

DESIGNING RESILIENT COMMUNITIES FOR A CHANGING CLIMATE



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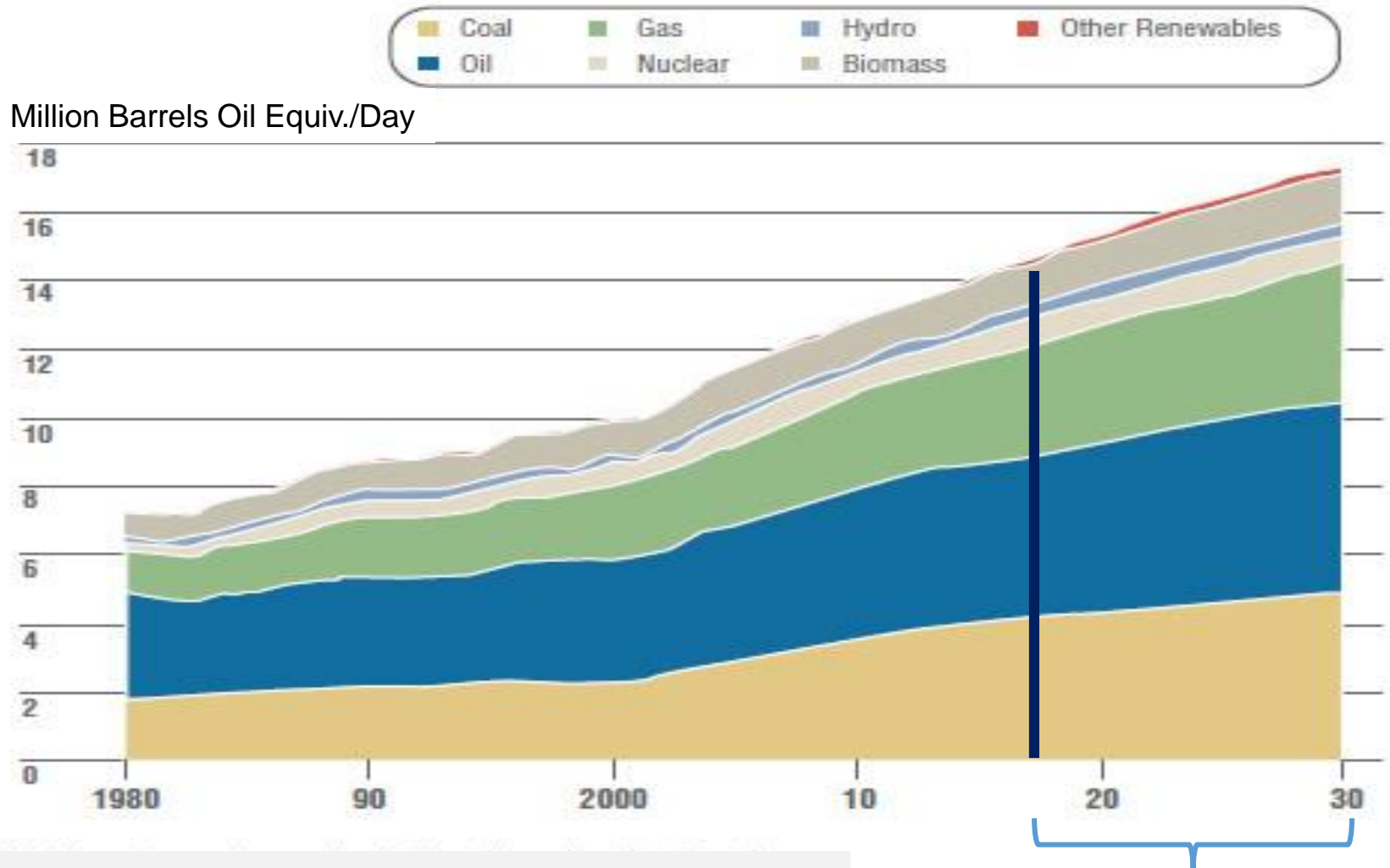


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[intact]

1. Climate change/extreme weather will get worse
2. Costs of climate change continue to climb
3. New Standards can help to limit flood risk
4. Limiting flood risk by leaving “natural infrastructure natural”
5. Capital markets are beginning to pay attention to climate risk
6. Discussion

World Energy Supply

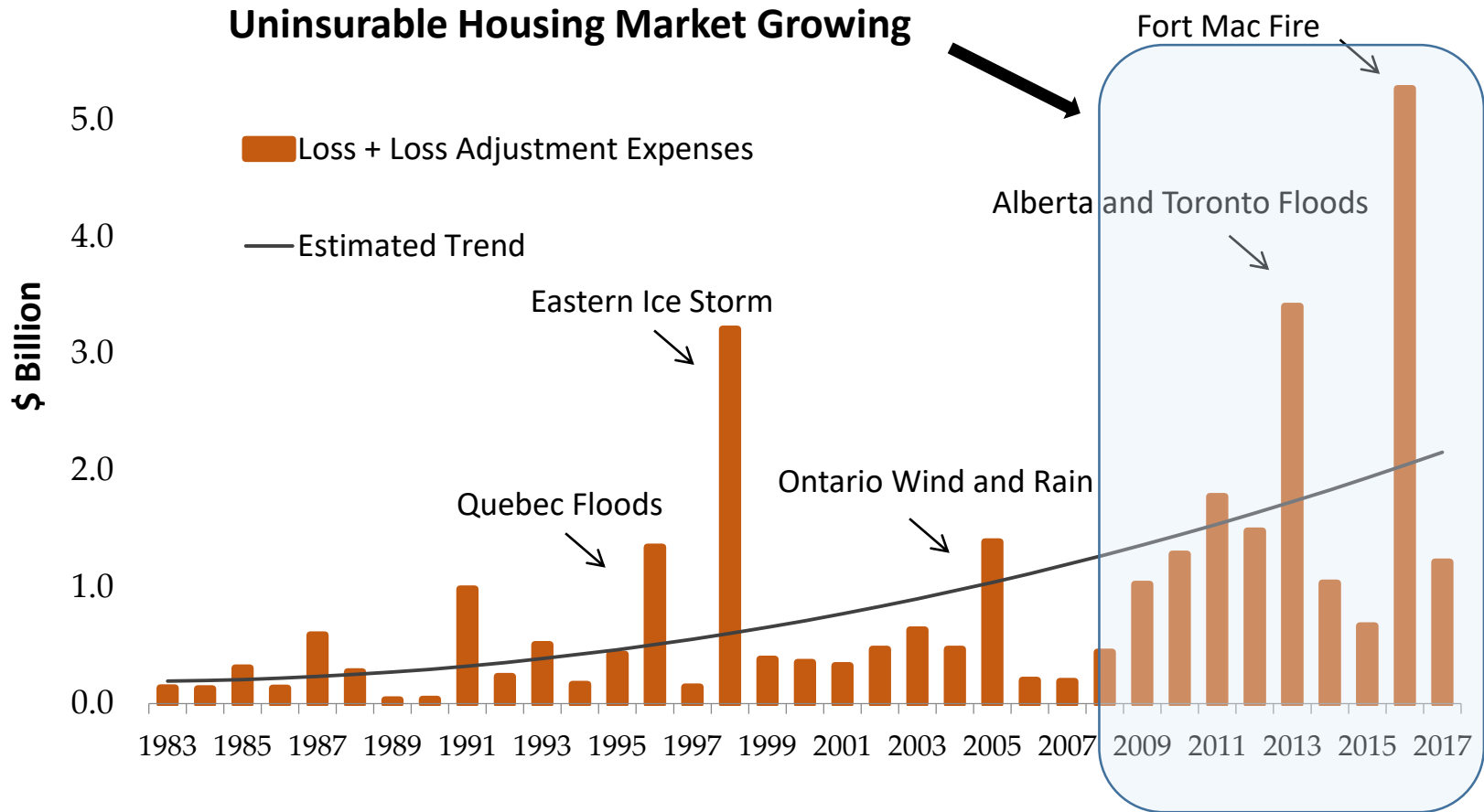


Source: International Energy Agency

COSTS OF EXTREME WEATHER: P&C CATASTROPHIC INSURABLE LOSSES

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Loss + Loss Adjustment Expenses

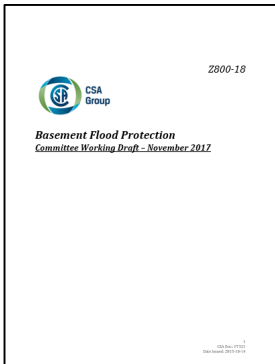
\$2017 Canada - total natural-catastrophe losses normalized by inflation and per-capita wealth accumulation. Courtesy Insurance Bureau of Canada

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

NEW ADAPTATION STANDARDS ARE BEING DEVELOPED – e.g., flood risk

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**Flood-Resiliency
Standard:
Basements**

**New Standards
Supported by:**

National Research Council Canada



**Flood-Resiliency
Standard:
New Communities**



Standards Council of Canada
Conseil canadien des normes



**Flood-Resiliency
Standard:
Existing Communities**

**... and experts
across Canada, who
contribute to
research and
standards
development...**

Purpose

- (1) Limit pathways for water to enter a basement
- (2) Minimize damage if water enters basement

Home Assessment

- On site assessment that reviews 40 potential points of water entry into basement
- Identifies prevention maintenance practices (e.g.,)
 - downspout disconnection & flow extensions
 - plastic covers over window wells
 - battery back-up for sump-pump
 - backwater valve
 - water sensors/alarms



Z800-18

Basement Flood Protection
Committee Working Draft – November 2017

HOME INSPECTION: HOME FLOOD ASSESSMENT

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- 9,000 Home Inspectors in Ontario & 40,000 nationally
- Home Inspectors currently receive virtually no training on home flood risk
- Home flood assessment would be applied to nearly all homes (95%) during the “buy/sell cycle”, and/or on request by home owner/insurer

Fleming College



BRITISH COLUMBIA
INSTITUTE OF TECHNOLOGY

Seneca
Because it matters.

Courses in Home Inspection Certificate (Online)

DETAILS AND REGISTRATION BELOW

MANDATORY COURSES

- » Roofing Inspection (CNST106)
- » Structural Inspection (CNST107)
- » Electrical Inspection (CNST099)
- » Heating Inspection I (CNST101)
- » Heating Inspection II (CNST102)
- » Air Conditioning and Heat Pump Inspection (CNST097)
- » Plumbing Inspection (CNST105)
- » Exterior Inspection (CNST100)
- » Interior/Insulation Inspection (CNST103)
- » Communication/Professional Practices (COMM052)

P&C INSURANCE INCENTIVES FOR FLOOD RISK REDUCTION

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*"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

THE ROLE OF NATURAL INFRASTRUCTURE FOR CLIMATE ADAPTATION

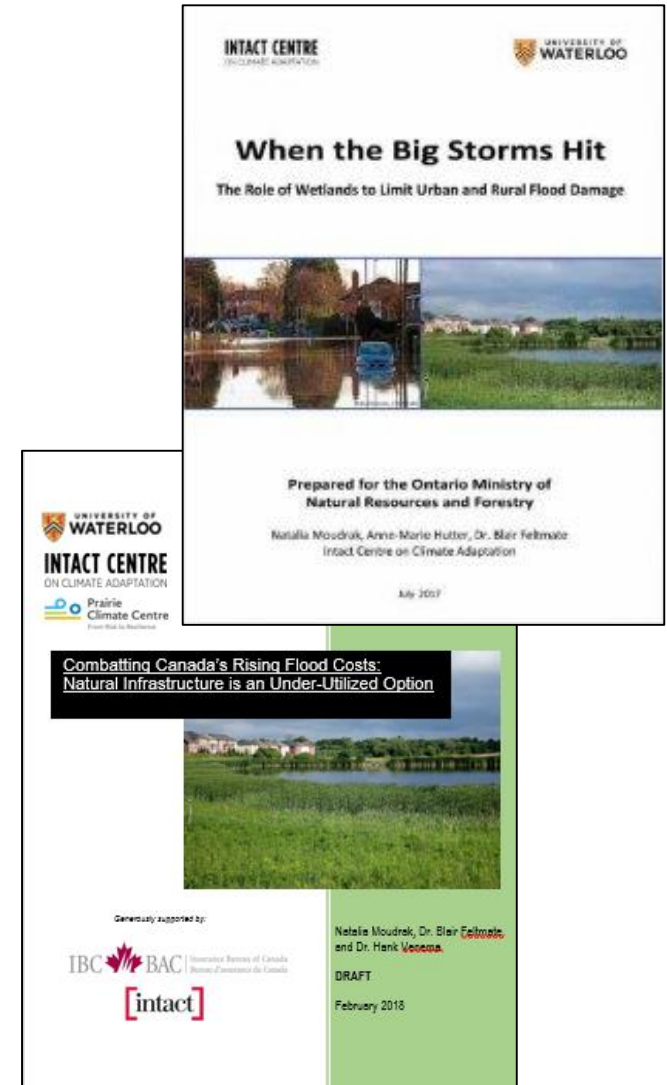
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Purpose:

- 1) develop a framework for evaluating the business case for natural infrastructure conservation (e.g., wetlands) for climate risk reduction
- 2) document case studies where natural infrastructure reduced disaster risk

* Intact Centre study found that keeping wetlands intact can reduce flood damage costs by 30 - 40%

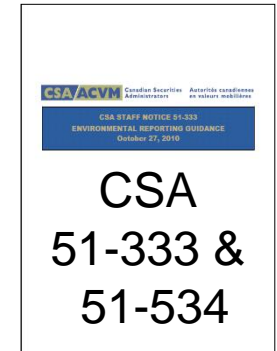
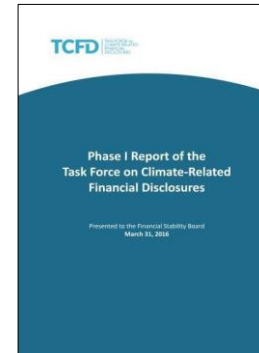


CAPITAL MARKETS ARE MEASURING CLIMATE RISK

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**Securities
Commissions.....**



Institutional Investors..



TEACHERS'™
PENSION PLAN



CPP
INVESTMENT
BOARD

Credit Rating Agency...



STANDARD & POOR'S
RATINGS SERVICES

Adaptation in Action

1. New Flood Standards – (a) Home/Property Level, (b) New Communities, and (c) Existing Communities
2. Home Inspector Training – Home Flood Assessment
3. Business and the Capital Markets are Paying Attention to Climate Change

Adaptation is the gift that keeps on giving