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City of Burlington
Comprehensive Master Fire Plan & Community Risk Assessment

Council Workshop Session
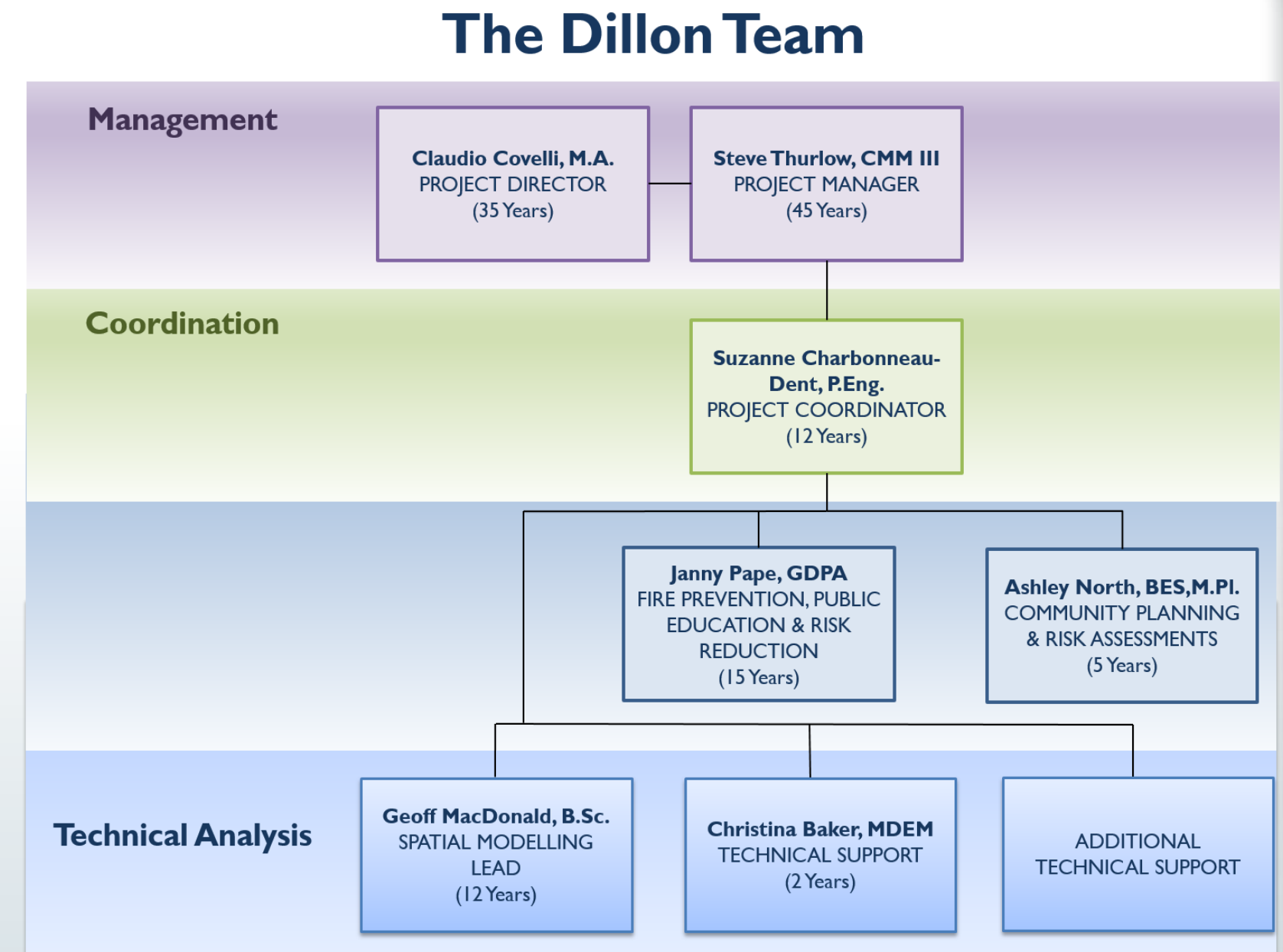Steve Thurlow, Ashley North, Christina Baker
Dillon Consulting Limited

November 7th, 2019

Project Team

Including:

✓ Over **100 years of municipal fire service** knowledge and experience across Canada;

✓ Senior **transportation engineering** qualifications and fire service experience;

✓ **Municipal fire service** administration, operations and leadership experience; and

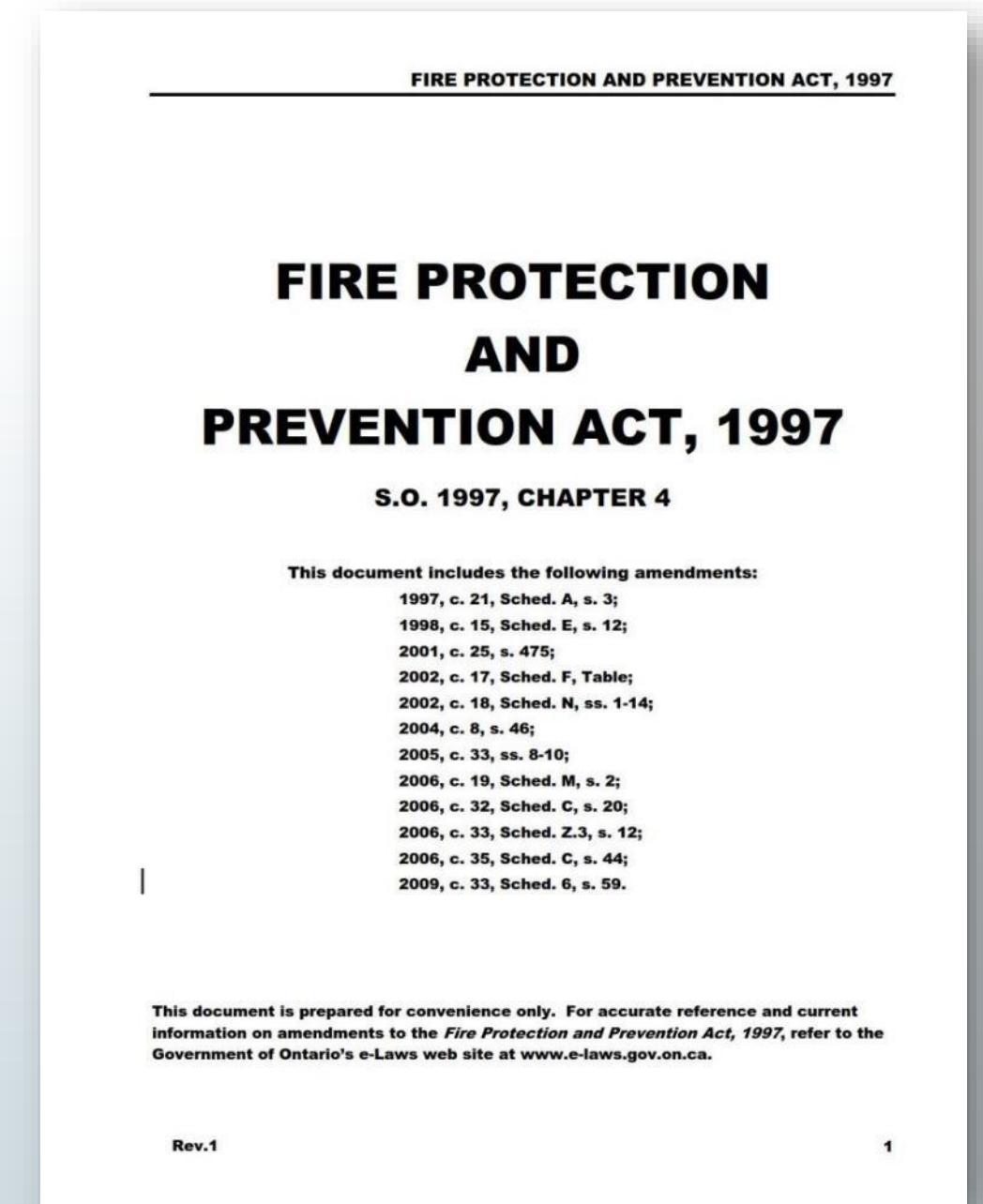✓ **Office of the Fire Marshal** technical fire prevention and public education experience.

The Dillon Team

Management

Claudio Covelli, M.A.
PROJECT DIRECTOR
(35 Years)

Steve Thurlow, CMM III
PROJECT MANAGER
(45 Years)

Coordination

Suzanne Charbonneau-Dent, P.Eng.
PROJECT COORDINATOR
(12 Years)

Janny Pape, GDPA
FIRE PREVENTION, PUBLIC EDUCATION & RISK REDUCTION
(15 Years)

Ashley North, BES, M.Pl.
COMMUNITY PLANNING & RISK ASSESSMENTS
(5 Years)

Technical Analysis

Geoff MacDonald, B.Sc.
SPATIAL MODELLING LEAD
(12 Years)

Christina Baker, MDEM
TECHNICAL SUPPORT
(2 Years)

ADDITIONAL TECHNICAL SUPPORT

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Fire Protection & Prevention Act

States that every municipality shall:

(a) Establish a **program for public education** with respect to fire safety and certain components of fire prevention; and

(b) **Provide other fire protection services** as it determines may be necessary in accordance with its **needs and circumstances**.

FIRE PROTECTION AND PREVENTION ACT, 1997

**FIRE PROTECTION
AND
PREVENTION ACT, 1997**

S.O. 1997, CHAPTER 4

This document includes the following amendments:
1997, c. 21, Sched. A, s. 3;
1998, c. 15, Sched. E, s. 12;
2001, c. 25, s. 475;
2002, c. 17, Sched. F, Table;
2002, c. 18, Sched. N, ss. 1-14;
2004, c. 8, s. 46;
2005, c. 33, ss. 8-10;
2006, c. 19, Sched. M, s. 2;
2006, c. 32, Sched. C, s. 20;
2006, c. 33, Sched. Z.3, s. 12;
2006, c. 35, Sched. C, s. 44;
2009, c. 33, Sched. 6, s. 59.

This document is prepared for convenience only. For accurate reference and current information on amendments to the *Fire Protection and Prevention Act, 1997*, refer to the Government of Ontario's e-Laws web site at www.e-laws.gov.on.ca.

Rev.1   1

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New Legislation

Community Risk Assessment

- **_Ontario Regulation 378/18_** requires every municipality in Ontario to develop a **_Community Risk Assessment._**

- **_Ontario Regulation 378/18_** also requires municipalities to use the C.R.A. to inform decisions about the provision of fire protection services.

- The regulation came into effect on **_July 1st, 2019_** and municipalities have until **_July 1, 2024_** to complete a C.R.A.

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Community Responsibilities

- ✓ Applicable to *individual homeowners, buildings owners*, and *tenants*;
- ✓ Community responsibilities are *legislated* (Ontario Fire Code) and promoted through public education (O.F.M.E.M. P.F.S.G.s);
- ✓ Under the *Ontario Fire Code,* a homeowner or building owner is required to:
  - ▪ maintain a working *Smoke Alarm* on every level of a residential occupancy;
  - ▪ maintain a working *Carbon Monoxide Alarm* in most residential occupancies;
- ✓ Homeowners are strongly suggested to develop and practice a *Home Escape Plan* that includes two exits from every room (O.F.M.E.M. P.F.S.G.s).

Ontario Fire Protection Model: Three Lines of Defence

1 | **Public Education and Prevention**
- Smoke alarm program, learn not to burn education, home escape planning;
- Identified vulnerable groups such as seniors and children

2 | **Fire Safety Standards and Enforcement**
- Fire inspection program and regular inspection cycles based on type of occupancy;
- Licensing, and violation enforcement including prosecution

3 | **Emergency Response**
- Ontario Fire Marshal's Office guidance notes; National Fire Protection Association Standards (N.F.P.A.); Ministry of Labour (Section 21 Guidance Notes); Industry best practices

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Fire Behaviour

FIRE PROPAGATION CURVE

Industry recognition that **fires** are **burning faster and hotter**.

Emphasis on the *First Two Lines of Defence.*

(e.g., early detection; early notification; home escape planning, etc.)

Fire Suppression as the Fail Safe.
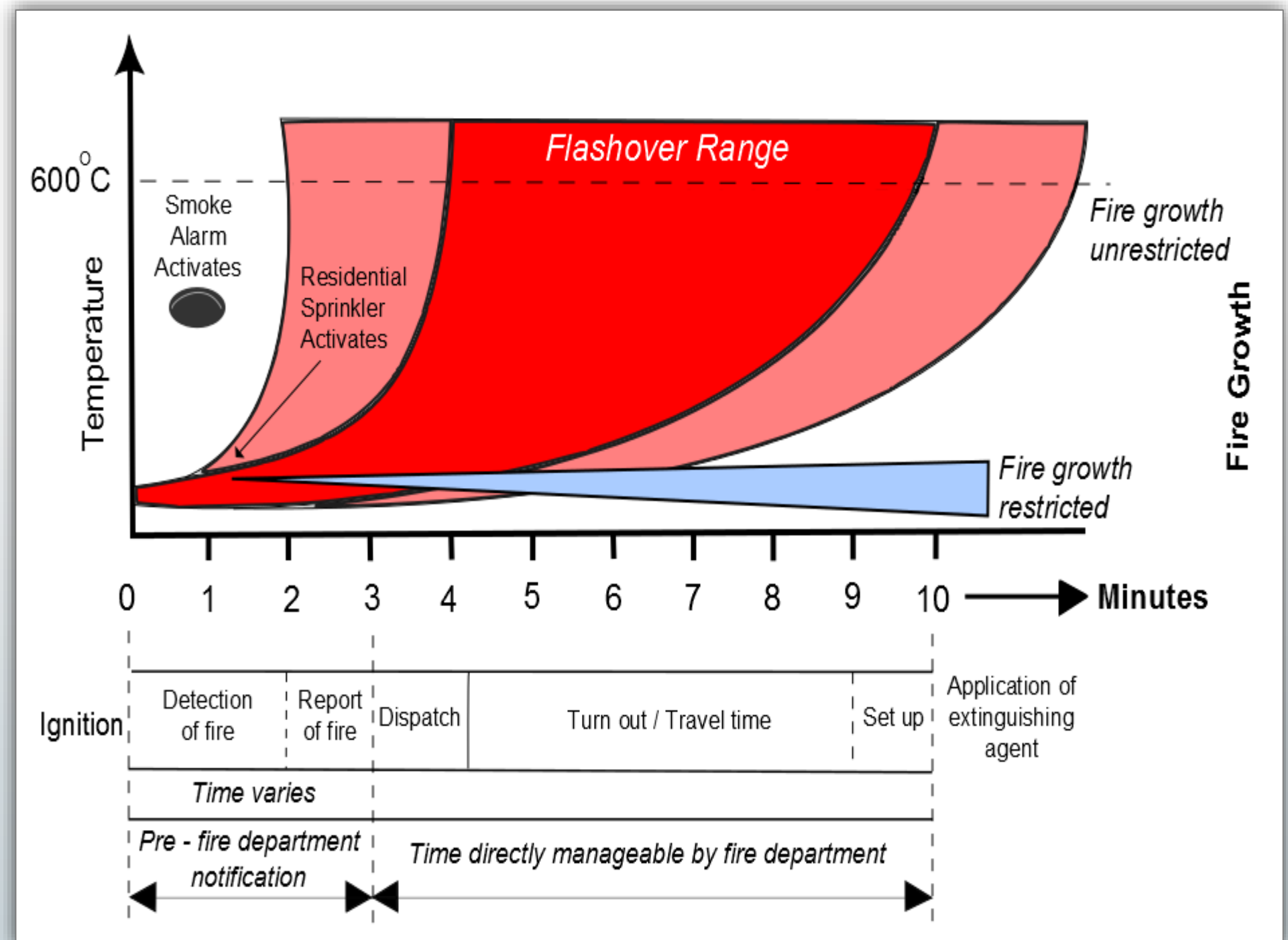
Source: Fire Underwriters Survey "Alternative Water Supplies for Public Fire Protection: An Informative Reference Guide for Use in Fire Insurance Grading "May 2009 and NFPA "Fire Protection Handbook" 2001

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Burlington Fire Department - Today

- Is defined within the fire service industry as a *"combination"* fire department;

- Includes a combination of full-time staff including firefighters and also utilizes volunteer firefighters (Station 5 – Kilbride, and Station 1 – Headquarters);

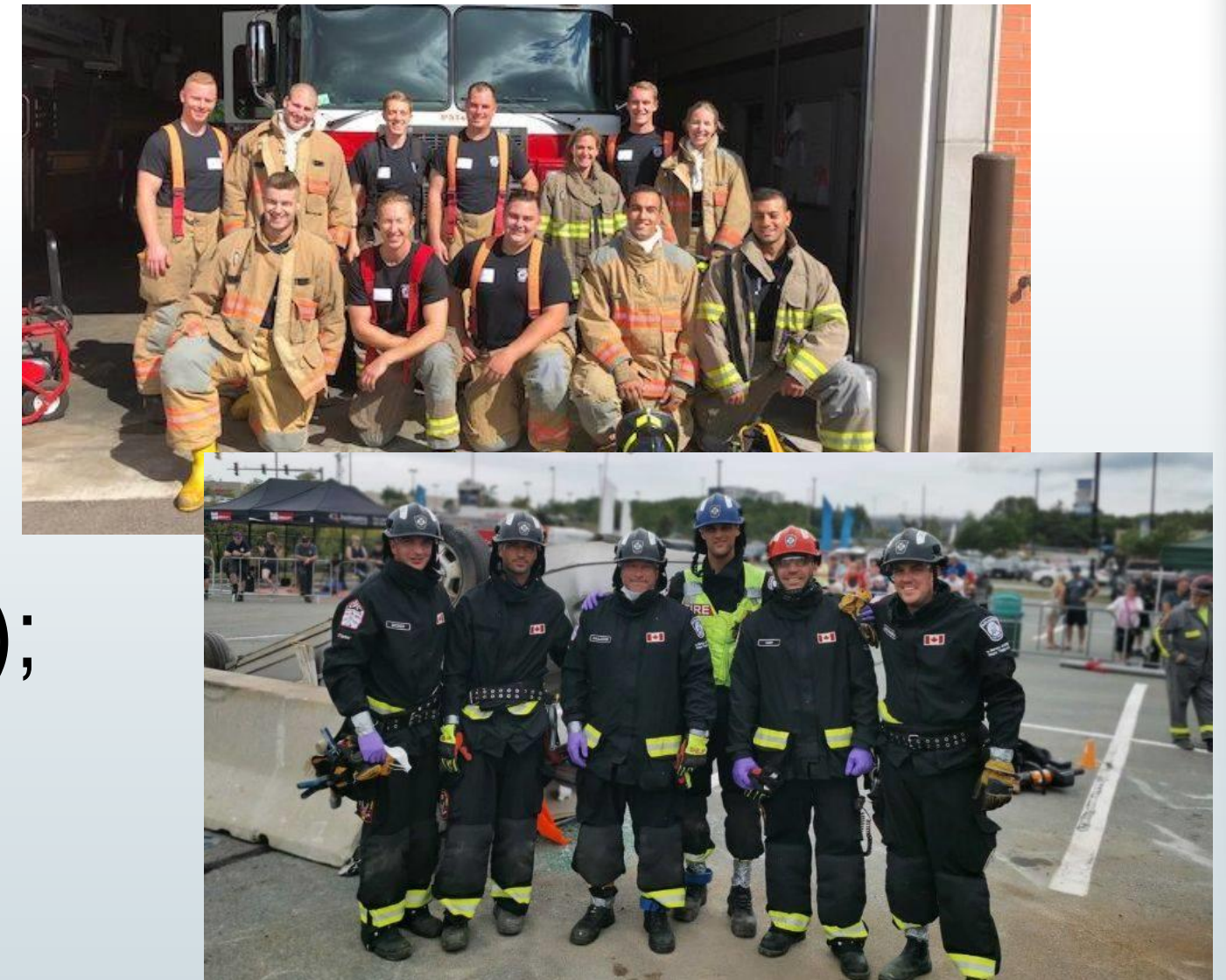- Provides a wide range of fire protection services utilizing the application of the *"three lines of defence"* model.

Photo Source: B.F.D. Facebook Page

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Burlington Fire Department - Today

- Current fire protection services include:

  – General and targeted public education programs;

  – Routine fire inspections, and inspections based on requests and complaints;

  – Emergency response to motor vehicle accidents, medical calls, fire related incidents and specialized services such as response hazardous materials, confined space rescue and ice/water rescue; and

  – Provides emergency call taking and dispatching for three of the four munipliaties within the Region of Halton.

Photo Source: B.F.D. Facebook Page

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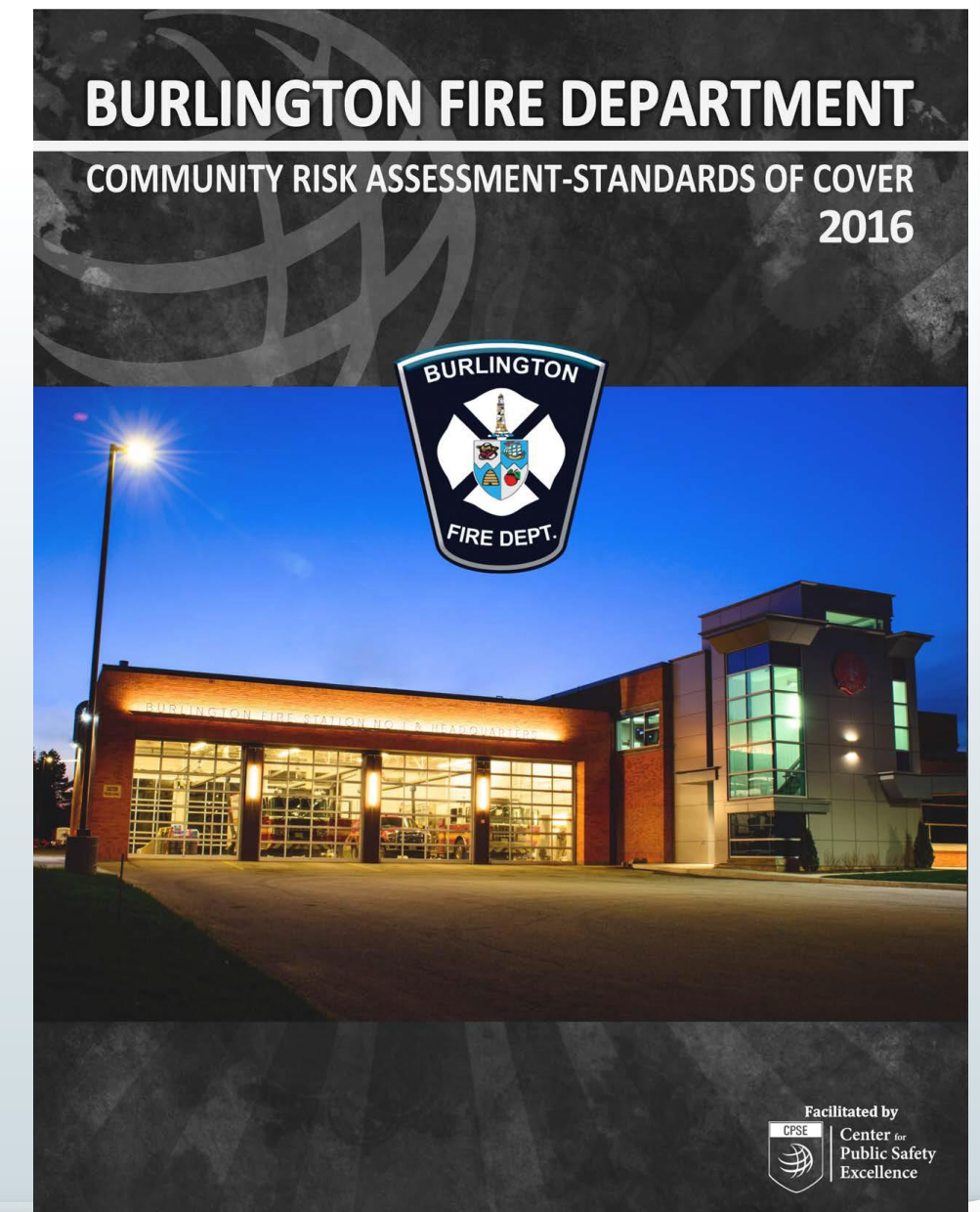# Suppression Deployment

Station	Apparatus	Minimum Staffing	
		Full-time	**Volunteer**
1	Command Unit	1	--
	Rescue	2	--
	Pump/Rescue	4	--
	Pump/Tanker	--	4
	Support Unit	--	2
2	Pump/Rescue	4	--
3	Quint	4	--
4	Pump/Rescue	4	--
	Aerial Ladder	2	--
5	Pumper	--	4
	Tanker	--	2
	Support Unit	--	2
6	Pump/Rescue	4	--
7	Pump/Rescue	4	--
	Rescue	2	--
8	Quint	4	--
Total		**35**	**14**
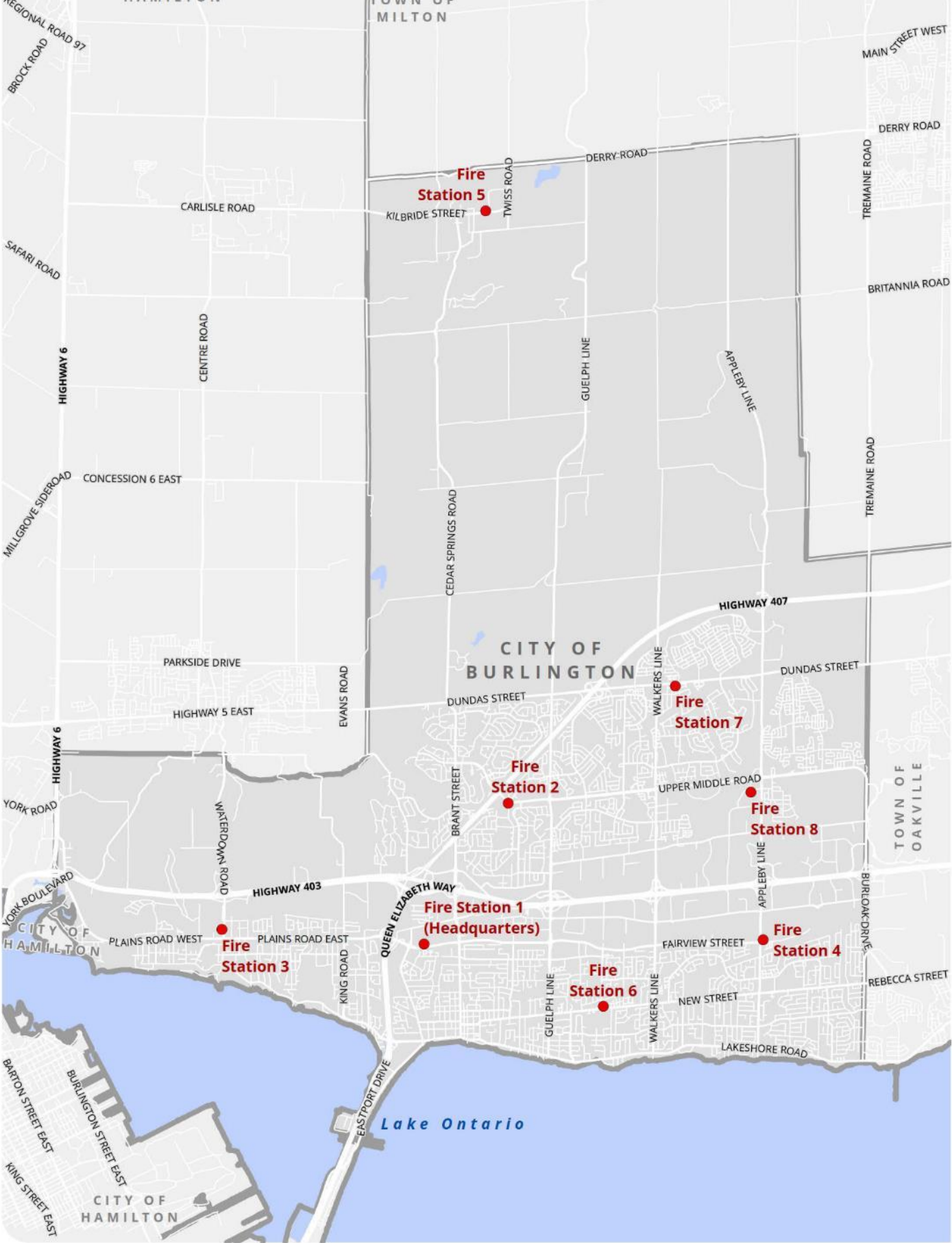
Burlington Fire Department - Today

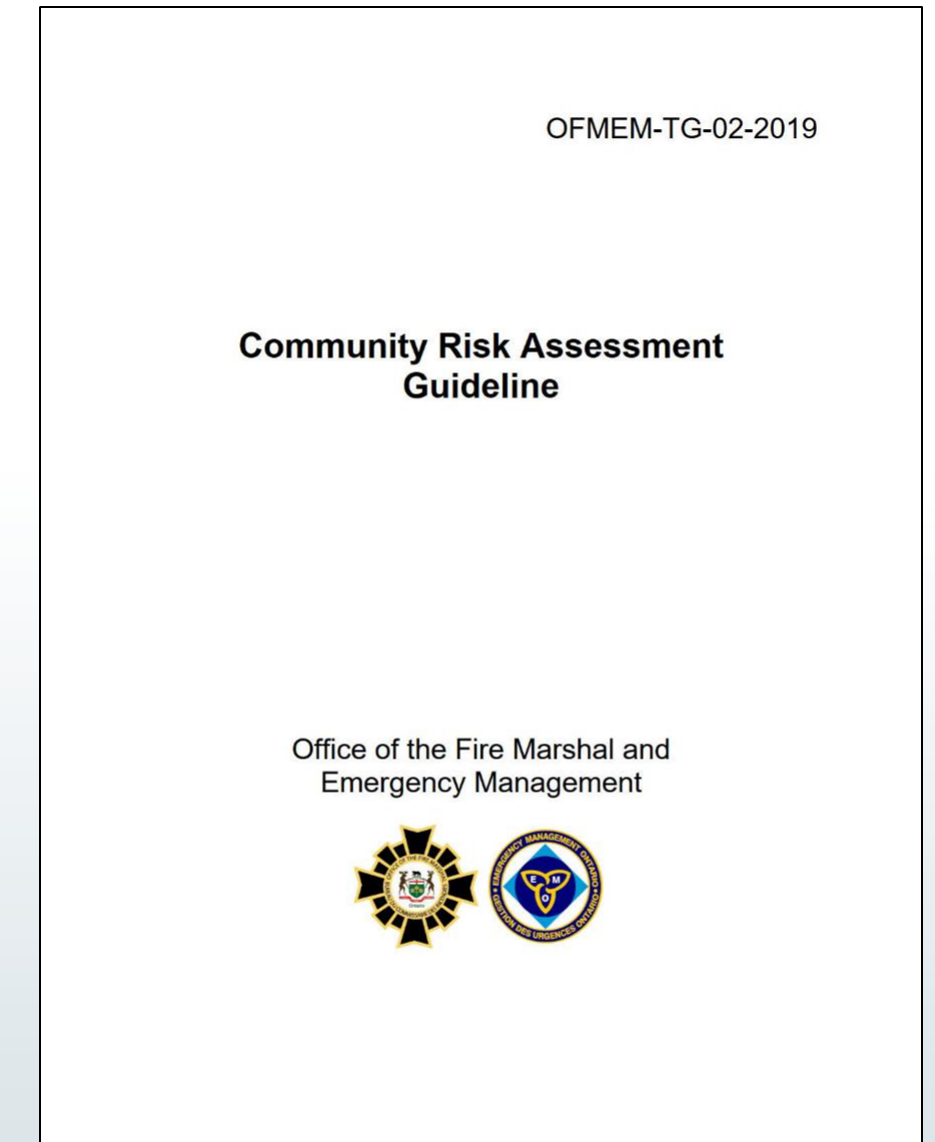- In 2015, the department conducted a community risk analysis and prepared a proposed *"Standards of Cover"* to inform the current fire suppression deployment model (B.F.D. Report 03-16) presented to Council;

- The *"Standards of Cover"* report included revised performance standards to be achieved through a strategy of *"continuous improvement"*.

BURLINGTON FIRE DEPARTMENT
COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER
2016

Facilitated by
CPSE | Center for Public Safety Excellence

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Community Risk

- Province recently adopted new ***Ontario Regulation 378/18*** that as of ***July 1st, 2019*** requires every municipality in Ontario to develop a ***Community Risk Assessment;***

- This new regulation is more comprehensive than the previous risk analysis completed by the department in 2015 resulting in the current ***"Standards of Cover"***;

- This new regulation requires that municipalities utilize the findings of the new Community Risk Assessment process to ***"inform all decisions"*** related to the delivery of fire protection services within their community.

OFMEM-TG-02-2019

Community Risk Assessment Guideline

Office of the Fire Marshal and Emergency Management

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Ontario Regulation 378/18

Supported by the ***Office of the Fire Marshal and Emergency Management Technical Guideline TG-02-2019*** including:

- ✓ Analysis of nine mandatory risk profiles;

- ✓ The assessment of probability and consequence;

- ✓ Identification of risk levels though the application of a risk matrix; and

- ✓ The application of risk mitigation/reduction strategies that consider:

  - ▪ *Avoid the risk;*

  - ▪ *Mitigate the risk;*

  - ▪ *Accept the risk; and*

  - ▪ *Transfer the risk.*

Geographic

Building Stock

Critical Infrastructure

Demographic

Hazard

Public Safety Response
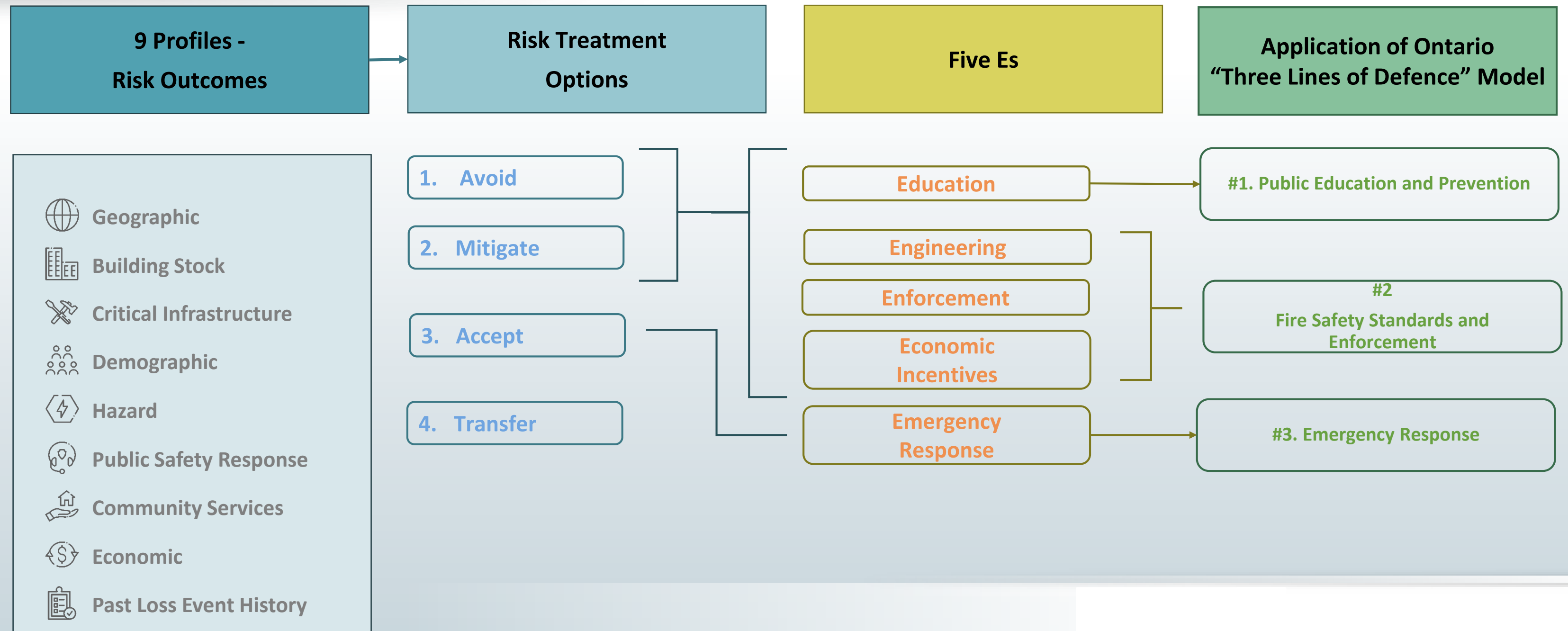
Community Services

Economic

Past Loss Event History

9 Mandatory Risk Profiles

# Risk Analyses/Risk Mitigation Process

9 Profiles - Risk Outcomes	Risk Treatment Options	Five Es	Application of Ontario "Three Lines of Defence" Model

9 Profiles - Risk Outcomes
- Geographic
- Building Stock
- Critical Infrastructure
- Demographic
- Hazard
- Public Safety Response
- Community Services
- Economic
- Past Loss Event History

Risk Treatment Options
1. Avoid
2. Mitigate
3. Accept
4. Transfer

Five Es
- Education
- Engineering
- Enforcement
- Economic Incentives
- Emergency Response

Application of Ontario "Three Lines of Defence" Model
- #1. Public Education and Prevention
- #2 Fire Safety Standards and Enforcement
- #3. Emergency Response

Fire Risk Modeling

Findings of the **Community Risk Assessment** will be illustrated in a GIS Model that identifies:

- Community fire risk based on the major building occupancy types presented within the Ontario Building Code; and

- In relation to low, moderate and high fire risks.

Divisional Analysis
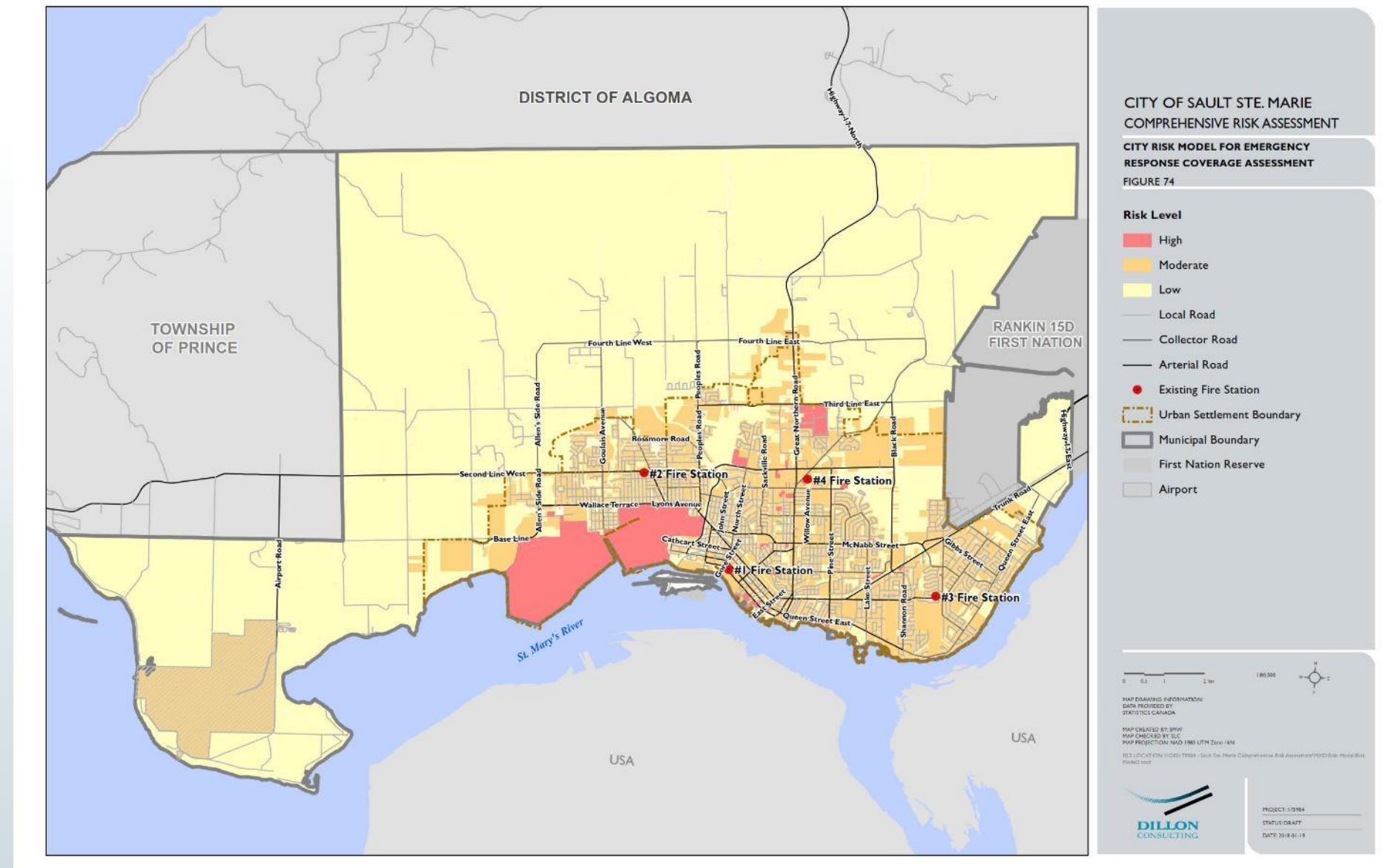
- Administration
- Fire Prevention
- Public Education
- Training
- Apparatus
- Equipment
- Emergency Management
- Communications

✓ Will include a review of all *"Non" Fire Suppression* activities and programs provide by the department;

✓ Analysis of compliance to *applicable legislation*;

✓ Comparison to current *industry guidelines* (O.F.M.E.M.) and *industry standards* as defined by the *National Fire Protection Association* (N.F.P.A.) reflecting current *industry best practices;*

✓ Informed by the *"Risk Outcomes"* of the *Community Risk Assessment;*

✓ Result in a completed *gap analysis* to inform options and recommendations for Council's consideration.

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Fire Suppression Division

✓ Statistical and trend analysis of **historical performance** (e.g., emergency response data, type of calls for the past 5 years);

✓ Suppression Division existing **staffing** and **service levels**;

✓ Compliance with applicable legislation including **O.H.S.A. Section 21 Guidance Notes;**

✓ Analysis of existing emergency response deployment (**Initial Arriving Company & Initial Full Alarm Assignments**) and impacts of planed future growth; and

✓ Existing station locations and facilities (condition, functionality, etc.).

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Fire Suppression Analysis

Informed by:

- ✓ *"Risk Outcomes"* identified by the *Community Risk Assessment;*

- ✓ Reference to O.F.M.E.M Public Fire Safety Guidelines (P.F.S.G.s);

- ✓ Application of the *National Fire Protection Association Standards* including *N.F.P.A. 1710* within the *defined urban area*, and *N.F.P.A. 1720* within the *identified rural area* of the City; and

- ✓ Where applicable, the utilization of *automatic* and *mutual aid agreements* to further enhance services.

Fire Suppression Analysis

TOTAL RESPONSE TIME =

Dispatch Time **+** **Turnout Time** **+** **Travel Time**

Time to receive and dispatch the call.

Time required for firefighters to react and prepare to respond.

Actual travel time from the fire station to the incident.

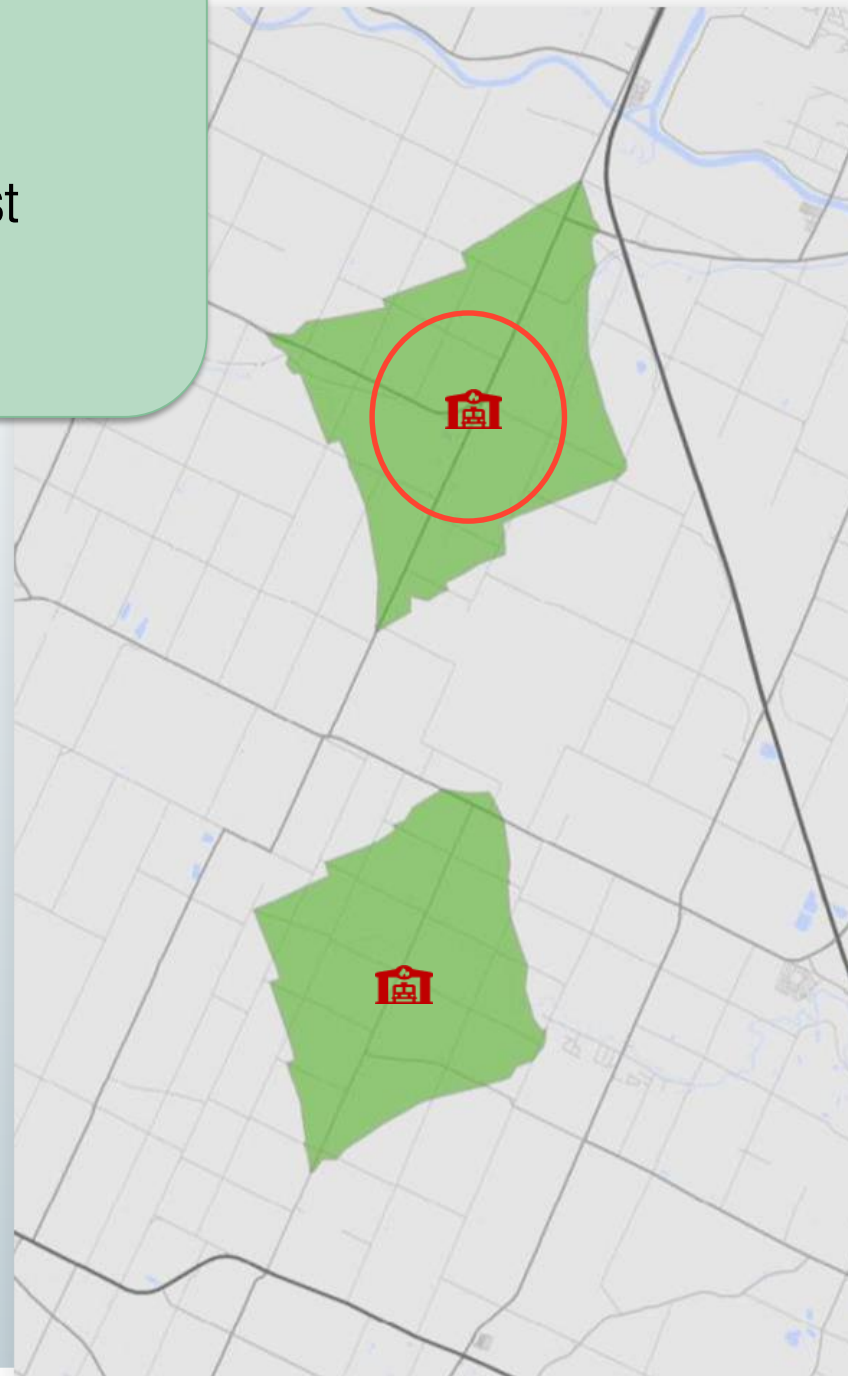**Initial Arriving Company:** The number of firefighters initially deployed on the 1st apparatus.

Initial Full Alarm Assignment: The total number of firefighters initially deployed to an incident.

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N.F.P.A. 1710 Standard – Defined Urban Area

Initial Arriving Company:
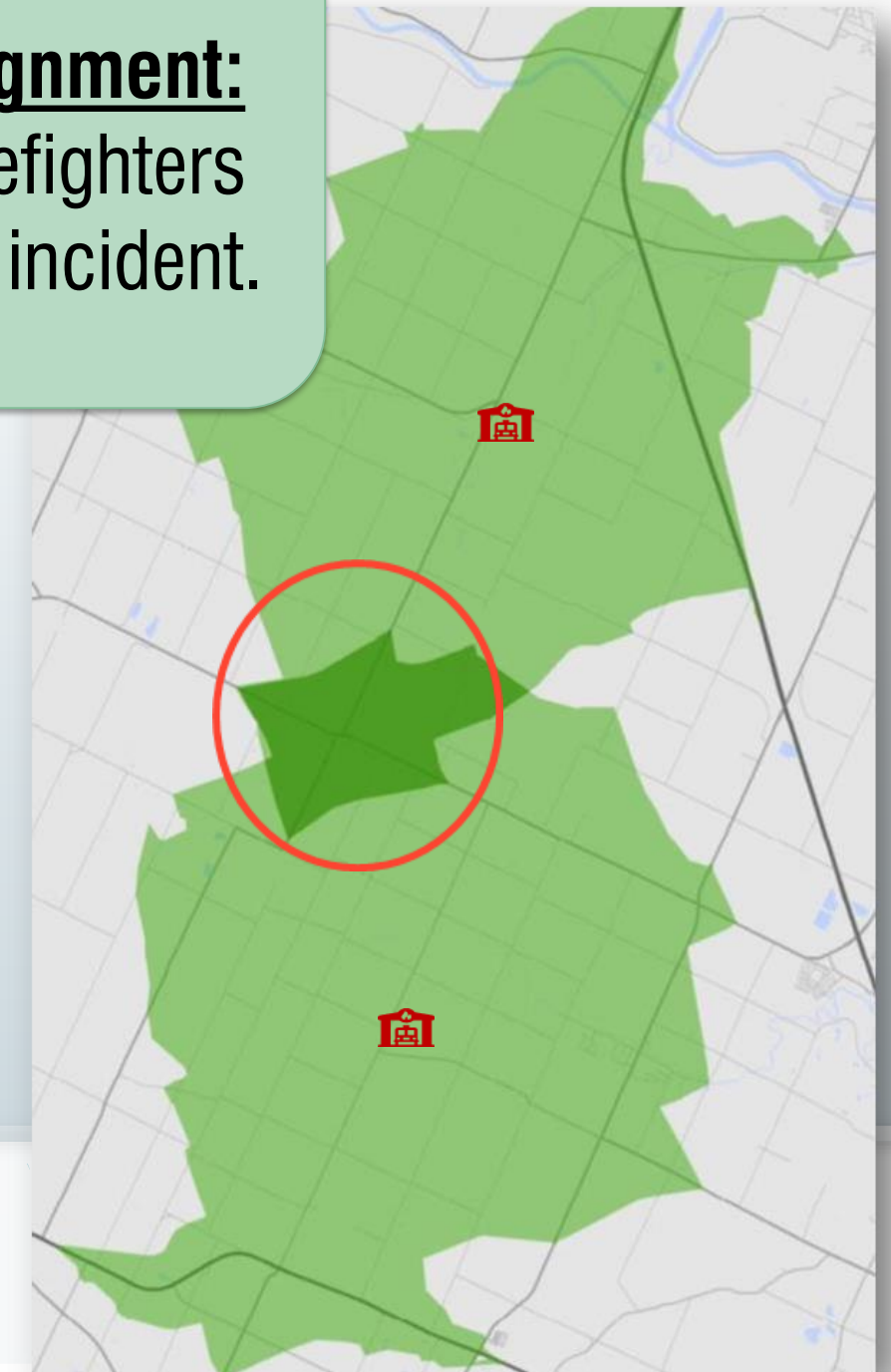The number of firefighters initially deployed on the 1st apparatus.

4 firefighters arriving on scene within 4 minutes of travel time to 90% of incidents

Initial Full Alarm Assignment:
The total number of firefighters initially deployed to an incident.

Total number of firefighters arriving on scene with 8 minutes of travel time to 90% of incidents

N.F.P.A. 1720 Standard (Rural Area)

Demand Zones	Demographics	Minimum # of Firefighters Responding	Response Time (Turnout + Travel) in Minutes	Performance Target
Urban Area	>1000 people per square mile	15	9	90%
Suburban Area	500-1000 people per square mile	10	10	80%
Rural Area	<500 people per square mile	6	14	80%
Remote Area	Travel Distance + or − 8 miles	4	Dependent upon travel distance	90%
Special Risks	To be determined by fire department	To be determined by fire department	Determined by authority having jurisdiction	90%

Project Work Plan

PROJECT INITIATION/ CONSULTATION

NON-FIRE SUPPRESSION REVIEW AND EXISTING EMERGENCY RESPONSE

FIRE SUPPRESSION AND NON-FIRE SUPPRESSION REVIEW

FINAL REPORT

- Project Initiation / Initiating Data Collection

- Internal Stakeholder Consultation

- Community Stakeholder Consultation

COMMUNITY RISK ASSESSMENT

- Nine Risk Profile Analyses

- Draft/Final CRA

- Non-Fire Suppression Division Review

- Fire Suppression Division Review

- Existing Emergency Response

- Emergency Response & Station Location Analysis

- Recommendations and Implementation Plan

- Draft MFP Report

- Presentation of Final Report to Steering Committee

- Final MFP Report

- Council Presentation

Preliminary Findings
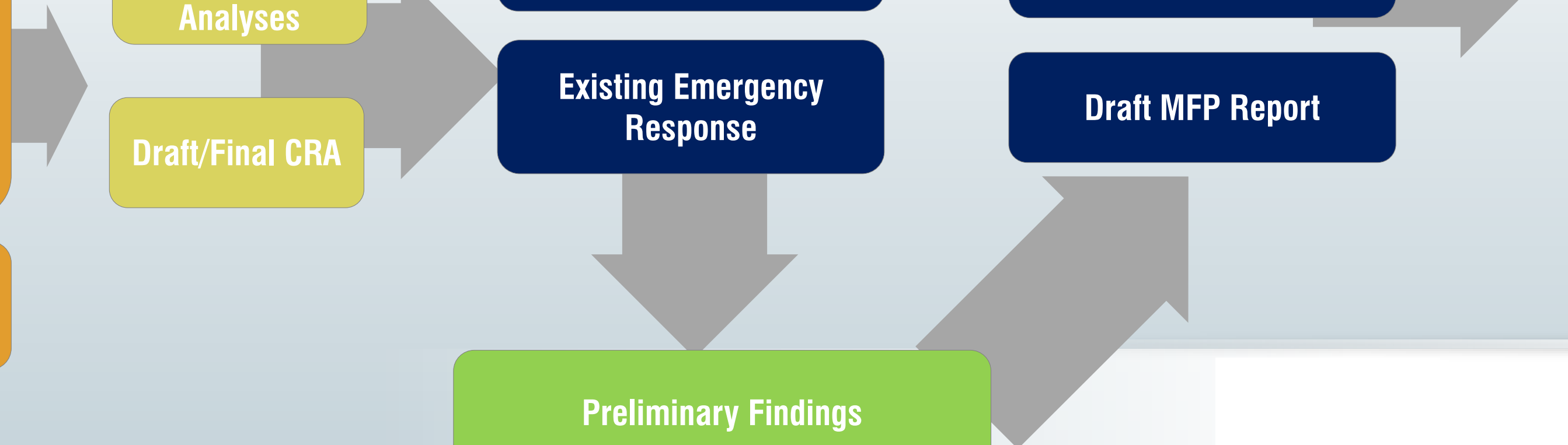
Community Stakeholder Consultation

Community Group Stakeholder Interviews

- Identification of eight (8) community stakeholders representing local industries, businesses and community groups

- Would require the assistance of the City's Project Team

- Includes pre-scheduled phone interviews

Community Information Open House

- Will highlight the project's purpose and scope

- Garner input from the community regarding the needs, perceived risks and opinions relating to the provision of fire protection services

- Can coincide with another community-based event to increase attendance

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Council Workshop

- What are the **strengths** of the fire department as it exists today?
- Its **weaknesses**?
- Where are there **opportunities** for the department to improve in the short-term and the long- term?
- What are possible **constraints** to this improvement?

Strengths	Weaknesses
Opportunities	**Constraints**
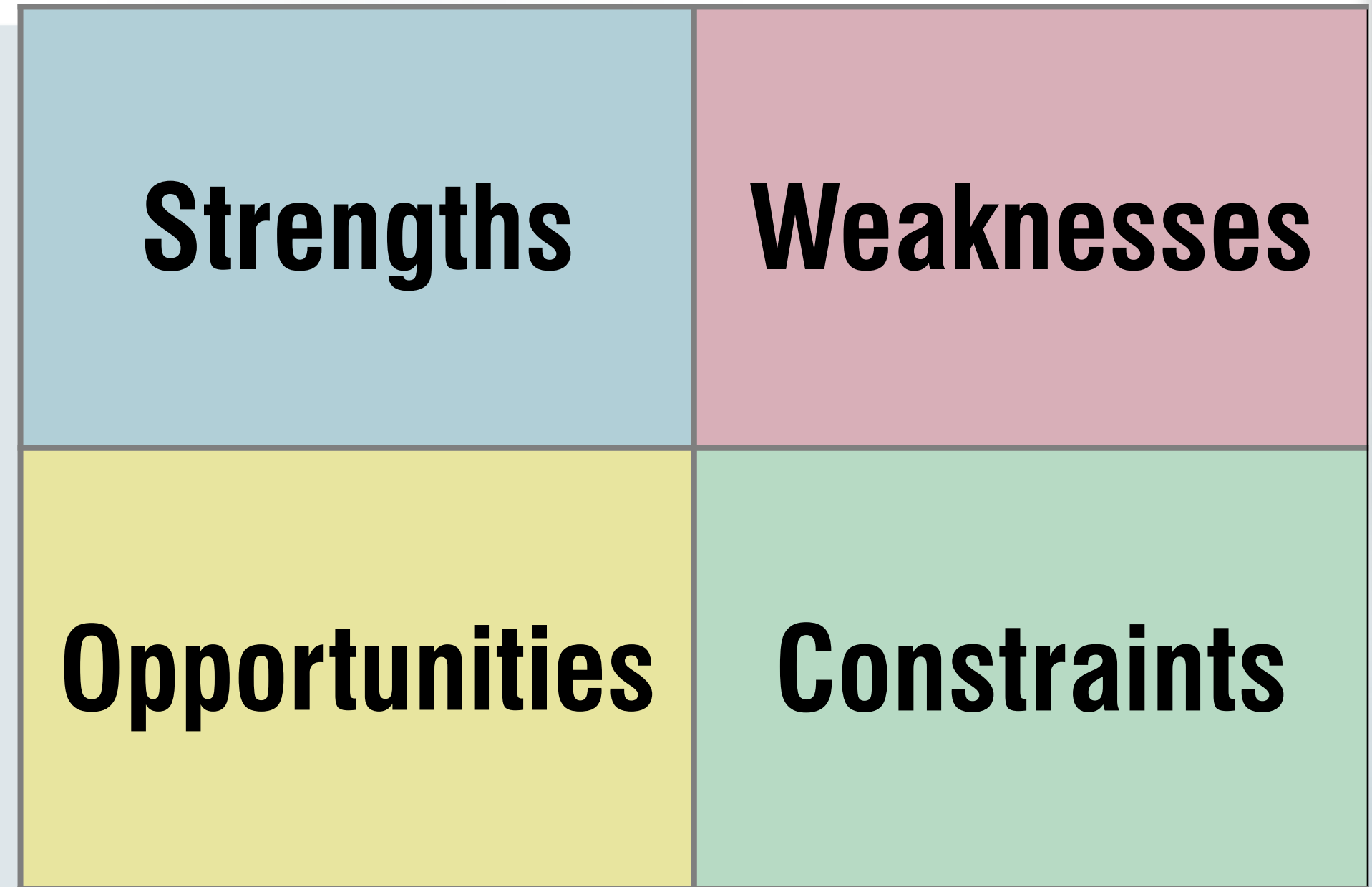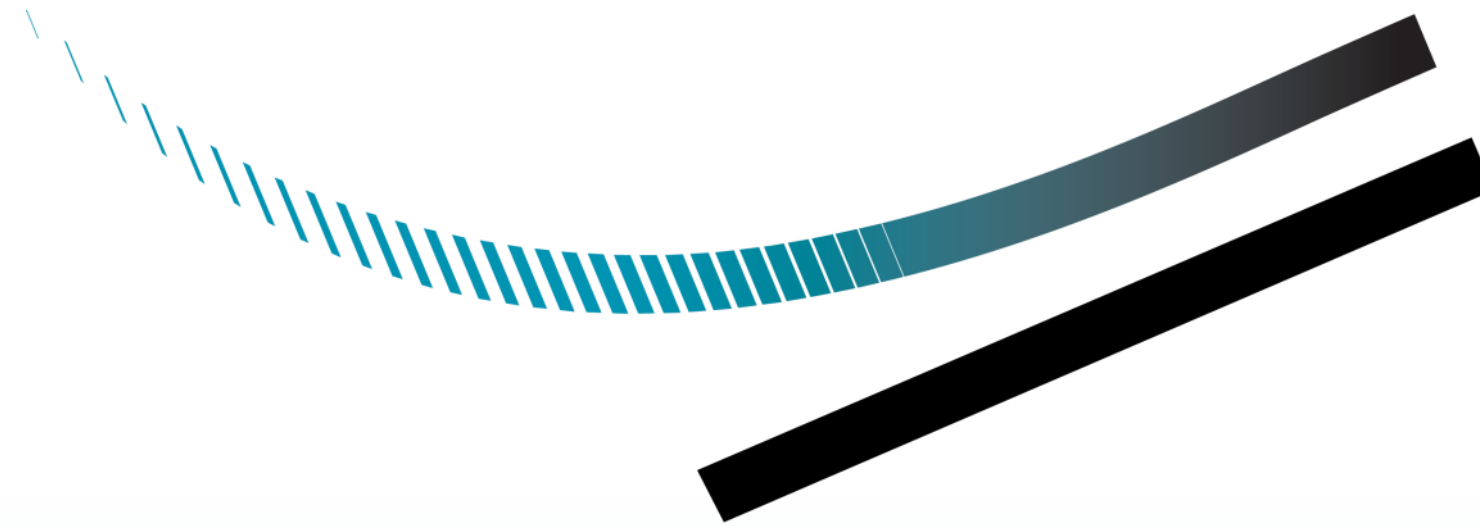
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Questions / Next Steps