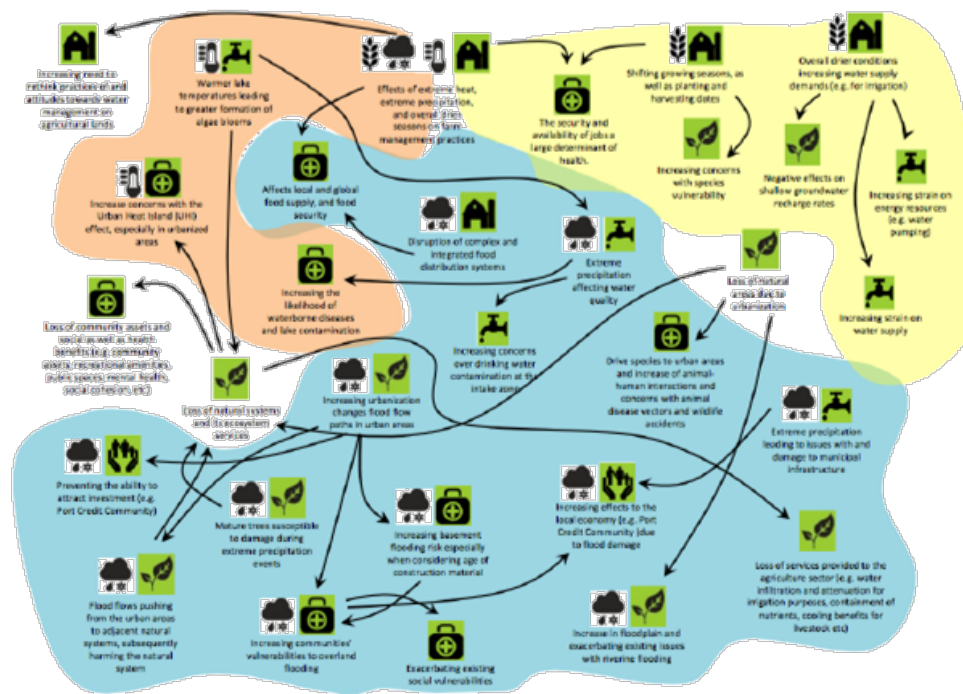


REFOCUSING on CLIMATE CHANGE with PARTNERS in the REGION OF PEEL



Mark Pajot
Advisor, Office of Climate Change
and Energy Management
Corporate Service
Region of Peel

*5th Ontario Climate Symposium,
York University
Toronto, May 12, 2017*

Region of Peel

- 1257 Sq. Kilometres
- 3 Municipalities
 - City of Mississauga
 - City of Brampton
 - Town of Caledon
- Located in GTA
- At 1.45 million
- Peel Region has second largest population in Ontario





Attributes of Low Carbon Climate Resilient Regions and Cities

- ✓ 1. Leadership
- ✓ 2. Plan
- ✓ 3. Transparent inclusive structured and integrated planning process
- ✓ 4. In-depth research and analysis (information and data) involving extensive coordination and collaboration,
- ✓ 5. Subject matter advice to mobilize knowledge and social learning
- ✓ 6. Central management and coordination by planning staff,
- ✓ 7. Openness for innovation and evidence informed policy-making,
- ✓ 8. Comprehensive public outreach process to educate the general public about climate change and generate policy support.

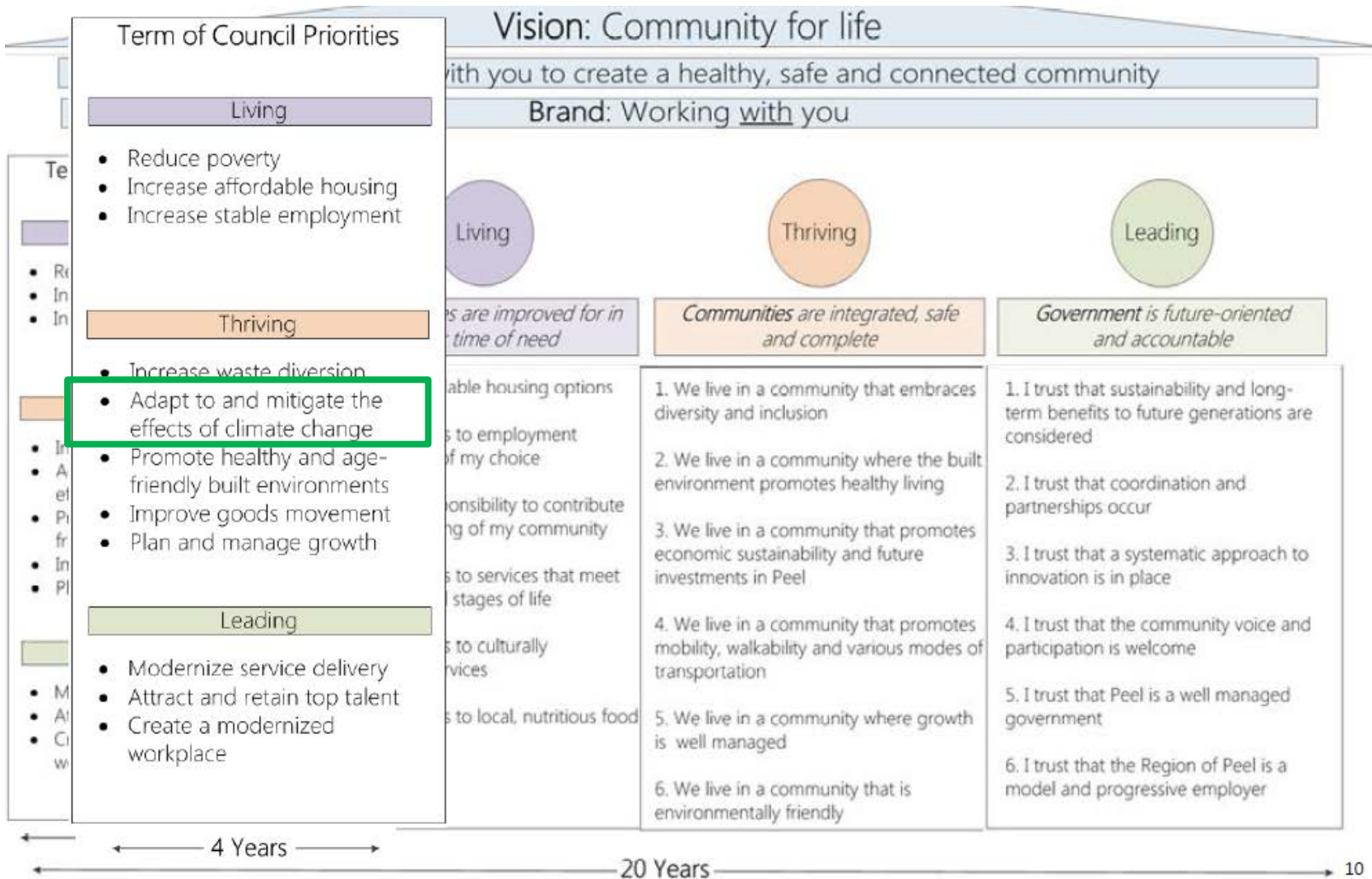
References:

IPCC, 2014: Climate Change 2014: Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change [Core Writing Team, R.K. Pachauri and L.A. Meyer (eds.)]. IPCC, Geneva, Switzerland, 151 pp.

Carmin, J., D. Dodman and E. Chu (2013), Urban Climate Adaptation and Leadership: From Conceptual Understanding to Practical Action *OECD Regional Development Working Papers*, 2013/26, OECD Publishing. <http://dx.doi.org/10.1787/5k3ttg88w8hh-en>

Shaw, A et. al. (2014) Accelerating the sustainability transition: Exploring synergies between adaptation and mitigation in British Columbian Communities. Global Environmental Change.

LEADERSHIP: Peel Region Strategic Plan (2015-2035)



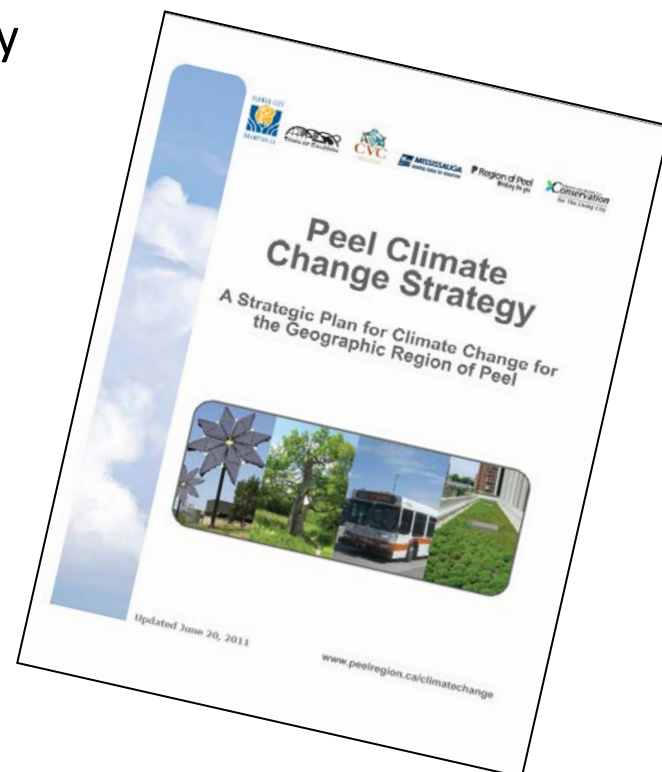
PLAN: Peel Climate Change Strategy

The Peel Climate Change Strategy was adopted by Regional Council on June 23, 2011

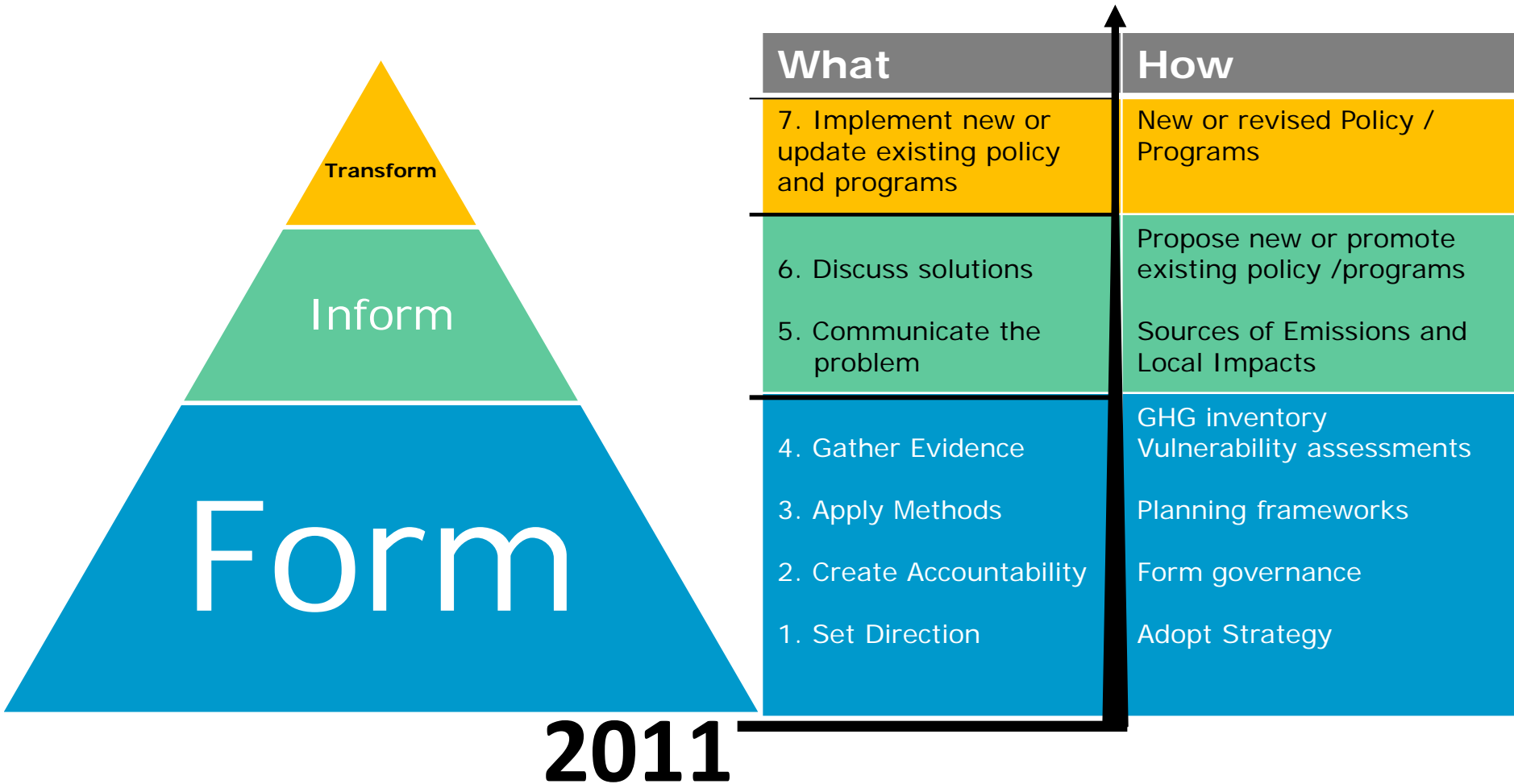
Aiming to:

1. Strengthen the Partnership
2. Reduce Community Vulnerability
3. Reduce Community Greenhouse Gases

Partners:



APPROACH: Climate Change Planning



PLANNING PROCESS: ICLEI Planning Framework



- Identify stakeholders
- Build climate change adaptation team
- Identify an adaptation champion
- Take a first look at climate change impacts and existing adaptation actions
- Pass council resolution and community charter

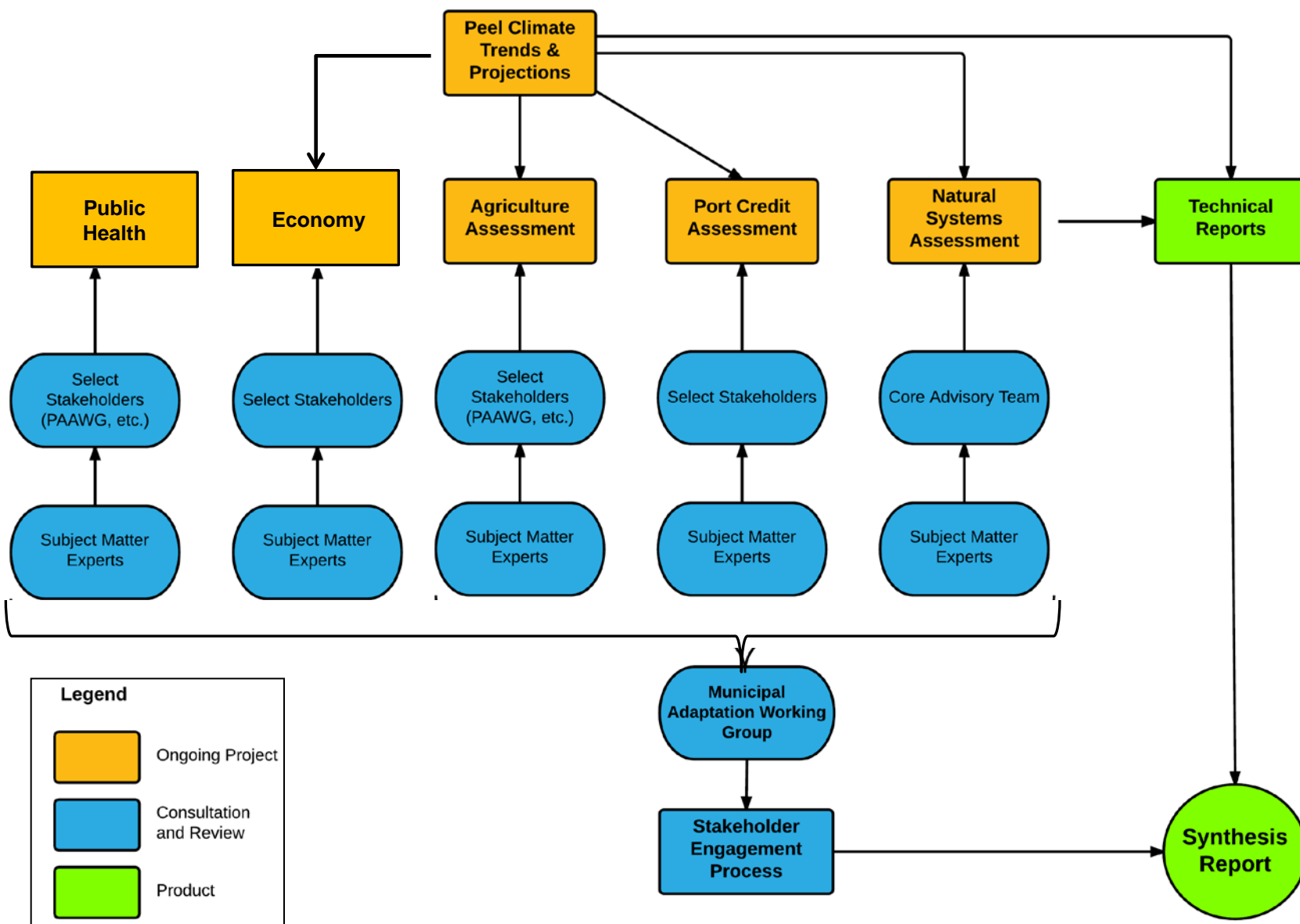
- Initiate research on climatic changes
- Refine impacts and consider service areas for each
- Vulnerability assessment (study of sensitivity and adaptive capacity)
- Risk assessment (consequence and likelihood of impacts) and prioritization

- Establish adaptation vision and objectives
- Set goals
- Identify options and actions
- Identify possible drivers and constraints
- Evaluate actions against drivers and constraints
- Determine appropriate baseline and indicator data
- Examine financing and budget
- Establish implementation schedule
- Create action plan
- Launch plan

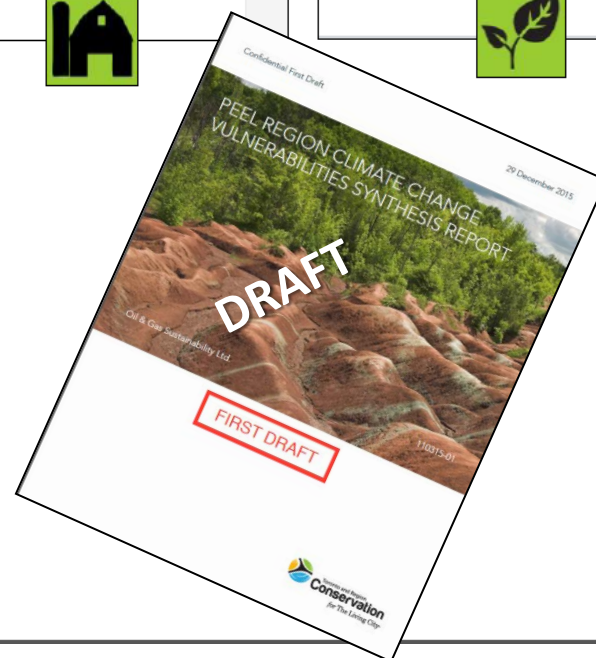
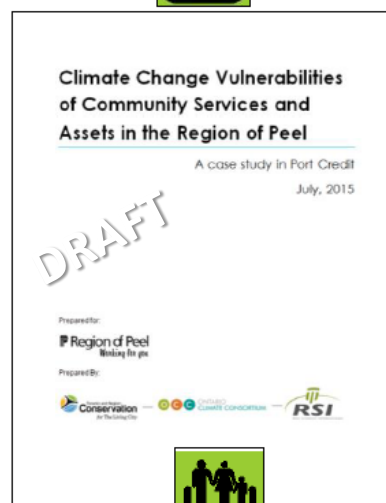
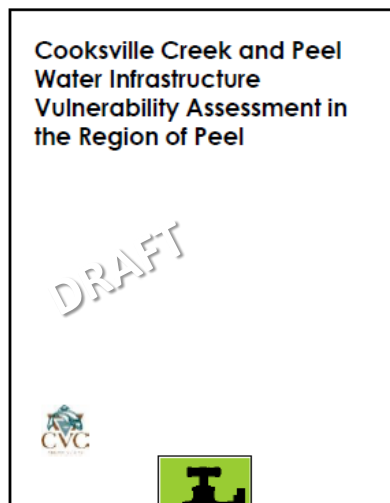
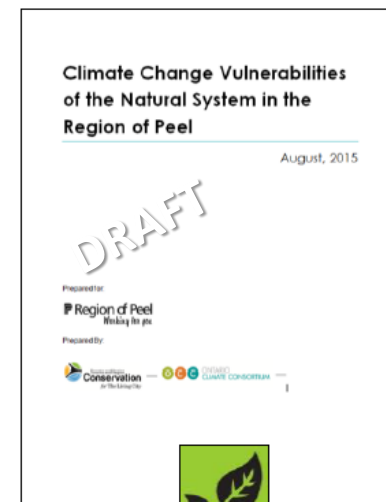
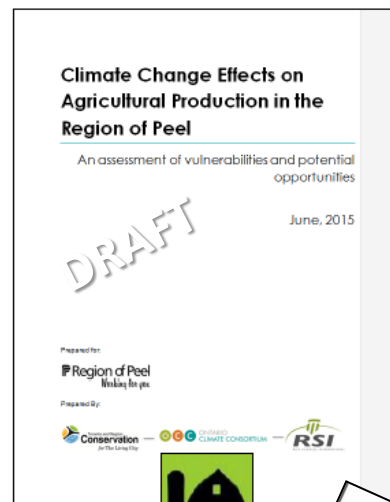
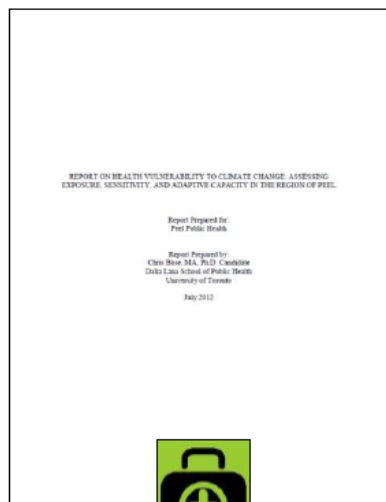
Assessments

- ✓ Climate Trends
 - ✓ Public Health
 - ✓ Agriculture
 - ✓ Community Assets
 - ✓ Natural Systems
 - ✓ Infrastructure
 - ✓ Economy
- } Synthesis Report

EXTENSIVE SUBJECT MATTER INVOLVEMENT



INDEPTH RESEARCH: Technical Reports and Synthesis



EVIDENCE INFORMED: Climate Trends and Futures



Climate Trends and Future Projections in the Region of Peel

Technical Report

October, 2015

Prepared for:



Prepared By:



FUTURE CLIMATE TRENDS IN THE REGION OF PEEL

A recent study found the following predicted climate trends for Peel Region by the end of the century:

It is very likely (90-100% probability):

- Annual mean temperature will rise by 5°C.
- The number of extreme heat days (over 30°C) will more than double.

It is likely (66-100% probability):

- The intensity of bad storms will increase by 28-51%.
- The length of the growing season will extend by as much as 20% on average (from 169 days to 203 days).



OPENNESS to INNOVATE

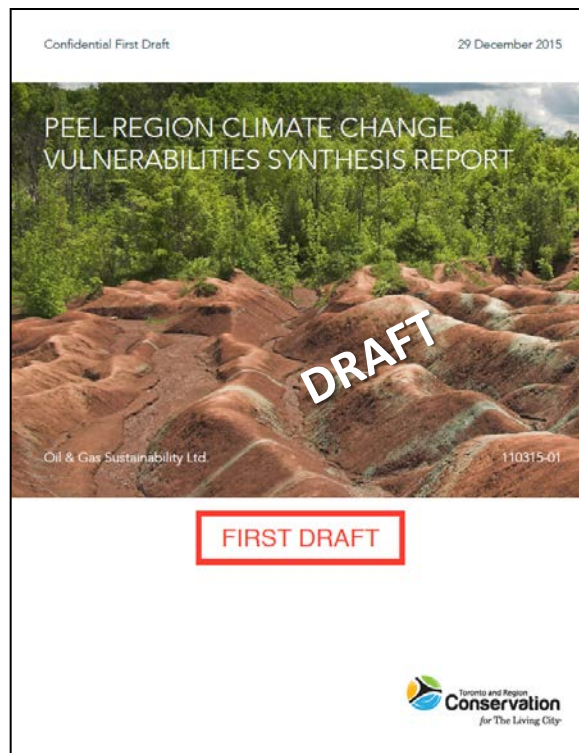
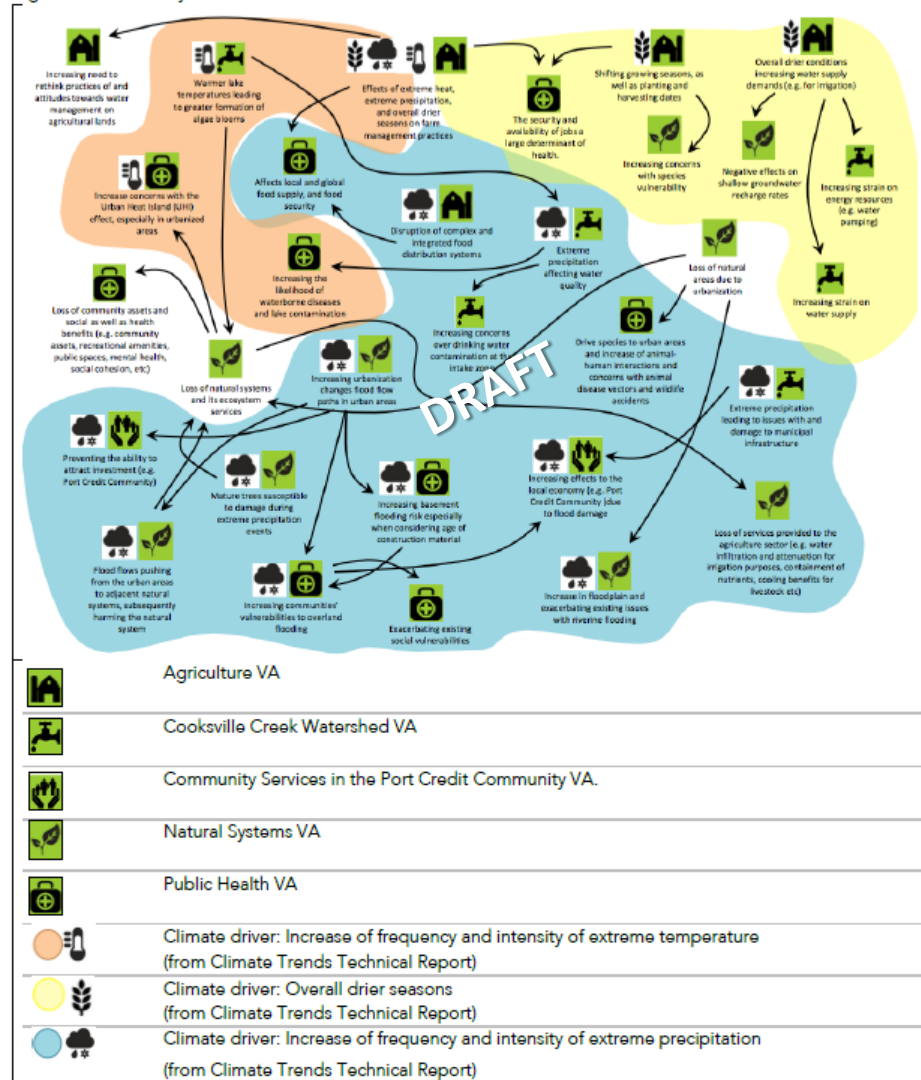


Figure 5: Vulnerability Interactions Web



Source: Developed by the Partnership through participant feedback from the June and October 2015 Workshops

OPENNESS to INNOVATE

What's up with the weather?

What it means for citizens

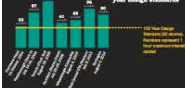
60%

Of extreme weather events that happened in Canada since the beginning of the century occurred since the 1990s.

How in Ontario disaster events



Recent storms vs. 100 year design standards



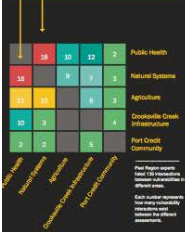
How vulnerable are we?

Looking at the root causes

139

Vulnerability interactions

Highest interaction found between Natural Systems and Public Health.



"The winter was about up to my stomach in the car and the power just shut off."

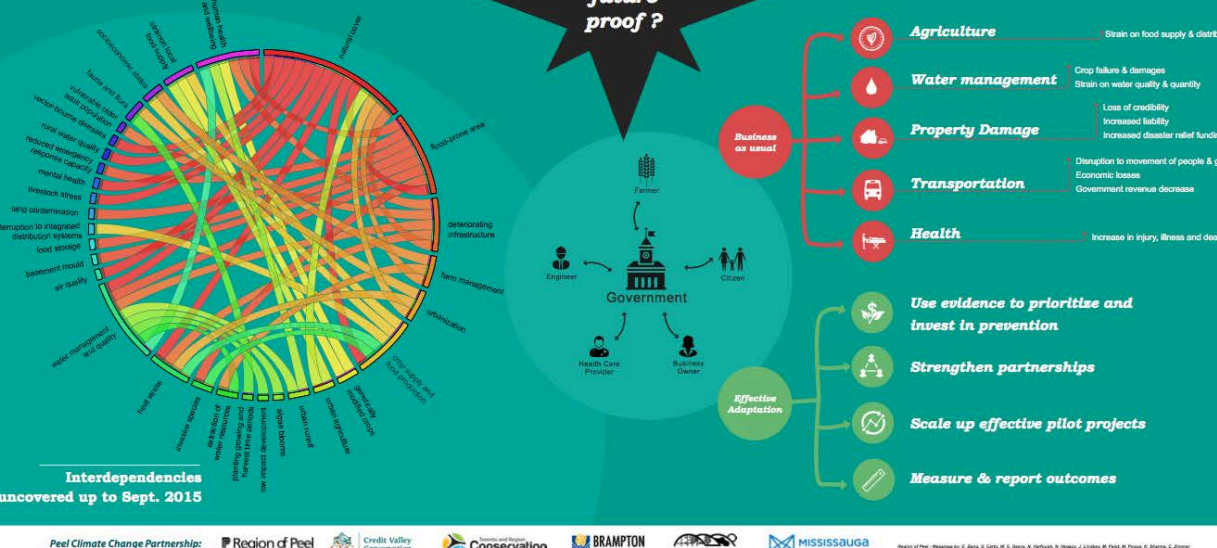
"Slag trees are older than me believe it or not and they have snapped like match sticks and come down."

"The prudent thing now is to plan for the worst and hope for the best."

"And of course I'm more fearful about the next few years. We've had these hundred year storms almost back to back and we need a partnership amongst all three levels of government."

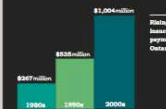
"The cleanup the next day was the really sobering moment. There were a couple of thick inches of mud on our basement floor and a really horrible smell. That's when the reality kicked in."

"Although it's still too early to assess the overall impact to Ontario crops, we know that some crops will not survive."



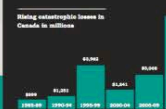
What are the true costs?

The cost of business as usual



50%

of catastrophic losses in Canada since 1985, occurred in the last 7 years.



What can we do?

Business as usual is not an option



HAPPENING IN PEEL

Mississauga Lakeview Neighbourhood

Mississauga DMAT Parking Lot

Brampton County Court Boulevard

The Caledonia Community Drive Fund

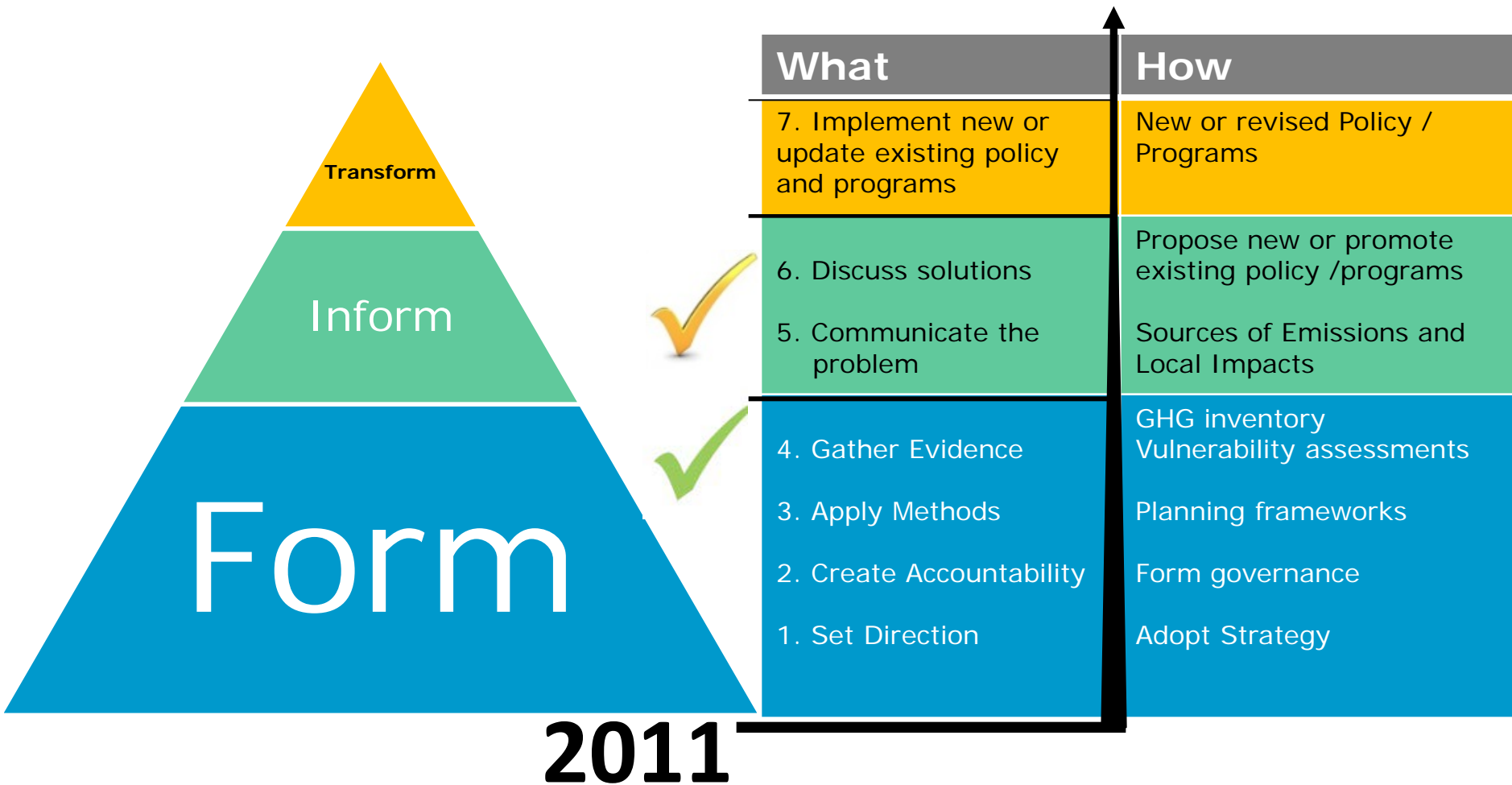
CENTRALIZED MANAGEMENT AND COORDINATION

FEATURE DIVISION

Office of Climate Change



Next Steps – PUBLIC OUTREACH to INFORM Policy



INFORM: Draft Vulnerability Summaries

VULNERABILITY ASSESSMENT SUMMARY | AGRICULTURAL SYSTEMS

STAKEHOLDER ENGAGEMENT

Farmers and agricultural decision-makers are the ones directly experiencing the effects of climate change on agriculture, and thus their input for this vulnerability assessment was critical. Stakeholder engagement was a key component of the assessment process and occurred at every step to ensure that stakeholders' perspectives, experiences and knowledge were considered and incorporated.

A broad cross-section of agricultural stakeholder groups were consulted for the report including: the Peel Agricultural Advisory Working Group, the Peel Federation of Agriculture, the Ontario Soil and Crop Improvement Association, Conservation Authorities, agricultural input supply companies, commodity groups, the Ontario Ministry of Agriculture, Food and Rural Affairs, the Greater Golden Horseshoe Food and Farming Alliance, Ontario Federation of Agriculture, and Agriculture and Agri-Food Canada.

such as habitat for crop pollinators, regulation of water quality in quantity, and control of soil erosion. But climate change threatens normal functioning of the natural environment, which will have effects on farming. In the Region of Peel, this could mean that there be shifts in the types of crops that can grow, changes in when as much water is available for crops and livestock, and increased risk of drought.

New Challenges Ahead

Climate change will bring fundamental changes to farming in the Region of Peel. To maximize farming under these new unpredictable conditions, farmers will need to:

- what land to farm
- what crops and livestock to produce
- what farming practices to follow
- what infrastructure to invest in

In Peel Region, for instance, rising temperatures, more variable rainfall, and a longer growing season will likely put significant pressures on water supply. New approaches to water management may be required to control the availability of water for farming. Irrigation, for example, is currently used in only 6% of Peel farms, may become an increasingly important practice across the region in the future.

What the Storylines Tell Us

The agricultural vulnerability assessment focused on four potential climate change on farming in Peel Region, which are presented in a series of storylines. The storylines link research on climate change with current conditions in Peel, to illustrate potential vulnerabilities and highlight potential ways farmers can adapt.

- Storyline 1: Extreme Precipitation
- Storyline 2: Drought
- Storyline 3: Extreme Heat
- Storyline 4: Changes to Growing Conditions

VULNERABILITY ASSESSMENT SUMMARY | COMMUNITY SERVICES AND ASSETS IN THE REGION OF PEEL

Port Credit

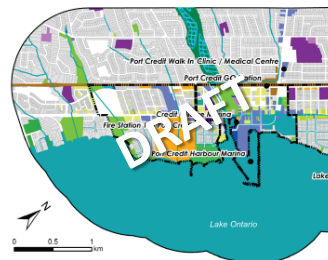
The Port Credit planning area of the City of Mississauga is located on the shore of Lake Ontario surrounding the mouth of the Credit River. It spans an area of 227 hectares with a population of approximately 12,500 people.

Land use in Port Credit is predominantly residential, but includes important lake-based commercial and recreational areas, and an abundance of green space for recreation and wildlife habitat. There are several critical pieces of infrastructure in Port Credit, including the Lorne Park Water Treatment Facility, the GO Transit station and Canadian National Railway line, several large community recreation facilities and three

large marinas. Port Credit has undergone a long-term visioning and revitalization process as part of the City of Mississauga's Official Plan Review. This process has resulted in several planning and land re-development projects that present opportunities to address climate change adaptation, such as the Port Credit Local Area Plan Review, Inspiration Port Credit and the Lake Ontario Integrated Shoreline Strategy.

Port Credit was selected as the focus for the vulnerability assessment because it satisfied criteria set by the stakeholders. Specifically, Port Credit is a shoreline community that supports a diversity of community services and assets. It has ongoing policy and decision-making processes that could benefit from climate change analysis and an active community to participate in stakeholder engagement.

Fig. 6. Land use and major community assets in Port Credit



DEFINING VULNERABILITY TO CLIMATE CHANGE

The first step in change is to understand sensitive or vulnerable systems are to exist. For the assessment we Intergovernmental Change's definition.

"The propensity to be adverse Vulnerability a variety of elements including susceptibility capacity to cope with and recover from disturbance."

DEFINING RESILIENCE AND ADAPTIVE CAPACITY TO CLIMATE CHANGE

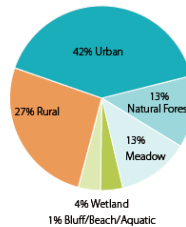
The vulnerability of natural systems to climate change will depend in large part on their resilience and adaptive capacity.

Resilience refers to a system's ability to cope with and recover from disturbance.

Resilience is closely tied with the concept of **adaptive capacity**, which is the ability to adjust and respond to changes.

VULNERABILITY ASSESSMENT SUMMARY | NATURAL SYSTEMS

LAND COVER IN PEEL REGION



Natural Systems in Peel Region

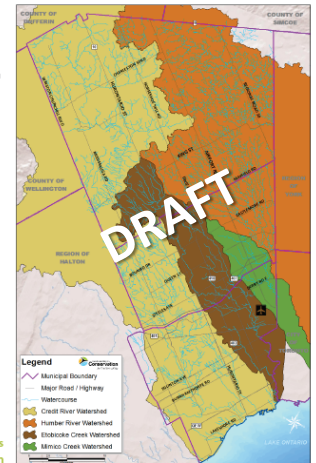
Peel Region is situated in the "mixedwoods plains ecozone," which is comprised of ecoregion 6E (Great Lakes-St. Lawrence Forest) in the north (Caledon and Brampton) and ecoregion 7E (Carolinian Forest) in the south (Brampton, Mississauga). The ecozone has one of the mildest climates in Canada, characterized by cool winters and long summers that are hot and humid.

There are four major watersheds in the region: Credit River, Humber River, Etobicoke Creek and Mimico Creek. All of the remaining forest in the region is fragmented, and most of the original wetlands have been lost.

Peel is one of the most densely populated areas in Canada, and all of its watersheds are under pressure from human activity, particularly urbanization. Other threats include aggregate extraction and agriculture. Specific impacts on natural systems in the region include the following:

- Forest fragmentation
- Pollution of streams by stormwater, fertilizers, pesticides, and livestock
- Lowering of the water table due to water taking
- Air pollution
- Wetland loss and degradation
- Spread of invasive species such as Emerald Ash Borer, Gypsy Moth, Butternut Canker, and Dutch Elm Disease

Figure 6*: Major Watersheds in Peel Region



THANKS

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