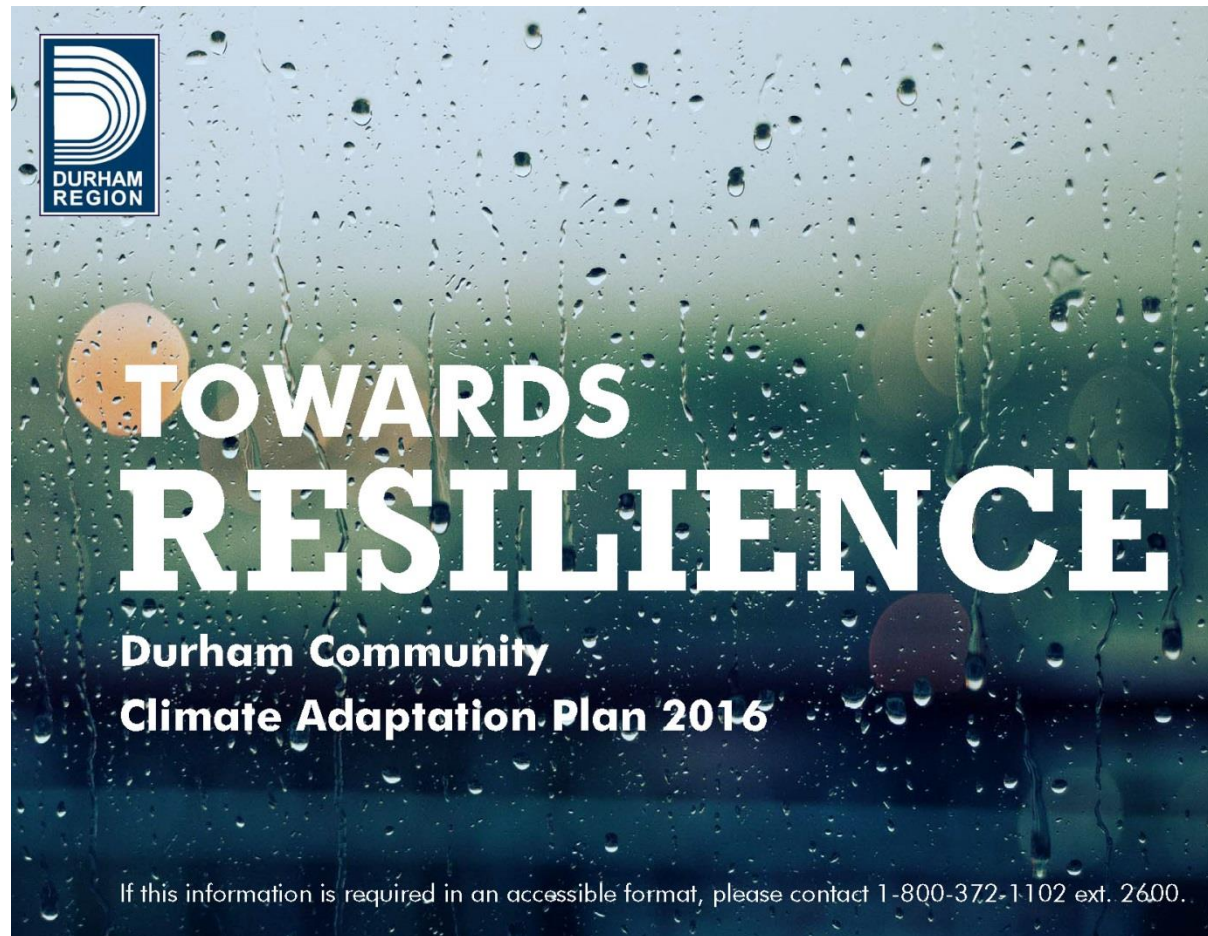


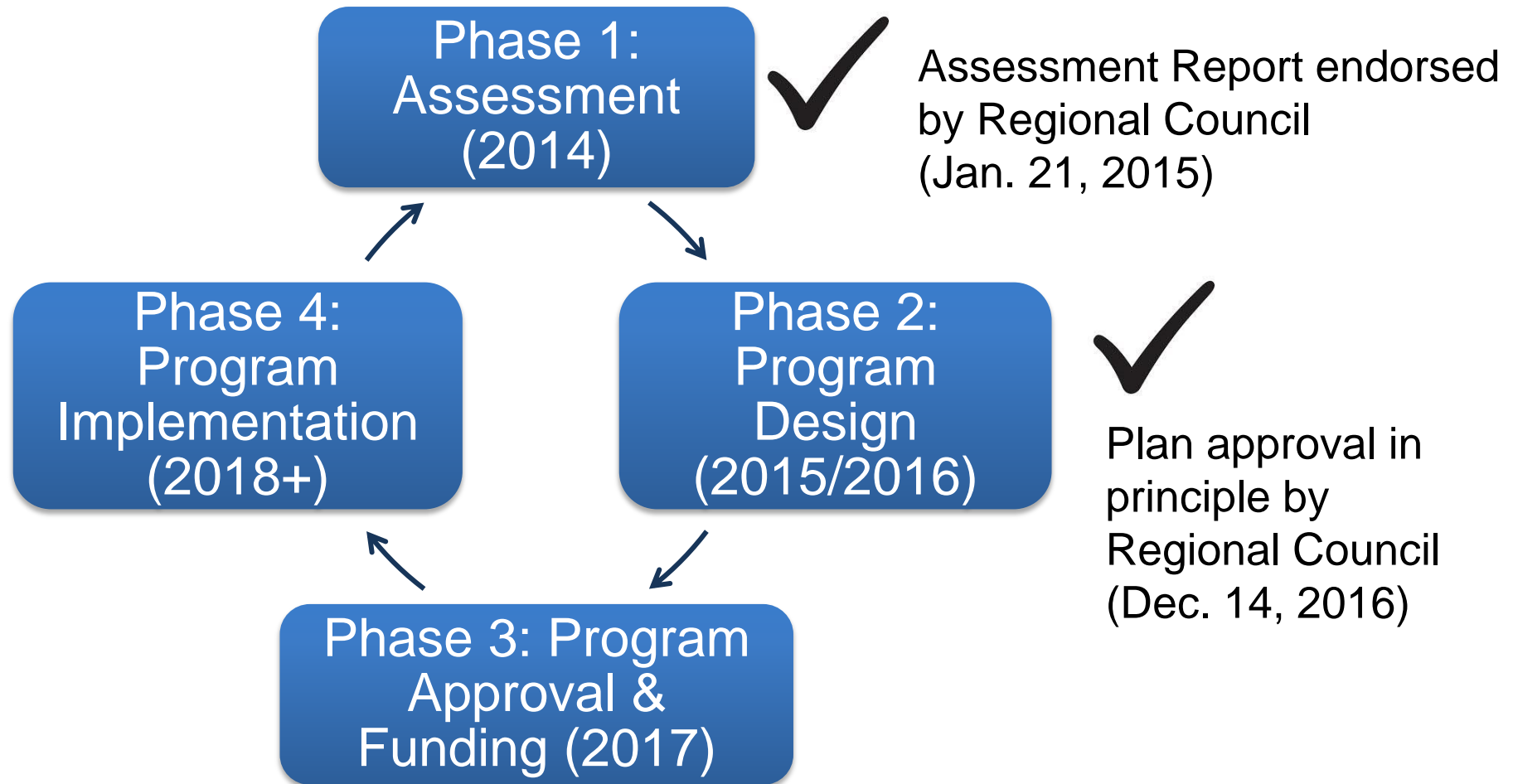
Durham Community Climate Adaptation Plan

**Notes for Remarks to
OCC Training Session
April 26, 2017**

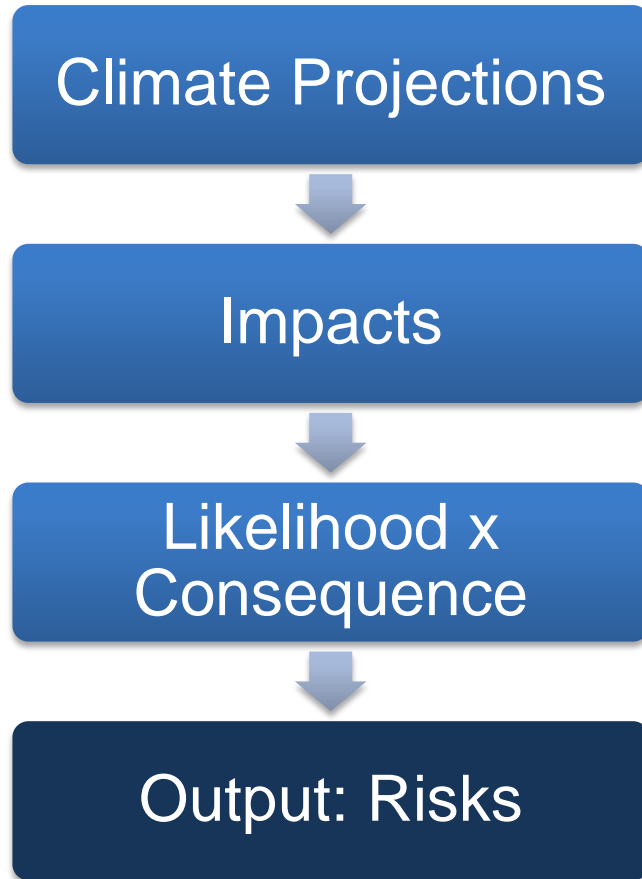
Climate Adaptation Planning – The Durham Approach



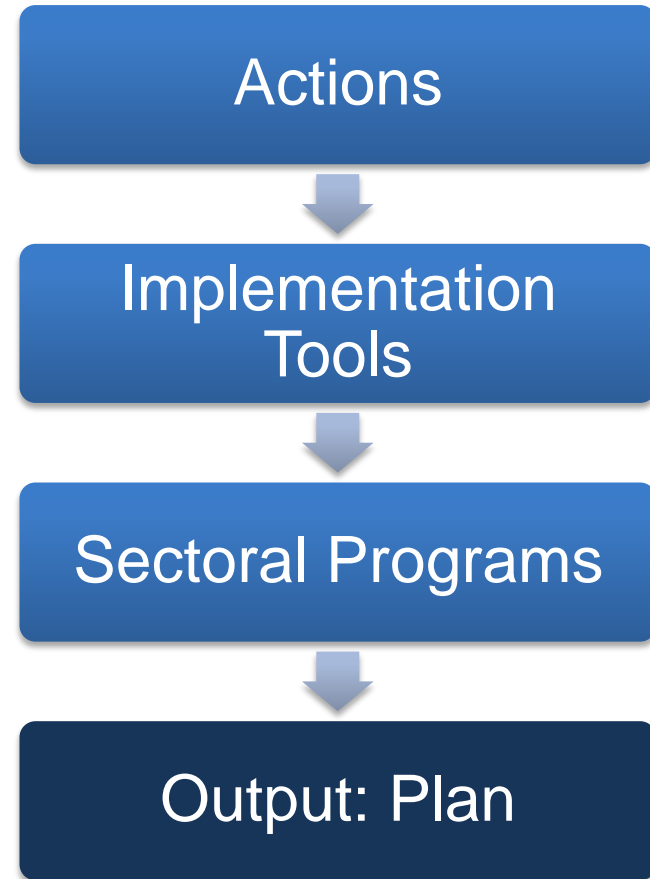
Phasing and Schedule



Phase 1



Phase 2



The Wayne Gretzky School

What did Wayne Gretzky say was the key to his success at hockey?

“Skate to where the puck is going to be.”

How does this rule apply to climate adaptation?

“Plan, build, retrofit and manage for where our climate is going to be.”

So, where is our climate going to be?

The SENES study

Step 1: Future Climate Projections

SENES Consultants was commissioned to project future climate and extremes for Durham region (based on extensive study done for Toronto in 2011)

Remember our motto: “*Imitation is the highest form of flattery.*”

Basis for confidence in projections include:

- The model is based on established scientific principals.
- Model is able to reproduce observed changes in climate.
- The model resolution is very high (1 km x 1 km cells).
- The model projects both averages and extremes.

Projections Model (SENES)

Report of climate and extreme weather projections for timeframe 2040-2049 compared to 2000-2009.

- Model provides ***projections not predictions (consistent with IPCC)*** – because it is not possible to know what future emissions of GHG will actually be.
- Model based on IPCC emissions scenario A1B.

The scope of the SENES study is:

- All eight local municipalities in the Region of Durham: Ajax, Brock (Beaverton), Clarington (Bowmanville), Oshawa, Pickering, Scugog (Port Perry), Uxbridge (Town of Uxbridge), Whitby.
- Parameters of temperature & precipitation with surrogates for lightning and combined parameters for tornadoes.
- Both climate means and weather extremes were included.

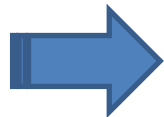
What Does All This Mean?


“Warmer, Wetter, Wilder” (pages 15 &16, Appendix 2)

- What are the implications/impacts?
- Can we handle the impacts?
- How vulnerable are we?
 - Infrastructure, health, security etc.
- What are the risks?
- What corrective actions should we take?
- How can we be better prepared for emergencies?
- How can we build resilience?

Step 3: Risk Assessment (Roads)

(for Projected Climate--extreme storm, heat, and fewer and less cold days)

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)

- HIGH RISK

- MODERATE RISK

- LOW RISK

Risks Identified

Task Force	High Risks	Medium Risks	Total
Flooding	26	0	26
Natural Environment	14	7	21
Buildings	16	37	53
Electrical Sector	3	3	6
Human Health	2	7	9
Roads	6	5	11
Food Security	4	9	13
Totals	71	68	139

Process Characteristics

- **Scientifically-based** – SENES future climate study
- **Consultative** – stakeholders across Durham
- **Rigorous** – risk analysis
- **Peer-based** – best practice analysis among municipalities
- **Collaborative** – experts from stakeholder agencies created program proposals (ETFs)
- **Comprehensive** – six sectors addressed, more to come

Current Status of Plan

- Approved in principle by Regional Council, Dec. 14/16
- A substantial and attractive public version of Plan was completed and printed week of Feb. 6
- Posted on website and widely distributed to IBC, MOECC, FCM, CAC members and environmental coordinators in Ontario
- Letters of commendation from Minister Murray and Intact Centre on Climate Adaptation
- Letter requested from Insurance Bureau of Canada



Celina C-Chavannes [@MPCelina](#) · 14h
Look who I found reading [@durhamregion](#) [#climatechange](#) [#TowardsResilience](#) report!! [@cathmckennall](#)
Thank you [@Regional_Chair](#) [@_donmitchell](#) pic.twitter.com/P0kPEYSE3g

2 10

Phase 3

- Referral to responsible agencies/partners
- Further joint program development (next steps)
- Costing
- Incorporation into future business plans
- Annual reporting on progress

Vision

“In the face of changing climate, Durham region remains a liveable, resilient and prosperous community through at least mid-century.”



Goals

- Increase the resiliency of community infrastructure, programs and services to the changing climate in Durham;
- Promote and facilitate the incorporation of the Proposed Programs into the business planning of the responsible agencies;
- Improve emergency planning for weather extremes and in particular for vulnerable populations;
- Advance the infusion of climate change information into the business planning of both the public and private sectors;
- Improve the awareness, knowledge, skills and resources of government, citizens and business people regarding climate adaptation;
- Improve the sustainability of Durham Region and its attraction as a place to invest, live and play;
- Lead to recognition of Durham Region as a leader in climate adaptation planning and implementation.

8 Sectors – 18 Programs

1. Cross-Sectoral
2. Buildings Sector
3. Electrical Sector
4. Flooding Sector
5. Health Sector
6. Roads Sector
7. Natural Environment Sector
8. Food Security Sector (placeholder for future development)

1. Cross-Sectoral Programs

- CS1 Protect Our Outside Workers – page 32
- CS2 Social Infrastructure for Emergency Resilience – page 33



2. Buildings Sector

- B1 The Durham Climate Resilience Standard for New Buildings – page 35
- B2 Building Retrofit for Climate Resilience – page 37



3. Electrical Sector

- E1 Asset Protection Against Flooding – page 39
- E2 Vegetation Management – page 41
- E3 Asset Design and Service Life Management Program – page 42



4. Flooding Sector

- F1 Addressing Urban Flooding – page 43
- F2 Redefine Flood Hazards Considering Climate Change – page 47
- F3 Improving Flood Forecasting Warming and Emergency Response – page 49
- F4 Addressing Riverine Flooding – page 51



5. Human Health Sector

- HH1 Extreme Weather Alert and Response (EWAR) System – page 53
- HH2 Property Standards By-Laws for Maximum Temperature Allowed in Apartments – page 55
- HH3 “Cool Durham” Heat Reduction Program – page 56



6. Roads Sector

- R1 Resilient Asphalt Program – page 57
- R2 Road Embankment Program – page 59
- R3 Adaptive Culverts and Bridges – page 61



7. Natural Environment Sector

- NE1 Achieving Climate Change Resilience in the Natural Environment – page 63



Roles and Responsibilities

Responsible Agencies:

- The Region of Durham
- Local municipalities
- Electrical utilities
- Conservation authorities
- Provincial agencies
- Federal agencies
- Private sector

(pages 73 & 74)

“It is expected that responsible agencies will respond to this Plan in a phased and measured manner consistent with their risk management policies and practices. Ultimately, however, it will be the role of each responsible agency to make informed decisions within its legal obligations and financial resources on whether and how to implement the programs recommended in this Plan.”

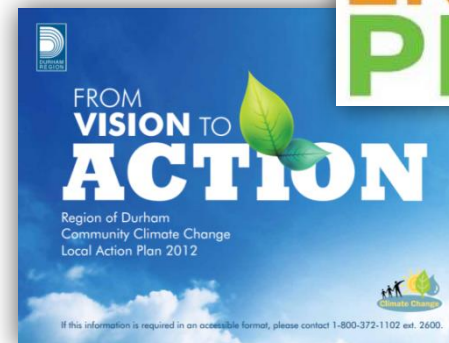
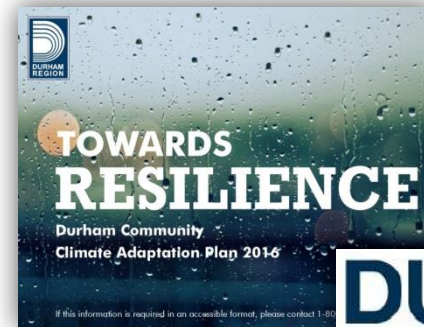
Three Keys to Our Success

- Governance structure: DRRCC
- Our future climate conditions: SENES Study
- Our Workhorses: Expert Task Forces

1. Durham Region Roundtable on Climate Change (DRRCC)

- An official committee of Regional Council with monthly meetings
- Membership:
 - Regional Chair
 - 4 Regional Councillors and 4 alternates
 - CAO / Commissioner of Planning
 - citizen members for small & large business, university, building & development industry, education, students, health, food, and general community
- Mandate:
 - education & outreach
 - advocacy for policies, plans and programs
 - leadership

Products:



2. Climate Projections (SENES Study)

- 200 page projection of climate conditions in 2040s in Durham, completed Dec. 2013 (real thud value)
- Modelled on Toronto study in 2011
- Data for all 8 local municipalities in Durham
- Downscaled to 1 km X 1 km cells (over city halls)
- Averages and extremes
- Resulted in much better understanding of climate impacts in Durham (removed skepticism)
- Warmer, wetter, wilder (pages 15 & 16)
- “Climate lock-in” (pages 13 & 14)

3. Expert Task Forces- Our Workhorses

- 7 Expert Task Forces: Buildings, Electrical Sector, Flooding, Food Security, Human Health, Natural Environment, Roads
- 63 experts from Region, municipalities, CAs, electrical utilities and private sector (Appendix 3)
- Phase 1: Assessment
 - Started with SENES Study
 - Identified impacts
 - Undertook risk assessment (likelihood X consequence) (Appendix 4)
 - Joint meeting to compare risk assessments
- Phase 2: Program Design
 - Identify actions
 - Group actions by implementation tools
 - Package into proposed programs
 - Design Charette

Expertise and stakeholder engagement

Current Priorities

- Approval in principle by responsible agencies
- Thank you luncheon and Phase 3 launch
- Creation of Working Groups on next steps
- Development of progress reporting framework
- Durham Accord (Sept. ?)

Letters of Referral

- Letters of referral sent Feb. 21 to:
 - Mayors and CAOs of local municipalities
 - Chairs and CEOs of electrical utilities
 - Chairs and CEOs of conservation authorities
- Letters requested:
 - Approval in principle of the Plan by Councils, Boards
 - Participation in Working Groups to further develop Programs
 - Work with us to develop a Progress Reporting Framework
- Letters noted \$100,000 “seed fund” for next steps

Council Approvals

Approved to date:

- Uxbridge (Mar. 6)
- Brock (Mar. 6)
- GRCA (Mar. 16)
- CLOCA (Mar. 21)
- Oshawa (Apr. 10)
- Clarington (April 18)
- TRCA (April 21)
- Whitby (April 24)

Scheduled for consideration:

- Ajax (TBD)
- Pickering (May 8)
- Others TBD

Questions?

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