

# HOTTER, WETTER, WILDER: HOW CANADA IS PREPARING FOR THE CONTAGION OF CLIMATE CHANGE



**Third Age Learning  
Kitchener - Waterloo**



**Dr. Blair Feltmate  
Head, Intact Centre**

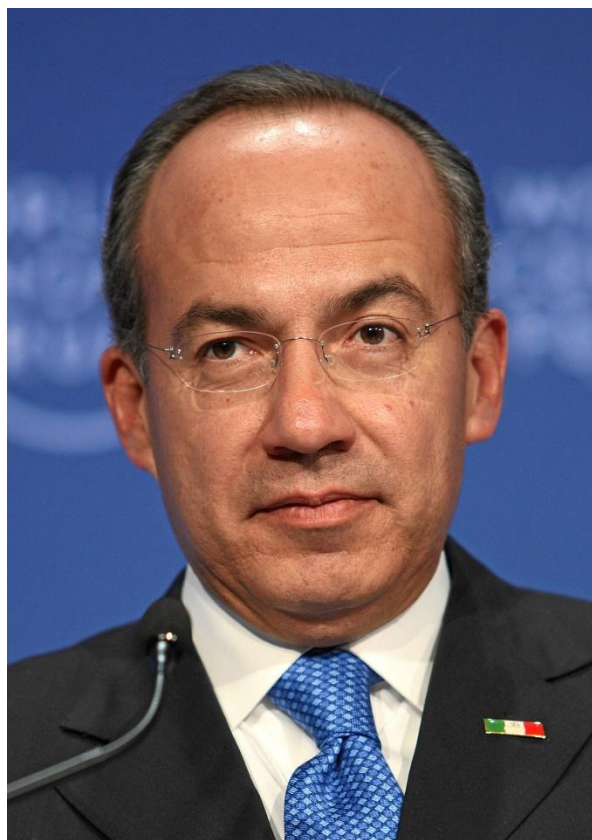
February 12, 2019

1. Climate change is real and irreversible
2. Costs of extreme weather are going up
3. New National Standards
4. New step to factor climate change into the business of the capital markets
5. What Canada must do NOW

# HOW EXPLICIT SHOULD WE BE WITH THE CLIMATE MESSAGE?

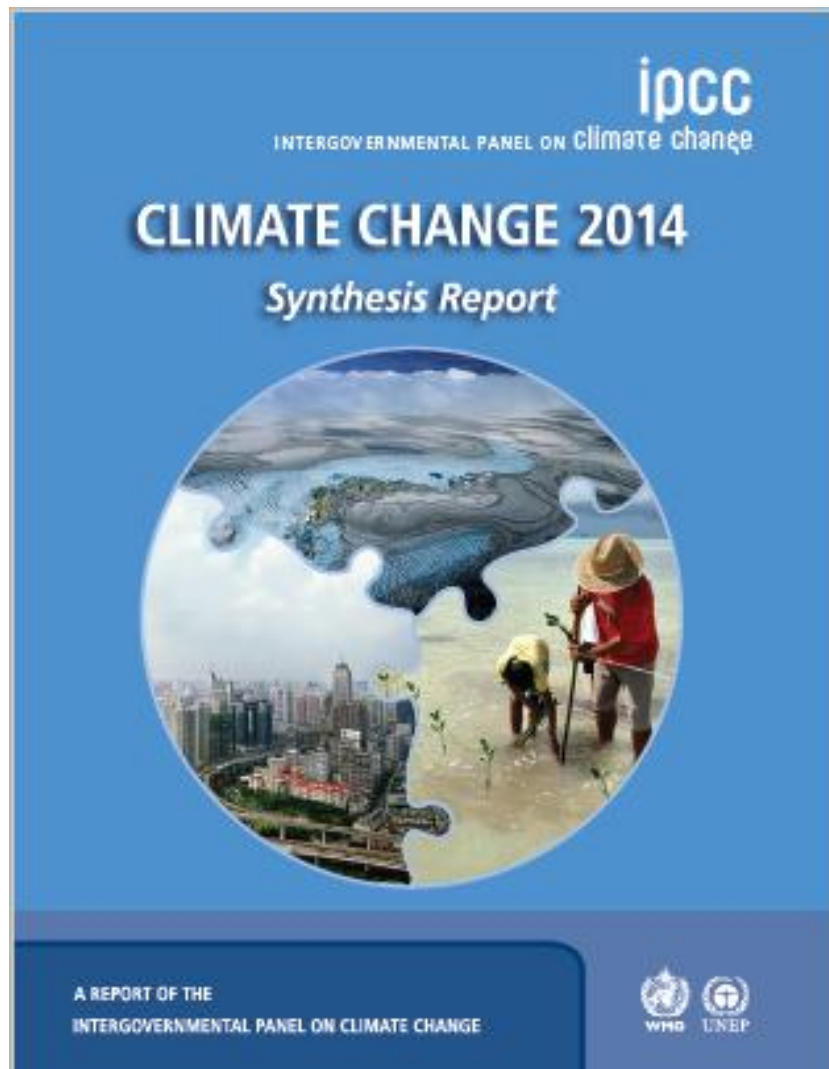
**INTACT CENTRE**  
ON CLIMATE ADAPTATION

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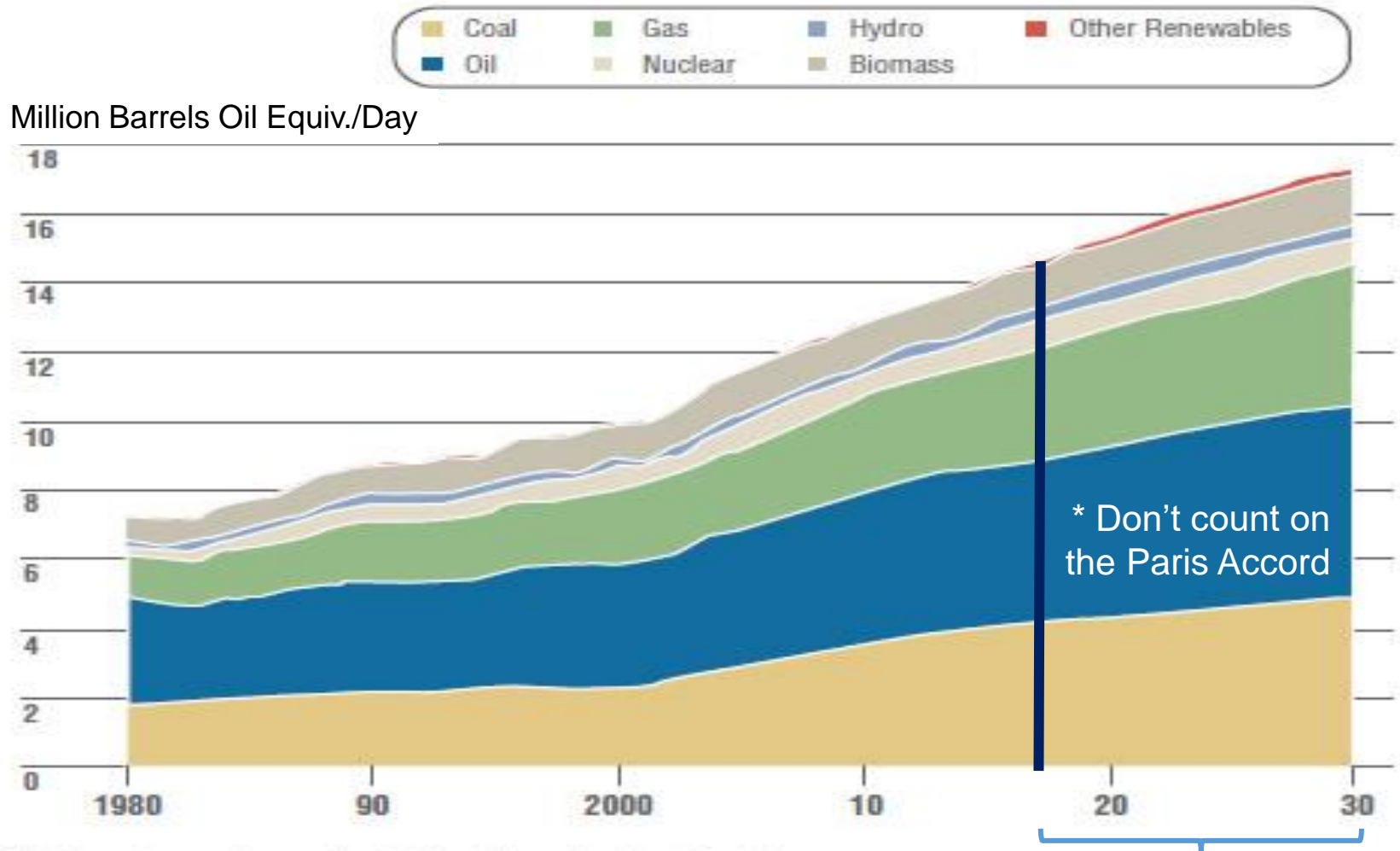
## Felipe Calderón – Former President of Mexico

- Commented that climate messaging that is “too negative” may “turn people off” of acting – he may be correct
- However, *delusional messaging* can lead to *delusional problem solving*
- Climate change – accurately profiled – should be a “***Call to Arms***”



*It is extremely likely  
that human influence  
has been the dominant  
cause of the observed  
warming since the  
mid-20th century  
(0.08 °C/decade for  
past 100 years)*

## World Energy Supply



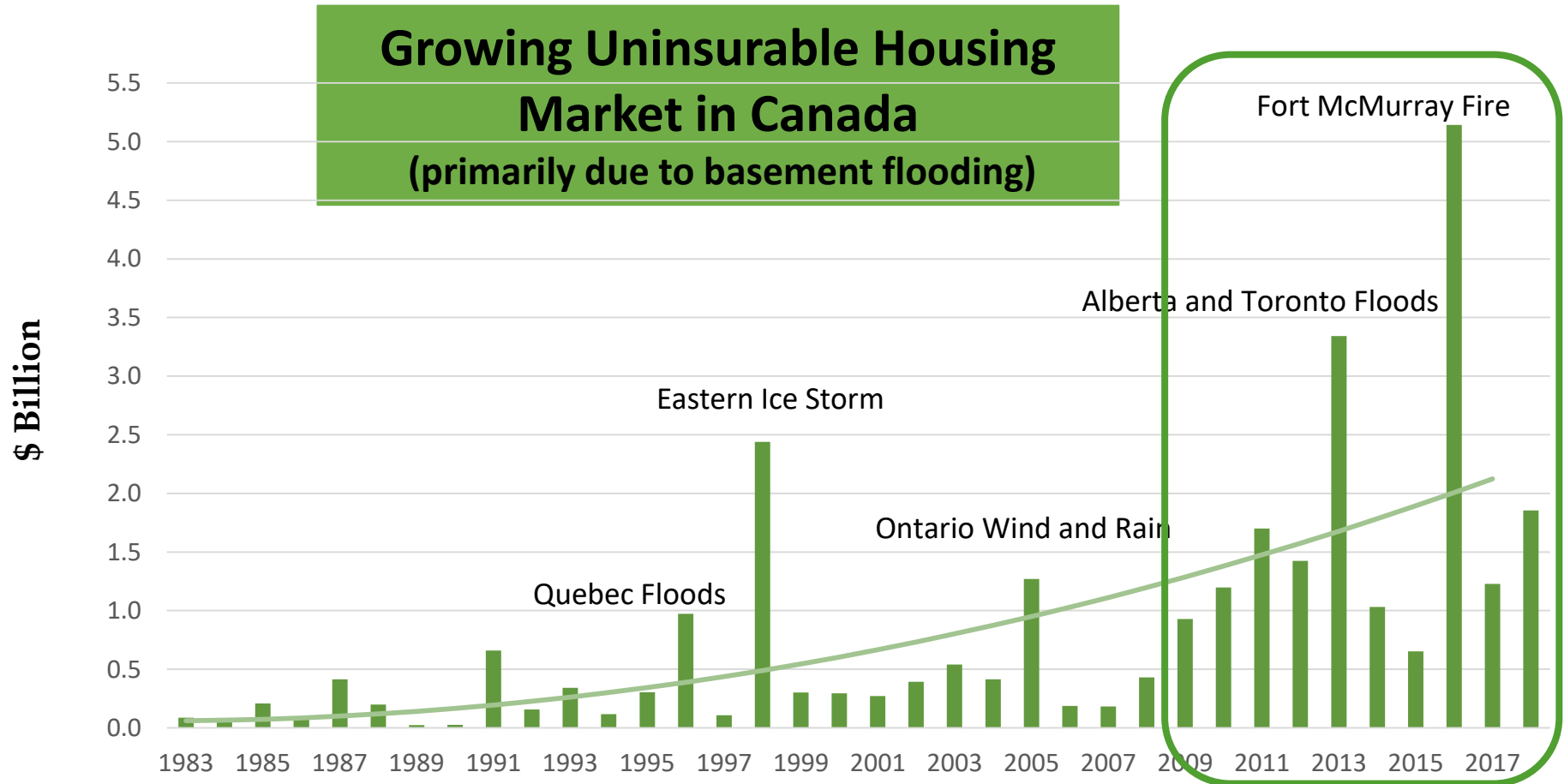
Source: International Energy Agency



# COSTS OF EXTREME WEATHER: P&C CATASTROPHIC INSURABLE LOSSES (\$CAD)

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Loss + Loss Adjustment Expenses

\$2017 - total natural-catastrophe losses normalized by inflation and per-capita wealth accumulation

Courtesy: Insurance Bureau of Canada

**Note:** Cost to government and homeowners 3-4X that of private insurers.

## Historic flooding hits British Columbia after record snowpack starts melting, Canada

Posted by TW on May 14, 2018 in categories [Featured articles](#), [Floods](#)



## Southwestern Ontario's worst flooding in decades triggers an emergency, an evacuation and aggravation

## Churchill residents reeling from rail closure after unprecedented flooding

By [James Wilt](#) in [News](#), [Energy](#) | June 13th 2017

CANADA

## Alberta flooding sets records, prompts calls for action on climate change

## Just inches of air left for two men rescued from flooded elevator



## London sops up after record rains, historic flooding



THE LONDON FREE PRESS

Published on: February 22, 2018 | Last Updated: February 22, 2018 2:47 PM EST

## Worst floods in New Brunswick history: how 2018 compares

Flooding a part of recorded history in the province for more than 300 years



Julia Wright · CBC News · Posted: Apr 30, 2018 5:41 PM AT | Last Updated: April 30

## Manitoba floods leads province to declare state of emergency, seek help from military

*Manitoba is declaring a provincial state of emergency and is asking the Canadian military to help fight a surge of floodwater coming from Saskatchewan.*

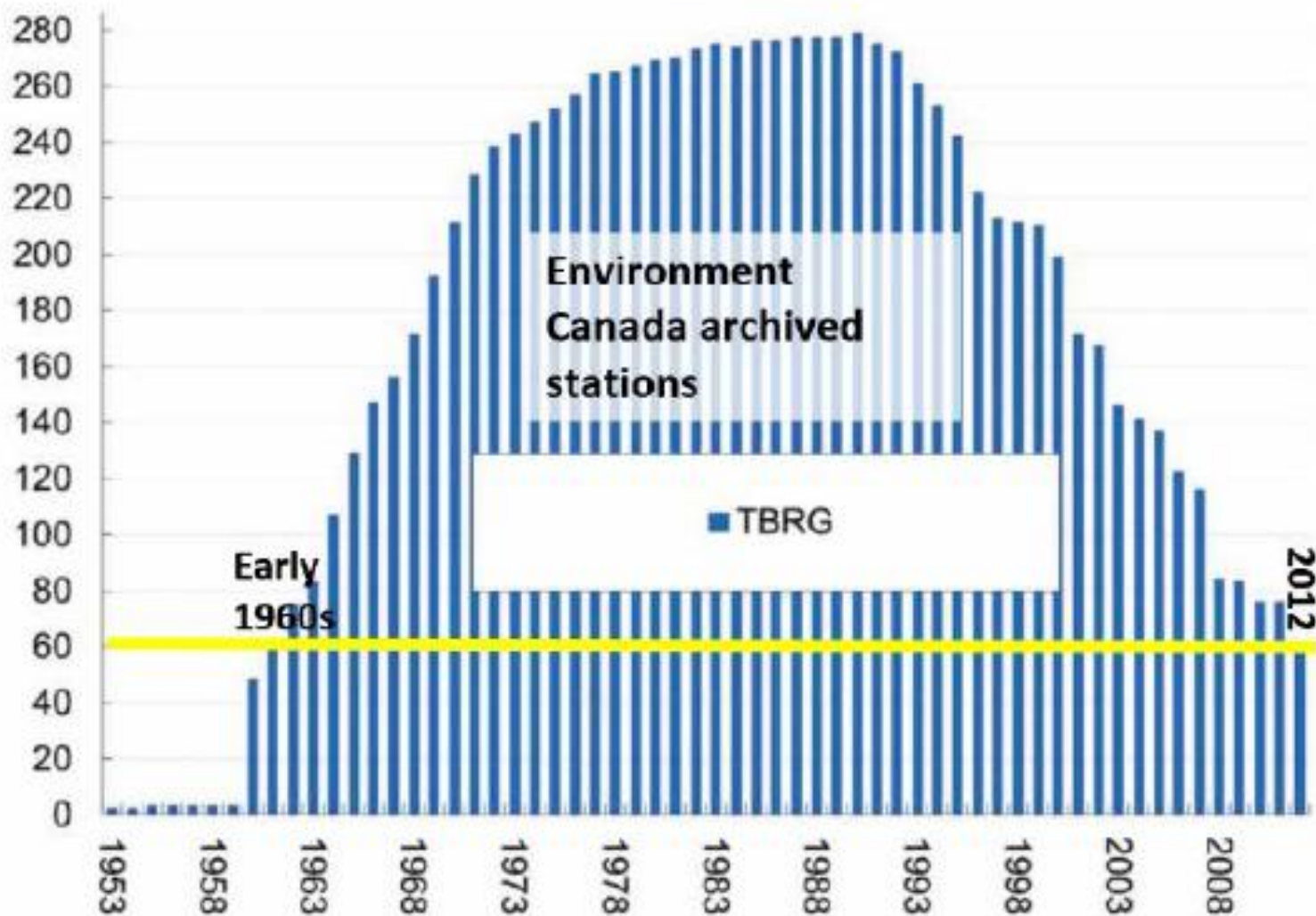


# CHANGES IN TIPPING BUCKET RANGE GAGE STATIONS: CANADA (1953 – 2012)

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ON CLIMATE ADAPTATION

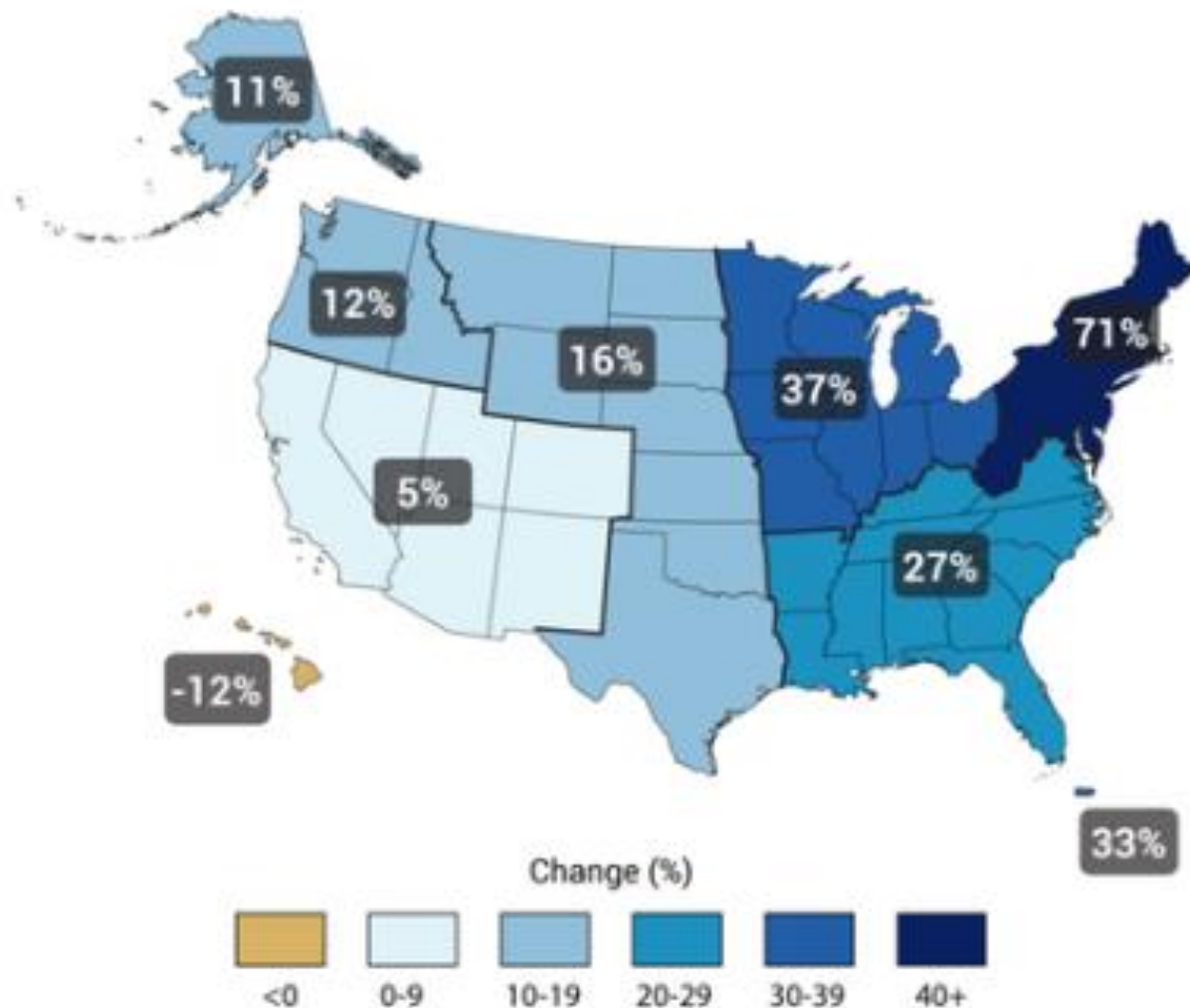
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Figure from Mekis et al. 2015





## CHANGES IN EXTREME PRECIPITATION: 1958 - 2012



## EXTREME PRECIP FROM THE US

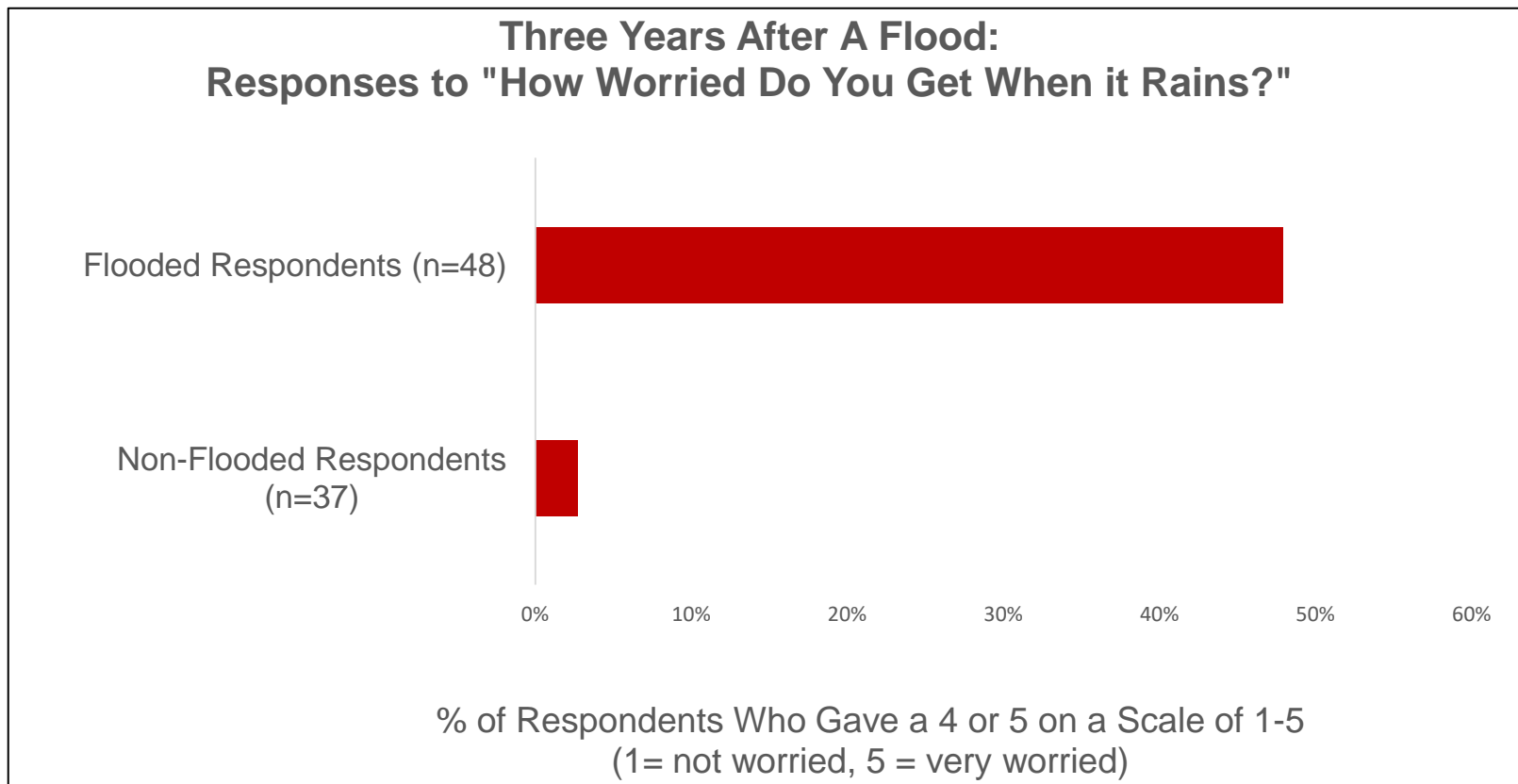
Percent changes in the amount of precipitation falling in very heavy events (the heaviest 1%) from 1958 to 2012 for each region.

SOURCE: US National Climate Assessment

# MENTAL HEALTH IMPACTS OF BASEMENT FLOODING

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ON CLIMATE ADAPTATION

- *“It’s something you never want to experience again in your life”*
- *Average time off work following basement flood – 7.1 days*  
*(basement flooding now attracting attention of Life & Health Insurers)*



# FAMILY OF FLOOD ADAPTATION GUIDELINES – NATIONAL APPLICATION

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ON CLIMATE ADAPTATION

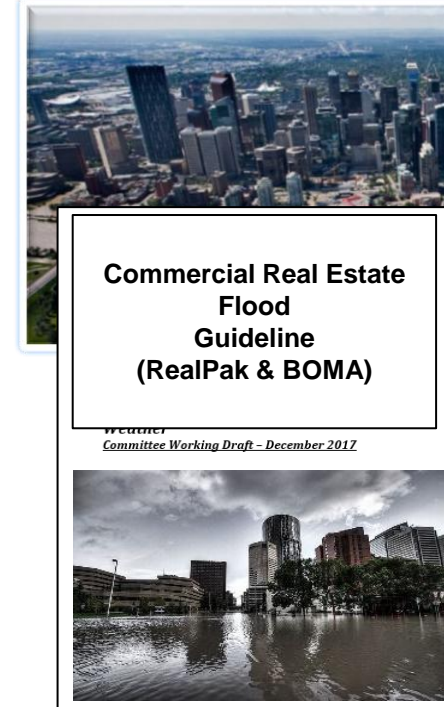
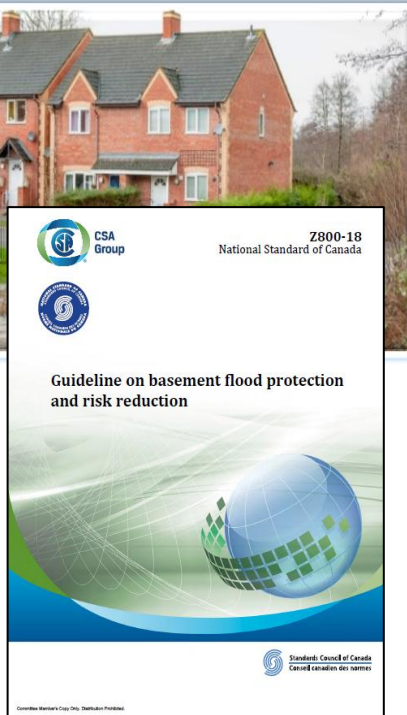
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## Homes - Flood Protection Guideline

## New Community Design Standard

## Existing Community Retrofits Guideline

## Commercial Real Estate Retrofits Guideline



## New Standards Supported by...

National Research Council Canada



Standards Council of Canada  
Conseil canadien des normes



... 50-100 experts per Standard



# Fleming College

PROGRAMS & COURSES

## ENROL IN HOME FLOOD RISK ASSESSMENT TRAINING

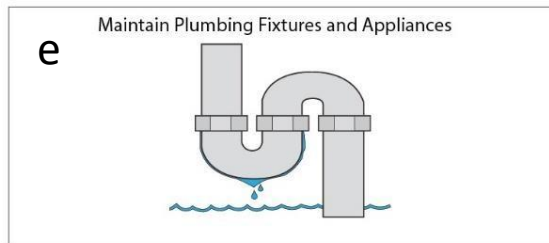
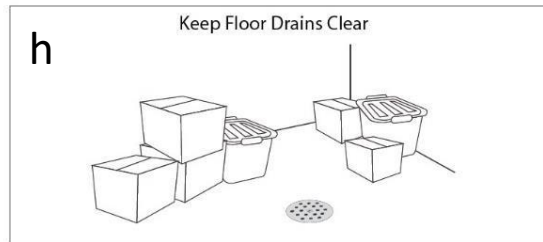
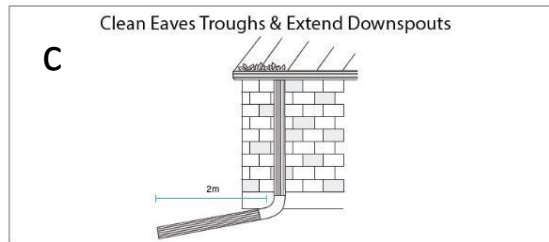
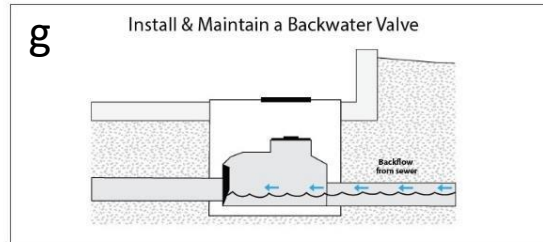
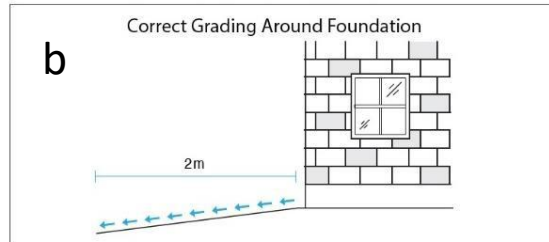
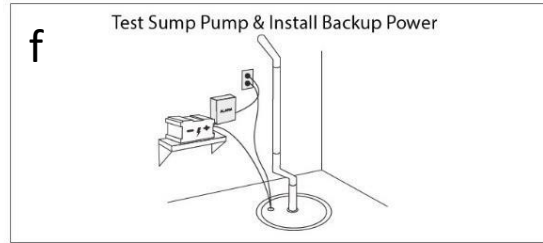
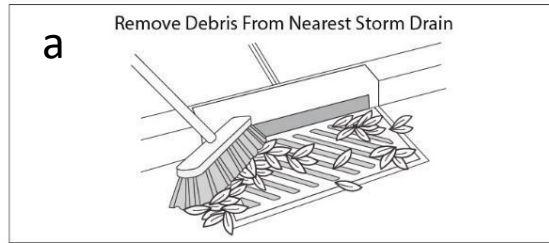
Course Code: CNST223

TOC



Study the theory and gain technical practice in identifying the broader factors that influence urban household floods in Canada. We will examine the impact of climate change, municipal engineering and practices, government land development policies and building and electrical codes on the risk of floods. We will provide insight into how the availability of flood risk insurance for homeowners has evolved. You will gain an in-depth understanding of how to complete a visual assessment of overland, infiltration and sewer backup risks at homes built during different eras of development, identify opportunities to reduce these risks and where further investigation is needed. You will be able to practice and demonstrate proficiency in the use of a nationally applicable flood risk assessment tool by completing one full flood risk assessment at a home of your choosing during the course.





# 10 SIMPLE WAYS TO LOWER BASEMENT FLOOD RISK

*"Water damage is now the leading cause of personal property claims. Over the last 10 years, water losses for personal property claims have doubled to 40% (of \$ paid in losses). There are a number of improvements that Canadians can take to better protect their homes and communities against water damage. **By taking these steps, Canadians could lower their annual premiums - anywhere from 5 to 15%.** Those who live in municipalities who make climate resilient infrastructure a priority could also benefit from more affordable premiums, higher coverage limits and enhanced insurance coverage."*

**Intact Financial Corporation, 2017**



### Forest Fires / FireSmart

- Intact Centre and **FireSmart** have now committed to working together
  1. **FireSmart** professionals know the technical means to mitigate fire risk
  2. Intact Centre knows the means to operationalize **FireSmart** in Canada



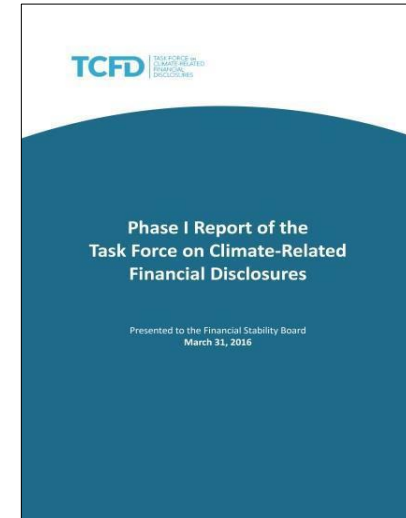
### Extreme Heat

- Heat in Canada will get more challenging
  - Daily maximum temperature
  - Days over 30 °C
  - Heat waves (3 days in row above 30 °C)
- Intact Centre can develop a Guideline(s) and implement programs to address three key address of vulnerability:
  1. **Heat Island** – cool roofs, tree canopy, etc.
  2. **Behavioural Programs for Vulnerable Populations** – elderly, very young, respiratory conditions, etc.
  3. **Structural** – back-up electricity generation, mandatory A/C, cooling centres, etc.

# CAPITAL MARKETS ARE PAYING ATTENTION TO CLIMATE CHANGE

## Securities Commissions

- mandate disclosure of climate risks material to investors



## Institutional Investors

- Factor climate change into investment decisions



**TEACHERS'**  
PENSION PLAN



**CPP**  
INVESTMENT  
BOARD

## Credit Rating Agencies

- Factor climate change into credit ratings



**STANDARD & POOR'S**  
RATINGS SERVICES



# CLIMATE CHANGE/EXTREME WEATHER ADAPTATION MATRIX

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ON CLIMATE ADAPTATION

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Sector	Flood / Drought	Heat	Wind	Ice / Snow / Hail	Permafrost	Coastal Impact	Forest Fire
Mining							
<b>Electricity Generation/T&amp;D</b>							
Petroleum							
Forestry							
<b>Hospitality/Recreation</b>							
Banking							
Insurance							
Telecommunications							
<b>Auto-Parts Supplier</b>							
Computer Software/Hardware							

1-3 factors per row

## 1. New Climate Standards must be made Mandatory in Canada

- Home Flood Risk Standard
- Community Design Flood Risk Standard – New Communities
- Community Flood Risk Standard – Existing Communities
- Commercial Real Estate Flood Risk Standard
- Fire Risk Standard – FireSmart
- Extreme Heat Risk Standard

## 2. Flood Risk Incorporated into Daily Operations

- P&C Insurance Brokers
- Mortgage Brokers (mortgage providers) - Banks/Credit Unions
- Real Estate Agents/Brokers (real estate listings)

## 3. Capital Markets

- Securities Commissions
- Institutional Investors
- Credit Rating Agencies



Complete Adaptation Risk Matrix

## 4. Bring Message of Value Add of Adaptation to Ministers of Finance