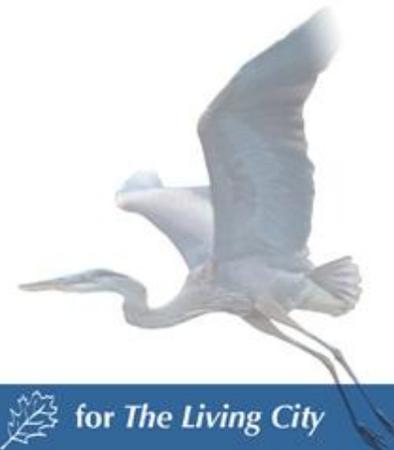




Conservation Authority Climate Change Adaptation Workshops Moving Forward on Adaptation February 23 2011



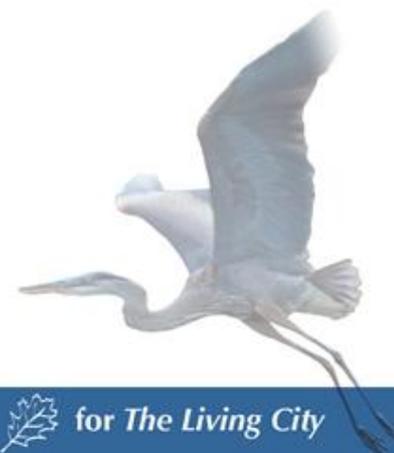
Don Haley, P.Eng.





Presentation Topics

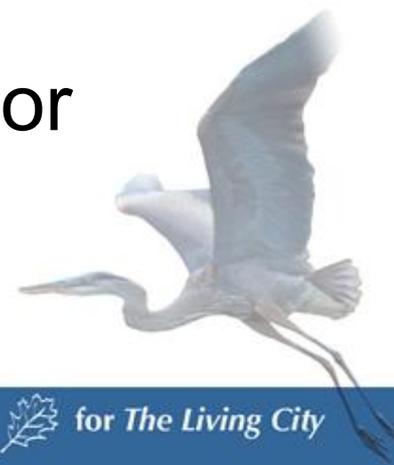
- A Brief review of why we need to address CC
- Why CA's are strategically placed to be leaders in CC
- Key Business areas where adaptation will be required
- Key Conclusions and future actions





CA's in a Changing Climate

- Given the changes anticipated, it is clear that Climate Change will result in impacts to the entire scope of current CA business's,
- Impacts to everything from flood control to plan review and regulations to park operations will require CA's to modify or adapt current operational procedures.



Major Storms and Flooding Events, Ontario, 2000-2009





CA's in a Changing Climate

- We are already seeing impacts

2005 Toronto Flood

- Up to 183 mm rainfall over a few hours: a 100+ year return period event overwhelming urban drainage systems
- Ontario's costliest weather disaster: \$500 million in insured losses
- Impacts included thousands of flooded basements, flooded interchanges, sink holes, erosion impacts to critical infrastructure and a large section of Finch Avenue washed away





CA's in a Changing Climate

Why CA's are the appropriate agencies to deliver on CC

Adaptation

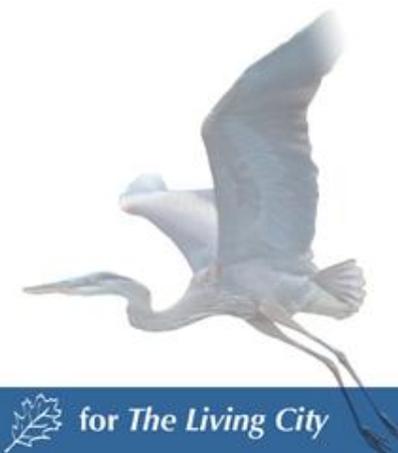
- CA's are inherently already in the adaptive management business- Watershed Management.
- Our adaptation approach is based on reducing harm to individuals and building resilient natural systems and watersheds.
- We have monitoring systems in place that will allow for identification and tracking of climate impacts to our communities and natural systems.
- To be effective, adaptation strategies will need to be implemented over a long period of time as our understanding of systems improves through watershed planning, monitoring and evaluation.





Key Business areas which will require adaptation

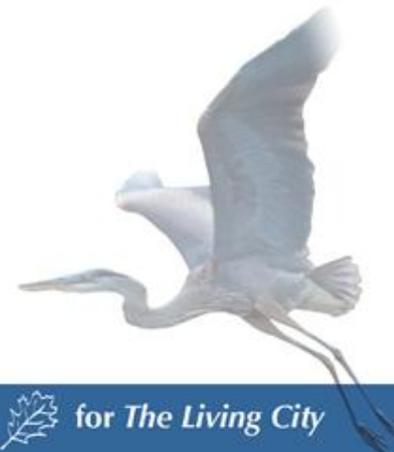
- **Watershed/Waterfront management**
 - Flood Management/Operations
 - Flood Mapping
- **Planning and Design**
 - Regulations
- **Cultural Heritage**
 - Parks operations/planning
 - education
- **Corporate Services**





Watershed/Waterfront Management

Integrate CA Climate Change activities and efforts with local or regional municipal partners many of whom are either looking for guidance or initiating strategy development which the CA will need to incorporate its operations within

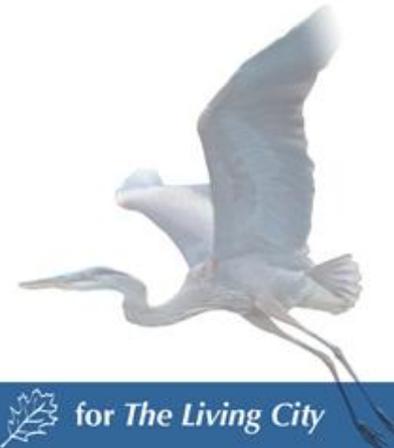




CA's in a Changing Climate

Flood Management/Operations - Impacts

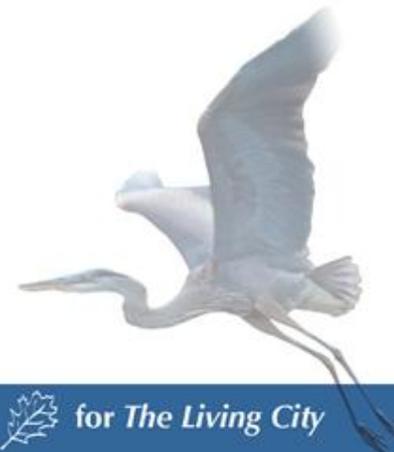
- More frequent severe storms and resultant flooding
 - local urban and rural flooding
 - increased erosion, soil loss
 - increased flood operations / staff time
- More Lake effect snow in areas prone to this precipitation type
 - larger snow melt events
- More mid winter melts/ice breakups
 - Increased flood operations
 - erosion and bank sloughing
- Severe storms moving into shoulder seasons
 - extended flood seasons





Flood Management/Operations - ADAPTATION

- Update Watershed Hydrology on a consistent basis
- update dam operations based upon updated watershed hydrology
- assess and track changes in flood risk at flood sites
- create a sound understanding of how climate and weather affects your current operations and assess risks
- Integrate CC into Watershed Hydrology studies and define changes in risks to understand future priorities for action/monitoring





CA's in a Changing Climate

Flood Warning and Forecasting

Increases in flood warnings and response will lead to the need to:

- increased staff time and training needs
- increased need to move towards a comprehensive system as outlined within the Provincial Guidelines.
- the need to keep flood sites data base up to date
- maintain and enhance monitoring systems with capabilities to respond to changing flood risk
- need to address potential for potential shorter lead times or new flood threats to your clients

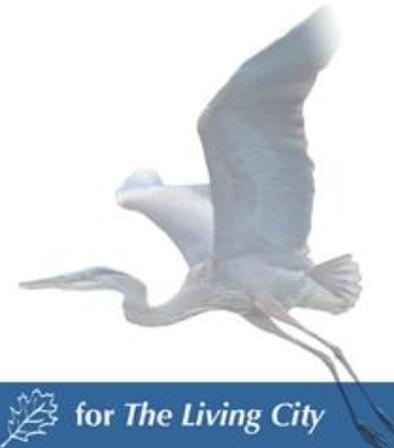




CA's in a Changing Climate

Flood Mapping

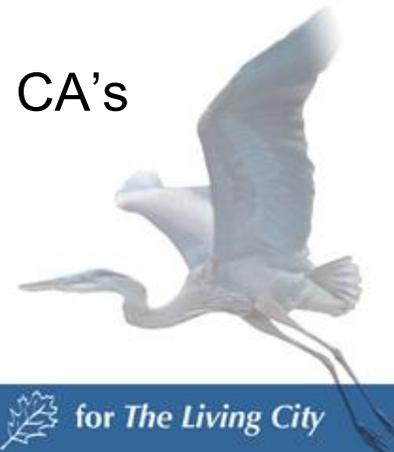
- Update hydraulic models in keeping with hydrologic updates
- Update flood sites data base in keeping with hydrologic updates
- update flood lines in keeping with hydrologic updates
- investigate potential change in flood risk associated with hydrologic updates incorporating CC





Overall Findings

- Most jurisdictions in very early stages of investigation (scoping or climate change impact assessment)
- Wide range of methods being used to predict future climate impacts, but limited focused guidance on best techniques
- Uncertainty in future climate projections almost universally cited as a major concern and often reason for inaction
- Municipalities looking for direction and leadership which CA's can contribute to



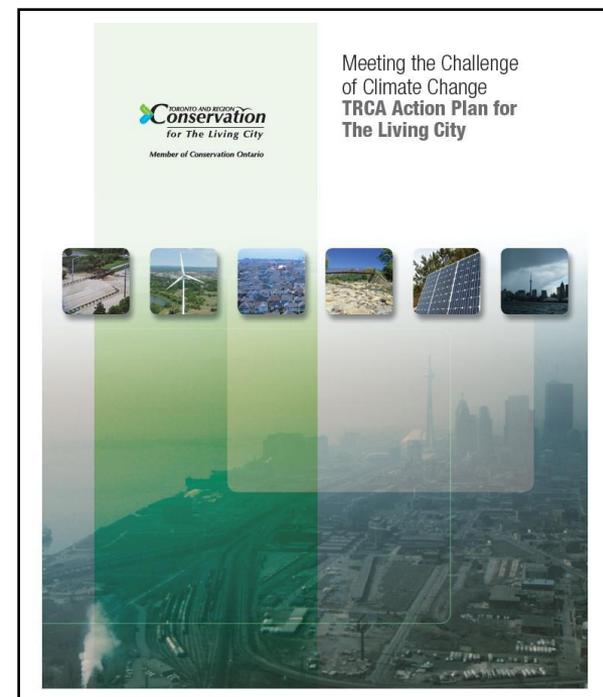


CA's in a Changing Climate

How to move forward

Meeting the Challenge of Climate Change: TRCA Action Plan for The Living City (April 2008)

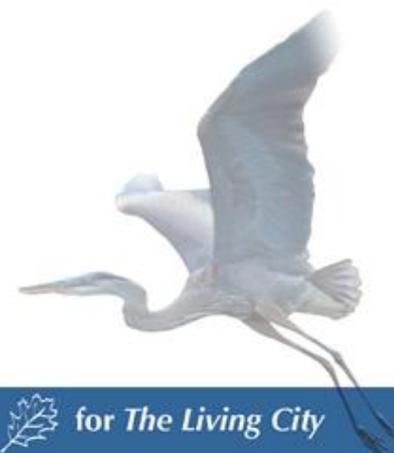
- Toronto and Region Conservation's (TRCA) Strategic Plan, "**Moving Toward The Living City**" identifies the integration of **Climate Change** as a critical component in achieving the objectives and goals of a healthy, sustainable urban region extending into the 22nd century.





Key Conclusions

- CA's are strategically well placed as long range planning agencies and inherently are adaptive in nature
- Need to understand what CC means and therefore the risks it presents in your watershed
- Integrate CC into existing programs and policies (no need to create a new administrative process)
- Positioning ourselves as leaders in CC creates a resources for our municipal clients





Questions?

