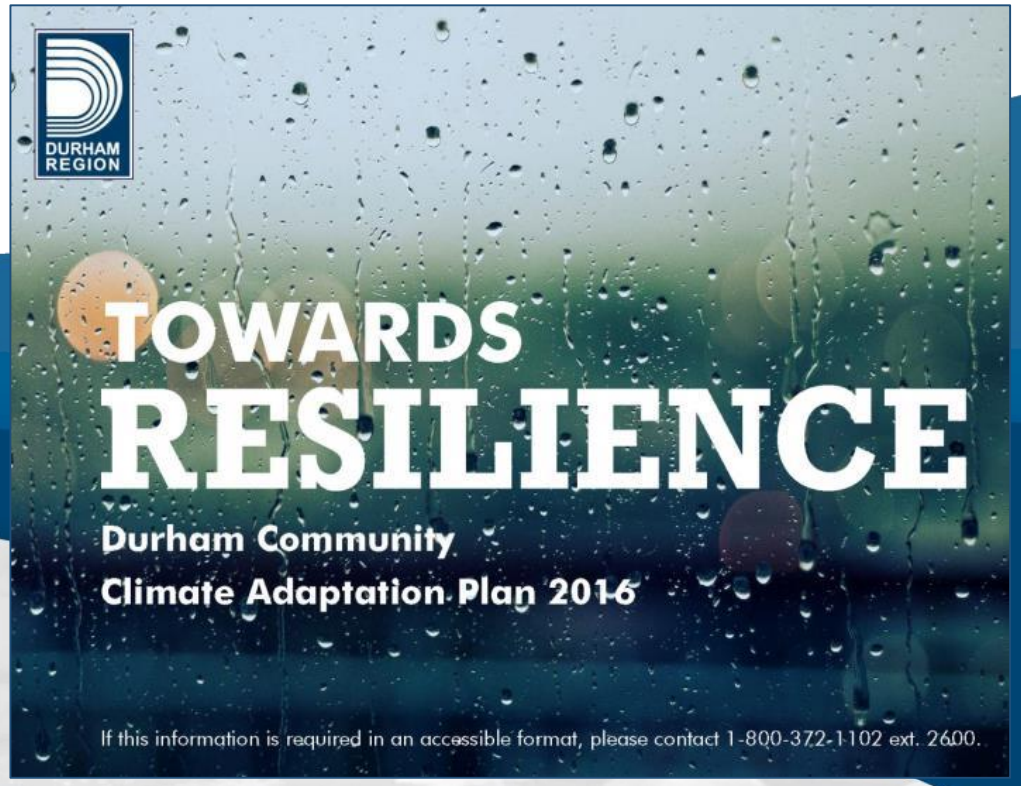
Durham Community Climate Adaptation Plan

Caitlin Rochon, Corporate Policy and Strategic Initiatives

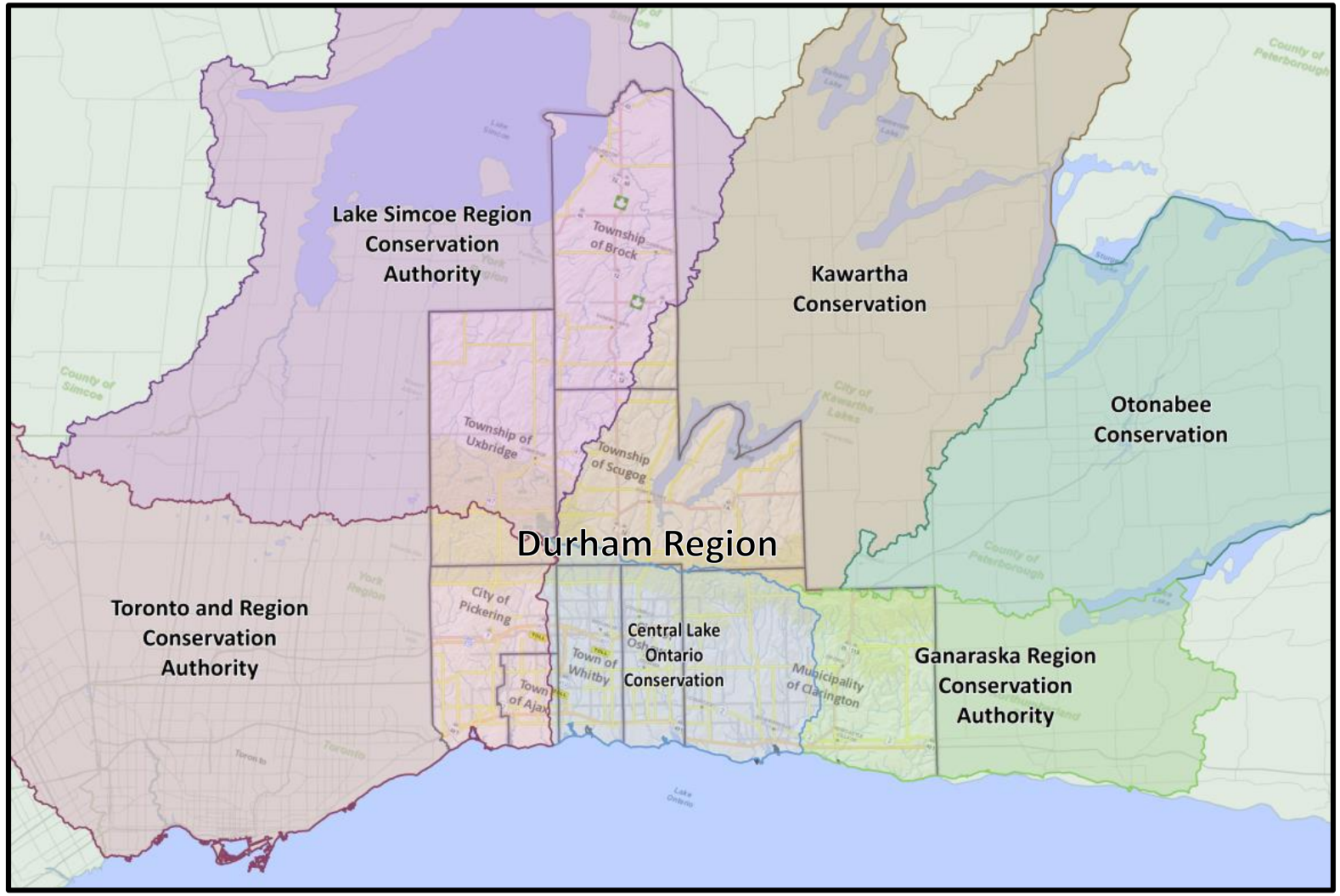
Regional Municipality of Durham



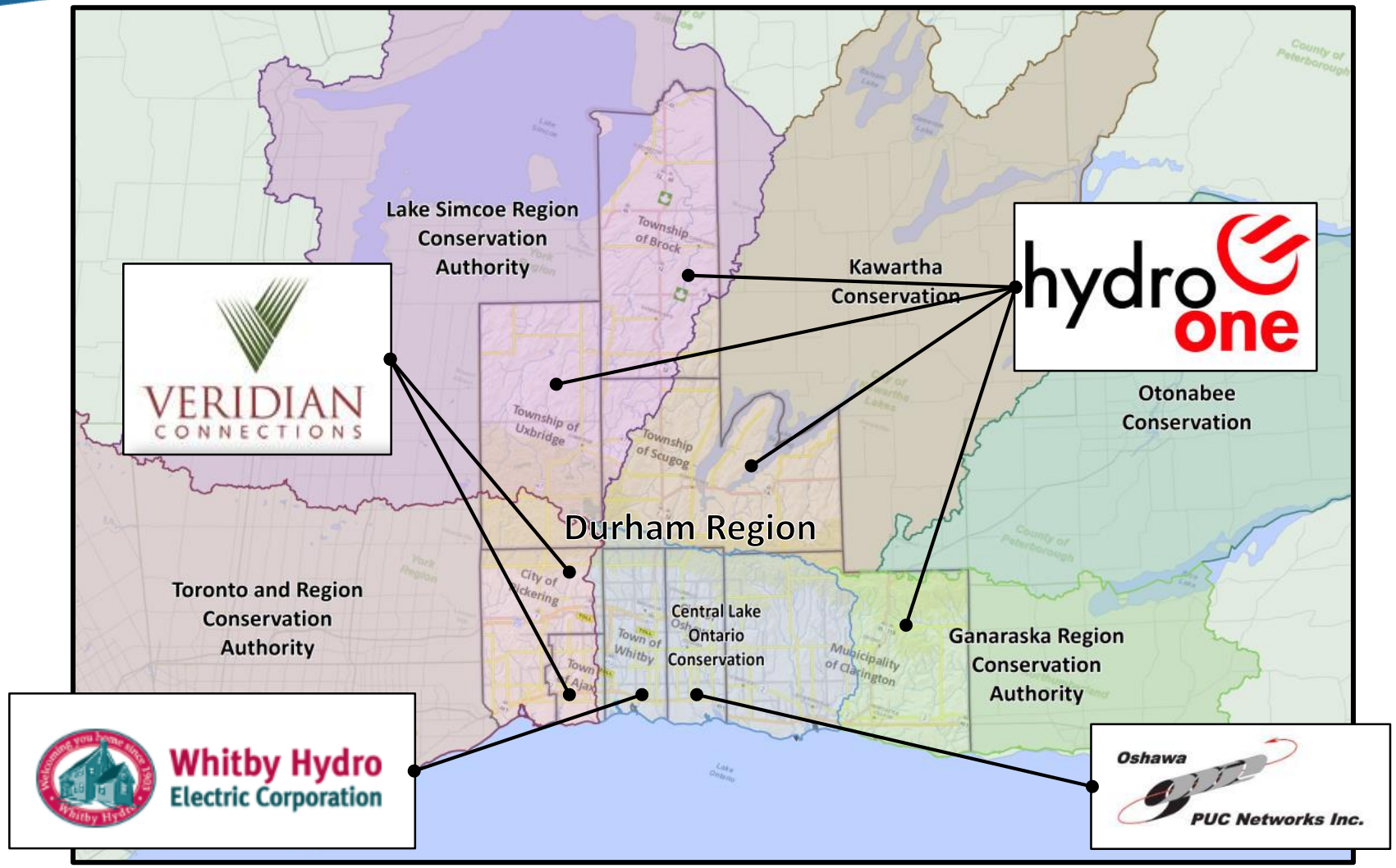
August 29, 2017

The Regional Municipality of Durham

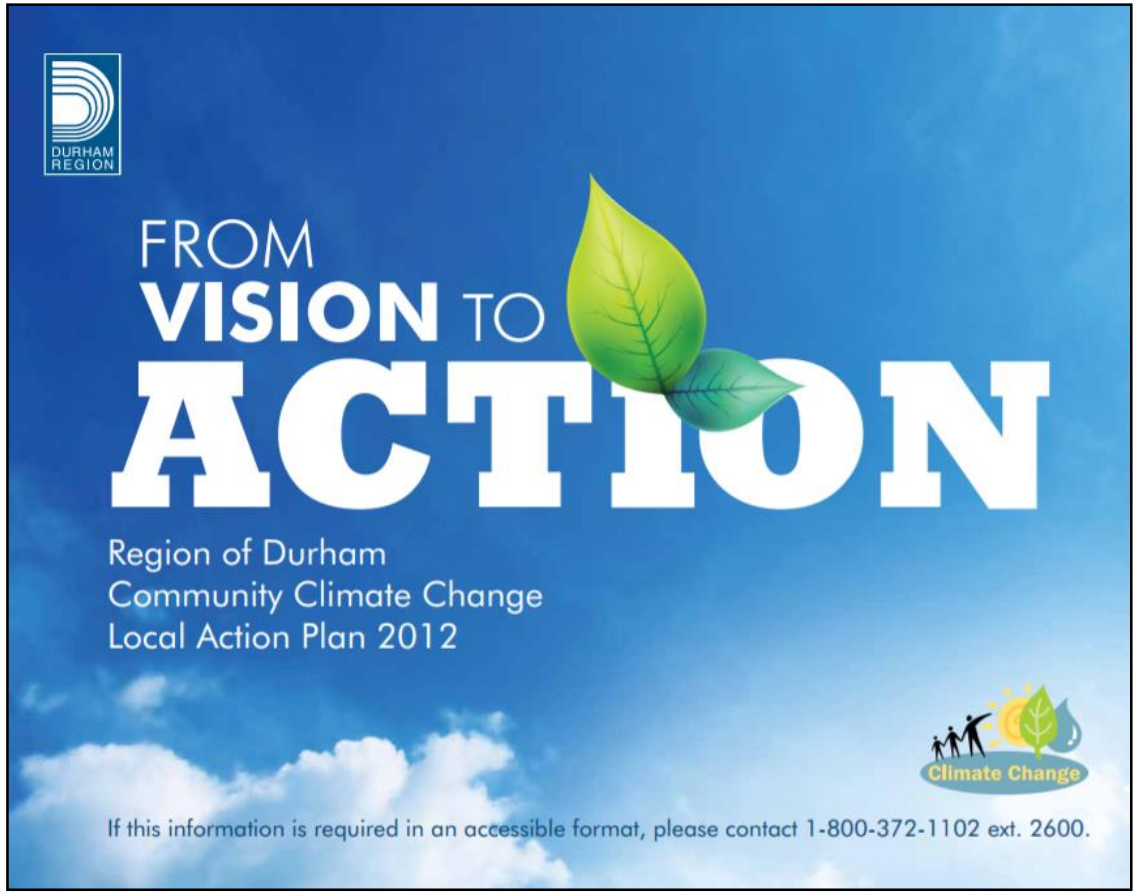
The Regional Municipality of Durham



The Regional Municipality of Durham

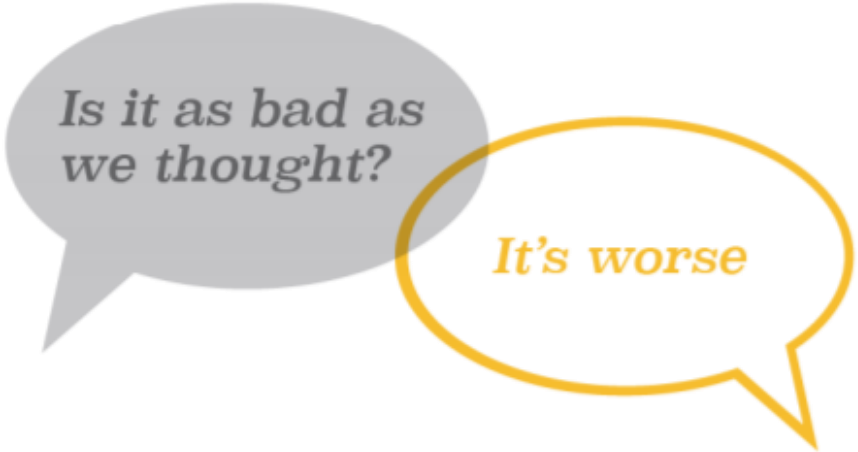


Durham Community Climate Local Action Plan

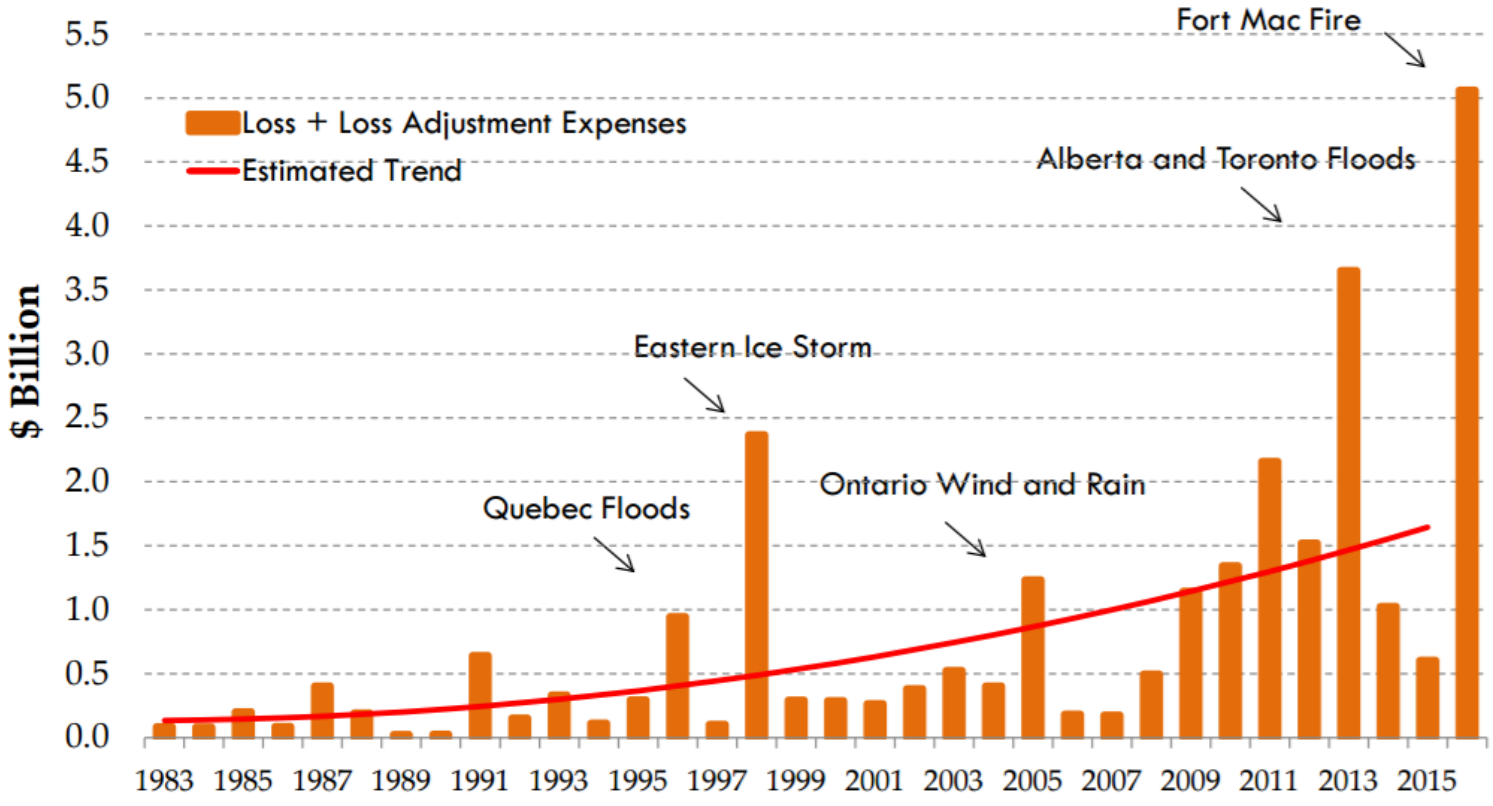


Climate change impacts in Ontario

- 2016 was the warmest year ever recorded.
- The 10 warmest years have occurred since 1988.
- In the past two decades, Ontario has experienced **billions of dollars in losses due to spring frost, dry summers, tornados and severe winds, ice storms, and flooding and thunderstorms. All of these events have been increasing in frequency and intensity.**



Climate change is expensive

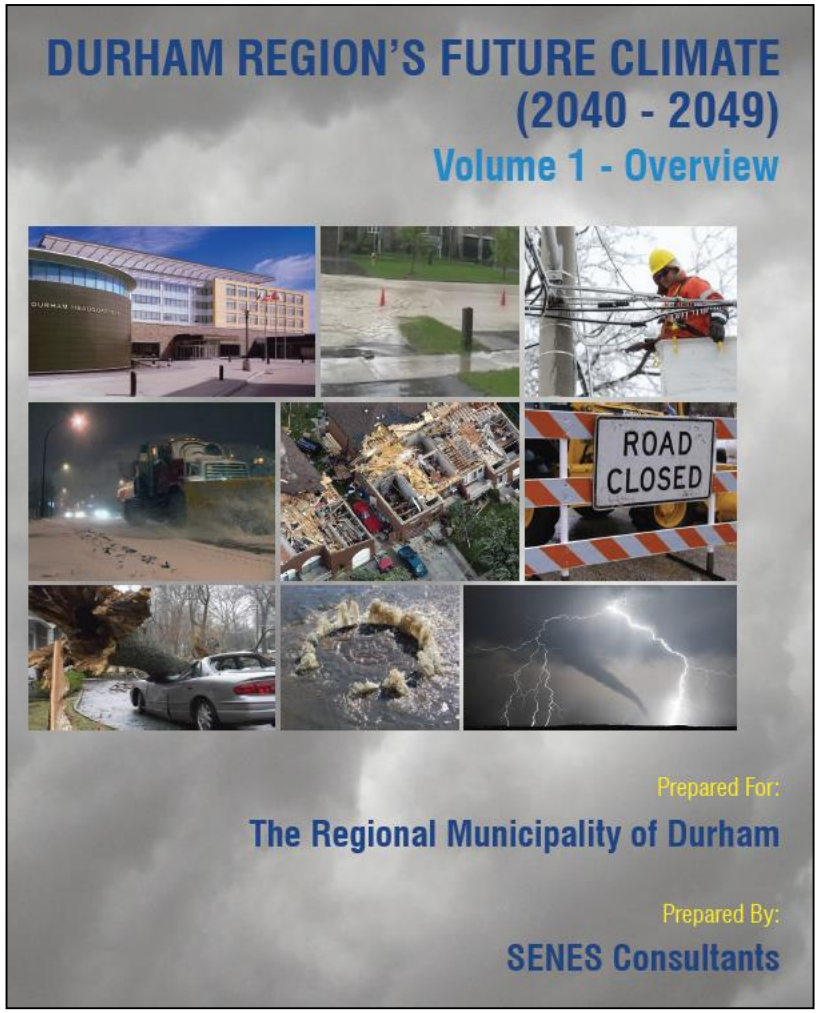


Courtesy: Insurance Bureau of Canada (Values in 2015 dollars)

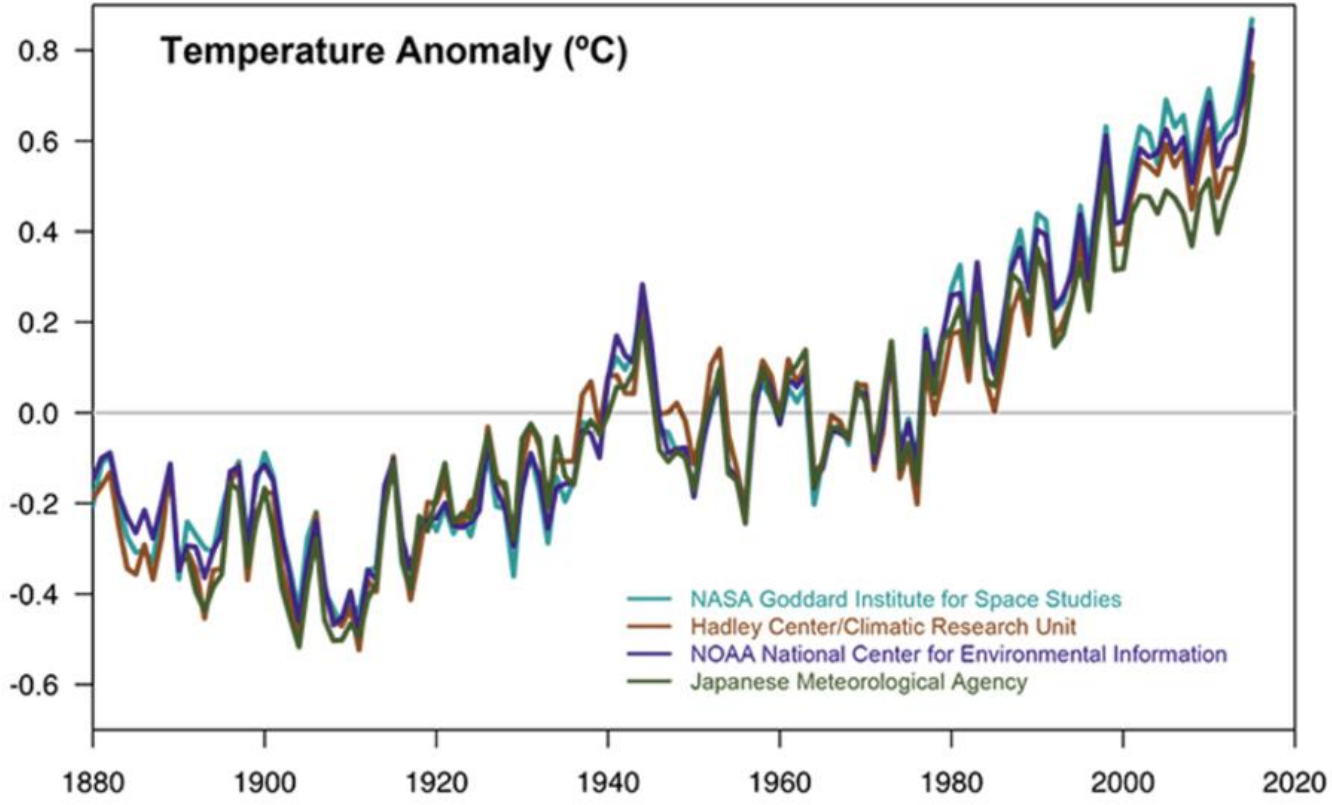
Note: Cost to government and homeowners is 3-4 X that of private insurers.

What can we do to de-risk the Durham community?

1. Future climate study.
2. Hazard identification risk assessment.
3. Identify control mechanisms.



Warmer. Wetter. Wilder.



Temperature data from four international science institutions. All show rapid warming in the past few decades and that the last decade has been the warmest on record. Data sources: NASA's Goddard Institute for Space Studies, NOAA National Climatic Data Center, Met Office Hadley Centre/Climatic Research Unit and the Japanese Meteorological Agency.

More frequent heat waves are likely to occur across Canada with a warming climate.

REUTERS/Mark Blinch

CANADA July 30, 2015 5:27 pm Updated: July 30, 2015 7:49 pm

Children, the elderly most at risk during heat waves

By Sarah Volstad
Reporter Global News

Climate change and health: Extreme heat a 'silent' killer

KAREN MCCOLL
The Globe and Mail
Published Wednesday, Apr. 30, 2014 3:34PM EDT

Warmer. Wetter. Wilder.

Climate Parameter	Detailed Parameter	2000-2009	2040-2049
Extreme Heat	Extreme max. (°C)	33	40
Extreme Heat	# days/year > 30°C	2	17
Degree Days	# degree days/year > 24°C	8	49
Humidex	Average # days/year >40°C	3	19

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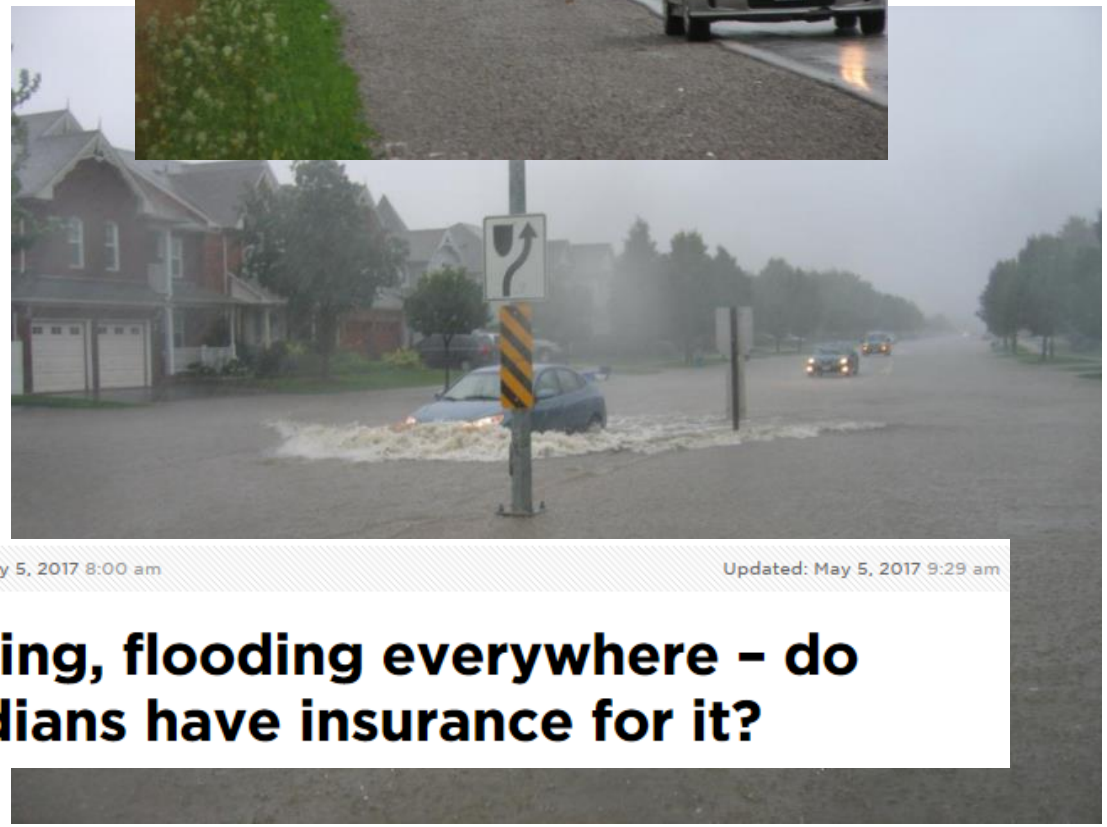
Climate Parameter	Detailed Parameter	2000-2009	2040-2049
Extreme Cold	Average min Daily (°C)	-8	-1
Extreme Cold	Extreme min. (°C)	-25	-13
Degree Days	# degree days/year < 0°C	475	70
Wind Chill	# days/year <-20°C	15	0

Warmer. **Wetter.** Wilder.

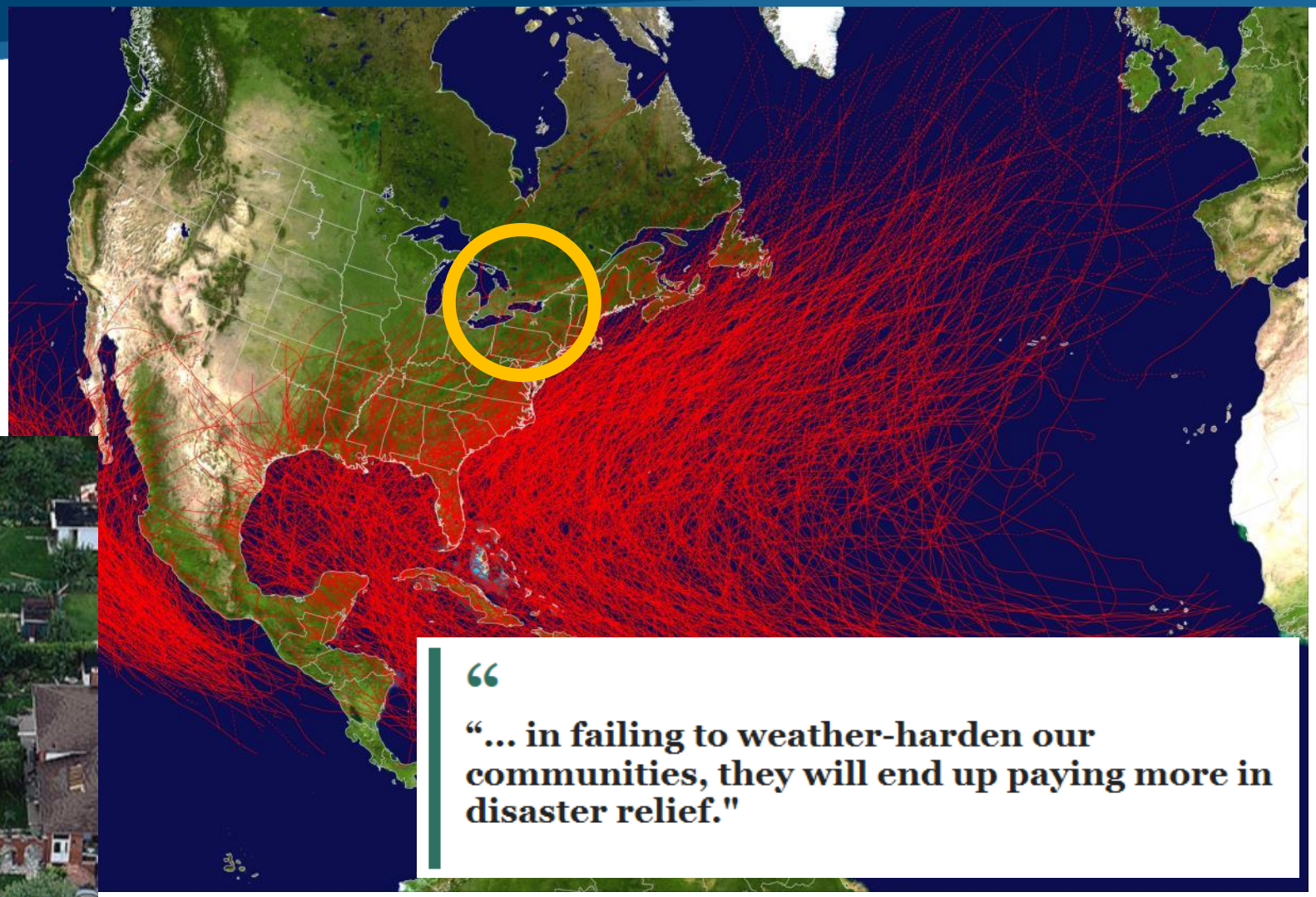


CANADA May 5, 2017 8:00 am Updated: May 5, 2017 9:29 am

Flooding, flooding everywhere – do Canadians have insurance for it?

Warmer. **Wetter.** Wilder.

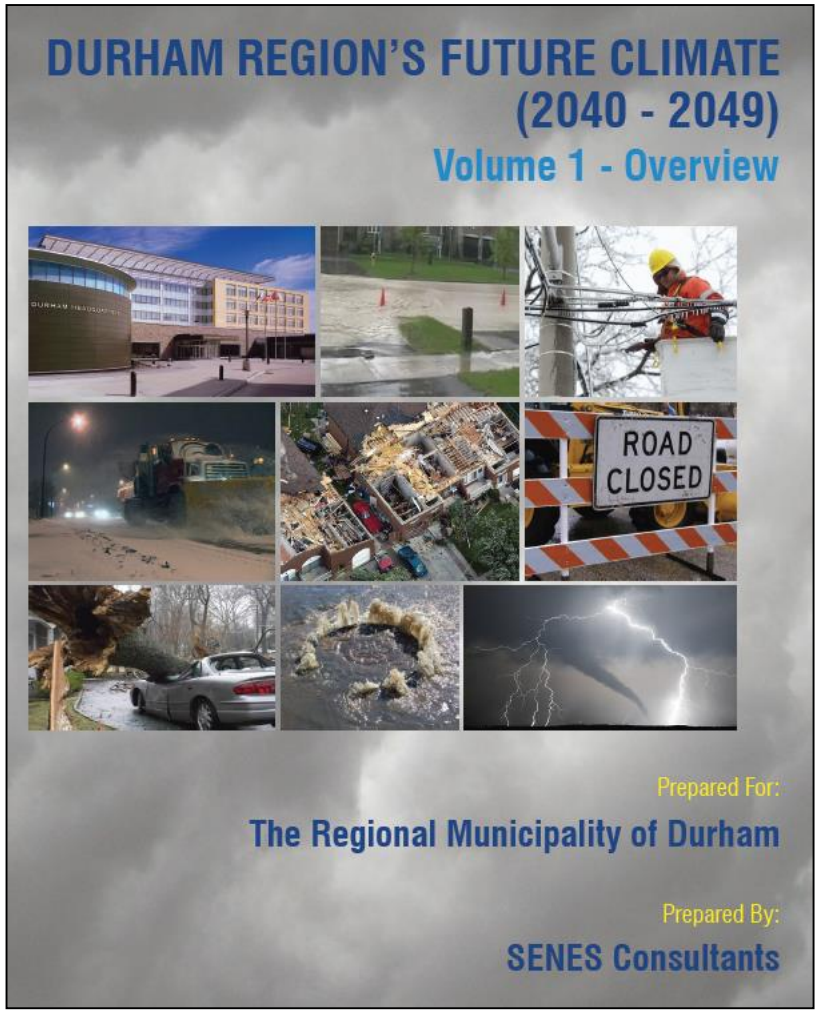
Warmer. Wetter. **Wilder.**



> "... in failing to weather-harden our communities, they will end up paying more in disaster relief."

What can we do to de-risk the Durham community?

1. **Future climate study.**
2. Hazard identification risk assessment.
3. Identify control mechanisms



What can we do to de-risk the Durham community?

1. Future climate study.
2. **Hazard identification risk assessment.**
3. Identify control mechanisms

Roads Sector

Likelihood of impact →

Consequence ↑

	1	2	3	4	5
5					Storm structures/ embankments
4					Pavement softening (heat)
3			Pavement structure (storm)	Buckling of concrete structures (heat)	Pavement deterioration (less cold days)
2	Bridges (heat, less cold days)	Potholes (less cold days)		Sanitary sewers (storm)	Waterfront bluffs
1				Signposts/trees (storm)	Reduction in road salt (less cold days)

What can we do to de-risk the Durham community?

1. Future climate study.
2. Hazard identification risk assessment.
3. **Identify control mechanisms**

Design Charrette

28 Potential Programs

Overlap? Redundancy?

Improvements?

What can we do to de-risk the Durham community?

1. Future climate study.
2. Hazard identification risk assessment.
3. **Identify control mechanisms**

Durham Community Climate Adaptation Plan

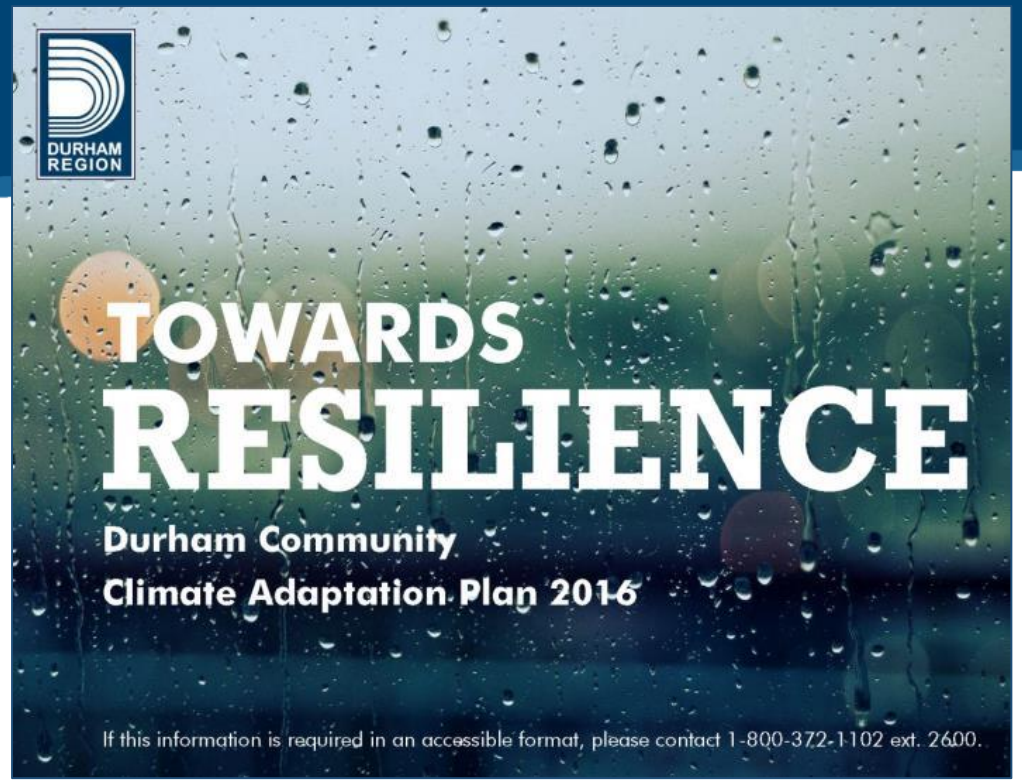
7 Sectors

18 Programs

+ 1 sector placeholder

8 Sectors – 18 Programs

- Cross-Sectoral
- Buildings Sector
- Electrical Sector
- Flooding Sector
- Health Sector
- Roads Sector
- Natural Environment Sector
- Food Security Sector (placeholder)



Cross-Sectoral Programs

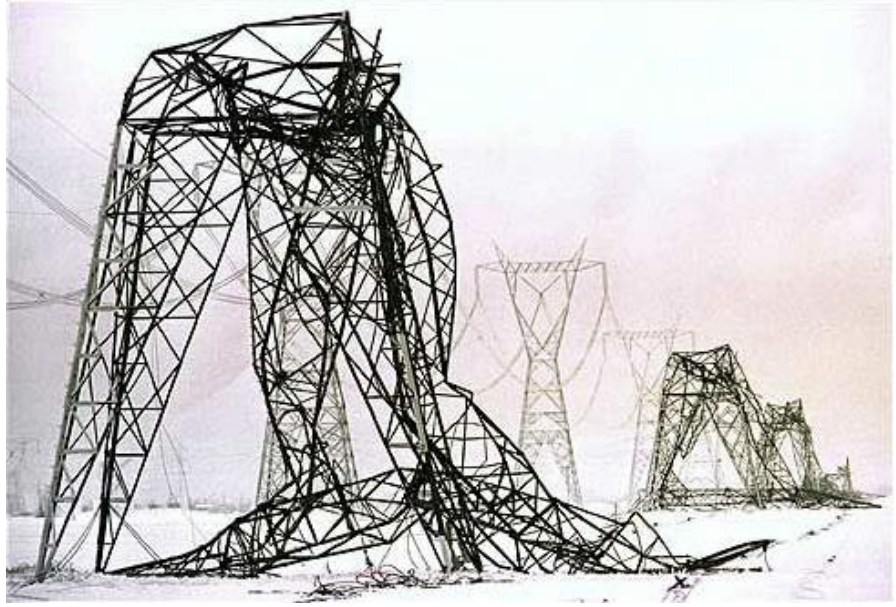
- CS1: Protect Our Outside Workers
- CS2: Social Infrastructure for Emergency Resilience

Buildings Sector

- B1: The Durham Climate Resilience Standard for New Buildings
- B2: Building Retrofit for Climate Resilience

Electrical Sector

- E1: Asset Protection Against Flooding
- E2: Vegetation Management
- E3: Asset Design and Service Life Management Program



Flooding Sector

- F1: Addressing Urban Flooding
- F2: Redefine Flood Hazards Considering Climate Change
- F3: Improving Flood Forecasting Warming and Emergency Response
- F4: Addressing Riverine Flooding

Flooding Sector

- F1: Addressing Urban Flooding
- F2: Redefine Flood Hazards Considering Climate Change
- F3: Improving Flood Forecasting Warming and Emergency Response
- F4: Addressing Riverine Flooding

Human Health Sector

- HH1: Extreme Weather Alert and Response (EWAR) System
- HH2: Property Standards By-Laws for Maximum Temperature Allowed in Apartments
- HH3: “Cool Durham” Heat Reduction Program

Roads Sector

- R1: Resilient Asphalt Program
- R2: Road Embankment Program
- R3: Adaptive Culverts and Bridges

Natural Environment Sector

- NE1: Achieving Climate Change Resilience in the Natural Environment

How to engage key stakeholders & sectors

- Know when to engage stakeholders.
- Be prepared to ask for what you need.
- Make sure your experts have a voice.
- Quarterly communications.
- Know when they need to work apart and when they need to work together.

Lessons learned

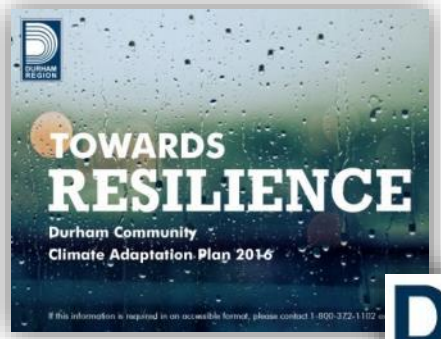
- The blanket approach will not work.
- If at first you do not succeed, try, try again.
- Be flexible with your timelines.
- Reengage and reassess delegates.

Keys to success

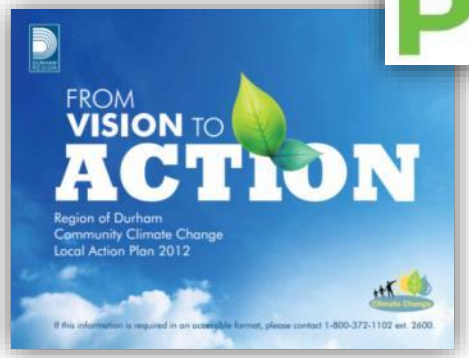
1. Councillor and corporate support – Durham Region Roundtable on Climate Change
2. Strong scientific foundation – Future Climate Study
3. Multi-agency buy-in – Expert Task Force members

Keys to success:
Durham Region Roundtable on Climate Change (DRRCC)

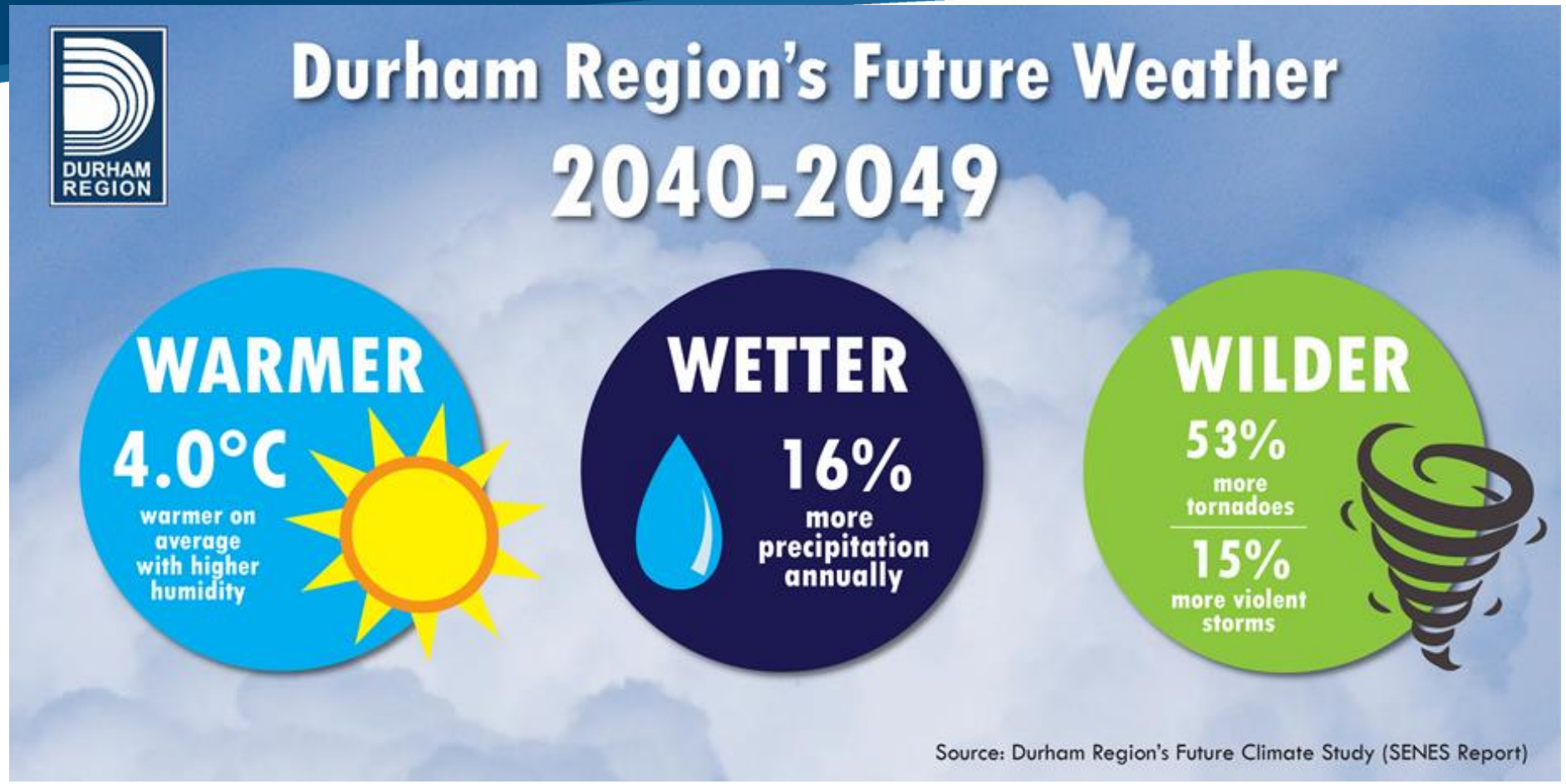
- An official committee of Regional Council with monthly meetings
- Membership consists of:
  - Council representatives: Regional Chair, 4 Regional Councillors and 4 alternates
  - Corporation representatives: CAO / Commissioner of Planning
  - Citizen members for small & large business, academia, building & development industry, education, students, health, food, and general community



DURHAM COMMUNITY ENERGY PLAN



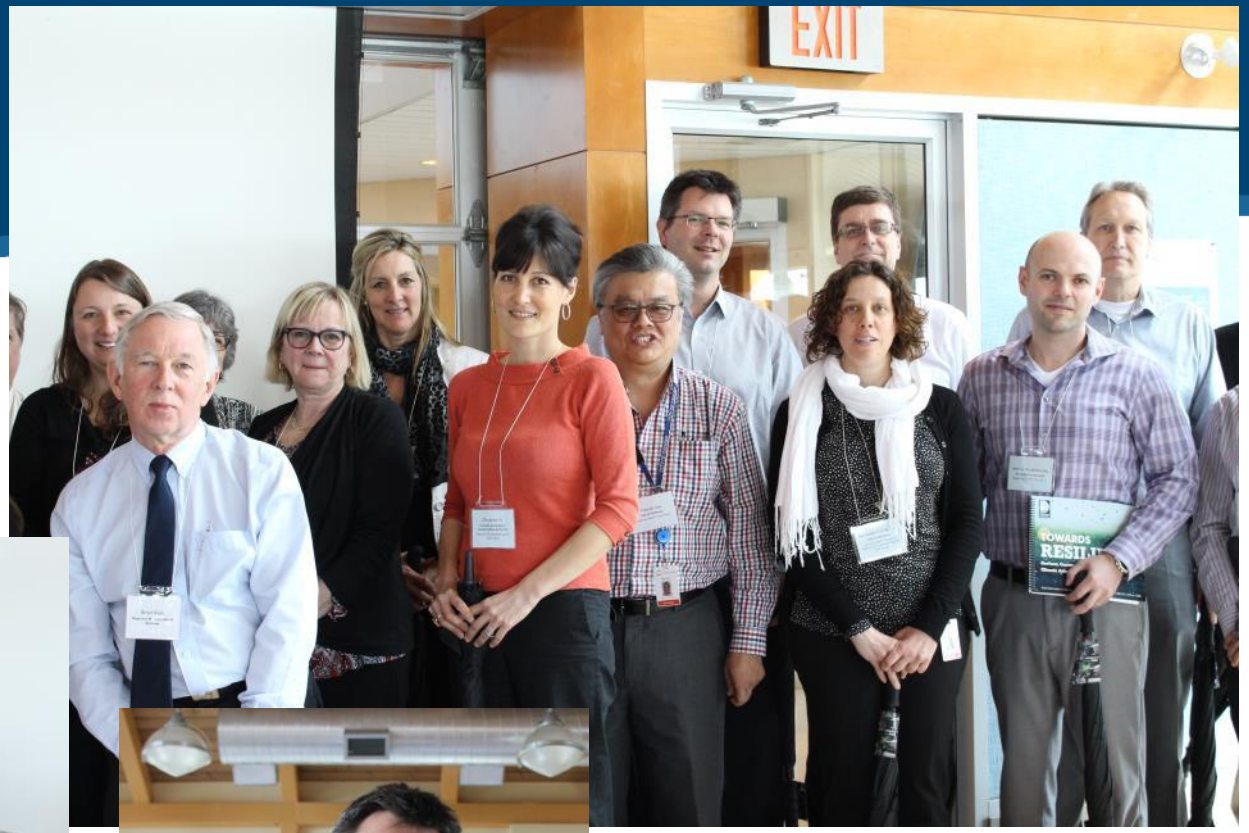
Keys to success:
Future Climate Study



Keys to success:
True stakeholder engagement

Sector/Program	Region of Durham	Municipalities	Electrical Utilities	Conservation Authorities	Provincial Agencies	Federal Agencies
Cross-Sectoral Programs						
Protect Our Outside Workers	•	•	•	•		
Social Infrastructure for Emergency Resilience	•	•				
Building Sector						
Durham Climate Resilience Standard for Buildings	•	•			•1	
Building Retrofit for Climate Resilience	•	•			•1, 2	
Electrical Sector						
Asset Protection Against Flooding		•	•	•		
Vegetation Management	•	•	•			
Asset Design & Service Life Management			•		• 3	
Flooding Sector						
Address Urban Flooding		•		•	• 2, 4, 5	• a
Redefine Flood Hazards		•		•	• 2, 4	
Improve Flood Forecasting, Warning & Emergency Response	•	•		•	• 4	
Address Riverine Flooding		•		•	• 2, 4	
Human Health Sector						
Extreme Weather Alert and Response system	•	•			• 6	• b, c
Property Standards Bylaw for Maximum Heat Allowed in Apartments	•	•			• 6	• c
"Cool Durham" Heat Reduction Program	•	•		•		
Roads Sector						
Resilient Asphalt Program	•	•			• 5	
Road Embankment Program	•	•			• 5	
Adaptive Culverts and Bridges	•	•		•		
Natural Environment Sector						
Achieving Climate Resilience in the Natural Environment	•	•		•		


TOWARDS
RESILIENCE
Durham Community
Climate Adaptation Plan,2016


EXIT


EXIT


WARDS
ESILIENCE
Durham Community
Climate Adaptation Plan,2016

REGION

Durham has become a leader in climate adaptation planning

- Recognition by:
  - Member of Parliament Celina Caesar-Chavannes
  - Provincial and Federal Minister of the Environment and Climate Change.
  - Intact Centre on Climate Adaptation

2017 Work Plan

- Establish Steering Committee, Working Groups, new Expert Task Forces for additional sectors
- Develop annual reporting framework
- Urban heat island mapping of the Region
- Durham Climate Resilience Standard for New Buildings with ICLR
- Development of Communications Plan and outreach documents

Thank you

Caitlin Rochon

Regional Municipality of Durham

Corporate Policy and Strategic Initiatives

caitlin.rochon@durham.ca

905-668-4113 ext. 2600