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City of Burlington
Comprehensive Master Fire Plan & Community Risk Assessment
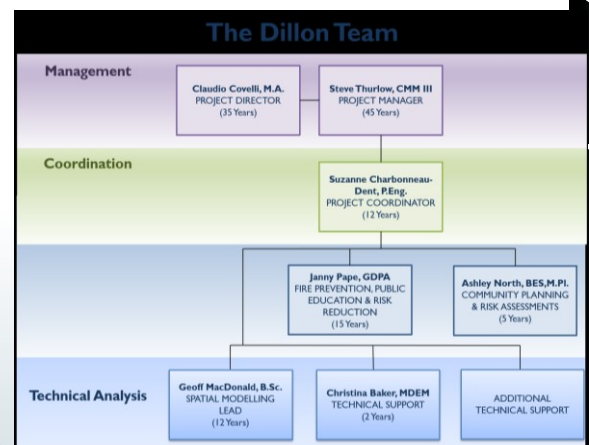
Council Workshop Session
Steve Thurlow, Ashley North, Christina Baker
Dillon Consulting Limited

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
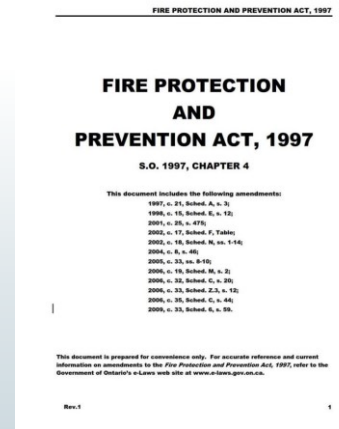
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Fire Protection & Prevention Act

States that every municipality shall:

(a) Establish a **program for public education** with respect to fire safety and certain components of fire prevention; and
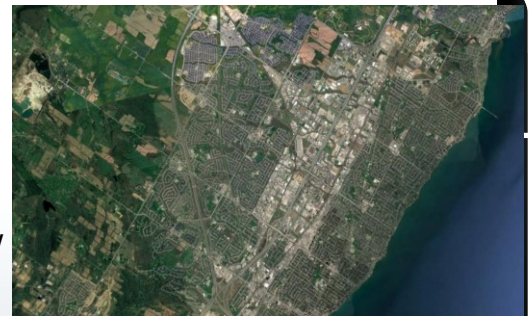
(b) **Provide other fire protection services** as it determines may be necessary in accordance with its **needs and circumstances**.
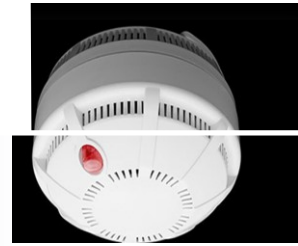
FIRE PROTECTION AND PREVENTION ACT, 1997

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. N, 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.
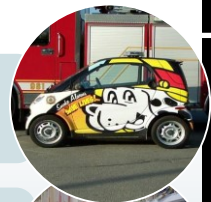
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Community Responsibilities

- ✓ 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

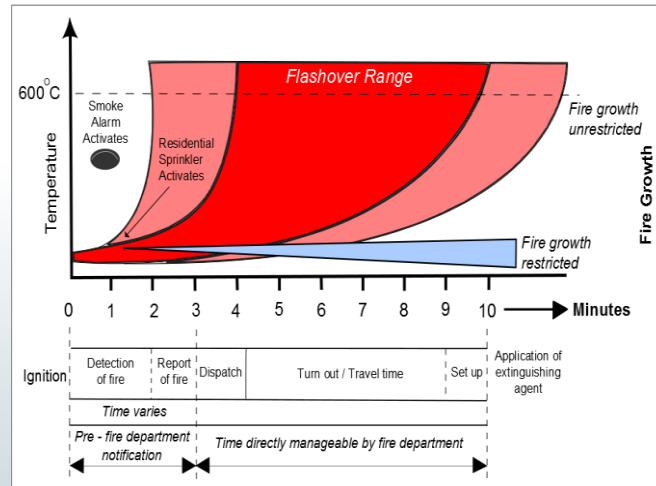| 1	Public Education and Prevention	• Smoke alarm program, learn not to burn education, home escape planning; • Identified vulnerable groups such as seniors and children
2	Fire Safety Standards and Enforcement	• Fire inspection program and regular inspection cycles based on type of occupancy; • Licensing, 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

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.

FIRE PROPAGATION CURVE

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.
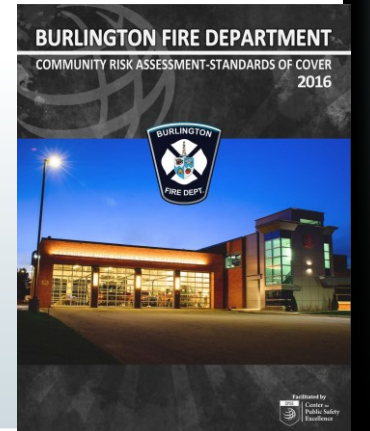

Photo Source: B.F.D. Facebook Page

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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
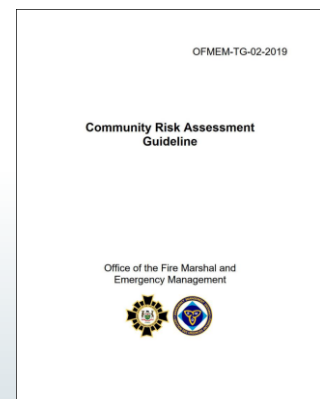COMMUNITY RISK ASSESSMENT-STANDARDS OF COVER
2016

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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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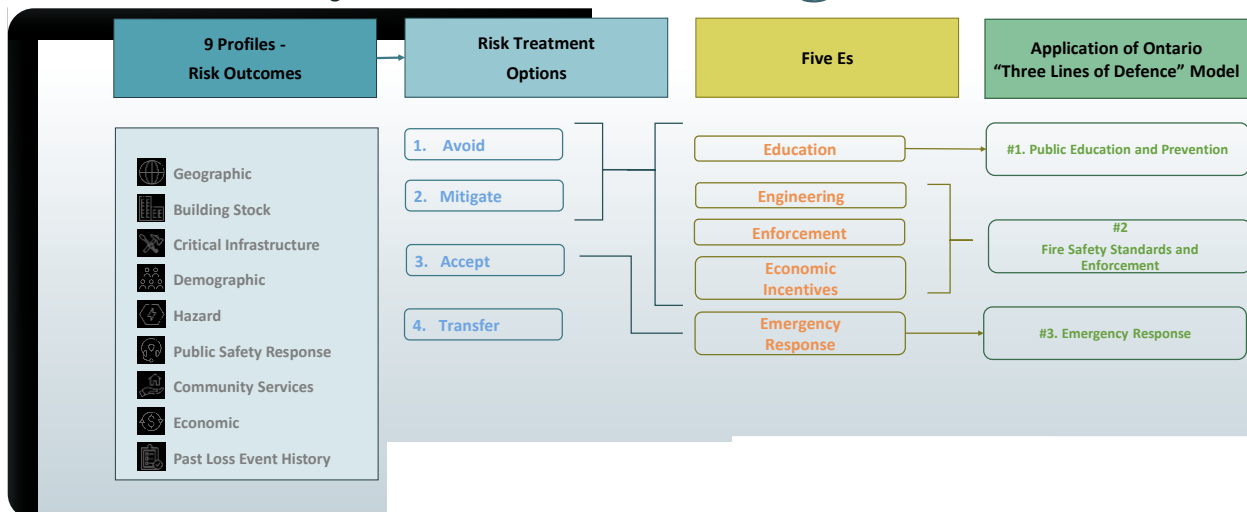CONSULTING

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;*
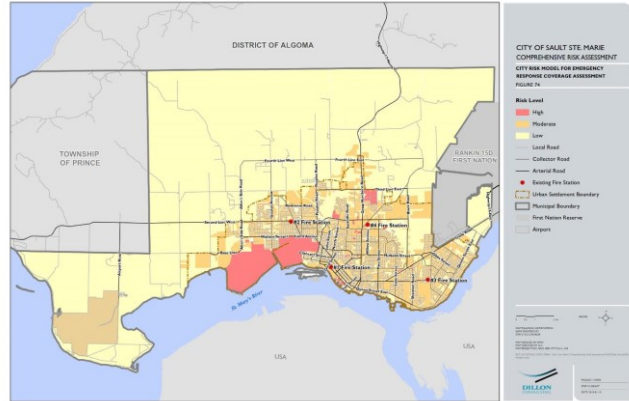 - ▪ *Accept the risk; and*
  - ▪ *Transfer the risk.*

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

Risk Outcomes	Treatment	Five Es	Lines of Defence
Geographic	1. Avoid	Education	#1. Public Education and Prevention
Building Stock	2. Mitigate	Engineering	
Critical Infrastructure		Enforcement	#2 Fire Safety Standards and Enforcement
Demographic	3. Accept	Economic Incentives	
Hazard		Emergency Response	#3. Emergency Response
Public Safety Response	4. Transfer		
Community Services			
Economic			
Past Loss Event History			

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.

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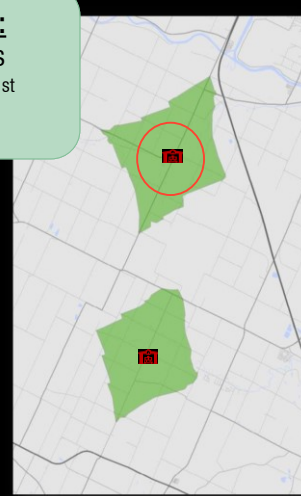
N.F.P.A. 1710 Standard – Defined Urban Area

Initial Arriving Company: The number of firefighters initially deployed on the 1st apparatus.
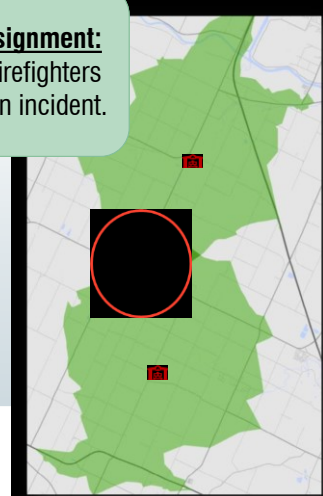
4 firefighters arriving on scene within 4 minutes of travel time to 90% of incidents

Initial Full Alarm Assignment: The total number of firefighters initially deployed to an incident.
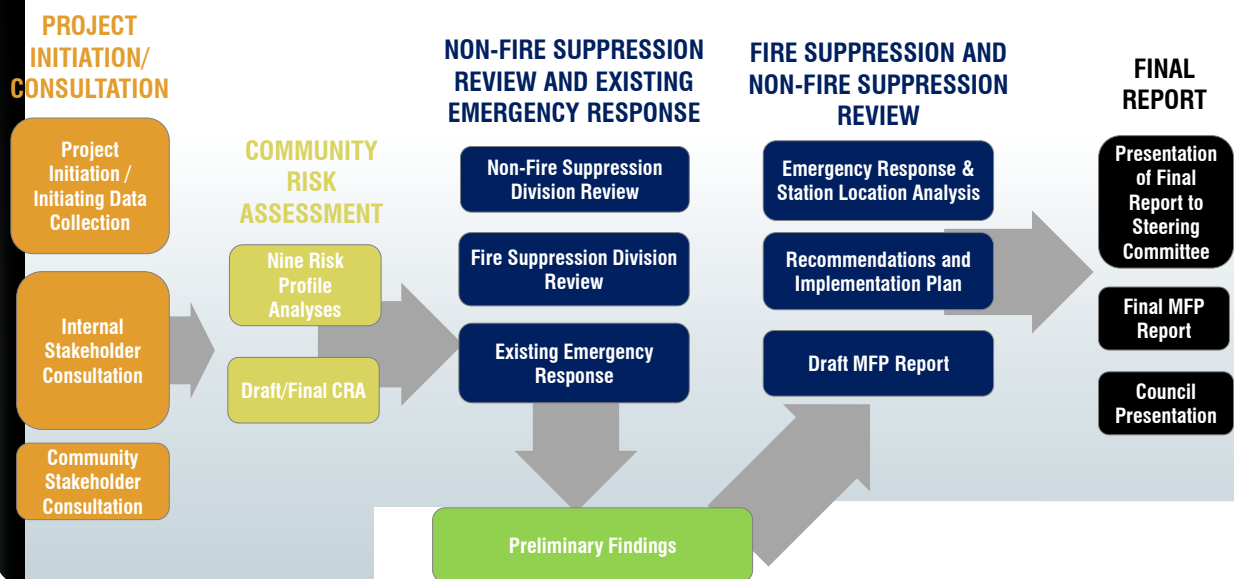
Total number of firefighters arriving on scene with 8 minutes of travel time to 90% of incidents

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

Project Initiation / Initiating Data Collection

Internal Stakeholder Consultation

Community Stakeholder Consultation

COMMUNITY RISK ASSESSMENT

Nine Risk Profile Analyses

Draft/Final CRA

NON-FIRE SUPPRESSION REVIEW AND EXISTING EMERGENCY RESPONSE

Non-Fire Suppression Division Review

Fire Suppression Division Review

Existing Emergency Response

FIRE SUPPRESSION AND NON-FIRE SUPPRESSION REVIEW

Emergency Response & Station Location Analysis

Recommendations and Implementation Plan

Draft MFP Report

FINAL 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**

Questions / Next Steps