intact public entities

Mitigation - Adaptation

Not in the Future – It's Happening Now

Changing Climate – Not Weather

Global – Local

How Are Local Municipalities Affected?

What Can/Should We Do?

intact public entities

Mitigation

- Transitional risk
- Alternate power sources
- EV fleet vehicles
- Solar panels
- Reduce GHGs

+

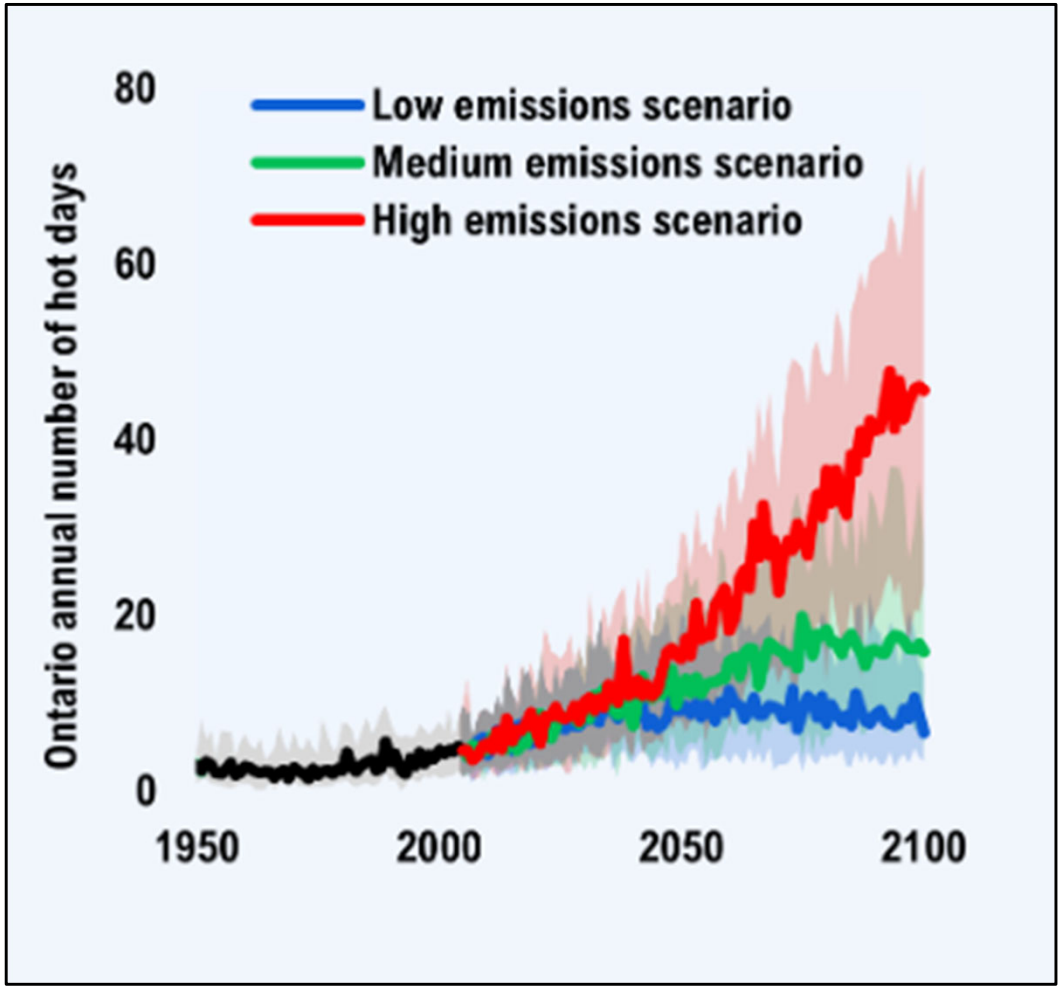
Adaptation

- Re-Engineering Infrastructure
- Asset life expectancy
- Re-considering work
- Natural assets
- Water

=

Resilience

- **Survival**
- **Protection of assets**
- **Delivery of services**
- **The new new-normal**


Low emissions scenario
Medium emissions scenario
High emissions scenario
Ontario annual number of hot days
80
60
40
20
0
1950
2000
2050
2100

Changing Weather – Changing Climate

1.5 °C

- Think of averages – if we have a yearly average 1.5 degree increase in temperature locally, what does that mean for our Summer?
- That small increase is often hidden or mitigated by cold winter weather.
- 1.5 degrees can mean a 15-day heat wave with temperatures that exceed 35 degrees daily.

intact public entities

The Ottawa River surrounds Terry Milks' cottage in Clarendon, Ont. (Dylan Dyson/CTV News Ottawa)

intact public entities

CBC News · Posted: May 21, 2019 9:49 AM EDT | Last Updated: May 21, 2019

The Chuckegg Creek fire is seen from the air near the town of High Level, Alta., on Sunday, May 19, 2019. (Government of Alberta/The Canadian Press)

Vancouver is one of a few B.C. municipalities ready to keep cooling centres open overnight. Two 24-hour centres in New Westminster are already open. (Ben Nelms/CBC)

intact public entities

intact public entities

LUKE DYMENT

PUBLISHED MAY 23, 2023

UPDATED YESTERDAY

Potato farmer John Visser digs into the soil of one of his fields near Victoria by the Sea, PEI, as planters work in the background on May 19.

NATHAN ROCHFORD/THE GLOBE AND MAIL

The rubble of a building is all that remains after a wildfire swept through the Westwood Hills area outside Halifax on Sunday. (Mark Crosby/CBC)

intact public entities

Impacts

Extremely hot temperatures and heat waves can be deadly and have a severe impact on:

Infrastructure and Services

- Electrical distribution problems
- Disrupted digital and telecommunications services
- Damage to transportation infrastructure - rail, roads, bridges
- Reduced water availability
- Increased demand for health and social serivces

Health

- Increase in physical health issues and heat-related deaths
- Adverse affects on mental health and wellbeing
- Increased challeges for populations at risk e.g. older adults, low income families, homeless people

Natural Environment

- Water-stressed plants
- Reduced insect populations
- Changes in bird communities
- Reduced water quality

Economy

- Reduced economic productivity
- Increased costs of loss of life and reduced quality of life

Heat-related deaths
526 in British Columbia 2021 **86** in Quebec 2018

UNIVERSITY OF WATERLOO
INTACT CENTRE ON CLIMATE ADAPTATION

Wetter…

- Though riverine flooding does occur, urban flooding (due to inadequate or aging storm sewer infrastructure) is most common and causes the most damage.
- Moving away from floodplains
- Improve flood mapping and watershed management

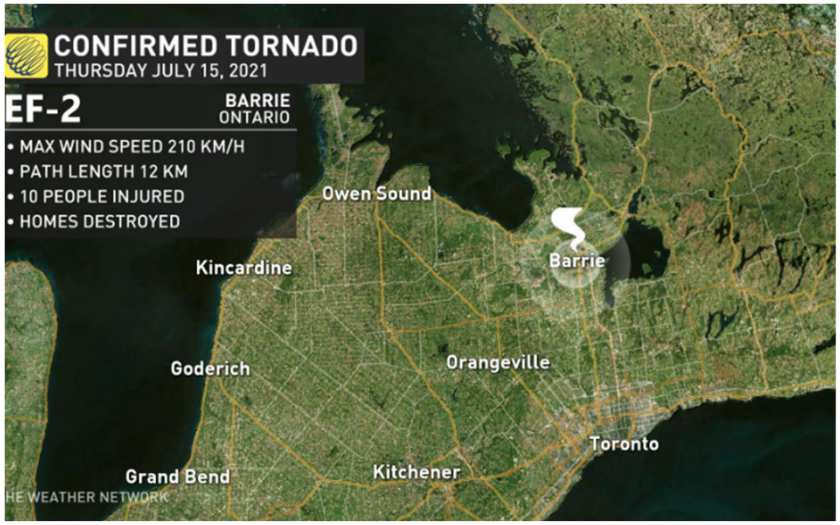
intact public entities

10 Ways to Prevent Home Basement Floods

Source: Home Flood Protection Program, Intact Centre on Climate Adaptation, University of Waterloo

Windier….

- Frequency and severity projected to increase
- Not only tornadoes – derechos and small storm bursts can cause substantial damage.



intact public entities

A large tree knocked down on Parkhurst Boulevard in Ottawa after a severe thunderstorm ripped across the city, May 21, 2022. (Kristy Cameron/Newstalk 580 CFRA)

intact public entities

Eroding Away…

- Intersection of wave action as well as geological concerns
- Made worse by lack of winter ice on the Great Lakes
- Damage to private property as well as municipal and provincial infrastructure
- Typically, no insurance coverage for earth movement – why does that matter?

ooding along western Lake Erie in 2018. Windsor-Essex is Ontario's most flood-prone
gion, with the insurance premiums to prove it. Photo: Essex Region Conservation
uthority / Flickr

Eroding Away…

- Intersection of wave action as well as geological concerns
- Made worse by lack of winter ice on the Great Lakes
- Damage to private property as well as municipal and provincial infrastructure
- Typically, no insurance coverage for earth movement – why does that matter?

David Piano, Twitter, CBC, February 25, 2022

Eroding Away…

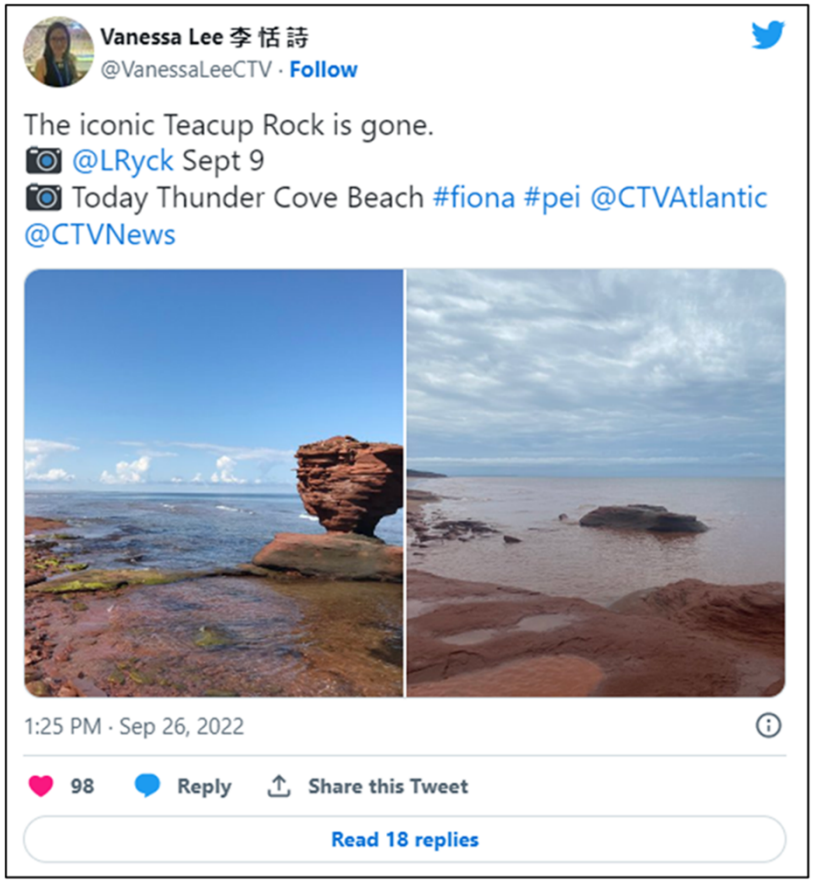
- Intersection of wave action as well as geological concerns
- Made worse by lack of winter ice on the Great Lakes
- Damage to private property as well as municipal and provincial infrastructure
- Typically, no insurance coverage for earth movement – why does that matter?

MATTHEW MCCLEARN >
PUBLISHED MARCH 12, 2023
UPDATED MARCH 17, 2023

This March 12, 2019 satellite photo provided by NOAA shows the Great Lakes in various degrees of snow and ice.
THE CANADIAN PRESS

Eroding Away…

- Intersection of wave action as well as geological concerns
- Made worse by lack of winter ice on the Great Lakes
- Damage to private property as well as municipal and provincial infrastructure
- Typically, no insurance coverage for earth movement – why does that matter?



The Story of Lytton

Lessons Learned…

- The village of Lytton was razed by fire in on June 30, 2021
- Destroyed much of the town and killed two civilians
- The day prior, Lytton had set Canadian temperature records of 49.6 °C (121.3 °F)
- What can we learn from Lytton?

The Story of Lytton

Lessons Learned…

- The village of Lytton was razed by fire in on June 30, 2021
- Destroyed much of the town and killed two civilians
- The day prior, Lytton had set Canadian temperature records of 49.6 °C (121.3 °F)
- What can we learn from Lytton?

The Story of Lytton

Lessons Learned…

- The village of Lytton was razed by fire in on June 30, 2021
- Destroyed much of the town and killed two civilians
- The day prior, Lytton had set Canadian temperature records of 49.6 °C (121.3 °F)
- What can we learn from Lytton?

Lessons Learned from Lytton

- Understand your exposures and have a disaster plan in place
- Communicate the plan openly, to all community members so everyone knows what to do
- All stakeholders, including First Nations, must have input to the plan
- Emergency Vulnerability*
- The plan should include rebuilding

The Story of Lytton

Lessons Learned…

- The village of Lytton was razed by fire in on June 30, 2021
- Destroyed much of the town and killed two civilians
- The day prior, Lytton had set Canadian temperature records of 49.6 °C (121.3 °F)
- What can we learn from Lytton?

British Columbia

Mudslide closes Highway 1 between Lytton and Spences Bridge

DriveBC says there is no detour available and a slope assessment will be conducted at first light

CBC News · Posted: Aug 11, 2022 1:50 AM EDT | Last Updated: August 11, 2022

A flood has closed Highway 1 near Spences Bridge, B.C. on Aug. 10. (J.R. Drynock/Facebook)

What Can Go Wrong???

How Can a Municipality be Held Responsible?

- Failed (or no) emergency response plan
- Blame for the catastrophe itself
- Liability for permitting development
- Failure to provide levels of service – reputational risk

intact public entities

Class-action lawsuit filed to recoup losses from Sumas Prairie flooding in Abbotsford

Defendants were 'grossly negligent' in failing to properly warn residents, lawsuit states

VIKKI HOPES / Dec. 28, 2021 12:31 p.m. / LOCAL NEWS / NEWS

Changes in Planning and Development

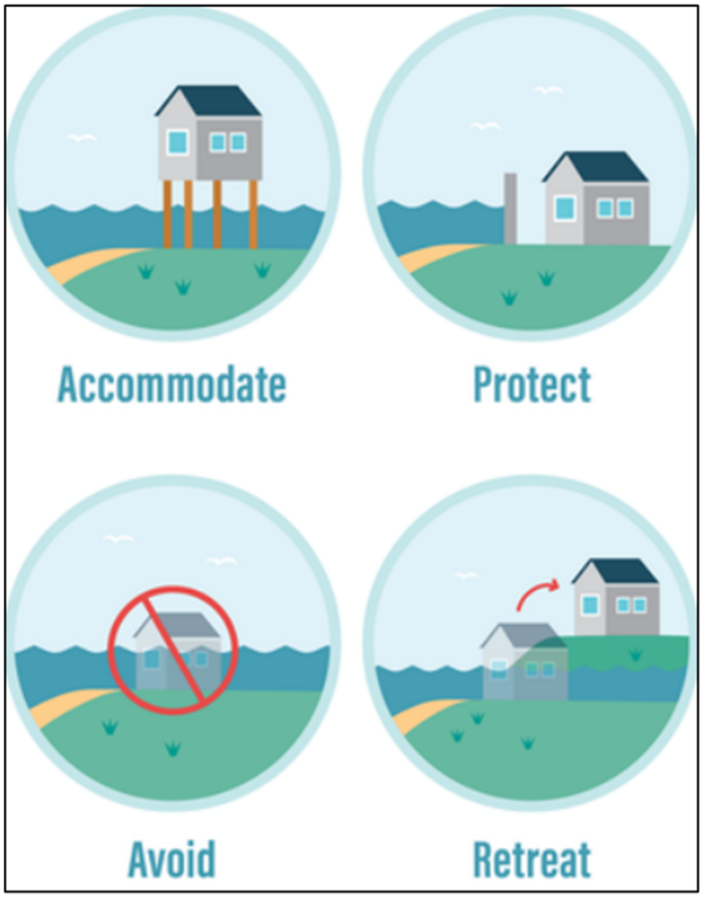
Adhere to the Building Code

- Advocate for positive changes in the Building Code
- When changes to legislation happen, act – document it
- Work with local Conservation Authorities – document it
- Work with developers – document it.
- Carry out all inspections –document it

Changes in Planning and Development

Adhere to the Building Code

- Advocate for positive changes in the Building Code
- When changes to legislation happen, act – document it
- Work with local Conservation Authorities – document it
- Work with developers – document it.
- Carry out all inspections –document it



Use Nature Strategically

- Wetlands
- Forest protection
- Beach nourishment
- Sand motor and beach nourishment
- How to insure this???

Use Nature Strategically

- Wetlands
- Forest protection
- Beach nourishment
- Sand motor and beach nourishment
- How to insure this???

Nature-based Strategy (NbS) Done Right?

- Ensure the goals of the solution are agreed upon
- Though natural, the solution will still require engineering and expertise
- Put a matrix in place to test the efficacy of the solution
- Understand that timelines may be longer than a typical construction
- Ensure there is backing from different stakeholders

Climate Initiatives

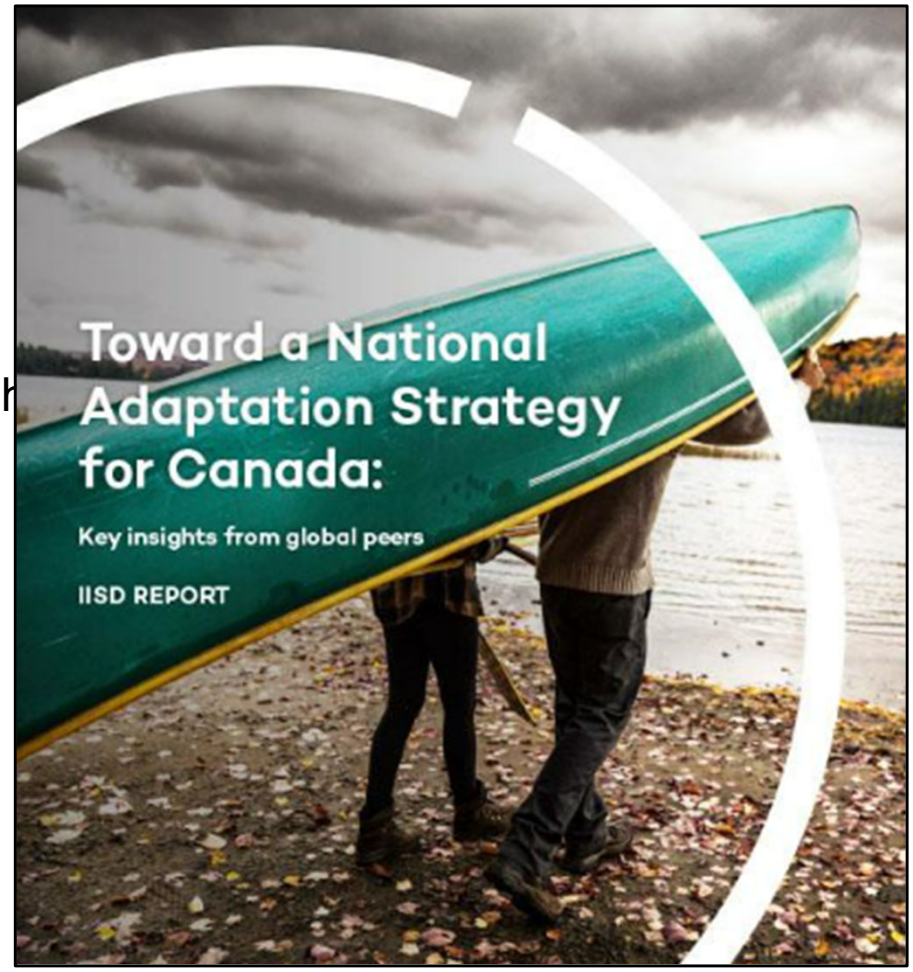
- MNAI
- Climate Resiliency grants
- Municipal Invasive Plant Strategy Workshop
- Canada’s National Adaptation Strategy
- COP 15 – Montreal

intact public entities

Climate Initiatives

Climate Initiatives

- MNAI
- Climate Resiliency grants
- Municipal Invasive Plant Strategy Worksh
- Canada's National Adaptation Strategy
- COP 15 – Montreal



Climate Initiatives

- MNAI
- Climate Resiliency grants
- Municipal Invasive Plant Strategy Workshop
- Canada's National Adaptation Strategy
- COP 15 – Montreal

References & Links

- Intact Public Entities' Centre of Excellence - https://www.intactpublicentities.ca/centre-of-excellence
- Intact Centre on Climate Adaptation - https://www.intactcentreclimateadaptation.ca/
- Municipal Natural Assets Initiative - https://mnai.ca/
- Ontario Climate Change and Health Modelling Study - https://www.health.gov.on.ca/en/common/ministry/publications/reports/climate_change_toolkit/climate_change_health_modelling_study.pdf
- AMO - Municipal Governments in Ontario and Climate Action - https://www.amo.on.ca/advocacy/energy-environment-planning/municipal-governments-ontario-and-climate-action
- Nature-based Climate Solutions - https://naturecanada.ca/wp-content/uploads/2021/04/Public-understanding-of-Nature-based-Climate-Solutions-NBCS.pdf?utm_source=Homepage
- National Adaptation Strategy - https://www.iisd.org/publications/national-adaptation-strategy-canada
- AMO Phragmites Grant Programme - https://www.invasivespeciescentre.ca/grant-opportunities/

Connect With Us

Tracy Eso, CIP, CRM, ACI

Risk Assessment and Solutions Manager

Intact Public Entities

278 Pinebush Road, Suite 200

Cambridge, Ontario, N1T 1Z6

tracy.eso@intactpublicentities.ca