

# GETTING AHEAD OF WEATHER GONE WILD: HOMEOWNERS AND COMMUNITIES CAN ACT TODAY TO LIMIT FLOOD AND WILDFIRE RISK TOMORROW



 MUSKOKA SUMMIT  
ON THE ENVIRONMENT

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October 4, 2024



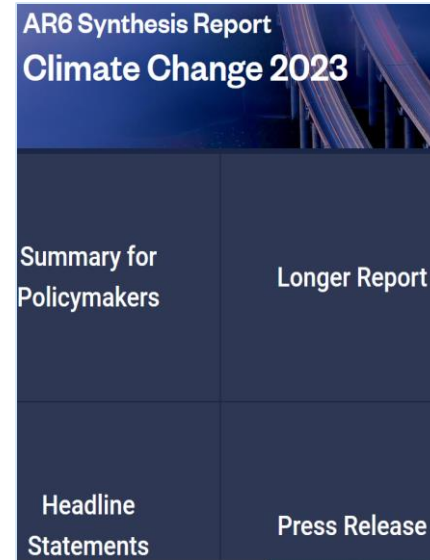
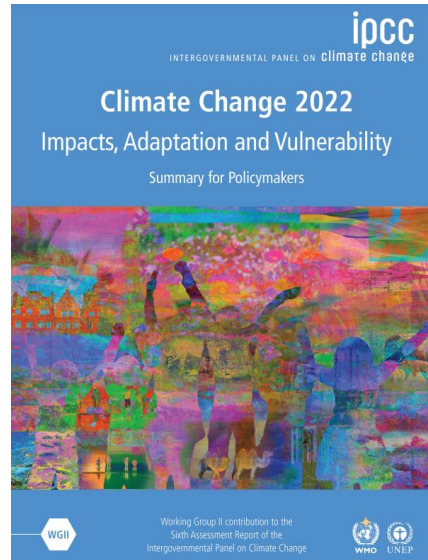
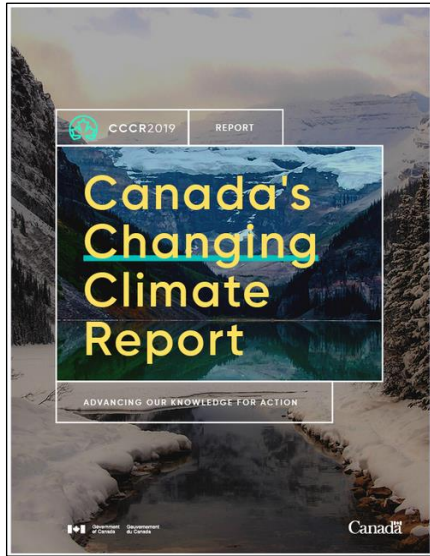
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1. Climate change is irreversible
2. Costs of climate change (financial and social) are bending up
3. Preparing Muskoka for extreme weather:
  - I. Flooding
  - II. Wildfire
4. Recap & Q&A

# CLIMATE CHANGE IS IRREVERSIBLE: SEVERE WEATHER WILL INCREASE



*In 1995, the year of the first COP, global demand for oil was 70 million barrels a day.*

*In 2028, oil demand will be 106 million barrels a day*

International Energy Agency, 2023

*Canada's climate has warmed and will warm further in the future, driven by human influence... this warming is effectively irreversible*

ECCC/CCCR 2019

*It is indisputable that human activities are causing climate change, making extreme climate events, including heat waves, heavy rainfall, and droughts, more frequent and severe*

IPCC 2022

*Some future changes are unavoidable and/or irreversible but can be limited by deep, rapid and sustained global greenhouse gas emissions reduction*

IPCC 2023

- **WORLD POPULATION INCREASES, NET (BIRTHS – DEATHS), BY 8,000 PEOPLE PER HOUR**
- **CLIMATE CHANGE IS DRIVING CLIMATE CHANGE, INDEPENDENT OF BURNING FOSSIL FUELS**

# Costs of Extreme Weather: Catastrophic Insurable Losses



\$1  
insured  
loss

\$3-4 uninsured losses  
incurred by government,  
business, individuals



Toronto, Southern Ontario, Quebec floods; Jasper, Alberta wildfire; Calgary, Alberta hailstorm

Fort McMurray, Alberta Wildfire

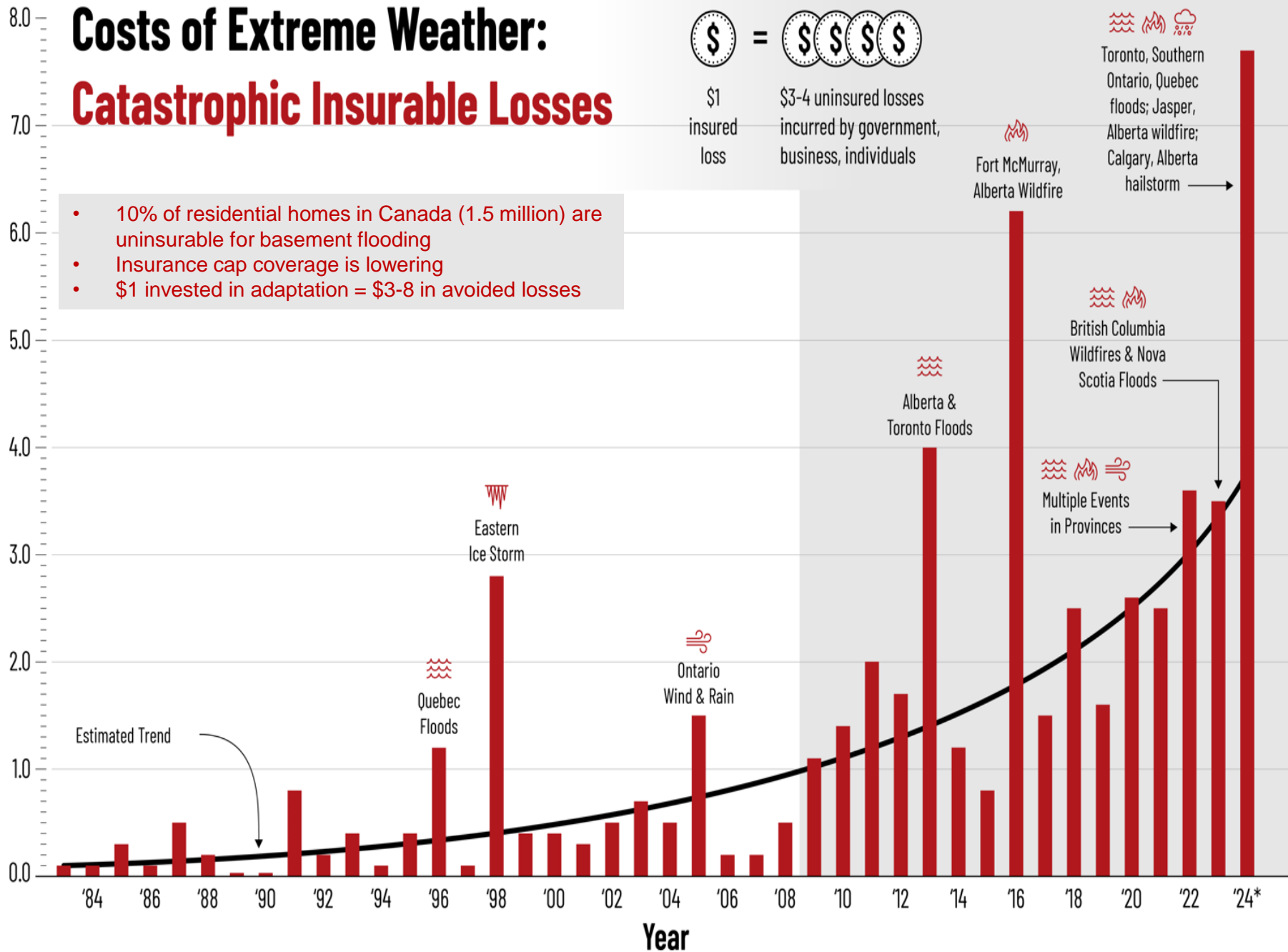
Alberta & Toronto Floods

British Columbia Wildfires & Nova Scotia Floods

Multiple Events in Provinces

- 10% of residential homes in Canada (1.5 million) are uninsurable for basement flooding
- Insurance cap coverage is lowering
- \$1 invested in adaptation = \$3-8 in avoided losses

\$ CAD Billion



# IMPACT OF FLOODING ON RESIDENTIAL HOUSING

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**Flooding Impact on House Price**  
**-8.2%**

**TREADING WATER:  
IMPACT OF  
CATASTROPHIC  
FLOODING  
ON CANADA'S  
HOUSING MARKET**

- Sold Price
- Days on Market
- Houses on Market
- Mortgage Arrears & Deferrals

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CMHC SCHL

GRI GLOBAL RISK INSTITUTE

Kathryn Bakos  
Dr. Blair Feltmate  
Chris Chopik  
Cheryl Evans

February 2022

## Average Sold Price

- *8.2% reduction* in sold price

## Average Number of Listings

- *44.3% decrease* in listings

## Average Days on Market

- *19.8% longer* on the market

## Mortgage Impact

- *loan-to-value ratio*



# MENTAL HEALTH IMPACTS OF RESIDENTIAL FLOODING (LIFE & HEALTH CHALLENGE)

- *“It’s something you never want to experience again in your life”*
- *Average time off work following basement flood – 7.1 days*

## AFTER THE FLOOD:

THE IMPACT OF CLIMATE CHANGE ON MENTAL HEALTH AND LOST TIME FROM WORK



FLOOD VICTIMS FROM A SUBURBAN FLOOD IN BURLINGTON, ON  
SOURCE: ROBERT ORSKI

DANA DECENT AND DR. BLAIR FELTMATE | INTACT CENTRE ON CLIMATE ADAPTATION | JUNE 2018

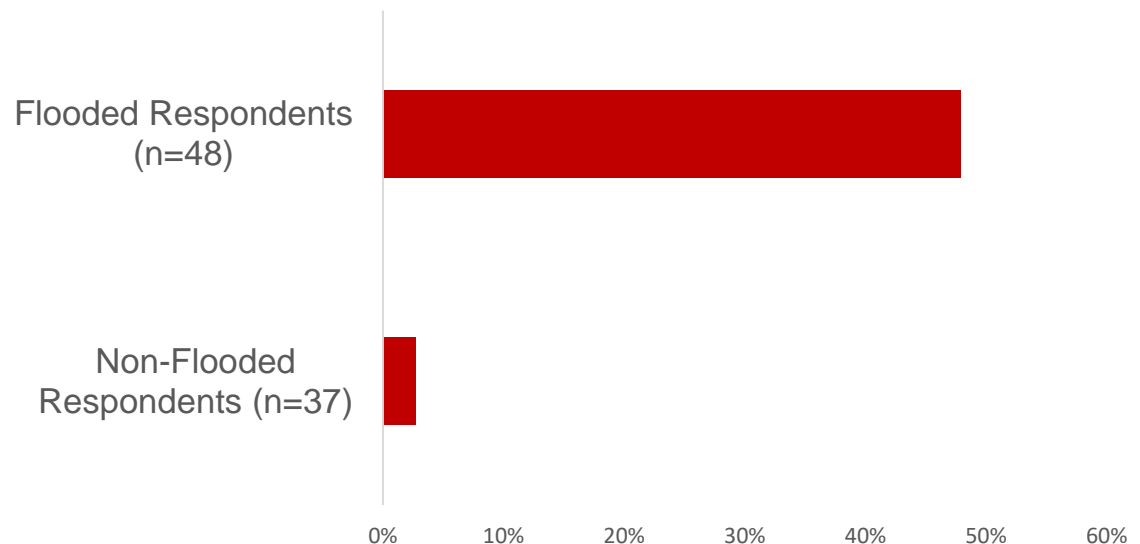
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## Three Years After A Flood: Responses to "How Worried Do You Get When it Rains?"



% of Respondents Who Gave a 4 or 5 on a Scale of 1-5  
(1= not worried, 5 = very worried)

# GUIDANCE TO LIMIT IMPACTS OF FLOODING, WILDFIRES AND EXTREME HEAT

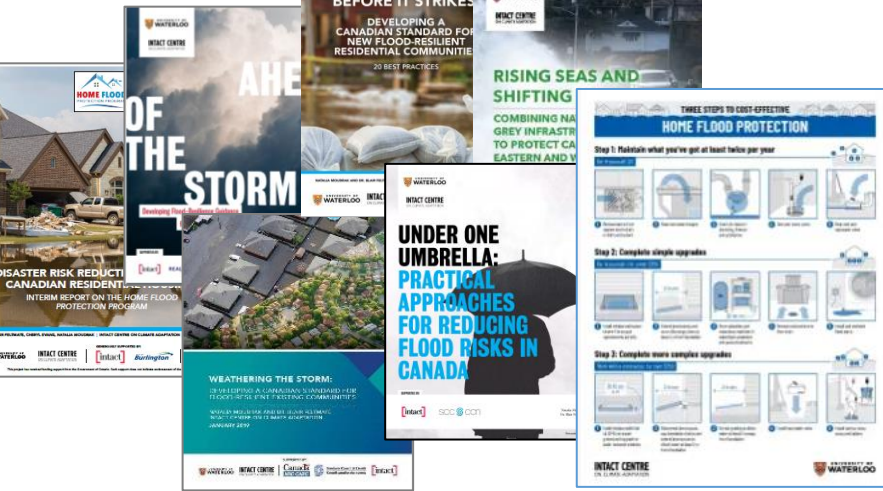
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## FLOOD

## WILDFIRE

## EXTREME HEAT



## NATURAL INFRASTRUCTURE

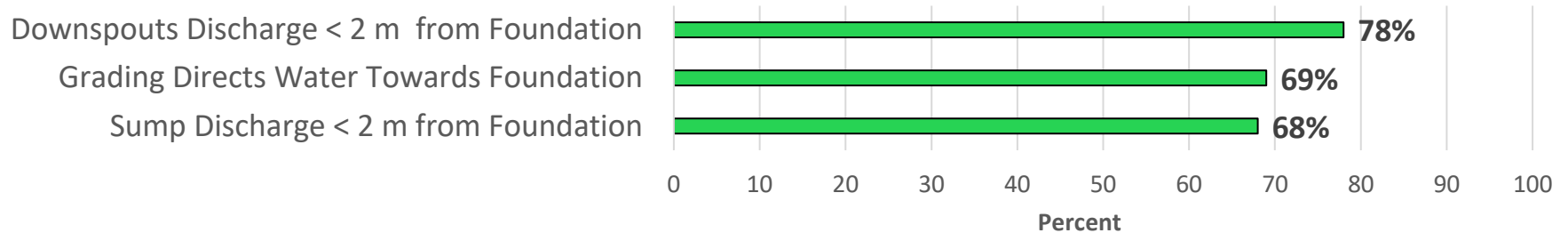
## HEALTH

## CAPITAL MARKETS

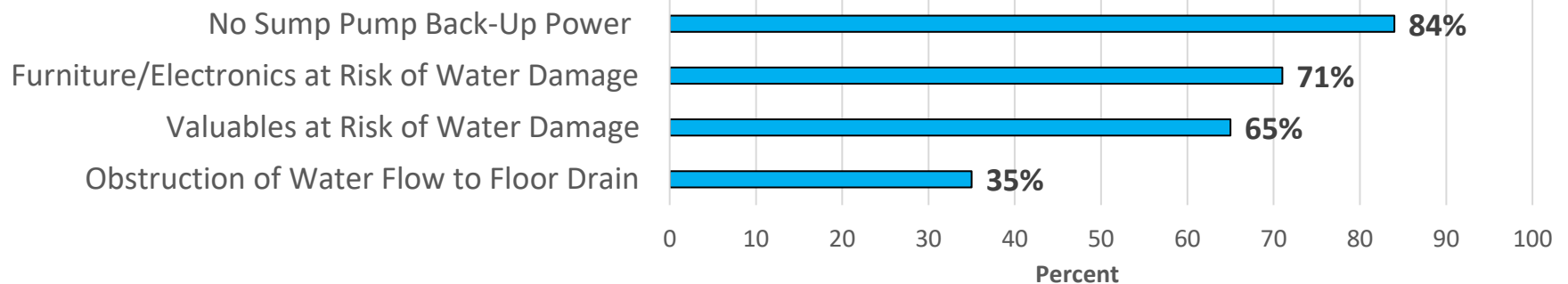


# KEY FACTORS THAT AFFECT BASEMENT FLOOD RISK

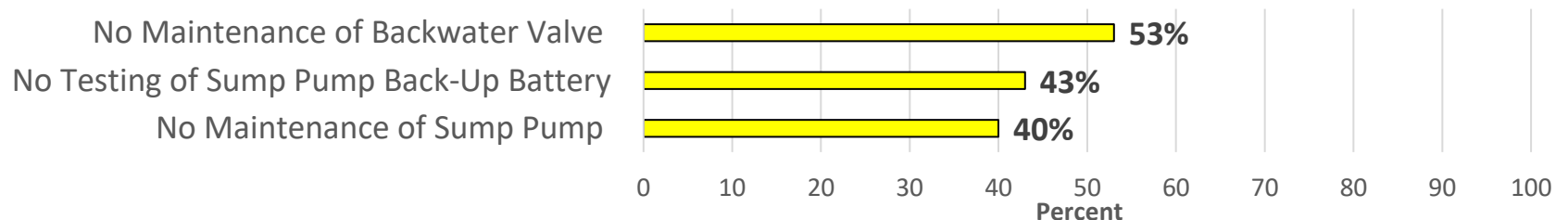
## Top Flood Risks Recorded Outside the Home



## Top Flood Risks Recorded Inside the Home



## Top Self-Reported Maintenance Flood Risks Inside the Home





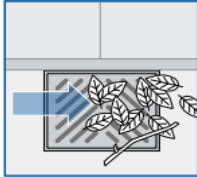
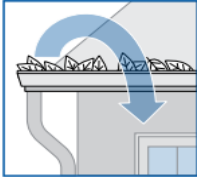
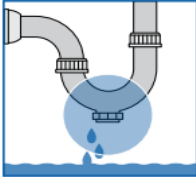

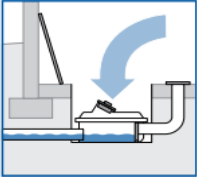
# PROMOTE HOME FLOOD PROTECTION

- Upon receiving infographic within six months, **70% of homeowners take two actions to limit basement flooding**
- Municipalities and financial institutions are sharing Intact Centre infographics (twice per year) across Canada
- This infographic should be shared aggressively throughout Muskoka

## THREE STEPS TO COST-EFFECTIVE HOME FLOOD PROTECTION

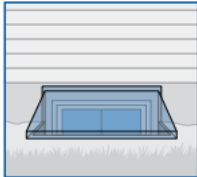
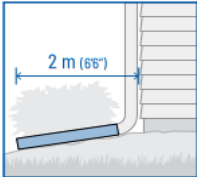
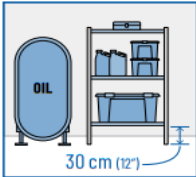
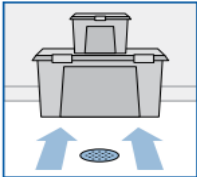
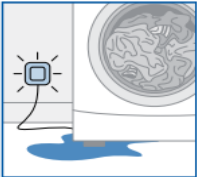
### Step 1: Maintain what you've got at least twice per year

**Do-it-yourself, \$0**

-  1 Remove debris from nearest storm drain or ditch and culvert
-  2 Clean out eaves troughs
-  3 Check for leaks in plumbing, fixtures and appliances
-  4 Test your sump pump
-  5 Clean out your backwater valve

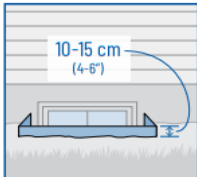
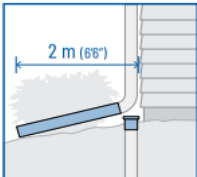
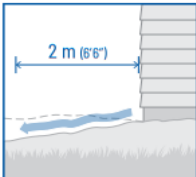
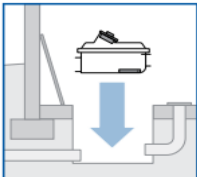
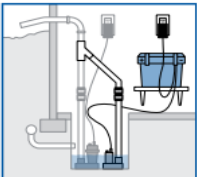
### Step 2: Complete simple upgrades

**Do-it-yourself, for under \$250**

-  1 Install window well covers (where fire escape requirements permit)
-  2 Extend downspouts and sump discharge pipes at least 2 m (6'6") from foundation
-  3 Store valuables and hazardous materials in watertight containers and secure fuel tanks
-  4 Remove obstructions to floor drain
-  5 Install and maintain flood alarm


### Step 3: Complete more complex upgrades

**Work with a contractor, for over \$250**

-  1 Install window wells that sit 10-15 cm (4-6") above ground and upgrade to water resistant windows
-  2 Disconnect downspouts, cap foundation drains and extend downspouts to direct water at least 2 m from foundation
-  3 Correct grading to direct water at least 2 m away from foundation
-  4 Install backwater valve
-  5 Install backup sump pump and battery

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Your logo goes here

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# INSTITUTIONS DISTRIBUTING HOME FLOOD INFOGRAPHIC

- 7.2 million Canadians reached, representing 3.4 million households

## **Cities sharing flood infographic (e.g.):**


- Gibsons, BC
- Squamish, BC
- Calgary, AB
- Saskatoon, SK
- Ajax, ON
- Richmond Hill, ON
- Oakville, ON
- Ottawa, ON
- Peel Region (Mississauga, Brampton, Caledon: 500,000 households, 1.4 million people)
- St. Catherines, ON
- Windsor , ON
- Montreal, QC
- St. John, NB
- Antigonish (Town and County), NS
- Nova Scotia Federation of Municipalities, NS
- Charlottetown, PEI

## **Banks/Credit Unions sharing flood infographics (e.g.):**

- Intact Financial Corporation
- Bank of Montreal
- Meridian Credit Union (170 branches in Ontario)
- Foresters Financials
- Scotiabank (under development)
- RBC (under development)

## **Ontario Ministries:**

- Emergency Management Ontario – Deputy Minister Bernie Derible (444 Community Emergency Management Coordinators)




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Canada's National Adaptation Strategy  
in Action

# WILDFIRE-READY

## PRACTICAL GUIDANCE TO STRENGTHEN THE RESILIENCE OF CANADIAN HOMES AND COMMUNITIES



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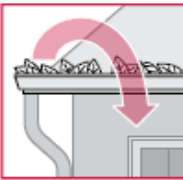
Cheryl Evans  
Dr. Anabela Bonada  
Dr. Blair Felkate

December 2023

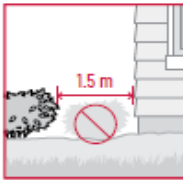
# THREE STEPS TO COST-EFFECTIVE FIRESMART™ HOME

## Step 1: Maintain what you've got at least twice per year

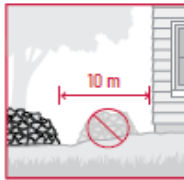
Do-it-yourself, \$0 - \$300



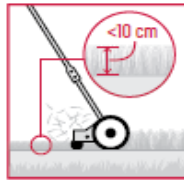
**1** Remove needles, leaves and other debris from gutters, roof surfaces, decks and balconies. Regularly clean vents.



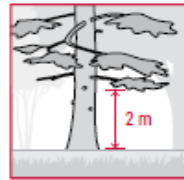
**2** Remove all combustible ground cover (mulch and plants) within 1.5 m of the house perimeter.



**3** Remove combustible materials (firewood and lumber) stored within 10 m of house perimeter and under decks.




**4** Mow the lawn to <10 cm and plant low-growing, well-spaced shrubs and other fire-resistant plants.



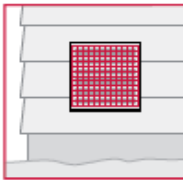
**5** Prune trees to create a 2 m clearance from the ground to the lowest tree branches.

## Step 2: Complete simple upgrades

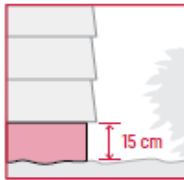
\$300 - \$3,000



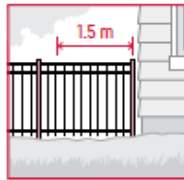
**1** Replace worn or missing weather stripping on all doors including garage doors.



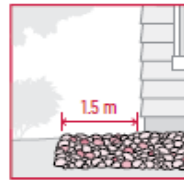
**2** Add a non-combustible 3 mm screen to all external vents, except dryer vents.



**3** Create a 15 cm ground-to-siding non-combustible clearance (e.g., install cement board or metal skirting).




**4** Install non-combustible fencing within 1.5 m of the house (cement fibre, metal, chain link or stone).



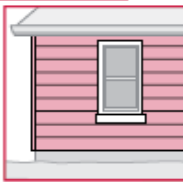
**5** Install non-combustible ground surfaces within 1.5 m of the house (mineral soil, rock, concrete or stone).

## Step 3: Complete more complex upgrades


Work with a contractor, \$3,000 - \$30,000



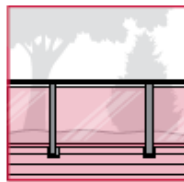
**1** Install Class A fire-resistant roof covering (e.g., cement fibre, metal or asphalt shingles).



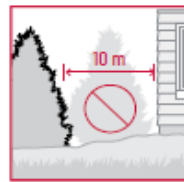
**2** Install non-combustible siding (stucco, metal, stone, cement fibre board).



**3** Install multi-pane or tempered glass windows and exterior fire-rated doors.




**4** Retrofit all deck components to be fire-rated, with a continuous surface.



**5** Remove conifer trees that are within 10 m of the house.


Note: not all actions will be applicable to each home. Completing these steps does not guarantee the prevention of fire.

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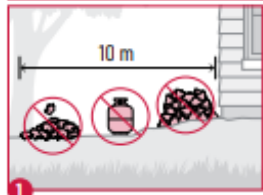


**FireSmart**  
Canada

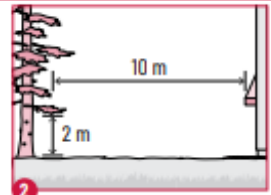
# THREE FEATURES OF A WILDFIRE-READY COMMUNITY

Communities can integrate wildfire-ready features into their risk management plans to limit damage and disruption due to wildfire events and strengthen emergency preparedness. By working with Provincial/Territorial wildfire agencies, communities can access available tools, training, and resources to help them assess their unique risks, and create customized action plans.

## Feature 1: Wildfire-Ready Structures & Infrastructure



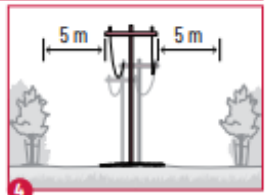
1 Complete regular maintenance of structures, infrastructure, and landscaping within 10 m to limit accumulation of flammable materials (e.g., leaves, brush piles, stored items, fuel tanks).



2 Install/replace landscaping with fire resistant materials within 10 m of structures and infrastructure.

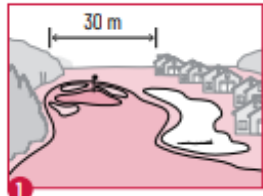


3 Build/update structures and infrastructure using fire resistant building materials (e.g., Class A roofing/metal roofs, non-combustible siding, metal, or concrete hydro poles).

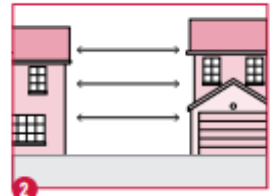


4 Design/update structures and infrastructure to be ignition resistant (e.g., 5 m distance between vegetation and power lines, power supply lines below ground where feasible).

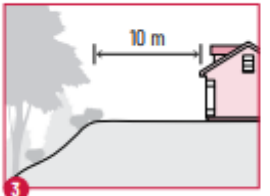
## Feature 2: Wildfire-Ready Community Design



1 Integrate minimum 30 m wide zones (fire breaks) featuring ignition resistant materials (e.g., mowed grasses, ponds, roads) into community design to limit the spread of fire. Increase minimum to 50 m on steep slopes.



2 Provide greater spatial separation between structures in hazard areas to limit the spread of fire from one structure to another.



3 Require minimum 10 m setback from the crest of a hill to limit spread of fire to structures.



4 Restrict development in hazard areas where mitigation measures cannot meet minimum standards for health, safety, and environmental protection.

## Feature 3: Wildfire-Ready Emergency Response



1 Complete annual emergency planning and cross-training exercises that include multiple agencies (e.g., wildland and structural firefighters).



2 Designate at least one emergency shelter per community.



3 Ensure minimum water supply for firefighting.



4 Provide two or more access and egress routes.

Note: The guidance in this document is voluntary. Completion of actions should not conflict with applicable building and fire codes. Wildfire-ready communities can reduce but not eliminate risk.



1. Climate change is irreversible
2. Adaptation is key to limiting future risks of extreme weather:
  - I. individual house
  - II. community / municipality
3. Home flood and wildfire protection **infographics** should be shared throughout Muskoka (e.g., included in property tax notices, distributed by insurance and mortgage brokers, distributed in bank branches, Home Depot, Home Hardware, etc.)
4. Preparedness = Success / Avoid “Management by Disaster”