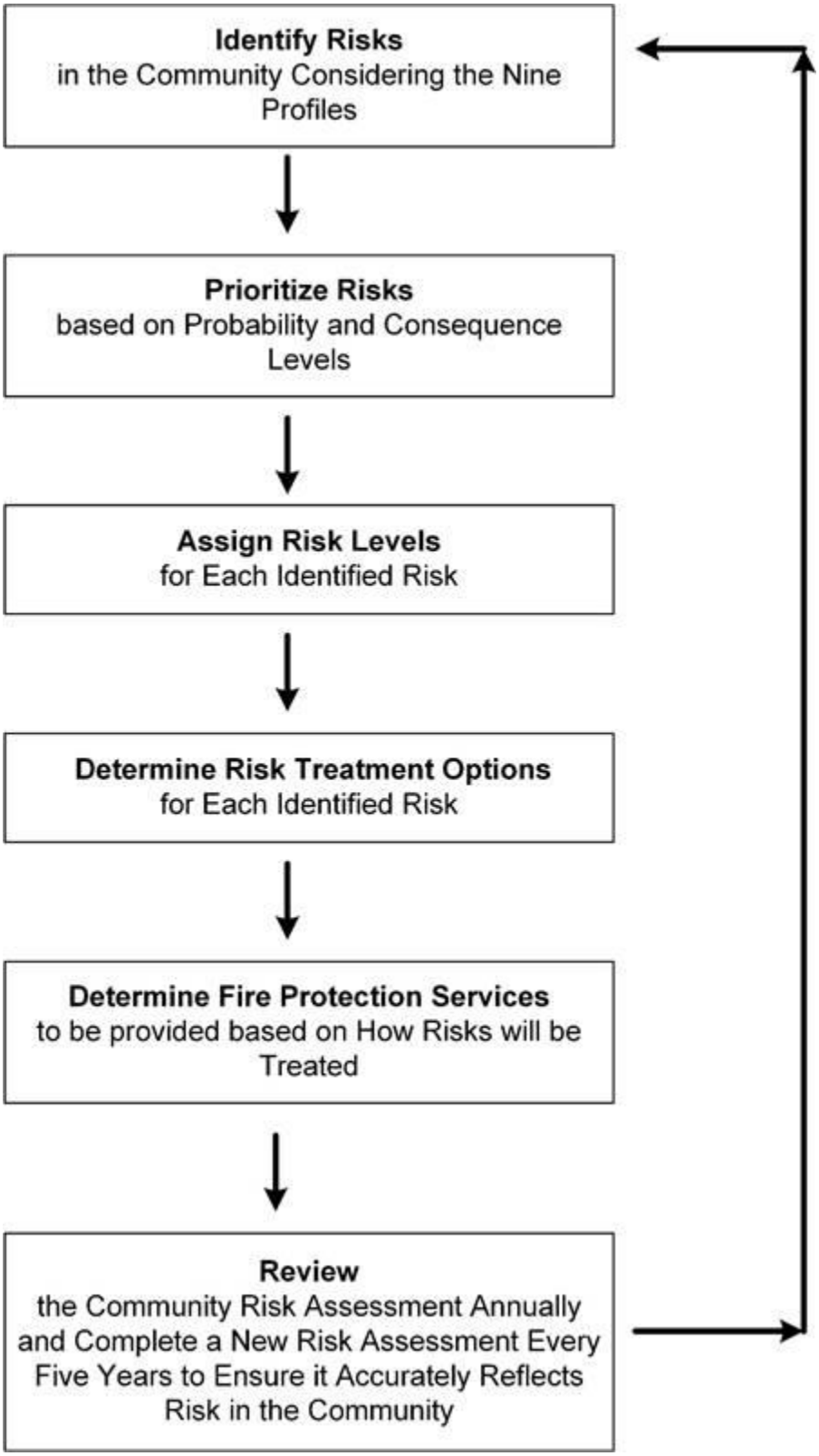
Community services profile: The types of services provided by other entities in the community, and those entities' service capabilities.
Economic profile: The economic sectors affecting the community that are critical to its financial sustainability.

Past loss and event history profile: The community's past emergency response experience, including the following analysis:

1. The number and types of emergency responses, injuries, deaths, and dollar losses.
2. Comparison of the community's fire loss statistics with provincial fire loss statistics.

Note: Each profile is to be interpreted as extending only to matters relevant to fire protection services.

APPENDIX D: COMMUNITY RISK ASSESSMENT FLOW CHART



APPENDIX E: REFERENCES

- DBP Management, ***5 Ways to Manage Risk***, ***dbpmanagement.com***
- Government of Ontario, ***Fire Protection and Prevention Act, 1997, S.O. 1997, c. 4***
- Government of Ontario, ***Ontario Regulation 378/18: Community Risk Assessments***, May 2018
- National Fire Protection Association, ***NFPA 1300, Standard on Community Risk Assessment and Community Risk Reduction Plan Development***, Proposed Second Draft, January 14, 2019
- National Fire Protection Association Urban Fire and Life Safety Task Force, ***Community Risk Reduction: Doing More With More***, June 2016
- Office of the Fire Marshal and Emergency Management, ***Comprehensive Fire Safety Effectiveness Model: Fire Prevention Effectiveness Model – Position Paper***, September 1997
- Office of the Fire Marshal and Emergency Management, ***Comprehensive Fire Safety Effectiveness Model: Fire Risk Sub-Model***, June 2009
- Office of the Fire Marshal and Emergency Management, ***Public Fire Safety Guideline 04-40A-03: Simplified Risk Assessment***, January 2006
- U.S. Fire Administration, ***Risk Management Practices in the Fire Service***, January 2018
- Vision 20/20, ***Community Risk Assessment: A Guide for Conducting a Community Risk Assessment***, Version 1.5, February 2016
- Vision 20/20, ***Community Risk Reduction Planning: A Guide for Developing a Community Risk Reduction Plan***, Version 4, June 2016