



THE REGIONAL MUNICIPALITY OF NIAGARA
AGRICULTURAL POLICY & ACTION COMMITTEE
AGENDA

APAC 02-2019

Friday, April 26, 2019

9:00 a.m.

Committee Room 4

Niagara Region Headquarters

1815 Sir Isaac Brock Way, Thorold ON

Pages

1. CALL TO ORDER

2. DISCLOSURES OF PECUNIARY INTEREST

3. PRESENTATIONS

3.1 Phragmites Overview

Adam Boudens, Planning Ecologist, Planning and Development
Services, Niagara Region

To be distributed.

4. DELEGATIONS

5. ITEMS FOR CONSIDERATION

6. CONSENT ITEMS FOR INFORMATION

6.1 Phragmites Presentation

Phragmites australis - Canada's Most Invasive Plant:

Concerns and Control Options

Presentation to Niagara-on-the-Lake Council

Monday, April 1, 2019

3 - 157

6.2	<u>Niagara Economic Development Strategy 2019 - 2024</u>	158 - 276
	Niagara Economic Development Strategy 2019 - 2024	
	March 2019	
6.3	<u>Asset Mapping</u>	277 - 293
	Asset Mapping - Golden Horseshoe Food and Farming Alliance	
6.4	<u>APAC 1-2019</u>	294 - 300
	Agricultural Policy and Action Committee Minutes	
	February 22, 2019	
6.5	<u>APAC-C 4-2019</u>	301
	Memorandum from Kelly Lotimer, Legislative Coordinator, to the Agricultural Policy and Action Committee, regarding a Motion from the Planning and Economic Development meeting of Wednesday, April 17, 2019, regarding Regulations, Policies and Enforcement of Cannabis and Greenhouse Industry	

7. OTHER BUSINESS

8. NEXT MEETING

The next meeting will be held on Friday, September 27, 2019, at 9:00 a.m. in Committee Room 4.

9. ADJOURNMENT

If you require any accommodations for a disability in order to attend or participate in meetings or events, please contact the Accessibility Advisory Coordinator at 905-980-6000 (office), 289-929-8376 (cellphone) or accessibility@niagararegion.ca (email).

Phragmites australis

Canada's Most Invasive Plant: Concerns and Control Options

Niagara-on-the-Lake
Council Meeting
Monday April 1st, 2019



Janice M. Gilbert, Ph.D.
Wetland Ecologist
Executive Director
Invasive Phragmites Control Centre



Presentation Outline:

- Background Information
- Concerns
- Control Options
- Challenges
- Control options for SWM ponds, irrigation and roadside ditches
- Emergency Use Program
- Ontario initiatives
- Components of an effective control program

Background Information:

- *Phragmites australis* - Common Reed, Giant Reed
- Native species - uncommon member of wetland plant communities in North America for at least 3000 yrs

Phragmites australis subsp. americanus

- Invasive genotype - Haplotype M
Phragmites australis subsp. australis
Phragmites australis
European Common Reed

- Canada's worst invasive plant
(P. Catling, 2005, Agriculture and Agri-food Canada)





Oliphant A⁷ugust 2015

J.M. Gilbert



8
Bruce Dale CA, Lake Huron, July 2015

J.M. Gilbert



9
McLean Marsh, Rondeau Bay, October 5, 2007

Background Information cont'd

- Perennial grass
- Clones long lived; evidence of persisting >1000 yrs in Europe
- Spreads into new areas through seed dispersal, rhizomes, stolons and stems
- Easily establishes in disturbed sites



Kettle Point, Lake Huron, March 2012



Detroit River, May 2011¹² (M. Gartshore)





Wood Drive B1 Aug 1 2017

Sturgeon Creek Wetland, Lake Erie, July 2014





Background Information cont'd:

- Once established spreads predominantly underground through rhizomes
- Up to ~200 stems/m²
- Rhizomes observed at 10m depths
- Exponential growth in colony size



Kettle Point, ⁸April 2012

J.M. Gilbert





Background Information cont'd:

- Wide tolerance of habitat conditions:
 - brackish to freshwater
 - >1m water depth to >1m above water table
 - low to high nutrient sites
 - pH 4.8 – 8.2
 - cool temperate to tropical desert



Crown Marsh, Long Point Bay, Lake Erie, July 2008



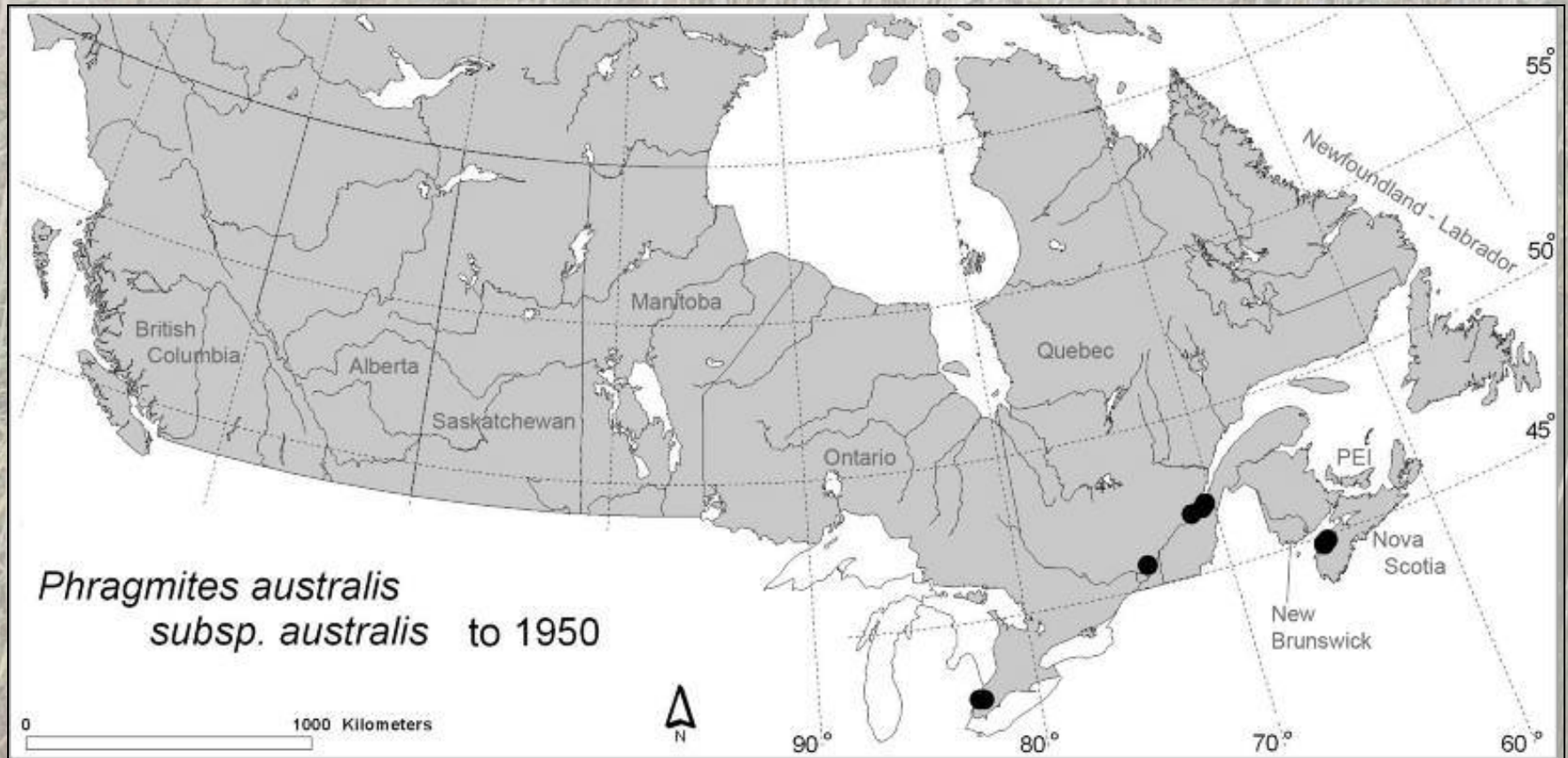
Crown Marsh, Long Point Bay, Lake Erie, July 2008



Background Information cont'd:

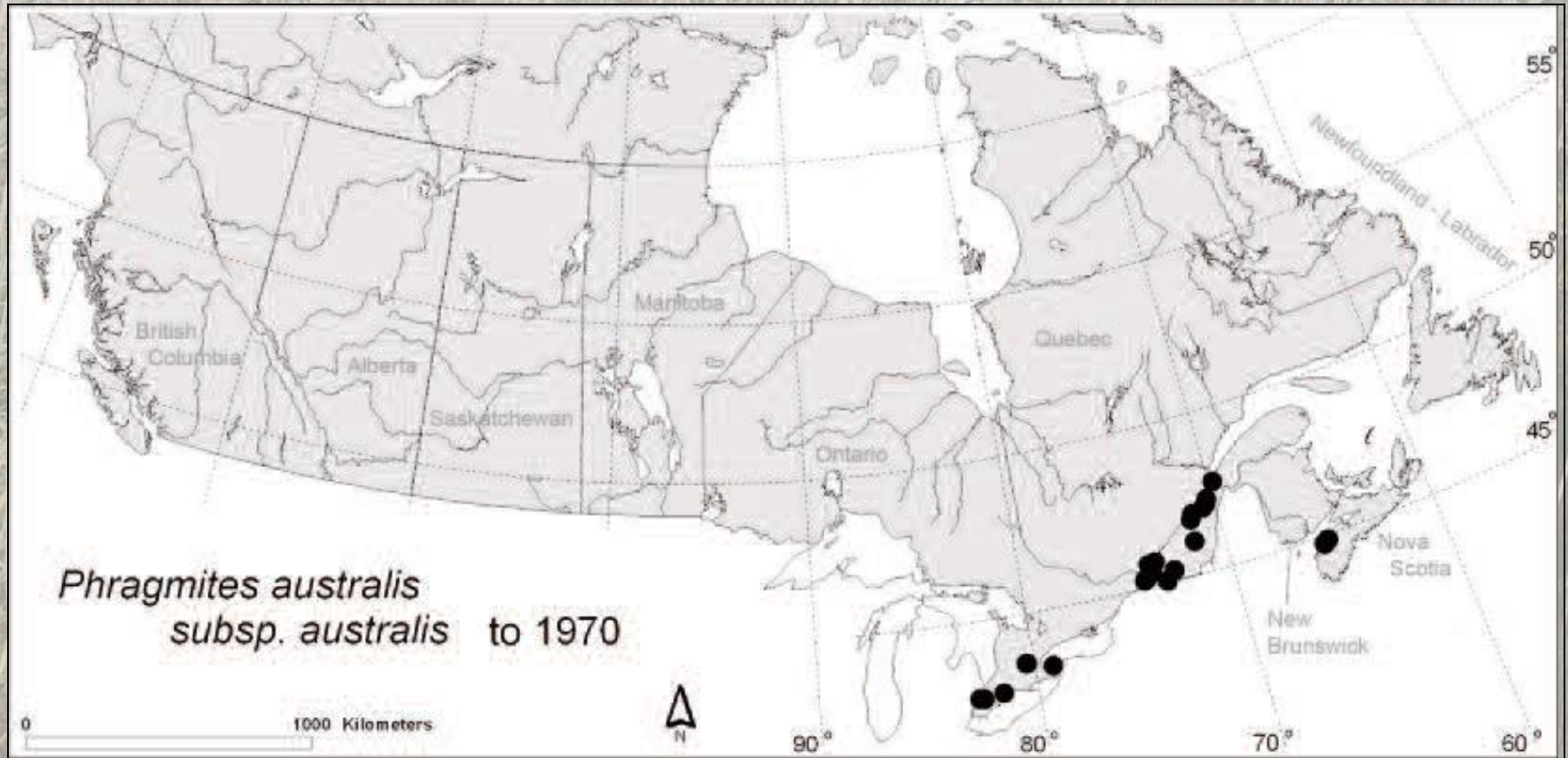
- Strong competitor for nutrients
- Allelopathic
- No effective natural controls

Historical Distribution



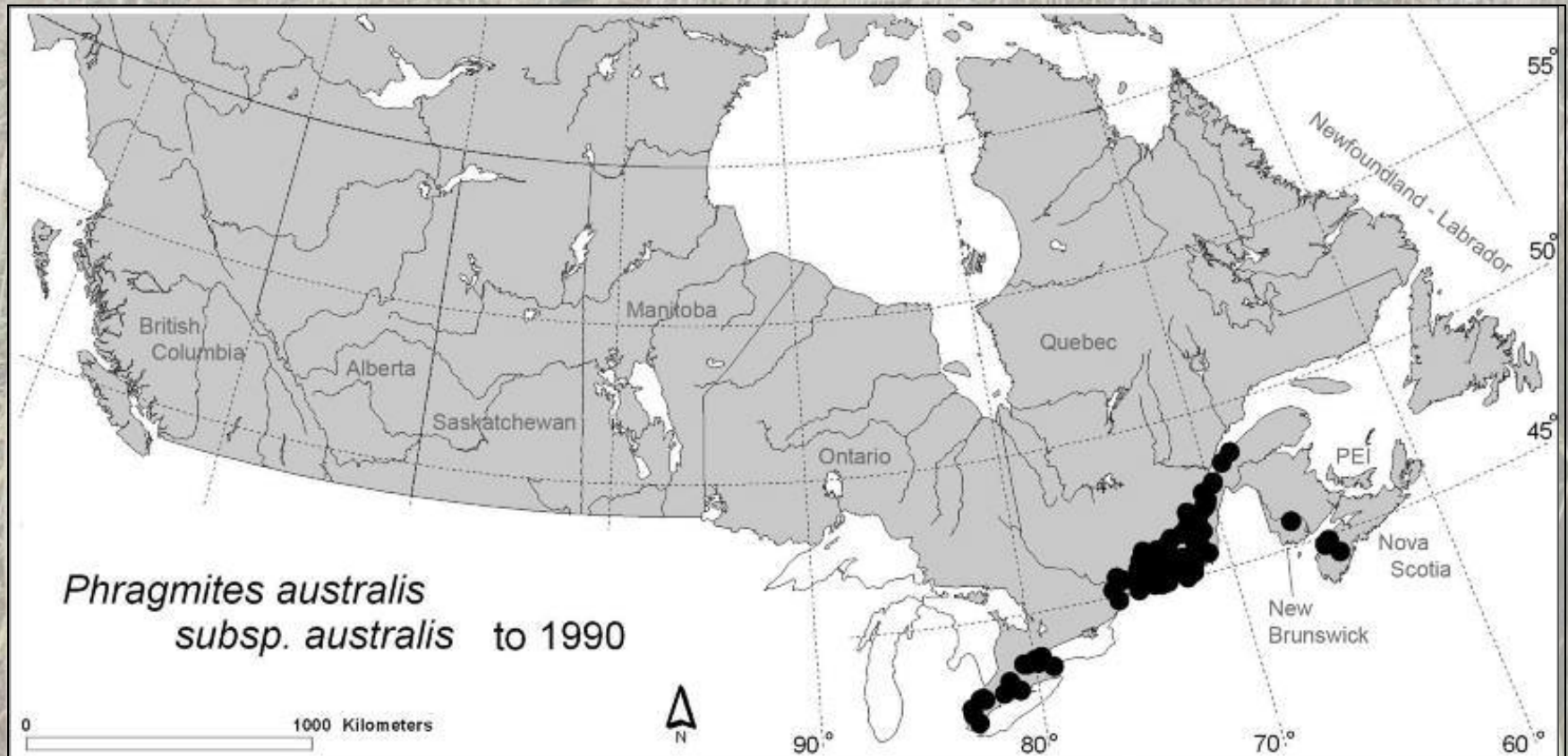
Catling, Paul M., and Gisèle Mitrow. 2011. The recent spread and potential distribution of *Phragmites australis* subsp. *australis* in Canada. *Canadian Field-Naturalist* 125: 95–104.

Historical Distribution cont'd.



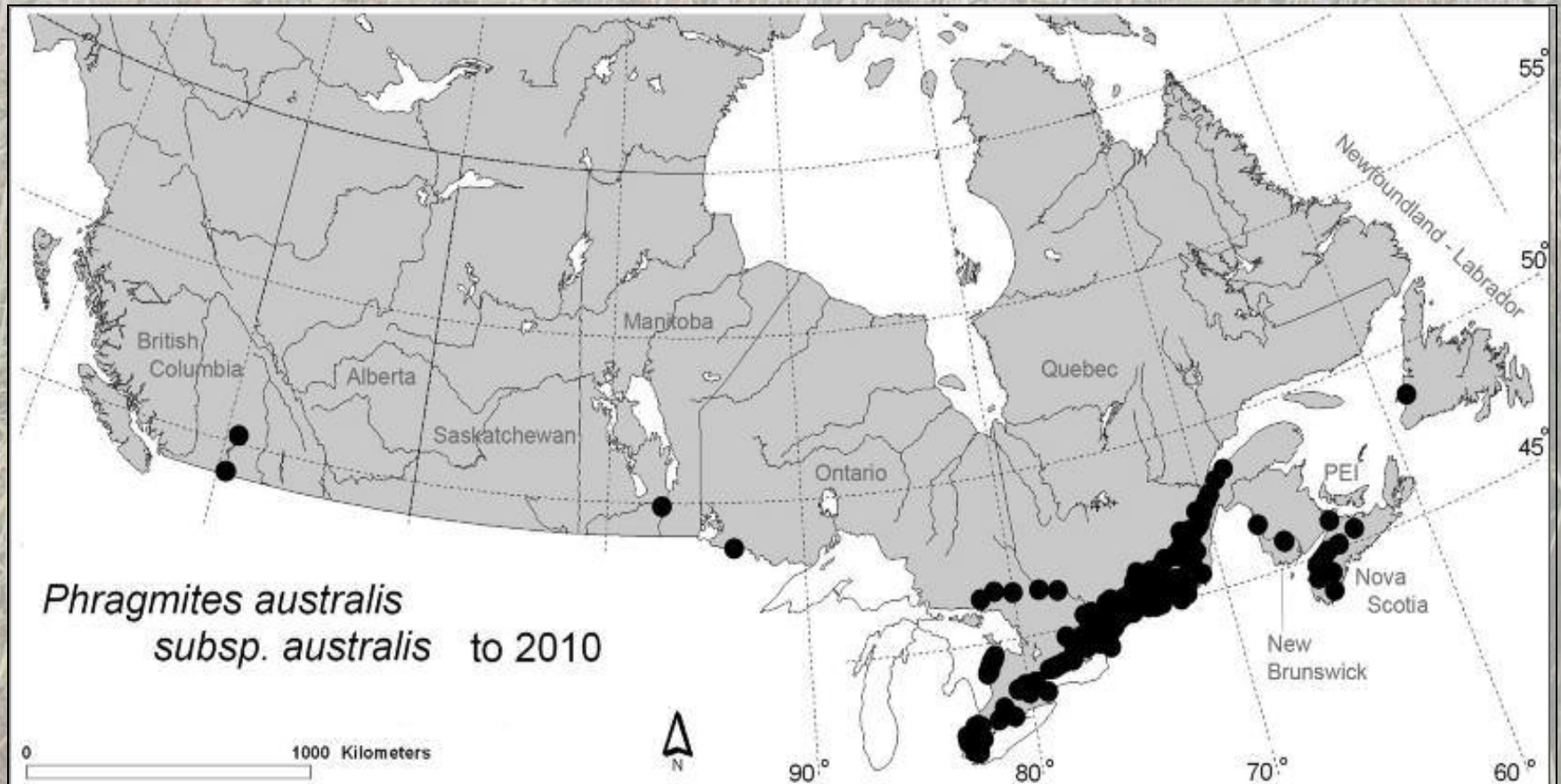
Catling, Paul M., and Gisèle Mitrow. 2011. The recent spread and potential distribution of *Phragmites australis* subsp. *australis* in Canada. *Canadian Field-Naturalist* 125: 95–104.

Historical Distribution cont'd.



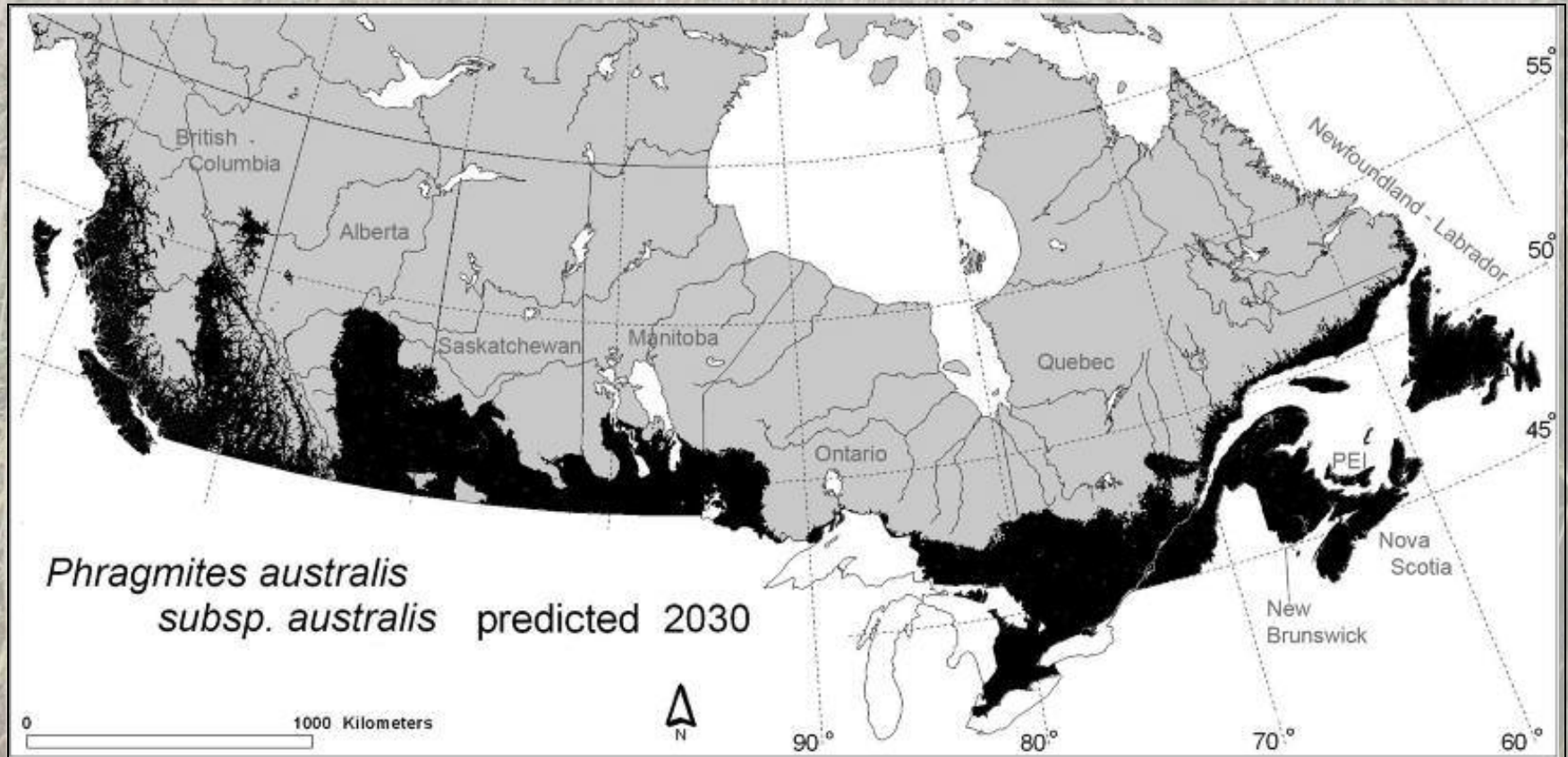
Catling, Paul M., and Gisèle Mitrow. 2011. The recent spread and potential distribution of *Phragmites australis* subsp. *australis* in Canada. *Canadian Field-Naturalist* 125: 95–104.

Distribution 2010



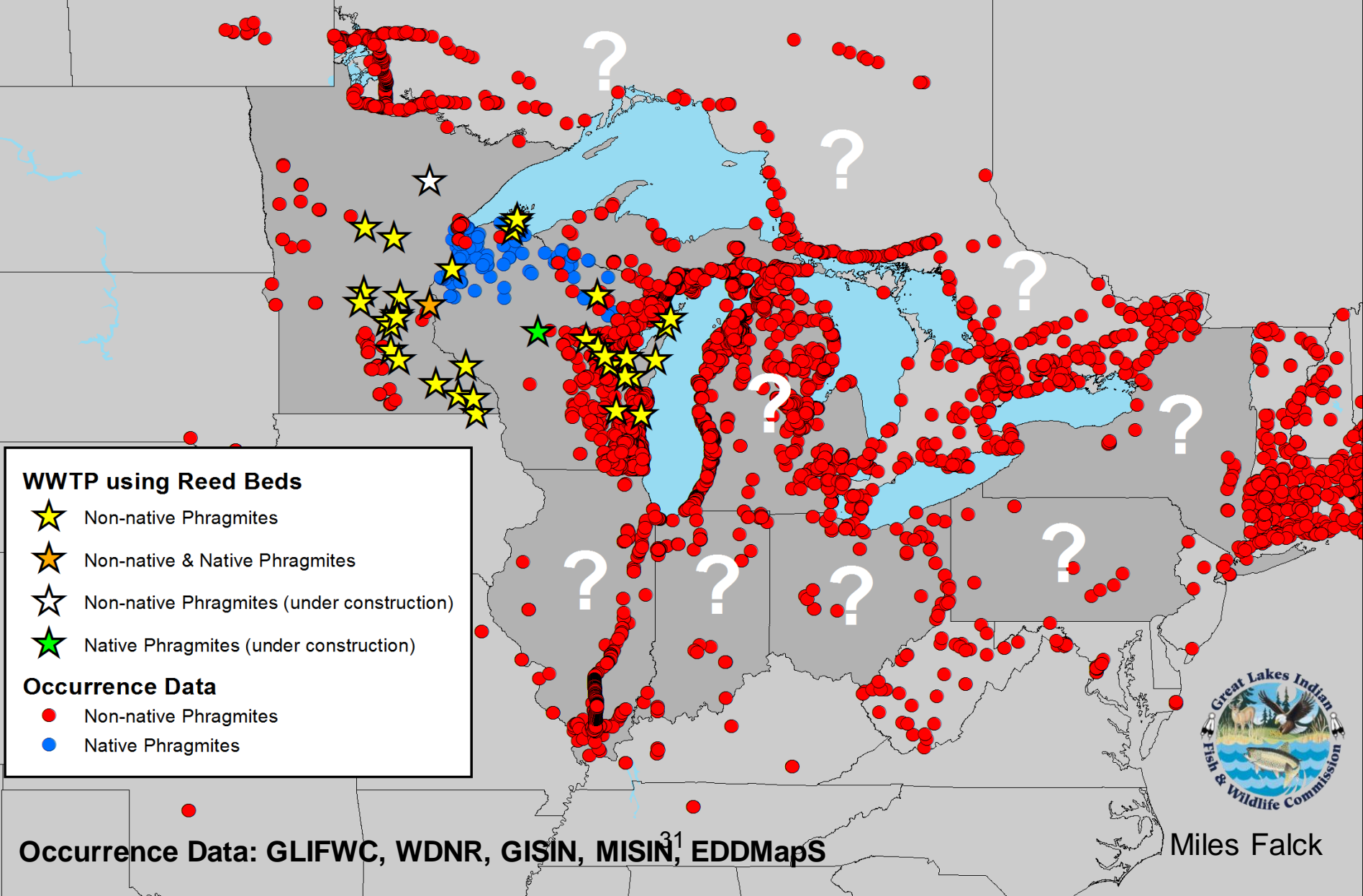
Catling, Paul M., and Gisèle Mitrow. 2011. The recent spread and potential distribution of *Phragmites australis* subsp. *australis* in Canada. *Canadian Field-Naturalist* 125: 95–104.

Predicted Distribution 2030



Catling, Paul M., and Gisèle Mitrow. 2011. The recent spread and potential distribution of *Phragmites australis* subsp. *australis* in Canada. *Canadian Field-Naturalist* 125: 95–104.

Great Lakes



Giving Phragmites a helping hand

- Population explosion in 1990's linked to land use changes (increased disturbance, urbanization, eutrophication, hydrological changes)
- Establishment along transportation corridors provides a major spread vector (Lelong *et al.* 2007, Diversity and Distributions Vol. 13)
- Strong correlation between pioneer populations at inflow locations along Lake Huron shoreline and *Phragmites* in ditches further inland (Alexander, K. 2012, *Phragmites australis* in Coastal Environments, Lake Huron Lake Huron Centre for Coastal Conservation)



Catling, Paul M., and Gisèle Mitrow. 2011. The recent spread and potential distribution of *Phragmites australis* subsp. *australis* in Canada. Canadian Field-Naturalist 125: 95–104.



Norfolk County Rd. 1, July 2009

Invasive *Phragmites* along Highway #17 East of Sault St. Marie, 2011



ATV activity increases Phragmites spread



Baie du Dore, Lake Huron, September, 2015

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Giving Phragmites a helping hand cont'd.

- Establishment in agricultural drainage ditches also a major spread vector
- Increasing issues with blocked drainage, flooded fields and reduced crop production



Norfolk County,³⁸ August 2015

Concerns

- Loss of recreational opportunities
- Negative impacts on tourism
- Decline in shoreline property values
- Damage to infrastructure (asphalt roads, Hydro corridors)
- Hazards (fire, blocked views at intersections)





Residential encroachment creates high risk of fire





YouTube^{CA}

Search



SIGN IN



Phragmites Burn at Golf Course

1,005 views



4



0



SHARE



Concerns cont'd.

- Significant reduction in biodiversity
- Major impacts on wildlife
- Identified threat to 25% of 217 Species at Risk

Rondeau Provincial Park, Lake Erie, September 2012





➤ turtles are particularly susceptible



dead Map Turtle

J.M. Gilbert

Dead Blanding's Turtle
Rondeau Provincial Park,
spring, 2013



Amy Whitear

46
Rondeau Provincial Park, fall 2010

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Control Options

- Biological
- Manual/Non-chemical
- Chemical

Control Options: factors to consider

- timing and design of a Phragmites control project is site specific
- edges of dense Phragmites cells will have wildlife habitat value (staging, mating, nesting, brood rearing, foraging)



J.M. Gilbert 48



J.M. Gilbert

Considerations

- What are the goals of the control program?
- What are the most appropriate methods for achieving those goals?
- What is the best timing to undertake the planned activities?
- How do you know you are doing more good than harm?

‘Do the most good with the least harm’

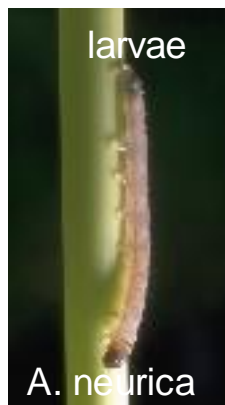




Biological Control:



- Bernd Blossey, Cornell University:
 - > 170 herbivores in Europe; 40% feed only on *Phragmites*
 - 26 herbivores known to attack *Phragmites* in the U.S.
 - all but 5 introduced
 - 2 moths recently identified as potentially effective
 - also target native *Phragmites*
- Great Lakes *Phragmites* Collaborative





Distribution.

The European part of Russia, the Caucasus and Ciscaucasia, Western Siberia, Eastern Siberia (except Arctic regions), all areas of the Far East (except Arctic regions), and Central Asia. Absent in deserts.

Ecology

Hygrophilous plant. It is widely distributed in lands with close-standing, subsoil waters (2.0-2.5 m). Grows in coastal zone, along coasts of rivers and lakes, frequently in water, grassy marshes, boggy meadows, forest edges, bogs, crude meadows, and solonetz soils. Frequently forms continuous thickets.

Economic significance.

Malicious segetal weed. It is widely distributed on irrigated grounds, where it infests all agricultural crops, especially rice, cotton, and lucerne. Small parts of rhizomes take root easily; therefore, inter-row treatments promote vegetative reproduction of the Common Reed. Main control measures include drainage, dehydration of soil surface after watering, deep and repeated treatments of ground, and crop rotation with alternation of rice and periodically watered cultivars.

Non-chemical Control Options

- Livestock grazing: cattle, sheep, goats



Freshkills Park, NY, 2.2 ac restoration
Pilot Project



Ranch
would be
good

Non-chemical Control Options cont'd

➤ Covering, smothering

Lake Huron, August, 2012



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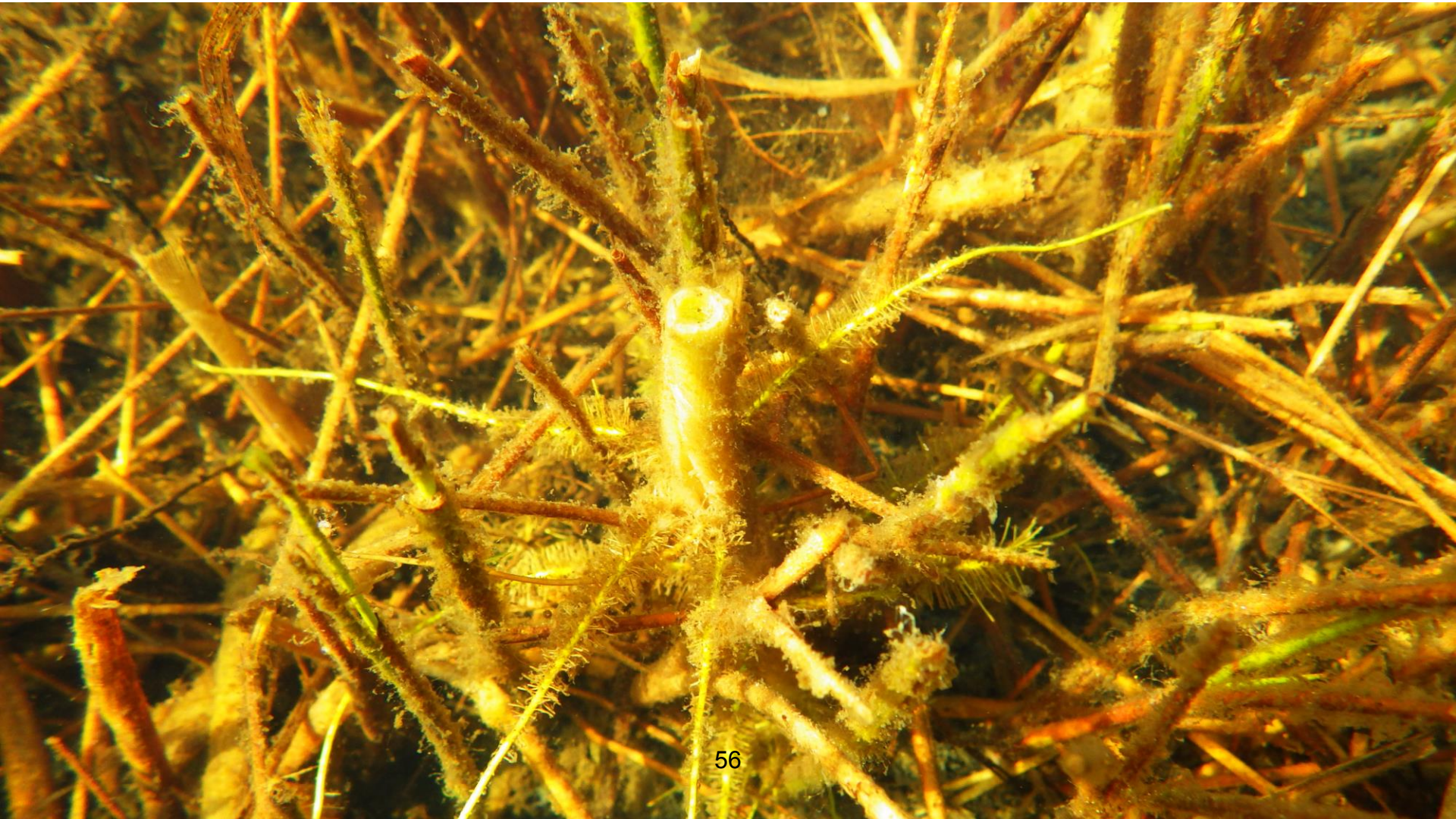
Pilot Project: Kettle Point, 2013



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Non-chemical Control Options cont'd

- Cutting to drown



Non-chemical Control Options cont'd

➤ spading



➤ raspberry cane cutter



Oliphant, Lake Huron, September 26, 2017



Wood Drive Coastal Wetland, Municipality of Lambton Shores, August 2015

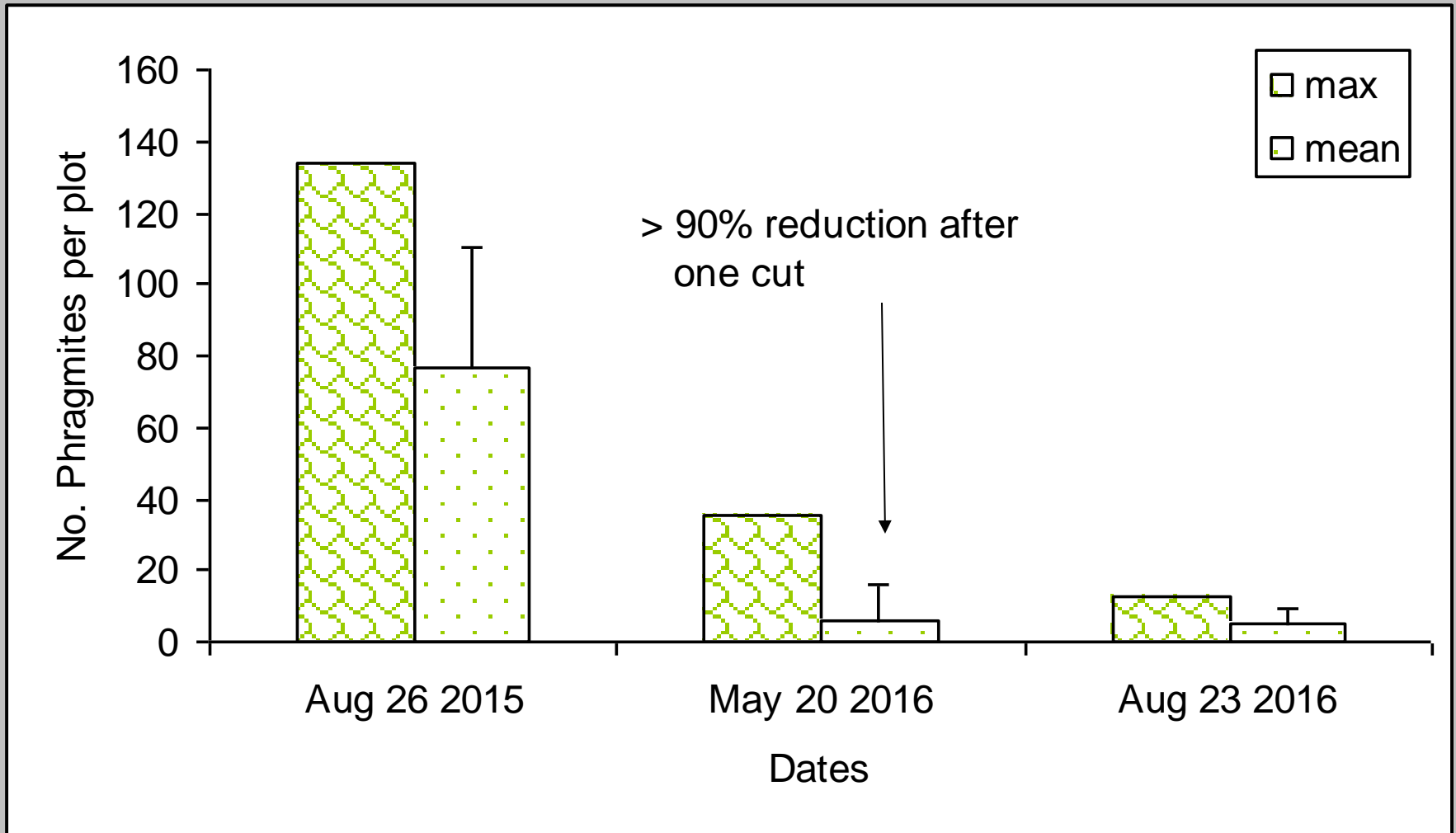
Before cutting
August 2015



After cutting
August 2016



Control Options: cutting to drown







Invasive Phragmites Control Centre

Est. 2017

- Not-for-profit organization
- emphasis on promoting site specific, appropriate control actions
- focus on restoring challenging sites (coastal areas, Species at Risk habitat, wetlands)



IPCC Overview

- Provide assistance with all Phragmites control needs: management plans, training, education, control (mechanical, chemical)
- Cutting Program
- Herbicide Program
- Monitoring: fish, vegetation, wildlife
- R&D

IPCC's Cutting Program

- control efficacy is water depth dependant
- short operating window to lower impacts/
disturbance to spawning fish, nesting birds etc.







Blue Jay Creek, Manitoulin Island, August 2018



Lambton Centre United Church Camp, Lake Huron, September 2017



69
Lambton Centre United Church Camp, Lake Huron, Septmber 2017



70
Wood Drive, Lake Huron, September 16, 2017



Oliphant, Lake Huron, August 9, 2018



Oliphant, Lake Huron, ⁷²September 14 2017



Oliphant, Lake Huron, September 14 2017





Manitoulin Island, August 14, 2018





Manitoulin Island, August 13, 2018



Oliphant, Lake Huron, September 15, 2017



Oliphant, Lake Huron, August 9, 2018







Oliphant Fishing Islands, August 2018

Bruce Peninsula Biosphere Association and Oliphant community assisting IPCC crew with Phragmites removal



Oliphant, Lake Huron, September 2017



Oliphant August 8, 2018



Wood Drive, Lake Huron, July 23 2018

Wood Drive Coastal Wetland



Wood Drive Coastal Wetland



Wood Drive Coastal Wetland





Lambton Centre, Lake Huron, August, 2012



Lambton Centre, Lake Huron, August, 2012



Lambton Centre, Lake₉₁ Huron, August 13 2017



Lambton Centre₉₂, September 7, 2017



Lambton Centre₉₃ July 18, 2018



Lambton Centre, July 18, 2018



Brucedale Conservation Area, Lake Huron, July 20, 2015



Brucedale Conservation Area⁹⁶, Lake Huron, July 20, 2015



97
Brucedale Conservation Area, Lake Huron, July 20, 2015



98
Brucedale Conservation Area, Lake Huron, July 20, 2015



Brucedale Conservation Area, Lake Huron, July 21, 2015



Bruce's Landing Conservation Area, Lake Huron, August 24, 2017



Brucedale Conservation Area, Lake Huron, September 14, 2018



102
Bruce Dale CA, Lake Huron, July 2015



Brucedale Conservation Area, ¹⁰³Lake Huron, August 1, 2018

Invasive Phragmites Control Centre: Cutting Program

2018

1. Wood Drive Coastal Wetland: Lambton Shores Phragmites Community Group
2. Lambton Centre
3. Kettle and Stony Point First Nation
4. Municipality of Kincardine
5. Brucedale Conservation Area: Lake Huron Centre for Coastal Conservation/Saugeen Valley CA/ Enbridge
6. Oliphant: Bruce Peninsula Biosphere Assoc., Friends of Oliphant
7. Manitoulin Is.- Blue Jay Creek (Judith Jones), Wiikemkoong First Nation
8. Fish Islands, Oliphant
9. Nawash First Nation
10. Baie du Dore coastal wetland: Bruce Power, Ontario Power Generation
11. Honey Harbour: Georgian Bay Forever
12. Saugeen First Nation

➤ ~ 310 tonnes cut and removed (2 Truxors)



Rondeau Provincial Park¹⁰⁵, Lake Erie, September 2012

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Chemical Control

United States:

- Effective chemicals: Glyphosate (Rodeo, AquaNeat, AquaPro, Shore Klear), Imazapyr (Habitat- BASF)
- Can be applied over water
- Can be applied aerially
- An estimated \$20 million to \$30 million (Federal) have been spent controlling Phragmites in the Great Lakes basin since 2011 (H. Braun, Great Lakes Commission)



Chemical Control cont'd.

Legal Chemical Options in Canada:

- WeatherMax® and VisionMax® (Monsanto products)
 - glyphosate + surfactant (polyethyloxylated tallowamine)
- Arsenal Powerline®
 - imazapyr + surfactant
- No over water approval for these products
- glyphosate and imazapyr two of 82 active ingredients banned for cosmetic use (Ontario Cosmetic Pesticides Ban Act, April 22, 2009)
- Requires a Letter of Opinion- written opinion from the MNR that the use is an appropriate means to protect or manage natural resources



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Chemical Control Options cont'd.

- large, dense cells targeted using retrofitted track vehicles (Dover Agri-serve)



➤ Marsh Master (Nature Conservancy of Canada, Giles Restoration)



Long Point Crown Marsh, March 2017

Chemical Application Options:





Lake Huron Coastal Wetland, Municipality of Kincardine, September 17, 2015

Complementary Control

- removal of biomass improves native plant species response and allows for easier follow-up Phragmites control



Before invasive Phragmites control, fall 2011



Kettle Point, Lake Huron

After invasive Phragmites control, spring 2014



Kettle Point, Lake Huron

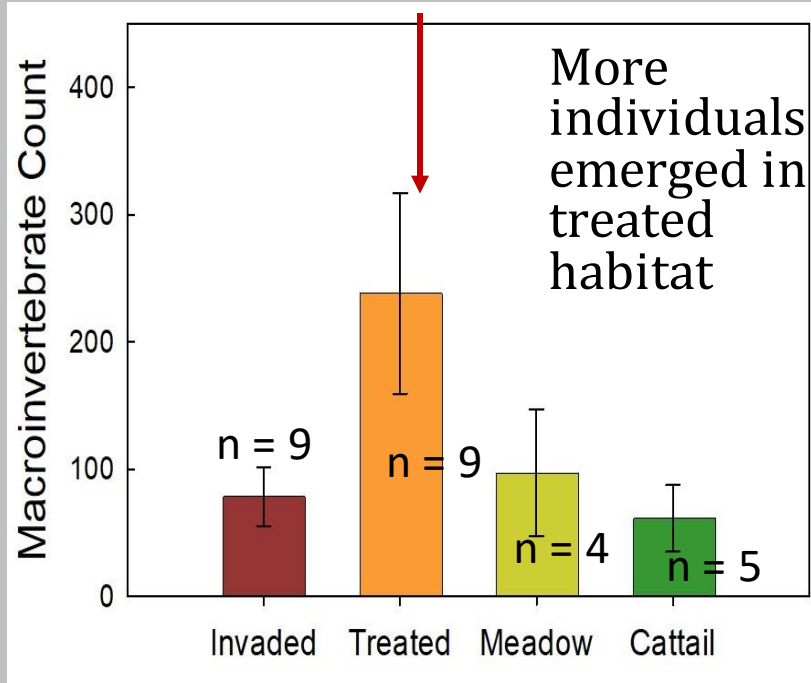
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Kettle Point, Lake Huron September 18, 2018



Prey quality and quantity: 2017 data



Ephydriidae



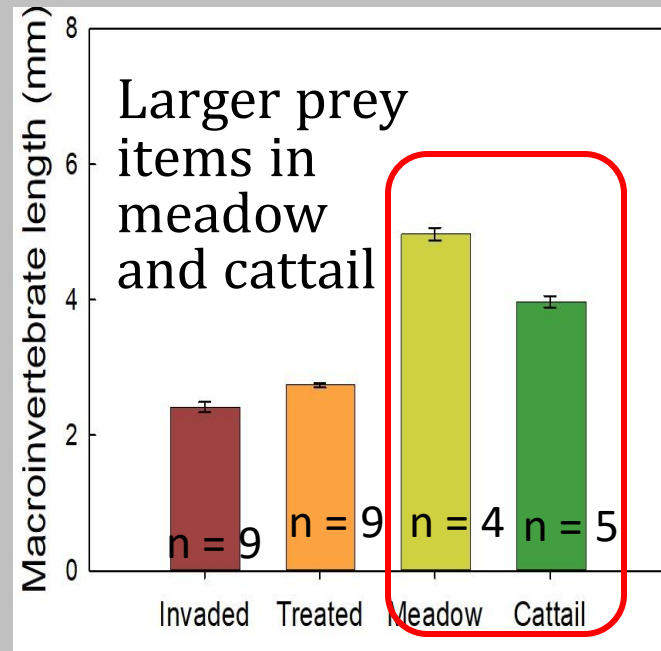
Chironomidae



Anisoptera



Chironomidae



Error bars = standard error

Challenges

- Trying to control Phragmites with the current 'tools'
- Reducing collateral damage to non-target species



Challenges cont'd.

Presence of SAR



Long Point October 2015

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Challenges cont'd.

Presence of Desirable Species





Rondeau Provincial Park, 2013

Challenges cont'd:

High and Low Density Cells



Baie du Dore September 2015

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Challenges cont'd:

Difficult Terrain



Lake Huron, September, 2012

Challenges cont'd:

High Winds



Challenges cont'd:

Remote Areas

Long Point October 2015

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Challenges cont'd:

Recreational Areas



Lake Huron shoreline, July 2012

Challenges cont'd:

How do we control invasive Phragmites using the tools currently available?

- Site specific approach
- Some sites can be controlled with current tools
- Many areas cannot be controlled

Control Options for SWM Ponds, Irrigation Ditches, Roadside Ditches

- Cutting
- Herbicide
- Excavation



Control Options for SWM Ponds, Irrigation Ditches, Roadside Ditches

Wet Sites

- cutting to drown if water depths >0.40 m
- shallow water cutting to reduce spread, seed production
- timing: standing dead early spring; new growth late July – fall

Control Options for SWM Ponds, Irrigation Ditches, Roadside Ditches

Dry Sites

- cutting alone will not kill Phragmites but it may slow growth, reduce stand density, reduce seed head development
- **cut everything**
- if you can only cut once, aim for mid-July to early August



Control Options for SWM Ponds, Irrigation Ditches, Roadside Ditches

Dry Sites

Wetblade: combines cutting and herbicide

- control option for areas where herbicide application using spray methods is not an applicable option (ie. close proximity to lawns, crops)
- potential for Phragmites to develop herbicide resistance



Control Options for SWM Ponds, Irrigation Ditches, Roadside Ditches

Herbicide: most effective control option on dry land

WeatherMAX/VisionMAX (a.i.glyphosate)

- recommended rate 2.0 - **8.0** L/Ha
- add an approved surfactant (MSO Concentrate Methylated Seed Oil); concentration 0.5% - **1%** v/v

Control Options for SWM Ponds, Irrigation Ditches, Roadside Ditches

Herbicide cont'd.

Arsenal Powerline (a.i. imazapyr)

- recommended rate 4.68 L/Ha
- non-ionic surfactant should be added at 0.25% v/v

Control Options for SWM Ponds, Irrigation Ditches, Roadside Ditches

Herbicide cont'd.

- apply anytime after there is enough leaf surface (plant height ~1.5 m) until first heavy frost (or natural die off)
- if planning to spray earlier in growing season, cut or roll standing dead stalks in winter/early spring
- do not spray when plants are wet with dew or rain or if temperatures are too cold/hot or in high humidity
- target entire cell

Control Options for SWM Ponds, Irrigation Ditches, Roadside Ditches

Herbicide: WeatherMAX/VisionMAX

- allow at least 3 weeks to assess plant response
- can anticipate 80 – 90% mortality
- touchup can be done in same year
- total control can be obtained within 2 -3 yrs

Control Options for SWM Ponds, Irrigation Ditches, Roadside Ditches

Herbicide: Arsenal Powerline

- plants will not brown after application
- stalks tend to fall down during winter
- can anticipate 90%-100% mortality
- mature trees and other woody species can be killed if roots are within the spray zone
- total control can be obtained within 2-3 yrs

Control Options for SWM Ponds, Irrigation Ditches, Roadside Ditches

Excavation

- unless all of the below ground plant material can be removed it is best to spray the ditch prior to digging (wait at least 3 weeks for the herbicide to be effective)
- excavated material should only be disposed of at locations where it can be contained, monitored and if needed, controlled
- can also cover ditch spoil with dark, thick plastic or bury (0.70 m overburden)
- transported Phragmites material must be properly covered to ensure seeds and viable plant parts do not escape while en route to the disposal site

Control Program Examples

- Huron County
- London
- St Thomas

Huron County

- Approached Ausable Bayfield CA in 2014
- Phragmites was spreading on County Roads but their spray program didn't suit Phragmites control as roadside spraying for weeds only occurred every three years
- ABCA staff had appropriate licenses and experience
- staff knowledgeable about Phragmites and are on the roads frequently and can monitor
- Can spray at optimum times

Contact: Jeff VanNiekerk Field Services jvanniekerk@abca.on.ca

London

- London Invasive Plant Management Strategy adopted by city council 2017; Identified need to develop a Phragmites control program
- London Phragmites Working Group formed 2017 (city staff from Parks, Sewer Operations, Transportation, Environmental & Parks Planning, Urban Forestry, 3 Conservation Authorities (LTVCA, UTVCA, KCCA); MTO, IPCC
- Mapping program designed for city staff; reporting portal on city website for public
- Control on ESA's contracted to UTVCA
- Ongoing control by various City departments (roads, parks, urban forests)
- Sewer Ops: all Phragmites in SWM ponds to be treated by 2020
- 90% of city private lands; provide list of contractors

St Thomas

- Formed Phragmites working group 2014 (private citizens, council member, city staff: fire, police, parks and recreation, roads and drainage, Conservation Authority)
- Management Plan- Phase 1 2014
- Annual budget allocation for control on all properties within city boundary
- Five year Letter of Opinion
- Goal Phrag Free by 2020...achieved goal in 2019

Contact information: David Collins phragfreecity@outlook.com

Emergency Use Program 2016-present

- Partnership between Ontario Ministry of Natural Resources and Forestry (OMNRF), Nature Conservancy of Canada, Ducks Unlimited Canada, Ontario Parks, Bird Studies Canada, private marsh owners
- OMNRF applicant to Pest Management Regulatory Agency (Health Ca); Ontario Ministry of the Environment, Conservation and Parks needed to approve
- Allows use of Roundup Custom (glyphosate) to treat Phragmites in wet areas
- Aerial and ground application

Emergency Use Program 2016-present

- Long Point and Rondeau Provincial Park focus areas
- First time this control activity has taken place in Canada
- Monitoring undertaken by Dr. Rebecca Rooney, University of Waterloo

Coastal marshes

Rooney Lab, University of Waterloo

Ecologically important ecosystems, > 80% of marsh habitat on north shore of Lake Erie

Need to assess whole system effects of herbicide application



1. Efficacy of 2016 EUR Application

- How effective was herbicide treatment at
 - a. Eradicating Common Reed
 - b. Encouraging re-growth of resident emergent marsh

2. Comparison of efficacy in 2017 ground and aerial application

3. Fate and effects in 2016 and 2017

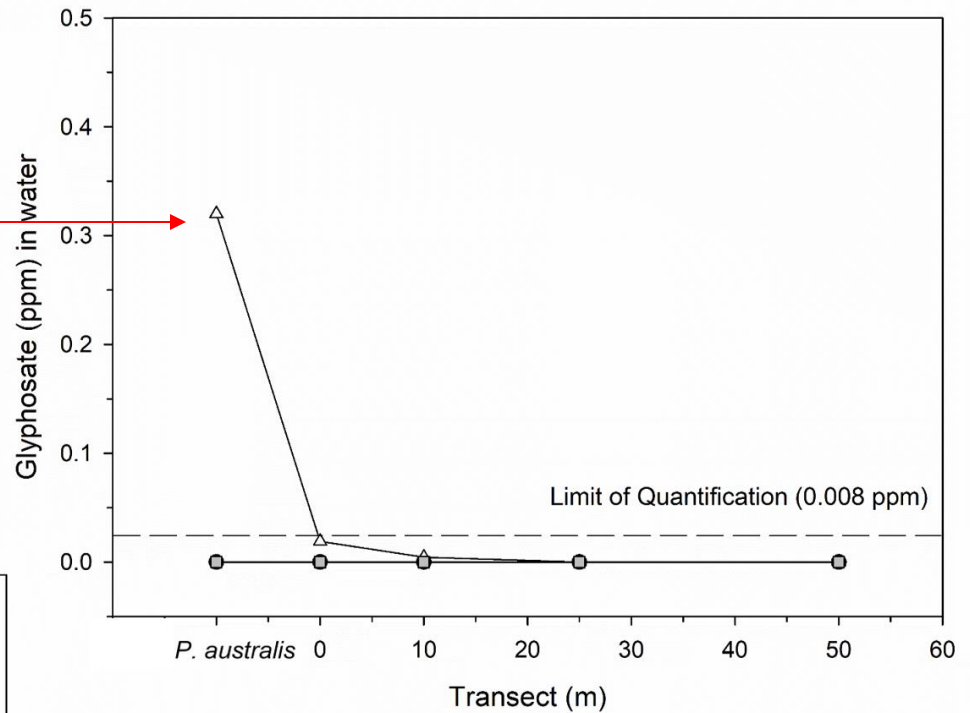
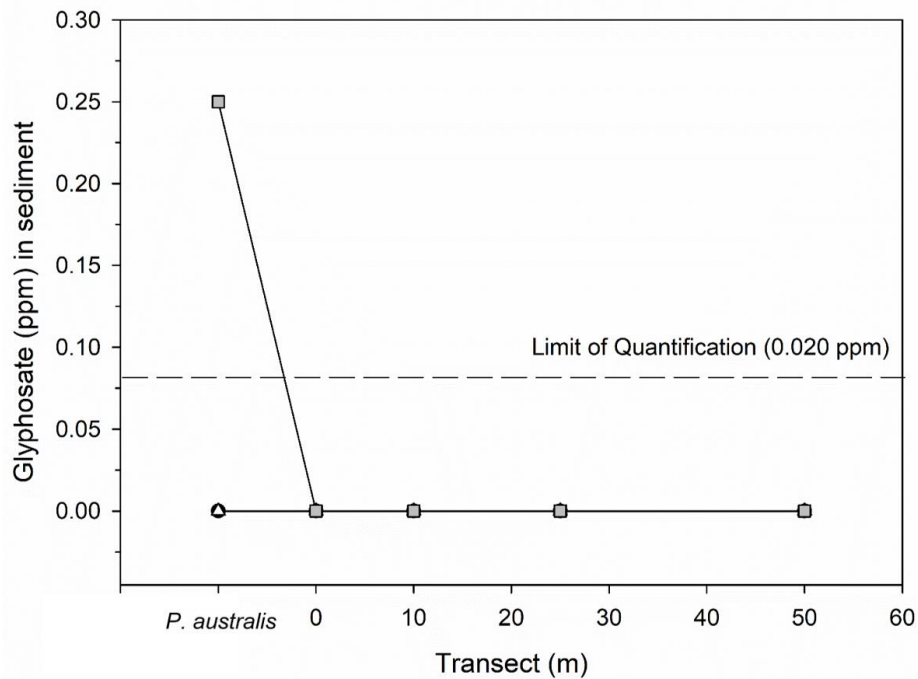
- i. How far did the herbicide spread?
- ii. How long did it stick around?
- iii. Whether the herbicide application resulted in an unacceptable impact to aquatic biota
 - a. Risk assessment based on exposure
 - b. Benthos
 - c. Periphyton

- Sampled sediment, water & total suspended solids for glyphosate, ampa, POEA
- benthic inverts for community composition, richness, diversity



Turkey Point

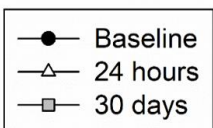
Max. concentration in 2018
(0.32 ppm); within 24 hours
at the *P. australis* site



CCME guideline for freshwater
biota:

Acute 27 ppm

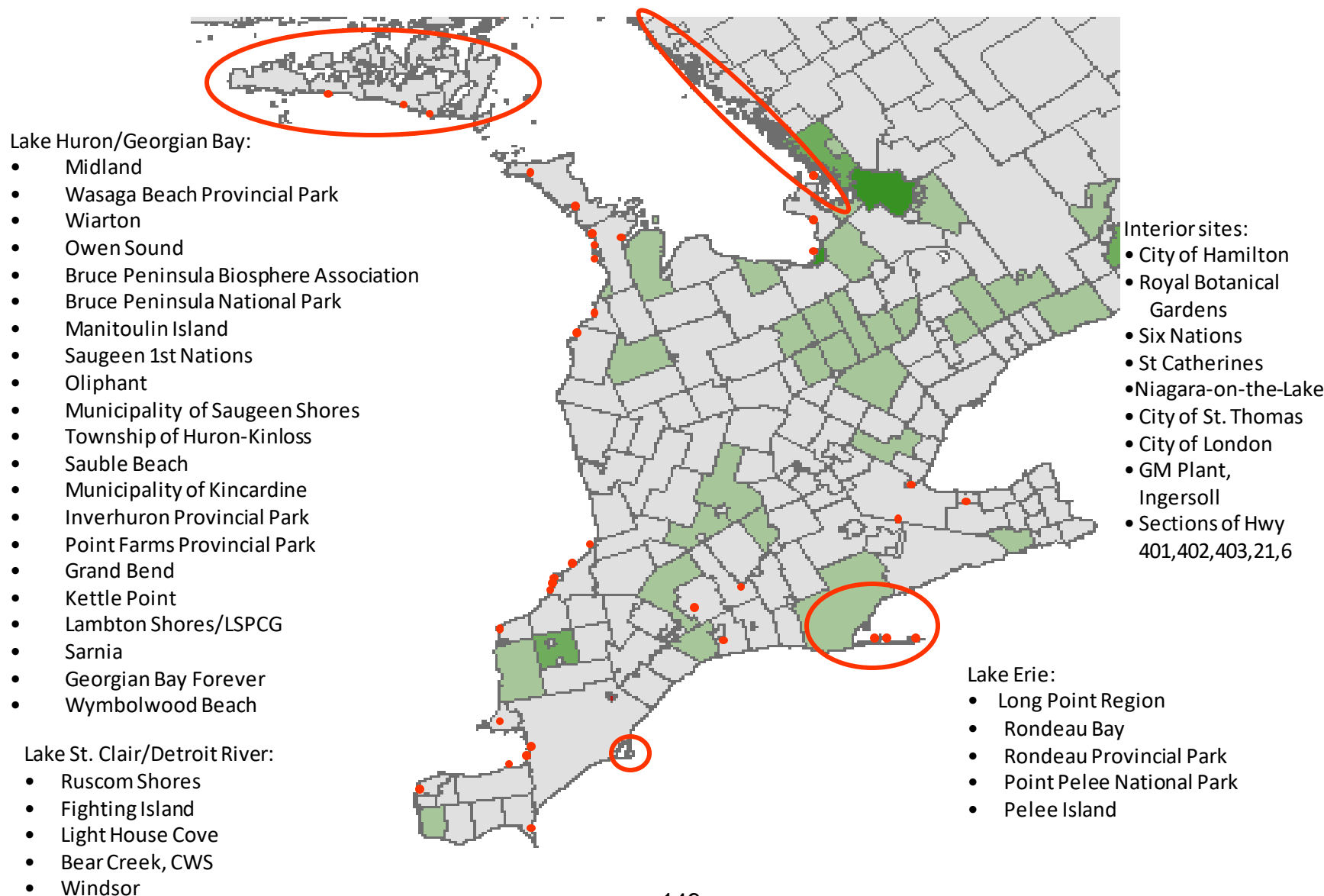
Chronic 0.8 ppm



Aquatic Safe Herbicide is Coming!

- Habitat (imazapyr)
- BASF submitted product registration application to Pest Management Regulatory Agency (Health Canada) 2017
- Anticipate registration late 2019
- Provincial approval also required

Invasive Phragmites Control Projects* in Ontario 2007-2018



Ontario Phragmites Working Group

Est. Dec. 2011

Committee of the Ontario Invasive Plant Council 2013

- MNRF/MOECC
- Ontario Parks
- National Parks
- Lake Huron Centre for Coastal Conservation
- First Nations
- Lambton Shores Phragmites Community Group
- Municipality of Chatham/Kent
- Township of Huron-Kinloss
- Hamilton Phragmites Working Group
- Canadian Wildlife Service
- Environment Canada
- Nature Conservancy of Canada
- Ducks Unlimited Canada
- Georgian Bay Forever
- Ontario Good Roads Association
- City of London
- Master Gardeners of Ontario
- Ontario Horticultural Association
- Lambton Community in Bloom
- Grand Bend and Area Horticultural Society
- Conservation Ontario
- Carolinian Canada
- Researchers (University of Waterloo, McMaster University, Humber College)
- BASF
- Private contractors
- St. Thomas Phragmites Community Group
- Great Lakes Our Waters
- Bruce Peninsula Biosphere Assoc.
- ON Fed. Agriculture
- Friends of Laurel Creek, Waterloo
- Long Point Rate Payers Assoc.
- Long Point Phragmites Action Alliance
- Elgin Phragmites Working Group

Preventing Further Contamination and Spread

- It is much more costly to control Phragmites after it's established than it is to prevent its spread
- Clean the equipment before moving from a contaminated site to an uncontaminated site

Clean Equipment Protocol for Industry

Inspecting and cleaning equipment for the purposes of invasive species prevention



Smart Practices for the Control of Invasive Phragmites along Ontario's Roads

Version 1, March 2015
Ontario Phragmites Working Group

J.M. Gilbert

FACT SHEET

Controlling *Phragmites australis* (European Common Reed) in Agricultural and Rural Areas

What is Phragmites?

Phragmites is an aggressively spreading invasive grass capable of reaching heights greater than 5 m and densities of over 200 plants per square metre. In 2005 it was recognized as Canada's worst invasive plant by scientists at Agriculture and Agri-Food Canada.



Lambton Shores Phragmites Community Group

Why is Phragmites a concern in agricultural areas?

If left uncontrolled, Phragmites can develop into a dense mass that clogs drainage tiles and ditches, impeding water flow and causing flooding. Old stalks are resistant to decay and can remain for several years, further impeding water flow if not removed.



Roadside Phragmites
Army Camp Road, Lambton Shores

Lambton Shores Phragmites Community Group

Phragmites is spreading along roadside ditches and municipal drains, interfering with water flow.



Same roadside ditch after herbicide application & excavating

Controlling Phragmites on the Farm

Phragmites control options are site specific and may include a combination of herbicide application, excavation, cutting or burning.

Timing is Everything

Regardless of the control method selected it is important to note that animals, including nesting birds, turtles, frogs, toads, or snakes, may be present on the edges of Phragmites cells, and timing control activities to reduce potential harm or mortality should be a consideration.

Cutting

- Although cutting will not cause Phragmites mortality, it may slow growth, reduce stand density and reduce seed head development
- If this method is selected as a management option, a regular cutting regime must remain in place for perpetuity, since the plants can grow quite rapidly and dense cells can re-establish once cutting discontinues

Herbicide Application

- Mortality rates of between 70–95% can be expected after one treatment and complete control can be expected after two treatments for most sites
- Depending upon the site conditions, control can be undertaken using conventional equipment such as boom sprayers
- Allow at least three weeks after herbicide application before cutting, burning or excavation activities take place to ensure the chemical has time to be effective
- If plants are to be treated before they reach full height it is highly recommended that the standing dead plants be flattened or cut prior to the growing season, to increase herbicide contact with live plants and reduce product waste

Disposal

- There are many benefits to removing dead plant material including restoring water flow and native vegetation
- For more information on proper disposal refer to "Smart Practices for the Control of Invasive Phragmites along Ontario's Roads" – Ontario Phragmites Working Group

Fact sheet created by:



and funded by:



Achieving the goal of an effective, efficient and environmentally responsible control program

- 1) Control spread vectors along roads and agricultural drainage ditches
 - requires government agencies engagement
 - prioritize roads and cells adjacent to rivers, creeks, wetlands
 - promote the Clean Equipment Protocol
- 2) Availability of over water and aerial herbicide control options
- 3) Implement an effective education campaign
 - needs to be added to the provincial Noxious Weed List
- 4) Provide local groups with required support
- 5) Dedicated funds – Federal/Provincial/Municipal/Private sources

Achieving the goal of an effective, efficient and environmentally responsible control program

➤ **Locally driven**

➤ **Management Plan:**

- 1) Scope of current invasion: habitat type, ditches, acreage
- 2) Control options (water, timing, habitat, recreational activity...)
- 3) Dealing with complications of different land ownership (Federal, Provincial, Conservation Authorities, Municipal, Private, NGOs)
- 4) Associated costs; funding options
- 5) Prioritizing target sites
- 6) Building short and long-term capacity/infrastructure



The most important message:

DO NOT IGNORE PHRAGMITES

- it will eventually become problematic
- the quicker an infestation is dealt with, the easier and less costly it will be to manage

Is this the next problematic invasive?



Questions?





NIAGARA ECONOMIC DEVELOPMENT STRATEGY 2019-2024

MARCH 2019

NIAGARA
CANADA

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Executive Summary

In February, 2018 Niagara Economic Development (NED) issued an RFP for consulting services to develop a long term economic development master plan for the Niagara region. The original scope of the economic development master plan envisioned a time horizon beginning in 2018 and ending in 2041, in partnership with Brock University and Niagara College, but was later re-scoped to a shorter five-year time horizon. This was envisioned as a unique opportunity to work with Niagara's two post-secondary institutions and position the region for sustained economic growth in the future. The Global Investment and Attraction Group (GIAG) was successfully awarded the contract and had worked on developing the strategy until November, 2018 when the decision was made to have staff complete the strategy internally.

The Niagara Economic Development Strategy since its conception has been based on statistical research, analysis, and extensive stakeholder engagement. This included a series of sector roundtables with businesses and industry leader, one-on-one interviews with business owners, community stakeholders, and both Brock University and Niagara College, as well as an online survey. The resulting strategy is a compilation of the research, stakeholder engagement, and work completed GIAG, complemented by additional research and engagement undertaken by NED.

The Economic Development Strategic Action Plan was developed internally by NED staff. The Action Plan was primarily based on the research and the extensive stakeholder engagement completed by GIAG and NED. The Strategic Action Plan is prioritized into seven key areas with specific actions and key performance indicators that will be to measure the successful implementation of the plan. It is important to note, however, that basing the action plan on stakeholder engagement was only the first step. Once a preliminary draft had been finalized it was subsequently shared with all businesses, partners, and community and industry stakeholders that had provided input throughout the development of the Niagara Economic Development Strategy process. This ensured that the priority areas and actions were vetted by the very stakeholders that will be partners in the strategy's successful implementation.

Drafting the Niagara Economic Development Strategy: 2019-2024 is merely the first step and will be followed by its implementation over the next five years. The real work will be in operationalizing the plan and collaborating with our partners to support the on-going success of the region. The economic development strategy is important to support Niagara's on-going success, however, a longer-term vision for the Niagara region is still absent. Within the next five years Niagara Economic Development is committed to partnering with Niagara stakeholders to develop a vision for Niagara region that will ensure the economic prosperity of not only today's residents, but future generations.

Niagara Economic Development

Niagara Economic Development (NED) reports directly to the Chief Administrative Officer (CAO) and reports to Regional Council through the Planning and Economic Development Committee. This corporate structure provides NED with greater latitude to work across departments within the corporation and to partner with Niagara's local area municipalities.

The department works closely with economic development staff in the six municipalities who have economic development offices and with the CAOs in the municipalities where there are no economic development staff. Through a Memorandum of Understanding (MOU), drawn up by the 12 CAOs at the time in 2012, and approved by Regional Council, there is a clear delineation of economic development responsibilities, so as not to duplicate efforts. The MOU states that the local municipalities are best suited to deliver Business Retention and Expansion (BRE) services because of their unique knowledge of their respective municipalities. NED is ideally positioned to deliver services that support economic development for the region as a whole, including investment attraction, lead generation, and research. Implementation of the MOU is led by Team Niagara, which includes representation from all municipalities, and was also formed in 2012. The group meets quarterly, principally to discuss trade and investment activities (outward and inward missions), strategic planning, and marketing. The Team Niagara Action Plan 2015-2018 will be updated in 2019.

The primary role of NED is to support the growth of Niagara's economy and ensure competitiveness by:

Figure 1: Niagara Economic Development Mandate



One of NED's on-going initiatives has been working towards a trade corridor designation for the region. One of the early results of this work as Niagara region was the first municipality in Ontario to have received the Federal Foreign Trade Zone point designation in 2016. Through a dedicated co-ordinator position, the Niagara Foreign Trade Zone (NFTZ) offers businesses the opportunity to work with a team of public and private sector experts to access information, programs, and, incentives specifically developed to help companies initiate and improve their international trade efforts. By working with the

NFTZ, companies and suppliers that are involved in the production of products for final export to other countries can find and apply for tax, duty and tariff exemptions that can significantly improve their bottom line.

The Niagara Development Corridor Partnership Inc. (NDCPi) in Fort Erie provides office space and administrative support. Although, the day-to-day operations of the NFTZ have been subcontracted to the NDCPi, with a grant from Niagara Region, the coordinator is part of the NED team. NED provides oversight and strategic management through bimonthly update meetings and the investment attraction activities in the NFTZ Strategic Plan are integrated into the NED Trade and Investment Work Plan.

NED has historically worked in collaboration with stakeholders across Niagara region. This can be seen through the partnership between the Regional Innovation Centre, Innovate Niagara, and NED to support new and innovative tech and digital media companies and entrepreneurs to start and grow in Niagara. NED has also worked collaboratively with both Brock University and Niagara College, Niagara region's two post-secondary educational institutions, to ensure businesses have access to the research and training programs to support their growth and success.

Economic Development Strategy and Methodology

The economic development strategy is intended to inform and provide guidance to strategic decision making at Niagara Region. It has been developed in consultation with the Shape Niagara report which informs Regional Councillors in the development of their strategic action plan. It aligns with longer-term Regional strategies, for example, the Transportation Master Plan. Municipal economic development strategies have also been taken into consideration, recognizing that they have a unique perspective on the community for which they are developed. The Niagara Region Economic Development Strategy aims to support the local strategies wherever possible.

Although the Economic Development Strategy is a five-year strategy, designed to overlap terms of Regional Council, it provides an adequate timeframe to achieve the identified results. The development and adoption of a longer-term strategy will be explored during the five years, if it receives consensus from stakeholders, and will be developed and timed to start in 2024. The figure below shows the methodology for the development of the Economic Development Strategy.

Figure 2: Economic Development Strategy Methodology



The development of this economic development strategy builds on foundational work conducted by economic development consultants, the Global Investment Attraction Group, between May and October 2018. This initial work was carried out in partnership with Brock University and Niagara College. It included economic research and analysis, the development of a 'Visioning Discussion Paper', an analysis of other Niagara Local Area Municipal economic development strategies, and the results of extensive stakeholder involvement. Stakeholders were consulted through an online survey, individual interviews, and sector round tables. Additional stakeholder consultations were held during November 2018 so that ultimately, manufacturing, agribusiness, tourism, health services, construction, real estate, and technology sectors all participated and provided input. Individual interviews ensured that major stakeholders throughout the region also had an opportunity to provide their insights as well.

The draft strategic action plan captured the results of this extensive consultation process and was circulated back to stakeholders for comment before being finalized. Once received by the Planning and Economic Development Committee, and Regional Council, a business plan will be created to implement the strategy. It will provide further operational definition on performance measures and partners. The activities have been aligned with the functions of NED and assigned to individual team members to be accountable for achieving results, either through leadership or supporting partnership roles. These areas include Trade and Investment, Business Development and Expedited Services, Strategic Initiatives, and Strategic Marketing. In addition, there is a Manager, Research and Analysis whose work supports all of our projects and an EDO who provides support to the tourism and agriculture sector as well as being a resource to the local area municipalities

Vision for the Future

Implementation of the Economic Development Strategy over the next five years will help to establish the environment and infrastructure to ensure a strong economic future for the region. It is important that an economic development strategy takes into account the technological developments and global trends will have an influence on Niagara region. It is not possible to accurately predict their effect, but it is important to be aware of them as we move through the implementation of the Economic Development Strategy and particularly when considering a longer-term plan in 2024.

Both the employment and population of Niagara are forecasted to grow between 2017 and 2041. The St. Catharines-Niagara Census Metropolitan Area is expected to add an estimated 80,000 new jobs and 168,000 new residents over the next 20 years. It should be expected that the increasing housing pressures in the Greater Toronto Area and the expansion of inter-regional public transit will make the Niagara region a preferred destination for people looking for more affordable housing options and a different quality of life. It will therefore be critical for Niagara's economic prosperity to ensure that a healthy economic base will continue to exist to provide residents with local employment opportunities.

All around us, technological change is occurring at dramatically accelerating rates that have commonly become exponential rather than linear. Change does not just involve the application of technology but is driven as well by new business models and influenced by global mega trends.¹ What is being referred to

¹ A Vision of Niagara Region in 2041 Discussion Paper by the Global Investment Attraction Group.

as the Fourth Industrial Revolution, or Industry 4.0, is essentially a digital revolution, and a revolution of technological breakthroughs, such as Robotic Process Automation, Artificial Intelligence, Blockchain, and the Internet of Things to name a few. The global economy is already undergoing massive changes as a result of Industry 4.0 and is transforming jobs, skills, and overhauling industries. Niagara's economic prosperity will be dependent on the ability of local businesses and municipalities to adopt and adapt to these technologies.

Niagara historically consisted of manufacturing branch plant facilities, employing large numbers of people and outsourcing parts and components extensively to local firms. Today, and in the future, these small and medium sized enterprises (SMEs) which have ridden through the challenges have adapted and innovated in order to expand and diversify their client base. Today, they see themselves in the aggregate as constituting an innovative Niagara-based "machine shop" able to be part of supply chains for leading-edge manufacturers located well beyond the region. As the nature of work changes, and the economy grows these innovative and adaptable businesses will need to continue to adapt to the changing economy.

In order to remain competitive, companies, regardless of sector, need to embrace technological change and the changing nature of work. The post-secondary institutions have a role in aligning their programs with the skills necessary for the changing nature of work. Economic development can facilitate stronger relationships between education/workforce development and industry. Economic development also has a role in bringing the innovation and technology eco-system together to encourage the growth of the technology sector in the region and the adoption of new technologies in industry. One of the world's leaders in the development of Industry 4.0 systems is General Electric who have established a state-of-the-art facility in Welland in 2018. For example, the new Welland facility (now owned by Advent International) is based on a sophisticated GE Industry 4.0 system, GE "Brilliant Factory," which is among those which GE not only adopts for its own facilities but actively seeks to sell to third parties.

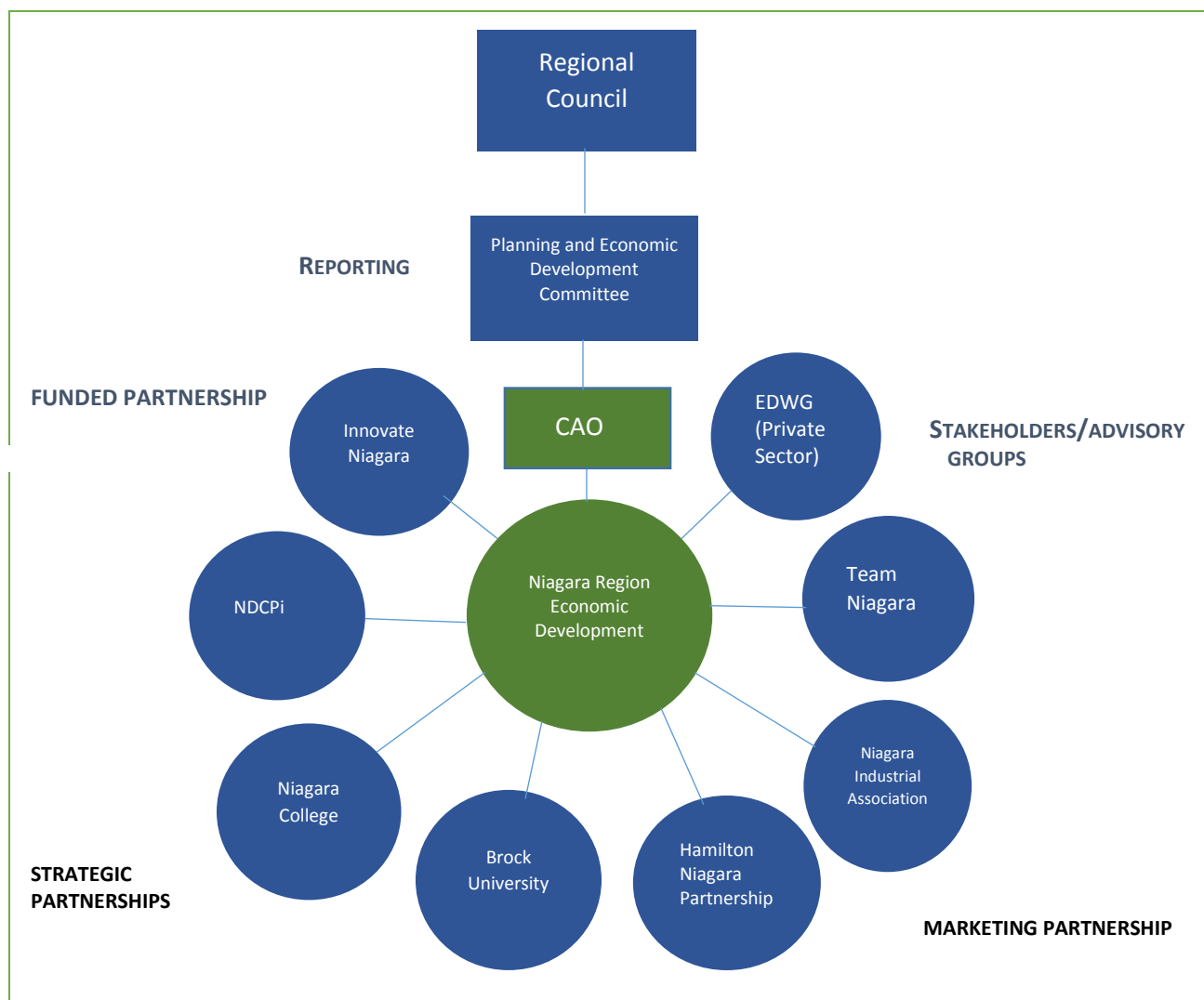
It is also important to recognize that the region of Niagara is part of a much larger mega-economic area, commonly referred to as the Great Lakes Region. This region includes eight U.S. states (Minnesota, Wisconsin, Illinois, Indiana, Michigan, New York, Ohio and Pennsylvania) and two Canadian provinces (Ontario and Quebec). If the region were a country, it would have the third largest economy in the world. The region is highly integrated in terms of trade, accounting for more than 50% of all U.S./Canada binational trade and 30% of all U.S./Canada economic activity. Niagara region's unique geographic position provides a unique economic advantage as a vital cross-road in this larger regional economy.

Niagara region is well positioned to be the first municipality to apply successfully for the federal Economic Trade Corridor designation, due to the vital role it plays in facilitating trade crossing the border between Canada and the United States and thereby supporting the economies of both Canada and Ontario. Recognizing that important role, it was the first municipality in Ontario to receive the Foreign Trade Zone Point designation in 2016. The Economic Trade Corridor designation would stimulate investment in infrastructure. This would ultimately increase the region's role in support of the federal and provincial economies by establishing Niagara as a focal point for trade related activities. Demographic shifts, increasing population of Ontario, focused around urban areas, e.g. Toronto now experiencing growth coming around the Golden Horseshoe.

Economic Development Eco-System in Niagara region

NED team members operate within an eco-system of stakeholders in the Niagara region and beyond. Figure 3 illustrates, at a high level, some of those relationships, describing them as either, funded strategic, advisory, or marketing partnerships.

Figure 3: Economic Development Stakeholder and Partner Network



These stakeholders include, but are not limited to, Team Niagara (which includes the six municipal economic development offices and the CAOs from municipalities without economic development offices), Niagara Development Corridor Partnership Inc. (membership includes economic development staff in Fort Erie, Lincoln, Niagara Falls, Port Colborne and St. Catharines), Brock University, Niagara College, Innovate Niagara, Chambers of Commerce, Niagara Industrial Association, and Niagara Workforce Planning Board. In addition, there are relationships with the Ontario Government, principally the Ministry of Economic Development, Job Creation and Trade, and the Ontario Ministry of Agriculture, Food, and Rural Affairs, as well as the Federal Government, principally the Trade Commissioner Service, both in Canada and overseas.

To achieve results in the activities described in the Strategic Action Plan, NED will work with all of our local, provincial, and federal partners on the implementation of the Plan. In many instances, NED will not be the lead on the project, but will play a supporting role in partnership with other stakeholders.

Niagara's Economy

The Niagara region has experienced unprecedented growth over the past four years and this growth is forecast to continue through to 2022. From 2011 to 2016, Niagara's population grew by 3.8%, which was slightly lower than Ontario's growth at 4.6% and Canada at 5.0%. From 2018 to 2026, Niagara's population is forecast to grow by 6.9%, compared to 7.1% of Ontario, and 7.5% for Canada. Niagara continues to show potential for continued economic growth on pace with Ontario and Canada.

As of 2017, nominal GDP was \$16.8 billion. The Conference Board of Canada predicts real GDP will increase by 1.4% in both 2018 and 2019, following a 1.6% increase in 2017. It is important to note that these figures are for the St. Catharines-Niagara CMA and do not include Grimsby and West Lincoln. Therefore, this growth would be stronger when you consider the development coming from Hamilton and the GTA.

Niagara has recently experienced a record level of industrial and commercial investment. For instance, from 2015 to 2017 investment in industrial building construction grew by 362.6% while investment in commercial building construction grew by 19.1%. Investment figures and building permits available for up to Q3 2018 indicate that investment activity may outpace 2017.

Niagara has had strong job growth over the last five years. From 2013 to 2018, Niagara had a 10.1% increase in the number of jobs, which is slightly higher than the percentage job increase in Ontario (9.4%) and higher than the percentage job increase in Canada (6.5%).

During this time period, the top 10 sectors by job growth included: health care and social assistance by 4,694 jobs; accommodation and food services by 4,271 jobs; manufacturing by 1,766 jobs; education by 1,662 jobs; retail trade by 1,646 jobs; construction by 1,313 jobs; arts, entertainment and recreation by 1,292 jobs; professional, scientific and technical services by 1,110 jobs; public administration by 878 jobs; and, administrative support, waste management and remediation by 686 jobs.

Manufacturing

Manufacturing has always been a significant sector of Niagara's economy and is a focus of activities in the Strategic Action Plan. Historically, Niagara was a powerhouse employing tens of thousands of people in automotive, paper, and steel manufacturing. Although the sector has gone through a decline that began in the 1980s, since 2012 it has seen positive growth in employment. While manufacturing in Niagara once consisted of many branch plant facilities employing large numbers of people in each facility, the sector is now predominantly comprised of small and medium-sized enterprises (SMEs). Today the sector is continuing to diversify and grow and remains a major contributor to the region's economy. Manufacturing accounts for 2.8% of the total number of businesses in Niagara but provides 8.5% of total jobs.

Manufacturing is also a major contributor to regional gross domestic product (GDP). In 2017, nominal GDP for the St. Catharines-Niagara census metropolitan area (CMA) was \$16.8 billion and manufacturing accounted for an estimated \$2.4 billion or 14% of that total. In recent years, the manufacturing sector in

Niagara has experienced substantial growth in jobs, exports and new investment. Manufacturing GDP is forecast to grow at 1.3% (CAGR) annually from 2019 to 2022 keeping pace with total GDP growth at 1.5% for the St. Catharines-Niagara CMA.

As noted, there have been significant job increases in the manufacturing sector in Niagara over the last five years with an increase of 1,766 jobs or 10.4%, which is higher than the job growth in this sector in Ontario (2.5%) and Canada (1.5%). Growth has occurred in the subsectors of beverage manufacturing, motor vehicle manufacturing, and architectural and structural metals manufacturing. In 2018, beverage manufacturing accounted for 2,519 jobs in Niagara, which was a 56.6% growth from 2013 (compared to a 20.5% growth in Ontario). In 2018, the motor vehicle subsector accounted for 2,048 jobs in Niagara, which was an increase of 439 jobs or 27.3% from 2017. In 2018, the architectural and structural metals manufacturing subsector had 1,269 jobs and an increase of 385 jobs (43.6%) over 2013, compared to a 3% job growth in Ontario.

Tourism

The Niagara region has long been amongst the prominent tourism regions in Canada given world-renowned Niagara Falls and the large variety of attractions in the area including natural heritage, cultural heritage and modern entertainment. Many of Niagara's other economic sectors are intertwined into the tourism sector as well with the increasing interest in touring wineries and breweries, culinary offerings, produce, and specialty food offerings. Given these characteristics, tourism has historically been a major economic contributor in Niagara, generating a significant amount of business activity, jobs, and other economic benefits.

As a result tourism is actually comprised of a large number of industries that provide a variety of products and services to tourists, which is what makes it so important to the regional economy. Therefore, unlike manufacturing and agriculture that have dedicated North American Industry Classification System (NAICS) codes to capture data, the codes that relate to tourism span and number of industries.

In 2018, tourism in the Niagara region supported 39,995 jobs and 2,824 businesses across a variety of industries including transportation services; travel arrangement; accommodation and hospitality; food service; beverage manufacturing; and, arts, entertainment and recreation. In 2017, the Niagara region was a destination for almost 13 million visitors with total tourism expenditures of \$2.4 billion.

Tourism is also comprised of many businesses. In 2018, the tourism sector in Niagara consisted of 2,824 total businesses. 1,546 of these businesses had employees on payroll and 1,278 did not have employees. Of the businesses with employees, 67.8% had fewer than 20 employees, 28.8% had 20 to 99 employees, and 3.4% of businesses had more than 100 employees. This indicates that the sector is largely comprised of small businesses.

Of the nearly 13 million visitors to Niagara in 2017, total tourism-expenditures reached \$2.4 billion. 65% of total expenditures were from Canadian visitors, 27.3% were from the United States visitors, and 7.7% were from overseas visitors.

Agribusiness

Agriculture and agriculture-related businesses are a fundamental pillar of the Niagara economy, having the climate, land base, experienced operators, research capability, and skills that make it a leading region in the production of agribusiness products. This has made Niagara a critical part of the Greater Golden Horseshoe's agriculture sector contributing \$838.1 million in gross farm receipts. This represented 43% of the total for the Greater Golden Horseshoe. The agribusiness sector has strengths in tender fruit, floriculture, the wine industry, and the greenhouse industry. In recent years, the sector has diversified to produce higher-value agriculture outputs.

In 2016, gross farm receipts totaled \$838.1 million, which was \$112.3 million over \$725.8 million in 2011. In 2016, total GDP impact for agriculture was \$1.41 billion, which was a \$19 million increase over 2011. In 2016, Niagara had 1,827 farms. This was a decrease of 187 farms or 9.3% in total farms since 2011. In 2016, Niagara also had 218,251 acres of farmland, which was a decrease of 4,660 acres over 222,911 acres in 2011.

Niagara experienced an overall decrease in the total number of farms and a decrease in total farm area, but saw substantial gains in gross farm receipts and GDP impact. This is indicative of the fact that companies and farms are consolidating, becoming more efficient, finding new market opportunities, and/or producing higher-value crops than previous years. The legalization of cannabis, the development of agricultural and processing businesses, as well as value-added services to agriculture provides an excellent opportunity for Niagara to leverage its traditional agricultural and agribusiness sectors. The opportunity to locate new value-add manufacturing in the processing of cannabis into higher-value products is just one area for new economic growth.

It is also important to note that three sub sectors account for 84.2% of total gross farm receipts in the agriculture sector. These include the greenhouse industry with 49.1% of total gross farm receipts, poultry with 18.4% of total gross farm receipts, and, tender fruit with 16.7% of total gross farm receipts.

Sources: The Conference Board of Canada, Metropolitan Outlook, 2018; Statistics Canada, Table 34-10-0175-01, 2018; Statistics Canada, 2016 Census Profile; Statistics Canada, Canadian Business Counts, June 2018; Statistics Canada, TSRC and ITS, 2017; Statistics Canada, Census of Agriculture, 2011 and 2016; Emsi 2018.1

Strategic Assessment

Information gained throughout the strategy development process ranging from data analysis, background reviews, existing studies, and from the extensive stakeholder consultations process (online survey, one-on-one interviews, sector round tables) have been put together to help to prioritize economic development initiatives. The Aggregated Stakeholder Consultations Report is included as an appendix at the end of the report.

This SWOT analysis is characterised as follows:

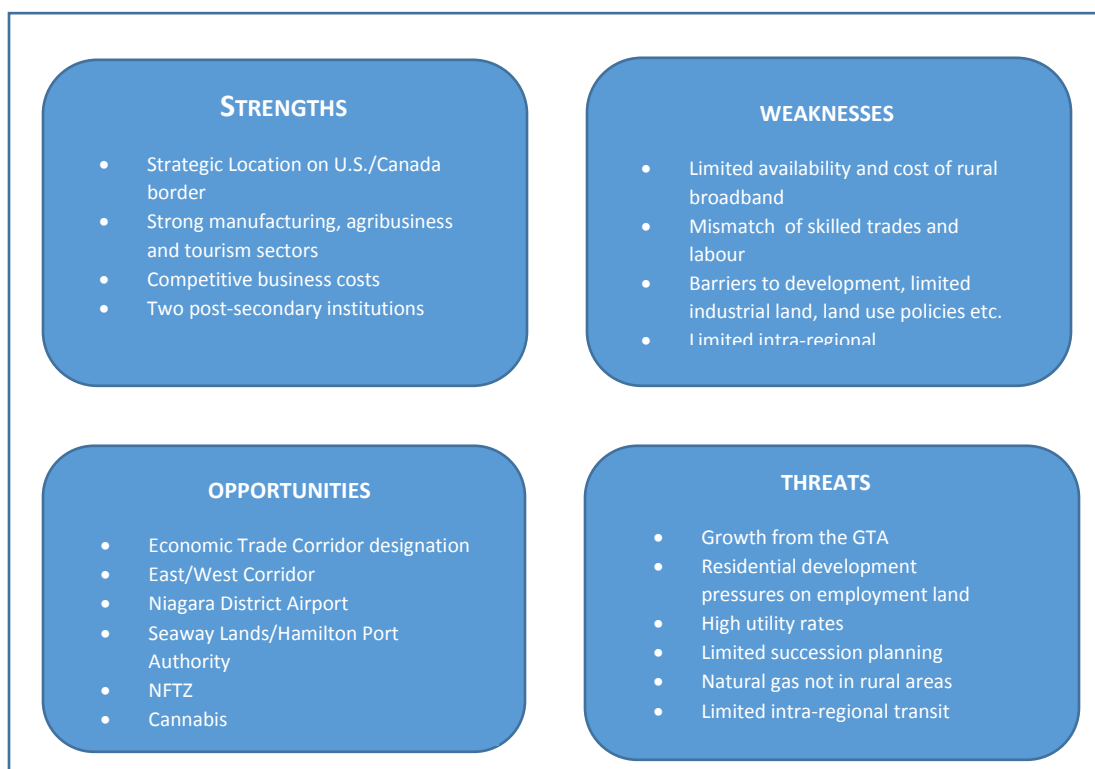
STRENGTHS (Positive, Internal): Competitive advantages or assets in Niagara Region

WEAKNESSES (Negative, Internal): Local issues or characteristics that limit current or future growth for Niagara.

OPPORTUNITIES (Positive, Internal and External): Areas where Niagara can encourage economic growth.

THREATS (Negative, Internal and External): Trends or deficiencies that threaten the Niagara's economic growth.

Figure 4 SWOT Analysis



Niagara Economic Strategic Action Plan

Niagara Economic Development (NED), in collaboration with local businesses, associations, community stakeholders, and post-secondary education institutions, has developed a five-year strategic action plan. The activities included below are based on strengths of the Niagara economy and addresses identified weaknesses, or gaps, that affect the region's competitiveness and ability to retain and attract investment. Most importantly, based on the extensive stakeholder engagement that was conducted throughout 2018 the result is that many of the activities reflect the input provided by the participants of the consultations. The success of Niagara Region Economic Development's Action Plan will only be achieved through meaningful partnerships and collaboration with our partners across Niagara.

Throughout the consultation process it became clear that no single department, government, association, institution, or business is capable of supporting the continued growth and success of the Niagara economy alone. It is with this in mind that the proposed Niagara Economic Strategic Action Plan has identified leaders and partners that will be necessary to enact this plan and support the continued economic growth of Niagara. This five-year plan provides a high-level overview and has been divided into seven target areas/goals based on the findings from the Stakeholder Consultation Plan:

- Economic Development: Supporting Business Growth and Diversification across Niagara Region
- Employment Land Strategy: Identifying and Creating a Provincially Significant Employment Zone
- Marketing Niagara Region: Raising the Profile of Niagara as a Place to Live and Do Business
- Streamline Planning Processes: Expediting Approvals Process
- Increase Niagara's Competitiveness: Addressing Unnecessary Regulatory Burdens on Businesses
- Workforce: Meeting Current and Future Talent, Professional, Skilled Trades and Labour Needs
- Advocacy: Improving Transportation Infrastructure Ensuring Niagara Remains Competitive in Global Economy

Each of the target areas will be operationalized through identified activities and associated timelines, activity leads, partners, and performance measures. Within the next five years NED will undertake a long-term strategy review with a 20-year time horizon. A successful Niagara Economic Strategic Action Plan will include increased job creation and retention; accelerated economic and greater competitiveness and prominence of the region through the action taken in associated with each of the seven target areas/goals.

The following Action Plan should be read using the following:

- **Time-Line:** The expected time horizon for the successful completion of the described economic development activity:
 - On-going: No assigned timeline
 - Short: One to two years (2019-2020)
 - Medium: Three to four years (2021-2022)
 - Long: Five plus years (2023+)
- **Activity:** The described activity to support regional economic development
- **Lead:** Identified organization(s), departments, or community stakeholder who will be responsible for the success of the Activity
- **Partners:** Identified organization(s), departments, or community stakeholder who will be necessary partners for the success of the Activity
- **Performance Measure:** How the success of the Activity will be measured

Economic Development: Supporting Business Growth and Diversification across Niagara Region

The Niagara region is home to a diverse economy that includes strong agri-business, manufacturing, and tourism sectors. The economic success of the region will be founded on supporting local businesses to grow and expand as well as attracting new businesses to the region. Niagara Region Economic Development is orientated towards facilitating inward investment, but has an important and critical role to support local economic development offices to facilitate growth within existing businesses.

GOAL: INCREASED BUSINESS DEVELOPMENT SUPPORT				
Time-Line	Activity	Lead	Partners	Performance Measure
On-Going	Niagara Region Economic Development will support local municipalities in their economic development functions. This includes the services of the Niagara Foreign Trade Zone Coordinator to engage companies in federal programs to encourage export activity; economic and business research and analysis; expedited development services; and, support to communities without economic development officers on regionally significant projects.	Team Niagara	Niagara Region Economic Development: Director, Economic Development; Economic Development Officer; Manager, Economic Research and Analysis; Manager, Business Development and Expedited Services; NFTZ Coordinator	Increased collaborative economic development activities between Niagara Region Economic Development and local economic development offices are achieved.
On-Going	Promote the Niagara Foreign Trade Zone programs through marketing activities and support the export diversification of existing Niagara manufacturing companies into new foreign markets.	Niagara Development Corridor Partnership Inc. (NDCPi) Niagara Region Economic Development: Niagara Foreign Trade Zone (NFTZ) Coordinator; Manager, Strategic Marketing	Team Niagara Canadian Border Services Agency NFTZ Task Force Local chambers of commerce Niagara Industrial Association Ministry of Economic Development, Job Creation and Trade	Performance measures are outlined in the Niagara Foreign Trade Zone Strategy.

Niagara Economic Development Strategy: 2019-2024

Short	Engage the private sector as advisors to Niagara Region Economic Development through the Economic Development Working Group. Representation will include all sectors and major stakeholders.	Team Niagara Niagara Region Economic Development: Director, Economic Development	Niagara Industrial Association Private sector businesses Brock University Niagara College	Regular Economic Development Working Group meetings to provide input into Niagara Region Economic Development initiatives.
Short	Participate in a review of Niagara Region development charges, waivers, and other incentive programs.	Niagara Region Planning and Development Niagara ERMS	Niagara Region Economic Development: Manager, Business Development and Expedited Services	Ensure Niagara Region has competitive development charges and incentives available for investors.
Medium	Conduct research into the impact of development charges on economic development with a focus on investment attraction, business expansion, and sector development.	Team Niagara Local municipal finance departments Niagara Region Economic Development: Manager, Economic Research and Analysis	Tourism stakeholders Niagara Industrial Association Ministry of Economic Development, Job Creation and Trade Niagara Region ERMS Niagara Region Planning and Development	Development Charge Impact Report is completed and circulated.
Medium	Define the role of Niagara Region Economic Development in tourism including research into new opportunities e.g. sports tourism.	Niagara Region Economic Development: Director, Economic Development; Economic Development Officer	Team Niagara Tourism Sector Stakeholders	Tourism role defined and supported with appropriate resources.
Medium	Advance projects of regional significance, including but not limited to opportunities in new agricultural and manufacturing industries, and supply chain development opportunities to support business growth and retention.	Team Niagara	Niagara Region Economic Development: Economic Development Officer Agricultural producers Food processors Niagara Industrial Association Brock University Niagara College Ministry of Economic Development, Job Creation and Trade Local chambers of commerce	Key projects are identified and necessary support provided.

			Agriculture federations Niagara Region Agriculture Policy and Action Committee	
Medium	Support and coordinate facilitated stakeholder events to provide succession planning solutions for Niagara-based companies. For example, this could include identifying opportunities for the purchase of existing operations as a succession strategy.	Team Niagara Niagara Industrial Association Local chambers of commerce Ministry of Economic Development, Job Creation and Trade Financial institutions with business advisory services	Niagara Region Economic Development: Manager, Business Development and Expedited Services	Succession planning strategies are promoted through stakeholders.
Long	Develop a joint aftercare program with local economic development offices to support new company investments in the region. This program will engage companies that have recently expanded into Niagara and their parent company to acknowledge their investment and the early identification of potential issues.	Team Niagara	Niagara Region Economic Development: Manager, Trade and Investment; Economic Development Officer; Manager, Business Development and Expedited Services; NFTZ Coordinator	Aftercare program will be in place and functioning.
Long	Consult with sector stakeholders to explore the need for a formalized collaborative group to support and strengthen the nascent information technology sector in Niagara.	Innovate Niagara Spark Niagara Accel North Niagara Region Economic Development: Manager, Strategic Initiatives	Team Niagara Innovation and information technology sector stakeholders Niagara College Private sector partners, if needed	Explore the need for additional support of the technology sector if required.

Employment Land Strategy: Identifying a Creating Regionally Significant Employment Lands

Existing employment lands in Niagara are located throughout the region. The development of these lands has historically been aligned with the economic development initiatives of the individual municipalities with little regional involvement. This has resulted in a number of smaller employment areas that have limited the ability to create a truly regional employment area. Niagara Region Planning and Development, with support from Niagara Region Economic Development, is reviewing the opportunity to create a large provincially significant regional employment zone. This will allow Niagara region to be more competitive in its investment attraction initiatives, both foreign and domestic. By providing new opportunities for Niagara to grow the manufacturing sector and attract new agribusinesses investments where the ability to co-locate with producers is needed.

GOAL: SUPPORT THE AVAILABILITY OF SHOVEL READY INDUSTRIAL LAND IN NIAGARA FOR DEVELOPMENT				
Time-line	Activity	Lead	Partners	Performance Measure
Long	Work with the St. Lawrence Seaway to identify and promote development opportunities for Transport Canada owned lands to attract investment in manufacturing, shipping, and distribution.	Niagara Region Economic Development: Manager, Business Development and Expedited Services	Transport Canada St. Lawrence Seaway Management Company Hamilton Port Authority Niagara Region Planning and Development Niagara Region Public Works Team Niagara NFTZ Coordinator	Identify lands for development and estimate development costs.
Long	Niagara Economic Development will support the Regional Employment Lands Study and act on the recommendations that involve regional economic development. This will determine the feasibility of creating a Regionally owned provincially significant employment zone within the Niagara Economic Zone & Centre.	Niagara Region Planning and Development	Niagara Region Economic Development: Managers, Strategic Initiatives and Business Development and Expedited Services Niagara Region Public Works Local Area Planning Departments Team Niagara	Employment Lands Study will be completed and finalized.
Long	Provide input into the Niagara Region's Municipal Comprehensive Review	Niagara Region Planning and Development	Niagara Region Economic Development: Director, Economic	Collaboration with Niagara Region Planning

	(Official Plan) to ensure the economic development perspective is considered.		Development; Manager, Business Development and Expedited Services; Economic Development Officer Team Niagara Local Planning Departments	and Development and input into the Official Plan provided.
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Marketing Niagara Region: Raising the Profile of Niagara as a Place to Live and Do Business

The success of the Niagara region, in terms of economic and population growth, is dependent on successfully marketing the region to target audiences. Niagara Region Economic Development, through collaboration and partnership with local stakeholders, will manage two distinct marketing initiatives. One will be targeted at foreign and domestic companies that are looking to expand their operations with the goal of raising the profile of the Niagara region as a competitive place to do business. The second will be predicated on the successful attraction of new residents to the region to increase the population for the long-term sustainable growth of the Niagara region. In collaboration with other community stakeholders Niagara Region Economic Development will work towards attracting new and recent immigrants to Ontario as well as families that are looking for an alternative to the lifestyle available to them in the Greater Toronto Area.

GOAL: MARKET NIAGARA TO ATTRACT NEW BUSINESS INVESTMENT AND RESIDENTS				
Time-Line	Activity	Lead	Partner(s)	Performance Measures
On-Going	Identify target markets for investment attraction activities in designated sectors. This includes leading investment missions, qualified lead generation initiatives, and participating in trade shows and events.	Niagara Region Economic Development: Director, Economic Development; Manager, Trade and Investment Team Niagara	Niagara Industrial Association Ministry of Economic Development, Job Creation and Trade Niagara Development Corridor Partnership	KPIs in Manager, Trade and Investment work plan achieved including qualified lead generation, trade missions, and trade shows.
On-Going	Conduct targeted marketing activities to promote Niagara as a location for business investment.	Niagara Region Economic Development: Managers, Strategic Marketing and Trade and Investment	Team Niagara	Marketing plan developed with the associated KPIs achieved.
Short	Coordinate with stakeholders to develop a communications and public relations campaign to promote Niagara's business and investment successes.	Team Niagara Niagara Region Economic Development: Manager, Strategic Marketing	Niagara Region Strategic Communications and Public Affairs Niagara Industrial Association Ministry of Economic Development, Job Creation and Trade Economic Development Working Group Niagara College Local chambers of commerce	Communications Plan developed and implemented.

Niagara Economic Development Strategy: 2019-2024

Short	Develop and implement a Niagara Ambassadors program with local business leaders from different sectors to promote the region and meet potential investors in Niagara.	Team Niagara Niagara Region Economic Development: Manager of Strategic Marketing, Manager, Trade and Investment; NFTZ Coordinator	Economic Development Working Group Local chambers of commerce Niagara Industrial Association Ministry of Economic Development, Job Creation and Trade Niagara-based businesses	Ambassadors identified and engaged in both inbound and outbound investment attraction activities.
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Streamline Planning Processes: Expediting Approvals Process

Under the direction of Niagara Regional Council, Niagara Region has been proactive in supporting business growth and economic prosperity. Over the next five years, Niagara Region Economic Development will continue to identify and reduce barriers to new private sector investment. This will be accomplished by ensuring that the Niagara Region and local area municipalities have competitive and complementary permit approval processes. Niagara Region Economic Development with local area municipalities will proactively engage the private sector to have a customer-first approach to business development and investment in Niagara.

GOAL: ENSURE THAT NIAGARA REMAINS PRO-DEVELOPMENT AND BECOMES A DESTINATION OF CHOICE FOR FUTURE INVESTMENT				
Time-Line	Activity	Lead	Partners	Performance Measure
On-Going	Engage and work with Regional and local area planning staff on industrial and commercial projects. This could include identifying opportunities for closer collaboration with local municipal partners to ensure timely approval processes.	Team Niagara Niagara Region Planning and Development	Local planning and building departments Niagara Region Economic Development: Manager, Business Development and Expedited Services	Increased investor awareness regarding permit and development timelines.
On-Going	Host a facilitated workshop with businesses and stakeholders to identify and address barriers to industrial and commercial development.	Team Niagara Niagara Region Economic Development: Manager, Business Development and Expedited Services	Niagara Region planning and development Local planning and building departments Commercial and industrial realtors Industrial, commercial, and institutional construction companies	Meeting scheduled with development stakeholders to ensure open communication. Barriers and challenges addressed on an on-going basis.

Increasing Niagara's Competitiveness: Addressing Unnecessary Regulatory Burdens on Businesses

Niagara Region Economic Development supports the Province's initiative to reduce the regulatory burden on businesses across Ontario. Development in Niagara is regulated by a number of different polices and bodies including, but not limited to, the Green Belt, Niagara Escarpment, Provincial Policy Statement (Provincially Significant Wetlands), Niagara Peninsula Conservation Authority, Niagara Escarpment Commission, and provincial ministries. This complex regulatory environment has the effect of increasing the difficulty of manufacturers and agribusinesses to do business and affecting Niagara's economic development competitiveness. Niagara Region Economic Development will work with local community stakeholders to address concerns regarding the existing regulatory environment and advocate for necessary changes that are aligned with Niagara Region's pro economic development agenda, while ensuring that Niagara's unique environmental landscapes are recognized economic assets and protected.

GOAL: REDUCE REGULATORY BURDEN ON BUSINESSES IN NIAGARA				
Time-Line	Activity	Lead	Partners	Performance Measures
On-Going	Support advocacy initiatives to the federal government for the Niagara region to receive the Economic Trade Corridor designation and infrastructure funding through the National Trade Corridors Fund.	The Offices of the Regional Chair and CAO Local Mayors	Niagara Region Economic Development: Manager Strategic Initiatives; NFTZ Coordinator Niagara Region Planning and Development Niagara Region Public Works Local Members of Parliament Local chambers of commerce	Application submitted and infrastructure funding awarded from the National Trade Corridors Fund and the Economic Trade Corridor designation.
Medium	Support the work of agricultural stakeholders to find solutions to on-going irrigation issues.	Agriculture sector stakeholders	Team Niagara Niagara Region Economic Development: Economic Development Officer Niagara Region Planning and Development APAC	Identify resources to implement the irrigation strategy.
Long	Support regional advocacy initiatives to advance land use planning policies that support agriculture uses and business	Niagara Region Planning and Development	Niagara Region Economic Development: Director of Economic Development Local area municipalities	Advocacy plan developed and implemented.

	development opportunities where appropriate.		Niagara Peninsula Conservation Authority Niagara Escarpment Commission Agriculture sector stakeholders	
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Workforce: Meeting Current and Future Talent, Professional, and Skill Trades and Labour Needs

Access to a talented, professional, skilled, and educated workforce is increasingly a top concern for businesses and essential to ensure the continued growth of the regional economy. The proximity of Niagara to significant national and global economic drivers makes the region both attractive to new investment as well and new opportunities build, attract, and retain a talented and skilled workforce within Niagara. Correspondingly, the existing job skills gap is not isolated to Niagara, but affecting communities across Canada. This challenge has been raised not only by local businesses looking to recruit new workers, but also companies looking to expand into Niagara. Finding a solution to this issue will require efforts and action from all levels of government, educational stakeholders, and employers themselves. Niagara Region Economic Development will work with local partners to create a solution that address the challenges directly related to Niagara's workforce. Additionally, developments in other jurisdictions have shown the importance of ensuring that the local workforce has the on-going training and professional development not only for today's jobs, but for the jobs of the future.

GOAL: WORKFORCE DEVELOPMENT TO ADDRESS SKILL GAPS THAT ARE AFFECTING TALENT RECRUITMENT				
Time-Line	Activity	Lead	Partner(s)	Performance Measure
Short	Niagara Region Economic Development to partner with the Local Immigration Partnership to promote Niagara as a destination for skilled immigrants.	Niagara Region Economic Development: Manager, Strategic Marketing	Local Immigration Partnership Niagara College Niagara Workforce Planning Board Niagara Folks Arts Festival Niagara Industrial Association Ministry of Economic Development, Job Creation and Trade	Marketing plan will be developed with associated KPIs achieved.
Medium	Develop an educational campaign aimed at parents and students to promote skilled trade occupations in collaboration with other stakeholders.	Niagara Workforce Planning Board Niagara Region Economic Development: Manager, Strategic Marketing	Niagara Industrial Association Ministry of Economic Development, Job Creation and Trade Niagara College Local boards of education Team Niagara Local chambers of commerce	Educational campaign developed and promoted.
Long	Facilitate the development of stakeholder partnerships to meet current and future talent, professional,	Niagara Workforce Planning Board	Niagara Industrial Association Ministry of Economic Development, Job Creation and Trade	Alignment of stakeholder strategies to develop

	skilled trades, and labour needs through collaboration with Brock University and Niagara College.	Niagara Region Economic Development: Manager, Strategic Initiatives	Brock University Niagara College Team Niagara Local Boards of Education Local Chambers of Commerce	a work-ready labour force.
Medium	Support the capacity for increased innovation, science, and technology transfer between post-secondary educational institutions and Niagara-based businesses to increase their competitiveness through adapting new technologies and professional development and training opportunities.	Brock University Niagara College Niagara Industrial Association Niagara Region Economic Development: Manager, Strategic Initiatives	Team Niagara Niagara Workforce Planning Board Local board of education Local chambers of commerce	Alignment of research and academic programming to support regional economic development.

Advocacy: Improving Transportation Infrastructure Ensuring Niagara Remains Competitive in Global Economy

The Niagara region is strategically located on one of the key transportation corridors into the eastern United States. This provides businesses the opportunity to move goods in and out of the region, which is fundamental to their success. To further leverage our geographic advantage it is critical that transportation infrastructure can support increased trade with the United States. This requires key investments, in partnership with the federal and provincial governments, in regional infrastructure to increase Niagara's competitiveness and attractiveness to new businesses.

GOAL: IMPROVE NIAGARA'S TRANSPORTATION AND INFRASTRUCTURE				
Time-Line	Activity	Lead	Partner(s)	Performance Measure
On-Going	Support advocacy efforts to the provincial government for funding of the East/West Corridor highway.	The Offices of the Regional Chair and CAO Niagara Region Public Works Niagara Economic Development: Manager, Strategic Initiatives	Niagara Region Planning and Development NFTZ Coordinator Local area municipalities City of Hamilton Regional MPs/MPPs	Solid business case established and presented to the provincial government.
Short	Support advocacy efforts for the development of a fully integrated intra-regional transit system with schedules that support employment.	Niagara Region Public Works	Niagara Region Planning and Development Niagara Region Economic Development: Director of Economic Development Local area municipalities Local chambers of commerce Niagara Industrial Association Ministry of Economic Development, Job Creation and Trade Brock University Niagara College Tourism stakeholders Niagara Workforce Planning Board	Regional transit system developed.

Medium	Ensure access to broadband is available to all areas in Niagara, both urban and rural.	SWIFT NRBN The Office of the Regional Chair and CAO Appointed Regional Councillor	Niagara Region Economic Development: Manager, Strategic Initiatives Niagara Region IT Local area municipalities Agriculture sector stakeholders	Progress in achieving regional broadband coverage for Niagara.
Medium	Support the creation of a business case for expanded services in Niagara with Metrolinx.	GO Implementation Team Metrolinx	Niagara Economic Development: Manager, Strategic Initiatives Tourism Stakeholders	Maintain on-going support.
Long	Support expanded economic opportunities at municipally owned airports.	Niagara Region Planning and Development Niagara Region Public Works: Director of Transportation Niagara Region Economic Development: Director; Economic Development Officer	Niagara District Airport Niagara Central Airport Local area municipalities Tourism stakeholders Team Niagara	Maintain on-going support to the Airport Strategic Plan.
Long	Research the feasibility for public-private partnerships to extend natural gas into rural areas of Niagara.	Niagara Region Economic Development: Director, Economic Development; Manager, Research and Analysis	Private-sector natural gas providers Team Niagara Local area municipalities Niagara Region Public Works Niagara Region Planning and Development Federations of Agriculture	Completed feasibility report.
Long	Support advocacy efforts to the provincial government for lower electricity costs to regain the manufacturing sector's competitiveness in southern Ontario.	The Office of the Regional Chair and CAO Niagara Region Economic Development: Director, Economic Development	Team Niagara Local offices of Niagara's Members of Provincial Parliament Local chambers of commerce Niagara Industrial Association Ministry of Economic Development, Job Creation and Trade Large scale users of electricity	Develop a business case research to support advocacy efforts.

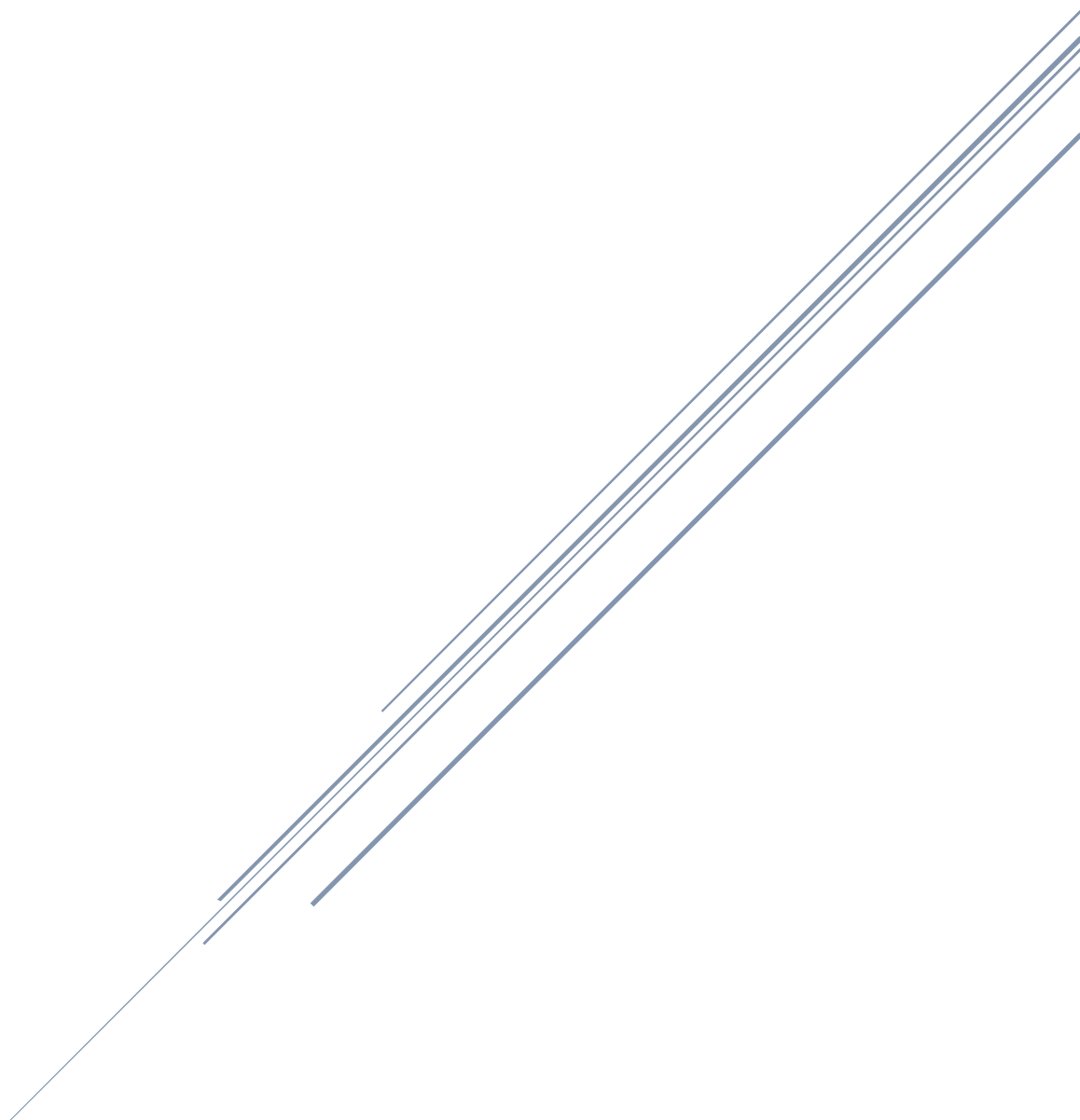
Long	Support the Region's advocacy efforts to develop a provincially funded campaign to promote skilled trades and labour and the available careers in manufacturing and other sectors to parents and students to ensure positions are filled.	The Office of the Regional Chair and CAO Niagara Economic Development: Director of Economic Development; Manager Strategic Initiatives	Team Niagara Niagara Industrial Association Ministry of Economic Development, Job Creation and Trade Niagara College Brock University Local chambers of commerce Niagara Workforce Planning Board	Provincial campaign in place with results.
Long	Collaborate with and support key stakeholders to determine the feasibility of a Niagara port facility.	Hamilton Port Authority St. Lawrence Seaway Management Company	Niagara Region Economic Development: Director, Economic Development; Manager, Strategic Initiatives; Manager, Trade & Investment Team Niagara Transport Canada	Feasibility study competed.

Appendices

Appendix 1 A Vision of Niagara Region in 2014 Discussion Paper, Global Investment Attraction Group

A Vision of Niagara Region in 2041

Discussion Paper



A Vision of Niagara Region in 2041

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A Niagara Region Crystal Ball

The External Influences and Trends

This discussion paper is intended to provoke discussion among Niagara’s economic development stakeholders about future external influences and trends and how these will impact and shape Niagara region’s economic evolution of over the coming two decades.

Living in a World of Accelerating Change: All around us, technological change is occurring at dramatically accelerating rates that have commonly become exponential rather than linear. Change does not just involve the application of technology but is driven as well by new business models and influenced by global mega-trends. The speed of the transformation has reached a point where, some say, it may defy the ability of humans to adapt quickly enough to keep up. Others wonder the extent to which governments have the capacity to take sufficiently timely policy and regulatory decisions.

The tempo of change is dramatically illustrated by how quickly technology that debuted a decade ago has transformed people’s lives and disrupted and radically altered the business landscape. Just over ten years ago, in 2007:

- The Apple iPhone was unveiled;
- Google launched Android;
- Twitter was spun off as a separate platform;
- Facebook had just been opened to people outside of colleges and high schools;
- Airbnb was conceived; and
- IBM began building a cognitive computer called Watson.¹

In June 2018, Apple, Alphabet, Microsoft, Amazon, and Facebook, ranked as the five most valuable companies by market capitalization – a very different line up than a decade previous.²

Niagara Region’s Neighbourhood – Benefiting from Being Part of Something Bigger

Niagara region’s future must be considered in the context of the opportunities and influences that its surrounding geography presents and how Niagara can capitalize on its location. In economic development, collaboration is growing and the “home” fields are becoming larger.

Niagara as Part of the Greater Golden Horseshoe Mega-Region: Niagara region benefits from being part of a major North American economic mega-region, the Greater Golden Horseshoe (GGH). Anchored by the city of Toronto, this population concentration of 9.4 million people³ extends into Niagara region. It ranks fifth among major US and Canadian metropolitan regions,⁴ contains over one-

¹ Thomas Friedman, “Thank You for Being Late: An Optimist’s Guide to Thriving in the Age of Accelerations,” November 2015.

² Corporate Information, Wright Investment Service (<https://www.corporateinformation.com/Top-100.aspx?topcase=b>), on June 20, 2018, largest companies by market cap.

³ Canadian Census 2016.

⁴ Based on a comparison with US “Combined Statistical Areas” in 2015 US Census. New York-Newark NY-NJ-CT-PA, Los Angeles-Long Beach CA, Chicago-Naperville IL-IN-WI, and Washington-Baltimore-Arlington DC-MD-VA-WV-PA are the four ahead, while San Jose-San Francisco-Oakland CA, Boston-Worcester-Providence MA-RI-NH-CT, Dallas-Fort Worth TX-OK and Philadelphia-Reading-Camden PA-NJ-DE-MD follow.

quarter of Canada's population, and attracts one in three new immigrants to Canada. As one of North America's fastest growing regions, the GGH population is forecast to reach 13.5 million by 2041.⁵

Such population growth presents Niagara with both challenges and opportunities. Niagara region's agricultural assets, coupled with its geographic proximity to the GGH's urban core, positions it ideally for Niagara producers to supply the GGH's daily food and beverage needs on a timely basis. For residents of the GGH, Niagara also offers an attractive change of pace, growing cultural and recreational options, and a quality of life, all readily accessible from the metropolitan core. Over time, facilitated by frequent two-way GO Transit rail and bus links, Niagara also can become an appealing location for enterprising lifestyle entrepreneurs who can choose their base of operations provided they have access to high-speed broadband networks. Over time, the area will be an increasingly attractive location for additional higher skill operational nodes for the financial and health care-related sectors, for example, to take advantage of talent graduating from post-secondary programs at Brock University and Niagara College. Among the faster-growing communities in the US and Canada in recent years have been university and college-centred cities on the perimeter of major metropolitan areas.

Niagara as a US-Canada Cross-Border Connector: Niagara peninsula is a vital bridge for the Canada-US relationship and the connector between the Greater Golden Horseshoe and Buffalo, Rochester, Syracuse and Albany in New York State. One hundred billion dollars in Canada-USA trade flows across Niagara's four border crossings every year.⁶ To facilitate international business, Niagara region was the first area in Ontario designated as a Foreign Trade Zone Point by the Federal government.

Though preferential NAFTA-style access to the US market remains an important consideration, Niagara region can position itself as a preferred North American site to enable firms to take fullest possible advantage of Canada's recent commitments to trade and economic pacts with the European Union and Pacific rim partners.

A Cross-Border Innovation and Prosperity Initiative, led by Brock University's Niagara Community Observatory and the University of Buffalo School of Architecture and Planning, continues to explore how assets on each side of the border could be meaningfully and strategically levered to strengthen innovation, prosperity and collective well-being. A binational Hamilton-Niagara-Buffalo health sciences corridor, facilitating access to two different health care systems and regulatory regimes, seeks to capitalize on Niagara's investment in state-of-the-art hospitals; the talent and research offered by Brock, Niagara College, and McMaster; and Buffalo's long-standing health sciences cluster and research and early-stage incubation facilities and funding resources.

In tourism, Niagara's unequalled international recognition is another common cross-border asset and opportunity, but one where a sense of competition may sometimes inhibit consideration of mutually-beneficial collaboration, including in the development and exploitation of new technologies applicable to the sector.

Growing Regional Collaboration in Economic Development: In economic development, there has been a marked increase in collaboration among likeminded but otherwise competing jurisdictions –

⁵ Ontario Ministry of Municipal Affairs (<http://www.mah.gov.on.ca/AssetFactory.aspx?did=10852>). Accessed on June 21, 2018.

⁶ Niagara Trade Zone, "Your Launch Pad to Export Success," April 2018 (https://niagaracanada.com/wp-content/uploads/sites/2/2018/05/NFTZ_Explanatory_Powerpoint_ENGLISH_FINAL_APRIL2018.pdf). Accessed on June 15, 2018.

something that has been labelled as “co-opetition” or “competi-mating.” The geographic footprint for collaborative ventures has been steadily expanding – as seen in the recent awards of Canadian government funding for five Superclusters. Niagara College is a member of the advanced manufacturing supercluster, Next Generation Manufacturing Canada. Amazon’s recent public Request for Proposals (RFP) for a second headquarters location stimulated many regionally based responses, including Niagara region’s collaboration with Western New York state partners.

Within Niagara region, there has been a continuing focus on building Team Niagara involving the 13 Niagara economic development programs. Spurred by the opportunities presented by the 2015 PanAm Games, Niagara region and Hamilton established Invest Hamilton Niagara. Niagara Economic Development is also a member of several collaborative Ontario-wide investment attraction arrangements that benefit from Federal and Ontario financial support. The Ontario Manufacturing Communities Alliance (OMCA), and the Ontario Food Cluster (OFC) are examples. This Niagara Region Economic Development Master Plan initiative involves Niagara College and Brock University in recognition of their critical economic development role.

Global Mega-Trends

Major global mega-trends are guide posts for those looking to the future. Lasting long-term impacts are inevitable. The main focus will often centre on how we manage the change. Frequently, these shifts require responses involving complex global systems. The status quo is not an option.

- 1. Rapid Technology Change – Disrupt or Be Disrupted:** What were linear rates of change have shifted to be exponential. All manner of businesses are being upended or radically changed by digital and technology-based disruptions. In the face of such change, governments have recognized that according a high policy priority to innovation is a national competitive imperative.

The convergence of digitally-based technologies has been a game changer that blurs traditional product sector boundaries, as technologies cut across and transform many products and services. Major thematic public policy initiatives – such as climate change – are also linked to commercial innovation across multiple sectors.

Just as multiple technologies converge to create ever more powerful and innovative impacts, an increasing number of novel business models will be built by companies that integrate various new platform technologies, often in highly customer-focused approaches that provide previously unavailable end-to-end experiences.⁷

Gartner, a US research and advisory firm, annually identifies a Hype Cycle of Emerging Technologies, those that show the most potential for delivering a competitive advantage over the next five to ten years. For 2017, the three dominant trends included “Artificial Intelligence (AI) Everywhere,” “Transparently Immersive Experiences,” and “Digital Platforms.” Prominent examples of AI enabled technologies are autonomous vehicles and machine learning. “Transparently Immersive Experiences” encompass augmented reality, virtual reality, 4-D printing,⁸ connected homes and

⁷ McKinsey and Company, “Competing in a World of Sectors without Borders,” July 2017 (<https://www.mckinsey.com/business-functions/mckinsey-analytics/our-insights/competing-in-a-world-of-sectors-without-borders>). Accessed on June 19, 2018.

⁸ 4-D Printing incorporates “shape memory” polymer fibers into composite materials so that a 3-D printer can be used to manufacture a 3-D object that, when later heated or cooled to a specific temperature, will transform into a different 3-D shape.

digital workspaces. According to Gartner, key platform enabling technologies are 5G, Blockchain, IoT Platforms, Quantum Computing, Neuromorphic Hardware, Digital Twin, Edge Computing, and Software-Defined Security.⁹

Digitization and Digital Technologies		
Artificial Intelligence (AI) Blockchain Manufacturing 4.0 Automotive Morphs to Mobility Precision Agriculture	The Internet of Things (IoT) Big Data Imaging Virtual & Augmented Reality Sensing Cybersecurity	3-D Printing Robotics High-Speed Broadband 5G Networks Quantum Computing
Advanced Technologies		
Gene Sequencing Nanotechnology	Biotechnology Neurotechnology	Geo-engineering Energy Storage

- 2. The Nature of Work:** Ontario has one of the world’s most educated populations. The Province leads all OECD jurisdictions in the proportion of the population that has achieved post-secondary completion. Niagara region exceeds the Ontario average for college completion, though it is below the provincial average in the numbers who have attained a university degree.

Technological change is however reverberating ominously in today’s workplace. Given the skills shifts associated with rapid technology advances, widespread concern has arisen over the potentially disruptive impact on the workforce, both in terms of threatened elimination of jobs and the rise of non-standard jobs (the gig economy).

Recent OECD studies on the potential impact of automation, which were released in March 2018, refined earlier predictions of the jobs that could be susceptible to automation. The adjusted estimates indicate that 14 percent of jobs in OECD countries are “highly automatable.” This is defined as having more than a 70 percent probability of automation. In addition, another 32 percent could face “significant change in how they are carried out.” The definition for “significant change” is having a risk of automation between 50 and 70 percent. For Canada, the estimates are close to these OECD averages. About 14 percent of jobs in Canada are “highly automatable,” while some 28 percent face a risk of “significant change,” that is a significant share of tasks, but not all, could be automated, thereby changing the skill requirements for these jobs.¹⁰

Retail is an example of an area of business facing major dislocation because the business model is shifting. The rapid growth in e-commerce is cutting into sales at traditional brick-and-mortar retail outlets, leading to downsizings, closures, and the repurposing shopping malls. The revamped new retail centre models adopt a mixed-use approach, incorporating residential, offices, shared work spaces, additional entertainment offerings, and other varied uses. Customer service call centres are another category under threat. Speech recognition technologies and automated intelligent enquiry

⁹ Gartner, “Top Trends in the Gartner Hype Cycle for Emerging Technologies, 2017,” August 15, 2017 (<https://www.gartner.com/smarterwithgartner/top-trends-in-the-gartner-hype-cycle-for-emerging-technologies-2017/>). Accessed on April 21, 2018.

¹⁰ Nedelkoska, Ljubica, and Glenda Quintini, Organization for Economic Cooperation and Development. “Automation, Skills Use and Training,” Working Papers #202, March 2018 (<https://www.oecd-ilibrary.org/docserver/2e2f4eea-en.pdf?expires=1531768312&id=id&accname=guest&checksum=5B9F4B3DEF03EF637E9811D651A78C8C>). Accessed on July 16, 2018.

response systems have advanced to the point where it is difficult to distinguish between human and automated responses.

Whatever the mathematics of these types of analyses may be, there is definitely a more pervasive sense of economic and job insecurity in the wake of the financial crisis and in the face of future market prospects. Since the 2008-2009 downturn, fewer Canadians self-identify as middle class (and more as lower class). A sense of middle class decline poses a threat to economic, societal and political stability.¹¹ The rapidity of workforce change and the associated risks to employment have invited wider international discussion of guaranteed annual income support programs.

What Education and Training are Required for the Jobs of the Future? As the nature of future jobs can be increasingly difficult to foresee, a number of studies stress the need to focus on skills which will facilitate the progression of workers into new occupations. These skills involve higher cognitive functions, such as creativity, critical thinking, people management, communication and teamwork. In addition, digital literacy and digital problem solving skills will be in demand across all occupations and industries.¹² The responses to these shifts obviously need to engage and benefit from the insights of the players at all levels in the education system.

With the rapid pace of change, lifelong learning becomes an imperative. Available data indicates, however, that spending on workplace training in Ontario declined 37 percent in constant dollars from 1993 to 2015.¹³ The adequacy of government funding levels that support retraining in Ontario appears in need of re-examination, as do the alignment of programs with the new realities.

Growing Income Disparities: A current preoccupation in advanced economies centres on the fact that middle class workforce compensation has stagnated and does not appear to be keeping pace with overall growth of the economies (and the wealth being accumulated by the world's richest people). This is among the prominent areas of dissatisfaction that has been propelling political change. A measure of this disparity is the link over time between per capita GDP and median income. In Ontario, a growing divergence between per capita GDP and median adjusted income started in the early 1990s and has generally widened since.¹⁴ With lower levels of unemployment in developed economies, some upward pressure on wages appears to be emerging recently. It is uncertain whether this is a trend that will sustain itself.

3. **Global Demographic Shifts:** The global population is forecast to rise to a 8.6 billion in 2030 and 9.8 billion in 2050, with Africa leading the way.¹⁵

¹¹ Organization for Economic Cooperation and Development, "The Squeezed Middle Class in OECD and Emerging Countries: Myth and Reality," Issues Paper, December 1, 2016 (<https://www.oecd.org/inclusive-growth/about/centre-for-opportunity-and-equality/Issues-note-Middle-Class-squeeze.pdf>). Accessed on May 2, 2018.

¹² Institute for Competitiveness & Prosperity, "The Labour Market Shift: Training a Highly Skilled and Resilient Workforce in Ontario," Working Paper 29, September 2017 (<https://www.competeprosper.ca/work/working-papers/labour-market-shift-training-highly-skilled-and-resilient-workforce-ontario>). Accessed on May 14, 2018.

¹³ Institute for Competitiveness & Prosperity, "The Labour Market Shift: Training a Highly Skilled and Resilient Workforce in Ontario," Working Paper 29, September 2017 (<https://www.competeprosper.ca/work/working-papers/labour-market-shift-training-highly-skilled-and-resilient-workforce-ontario>). Accessed on May 14, 2018.

¹⁴ Ontario Ministry of Finance, "Ontario's Long-Term Report on the Economy," 2017 (<https://www.fin.gov.on.ca/en/economy/ltr/>). Accessed on May 8, 2018.

¹⁵ United Nations, "World Population Prospects – Volume II: Demographic Profiles – 2017 Revision," (https://esa.un.org/unpd/wpp/Publications/Files/WPP2017_Volume-II-Demographic-Profiles.pdf). Accessed on June 16, 2018.

The aging of society affects multiple areas and has wide spread impact. According to the United Nations, population aging is poised to become one of the most significant social transformations of the 21st century, with implications for financial and labour markets and the demand for goods and services. In Canada in 2017, 23 percent of the population was sixty years and over. By 2050, the proportion will rise to 32.4 percent. This will be less than Europe (34.2 percent) but higher than the US (27.9 percent).¹⁶ Though living longer and drawing a greater share of social services, more seniors will look to be engaged and want to contribute to society. Niagara region has an older population profile than Canada and Ontario,¹⁷ a situation that has invited Brock and Niagara College to focus on aging.

In the developing and emerging economies, a global success story has been the marked – though still incomplete – progress on reducing global poverty. Nearly 1.1 billion people moved out of extreme poverty (less than \$US 1.90 per day) between 1990 and 2013, even as the world’s population grew by 1.9 billion. The 767 million still in poverty in 2013 represent an even bigger challenge.

One of the most economically relevant trends has been the growth of the global middle class, especially in Asia. Standing at 3.2 billion people in 2016, the middle class is expected to become a majority of the global population for the first time ever around 2020. Slower growth will occur in developed countries (one-half to one percent annually). Higher rates of 6 percent or more will be the norm for emerging countries. As a result, eight out of nine people in the million members of middle class who will be added globally between 2016 and 2022 will be Asian. Households entering the middle class will seek to purchase consumer durables, as well as services including tourism, entertainment, health, education and transport.¹⁸ The economic potential is dramatically illustrated by the growth in travel from Asian and Latin American countries to Ontario in 2017. Arrivals from China were up 7 percent over 2016, from South Korea by 25 percent, India 32 percent, Mexico 64 percent, and Brazil 24 percent.

Of concern in terms of global instability is the continuing progression of the world-wide refugee crisis and the humanitarian and political challenges that accompany it. In 2017 for the fifth straight year, there were record number of displaced people – 68.5 million in total – in places such as the Democratic Republic of the Congo, South Sudan, the mid-east and north Africa, and Myanmar.

Without immigration, Ontario’s talent pool will no longer grow. The entry of Canadian-born talent into the workforce is now plateauing, adding to the importance of immigration to grow employable talent. The diversity that results is viewed as a competitive advantage.

¹⁶ United Nations, “World Population Aging,” 2015 (http://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2015_Report.pdf). Accessed on June 20, 2018.

¹⁷ In 2016, Niagara region’s median age was 45.7 years versus 41.3 years in Ontario and 41.2 years in Canada. In Niagara region, 21.4% of the population was 65 years and over compared to 16.7% in Ontario and 16.9% in Canada.

¹⁸ Kharas, Homi, Brookings Institute, “The Unprecedented Expansion of the Global Middle Class: An Update,” Global Economy & Development Working Paper 100, February 2017 (https://www.brookings.edu/wp-content/uploads/2017/02/global_20170228_global-middle-class.pdf). Accessed on June 19, 2018.

Ontario Population Growth: The Ontario government's projection for provincial population growth foresees slowing from current average annual increases of 1.3 percent to 0.8 percent by 2040. A notable shift will occur in age distribution, with the cohort from 15 to 64 years dropping from nearly 68 percent to just under 60 percent, while the proportion of those 65 years and over swells from 16 to 25 percent (Exhibit 1).

In a continuation of the longer-term trend to urbanization, the rates of population growth will be greatest in cities, with the Greater Toronto Area (GTA) having the highest in Ontario (42 percent), followed by the remainder of the Golden Horseshoe just beyond the GTA (24 percent).

Exhibit 1 Demographic Projections for Ontario to 2040 Ontario Ministry of Finance		
DEMOGRAPHICS	2016	2040
Ontario's Population	13,983,000	17,802,000
Average Annual Population Growth	1.3%	0.8%
Age Distribution (Share)		
0-14 Years	15.9%	15.0%
15-64 Years	67.8%	59.8%
65+ Years	16.4%	25.2%
Ancillary Observations: <ul style="list-style-type: none"> • More people now turn 65 than young people turn 15. Therefore, future growth of people in the working age group (15-65 years) will come exclusively from net migration to Ontario (domestic and international). • In 2016, 110,011 international immigrants came to Ontario, of which 41.0% were economic immigrants, the lowest proportion among provinces and territories (Immigration, Refugees and Citizenship Canada). 		
Source: Ontario's Long-Term Report on the Economy, 2017, Ontario Ministry of Finance		

4. **Globalization:** A wave of nativism, nationalism and protectionism presents important challenges to aspects of globalization. Nonetheless, even if national borders regain greater importance as a result of more inward-looking economic and immigration policies, the hyper-connectivity that facilitates international exchanges has been embedded by digital technologies, while global supply chains have become ubiquitous. The service and intellectual property quotient in international commerce (rather than just goods) is also becoming more dominant and is less susceptible to border measures, except for the movement of the people who possess or deliver the knowledge and the skills. Within Canada, the provinces are closer to eliminating long-standing internal trade barriers. As a wine, cider, beer and spirits producer, Niagara will benefit if collaborative national arrangements can be forged.
5. **Climate Change and Energy:** Though controversial and influenced by political outcomes, the direction of government and corporate climate change and environmental policies is moving inevitably – even if unevenly – toward greater sustainability, alternative energy sources, CO₂ and pollution reduction, zero emission outcomes, water quality initiatives, and energy efficient buildings. The competitiveness of alternative energy sources will be greatly heightened when lower-cost high-capacity energy storage technology becomes available.

Environmental risks have gained prominence in recent years, and are identified in the World Economic Forum's 2018 "Global Risks Report"¹⁹ as an area of special concern for the future. Extreme weather events, natural disasters and the failure of climate-change mitigation and adaption rank as the top three global environmental risks in terms of impact. The likelihood of biodiversity

¹⁹ World Economic Forum, "The Global Risks Report 2018 – 13th Edition," January 17, 2018 (<https://www.weforum.org/reports/the-global-risks-report-2018>). Accessed on June 4, 2018.

loss and ecosystem collapse and man-made environmental disasters also ranked highly, in the World Economic Forum's estimation.

Fresh water remains a limited and therefore especially valued resource. As climate change leads to higher temperatures in water challenged areas and as demand grows, Niagara is fortunate to be in a temperate climatic zone in the Great Lakes region. Assured access to fresh water represents a vital competitive advantage.

Niagara's iconic Falls, abundant protected natural terrain, and conservation areas predispose many to hope that Niagara is a guardian of its natural heritage. An assumed reputation for sustainability can be part of the calculus in the choice of Niagara as a location to visit or live. Longstanding Ontario government planning policies that govern development, such as the Greenbelt, the Escarpment and conservation areas, have set a framework that supports retention of lands for agriculture and agriculture-related and recreational uses and favours environmentally sensitive development.

Climate change will impact Niagara's agriculture. Warmer temperatures will expand the range of varieties – for example, of grapes – that can be cultivated in Niagara, though in other parts of the world – such as California's wine regions – hotter weather may be damaging. As is pointed out however, by experts such as Dr. Tony Shaw, a Fellow at Brock's Cool Climate Oenology and Viticulture Institute, climate change also brings greater risks of volatility in the weather, involving greater extremes, including more serious frosts in the winter that can adversely affect vines.

If it chooses, Niagara region is afforded the opportunity to demonstrate, through concerted action, world-class leadership that can ensure and enhance a balanced reputation and commitment to sustainability in ways which will deliver longer-term benefit and return from its natural assets, while protecting them.

Advanced technologies can play a role. Areas for attention are Great Lakes water quality and transportation including for pleasure cruising; how to limit environmental impact in what is a heavily travelled Canada-US land transportation corridor; developing environmentally-sensitive active and shared transportation models for people; and greenhouse management efficiencies to sustain long-term competitiveness. Clean technology innovation presents abundant business opportunities for which there are supportive funding programs. Brock and Niagara College are active research partners in developing answers.

Economic Trends

Global economic growth has been on a lower trajectory since the Great Recession in 2008-2009, explained in part by weak productivity growth and an aging population. Though more modest and variable, growth has nonetheless been sustained for the decade since the downturn. Along with a somewhat stronger recent growth outlook in 2018 and 2019, the S&P stock index continues its second longest bull run. Concerns are emerging, however, as to how long the run of GDP growth will continue. Many economists believe that rising US government deficits, the significant stimulus of the 2018 US tax cuts, and an already low US unemployment rate invite the return of inflation. This is among the factors

that heighten the risk of a major economic correction by the early 2020s.²⁰ The US and global outlook is also threatened and complicated by protectionist and nationalist tendencies and economic policy uncertainties. The US Administration's "America First" policies have affected cross-border flows of goods, while influencing some companies to invest in the US.

The Niagara economy grew at 2.1 percent in 2015 and 1.7 percent in 2016, levels just below Ontario averages.²¹ For 2018, the Conference Board of Canada forecast for the Niagara CMA is 1.4 percent, the lower end of the range of 1.4 to 2.4 percent for Southern Ontario cities.²² Positive recent signs have emerged. In February 2018, the Niagara CMA registered its lowest unemployment rate in 18 years (5.2 percent), while investment in commercial and industrial building construction in 2017 reached decade high levels.

Looking ahead over the coming two decades, the Ontario Ministry of Finance forecasts that average annual economic growth rates to 2040 will be just over 2 percent, or a half percentage lower than the average from 1982 to 2015 (Exhibit 2). Labour force growth and labour participation rates will also be lower, as the population ages. For people 65 and over, an increase in the number remaining in the workforce is already discernible, a trend that is likely to grow further.

Exhibit 2 Economic and Labour Force Projections for Ontario to 2040 Ontario Ministry of Finance		
Metric	Actual (Annual Average) 1982-2015	Projection (Annual Average) 2016-2040
Real Gross Domestic Product (GDP)	2.6%	2.1%
Exports	3.4%	2.2%
Imports	4.0%	2.1%
Housing Starts	66,000	71,300
Primary Household Income	5.0%	3.9%
Labour Market		
Participation Rate	67.3%	63.2%
Labour Force Growth	1.4%	0.8%
Employment Growth	1.4%	0.9%
Unemployment Rate	7.7%	5.8%
Labour Productivity	1.2%	2.2%
Source: Ontario's Long-Term Report on the Economy, 2017, Ontario Ministry of Finance		

Global Foreign Direct Investment: International greenfield foreign direct investment (FDI)²³ flows – though significant in absolute terms – have yet to recover to peaks prior to the 2008-2009 recession.

²⁰ Dodge, David, Richard Dion, Serge Dupont, John Weekes, and Michael Horgan, Bennett Jones, "Economic Outlook." Spring 2018 (<https://www.bennettjones.com/Spring2018EconomicOutlook>). Accessed on June 12, 2018.

²¹ Conference Board of Canada.

²² Conference Board of Canada, Media Release, "Economic Slowdown on the Horizon for Southern Ontario Cities," March 13, 2018 (<https://www.newswire.ca/news-releases/economic-slowdown-on-the-horizon-for-southern-ontario-cities-676649683.html>). Accessed on May 8, 2018.

²³ "Greenfield" investment projects involve investment at entirely new locations or involve an expansion of an existing investment. Greenfield investment does not include mergers and acquisitions (M&A).

Since the global downturn, annual levels of FDI flows have been uneven and well below the annual levels registered prior to the global downturn.²⁴

The United States has traditionally been the largest source of foreign direct investment (FDI). China's outward FDI has increased significantly in recent years. In 2017 however, China adopted more cautious policies on investment abroad and slipped to third place in FDI outflows behind Japan, but ahead of the United Kingdom, Hong Kong, Germany and Canada.²⁵ In the first FDI wave, the Chinese concentrated on foreign acquisitions, especially those that secure needed basic agricultural commodities and resources. Prior to the 2018 US-China trade confrontation, Chinese investment in North American manufacturing and in the technology sector emerged as a growing segment, with an increasing number of greenfield investments.

Looking ahead, major influences in 2018 will be repatriation of profits held abroad by US-based multinationals and US tax reform which will encourage investment and expansion in the US. The nearer-term FDI outlook is clouded by international policy uncertainty and protectionist tendencies that will adversely affect FDI location decisions.

Foreign Direct Investment in Canada: Since the Great Recession in 2008-2009, the stock of foreign direct investment (FDI) in Canada showed steady growth from 2011 to 2015. Increases in 2016 and 2017 were modest however, with the flow of direct investment in 2017 at \$33.8 billion being the lowest since 2010, well behind the record of \$126.1 billion in 2007.²⁶

The total stock of FDI in Canada at the end of 2017 was \$824.0 billion. By country, the US stock of FDI in Canada has declined by a few percentage points over recent years but still hovers around 50 percent of the total. European FDI has been up marginally, with its stock representing just over one-third of the total. The larger, growing European sources over the last decade are The Netherlands, Switzerland and Germany. Asia represents about 10 percent.

In the Canadian manufacturing sector, the stock of FDI in 2017 was slightly less than 2008 in absolute terms, falling as a proportion of all FDI in Canada from nearly one-third to just over one-fifth. Food manufacturing fared well, however, nearly doubling since 2008, with the greatest gains being registered prior to 2015. Significant sectors that showed growth over the 2008 to 2017 span were mining and oil and gas extraction which grew strongly to 2014 but has declined since; finance and insurance; wholesale and retail trade and transportation and warehousing; and the management of companies and enterprises.²⁷

Ontario attracted 114 foreign greenfield projects in 2017, down 18 percent over 2016, but still ranked fourth among provinces and states after California, New York and Texas. These projects involved investment of \$6.9 billion.²⁸

Though reliable statistics are not available, strategic expansions in Ontario by existing foreign investors appear to have been the most notable and reliable source of increased FDI in southern Ontario in recent

²⁴ United Nations Conference on Trade and Development (UNCTAD), "World Investment Report 2018," June 7, 2018.

²⁵ United Nations Conference on Trade and Development (UNCTAD), "World Investment Report 2018," June 7, 2018.

²⁶ Statistics Canada, The Daily, March 1, 2018 and April 25, 2018.

²⁷ Statistics Canada, International Investment Position, Foreign Direct Investment in Canada by NAICS, Table 36-10-0009-01.

²⁸ fDi Intelligence, "The fDi Report 2018: Global Greenfield Investment Trends," 2018.

years, especially in manufacturing. Foreign investors who are already established in Ontario know their own milieus well and possess relationships, including with post-secondary institutions. This allows them to move quickly and confidently to scale-up existing operations, including being well positioned to hire highly qualified people and to take advantage of tax rates, incentives and arrangements that support innovation. This underlines the importance of business retention and expansion activities in economic development.

Niagara region has many foreign-affiliated investors, including General Motors, Rich Products, Convergys, Airbus Helicopters, THK, Rexroth Bosch Group, and Jungbunzlauer. Recently, Niagara has attracted important new domestic and foreign investment – the GE Brilliant Factory and Northern Gold being examples.

Challenges to Realizing Ontario's and Niagara's Longer-Term Potential

What CEOs and Futurists Say About Ontario's Potential: In 2017, Ontario's Institute for Competitiveness and Prosperity interviewed selected CEOs of companies headquartered or operating in Ontario and conferred with "futurists," who advise such companies on strategy relative to disruptive technologies and new business opportunities.²⁹ The objective was to identify where Ontario can "win" over the next 10 to 20 years and what businesses, government and post-secondary educational institutions need to do to realize Ontario's future potential.

The key points that emerged from the sessions with the CEOs and futurists were:

1. Talent is Ontario's greatest strength;
2. Ontario "stands tall" on research, though it lacks the capacity to commercialize this research;
3. The biggest thing holding Ontario back is a cautious attitude to risk; and
4. Attracting global talent, visitors and international capital is hard and, above all, requires a compelling "Why Canada?" value proposition.

The Institute's report issued a challenge:

"... Ontario must change. The elements of competitiveness that gave the province its advantages in the past can no longer sustain or ensure the future. Instead, concerted efforts must be made toward innovating, investing in technologies, and making big, bold moves across clusters."

"Big Ideas:" Leaders offered five "Big Ideas" for Ontario to reach its potential based on its existing strengths, primarily around talent and innovation. These proposals crystalize points often made about where Ontario (and Canada) must do better.

1. Embrace disruption and see technologies and consumer trends as once-in-a-lifetime opportunities to grab new markets and secure new customers through the world;

²⁹ Institute for Competitiveness & Prosperity, "The Future Is Not Destiny: CEO Perspectives on Realizing Ontario's Potential," Working Paper 30, September 2017 (<https://www.competeprosper.ca/work/working-papers/the-future-is-not-destiny-ceo-perspectives-on-realizing-ontarios-potential>). Accessed on June 5, 2018.

2. Market Canada and Ontario to the world by defining our competitive differentiators and then by creating a simple and compelling narrative around them to be broadcast to the world – to investors, visitors, and domestic and international talent;
3. Adopt lifelong education and work-integrated learning to keep Ontarians on the cutting edge of 21st century skills in the digital age;
4. Take risks and be leaders, rather than followers, in order to capture the full value of technology and innovation; and
5. Woo the world's best talent to Canada, especially high-achieving students, experienced STEM talent, and executives with track records, especially in scaling-up companies.

Like the Institute's recent assessment, expert commentaries and reports have identified the critical areas where Canada and Ontario have been underperforming other competitor countries – for which the US is often the benchmark – and need to do better. The lists commonly include:

1. Productivity, where Canada has fallen further behind the US with Canadian business under-investing in machinery, equipment, information technology and systems, and intellectual property;
2. Competitiveness, principally involving higher electricity costs, personal taxes, and, in light of the recent US tax cuts, corporate tax levels;
3. Infrastructure maintenance and investment, notably the transportation infrastructure needed to mitigate costly congestion, especially in the Greater Golden Horseshoe;
4. Innovation, a telling indicator being Canada's declining R&D intensity;³⁰ and
5. Lower than desirable levels of post-graduate study and retention, and private sector investment in skills training.

Sectors of Opportunity

National Priorities: Based on the proposals of the Federal government's Advisory Council on Economic Growth, the Canadian government has established private-sector led Economic Strategy tables to recommend a focused and comprehensive approach to "clear the path" to make Canada a global leader in six high-potential sectors:

- Agri Food
- Health/Bio-Sciences
- Digital Industries
- Advanced Manufacturing
- Clean Technology
- Resources of the Future

The Advisory Council chose the agri-food sector to illustrate the type of ambitious, targeted coordinated approach that should be envisaged in order to move Canada up in the rankings, for example compared to The Netherlands and Brazil.³¹

³⁰ Council of Canadian Academies, Expert Panel on the State of Science and Technology and Industrial Research and Development in Canada, "Competing in a Global Innovation Economy: The Current State of R&D in Canada," 2018

³¹ Advisory Council on Economic Growth, "Unleashing the Growth Potential of Key Sectors," February 6, 2017 (<https://www.budget.gc.ca/aceg-ccce/pdf/key-sectors-secteurs-cles-eng.pdf>). Also see information on the Economic Strategy Tables at <https://www.ic.gc.ca/eic/site/098.nsf/eng/home>. Accessed on June 14, 2018.

Niagara Priorities: At the regional level, Niagara's region-wide strengths and opportunities, according to Niagara Economic Development, lie in:

- Agri-Business
- Manufacturing
- Transportation and Logistics
- Tourism

These were chosen taking into account the priorities of the 12 Team Niagara municipal partners.³²

The Outlook for Agri-Business in Niagara: Ontario's Greenbelt policies, together with those applicable to the Niagara Escarpment and conservation areas, ensure preservation of Niagara's highly productive agricultural lands, including specialized and intensive land-use for higher value crops such as grapes, tree fruits, berries, and greenhouses. Niagara is an agricultural powerhouse. The gross farm receipts from Niagara region's 1,827 farms totaled \$838 million in 2015 representing 43 percent of all farm receipts in the entire Golden Horseshoe. With the legalization of recreational use, cannabis production is becoming a fast growing part of the mix and a highly significant economic development opportunity, not just for cannabis flower production but for value added products such as oils and edibles which are claiming growing market shares in legalized recreational markets. Still uncertain is the extent of its impact on the greenhouse and other segments and whether (as some forecast) over production in a few years is a potentially disruptive risk.

Agricultural producers in Niagara face major competitive challenges including increased minimum wages, availability of talent, a degree of uncertainty or demanding processes regarding seasonal immigrant workers, and competition from increasingly efficient lower wage jurisdictions able to capitalize on logistics advances. The major steps forward in controlled greenhouse environments and precision agriculture, involving the application of a host of technologies, provides a suite of potential responses. Autonomous vehicles are already planting, spraying and harvesting crops. Greenhouses can be managed remotely. Integrated systems incorporate satellite data, GPS, weather data and forecasts, drone and aerial imaging, and variable application of nutrients. Greenhouses benefit from LED lighting, climate controlled environments, and computer controlled irrigation and nutrient systems. Cannabis growers are setting an even more ambitious technological pace, adopting state-of-the-art systems, including high security. Canada has a first mover advantage to supply cannabis to newly opened export markets for medical use. An emerging leading edge concept is intensive vertical indoor farming within and on the edges of major urban concentrations, providing at least daily delivery of fresh and flavourful leafy greens and herbs produced in operations that employ robots, sensors, and controlled environments. Niagara, though part of the trend, is only beginning to exploit this growth opportunity in spite of its experience with advanced greenhouse technologies and favourable access for the production to the GTA market.

Adding value to Niagara agriculture produce through more direct-to-market retail channels locally and processing operations in Niagara afford additional opportunities to get higher returns for Niagara producers. Wine and craft beverage start-ups face complex and overlapping regulatory regimes. A pilot project in Peterborough developed an expedited and integrated all-levels-of-government approach to

³² A Summary Chart on Municipal Economic Development has been prepared by GIAG based on a review of municipal websites including landing pages directly related to economic development, standalone economic development pages and Economic Development Strategies, Municipal Strategic Plans and Annual Reports. The review examines structure, areas of focus, sectors covered and any issues identified. At the time of preparation, stakeholder interviews had not been conducted with the municipalities. Planned interviews with appropriate stakeholders will provide more accurate and detailed information for updating this report as part of regional context.

overcoming the complexities of overlapping regulation. This could be replicated in Niagara to make Niagara a favoured location to launch of new craft beverage ventures.³³

Niagara region's two post-secondary educational institutions and the Vineland Research and Innovation Centre (VRIC), plus neighbouring institutions such as the University of Guelph, afford immense competitive advantage through their research, prototyping, trial and training programs, which have a Niagara-specific relevance.

The Future of Manufacturing in Niagara: Though Niagara's manufacturing sector represents a much smaller portion of the total workforce than in the past, Niagara has deep and resilient manufacturing traditions on which to build, as Industry 4.0 – the fourth industrial revolution – transforms manufacturing globally. Niagara region, moreover, attracted one of the world's leading proponents and developers of Industry 4.0 systems, General Electric, which created a new state-of-the-art Welland plant adopting its Brilliant Factory systems, now to be operated under the ownership of Advent International. Airbus Helicopters Canada provides an important aerospace and advanced composites presence.

Looking to the needs of Niagara's agri-businesses, manufacturing opportunities are available to service the requirements of producers and processors – including cannabis growers – for highly advanced technology and supportive software systems. The Netherlands stands as an example of technological leadership in agri-tech. By purposely creating and adopting the latest advances, the country ranks as the world's secondary largest global exporter of food after the United States, despite its small land area. The Niagara manufacturing sector can capitalize on support from Niagara College, the Vineland Research and Innovation Centre, and Brock University. Niagara locations are well positioned to be innovative North American production and software systems development bases for Canada and the US, taking advantage of European – especially Dutch partnerships – that can take advantage of personal heritage and of Canada's Comprehensive Economic and Trade Agreement (CETA) with the European Union.

The automotive sector – still an identifiable component of Niagara region's manufacturing base – is in transition globally towards becoming the mobility sector in which business models, powertrains and autonomous vehicles are redefining whose technology, integration, and revenue streams win. This invites an evaluation of future vulnerabilities and exploration of what it will take for Niagara to retain the presence of firms such as GM and THK and sustain a meaningful stake over the longer term.

Tourism and Niagara: Niagara owns one of the world's most recognizable and enduring tourism brands with a legacy that dates well before many of today's best branded destinations were conceived. Challenges to realizing its still greater potential lie in growing and enriching the experience and creating the desire on the part of visitors to return; making Niagara the recreational, wine and culinary, and arts, festival and culture get away; and generating revenue-enhancing overnight stays. The Falls remains an anchor but the region's offerings have immense potential to further broaden visitor options and the experience. Tourism has been transformed by the shared economy, smart phones, social media, and mapping and GPS. Technology promises important further advances, especially augmented and virtual reality, multiple language speech recognition technologies, and intelligent processing of voice enquiries. These systems could be a focus for aggressive development in Niagara region, possibly through cross-border partnerships, as a demonstration of the region's tourism leadership.

³³ Association of Municipalities Ontario, "Reducing Business Burdens: Great Ideas from Five Innovative Ontario Municipalities," May 31, 2017 (<https://www.amo.on.ca/AMO-PDFs/Reports/2017/ReducingBusinessBurdensGreatIdeasfromFiveInnovativ.aspx>). Accessed on June 13, 2018.

Niagara region has had success in attracting major international, national and provincial sports events, though structures to support sports tourism bids are needed. The region also has the potential to expand business meeting and incentive travel attraction.

Niagara's Transportation and Logistics Sector: Niagara sees opportunities in supporting the movement of goods and people by leveraging its central Canada-US border location that places it within a one-day trip of half of the Canada-US population. As well, Niagara is intersected by the Great Lakes Seaway system and two class one railways, and has access to seven nearby airports. Niagara region's designation as a Foreign Trade Zone Point seeks to mitigate processes that impose barriers and costs. The Niagara corridor is of strategic national commercial importance, meriting Federal government involvement and investment. As Niagara looks ahead, it needs to determine how – whether through increased physical capacity or technology adoption – it can ensure that congestion and border processes will not impede the corridor's smooth functioning and growth. Transportation and logistics will continue to experience fundamental business model and technology transformations – driven by the use of autonomous trucks, on demand buses, driverless shuttles, and Uber and Lyft type ride hailing services.

Exhibit 3 Prominent Emerging Technology Platforms and Their Potential Impact		
	Outlook	Considerations for Niagara Region
Industry 4.0	Industry 4.0, also referred to as the fourth industrial revolution, is the name attached interconnected automation and digitization that brings together multiple advanced technologies to transform manufacturing. It encompasses cyber-physical systems, such as the Internet of Things, Big Data, robotics, 3-D software and printing, and cognitive computing (AI).	<ul style="list-style-type: none"> • Niagara region can call upon its strong manufacturing tradition and today's innovative programs at Niagara College and Brock as it taps into the new Industry 4.0 paradigm • GE's new Welland facility is adopting the company's advanced Brilliant Factory Industry 4.0 platform systems • Other global Industry 4.0 leaders include Bosch and Siemens
Artificial Intelligence (AI)	AI – based on neural networks and machine learning, ideas dating to the 1940s – has emerged in the last five years to be one of the technology industry's brightest hopes. Applications currently rely on supervised learning where computers are told what to do in millions of cases. An area of focus is also on using AI to augment human capabilities. Artificial General Intelligence (AGI) systems that are near human intelligence are judged likely to take longer, maybe decades. ³⁴ Canada is a recognized leader with Montreal, Toronto and Edmonton having emerged as the Canadian hubs.	<ul style="list-style-type: none"> • AI is a major and rapidly moving area of advances that will have wide-spread impact, including creation of autonomous systems • Multilingual speech recognition technologies and enquiry response systems can enhance tourism offerings, but may replace some call centre operations, of which there are some significant ones in Niagara region. AI is critical to Mobility applications and will grow rapidly in health care diagnosis. AI can also take the massive amounts of tourism-related data that can be captured to determine patterns and preferences and to predict future opportunities.³⁵

³⁴ Bloomberg Businessweek, "Apple and Its Rivals Bet Their Futures on These Men's Dreams," May 17, 2018 (<https://www.bloomberg.com/news/features/2018-05-17/apple-and-its-rivals-bet-their-futures-on-these-men-s-dreams>). Quoting Yann LeCun, University of Toronto. Accessed on June 4, 2018.

³⁵ Ie, "Technology: Disruptive Innovation in the Tourism Industry," October 17, 2017 (<https://www.ie.edu/corporate-relations/insights/technology-disruptive-innovation-in-the-tourism-industry/>). Accessed on June 18, 2018.

Exhibit 3 (Continued)		
Prominent Emerging Technology Platforms and Their Potential Impact		
	Outlook	Considerations for Niagara Region
Internet of Things (IoT)	The Internet of Things is a typically wireless network of physical devices, including machines, vehicles and appliances, embedded with electronics, sensors, actuators and connectivity which enables them to connect and exchange data, creating greater digital integration. IoT is widely applicable, including in the home, manufacturing, agriculture, health care, transportation, and within municipalities. The number of IoT devices (8.4 billion) surpassed the global population in 2017 and is forecast to reach 20.4 billion in 2020. ³⁶	<ul style="list-style-type: none"> • Bell, Huawei and BeWhere are undertaking a pilot IoT project in Niagara, using Bell's advanced cellular network, with Henry of Pelham that uses sensors to remotely monitor temperature and water levels and prevent vine disease. • IoT is at the centre of smart city initiatives, connecting and engaging with tourists, and Industry 4.0.
Broadband Optical Fibre	High-speed broadband is an essential part of basic infrastructure, like water, sewage, electricity, and phone connections. The Canadian Radio-television and Telecommunications Commission (CRTC) declared broadband internet a basic telecommunications service in December 2016. Generally, Niagara has good access, in part because major cross-border high-speed optical fibre is routed through the Niagara peninsula. Demand for greater capacity and speed continues to grow. Nielsen's Law of Internet Bandwidth, for example, states that a high-speed user's connection speed grows by 50% a year. This rate of growth is only slightly less than the 60% a year postulated by Moore's Law which addresses computing speed. ³⁷	<ul style="list-style-type: none"> • To apply the latest technology and utilize advanced software systems, high-speed broadband is essential to businesses and agricultural enterprises • Providing tourists with wireless access to online information and social media tools, requires broadband and WiFi access
5G Networks	The Ontario, Quebec and Canadian governments announced a \$400 million partnership (ENCQOR – Evolution of Networked Services through a Corridor in Quebec and Ontario for Research and Innovation) in March 2018 with five private sector partners to create a Montreal to Waterloo corridor of 5G test beds which will become operational by early 2019. 5G networks will be critical to autonomous vehicles and IoT applications.	<ul style="list-style-type: none"> • 5G network access will become a basic requirement for autonomous vehicles and for many IoT networks, all important to Niagara

³⁶ Gartner, "Gartner says 8.4 billion connected things will be in use in 2017," 7 February 2017 (www.gartner.com/newsroom/id/3598917). Accessed on June 4, 2018.

³⁷ Nielsen Norman Group, "Nielsen's Law of Internet Bandwidth," (<https://www.nngroup.com/articles/law-of-bandwidth/>). Accessed on May 10, 2018.

Exhibit 3 (Continued)		
Prominent Emerging Technology Platforms and Their Potential Impact		
	Outlook	Considerations for Niagara Region
Cyber Security	Today's increasingly digitized and digitalized systems bring inevitable risks of hacking and data and identity theft. Cyber breaches recorded by businesses have almost doubled in five years, from 68 per business in 2012 to 130 per business in 2017. ³⁸	<ul style="list-style-type: none"> A high level of security is vitally important for the cannabis sector, the integrity of systems in business and the public sector, and for personal data protection.
Precision Agriculture	Driven by the cost and constraints on the availability of labour, precision agriculture researchers and companies have developed systems incorporating drones and autonomous vehicles using satellites and GPS to plant and fertilize; robotic harvesters with vision sensors and software to scan plants; picking platforms; controlled environments with LED lighting and computer controlled irrigation and nutrient systems; water jet lettuce harvesting methods; and robotic apple picking machines. ³⁹	<ul style="list-style-type: none"> The competitiveness of Niagara region agriculture is dependent on aggressive development and adoption of advanced technologies and software systems, supported by research, development, testing, prototyping and talent development at Niagara's post-secondary institutions and VRIC. Of note is the NSERC Chair in Precision Agriculture and Environmental Technologies at Niagara College. Innovation may be spurred by creating locations where ag-tech clusters can grow.
Mobility, including Autonomous Vehicles	By 2030, internal combustion engines (ICE) will still represent a significant portion of the market in North America, but battery electric vehicles (BEV) will near cost competitiveness with major reductions in battery cost. Level 4 robotaxis, shuttles and commercial vehicles will be adopted worldwide, along with deployment of Level 4 vehicles for personal use. There will be full availability of vehicle to vehicle (V2V) infrastructure with continuing expansion of vehicle to infrastructure capability. 26.2% of global distances travelled will be shared, with vehicle sharing models largely adopted in urban areas. Adhesives will be the primary joining material. Manufacturing will see possible integration of all industrial machinery, collaborative robots, inventory and logistics systems talking to each other, not only in a plant but across the company and suppliers, with high utilization of renewable energy. ⁴⁰	<ul style="list-style-type: none"> Trends in the mobility sector will be critical to the longer-term future of GM's St. Catharines Propulsion plant which produces V6 and V8 engines and transmissions, and to companies in its supply chain. Technology holds out the promise of increasing the vehicle capacity on highways, potentially offering options other than just constructing more high capacity highways.

³⁸ Accenture, "Cost of Cyber Crime Study," 2017 (<https://www.accenture.com/ca-en/insight-cost-of-cybercrime-2017>). Accessed on June 4, 2018.

³⁹ CNBC, Jeff Daniels, "Agriculture Robotics May Ease Farm Labour Crunch," March 8, 2018 (<https://www.cnbc.com/2018/03/08/wave-of-agriculture-robotics-holds-potential-to-ease-farm-labor-crunch.html>). Accessed on June 4, 2018.

⁴⁰ Center for Automotive Research, Ann Arbor, Michigan, "Technology Roadmap Analysis – Current Year to Beyond 2030," February 28, 2017 (Prepared for Innovation, Science and Economic Development Canada)

Exhibit 3 (Continued)		
Prominent Emerging Technology Platforms and Their Potential Impact		
	Outlook	Considerations for Niagara Region
Augmented and Virtual Reality	Virtual reality is a computer-generated recreation of real life environments and situations that immerse the user by making them feel like they are part of the environment. Augmented reality layers computer-generated enhancements atop an existing realty recreation. Augmented reality will find early applications in health care and energy.	<ul style="list-style-type: none"> • Brock's Cool Climate Oenology & Viticulture Institute (CCOVI) is establishing a first-of-its-kind Mediated Reality Wine Lab for researchers to study how factors within an environment affect customers' consumer choices regarding wines. • Augmented reality will be a valuable tool specific skills and situational training. • Augmented and Virtual Reality can enhance tourists' experiences though storytelling and by providing views and access to locations and situations not otherwise readily available
Blockchain	Blockchain is an open, distributed ledger that can record transaction between two parties in a verifiable and permanent way. By design, a blockchain is resistant to modifications of the data.	<ul style="list-style-type: none"> • Blockchain is being widely applied to transportation and supply chains and associated contracts and financial transactions, an apparent natural fit for Niagara

Appendix 2 Aggregated Stakeholder Consultation Report, Global Investment Attraction Group

Aggregated Stakeholder Consultation Report

January 31, 2019

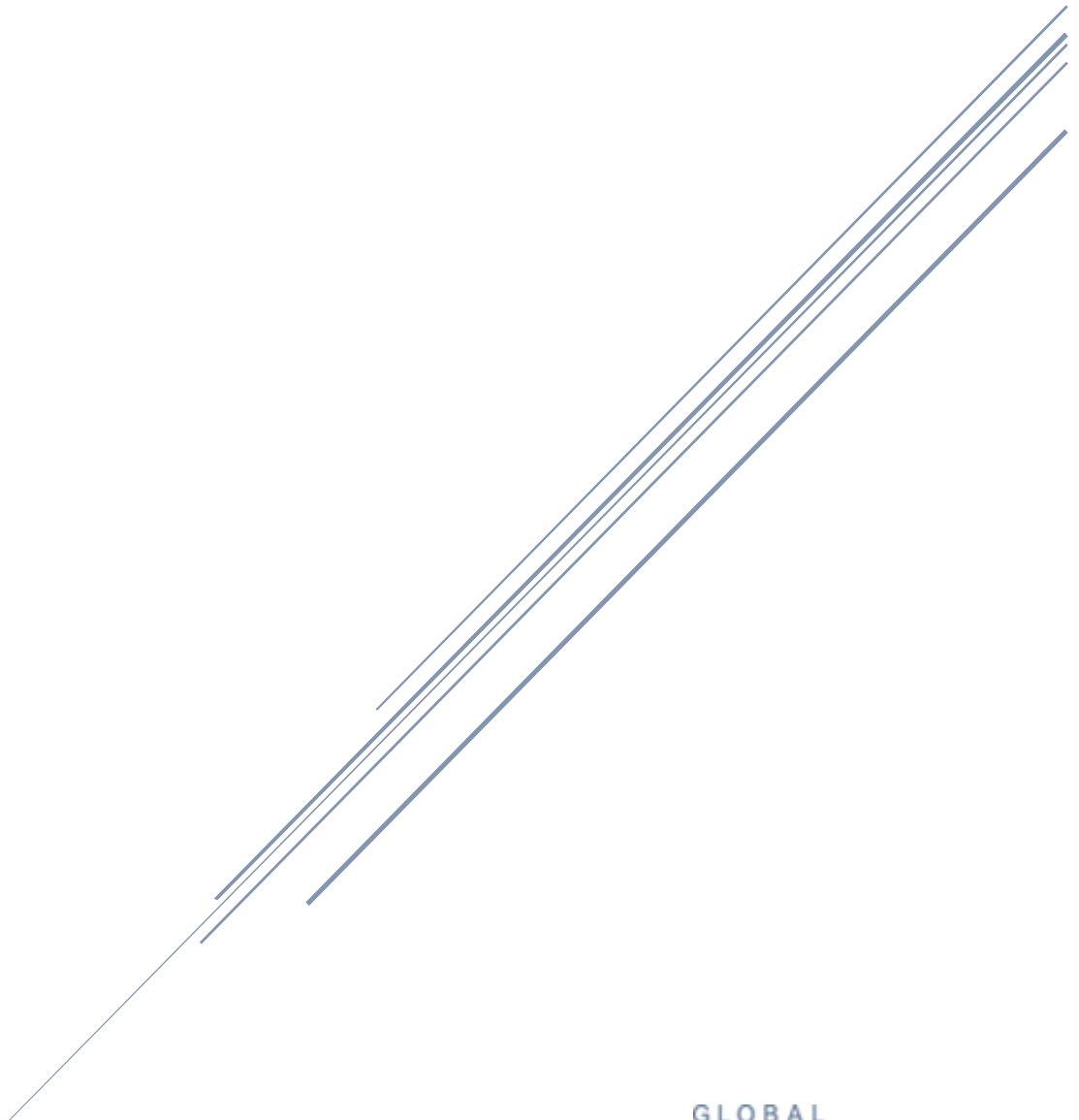


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Introduction

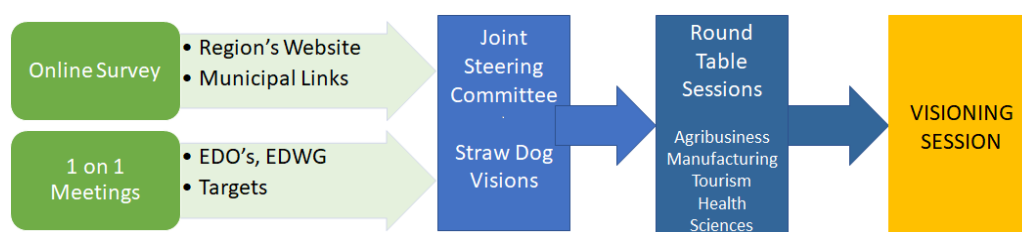
The economic development process influences the economic well-being of communities and regions, including job and wealth creation and the general quality of life. Due to the number of Stakeholders engagement, collaboration and partnerships are an important part of the undertaking.

As a component of the Niagara Region Economic Development Master Plan, it was crucial to involve representative organizations and business engaged in the local economy. Collaboration and meaningful consultation help create tangible buy-in from those who have been engaged and see their perspectives and contributions reflected in the Master Plan.

Stakeholder consultations were designed to provide primary research, building upon the secondary research conducted in the Economic Base Analysis and the resulting Situational Analysis. Capturing this real-world experience helps validate the Phase 1 background review, research and analysis as well as statistical analysis.

The Stakeholder Consultation Plan included:

- Working Group (who were responsible for day to day project management and were part of Joint Steering Committee, see - Addendum 2) session for orientation and feedback
- A public online survey listed on Region's website and links from municipalities and associations
- Facilitated "Straw Dog"¹ session with the Joint Steering Committee (Addendum 2)
- Sector Roundtable Sessions for Agriculture, Tourism, Manufacturing and Health & Wellness
- One on one meetings with selected stakeholders including the Economic Development Working Group (Addendum 1)



Global Investment Action Group (GIAG) provided three background discussion papers; Economic Analysis and Forecasting, Comparison of Niagara Region Municipal Economic Development and A Vision of Niagara Region in 2041. These discussion papers were shared with stakeholders prior to engagement.

After consultation with the Working Group, stakeholders in the below categories were solicited for interviews:

Ag Production	Business Associations
CAO / EDO of Niagara Region municipalities	Economic Development Working Group
Food & Beverage	Health and Wellness
Innovation and Entrepreneurship	Joint Steering Committee
Manufacturing	Niagara Region Senior Management Team
Ontario Ministries – Economic Development / Ag	Post Secondary Education
Real Estate and Development	Tourism

¹ A brainstorming roundtable that generated discussion of relevant economic topics meant to provoke the generation of new and better ideas, visions and actions for the future.

A total of sixty-four (64) interviews were completed, following a preplanned Interview Guide (Addendum 3) which was developed in collaboration with the Working Group. The guide was adapted as required for each group / sector to target specific areas of relevance to the stakeholder relating to their presence in Niagara Region. Confidentiality was offered to each in return for candid feedback.

We have aggregated key feedback and themes from our interviews under the most common comment areas.

Agriculture, Food and Beverage

- ☐ Irrigation needs to be resolved
- ☐ Cannabis can be a threat
- ☐ Need natural gas
- ☐ Increase markets
- ☐ Development of environmental packaging an opportunity
- ☐ Climate change will provide challenges and opportunities
- ☐ Manufacturing / grapes / flowers / cannabis need to be leaders – not crop producers, need automation, software, more value above primary
- ☐ VRIC a leader in automation, artificial intelligence – need funding to expand core operations, not capital projects
- ☐ Opportunity to build the technology base – make the sector bigger
- ☐ Associations don't play a role – staffing not experienced enough
- ☐ Individuals are successful, not the industry; need to start investing as an industry
- ☐ Economic development needs a representative with knowledge and skill in the industry
- ☐ Crush pad – shared space for cider / wine; sell out of one storefront start to incubate – lots of wealthy retirees in the region, what kind of capital is needed
- ☐ No net in-migration, only farm workers – need to target big immigration
- ☐ Need food processing and food processing technology
- ☐ Big data / climate change – all in downtown Toronto
- ☐ Need for a bio control company. Several living at MaRS as post seed start ups. Get them to come to Niagara (another MaRS Landing)
- ☐ Opportunity for micro-processing food incubator

Cannabis

- ◆ Development of associated technologies
- ◆ Most entities in the region are reactive rather than proactive; wait and see attitude
- ◆ Build the technology base - technology for cannabis doesn't exist, no genetics etc., complete whitespace
- ◆ Growing cannabis is low value – what are the products / inputs up the value chain
- ◆ Opportunity in genomics services. Cannabis seed business \$1 billion – Cargill / Monsanto can't do it due to US regulations

Tourism

- ☐ Tourism is a large revenue generator for Niagara region
- ☐ Safety for Visitors is a plus
- ☐ Proximity to the US market
- ☐ Canada has an exchange rate advantage

- ☐ Proximity to the GTA, including its multi-ethnic population
- ☐ Boomers are moving to Niagara
- ☐ Opportunity to be a destination for sports tourism (e.g. Canada Summer Games 2021)
- ☐ Niagara has international reach
- ☐ International students are being used as 'welcomers' by Gateway Tourism in Grimsby
- ☐ Transportation choices are a plus, including Niagara District Airport, GO Rail and Buffalo International
- ☐ Transportation challenges include intra-regional public transit, getting employees of tourism establishments to and from work, the need for a new Niagara – Hamilton Airport Highway (formerly known as Mid-Peninsula), and facilitating people (in addition to goods) movement over the bridges on the border
- ☐ Growth of the local population only adds to the pressure on transportation
- ☐ Urgency to improve the infrastructure situation
 - ◆ Skyway expansion will create notable disruption and leave negative impressions
 - ◆ Track record for completion of major public projects not good, in part because of governmental layers
- ☐ Survey following a national Federation of Canadian Municipalities (FCM) convention in Niagara indicated that the #1 issue for attendees was getting to and from Niagara – over 50% were not satisfied
- ☐ Toronto Pearson International Airport is important to Niagara, as it is second only to JFK in New York for international passenger traffic among North American airports
- ☐ External perceptions about ease of access are the problem
- ☐ There is more to do beyond the historic Niagara image – The Falls:
 - ◆ Need to work together to present a bigger message
 - ◆ Raise standards of service and encourage over-night and long term stays
 - ◆ Expand the narrative about Niagara
 - ◆ Expose options
- ☐ Employees – lack of connectivity by public transportation
- ☐ Tourism industry in Niagara needs more international thinking – e.g. acceptance of Chinese payment cards (Alipay and WeChat Pay), meeting expectations of international guests
- ☐ Niagara post-secondary institutions have linkages with the local tourism needs:
 - ◆ Craft beverages/wineries
 - ◆ Courses, research and co-ops
 - ◆ Hospitality programs and gaming
 - ◆ Business cases, including marketing
 - ◆ Heritage projects
- ☐ No post-secondary hotel degree program; Niagara industry draws on Ryerson and Guelph for grads
- ☐ Professors could promote holding conferences in Niagara to the principal academic organizations to which they belong (e.g. IEEE)
- ☐ Potential for post-secondary extension programs
- ☐ Staff from tourism business (e.g. chefs) often are instructors in post-secondary institutions
- ☐ Attitudes of the local population and councils in Niagara are not always helpful
- ☐ Leadership is needed in the industry
- ☐ Major challenges with availability, retention and training of the workforce, along with public transport to and from work
- ☐ Need greater awareness of product away from The Falls

- ☐ Significant investments and gains have been made in off-season promotions, including casinos, wineries and Shaw Festival, so that the major low traffic period to remedy is now Monday to Thursday
- ☐ Sport tourism is a major opportunity, but requires a bid fund; students can be a resource; need more hockey ice pads in order to attract tournaments
- ☐ Commitment by the Region is required

Manufacturing

- ☐ Location/Access to Markets is a competitive advantage
- ☐ Supply chain: Can find a source of almost anything needed within 100 miles; Aids competitiveness
- ☐ Transportation
- ☐ Training and Trades (Mohawk and Niagara College)
- ☐ Seaway access, though it could be better
- ☐ “Niagara discount”
 - ◆ Cost of living and homes cheaper
 - ◆ An attraction to mid to ‘C’ level employees; not such a strong drawing card for entry level employees
 - ◆ Canada-US Border provides proximity to the US but some tariff challenges
- ☐ Niagara has a “workplace mindset” founded on tradition and trades such as welding, forging, heat treatment, etc.
- ☐ Cross-border funnel
- ☐ Post-secondary educational institutions
- ☐ Manufacturing has left environmental damage that often must be remedied
- ☐ Water available for processing from Welland Canal, though a fee has been introduced by the Seaway Corporation
- ☐ Fermentation skills and relevant graduates available
- ☐ A major gap is the shortage of machinists
- ☐ Reinvention
 - ◆ Niche markets
 - ◆ Innovations
 - ◆ Move quickly
 - ◆ Be different
 - ◆ Many under 50 employees
 - ◆ Success or find gaps to exploit
 - ◆ Upward pressure on wages coming from Toronto (“The Toronto Effect”)
 - ◆ “China price” survivors
- ☐ What advantages can be delivered in Niagara
 - ◆ Lower land costs
 - ◆ Incentives
 - ◆ Post-secondary education institutions
 - ◆ Lifestyle
- ☐ Economic Development in Niagara – What’s Needed
 - ◆ One Stop
 - ◆ Learn from losses – act on what needs fixing
 - ◆ Regional transportation

- ☐ Require retraining – does not count for funding; need to get change to programs
- ☐ One company developed its own program with Brock's Goodman School of Business
- ☐ Lobby Ontario government on apprentice program
- ☐ Retraining needs to be individually centred
- ☐ Secondary schools should return to offering more exposure to trades
- ☐ How to repeat GE
 - ◆ Welland was one of 27 sites considered
 - ◆ Talent/Legacy of trades
 - ◆ Water
 - ◆ Supply chain
 - ◆ Need to market region more aggressively/effectively
- ☐ SME breakthrough growth
- ☐ Access IRAP, SR&ED and FedDev programs
- ☐ Business retention activity helps attract investment
- ☐ Protect industrial land (Welland example)
- ☐ Regulatory threats
- ☐ Expectations are now shorter-term
- ☐ Need assurances of continuity
- ☐ In the past when Niagara had larger companies, today's manufacturers were their supply chain partners (95%). With departure of large firms, things have shifted and companies who have stayed and survived have expanded their customer base more widely
- ☐ Make Niagara's manufacturers collectively North America's machine "Shop," "local" suppliers to North America, offering X lathes, etc.
- ☐ Unionization: Perception become reality
- ☐ High electricity costs
- ☐ Put best foot forward, with NIA as the voice
- ☐ Get Niagara College back on side with trades
- ☐ Are Germany's Mittelstand companies an example for Niagara's SME manufacturers?

Health and Wellness

- ☐ The Niagara Peninsula (Niagara Health System) owns its own health care
- ☐ Niagara is building a system of care, including the St. Catharines General Hospital and the new South Niagara hospital (to be expected in 6 to 8 years)
- ☐ The system is integrated – moving from silos to partnership
- ☐ Collaboration on the talent front is strong with Brock and Niagara College
- ☐ Brock
 - ◆ Health and wellness is important to a community
 - ◆ Comprehensive programs
 - ◆ Nursing program
 - ◆ Public Health
 - ◆ Partnership in condos for seniors
 - ◆ Masters in gerontology expected next year
 - ◆ Centre for Health and Wellness
 - ◆ I-EQUIP
 - ◆ Conference on the "Future of Health" being developed for June 2019
- ☐ New LINC at Brock
 - ◆ Experiential

- ◆ Profit, Place and People
- ◆ Social innovation
- Niagara College
 - ◆ Course-based research
 - ◆ Continuing education
 - ◆ Career ready
 - ◆ Rehab clinic
 - ◆ Health care thought leadership, including from alumni
 - ◆ Social innovation and cross-training (e.g. dementia)
 - ◆ Age-friendly network
 - ◆ Program Advisory Committees (PACs) ensure “world ready” focus
- Hotel Dieu Shaver
 - ◆ Parkinsons Rehab
 - ◆ Cancer Rehab
- Pain Points in system
 - ◆ Security of data and information
 - ◆ Data silos
 - ◆ Mobility
 - ◆ AI
 - ◆ EMS (Niagara is a leader)
- A strong health care system is a plus in attracting the talent that will then lead to investment – Power of Place
- Commercialization
 - ◆ Ecosystems
 - ◆ Partnerships
 - ◆ Forums
 - ◆ Link systems
 - ◆ Calculated risk taking
 - ◆ Hack events
 - ◆ Medical maker
- Governance model needed to bring people together – e.g. integrated health record (WiFi)
- Engage Region and municipalities
- Communication
- Digital is an opportunity
- Pro-active model
- Need for Public Transit/Active transport

Challenges

- Succession planning
- Parochialism
- Sense of entitlement / resistance to change
- Not investment ready / investment hesitant
- Companies are risk adverse, conservative
- No dreamers, only dabblers

Education

- ☐ More skills development
- ☐ Skilled trades responding to industry needs
- ☐ Encouragement of STEM participation
- ☐ Experiential learning
- ☐ Better industry / education collaboration

External linkages

- ☐ Focus on exports, value add
- ☐ Mobilize supply chain
- ☐ Hamilton Niagara Seaway
- ☐ Binational collaboration with WNY

Governance

- ☐ “One stop shop”, eliminate red tape
- ☐ Equal promotion across all areas of the region
- ☐ Advocacy for streamlined governance & regulations by outside agencies and senior levels of government
- ☐ Amalgamation of the region needed

Growth opportunities

- ☐ Bi- national cooperation
- ☐ Cannabis
- ☐ Healthcare
- ☐ Aging and related health / wellness
- ☐ Retirement community
- ☐ Tourism growth across the region
- ☐ Sports & Recreation
- ☐ Identify and grow local supply chains
- ☐ Unique, craft orientated manufacturing
- ☐ Value added agriculture in all areas
- ☐ Very active SME's with development of diversified entrepreneurial small business, need more offices

Immigration

- ☐ Foreign student post secondary grad retention
- ☐ Immigrant attraction program
- ☐ Increase multiculturalism

Infrastructure

- ☐ Mid Peninsula Highway

- ☐ GO Train
- ☐ Multi - modal (water, road, rail, air) including Seaway / Canal
- ☐ Inter-regional transit
- ☐ First mile / last mile
- ☐ Natural gas
- ☐ 5G broadband
- ☐ Seaway / Canal development
- ☐ Reduce electrical costs
- ☐ Infrastructure backlog needs to be identified and qualified

Leadership

- ☐ A need for collaboration
- ☐ Initiate and promote “open for business”
- ☐ Need a better culture of innovation
- ☐ More rapid adoption of technology
- ☐ Develop Centres of Excellence
- ☐ Business mentorship and support at all levels, not just start ups
- ☐ Overhaul of political structure and leadership
- ☐ Demand political accountability
- ☐ Stronger linkage between business and economic development
- ☐ Need to achieve the opportunities and potential long exposed in Niagara region
- ☐ Need Top 10 point plan
- ☐ No trust

Real Estate & Development

- ☐ Balance growth
- ☐ Equalize incentives across the region
- ☐ Develop effective zoning
- ☐ Increase shovel ready lands
- ☐ Remove DCs
- ☐ Expedite planning approval process

Talent & Workforce

- ☐ Youth retention
- ☐ Post secondary grad retention
- ☐ Better workforce development a must
- ☐ Workforce retention
- ☐ Talent attraction
- ☐ More support for entrepreneurship
- ☐ Post secondary must respond to industry needs
- ☐ Recognize Gray Power an asset

Addendum 1 – Economic Development Working Group

<i>Economic Development Working Group Committee</i>		
Name	Sector Represented	Company/Organization
Dominic Ursini	Economic Development	Director, Niagara Region Economic Development
David O’Kane	One Business Representative of the Finance Sector	Commercial Banker, Scotiabank
Gervan Fearon	Two representatives of the post-secondary education sector	President and Vice Chancellor, Brock University
Dan Patterson		President, Niagara College
Tom Beach	One business representative within the industrial sector	President, Handling Specialty
Greg Chew	One business representative of the real estate sector	Real Estate Salesman, Colliers International Niagara Ltd
Tim Nohara	One business representative within the innovation sector	President and CEO, Accipiter Radar
Mark Cherney	One labour representative	Business Manager and Financial Secretary, I.B.E.W.
Kevin Jacobi	One representative with business experience in international trade	Executive Director, CanadaBW Logistics Inc.
Euan McKendrick	One representative of the transportation/logistics sector	Claire’s Delivery and Transportation
Ian Hamilton	One business representative of the marine transportation sector	President and CEO, Port of Hamilton
Anthony Annunziata	One representative of the regional tourism sector	President, Niagara Tourism Partnership
Dwayne Charette	Two business owners (manufacturing, tourism, and agribusiness)	Director, Global Supply Chain and Manufacturing, Airbus
Serge Paquin		CEO, Sky Comp

Addendum 2 – Joint Steering Committee

<i>Joint Steering Committee</i>		
Name	Title	Organization
Gervan Fearon	President and Vice-Chancellor	Brock University
Tim Kenyon	Vice President Research	Brock University
Dan Patterson	President	Niagara College
Fiona Allan	Dean, Academic and Liberal Studies	Niagara College
Greg Medulun	Vice President, External Relations	Niagara College
Jim Thibert	General Manager	Ft. Erie Economic Development and Tourism
Dwayne Charette	COO	Airbus
Domenic Ursini	Director	NED
Valerie Kuhns *	Manager, Strategic Economic Initiatives	NED
Lyndon Ashton *	Innovation Centre Manager, Canadian Food and Wine Institute	Niagara College
Charles Conteh *	Associate Professor, Director - Niagara Community Observatory	Brock University

* Working Group Committee Member

Addendum 3 - Stakeholder Discussion Guide - Niagara Region

Current conditions

- What was the genesis of the establishment of your business in Niagara Region?
- What is attractive about the Niagara Region as a destination for businesses to locate?
- What is the nature, strength and prospects of your business sector in Niagara? Are your supply chain interests well served by a Niagara location? Are there supply chain partners that have invested or might invest in Niagara or elsewhere in Ontario or Canada?
- What medium to long-term changes do you anticipate for your business over five, ten or even twenty years?
 - Size and nature of the physical space your business occupies in Niagara?
 - Talent and workforce implications and needs?
 - How will these changes, if any, impact the evolution of your strategies and the company in the coming years
- What are the advantages and disadvantages associated with a Niagara business presence?
 - Are utilities readily available and cost competitive to meet your needs – hydro, water/wastewater/natural gas, and telecommunications? Are there adequate and affordable broadband services in Niagara to meet your requirements? How important will access to 5G networks be?
 - Is there a suitable supply of land and buildings for business retention, expansion and attraction?
 - How big a role does transportation and warehousing play, if at all, in your business? [If has a role] Is the existing supply adequate with room to grow if required?
- Have the Regional and local governments been helpful to businesses like your own? Why do you have that opinion? What meaningful roles can the Regional government and regional / local organizations play in future years that will contribute to your company's success?
- Are you aware of incentive programs at the local, regional and federal level that can enhance your business and assist with growth?
- Are you a member of an association for your sector? If so, what programs, initiatives are offered that are beneficial to your business? Do you have recommendations for initiating programs that would be beneficial to the sector?
- What major infrastructure investments will be required in Niagara over the next two decades to help enable more prosperity in the Region?
- Does Niagara afford lifestyle requirements for your workforce? (Housing, recreation, entertainment etc.)? What role can the Regional government play in attracting and retaining talent, including immigrants?
- How do you see a Niagara location in the context of the Greater Toronto Hamilton Area (GTHA), the Great Golden Horseshoe (GGH), and the broader North American context? Is it more attractive or less attractive as a place to do business...? Than the GTHA.... than the GGH? Why do you have that opinion?
- Are there external geographic / corporate (ON, Canada, NA, Global) linkages that you see as beneficial to growing your business?
- Is proximity to the U.S. border a strategic advantage for your business? If so, how?
- If you are a foreign owned company, can you tell us more about where the Niagara operations fit in the broader corporate strategies and the challenges and opportunities in sustaining and growing the Niagara presence?
- What are the main obstacles to growth and expansion for your business?

- How would you rate the overall business cost competitiveness in Niagara?

Education, training, research and development

- What is the availability and quality of regional university and college graduates? Skilled labour? Semi-skilled labour?
- Are there adequate training and educational opportunities? How can universities and colleges adapt to meet future talent and workforce requirements?
- To what extent do Brock University and Niagara College provide you with some of the talent and skills you need to run your business?
- As your business grows over the next 25 years and adjusts to changes in technology and markets, what kinds of new talent and skills will you likely need to run and grow your business?
- To what extent do Brock University and Niagara College permit you to access the research and development assistance you need to run your business?
- Are you aware of the education, training, research and development incentives available to assist your company and help with growth?
- As your business grows over the next 25 years and adjusts to changes in technology and markets, what kinds of research and development assistance will you likely need to run your business?
- What other meaningful roles can the university and college play in future years that will contribute to your company's success?

Economy and Future Trends

- Has your company/organization been affected by recent changes in the economy or the workforce? For example, hiring or retaining skilled talent, younger versus older workers, the Internet of Things, automation, digitization, remote working opportunities, currency fluctuations etc.
 - How has your company/organization adapted to these changes? Internal HR changes, new technological investments, etc.?
- Between now and 2041, what are the changes that will most impact your business/organization? For example, currency fluctuation, growing Chinese middle-class, Brexit, Trade Agreements, US protectionism, Manufacturing 4.0, electric self-driving vehicles, workforce development, data analytics, artificial intelligence, etc.
 - What plans do you have for adapting to these changes?
- Some economists believe that we are heading into "the most transformational times in history." How do you think these global changes will affect the Niagara economy? What steps/actions, if any, should be taken or considered? (This could be from the private or public sector. Municipal, Provincial, or Federal level of government)
 - What are some of the positive changes that the Niagara region could benefit from?
 - What are some of the negative changes that should be an area of concern?
- The Niagara economy has changed dramatically over the past 25 years, however, its geographic location and proximity to the US border has continued to be an economic strength. Do you believe this will remain one of Niagara's competitive advantages?
 - If so, how does Niagara leverage its proximity to the border in the future?
 - If not, what should it focus on?
- What areas of the economy do you believe provide Niagara Region distinct advantages or opportunity for "Centres of Excellence"?
 - Will these be relevant moving forward?
 - Are there current nascent opportunities to be planned and developed?

- Does Niagara's population and cultural diversity provide opportunity as the economy continues to develop and change?
- What do you believe to be the number one challenge or issue facing the Niagara region in the next 25 years?
- What could Niagara do to attract more prosperity to the region?
- What is your vision for Niagara in 2041?

Stakeholder Questionnaire

1. What is the economic development related competitive strengths you associate with Town/City/Region?
2. What is Town/City/Region's greatest weaknesses and challenges related to economic development?
3. What are the greatest external threats to future economic growth in Town/City/Region?
4. Are there global linkages that provide international leverage for Town/City/Region and its businesses to exploit?
5. What future opportunities do you see for Town/City/Region in growing its economic base and its businesses?
 - a. What sectors do you think will drive future economic growth and why?
6. Is Town/City/Region's workforce and talent aligned with the future requirements of businesses?
 - a. If not, what improvements are needed?
7. How do you perceive Town/City/Region as a location for new businesses and investment?
 - a. How does this vary by type of investment/sector?
8. What is your vision for Town/City/Region?

Addendum 4 – Roundtable Discussion Guide

1. What is your sector's unique competitive advantage?
 - a. Sustainable compelling advantages
 - b. Disadvantages of concern
2. Where will your sector fit into the regional, national and global prosperity chain?
3. What are the key opportunities / threats in your sector for Niagara looking forward to 2041?
4. What is Brock University's and Niagara College's involvement and impact in Niagara Region?
 - a. Talent
 - b. Training
 - c. Research, Development, Commercialization
 - d. Thought leadership

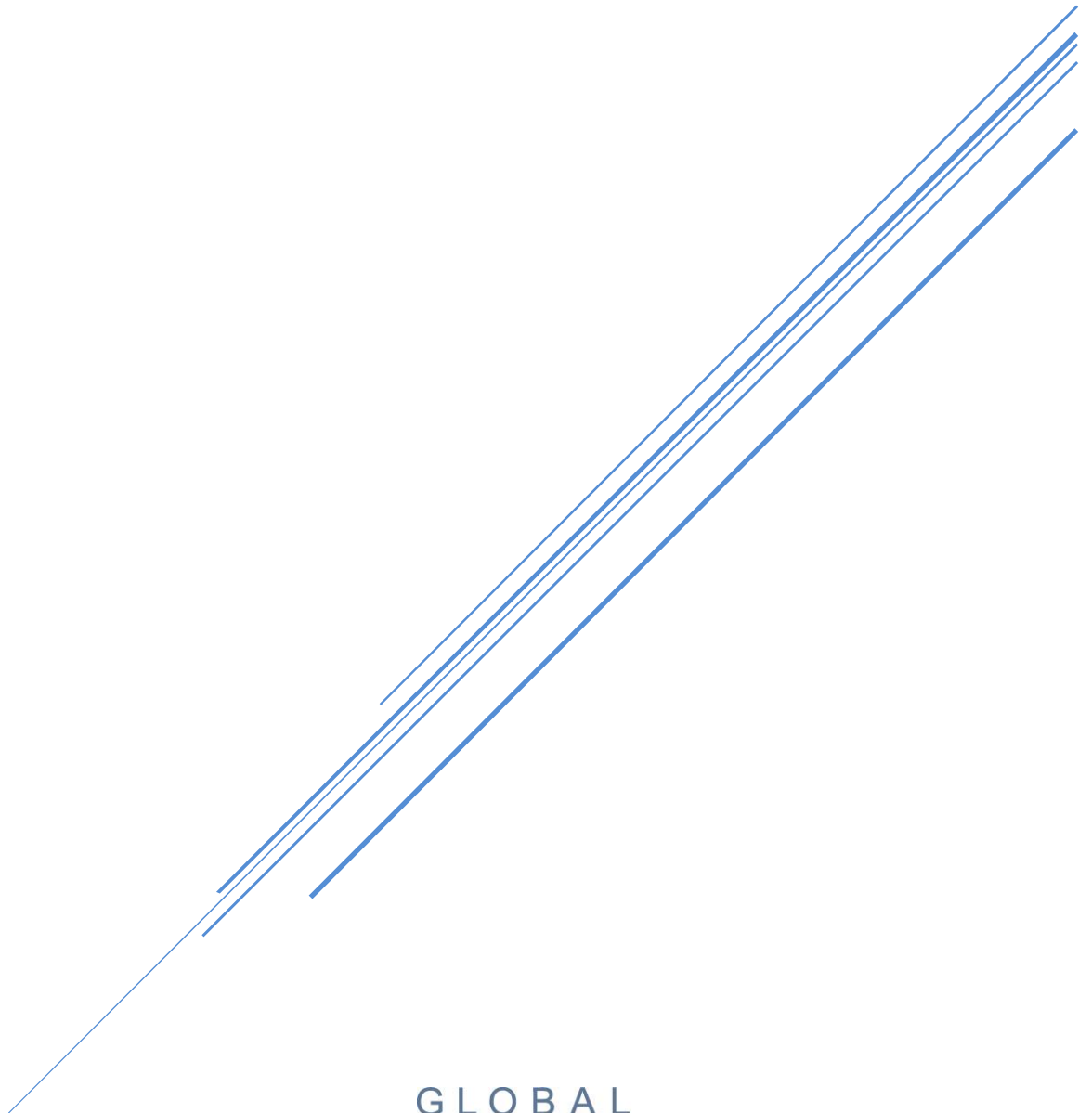
5. What does 2041 look like?
 - a. Technological change
 - b. Political change
 - c. Workplace change
 - d. What drives prosperity
 - e. Sector opportunities
 - f. Global economy
6. What should the key takeaways / actions be from today's session?

Appendix 3 Economic Analysis and Forecasting Draft Discussion Paper, Global
Investment Attraction Group

Economic Analysis and Forecasting Draft Discussion Paper

Niagara Region Economic Development Master Plan

October 1, 2018



GLOBAL
INVESTMENT ATTRACTION
GROUP

Introduction

This discussion paper consists of an overview of key findings of the Economic Analysis and Forecasting review work undertaken as part of the Research, Consultation and Master Plan Development phase of the Economic Development Master Plan for Niagara project. It is intended to provide the reader with an understanding of the Niagara economy based on available background data.

This paper is organized into the following sections:

- Section 1: Demographic and Labour Force Trends;
- Section 2: Commuting Trends;
- Section 3: Economic Base and Sector Analysis;
- Section 4: Economic Outlook;
- Section 5: Export Activity.

Section 1: Niagara Demographic and Labour Force Trends

Population Levels and Growth

Niagara's 2016 population level was 447,888, which is 3.8% higher than its 2011 population level. The Niagara percentage population growth between 2011 and 2016 was slightly lower than Ontario (4.6%) and Canada (5.0%). Population growth varied by municipality in Niagara with the highest growth occurring in Niagara Falls (5,074) and population decrease (118) occurring in Port Colborne. Population levels and growth by municipality in Niagara are shown in the following exhibit.

Exhibit 1. Population Growth in Niagara Municipalities

Community	2011 Population	2016 Population	2011 - 2016 Change	2011-2016 % Pop. Growth	% of Niagara Population 2011	% of Niagara Population 2016
St. Catharines	131,400	133,113	1,713	1.3%	30.5%	29.7%
Niagara Falls	82,997	88,071	5,074	6.1%	19.2%	19.7%
Welland	50,631	52,293	1,662	3.3%	11.7%	11.7%
Fort Erie	29,960	30,710	750	2.5%	6.9%	6.9%
Grimsby	25,325	27,314	1,989	7.9%	5.9%	6.1%
Lincoln	22,487	23,787	1,300	5.8%	5.2%	5.3%
Thorold	17,931	18,801	870	4.9%	4.2%	4.2%
Port Colborne	18,424	18,306	-118	-0.6%	4.3%	4.1%
Niagara-on-the-Lake	15,400	17,511	2,111	13.7%	3.6%	3.9%
Pelham	16,598	17,110	512	3.1%	3.8%	3.8%
West Lincoln	13,837	14,500	663	4.8%	3.2%	3.2%
Wainfleet	6,356	6,372	16	0.3%	1.5%	1.4%
Niagara Region	431,346	447,888	16,542	3.8%	100.0%	100.0%

Source: Statistics Canada 2016 Census

Age Distribution

Niagara has an older population compared to Ontario and Canada. The median age of the Niagara population in 2016 was 45.7 years, compared to 41.3 years in Ontario and 41.2 years in Canada. Niagara has a higher portion of seniors with the population aged 65 and over in 2016 accounting for 21.4% of the total population. In comparison, seniors accounted for only 16.7% of the population in Ontario and 16.9% in Canada. Niagara's portion of the population 85 years and over (3.1%) is slightly higher than Ontario and Canada (2.2%).

Niagara has a lower portion of population in the prime working age group (25 to 44 years) at 22.2% compared to 25.7% for Ontario in 2016. See Exhibit 2 for the distribution of the population by age cohort.

Exhibit 2: Population by Age Distribution

Age Cohort	Niagara Population	Niagara Percent	Ontario Percent	Canada Percent
0 to 14 years	66,760	14.9%	16.4%	16.6%
15 to 19 years	25,710	5.7%	6.0%	5.8%
20 to 24 years	28,155	6.3%	6.7%	6.4%
25 to 29 years	25,130	5.6%	6.5%	6.5%
30 to 34 years	24,005	5.4%	6.4%	6.6%
35 to 39 years	23,950	5.3%	6.3%	6.5%
40 to 44 years	26,150	5.8%	6.5%	6.4%
45 to 49 years	29,145	6.5%	7.0%	6.7%
50 to 54 years	35,335	7.9%	7.9%	7.6%
55 to 59 years	34,995	7.8%	7.4%	7.5%
60 to 64 years	32,715	7.3%	6.3%	6.5%
65 years +	95,845	21.4%	16.7%	16.9%
Prime Working Age Group (25 to 44 Yrs.)	99,235	22.2%	25.7%	26.1%
Median Age		45.7	41.3	41.2

Source: Statistics Canada 2016 Census

Educational Attainment

Niagara has lower educational attainment levels compared to Ontario and Canada. A lower portion of the Niagara population aged 25 to 64 years in 2016 had a postsecondary certificate, diploma or degree compared to Ontario and Canada - 60% compared to around 65%. Niagara has a notably smaller portion of population aged 25 to 64 years who have attained a university certificate, diploma or degree at the bachelor level or higher – 20.7% compared to 31.9% and 28.5% for Ontario and Canada respectively. A higher portion (29.1%) of the Niagara population have College, CEGEP or non-university certificates or diplomas compared to Ontario (24.7%) and Canada (22.4%). See Exhibit 3.

Exhibit 3: Highest Educational Attainment – Population Aged 25 – 64 years

Highest certificate, diploma or degree	Niagara Number	Niagara Percent	Ontario Percent	Canada Percent
Population aged 25 – 64 years	229,125			
No certificate, diploma or degree	23,365	10.2%	10.4%	11.5%
Secondary (high) school diploma or equivalency certificate	68,355	29.8%	24.5%	23.7%
Postsecondary certificate, diploma or degree	137,400	60.0%	65.1%	64.8%
Apprenticeship or trades certificate or diploma	19,245	8.4%	6.2%	10.8%
Trades certificate or diploma other than Certificate of Apprenticeship or Certificate of Qualification	9,140	4.0%	3.0%	6.0%
Certificate of Apprenticeship or Certificate of Qualification	10,105	4.4%	3.1%	4.7%
College, CEGEP or other non-university certificate or diploma	66,645	29.1%	24.7%	22.4%
University certificate or diploma below bachelor level	4,000	1.7%	2.4%	3.1%
University certificate, diploma or degree at bachelor level or above	47,515	20.7%	31.9%	28.5%
Bachelor's degree	32,850	14.3%	21.0%	19.0%
University certificate or diploma above bachelor level	3,230	1.4%	2.1%	1.9%
Degree in medicine, dentistry, veterinary medicine or optometry	1,275	0.6%	0.9%	0.8%
Master's degree	9,010	3.9%	6.9%	5.9%
Earned doctorate	1,155	0.5%	1.0%	0.9%

Source: Statistics Canada 2016 Census

Compared to Ontario, a lower portion of the population aged 25 to 64 years in Niagara have attained postsecondary diploma, degree or certificate in business, management and public administration; or mathematics, computer and information sciences (lower by about two percentage points or more). Niagara has higher portion of its population with a postsecondary diploma, degree or certificate in health and related fields, and personal; protective and transportation services – about 3 percentage points higher than Ontario.

Exhibit 4: Major Field of Study, Population 25 – 64 Years

Major Field of Study	Niagara Total	Niagara Percent	Ontario Percent	Canada Percent
Education	8,745	6.4%	5.2%	5.9%
Visual and performing arts; and communications technologies	5,050	3.7%	4.1%	3.8%
Humanities	6,430	4.7%	5.7%	5.0%
Social and behavioural sciences and law	16,380	11.9%	13.8%	11.6%
Business; management and public administration	26,635	19.4%	21.8%	22.0%
Physical and life sciences and technologies	3,815	2.8%	4.0%	3.7%
Mathematics; computer and information sciences	4,365	3.2%	5.4%	4.6%
Architecture; engineering; and related technologies	27,535	20.0%	18.7%	20.6%
Agriculture; natural resources and conservation	3,010	2.2%	1.8%	2.2%
Health and related fields	23,765	17.3%	14.1%	14.3%
Personal; protective and transportation services	11,640	8.5%	5.5%	6.3%
Total Persons with Postsecondary diploma, degree of certificate	137,390	100.0%	100.0%	100.0%

Source: Statistics Canada 2016 Census

Labour Force

There were 226,595 persons in the Niagara labour force in 2016 which represents a participation level of around 61% of those 15 years of age and older (which is slightly lower than the participation rate for Ontario at 64.7%). The portion of the Niagara labour force that was employed in 2016 was 209,890 (92.6%). Niagara's unemployment rate was 7.4%, which is the same as the Ontario unemployment rate in that year. The size of the Niagara labour force increased by only 2.4% between 2011 and 2016, compared to a 4.0% increase in Ontario.

The percentage of the Niagara labour force by sector is comparable to Ontario and Canada for most sectors. Those sectors where there is a two percentage point or higher difference are noted below, with data shown in Exhibit 5:

- A total of 11.2% of the Niagara labour force were employed in the accommodations and food services sector in 2016, compared to 6.9% and 7.0% in Ontario and Canada respectively;
- Only 4.7% of the Niagara labour force were employed in the professional, scientific and technical services sector in 2016, compared to 8.1% and 7.3% in Ontario and Canada respectively;
- The arts, entertainment and recreation sector accounted for 4.1% of the Niagara labour force employment in 2016, compared to 2.1% in both Ontario and Canada;

- The finance and insurance sector only accounted for 3.0% of jobs of the Niagara labour force in 2016, which is lower than 5.5% in Ontario (although only 1.3 percentage points lower than Canada).

Exhibit 5: Labour Force by Sector

NAIC/Sector	Niagara Number	Niagara-Percent	Ontario Percent	Canada Percent
44-45 Retail trade	27,325	12.3%	11.2%	11.6%
62 Health care and social assistance	25,920	11.7%	10.8%	11.7%
72 Accommodation and food services	24,915	11.2%	6.9%	7.0%
31-33 Manufacturing	21,100	9.5%	9.8%	8.7%
61 Educational services	16,455	7.4%	7.6%	7.4%
23 Construction	16,065	7.2%	6.8%	7.5%
56 Administrative and support; waste management and remediation services	11,900	5.4%	4.9%	4.4%
91 Public administration	10,685	4.8%	6.0%	6.2%
54 Professional; scientific and technical services	10,505	4.7%	8.1%	7.3%
81 Other services (except public administration)	10,025	4.5%	4.3%	4.5%
48-49 Transportation and warehousing	9,440	4.3%	4.7%	4.8%
71 Arts; entertainment and recreation	9,100	4.1%	2.1%	2.1%
41 Wholesale trade	7,805	3.5%	3.9%	3.6%
52 Finance and insurance	6,715	3.0%	5.5%	4.3%
11 Agriculture; forestry; fishing and hunting	5,790	2.6%	1.5%	2.4%
53 Real estate and rental and leasing	3,425	1.5%	2.1%	1.8%
51 Information and cultural industries	2,845	1.3%	2.5%	2.3%
22 Utilities	1,370	0.6%	0.7%	0.7%
21 Mining; quarrying; and oil and gas extraction	515	0.2%	0.5%	1.5%
55 Management of companies and enterprises	180	0.1%	0.2%	0.2%
Total (excludes not applicable category)	222,080	100.0%	100.0%	100.0%

Source: Statistics Canada 2016 Census

Niagara has a notably larger portion of its labour force employed in sales and services jobs (29.1%) compared to Ontario and Canada (both at 23.4%). It has a lower portion in business, finance, and administration occupations; as well as natural and applied sciences and related occupations. See Exhibit 6.

Exhibit 6: Labour Force by Occupation

Occupation Classification	Niagara Number	Niagara Percent	Ontario Percent	Canada Percent
0 Management occupations	23,885	10.8%	11.3%	11.0%
1 Business; finance and administration occupations	29,220	13.2%	16.1%	15.7%
2 Natural and applied sciences and related occupations	10,120	4.6%	7.4%	7.0%
3 Health occupations	15,885	7.2%	6.4%	6.8%
4 Occupations in education; law and social; community and government services	23,585	10.6%	11.9%	11.7%
5 Occupations in art; culture; recreation and sport	5,485	2.5%	3.2%	3.1%
6 Sales and service occupations	64,735	29.1%	23.4%	23.4%
7 Trades; transport and equipment operators and related occupations	33,180	14.9%	13.3%	14.6%
8 Natural resources; agriculture and related production occupations	5,785	2.6%	1.6%	2.3%
9 Occupations in manufacturing and utilities	10,200	4.6%	5.2%	4.5%
All occupations (excludes not applicable category)	222,080	100.0%	100.0%	100.0%

Source: Statistics Canada 2016 Census

The 'jobs to labour force' ratio is a measure of 'complete communities' and is used to measure and track the opportunity for workers to hold a job in their community. The ratio is calculated by dividing the number of jobs in a community by the labour force residing in that community. Generally, communities strive to have a balanced jobs to labour force ratio of close to 1:1. Larger urban centres tend to have higher jobs to labour force ratios as they are economic centres attracting large inflows of labour.

The 'jobs to labour force' ratio varies by community throughout Niagara. At an overall regional level, Niagara has a slightly less than optimal ratio of jobs to labour force with a ratio of 0.94 jobs to every person in the labour force. Niagara has a high number of jobs to labour force in the management of companies and enterprises sector with 1,462 jobs but only 180 of the Niagara labour force working in that sector, as shown below.

Exhibit 7: Number of Jobs to Labour Force in Niagara, 2016

NAICS	Description	Jobs	Labour Force	Jobs to Labour Force Ratio
11	Agriculture, forestry, fishing and hunting	4,924	5,970	0.82
21	Mining, quarrying, and oil and gas extraction	309	515	0.60
22	Utilities	1,375	1,370	1.00
23	Construction	15,760	16,065	0.98
31-33	Manufacturing	18,297	21,100	0.87
41	Wholesale trade	8,025	7,805	1.03
44-45	Retail trade	27,245	27,325	1.00
48-49	Transportation and warehousing	6,684	9,440	0.71
51	Information and cultural industries	2,045	2,845	0.72
52	Finance and insurance	5,935	6,715	0.88
53	Real estate and rental and leasing	4,582	3,425	1.34
54	Professional, scientific and technical services	8,703	10,505	0.83
55	Management of companies and enterprises	1,462	180	8.12
56	Administrative and support, waste management and remediation services	12,077	11,900	1.01
61	Educational services	14,489	16,455	0.88
62	Health care and social assistance	24,829	25,920	0.96
71	Arts, entertainment and recreation	8,666	9,100	0.95
72	Accommodation and food services	25,333	24,915	1.02
81	Other services (except public administration)	9,806	10,025	0.98
91	Public administration	10,265	10,685	0.96
X0	Unclassified	3,300	4,335	0.76
	Total	214,110	226,595	0.94

Source: EMSI 2018.1 Dataset, Statistics Canada 2016 Census

Income

The average total household income in Niagara in 2015 was \$81,842 which represents a 13% increase from 2010, not taking into account inflation. This can be compared to an average total household income of \$97,856 in Ontario, which is a 14.1% increase from 2005, not considering inflation. A comparison of household income levels in Niagara against benchmark regions is provided later in this discussion paper.

Section 2: Commuting Trends

The Niagara region employed resident labour force was 209,890 in 2016, of which 171,345 persons worked at a usual place of work. An additional 22,940 worked at 'no fixed place of work' (such as landscapers and truck drivers); 13,955 persons worked at home; and 1,650 worked outside of Canada.

Statistics Canada reports on estimated commuting flows of persons 15 years of age or older that worked at a usual place of work in 2016 based on a 25% sample and flows of 20 persons or more.

The majority of jobs at usual places of work in Niagara were held by people living in Niagara. The largest inflow of workers from outside Niagara were from Hamilton (4,350) and Haldimand county (1,045). Data on place of residence of persons working at usual places of work in Niagara in 2016 is provided in Exhibit 8.

Commuting flows were estimated for 169,005 persons in the Niagara employed resident labour force in 2016 (98.6% of the total number of Niagara employed labour force with a usual place of work). The communities with the largest share of the Niagara resident labour force working in those communities were St. Catharines (48,250), Niagara Falls (34,425), Welland (14,195), Hamilton (11,840) and Niagara-on-the-Lake (9,710). About 84% or 144,320 (of the Niagara employed resident labour force that worked at usual places of work had jobs in Niagara. Under 25,000 persons worked outside of Niagara, with about half (48%) working in Hamilton. Data on commuting flows of the employed resident labour force with a usual place of work in 2016 is provided in Exhibit 9.

Exhibit 8: Municipality of Residence of Persons Commuting to Niagara for Work, 2016

Municipality	St. Catharines	Niagara Falls	Welland	NOTL	Lincoln	Fort Erie	Grimsby	Thorold	Port Colborne	Pelham	West Lincoln	Wainfleet	Total
Burlington	240	75	40	40	105		165	35					700
Fort Erie	950	1,895	455	225	70	5,670	30	195	375	35		25	9,925
Grimsby	600	115	85	95	680		2,710	60			230		4,575
Haldimand County	105	110	125		105	25	145	35	60	40	240	55	1,045
Hamilton	1,345	255	165	210	565	50	1,275	110	25	20	330		4,350
Lincoln	1,350	285	135	165	2,805	25	925	80	25	60	145		6,000
Mississauga	170	70	25	20	20	20	35						360
Niagara Falls	5,035	22,070	1,040	1,830	360	725	210	1,070	220	155	70		32,785
NOTL	1,365	840	105	2,325	100	65	45	120					4,965
Oakville	90	40		20	40		60						250
Pelham	1,515	600	1,110	200	215	45	100	380	120	1,140	80	30	5,535
Port Colborne	645	515	1,010	65	95	505		130	2,705	70	25	100	5,865
St. Catharines	29,800	4,435	1,280	3,785	2,040	315	825	1,980	210	265	240	35	45,210
Thorold	3,100	1,200	395	510	280	65	105	1,250	50	125	25		7,105
Toronto	215	140	55	85	45		30	30					600
Wainfleet	235	175	375	55	80	25	55	70	280	90	80	370	1,890
Welland	3,300	2,220	8,130	415	355	465	130	885	765	765	200	100	17,730
West Lincoln	355	75	75	40	390		440	80		155	1,125		2,735
Totals	50,415	35,115	14,605	10,085	8,350	8,000	7,285	6,510	4,835	2,920	2,790	715	151,625

Note: Totals exclude flows under 20 persons

Source: Statistics Canada - 2016 Census. Catalogue Number 98-400-X2016325.

Exhibit 9: Commuting Flow of Niagara Labour Force by Place of Work, 2016 Census

Municipality of Work	Municipality of Residence												Total
	St. Catharines	Niagara Falls	Welland	Grimsby	Fort Erie	Lincoln	Thorold	Port Colborne	Pelham	West Lincoln	NOTL	Wainfleet	
St. Catharines	29,800	5,035	3,300	600	950	1,350	3,100	645	1,515	355	1,365	235	48,250
Niagara Falls	4,435	22,070	2,220	115	1,895	285	1,200	515	600	75	840	175	34,425
NOTL	3,785	1,830	415	95	225	165	510	65	200	40	2,325	55	9,710
Hamilton	2,400	685	665	3,405	155	1,605	310	125	345	1,805	130	210	11,840
Lincoln	2,040	360	355	680	70	2,805	280	95	215	390	100	80	7,470
Thorold	1,980	1,070	885	60	195	80	1,250	130	380	80	120	70	6,300
Welland	1,280	1,040	8,130	85	455	135	395	1,010	1,110	75	105	375	14,195
Grimsby	825	210	130	2,710	30	925	105		100	440	45	55	5,575
Toronto	675	405	130	345	85	160	85	75	145	90	160	45	2,400
Burlington	670	215	155	1,345	65	635	110	45	70	375	60	35	3,780
Mississauga	540	180	130	490	45	210	30	60	50	150	85	20	1,990
Oakville	435	195	120	580	40	290	50			95	80		1,885
Fort Erie	315	725	465		5,670	25	65	505	45		65	25	7,905
Pelham	265	155	765		35	60	125	70	1,140	155		90	2,860
West Lincoln	240	70	200	230		145	25	25	80	1,125		80	2,220
Port Colborne	210	220	765		375	25	50	2,705	120			280	4,750
Brampton	115	90	35	80	25	60	20			25	25		475
Milton	100	30	20	90		50	20			30			340
Vaughan	70	40				40							150
Kitchener	70												70
Markham	65										20		85
Haldimand County	65	35	85	45	40	60		95	95	240		170	930
Cambridge	65	40	20		20								145
Brantford	60		20	50						35			165
Guelph	50		25	25						25			125
Waterloo	50	20											70
Ottawa	45	20	25										90
Richmond Hill	35												35
Wainfleet	35		100		25			100	30			370	660
London	30	30					30						90
Halton Hills		20		25									45
	50,750	34,790	19,160	11,030	10,400	9,110	7,760	6,265	6,240	5,605	5,525	2,370	169,005

Source: Statistics Canada - 2016 Census. Catalogue Number 98-400-X2016325.

Section 3: Economic Base and Sector Analysis

Niagara – Job Growth in the Last Fifteen Years within Ontario and Canada Contexts

The total number of jobs in Niagara increased from 203,651 in 2003 to 222,202 in 2018, which is a growth of 9.1%. This is significantly lower than job growth in Canada and Ontario (roughly 22% each) over that period. There was significant job loss in Niagara in the aftermath of 2008 - 2009 Great Recession, particularly in the manufacturing sector. Between 2008 and 2013, Niagara lost over 8,400 of its total jobs, and its job level in 2013 (201,866) was lower than in 2003 (203,651). See Exhibit 1.

While Niagara had job growth in several services sectors between 2003 and 2018, the region suffered large job losses in the manufacturing sector as mentioned, which adversely impacted the total employment level in the region. Over the fifteen year period, the manufacturing sector in Niagara lost about 34% (9,802) of its jobs, which is a notably higher percentage job loss for this sector compared to Ontario (24.2%) and Canada (20.2%) over the period. The job loss in the manufacturing sector over this period was part of a broader trend towards restructuring of the sector, automation, and movement of some jobs to more cost competitive offshore locations. The loss of manufacturing sector jobs in Niagara also changed the relative importance of manufacturing as a job-intensive sector in the region: the manufacturing sector in Niagara accounted for 14.0% of jobs in the region in 2003, but that decreased to only 8.4% in 2018.

A decline in the manufacturing sector in Niagara has been underway for many years. For example, based on data from the Statistics Canada Labour Force Survey, the manufacturing sector accounted for around 47,300 jobs in the St. Catharines – Niagara CMA in 1987. By 1995, manufacturing jobs in the CMA had decreased to 32,700.

Over the fifteen year period between 2003 and 2018, there has been a decrease in the number of jobs in the agriculture, forestry, fishing and hunting sector in Niagara with a loss of 1,293 jobs. The percentage job loss in this sector at 21.3% is roughly midpoint of the percentage job loss in Ontario (18.9%) and Canada (23.3%).

The information and cultural Industries sector, a relatively small sector in Niagara, lost 441 jobs or 17.8% of sector jobs between 2003 and 2018. In comparison, the number of jobs in this sector increased by 15.5% and 9.4% in Ontario and Canada respectively over the fifteen year period.

Two other sectors that had some job loss in Niagara over the fifteen year period compared to significant job growth in Ontario and Canada were the transportation and warehousing sector with a 6.3% job loss compared to 28.7% and 25.6% job growth in Ontario and Canada respectively; and the finance and insurance sector with 13.5% job loss in Niagara, compared to 39.3% and 31.2% job growth in Ontario and Canada respectively.

Like Ontario and Canada, job growth has occurred in services sectors in Niagara, although generally to a lesser extent than in Ontario and Canada. See Exhibit 10.

Exhibit 10: Job Growth in Niagara Compared to Ontario and Canada, 2003 - 2018

NAICS	Description	2003 Jobs	2008 Jobs	2013	2018 Jobs	Change 2003 - 2018	Niagara % Change 2003 - 2018	Ontario % Change 2003 - 2018	Canada % Change 2003 - 2018
11	Agriculture, forestry, fishing and hunting	6,083	6,175	4,877	4,790	-1,293	-21.3%	-18.9%	-23.3%
21	Mining, quarrying, and oil and gas extraction	195	290	254	332	138	70.6%	53.5%	36.2%
22	Utilities	1,354	931	1,276	1,419	65	4.8%	9.5%	11.5%
23	Construction	13,162	15,759	15,153	16,466	3,304	25.1%	48.2%	55.7%
31-33	Manufacturing	28,593	21,179	17,025	18,791	-9,802	-34.3%	-24.2%	-20.2%
41	Wholesale trade	8,241	8,710	8,200	8,282	42	0.5%	10.9%	7.1%
44-45	Retail trade	23,738	26,711	26,020	27,666	3,928	16.5%	17.0%	16.2%
48-49	Transportation and warehousing	7,502	7,370	6,857	7,026	-476	-6.3%	28.7%	25.6%
51	Information and cultural industries	2,472	2,506	1,897	2,031	-441	-17.8%	15.5%	9.4%
52	Finance and insurance	6,598	6,313	5,825	5,705	-893	-13.5%	39.3%	31.2%
53	Real estate and rental and leasing	3,237	3,144	4,473	4,425	1,189	36.7%	48.7%	39.4%
54	Professional, scientific and technical services	7,698	8,361	8,009	9,119	1,420	18.5%	37.4%	38.6%
55	Management of companies and enterprises	1,266	1,372	1,749	1,470	204	16.1%	-12.2%	1.2%
56	Administrative & support, waste management/remediation	11,055	12,180	11,561	12,247	1,192	10.8%	24.6%	28.8%
61	Educational services	11,712	13,779	13,303	14,965	3,252	27.8%	33.5%	27.9%
62	Health care and social assistance	19,120	19,842	22,061	26,756	7,636	39.9%	53.7%	44.5%
71	Arts, entertainment and recreation	8,974	8,678	7,745	9,038	64	0.7%	30.8%	31.6%
72	Accommodation and food services	21,610	24,610	23,007	27,278	5,668	26.2%	40.9%	33.2%
81	Other services (except public administration)	10,420	11,041	9,900	9,810	-610	-5.9%	5.8%	6.0%
91	Public administration	9,195	9,226	9,869	10,748	1,553	16.9%	22.6%	22.1%
X0	Unclassified	1,428	2,100	2,804	3,839	2,411	168.9%	202.4%	209.7%
	Total Jobs	203,651	210,277	201,866	222,202	18,551	9.1%	22.4%	21.7%

Source: EMSI, 2018.1 Dataset

The level of job growth in Niagara over the past fifteen years has varied by community with the highest job growth occurring in Niagara Falls (5,205) and Welland (5,172) as shown in Exhibit 11. The highest percentage job growth occurred in West Lincoln, Grimsby, and Welland. Fort Erie and Wainfleet were the only two of the twelve municipalities in the region to lose jobs over the fifteen year period (297 and 314 jobs respectively). The job loss in Fort Erie was particularly high between 2003 and 2013 when the number of jobs decreased from 13,508 to 11,988. However, there was significant growth in the community between 2013 and 2018, with an increase of 1,223 jobs.

The share of jobs by community in Niagara has shifted slightly between 2003 and 2018. In particular, the largest community, St. Catharines, has a lower share of jobs in the region in 2018 (31.4%) compared to 2003 (33.6%); Welland's share of jobs increased from 10.9% in 2003 to 12.3% in 2018.

Exhibit 11: Job Growth by Community in Niagara – 2003 to 2018

Community	2003	2008	2013	2018	2003-2018 Change	2003-2018 Change	% Share of Niagara Jobs 2003	% Share of Niagara Jobs 2018
St. Catharines	68,378	69,889	65,415	69,870	1,492	2.2%	33.6%	31.4%
Niagara Falls	43,639	46,117	44,893	48,844	5,205	11.9%	21.4%	22.0%
Welland	22,183	24,262	23,576	27,355	5,172	23.3%	10.9%	12.3%
Niagara-on-the-Lake	11,822	12,279	11,038	13,062	1,240	10.5%	5.8%	5.9%
Fort Erie	13,508	12,756	11,988	13,211	-297	-2.2%	6.6%	5.9%
Lincoln	11,357	9,971	11,215	12,774	1,417	12.5%	5.6%	5.7%
Grimsby	7,975	9,075	8,762	9,977	2,002	25.1%	3.9%	4.5%
Thorold	8,456	8,375	7,631	8,782	326	3.9%	4.2%	4.0%
Port Colborne	6,802	7,107	6,769	6,946	144	2.1%	3.3%	3.1%
Pelham	4,317	4,659	4,521	5,094	777	18.0%	2.1%	2.3%
West Lincoln	3,703	4,526	4,898	5,089	1,386	37.4%	1.8%	2.3%
Wainfleet	1,512	1,262	1,160	1,198	-314	-20.8%	0.7%	0.5%
Niagara Region	203,652	210,278	201,866	222,202	18,550	9.1%	100.0%	100.0%

Source: EMSI, 2018.1 Dataset

Niagara – Job Changes in 2013 to 2018

A review of data on job levels and growth in Niagara over the last five years provides insight on recent changes in the economic base. Niagara has had strong job growth over the past five years with a 10.1% increase in the number of jobs, which is slightly higher than the percentage job increase in Ontario (9.4%) and higher than the percentage job increase in Canada (6.5%) between 2013 and 2018.

Data on the changes in the number of jobs by sector in Niagara between 2013 and 2018 and location quotients are provided in Exhibit 12. Location quotients are used to compare the relative concentration of each sector in a community to a reference area (in this case Ontario). The comparison uses a simple ratio of sector employment to total employment. The provincial average for each sector has a location quotient of 1. A location quotient higher than 1 indicates a higher employment concentration in that sector than the provincial average, while less than 1 indicates the concentration is lower than the provincial average. Greater location quotient variances mean higher or lower employment concentrations than provincial averages. In essence, location quotients allow us to identify which sectors are over- or under-represented relative to the province as a whole. High location quotients are indicative of a region's or community's sector specialization. Sectors with high location quotients are usually 'traded' or export sectors that bring new money into a region or community rather than just a recirculation of money already in a local economy.

Some of the key findings for Niagara from a review of data at the 2 digit NAIC level are:

- The most significant sectors as measured by location quotients are: agriculture, forestry, fishing, and hunting (1.94); arts, entertainment and recreation (1.92); and accommodation and food services (1.75).
- Manufacturing has a location quotient of 0.92, which is slightly below the Ontario average; however, Niagara had higher percentage job growth in this sector compared to Ontario over the five year period – 10.4% compared to 2.5%.
- The management of companies and enterprises sector has a location quotient of 1.40, which is slightly above the provincial average. However the sector lost 16.0% of its jobs between 2013 and 2018, which is higher than the percentage job loss in this sector in Ontario over that period (10.5%);
- Niagara has particularly low location quotients for information and cultural industries; finance and insurance; and professional, scientific and technical services sectors – roughly half the Ontario average.

A review of data for selected sectors is provided on the following pages. The discussion includes an overview of job levels and percentage job growth, location quotients and shift share analysis. Shift share¹ is a regional analysis method that is used to estimate how much of regional job growth can be

¹ For further information on shift share analysis, please see http://www.economicmodeling.com/wp-content/uploads/2007/10/emsi_understandingshiftshare.pdf

attributed to national trends and how much is due to unique regional factors or competitive advantages. Three measures are used in shift share analysis when analysing sector growth within a region such as Niagara: national growth effect (how much of the regional sector growth is explained by growth in the national economy), expected change (based on growth of sector at the national level) and regional competitiveness effect (which is calculated by taking the regional growth and subtracting the national growth). In the following sections, we note how the job growth by sector and subsector in Niagara compares to the level of job growth that would have been expected based on shift share analysis.

Exhibit 12: Job Growth by Sector in Niagara (2013 – 2018)

NAICS	Description	2013 Jobs	2018 Jobs	2013 - 2018 Change	Niagara 2013 - 2018 % Change	Ontario 2013 - 2018 % Change	LQ
11	Agriculture, forestry, fishing and hunting	4,877	4,790	-87	-1.8%	-17.2%	1.94
21	Mining, quarrying, and oil and gas extraction	254	332	78	30.7%	14.5%	0.41
22	Utilities	1,276	1,419	143	11.2%	2.1%	1.04
23	Construction	15,153	16,466	1,313	8.7%	12.7%	1.13
31-33	Manufacturing	17,025	18,791	1,766	10.4%	2.5%	0.92
41	Wholesale trade	8,200	8,282	82	1.0%	9.1%	0.75
44-45	Retail trade	26,020	27,666	1,646	6.3%	6.1%	1.17
48-49	Transportation and warehousing	6,857	7,026	169	2.5%	10.9%	0.71
51	Information and cultural industries	1,897	2,031	134	7.1%	8.0%	0.41
52	Finance and insurance	5,825	5,705	-120	-2.1%	8.2%	0.53
53	Real estate and rental and leasing	4,473	4,425	-48	-1.1%	12.5%	0.84
54	Professional, scientific and technical services	8,009	9,119	1,110	13.9%	12.6%	0.54
55	Management of companies and enterprises	1,749	1,470	-279	-16.0%	-10.5%	1.40
56	Administrative and support, waste management/remediation services	11,561	12,247	686	5.9%	4.1%	0.99
61	Educational services	13,303	14,965	1,662	12.5%	9.8%	0.99
62	Health care and social assistance	22,061	26,756	4,695	21.3%	16.7%	1.08
71	Arts, entertainment and recreation	7,745	9,038	1,293	16.7%	23.6%	1.92
72	Accommodation and food services	23,007	27,278	4,271	18.6%	19.6%	1.75
81	Other services (except public administration)	9,900	9,810	-90	-0.9%	0.0%	1.06
91	Public administration	9,869	10,748	879	8.9%	5.0%	0.82
X0	Unclassified	2,804	3,839	1,035	36.9%	35.0%	1.00
	Total	201,866	222,202	20,336	10.1%	9.4%	

Source: EMSI, 2018.1 Dataset

Agriculture

The percentage decrease in the number of jobs in the agriculture, forestry, fishing and hunting sector in Niagara over the past five years has been low (1.8%) compared to the significant decrease in the number of jobs in this sector in Ontario (17.2%).

Farms (NAIC 1111) is a significant subsector in Niagara and accounts for the vast majority of jobs in the agriculture, forestry, fishing and hunting sector at 4,750 jobs (out of 4,790 jobs in the broader sector in 2018). The number of jobs lost in the farming sector in Niagara between 2013 and 2018 was 82, which is significantly lower than the expected change based on shift share analysis (473).

Farms have a location quotient of 2.1 in Niagara, which is over two times the Ontario average.

Further information on the agriculture sector will be provided later in this discussion paper, using data from the Census of Agriculture.

Manufacturing

There have been significant job gains in the manufacturing sector in Niagara over the last five years with an increase of 1,766 jobs or 10.4% between 2013 and 2018, which is higher than the job growth in this sector in Ontario (2.5%) and Canada (1.5%).

The job growth in manufacturing in Niagara was considerably higher than expected using shift share analysis. Specifically, the expected change was only 251 jobs. Niagara's job growth in this sector beyond the level expected was 1,515 jobs.

Some of the most significant manufacturing subsectors are discussed below.

Beverage Manufacturing

Beverage manufacturing (NAIC 3121) is the largest manufacturing subsector in Niagara at the 4 digit NAIC level, with the majority of jobs being in wine production. Beverage manufacturing accounted for 2,519 jobs in Niagara in 2018 which is a 56.6% growth from 2013 (compared to a 20.5% growth in Ontario). This represents a growth of 910 jobs over the period which is close to double the expected change based on shift share analysis (471).

The beverage manufacturing segment in Niagara has high location quotient level at 4.87, which is about 5 times the Ontario average.

Motor Vehicle Manufacturing

The motor vehicle manufacturing subsector accounted for 2,048 jobs in Niagara in 2018 which is an increase of 439 jobs or 27.3% from 2017. This is a growth of 243 more jobs than expected based on shift share analysis. In comparison, the number of jobs in this subsector increased by 14.3% in Ontario between 2013 and 2018.

The motor vehicle manufacturing subsector in Niagara has a location quotient of 1.82, which is close to double the Ontario average.

Architectural and Structural Metals Manufacturing

Another significant manufacturing subsector in Niagara is architectural and structural metals manufacturing with 1,269 jobs in 2018 and an increase of 385 jobs (43.6%) between 2013 and 2018, compared to a 3% job growth in Ontario. Niagara's job growth in this subsector was marginally higher than expected based on shift share analysis (19 more jobs).

The location quotient for this segment is 1.93 which is about two times the Ontario average.

Manufacturing – Highest Growth Subsectors

Several manufacturing subsectors in Niagara have had job growth at much higher percentage levels than Ontario as shown in Exhibit 13. About half of these have location quotients that are roughly two times the provincial average or higher.

Exhibit 13: Highest Manufacturing Growth Segments in Niagara 2013 - 2018

NAICS	Description	2013 Jobs	2018 Jobs	2013 - 2018 Change	2013 - 2018 % Change	Ontario 2013 - 2018 % Change	LQ
3121	Beverage manufacturing	1,609	2,519	910	56.6%	20.5%	4.87
3361	Motor vehicle manufacturing	1,609	2,048	439	27.3%	14.3%	1.82
3323	Architectural and structural metals manufacturing	884	1,269	385	43.6%	3.0%	1.93
3312	Steel product manufacturing from purchased steel	392	586	194	49.5%	-6.3%	5.13
3261	Plastic product manufacturing	491	668	177	36.0%	9.3%	0.51
3262	Rubber product manufacturing	282	427	145	51.4%	-0.8%	2.55
3339	Other general-purpose machinery manufacturing	678	814	136	20.1%	5.3%	1.79
3272	Glass and glass product manufacturing	209	341	132	63.2%	-22.1%	3.57
3363	Motor vehicle parts manufacturing	528	640	112	21.2%	15.9%	0.32
3259	Other chemical product manufacturing	87	194	107	123.0%	23.2%	1.14
3335	Metalworking machinery manufacturing	429	531	102	23.8%	12.2%	1.01
3341	Computer and peripheral equipment manufacturing	24	101	77	320.8%	-2.4%	1.12
3255	Paint, coating and adhesive manufacturing	108	180	72	66.7%	5.1%	1.71
3364	Aerospace product and parts manufacturing	271	341	70	25.8%	9.3%	0.93
3328	Coating, engraving, cold and heat treating and allied activities	281	348	67	23.8%	10.6%	1.86
3253	Pesticide, fertilizer and other agricultural chemical manufacturing	49	99	50	102.0%	16.7%	2.74

Source: EMSI, 2018.1 Dataset

Tourism

The Tourism sector includes businesses, products and activities that cater to visitors, however, many of these also serve local residents and can be considered as part of the quality of place amenities such as restaurants, cultural and heritage attractions and activities, sporting and recreational facilities, etc. Accommodation facilities generally are used by visitors rather than local residents or local businesses, however, a portion of those facilities such as boardrooms, banquet halls and restaurants may also be used by the local businesses and population. Tourism is not a distinct sector in the North American Industry Classification (NAIC) system, but portions of what could be considered to be tourism-related

are included in specific NAIC codes within NAIC 71 - Arts, Entertainment and Recreation, NAIC 72 - Accommodation and Food Services, NAIC 48 – Transportation, and others.

As mentioned previously, the arts, entertainment and recreation sector in Niagara is one of the three most significant sectors as measured by location quotient at 1.92. The sector's percentage job growth between 2013 and 2018 was 16.7% (1,293 jobs), which was lower than the job growth in this sector in Ontario (23.6%). Based on shift share analysis, the job growth in the sector in Niagara was about 39 jobs lower than expected.

Niagara had relatively high percentage job growth in most of the industry segments within the arts, entertainment and recreation sector between 2013 and 2018 compared to Ontario. Job growth was lower in Niagara for heritage institutions (at 9.1% compared to 44.3% in Ontario). Like Ontario, Niagara lost jobs in gambling industries but had a higher percentage job loss (35.3%) compared to Ontario (21%) between 2013 and 2018. Five of the eight subsectors in the arts, entertainment and recreation sector (NAIC 71) in Niagara, as noted in Exhibit 14, have location quotients of around 2.5 or higher, with the highest being gambling industries with a location quotient of 5.7.

The one subsector in the accommodation and food services sector (NAIC 72) that has a job concentration notably above average is traveller accommodations with a location quotient of 4.8 – so roughly five times above the provincial average, which is an indication of the strength of the overnight tourism segment in Niagara.

Exhibit 14: Number of Jobs in Key Tourism-related Industry Segments in Niagara, 2013 - 2018

NAICS	Description	2013 Jobs	2018 Jobs	2013 - 2018 Change	2013 - 2018 % Change	Ontario 2013 - 2018 % Change	LQ
7111	Performing arts companies	581	896	315	54.2%	-8.3%	2.45
7112	Spectator sports	308	546	238	77.3%	15.7%	2.50
7113	Promoters (presenters) of performing arts, sports and similar events	161	305	144	89.4%	47.2%	0.97
7115	Independent artists, writers and performers	524	949	425	81.1%	17.2%	1.12
7121	Heritage institutions	928	1,012	84	9.1%	44.3%	4.04
7131	Amusement parks and arcades	282	605	323	114.5%	28.1%	4.01
7132	Gambling industries	3,106	2,011	- 1,095	-35.3%	-21.0%	5.71
7139	Other amusement and recreation industries	1,849	2,651	802	43.4%	42.8%	1.21
7211	Traveller accommodations	7,527	8,673	1,146	15.2%	16.7%	4.83
7212	Recreational vehicle (RV) parks and recreational camps	74	38	-36	-48.6%	14.8%	0.19
7223	Special food services	556	719	163	29.3%	21.1%	0.62
7224	Drinking places (alcoholic beverages)	548	347	-201	-36.7%	-20.1%	1.38
7225	Full-service restaurants and limited-service eating places	14,289	17,492	3,203	22.4%	21.2%	1.44
4871	Scenic & Sightseeing transportation - land	41	<10	<10	-	-	-
4872	Scenic & Sightseeing transportation – water	89	216	127	143.0%	96.5%	8.2

Source: EMSI, 2018.1 Dataset

Health Care and Social Assistance

There has been significant growth in the health care and social assistance sector in Niagara over the last five years, with a job growth of 21.3%. This has also been a growth sector in Ontario with a job growth of 16.7% between 2013 and 2018, partly fueled by the health and social assistance needs of an aging population.

The job growth in Niagara in the health care and social assistance sector between 2013 and 2018 was 686 jobs which is 115 more jobs than expected based on shift share analysis.

Only two subsectors in the health care and social assistance sector have location quotients that are approaching twice the provincial average – nursing care facilities and residential developmental handicap, mental health and substance abuse facilities, with location quotients of about 1.7 each. See Exhibit 15.

Exhibit 15: Job Growth in Health Care and Social Assistance Industry Segments

NAICS	Description	2013 Jobs	2018 Jobs	2013 - 2018 Change	2013 - 2018 % Change	Ontario 2013 - 2018 % Change	LQ
6211	Offices of physicians	1,803	2,482	679	37.7%	19.4%	1.00
6212	Offices of dentists	1,695	1,988	293	17.3%	18.9%	1.27
6213	Offices of other health practitioners	1,483	1,973	490	33.0%	32.6%	0.93
6214	Out-patient care centres	748	1,140	392	52.4%	19.5%	1.06
6215	Medical and diagnostic laboratories	337	419	82	24.3%	28.8%	1.02
6216	Home health care services	860	1,168	308	35.8%	24.5%	1.16
6219	Other ambulatory health care services	161	105	-56	-34.8%	12.0%	0.53
6221	General medical and surgical hospitals	5,008	5,685	677	13.5%	10.5%	0.94
6222	Psychiatric and substance abuse hospitals	0	0	0	0.0%	-0.8%	0.00
6223	Specialty (except psychiatric and substance abuse) hospitals	0	0	0	0.0%	14.7%	0.00
6231	Nursing care facilities	2,720	3,566	846	31.1%	23.7%	1.72
6232	Residential developmental handicap, mental health and substance abuse facilities	1,602	1,445	-157	-9.8%	-0.6%	1.69
6233	Community care facilities for the elderly	1,289	1,671	382	29.6%	13.1%	1.23
6239	Other residential care facilities	526	518	-8	-1.5%	-7.4%	1.02
6241	Individual and family services	1,857	2,457	600	32.3%	28.8%	1.16
6242	Community food and housing, and emergency and other relief services	103	104	1	1.0%	39.9%	0.85
6243	Vocational rehabilitation services	400	386	-14	-3.5%	1.5%	1.18
6244	Child day-care services	1,471	1,647	176	12.0%	14.7%	0.85

Source: EMSI, 2018.1 Dataset

Professional, Scientific and Technical Services

The number of jobs in the professional, scientific and technical services in Niagara increased by 13.9% between 2013 and 2018, which is slightly higher than the Ontario job growth (12.6%) in this sector over that period. The growth in the number of jobs in this sector in Niagara between 2013 and 2018 was 1,100, which is 390 more jobs than expected based on shift share analysis.

A notably high percentage job growth occurred in one subsector of professional, scientific and technical services sector in Niagara – specialized design services, with a 173% job growth compared to 52.1% growth in Ontario. However, this is a relatively small sector, with a lower than average location quotient at 0.67.

Almost all of the subsectors in the professional, scientific and technical services sector have location quotients that are significantly below the Ontario average, with only one being close to average – the accounting, tax preparation, bookkeeping and payroll services subsector has a location quotient of 0.85.

Exhibit 16: Job Growth in Niagara’s Professional, Scientific and Technical Services Sector

NAICS	Description	2013 Jobs	2018 Jobs	2013 - 2018 Change	2013 - 2018 % Change	Ontario 2013 - 2018 % Change	LQ
5411	Legal services	902	961	59	6.5%	7.0%	0.56
5412	Accounting, tax preparation, bookkeeping and payroll services	1,429	1,739	310	21.7%	12.6%	0.85
5413	Architectural, engineering and related services	1,766	1,818	52	2.9%	5.7%	0.74
5414	Specialized design services	202	552	350	173.3%	52.1%	0.67
5415	Computer systems design and related services	1,040	1,173	133	12.8%	31.9%	0.26
5416	Management, scientific and technical consulting services	1,014	1,046	32	3.2%	0.8%	0.46
5417	Scientific research and development services	271	203	-68	-25.1%	-36.8%	0.37
5418	Advertising, public relations, and related services	493	603	110	22.3%	17.4%	0.45
5419	Other professional, scientific and technical services	892	1,023	131	14.7%	13.4%	0.75

Source: EMSI, 2018.1 Dataset

Agriculture Sector

An overview of the Agriculture sector in Niagara is provided in this section. Detailed information on the sector is available through the Census of Agriculture and the Region of Niagara report, Niagara Agriculture Economic Impact Report, dated April 19, 2018.

Agriculture is a very important sector in Niagara. Niagara’s agriculture sector had gross farm receipts of in excess of \$838 million in 2015, which is a 15.5% increase from 2010. Niagara’s farms accounted for 12.6% of gross farm revenues in Southern Ontario in 2015, compared to 13.8% in 2011.

Niagara had 1,827 farms in 2016, with a decrease of 187 farms or 9.3% in the number of farms from 2011. Together five of the twelve municipalities in Niagara account for about 77% of the farms in the region. These include West Lincoln, Lincoln, Niagara-on-the-Lake, Wainfleet and Pelham. The number of farms by municipality in Niagara is shown in the following exhibit.

Exhibit 17: Number of Farms by Municipality

Community	2011	2016	Change	% Change
West Lincoln	444	391	-53	-11.9%
Lincoln	395	364	-31	-7.8%
Niagara-on-the-Lake	352	329	-23	-6.5%
Wainfleet	178	167	-11	-6.2%
Pelham	174	161	-13	-7.5%
St. Catharines	75	83	8	10.7%
Thorold	54	73	19	35.2%
Grimsby	105	72	-33	-31.4%
Fort Erie	77	68	-9	-11.7%
Port Colborne	72	61	-11	-15.3%
Niagara Falls	88	58	-30	-34.1%
Welland	-	-	-	-
Niagara Region	2,014	1,827	-187	-9.3%

Source: Census of Agriculture, 2016

Niagara has few very large farms, with around 88% of farms under 240 acres. Only 25 farms or about 1.4% of total farms in Niagara are 1,120 acres or more. The average size of farm varies across the region, with a high of 235 acres in Wainfleet to a low of 47 acres in St. Catharines. See Exhibit 18.

Exhibit 18: Number of Farms by Size

Total Farm Area	Niagara	Percent
Farms under 10 acres	359	19.6%
Farms 10 to 69 acres	858	47.0%
Farms 70 to 129 acres	228	12.5%
Farms 130 to 179 acres	90	4.9%
Farms 180 to 239 acres	79	4.3%
Farms 240 to 399 acres	97	5.3%
Farms 400 to 559 acres	46	2.5%
Farms 560 to 759 acres	22	1.2%
Farms 760 to 1,119 acres	23	1.3%
Farms 1,120 to 1,599 acres	7	0.4%
Farms 1,600 to 2,239 acres	9	0.5%
Farms 2,240 to 2,879 acres	6	0.3%
Farms 2,880 to 3,519 acres	0	0.0%
Farms 3,520 acres and over	3	0.2%
Total	1,827	100.0%

Source: Census of Agriculture, 2016

Niagara has a diverse agricultural base, with farms across numerous farm type classifications. The largest as measured by number of farms include: fruit and tree nut farming; oil and grain farming; greenhouse, nursery, and floriculture production; and soybean farming. These categories account for between 180 and 547 farms, with the largest being fruit and tree nut farming. There have been decreases and increases in number of farms in some categories between 2011 and 2016 as shown in the below exhibit.

Exhibit 19: Number of Farms in Niagara Classified by NAIC Codes

Description/NAIC Codes	2011	2016	Change
Fruit and tree nut farming [1113]	637	547	-90
Oilseed and grain farming [1111]	316	326	10
Greenhouse, nursery and floriculture production [1114]	283	254	-29
Soybean farming [111110]	196	180	-16
Other animal production [1129]	231	178	-53
Poultry and egg production [1123]	164	175	11
Other crop farming [1119]	159	142	-17
Floriculture production [111422]	156	128	-28
Broiler and other meat-type chicken production [112320]	111	118	7
Horse and other equine production [112920]	160	112	-48
Nursery and tree production [111421]	104	96	-8
Cattle ranching and farming [1121]	104	91	-13
Hay farming [111940]	108	85	-23
Vegetable and melon farming [1112]	64	73	9
Other vegetable (except potato) and melon farming [111219]	64	73	9
Other grain farming [111190]	65	66	1
Beef cattle ranching and farming, including feedlots [112110]	53	52	-1
All other miscellaneous crop farming [111999]	42	45	3
Wheat farming [111140]	9	42	33
Dairy cattle and milk production [112120]	51	39	-12
Corn farming [111150]	45	36	-9
Chicken egg production [112310]	31	35	4
Animal combination farming [112991]	33	34	1
Other food crops grown under cover [111419]	23	27	4
Sheep and goat farming [1124]	38	24	-14
Apiculture [112910]	24	20	-4
Hog and pig farming [1122]	18	17	-1
Sheep farming [112410]	27	15	-12
Turkey production [112330]	9	10	1
Goat farming [112420]	11	9	-2
All other poultry production [112399]	10	8	-2
All other miscellaneous animal production [112999]	11	7	-4
Fruit and vegetable combination farming [111993]	9	7	-2
Fur-bearing animal and rabbit production [112930]	3	5	2
Tobacco farming [111910]	0	4	4
Mushroom production [111411]	0	3	3
Poultry hatcheries [112340]	1	2	1
Combination poultry and egg production [112391]	2	2	0
Oilseed (except soybean) farming [111120]	0	1	1
Dry pea and bean farming [111130]	1	1	0
Maple syrup and products production [111994]	0	1	1
Total number of farms	2014	1827	-187

Source: Census of Agriculture, 2016

While the various different types of farming contribute to the Niagara economy, Niagara is especially well known for fruit farming, particularly grape production as input to wine-making and wine tourism in the region. A total of 386 farms in Niagara in 2016 were classified in the Census of Agriculture as 'grape farms'. This is 55 farms fewer than in 2011. However, the number of hectares used in grape growing in Niagara increased by 99 hectares over that period, with 6,366 hectares being used in grape growing in 2016.

Much of the grape growing in Niagara takes place in two municipalities: Niagara-on-the-Lake with 186 vineyards in 2016 and 3,772 hectares of land used for growing grapes; and Lincoln with 143 vineyards in 2016, with 1,835 hectares of land used for growing grapes. Together, these municipalities account for 88% of the hectares of land used for grape growing in Niagara.

The next largest segment of the fruit, berries and nut farming in Niagara is peach farming with 1,894 hectares in 2016. The number of farms and hectares by segment in the fruit, berries and nuts classification is shown in the following exhibit.

Exhibit 20: Number of Farms and Hectares in Niagara - Fruit, Berries and Nuts

Segment	# Farms 2011	# Farms 2016	Change	# Hectares 2011	# Hectares 2016	Change	% Change
Grapes	441	386	-55	6,267	6,366	99	1.6%
Peaches	188	156	-32	2,314	1,894	-420	-22.2%
Plums and prunes	182	144	-38	369	344	-25	-7.3%
Apples	153	134	-19	259	309	50	16.2%
Cherries (sour)	43	36	-7	351	276	-75	-27.2%
Cherries (sweet)	140	112	-28	160	104	-56	-53.8%
Strawberries	37	35	-2	55	64	9	14.1%
Apricots	66	51	-15	34	40	6	15.0%
Raspberries	57	47	-10	25	12	-13	-
Cranberries	0	0	0	0	0	0	-
Blueberries	21	15	-6	-	9	-	-
Saskatoons	2	4	2	-	1	-	-
Other fruit, berries and nuts	94	98	4	319	325	6	1.8%
Total	720	624	-96	10,483	10,073	-410	-4.1%

Source: Census of Agriculture, 2016

Jobs by Sector in Niagara Municipalities

The concentration of jobs by sector varies by community across the region. St. Catharines, being the largest community in the region, has the largest number of jobs in most sectors. There are relatively high concentrations of jobs in specific sectors in other communities. An overview of some of the key findings from reviewing data on number of jobs and location quotients by sector in communities in Niagara is provided below:

- The communities with a high concentration of jobs in agriculture as measured by location quotients are West Lincoln, Wainfleet, Lincoln, Niagara-on-the-Lake, and Pelham, with location quotients ranging from around 6.6 to close to 13.0.

- The communities with relatively high location quotients in the manufacturing sector are Fort Erie, Lincoln, West Lincoln, and Port Colborne, with location quotients ranging from 1.5 to around 1.7. St. Catharines' location quotient for the manufacturing sector is average, although it accounts for the largest number of manufacturing jobs in the region (5,857 out of 18,791, or about 31%). Niagara Falls accounts for the next highest number of jobs in this sector (2,720), followed by Lincoln, Fort Erie, and Welland (with the number of manufacturing jobs for these three communities ranging from 1,768 to 1,829).
- Niagara Falls has the highest number of jobs in tourism-related sectors: 12,939 jobs in accommodation and food services (about 21% of sector jobs in the region) and location quotient of about 3.8. St. Catharines has 5,717 jobs in this sector, followed by Welland and Niagara-on-the-Lake (with 2,804 and 1,609 sector jobs respectively). Aside from Niagara Falls, communities with the highest location quotients in this sector include: Niagara-on-the-Lake (1.76), Port Colborne (1.47) and Welland (1.46). Niagara Falls also has the highest number of jobs in the arts, entertainment and recreation sector with 4,614 jobs or about 51% of sector jobs in the region. Half the communities in Niagara have high location quotients for this sector: Niagara Falls, Niagara-on-the-Lake, Fort Erie, Lincoln, Pelham, and Wainfleet.

Data on number of jobs by sector in each community in Niagara is provided in Exhibit 21.

Exhibit 21: Jobs by Municipality and Sector

NAICS	Description	St. Catharines	Niagara Falls	Welland	NOTL	Fort Erie	Lincoln	Grimsby	Thorold	Port Colborne	Pelham	West Lincoln	Wainfleet
11	Agriculture, forestry, fishing and hunting	761	169	84	950	37	1,379	96	40	39	387	732	117
21	Mining, quarrying, and oil and gas extraction	<10	111	0	<10	<10	104	0	0	113	0	0	<10
22	Utilities	201	185	83	447	104	<10	54	273	0	0	59	<10
23	Construction	3,991	4,031	2,036	935	1,091	914	865	1,095	263	359	666	221
31-33	Manufacturing	5,857	2,720	1,768	1,210	1,826	1,829	1,084	383	1,113	166	796	39
41	Wholesale trade	2,096	1,654	701	717	442	944	604	391	284	167	216	67
44-45	Retail trade	10,556	4,861	3,733	1,552	1,413	961	1,262	749	1,185	863	477	54
48-49	Transportation and warehousing	1,797	1,180	754	610	758	466	271	347	268	17	513	45
51	Information and cultural industries	831	331	384	46	108	29	103	145	21	27	<10	<10
52	Finance and insurance	2,085	1,022	796	163	368	173	306	123	236	320	111	0
53	Real estate and rental and leasing	1,474	786	685	161	342	105	356	209	197	88	23	0
54	Professional, scientific and technical services	3,386	1,377	833	669	693	464	326	480	268	462	159	<10
55	Management of companies and enterprises	1,163	113	50	41	71	<10	<10	<10	0	0	<10	14
56	Administrative and support, waste management and remediation services	4,065	2,027	2,248	299	851	1,091	378	779	258	154	54	45
61	Educational services	6,492	1,599	3,008	747	524	594	536	365	378	261	333	128
62	Health care and social assistance	9,820	4,639	3,939	855	1,195	1,616	1,699	1,115	873	663	264	78
71	Arts, entertainment and recreation	1,350	4,614	308	978	755	426	148	19	96	212	<10	133
72	Accommodation and food services	5,717	12,939	2,804	1,609	928	879	762	386	717	336	177	24
81	Other services (except public administration)	3,152	1,669	1,479	353	628	278	750	434	270	442	278	76
91	Public administration	3,837	1,949	1,175	507	854	309	212	1,302	240	90	140	133
X0	Unclassified	1,237	870	486	215	221	198	164	144	127	80	82	15
	Total	69,870	48,844	27,355	13,062	13,211	12,774	9,977	8,782	6,946	5,094	5,089	1,198

Source: EMSI, 2018.1 Dataset

Number of Enterprises in Niagara

Based on Canada Business Counts data, Niagara had a total of 12,576 enterprises with employees in December 2017. More than double this number (26,289) had no employees.

The majority of enterprises can be considered small businesses or microenterprises:

- 6,322 are microenterprises (1-4 employees), accounting for about half of enterprises in Niagara that have employees;
- Another 5,987 (48%) can be considered small businesses (5 to 99 employees);
- 242 can be considered as medium-sized enterprises (100 to 499 employees);
- Only 25 are large enterprises (500 or more employees).

When enterprises in the indeterminate category are considered as well as very small or part-time businesses with gross revenues of less than \$30,000 (which are not represented in the Canada Business Counts database), it is clear that the vast majority of enterprises in Niagara are micro or small enterprises as measured by number of employees.

The large enterprises in Niagara are within the following sectors/subsectors (listed by NAIC codes):

Manufacturing:

- 336330 - Motor vehicle steering and suspension components (except spring) manufacturing (1)
- 336310 - Motor vehicle gasoline engine and engine parts manufacturing (1)
- 326220 - Rubber and plastic hose and belting manufacturing (1)

Retail Trade:

- 453220 - Gift, novelty and souvenir stores (1)
- 445120 - Convenience stores (1)

Transportation:

- 483115 - Deep sea, coastal and Great Lakes water transportation (except by ferries) (1)

Finance and Insurance:

- 522130 - Local credit unions (1)

Administrative and Support:

- 561420 - Telephone call centres (2)
- 561722 - Janitorial services (except window cleaning) (1)

Educational Services:

- 611110 - Elementary and secondary schools (3)
- 611310 – Universities (1)

Health Care Services:

621494 - Community health centres (1)

622111 - General (except paediatric) hospitals (3)

Accommodations:

721111 – Hotels (2)

721113 – Resorts (2)

Public Administration:

913910 - Other local, municipal and regional public administration (3)

See Exhibit 22 for data on number of enterprises in Niagara in 2017 by sector and number of employees.

Change in Number of Enterprises in Niagara – 2014 to 2017

The number of enterprises with employees in Niagara increased by 522 between 2014 and 2017, with most of the increase being in micro-enterprises and small businesses as shown in Exhibit 23. An earlier-years comparison cannot be done due to Statistics Canada significant methodology changes in business counts in 2014. The largest increase in number of enterprises with employees was in the construction sector (160) and in professional, scientific and technical services (99, of which 81 were micro enterprises with 1 to 4 employees).

Exhibit 22: Number of Enterprises in Niagara by Sector and Number of Employees, Dec. 2017

Sector	Indeterminate	Total With Employees	1 to 4	5 to 9	10 to 19	20 to 49	50 to 99	100 to 199	200 to 499	500+
11 - Agriculture, forestry, fishing and hunting	1,057	501	221	99	78	68	20	12	3	0
21 - Mining, quarrying, and oil and gas extraction	11	12	4	3	3	2	0	0	0	0
22 - Utilities	87	19	8	3	1	4	3	0	0	0
23 - Construction	2,392	1,594	901	393	174	95	21	7	3	0
31-33 - Manufacturing	491	624	196	127	92	120	58	23	5	3
41 - Wholesale trade	465	509	220	102	89	67	19	10	2	0
44-45 - Retail trade	1,210	1,626	578	424	341	183	55	33	10	2
48-49 - Transportation and warehousing	980	478	298	57	54	40	17	9	2	1
51 - Information and cultural industries	230	157	68	50	20	13	3	3	0	0
52 - Finance and insurance	1,647	417	215	87	74	26	10	1	3	1
53 - Real estate and rental and leasing	6,874	453	316	71	37	25	4	0	0	0
54 - Professional, scientific and technical services	2,324	977	706	128	93	36	8	4	2	0
55 - Management of companies and enterprises	263	41	11	6	8	7	4	5	0	0
56 - Administrative and support, waste management and remediation services	801	551	278	118	77	47	14	10	4	3
61 - Educational services	199	127	52	29	16	19	3	2	2	4
62 - Health care and social assistance	1,214	1,276	678	295	157	86	30	18	8	4
71 - Arts, entertainment and recreation	460	243	76	77	32	37	13	5	3	0
72 - Accommodation and food services	618	1,098	242	252	233	237	90	21	19	4
81 - Other services (except public administration)	1,642	1,167	732	256	107	52	18	1	1	0
91 - Public administration	2	20	1	1	2	2	2	7	2	3
Unclassified	3,322	686	521	101	37	21	4	1	1	0
Total	26,289	12,576	6,322	2,679	1,725	1,187	396	172	70	25

Source: Statistics Canada, Canada Business Counts, December 2014 and 2017

Exhibit 23: Change in the Number of Enterprises in Niagara by Sector and Number of Employees, 2014 to 2017

Sector	Indeterminate	Total With Employees	1 to 4	5 to 9	10 to 19	20 to 49	50 to 99	100 to 199	200 to 499	500+
11 - Agriculture, forestry, fishing and hunting	19	-14	-9	-4	-7	-5	3	5	3	0
21 - Mining, quarrying, and oil and gas extraction	-5	1	0	1	1	-1	0	0	0	0
22 - Utilities	33	-1	-2	0	0	1	0	0	0	0
23 - Construction	223	160	69	60	23	0	8	0	0	0
31-33 - Manufacturing	44	-5	-5	0	-9	9	4	1	-6	1
41 - Wholesale trade	3	-25	-3	-12	-12	1	-5	5	1	0
44-45 - Retail trade	2	47	-14	19	30	12	1	0	-1	0
48-49 - Transportation and warehousing	90	56	60	-10	10	-4	3	-2	-1	0
51 - Information and cultural industries	34	14	12	27	-20	-5	0	0	0	0
52 - Finance and insurance	395	36	13	13	36	-28	2	0	0	0
53 - Real estate and rental and leasing	964	8	8	8	-9	5	-3	-1	0	0
54 - Professional, scientific and technical services	108	99	81	-4	21	-2	2	2	-1	0
55 - Management of companies and enterprises	-332	-40	-33	-6	0	1	0	-1	-1	0
56 - Administrative and support, waste management and remediation services	54	22	28	-3	1	-5	4	-2	0	-1
61 - Educational services	49	6	-8	4	3	5	0	2	0	0
62 - Health care and social assistance	145	3	20	-24	-8	6	7	1	1	0
71 - Arts, entertainment and recreation	26	4	-46	34	8	6	3	-1	0	0
72 - Accommodation and food services	43	40	-3	5	-3	46	-4	-5	3	1
81 - Other services (except public administration)	299	-54	-57	0	2	4	3	-5	-1	0
91 - Public administration	-1	-1	-2	0	1	-1	1	0	0	0
Unclassified	762	166	113	41	7	8	-3	0	0	0
Total	2,955	522	222	149	75	53	26	-1	-3	1

Source: Statistics Canada, Canada Business Counts, December 2014 and 2017

Benchmarking

Niagara region was benchmarked against selected benchmark regions to show its relative situation. These regions were selected in consultation with the project Working Group for the Niagara Economic Development Strategy Master Plan project:

- Waterloo region (consisting of the cities of Waterloo, Cambridge, Kitchener; and townships of North Dumfries, Wellesley, Wilmot and Woolwich);
- Essex county (consisting of Windsor, and towns of Amherstburg, Essex, Kingsville, LaSalle, Lakeshore, Tecumseh; Municipality of Leamington; and Pelee township);
- Hamilton – city;
- Buffalo-Cheektowaga Niagara Falls MSA, New York – consisting of Erie County (including the city of Buffalo) and Niagara County (including Niagara Falls);
- Rochester MSA, New York - including Livingston County, Monroe County (including the city Rochester), Ontario County, Orleans County, Wayne County and Yates County.

Of the Ontario benchmark areas, the 2016 population levels range from 398,953 to 536,917, with Niagara's 2016 population level being 447,888, which is 87,266 and 89,029 lower than Waterloo region and Hamilton respectively, and is 42,564 higher than Essex county. Niagara's percentage population growth over the five year period has been roughly midrange at 3.8% with the lowest population growth in Essex county (2.6%) and the highest in Waterloo region (5.5%). Niagara region has the highest median age of the Ontario benchmark regions (45.7 years in 2016), lowest percentage with university degrees, and lowest household income.

Exhibit 24: Population Trends – Ontario Benchmark Areas

Area	Population 2011	Population 2016	Change	% Change	Median Age (2016)	% Postsecondary Completion	% With Degree(s)	Average Total Household Income 2010	Average Total Household Income 2015
Niagara region	431,346	447,888	16,542	3.80%	45.7	60.0%	20.7%	\$72,453	\$81,842
Waterloo region	507,096	535,154	28,058	5.50%	38.5	62.6%	28.7%	\$85,546	\$95,459
Essex county	388,782	398,953	10,171	2.60%	42.4	59.2%	24.0%	\$72,692	\$85,824
Hamilton	519,949	536,917	16,968	3.30%	41.5	61.6%	25.0%	\$84,273	\$87,775

Source: Statistics Canada, Census, 2016

The two New York state benchmark MSAs have larger population levels than the Ontario benchmark areas. The Buffalo-Cheektowaga-Niagara MSA had a population level of over 1.1 million in 2016, which is 0.3% lower than its 2011 population level. Most of the population resides in Erie county, which includes the city of

Buffalo. The Rochester MSA had a population level of over 1 million in 2016, with the largest population level in Monroe county (747,726) which includes the city of Rochester. The population level of the Rochester MSA decreased slightly (0.4%) between 2011 and 2016. The median age in both MSAs is notably lower than in Niagara (39.9 and 40.8 years of age in 2016). See Exhibit 25.

Exhibit 25: Population Trends – New York State Benchmark Areas

Area	2011 Population	2016 Population	% Change	2016 Median Age
Buffalo-Cheektowaga-Niagara MSA	1,135,850	1,132,867	-0.3%	40.8
Erie County (Buffalo)	920,113	921,092	0.1%	40.4
Niagara County (Niagara Falls)	215,736	211,775	-1.8%	42.9
Rochester MSA	1,082,663	1,078,853	-0.4%	39.9
Livingston County	64,859	64,218	-1.0%	40.4
Monroe County (Rochester)	747,696	747,726	0.0%	38.6
Ontario County	108,751	109,827	1.0%	43.3
Orleans County	42,697	41,351	-3.2%	42.6
Wayne County	93,276	90,812	-2.6%	43.4
Yates County	25,383	24,919	-1.8%	41.5

Source: Economic Modeling Specialists International (EMSI), customized data extraction, 2018

Job levels by 2 digit NAICs and job growth between 2013 and 2018 were reviewed for Niagara against the benchmark regions. Some of the key findings from this review are discussed below.

Agriculture

Niagara has the highest portion of jobs in the agriculture, forestry, fishing and hunting sector (primarily agriculture) of the benchmark regions with 2.2 % of jobs in this sector, being about the same as Essex county (2.1%). This sector accounted for 0.5% to 1.5% of total jobs in other benchmark regions.

While the number of jobs in this sector in Niagara decreased by 1.8% between 2013 and 2018, the number of jobs in this sector decreased at a much higher level in all the Ontario benchmark areas (8.0% to 14.8%). However, the number of jobs in this sector in the two New York state MSAs increased (2.1% and 4.7%).

Manufacturing

Essex county and Waterloo region had a high percentage of jobs in the manufacturing sector at 16.7% and 14.0% respectively. This can be compared to 8.5% for Niagara, which is close to the level in Hamilton, and just slightly lower than the Buffalo-Cheektowaga-Niagara MSA (9.0%) and Rochester MSA (10.4%).

Niagara had the highest increase in the number of manufacturing jobs of benchmark areas between 2013 and 2018 at 10.4% compared to a job loss of between 4.9% to a gain of 3.6% in other benchmark areas.

Tourism-related

Niagara has a slightly higher percentage of jobs than the benchmark regions in tourism-related sectors such as arts, entertainment, and recreation services (4.1% compared to 1.5% to 3% in benchmark regions) and

notably higher percentage in accommodation and food services (12.3% compared to 6.6% to 9.1% in benchmark regions).

Niagara's increase in the number of jobs in the arts, entertainment, and recreation services sector between 2013 and 2018 was 16.7%, which is low compared to Waterloo region (44.5%) and Hamilton (41.6%), but higher than Essex (7.7%). Niagara's percentage job growth in this sector is slightly higher than Buffalo-Cheektowaga-Niagara MSA (12.6%). In comparison, the Rochester MSA lost 4.0% of its jobs in this sector between 2013 and 2018. Niagara's job growth in the accommodation and food services sector (18.6%) is about the same as Waterloo region (18.2%), although higher than the other benchmark areas.

Data on job level, growth and sector share of total jobs at the 2 digit NAIC level is included in the following exhibits.

Exhibit 26: Job Levels and Change – Ontario Benchmark Areas

	Niagara region		Waterloo region		Essex county		Hamilton	
Description	2018 Jobs	% Change 2013 – 2018	2018 Jobs	% Change 2013 - 2018	2018 Jobs	% Change 2013 - 2018	2018 Jobs	% Change 2013 - 2018
Agriculture, forestry, fishing and hunting	4,790	-1.8%	3,784	-14.8%	3,900	-8.0%	2,857	-12.2%
Mining, quarrying, and oil and gas extraction	332	30.7%	210	13.7%	389	5.5%	100	-35.1%
Utilities	1,419	11.2%	573	-15.3%	745	-9.8%	877	1.2%
Construction	16,466	8.7%	23,828	18.8%	10,878	5.5%	20,174	10.2%
Manufacturing	18,791	10.4%	45,075	0.4%	30,295	3.6%	21,617	-4.9%
Wholesale trade	8,282	1.0%	18,294	14.1%	6,396	0.9%	9,428	8.9%
Retail trade	27,666	6.3%	35,955	6.4%	20,172	6.9%	28,399	5.3%
Transportation and warehousing	7,026	2.5%	12,259	4.7%	8,615	-0.1%	9,477	-2.3%
Information and cultural industries	2,031	7.1%	6,597	46.8%	1,499	-7.5%	3,072	-1.2%
Finance and insurance	5,705	-2.1%	19,501	15.2%	5,618	8.3%	7,568	2.7%
Real estate and rental and leasing	4,425	-1.1%	6,009	-4.0%	3,024	16.2%	5,894	11.2%
Professional, scientific and technical services	9,119	13.9%	21,808	21.4%	6,777	8.7%	13,769	11.8%
Management of companies and enterprises	1,470	-16.0%	41	-92.2%	1,046	29.1%	884	-6.4%
Administrative and support, waste management/remediation services	12,247	5.9%	15,595	13.0%	8,617	25.1%	13,868	-10.4%
Educational services	14,965	12.5%	26,816	14.1%	13,733	3.4%	26,334	10.3%
Health care and social assistance	26,756	21.3%	32,084	15.2%	22,973	5.0%	43,049	18.8%
Arts, entertainment and recreation	9,038	16.7%	5,396	44.5%	5,390	7.7%	5,244	41.6%
Accommodation and food services	27,278	18.6%	21,404	18.2%	13,448	11.0%	17,759	13.2%
Other services (except public administration)	9,810	-0.9%	11,242	-12.6%	7,713	-8.7%	12,186	-6.4%
Public administration	10,748	8.9%	10,185	-8.3%	7,042	-6.3%	12,919	7.5%
Unclassified	3,839	36.9%	5,798	37.8%	3,260	31.9%	4,493	32.5%
Total	222,202	10.1%	322,454	10.0%	181,531	5.0%	259,969	6.9%

Source: Economic Modeling Specialists International (EMSI), customized data extraction, 2018; EMSI, 2018.1 Dataset

Exhibit 27: Job Levels and Change – Niagara Compared to US Benchmark Areas

	Niagara Region		Buffalo- Cheektowaga- Niagara MSA		Rochester MSA	
Description	2018 Jobs	% Change 2013 - 2018	2018 Jobs	% Change 2013 - 2018	2018 Jobs	% Change 2013 - 2018
Agriculture, forestry, fishing and hunting	4,790	-1.8%	2,630	4.7%	8,013	2.1%
Mining, quarrying, and oil and gas extraction	332	30.7%	185	-37.5%	620	23.5%
Utilities	1,419	11.2%	1,463	-7.0%	1,631	1.2%
Construction	16,466	8.7%	23,585	9.9%	24,054	8.1%
Manufacturing	18,791	10.4%	51,838	0.8%	57,115	-4.4%
Wholesale trade	8,282	1.0%	19,980	-1.5%	15,982	-0.5%
Retail trade	27,666	6.3%	63,981	0.6%	56,766	0.0%
Transportation and warehousing	7,026	2.5%	16,197	7.1%	9,935	9.8%
Information and cultural industries	2,031	7.1%	6,981	-7.9%	8,253	-6.5%
Finance and insurance	5,705	-2.1%	29,880	16.9%	15,138	0.0%
Real estate and rental and leasing	4,425	-1.1%	8,357	13.9%	8,558	14.1%
Professional, scientific and technical services	9,119	13.9%	29,716	4.6%	31,644	13.3%
Management of companies and enterprises	1,470	-16.0%	13,120	-2.1%	10,770	-10.9%
Administrative and support, waste management/remediation services	12,247	5.9%	29,706	-12.0%	28,903	3.5%
Educational services	14,965	12.5%	16,196	2.5%	37,079	10.7%
Health care and social assistance	26,756	21.3%	82,451	8.6%	86,538	10.1%
Arts, entertainment and recreation	9,038	16.7%	10,277	12.6%	8,343	-4.0%
Accommodation and food services	27,278	18.6%	52,760	7.8%	39,080	4.4%
Other services (except public administration)	9,810	-0.9%	25,070	6.7%	22,719	3.2%
Public administration	10,748	8.9%	91,620	-0.4%	77,939	-0.6%
Unclassified	3,839	36.9%	1,762	182.4%	1,417	133.4%
Total	222,202	10.1%	577,755	3.5%	550,497	3.4%

Source: Economic Modeling Specialists International (EMSI), customized data extraction, 2018; EMSI, 2018.1 Dataset

Exhibit 28: Comparison of Benchmark Areas - Share of Total Jobs (2018) by Sector

Description	Niagara region	Waterloo region	Essex county	Hamilton	Buffalo-Cheektowaga-Niagara	Rochester
Agriculture, forestry, fishing and hunting	2.2%	1.2%	2.1%	1.1%	0.5%	1.5%
Mining, quarrying, and oil and gas extraction	0.1%	0.1%	0.2%	0.0%	0.0%	0.1%
Utilities	0.6%	0.2%	0.4%	0.3%	0.3%	0.3%
Construction	7.4%	7.4%	6.0%	7.8%	4.1%	4.4%
Manufacturing	8.5%	14.0%	16.7%	8.3%	9.0%	10.4%
Wholesale trade	3.7%	5.7%	3.5%	3.6%	3.5%	2.9%
Retail trade	12.5%	11.2%	11.1%	10.9%	11.1%	10.3%
Transportation and warehousing	3.2%	3.8%	4.7%	3.6%	2.8%	1.8%
Information and cultural industries	0.9%	2.0%	0.8%	1.2%	1.2%	1.5%
Finance and insurance	2.6%	6.0%	3.1%	2.9%	5.2%	2.7%
Real estate and rental and leasing	2.0%	1.9%	1.7%	2.3%	1.4%	1.6%
Professional, scientific and technical services	4.1%	6.8%	3.7%	5.3%	5.1%	5.7%
Management of companies and enterprises	0.7%	0.0%	0.6%	0.3%	2.3%	2.0%
Administrative and support, waste management/remediation services	5.5%	4.8%	4.7%	5.3%	5.1%	5.3%
Educational services	6.7%	8.3%	7.6%	10.1%	2.8%	6.7%
Health care and social assistance	12.0%	9.9%	12.7%	16.6%	14.3%	15.7%
Arts, entertainment and recreation	4.1%	1.7%	3.0%	2.0%	1.8%	1.5%
Accommodation and food services	12.3%	6.6%	7.4%	6.8%	9.1%	7.1%
Other services (except public administration)	4.4%	3.5%	4.2%	4.7%	4.3%	4.1%
Public administration	4.8%	3.2%	3.9%	5.0%	15.9%	14.2%
Unclassified	1.7%	1.8%	1.8%	1.7%	0.3%	0.3%
Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Economic Modeling Specialists International (EMSI), customized data extraction, 2018; EMSI, 2018.1 Dataset

Manufacturing Subsectors

A review was undertaken of the job levels and growth across manufacturing subsectors in Niagara, and this was compared to the benchmark regions. Key findings from this review include:

- Niagara has a high number of jobs in beverage manufacturing (mainly wine-making, with 2,519 jobs in 2018) and a 57% growth from 2013. This is a higher job number than any of the benchmark regions, with the next highest being the Rochester MSA (1,723 and 19% growth) and Essex county with 1,106 jobs and growth of 8.6%.

- Niagara has a high number of jobs in the transportation manufacturing subsector at 3,237 jobs in 2018, and a growth of around 22% from 2013. However, this is low compared to number of jobs in this subsector in some of the other benchmark regions: Waterloo region (9,107 jobs), Essex county (10,486 jobs), and Buffalo-Cheektowaga-Niagara MSA (5,411 jobs).
- The fabricated metal product manufacturing subsector in Niagara also has a relatively high number of jobs at 2,740, but this is significantly lower than Waterloo region (6,534) and the Buffalo-Cheektowaga-Niagara, and Rochester MSAs which have subsector job levels slightly higher than Waterloo region.

Data on the job levels and percentage growth for manufacturing subsectors for the benchmark regions is provided in Exhibits 29 and 30 on the following pages.

Exhibit 29: Job Changes in Manufacturing Subsectors in Ontario Benchmark Regions

		Niagara region		Waterloo region		Essex county		Hamilton	
NAICS	Description	2018 Jobs	% Change 2013 – 2018	2018 Jobs	% Change 2013 - 2018	2018 Jobs	% Change 2013 – 2018	2018 Jobs	% Change 2013 - 2018
311	Food manufacturing	1,372	-23.8%	5,812	-10.9%	1,608	-28.4%	2,701	-5.8%
312	Beverage and tobacco product manufacturing	2,519	56.6%	361	42.2%	1,106	8.6%	244	10.5%
3121	Beverage manufacturing	2,519	56.6%	361	49.7%	1,106	8.6%	244	10.5%
321	Wood product manufacturing	490	10.6%	970	4.6%	67	-16.9%	223	-24.2%
322	Paper manufacturing	405	-28.9%	435	-15.7%	51	-17.6%	107	-30.9%
323	Printing and related support activities	504	-19.1%	943	55.4%	1,283	5.8%	383	-23.9%
325	Chemical manufacturing	881	46.1%	845	4.3%	1,961	13.1%	763	-1.5%
326	Plastics and rubber products manufacturing	1,095	41.7%	3,093	21.2%	2,574	-4.9%	360	-16.7%
327	Non-metallic mineral product manufacturing	1,255	-2.8%	958	-7.0%	352	4.7%	560	-37.0%
331	Primary metal manufacturing	875	10.6%	810	9.8%	600	-1.7%	5,500	-5.8%
332	Fabricated metal product manufacturing	2,740	4.6%	6,534	-6.0%	2,001	-14.7%	2,635	-26.5%
3323	Architectural and structural metals manufacturing	1,269	43.6%	1,071	11.4%	962	26.9%	483	-34.0%
333	Machinery manufacturing	1,538	13.3%	4,929	16.9%	6,914	22.9%	1,947	10.7%
334	Computer and electronic product manufacturing	561	-13.3%	5,482	-27.4%	162	-29.1%	234	6.5%
335	Electrical equipment, appliance and component manufacturing	68	-9.3%	559	-38.1%	63	-27.2%	133	-24.9%
336	Transportation equipment manufacturing	3,237	21.5%	9,107	25.7%	10,486	5.4%	3,358	26.6%
3361	Motor vehicle manufacturing	2,048	27.3%	4,846	28.4%	6,315	8.0%	80	20.4%
3362	Motor vehicle body and trailer manufacturing	<10	-	395	-13.4%	57		79	7.4%
3363	Motor vehicle parts manufacturing	640	21.2%	2,465	18.5%	3,921	-0.8%	1,875	46.7%
3364	Aerospace product and parts manufacturing	341	25.8%	697	19.7%	130	50.7%	16	-48.3%
3365	Railroad rolling stock manufacturing	40	-7.0%	0	-	<10	-	1,218	7.1%
3366	Ship and boat building	150	-27.2%	<10	-	59	-	89	34.6%
3369	Other transportation equipment manufacturing	16	-	479	36.8%	<10	-	0	-
337	Furniture and related product manufacturing	286	16.3%	1,628	31.8%	410	17.3%	356	70.1%

Source: Economic Modeling Specialists International (EMSI), customized data extraction, 2018; EMSI, 2018.1 Dataset

Exhibit 30: Jobs Changes in Manufacturing Sector – Niagara Compared to US Benchmark Regions

		Niagara		Buffalo-Cheektowaga-Niagara		Rochester	
NAICS	Description	2018 Jobs	% Change 2013 - 2018	2018 Jobs	% Change 2013 - 2018	2018 Jobs	% Change 2013 - 2018
311	Food manufacturing	1,372	-23.8%	4,862	-7.8%	5,700	11.1%
312	Beverage and tobacco product manufacturing	2,519	56.6%	988	73.9%	1,771	22.4%
3121	Beverage manufacturing	2,519	56.6%	859	68.8%	1,723	19.1%
321	Wood product manufacturing	490	10.6%	782	-14.3%	634	60.1%
322	Paper manufacturing	405	-28.9%	1,422	-15.0%	2,028	11.9%
323	Printing and related support activities	504	-19.1%	2,149	12.3%	2,395	-6.3%
325	Chemical manufacturing	881	46.1%	4,987	5.7%	3,360	-43.7%
326	Plastics and rubber products manufacturing	1,095	41.7%	4,017	2.4%	5,334	6.9%
327	Non-metallic mineral product manufacturing	1,255	-2.8%	2,298	-7.4%	1,150	-1.2%
331	Primary metal manufacturing	875	10.6%	1,608	-8.8%	347	17.6%
332	Fabricated metal product manufacturing	2,740	4.6%	7,046	0.7%	6,989	-10.4%
3323	Architectural and structural metals manufacturing	1,269	43.6%	976	-13.3%	1,240	-7.1%
333	Machinery manufacturing	1,538	13.3%	4,897	-7.8%	8,781	-14.9%
334	Computer and electronic product manufacturing	561	-13.3%	3,193	4.6%	10,298	17.7%
335	Electrical equipment, appliance and component manufacturing	68	-9.3%	2,242	2.5%	899	-8.5%
336	Transportation equipment manufacturing	3,237	21.5%	5,411	31.0%	1,933	4.9%
3361	Motor vehicle manufacturing	2,048	27.3%	2	-	10	-89.0%
3362	Motor vehicle body and trailer manufacturing	<10	-	282	243.9%	127	-10.6%
3363	Motor vehicle parts manufacturing	640	21.2%	3,968	17.5%	1,671	13.7%
3364	Aerospace product and parts manufacturing	341	25.8%	1,005	62.9%	10	-58.3%
3365	Railroad rolling stock manufacturing	40	-7.0%	116	286.7%	28	211.1%
3366	Ship and boat building	150	-27.2%	38	216.7%	17	54.5%
3369	Other transportation equipment manufacturing	16	-	0	-100.0%	71	-26.0%
337	Furniture and related product manufacturing	286	16.3%	786	2.9%	811	0.6%

Source: Economic Modeling Specialists International (EMSI), customized data extraction, 2018; EMSI, 2018.1 Dataset

Tourism-related Subsectors

Niagara has a large number of jobs in a few tourism-related subsectors:

- It has 2,011 jobs in gambling industries but there has been a significant job loss in this subsector from 2013 (35%). The only benchmark region to have a comparable level of jobs is Essex county (1,917 jobs, with a job loss of 19% from 2013).
- The 'other amusement and recreation industries' subsector has a relatively large number of jobs in Niagara (2,651) but this level is comparable to some of the benchmark regions and lower than others.
- The travellers' accommodation subsector in Niagara accounts for a large number of jobs (8,673) which is significantly higher than the benchmark regions.
- The full-service restaurants and limited-service eating places subsector has the largest number of jobs of tourism-related subsectors in Niagara at 17,492 jobs which is similar to Waterloo, and significantly lower than in the Buffalo-Cheektowaga-Niagara, and Rochester MSAs. However, a large portion of the market for this subsector is the residential market – people residing in the benchmark regions and therefore the higher number of jobs in this subsector in the MSAs is expected given higher population numbers.

Data on the job levels and percentage growth for tourism-related subsectors for the benchmark regions is provided in Exhibits 31 and 32 on the following pages.

Exhibit 31: Job numbers and Growth in Tourism-related Subsectors in Ontario Benchmark Regions

		Niagara region		Waterloo region		Essex county		Hamilton	
NAICS	Description	2018 Jobs	% Change 2013 - 2018	2018 Jobs	% Change 2013 – 2018	2018 Jobs	% Change 2013 - 2018	2018 Jobs	% Change 2013 – 2018
7111	Performing arts companies	896	54.2%	449	2.6%	112	-39.2%	290	58.0%
7112	Spectator sports	546	77.3%	269	58.0%	145	38.9%	254	1.9%
7113	Promoters (presenters) of performing arts, sports and similar events	305	89.4%	429	54.0%	99	84.5%	140	80.9%
7114	Agents and managers for artists, athletes, entertainers and other public figures	64	Insf. Data	<10	-	0	-	18	13.6%
7115	Independent artists, writers and performers	949	81.1%	880	18.3%	472	18.6%	1,369	103.7%
7121	Heritage institutions	1,012	9.1%	171	96.5%	159	52.2%	301	38.4%
7131	Amusement parks and arcades	605	114.5%	<10	-	37	20.4%	137	70.7%
7132	Gambling industries	2,011	-35.3%	<10	-	1,917	-19.4%	138	-34.9%
7139	Other amusement and recreation industries	2,651	43.4%	3,181	60.4%	2,448	39.7%	2,597	30.1%
7211	Traveller accommodation	8,673	15.2%	1,750	15.0%	940	31.6%	728	49.2%
7212	Recreational vehicle (RV) parks and recreational camps	38	-48.6%	102	3.1%	201	13.5%	98	-26.7%
7223	Special food services	719	29.3%	1,109	28.7%	563	33.3%	1,599	25.8%
7224	Drinking places (alcoholic beverages)	347	-36.7%	536	-13.2%	366	2.1%	119	-54.3%
7225	Full-service restaurants and limited-service eating places	17,492	22.4%	17,889	19.5%	11,324	8.7%	14,964	11.9%
4871	Scenic and sightseeing transportation, land	<10	-	0	-	<10	-	0	-
4872	Scenic and sightseeing transportation, water	216	142.7%	0	-	<10	-	0	-

Source: Economic Modeling Specialists International (EMSI), customized data extraction, 2018; EMSI, 2018.1 Dataset

Exhibit 32: Job numbers and Growth in Tourism-related Subsectors in US Benchmark Regions

		Niagara		Buffalo-Cheektowaga-Niagara		Rochester	
NAICS	Description	2018 Jobs	% Change 2013 – 2018	2018 Jobs	% Change 2013 - 2018	2018 Jobs	% Change 2013 - 2018
7111	Performing arts companies	896	54.2%	668	20.6%	431	11.4%
7112	Spectator sports	546	77.3%	1,404	22.3%	940	-0.5%
7113	Promoters (presenters) of performing arts, sports and similar events	305	89.4%	930	55.0%	172	-13.6%
7114	Agents and managers for artists, athletes, entertainers and other public figures	64	Insf. Data	76	33.3%	57	-8.1%
7115	Independent artists, writers and performers	949	81.1%	801	9.7%	934	2.8%
7121	Heritage institutions	1,012	9.1%	792	36.6%	649	-7.3%
7131	Amusement parks and arcades	605	114.5%	186	5.7%	285	10.9%
7132	Gambling industries	2,011	-35.3%	336	-6.9%	30	-33.3%
7139	Other amusement and recreation industries	2,651	43.4%	5,084	3.4%	4,845	-6.6%
7211	Traveller accommodation	8,673	15.2%	5,079	24.8%	2,942	-5.2%
7212	Recreational vehicle (RV) parks and recreational camps	38	-48.6%	247	44.4%	155	18.3%
7223	Special food services	719	29.3%	4,719	1.0%	2,615	2.3%
7224	Drinking places (alcoholic beverages)	347	-36.7%	2,205	8.9%	1,613	6.0%
7225	Full-service restaurants and limited-service eating places	17,492	22.4%	40,507	6.6%	31,732	5.4%
4871	Scenic and sightseeing transportation, land	<10	-	61	-34.4%	34	325.0%
4872	Scenic and sightseeing transportation, water	216	142.7%	139	69.5%	21	-8.7%

Source: Economic Modeling Specialists International (EMSI), customized data extraction, 2018; EMSI, 2018.1 Dataset

Section 4: Economic Outlook

Published employment forecasts for Niagara, communities within the region and the St. Catharines-Niagara CMA are, for the most part, short term forecasts. There are also differences between the starting baseline employment numbers between the sources, with the EMSI reported employment levels being slightly higher than those reported by the Conference Board of Canada. For example, the 2017 employment number used in the Conference Board of Canada forecast for the St. Catharines-Niagara CMA is 198,100. Based on the EMSI data, the 2017 employment level for the CMA was 204,276. The Conference Board of Canada forecasted 2018 employment level was 204,900, while the EMSI reported employment level for the CMA in 2018 was 207,136. The Conference Board Metropolitan Outlook for the St. Catharines-Niagara CMA forecasts an employment level of 211,500 for 2022, which can be compared to a much higher EMSI forecast of 219,396 for the CMA in 2022.

A discussion of some of the forecast data from these two sources and how the outlook compares to Ontario and Canada is provided below. Total employment in the CMA is forecasted by the Conference Board of Canada to increase by 6.8% between 2017 and 2022, which is higher than the job growth forecasted for Ontario (5.9%) and Canada (4.9%) over this period. Relatively high job growth is forecasted in population serving sectors such as health care and social assistance and sectors that serve residents and tourists such as arts, entertainment and recreation and accommodation and food services. Relatively high growth is also expected in construction.

Exhibit 33: Forecasted Employment Growth in the St. Catharines – Niagara CMA ('000)

Sector	2017	2022	Change	2017 to 2022 % Change	Per Annum Average % Change
Construction	13.0	16.3	3.3	25.4%	5.1%
Health care and social assistance	24.7	29.9	5.2	21.1%	4.2%
Arts, entertainment, and recreation	7.8	9.1	1.3	16.7%	3.3%
Information and cultural industries	1.9	2.2	0.3	15.8%	3.2%
Accommodation and food services	24.4	28.1	3.7	15.2%	3.0%
Wholesale and retail trade	31.4	33.8	2.4	7.6%	1.5%
Transportation and warehousing	8.2	8.2	0	0.0%	0.0%
Finance, insurance, real estate, business, building and support services	19.5	19.5	0	0.0%	0.0%
Professional, scientific, and technical services	9.5	9.5	0	0.0%	0.0%
Public administration	8.5	8.5	0	0.0%	0.0%
Educational services	12.8	12.6	-0.2	-1.6%	-0.3%
Manufacturing	21.0	20.1	-0.9	-4.3%	-0.9%
Primary and utilities	5.7	5.1	-0.6	-10.5%	-2.1%
Other services (except for public administration)	10.0	8.4	-1.6	-16.0%	-3.2%
Total employment	198.1	211.5	13.4	6.8%	1.4%

Source: Conference Board of Canada, Metropolitan Outlook 2, St. Catharines-Niagara - Winter 2018

Employment forecasts are available for Niagara region from the EMSI Analyst program. The data is not immediately comparable to the Conference Board of Canada forecasts.

Based on the EMSI data, the number of jobs in Niagara is forecasted to increase by about 5.1% between 2018 and 2023.

Exhibit 34: Forecasted Job Growth in Niagara

NAICS	Description	2018 Jobs	2023 Jobs	Change	% Change	Average per annum % change
62	Health care and social assistance	26,756	30,366	3,611	13.5%	2.7%
72	Accommodation and food services	27,278	29,063	1,785	6.5%	1.3%
23	Construction	16,466	17,527	1,061	6.4%	1.3%
61	Educational services	14,965	15,835	870	5.8%	1.2%
44-45	Retail trade	27,666	28,437	771	2.8%	0.6%
31-33	Manufacturing	18,791	19,373	582	3.1%	0.6%
54	Professional, scientific and technical services	9,119	9,655	537	5.9%	1.2%
71	Arts, entertainment and recreation	9,038	9,551	513	5.7%	1.1%
41	Wholesale trade	8,282	8,616	334	4.0%	0.8%
56	Administrative and support, waste management and remediation services	12,247	12,572	325	2.7%	0.5%
91	Public administration	10,748	11,065	317	3.0%	0.6%
X0	Unclassified	3,839	4,069	230	6.0%	1.2%
48-49	Transportation and warehousing	7,026	7,212	186	2.6%	0.5%
53	Real estate and rental and leasing	4,425	4,594	168	3.8%	0.8%
22	Utilities	1,419	1,535	116	8.2%	1.6%
51	Information and cultural industries	2,031	2,088	57	2.8%	0.6%
52	Finance and insurance	5,705	5,755	50	0.9%	0.2%
21	Mining, quarrying, and oil and gas extraction	332	355	23	6.8%	1.4%
81	Other services (except public administration)	9,810	9,788	-22	-0.2%	0.0%
55	Management of companies and enterprises	1,470	1,426	-44	-3.0%	-0.6%
11	Agriculture, forestry, fishing and hunting	4,790	4,676	-114	-2.4%	-0.5%
	Total	222,202	233,559	11,357	5.1%	1.0%

Source: EMSI 2018.1 Data set

Longer term employment forecasts for Niagara are available from the Municipal Comprehensive Review (MCR) for the Region of Niagara. The Preferred Growth Option in the MCR is predicated on focusing growth in settlement areas where it can be best serviced. Forecasts of employment by municipality have been prepared as part of the MCR but these will need to be refined taking into account servicing and employment lands supply, and any final amendments to the Growth Plan. The forecasts of employment numbers by year in the MCR were prepared before the 2016 Census data and other data was available and therefore the allocations by year may change once base year information is revised in updates to the forecasts. The number of jobs in Niagara was forecasted to reach 213,830 in 2021 (which is significantly lower than the number of jobs that EMSI has estimated for Niagara in 2018 – 222,202). The total number of jobs estimated for the Region in 2041 is 265,020, which is an increase of 42,818 jobs or around 19% from the estimated 2018 job level based

on EMSI. The projected share of jobs by municipality in 2041 is generally similar to the estimated 2016 share in the MCR forecast and the 2018 share based on EMSI.

Exhibit 35: MCR Strategic Growth Option - Employment Forecasts

Municipality	2,016	2,021	2,031	2,041	Change	2041 Share
Fort Erie	12,460	13,270	14,920	17,240	4,780	6.5%
Grimsby	9,870	10,780	12,380	14,630	4,760	5.5%
Lincoln	11,280	11,870	13,040	14,600	3,320	5.5%
Niagara Falls	45,360	47,790	52,060	57,720	12,360	21.8%
Niagara-on-the-Lake	13,010	13,720	14,660	16,030	3,020	6.0%
Pelham	4,540	4,880	5,750	6,930	2,390	2.6%
Port Colborne	5,770	5,900	6,350	7,000	1,230	2.6%
St. Catharines	62,660	65,530	71,480	80,240	17,580	30.3%
Thorold	8,070	8,480	9,390	10,660	2,590	4.0%
Wainfleet	1,300	1,350	1,470	1,650	350	0.6%
Welland	23,590	24,490	26,220	28,760	5,170	10.9%
West Lincoln	5,150	5,770	7,270	9,560	4,410	3.6%
Niagara Region	203,060	213,830	234,990	265,020	61,960	

Source: Niagara Municipal Comprehensive Review, Phase 3 Summary Report, Nov. 2016

Based on Ontario's Long Term Report on the Economy, there are a number of trends that are expected to continue in the future and impact the level of employment and job sector growth. These include:

- Economic growth is expected to continue, but at a slower pace in the future, and this is primarily attributed to slower growth in the working age population, particularly with the retirement of the baby boom generation with a large portion retiring into the late 2020's. It is expected that the core working age group pace of growth will increase by 2031 but will still be lower than it has been historically;
- Employment is projected to grow at a slower pace than in the past. While the number of jobs in Ontario increased by an average growth of 1.4% per annum between 1982 and 2015, based on a medium growth scenario, job growth in Ontario is expected to average at 1.2% between 2016 and 2020, and 0.8% per annum between 2021 and 2041. The average annual projected employment growth rate by the Ministry of Finance for the period 2016 and 2040 as noted in Ontario's Long Term Report on the Economy is 0.9 percent. As noted in that report, this is slightly higher than the forecast by the Conference Board of Canada (0.8 percent) and slightly lower than the Institute for Policy Analysis at the University of Toronto (1.0 percent). However, these are small difference and the forecasts are generally comparable in terms of the long term growth of the economy in Ontario;
- Transformative technologies will create opportunities as well as challenges and could result in job loss due to automation in some industry segments;
- Increases in non-standard forms of employment such as part-time, contract and temporary work;
- Growth in the number of older workers continuing to work longer, and self-employment;
- Labour productivity is expected to continue to grow at its long-term historical pace;

- The shift from goods-producing sectors, particularly manufacturing, to service producing sectors is expected to continue, although at a slower pace. In Ontario, the manufacturing sector accounted for 17.5% of total jobs in 1996, but only 10.7% in 2016. Data on the shift towards services sectors is shown below.

Exhibit 36: Percentage Employment Share of Ontario Major Sectors

Sector	1996	2006	2016	Change 1996- 2016
Goods-Producing Sector	26.4	24.6	20.3	-6.1
Manufacturing	17.5	15.4	10.7	-6.8
Other Goods-Producing Industries	8.9	9.1	9.5	0.6
Private Services Producing Sector	51.7	53.8	55.5	3.8
Wholesale and Retail Trade	15.0	15.7	14.8	-0.2
Transportation and Warehousing	4.7	4.6	4.7	0.0
Information and Cultural	2.7	2.7	2.1	-0.6
Financial Services	5.2	5.4	5.8	0.6
Real Estate, Rental and Leasing	2.0	1.9	2.1	0.1
Professional, Scientific and Technical Services	6.1	7.0	8.5	2.4
Management, Administrative and Support	3.4	4.5	4.7	1.3
Arts, Entertainment, and Recreation	1.8	2.2	2.4	0.6
Accommodation and Food Services	6.0	5.8	6.5	0.5
Other Services	4.7	4.0	3.9	-0.8
Public Sector Services	21.9	21.6	24.2	2.3
Education	6.6	6.9	7.2	0.6
Health Care and Social Assistance	9.7	9.8	12.0	2.3
Public Administration	5.6	4.8	5.0	-0.6

Note: Other Goods-producing sectors include agriculture, fishing, forestry, mining, utilities and construction

Source: Ontario's Long Term Report on the Economy, using data from Statistics Canada, Labour Force Survey

Section 5: Export Activity

The total value of exports from Niagara in 2016 exceeded \$4.1 billion in 2016, which represents a growth of 13.9% from 2011. In comparison, the value of exports increased by 19.8% in Ontario over this period.

Overwhelmingly, the majority of exports from Niagara are from establishments in the manufacturing sector, which accounted for close to 91% of the value of exports from Niagara in 2016. The manufacturing sector's share of export value in 2016 was about two percentage points lower than in 2011. Some sectors, while still having a low share of the overall value of Niagara exports, have shown significant growth between 2011 and 2016, such as agriculture; transportation and warehousing; finance and insurance; and wholesale trade. Some sectors have had a decrease in the levels of exports between 2011 and 2016 as shown below.

The manufacturing commodity group with the highest value of exports by Niagara companies is machinery, boilers, mechanical appliances, engines and parts. This commodity group accounted for about 39% of the value of Niagara exports in 2016. This was followed by nickel and articles thereof, at 16%. The following two commodity groups each accounted for just over 6% of the total – vehicles, parts and accessories thereof; and plastics and articles thereof.

Exhibit 37: Total Value of Exports by Industry Sector, Niagara Region, 2011 to 2016

Sector	2011	2016	% Change	% Total 2011	% Total 2016
Manufacturing	\$3,358,224,100	\$3,728,310,300	11.0%	92.99%	90.67%
Wholesale Trade	\$138,956,400	\$197,161,800	41.9%	3.85%	4.79%
Agriculture, forestry, fishing and hunting	\$47,082,200	\$109,247,600	132.0%	1.30%	2.66%
Transportation and warehousing	\$1,309,000	\$19,366,600	1379.5%	0.04%	0.47%
Construction	\$17,768,300	\$12,988,800	-26.9%	0.49%	0.32%
Admin Support, waste management, remediation	\$10,794,300	\$9,660,200	-10.5%	0.30%	0.23%
Retail trade	\$11,475,200	\$7,955,200	-30.7%	0.32%	0.19%
Professional, scientific & technical services	\$7,269,900	\$6,527,400	-10.2%	0.20%	0.16%
Other services (except public admin.)	\$2,410,100	\$5,533,000	129.6%	0.07%	0.13%
Arts, entertainment and recreation	\$7,126,900	\$4,646,400	-34.8%	0.20%	0.11%
Management of companies and enterprises	\$2,211,000	\$3,759,800	70.0%	0.06%	0.09%
Real estate rental and leasing	\$6,384,400	\$3,744,400	-41.4%	0.18%	0.09%
Finance and insurance	\$64,900	\$1,672,000	2476.3%	-	0.04%
Information and cultural industries	\$170,500	\$1,185,800	595.5%	-	0.03%
Educational services	\$85,800	\$216,700	152.6%	-	0.01%
Accommodation and food services	\$1,100	\$69,300	6200.0%	-	-
Public administration	\$5,500	\$7,700	40.0%	-	-
Mining, oil and gas extraction	\$9,900	\$5,500	-44.4%	-	-
Health care and social assistance	\$2,200	\$1,100	-50.0%	-	-
Total	\$3,611,351,700	\$4,112,059,600	13.9%	100.00%	100.00%

Source: Niagara Economic Development, Niagara Export Trade Overview

Niagara accounted for a small portion of export trade in Ontario at 2.17% in 2016, which is slightly lower than its share in 2011 (2.28%).

The number of exporters in Niagara region was 613 in 2016, which is an increase of 33 firms or 5.7% from 2011. The largest number of exporters are in the manufacturing sector accounting for about 40% of the total value number of exporting establishments in Niagara in 2016; followed by wholesale trade, accounting for about 19% of exporting businesses; and agriculture sector accounting for about 13% of exporting businesses. A comparison of the number of exporting enterprises by sector is shown in Exhibit 38.

Exhibit 38: Total Number of the Exporting Establishments by Industry Sector, Niagara Region

Sector	2011	2016	Change	% Total 2011	% Total 2016
Manufacturing	239	243	4	41.2%	39.6%
Wholesale Trade	117	119	2	20.2%	19.4%
Agriculture	69	77	8	11.9%	12.6%
Retail trade	36	46	10	6.2%	7.5%
Construction	16	22	6	2.8%	3.6%
Transportation and warehousing	13	18	5	2.2%	2.9%
Professional, scientific & technical services	20	16	-4	3.4%	2.6%
Other services (except public admin.)	16	15	-1	2.8%	2.4%
Admin Support, waste management remediation	10	11	1	1.7%	1.8%
Arts, entertainment and recreation	8	11	3	1.4%	1.8%
Management of companies and enterprises	6	-	-	1.0%	
Real estate rental and leasing	15	14	-1	2.6%	2.3%
Finance and insurance	-	-	-	-	-
Information and cultural industries	6	-	-	1.0%	-
Educational services	-	-	-	-	-
Accommodation and food services	-	-	-	-	-
Public administration	-	-	-	-	-
Mining, oil and gas extraction	-	-	-	-	-
Health care and social assistance	-	-	-	-	-
Total	580	613	33	100.0%	100.0%

Note: establishment estimates counts of less than 5 are suppressed for confidentiality purposes and shown as '-'

Source: Niagara Economic Development, Niagara Export Trade Overview

The primary destination for Niagara exports is North America, accounting for about \$3.9 billion in 2016 or about 95% of the value of exports from Niagara in 2016. This is followed by Asia and Europe, with each accounting for about 1.7%.



ConnectON

Data engine for economic growth

Asset Mapping

Janet Horner
Executive Director



Golden Horseshoe
Food and Farming
Alliance

Introduction

- An economic development tool that provides information about the resources of a sector and community
- Assets are inventoried and mapped
- Purpose is to build comprehensive industry data to support investment, planning and business retention and expansion

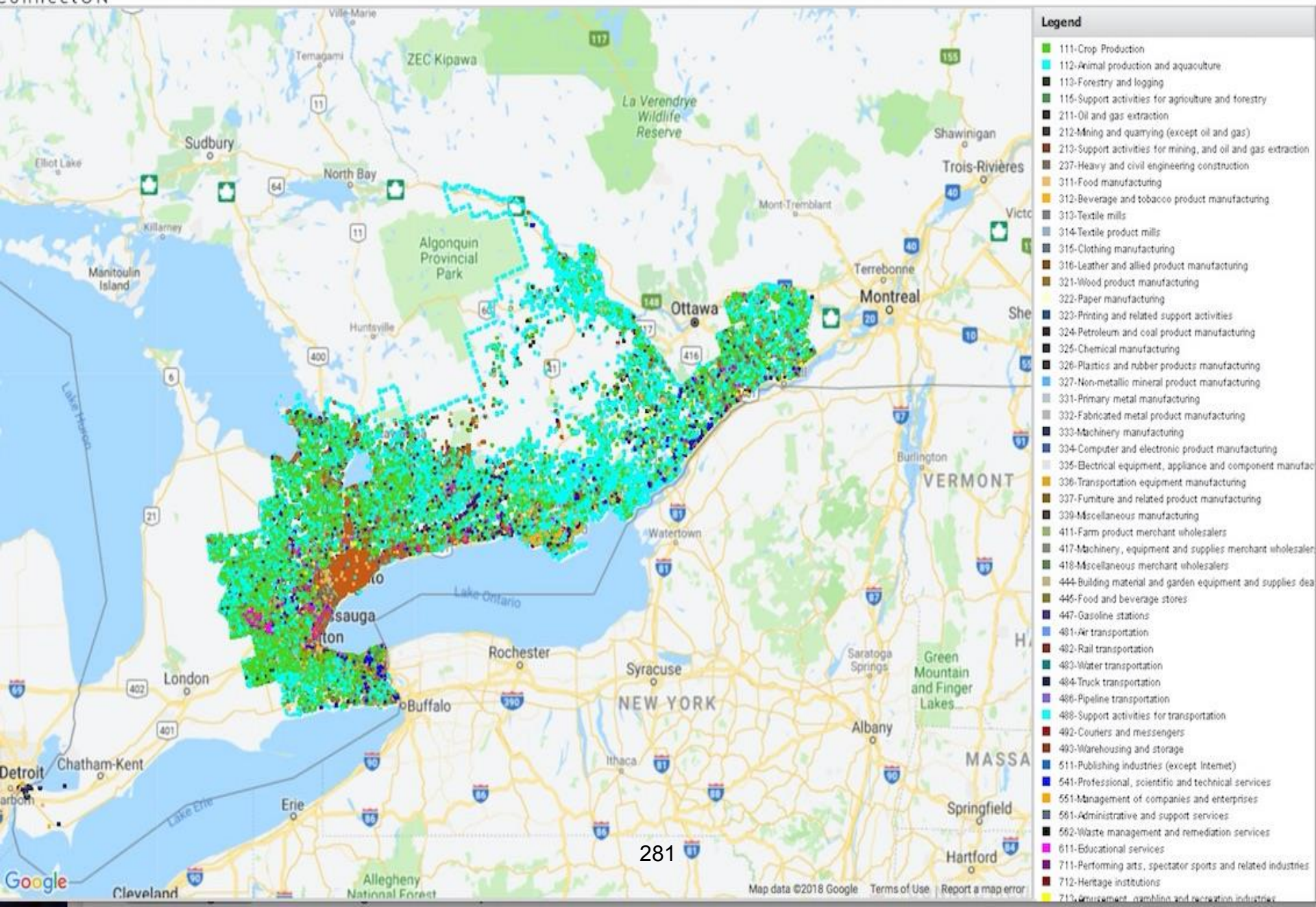
Agri-food Asset Mapping

The Agri-Food value chain from production to consumption



Golden, Greater Golden, Ontario East Project Results

- Data received from all 21 GH and GGH municipalities and 22 Ontario East
- Farm and food processing data was added from OMAFRA
- Approximately 73,000 records have been collected
- Data Sharing Agreement signed by OMAFRA, partners and municipalities



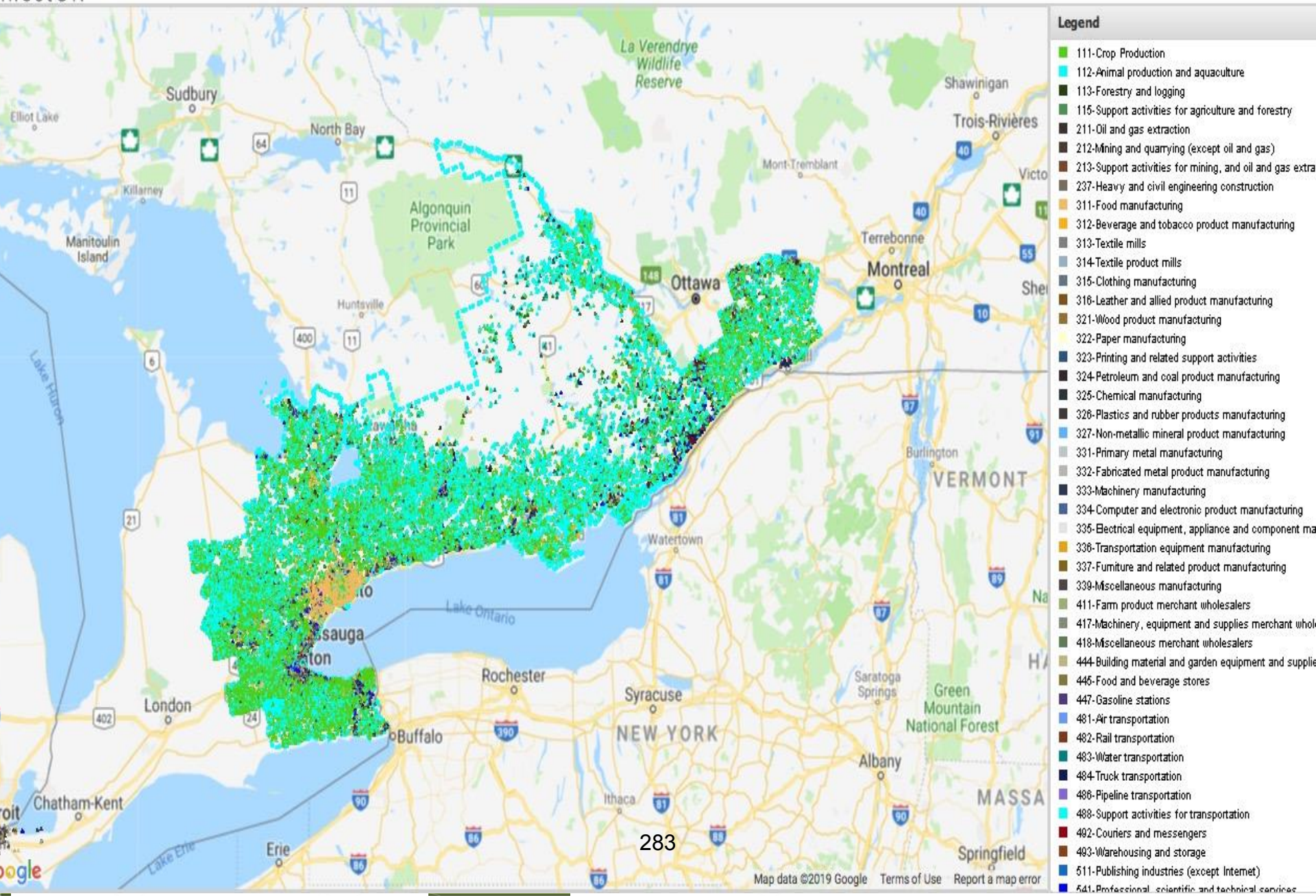
Manufacturing Asset Mapping

- Emerged from Agri-food Asset Mapping
- Municipally driven in partnership with EDCO
- Data received from 24 municipal partners
- Approximately 47,230 manufacturing records have been collected





Manufacturing Assets

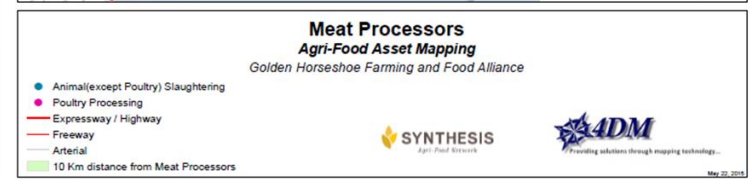
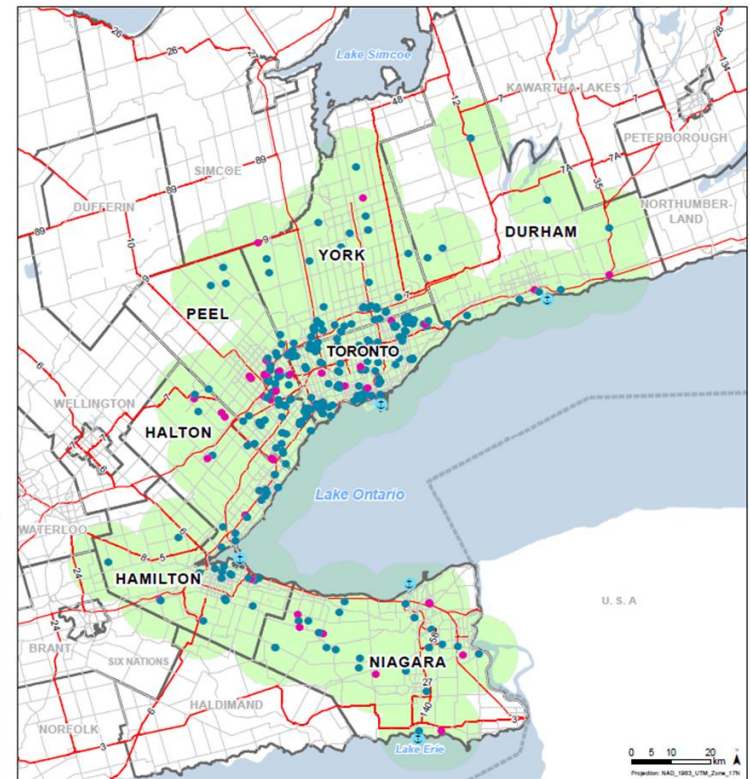
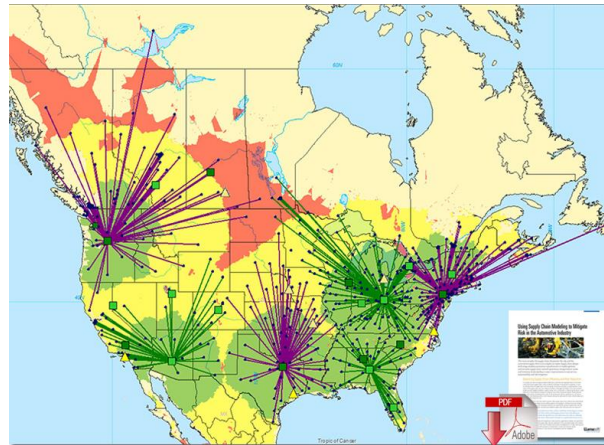


Building Industry Knowledge

Spacial Trends: Cluster and Proximity Analysis

Temporal Trends: shift in industry sectors over time

Building Linkages with asset points



Benefits

- Online data and mapping to support strategic planning, business retention and expansion, capital improvement projects, and communications
- Access to a comprehensive, dynamic, growing, view of Ontario's business assets
- Data quality is foundational
- Mapping is at the point level



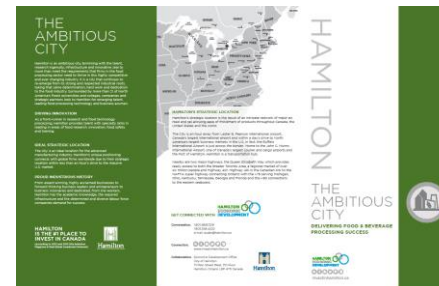
Benefits

- Data can be selected, sorted, mapped, directly downloaded, uploaded and refreshed from desktop
- One system approach to collect, maintain and map assets
- Collaborative environment working with partners and sharing resources



Examples

- **Halton:** Food processing and value chain analysis, assess production and livestock
- **Hamilton:** Information, analysis, farm map and directory, target marketing, feasibility study
- **Northumberland:** Investment attraction



Examples

- **City of Kawartha Lakes:** Sector and trend analysis, informing other studies
- **Durham, Simcoe:** Support BRE projects
- **Lanark:** Identifying business linkages and opportunities



Winner: Premier's Award for Agrifood Innovation Excellence



MPP Laura Albanese, Janet Horner and Bill Hodgson

Partnerships



Golden Horseshoe
Food and Farming
Alliance



Economic
Developers
Council
of Ontario





ConnectON

Data engine for economic growth

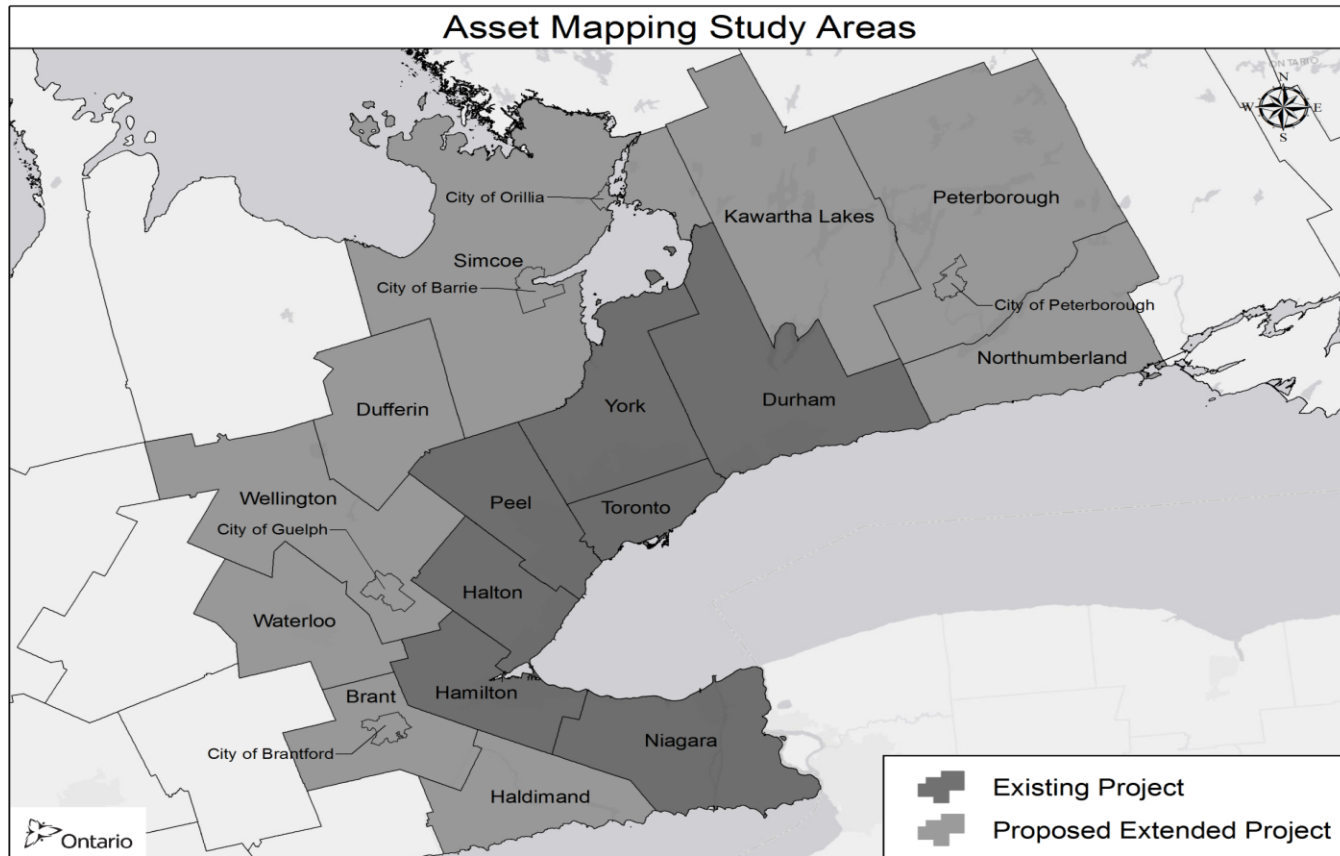
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& GLENGARRY

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Prescott

Brockville

LEEDS &
GRENVILLE

Gananoque

Kingston

LENNOX
AND
ADDINGTON

Quinte West

Belleville

PRINCE
EDWARD

NORTHUMBERLAND

PETERBOROUGH

Peterborough

KAWARTHA
LAKES

HALIBURTON

New York State

Toronto

Lake Ontario

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**THE REGIONAL MUNICIPALITY OF NIAGARA
AGRICULTURAL POLICY & ACTION COMMITTEE
MINUTES**

**APAC 1-2019
Friday, February 22, 2019
Committee Room 4
Niagara Region Headquarters
1815 Sir Isaac Brock Way, Thorold ON**

Committee: Councillors Butters, Disero, Easton, Steele, Witteveen
(Committee Chair); G. Janes, C. Mullet Koop, J. Schonberger,
L. Troup, A. Vaughn, K. Wiens

Absent/Regrets: Bradley (Regional Chair), Councillor Jordan; J. Kikkert, B.
Schenck (Committee Vice Chair), A. White

Staff: E. Acs, Manager, Community Planning, K. Lotimer, Legislative
Coordinator, K. Provost, Economic Development Officer

Others Present: S. Marshall (Ontario Tender Fruit), H. Swierenga (OFA Member
Services Representative)

1. CALL TO ORDER

Kelly Lotimer, Legislative Coordinator, called the meeting to order at 9:02 a.m.

2. DISCLOSURES OF PECUNIARY INTEREST

There were no disclosures of pecuniary interest.

3. SELECTION OF CHAIR AND VICE CHAIR

3.1 Call for Nominations for Committee Chair

Kelly Lotimer, Legislative Coordinator, called for nominations for the position of Chair of the Agricultural Policy and Action Committee, for a two year term (2019 - 2020).

Moved by K. Wiens
Seconded by G. Janes

That Councillor Disero, **BE NOMINATED** for the position of Chair of the Agricultural Policy and Action Committee, for a two year term (2019 - 2020)

Moved by A. Vaughn
Seconded by Councillor Easton

That Councillor Witteveen, **BE NOMINATED** for the position of Chair of the Agricultural Policy and Advisory Committee, for a two year term (2019 - 2020)

3.2 Motion to Close the Nominations for Committee Chair

Kelly Lotimer, Legislative Coordinator, called a second and third time for nominations for the position of Chair of the Agricultural Policy and Action Committee. There being no further nominations it was:

Moved by Councillor Steele
Seconded by K. Wiens

That the nominations for the position of Chair of the Agricultural Policy and Action Committee for a two year term (2019 - 2020), **BE CLOSED**.

Carried

3.3 Voting for the Position of Committee Chair

Voting by a show of hands resulted in the following:

Councillor Disero = 4

Councillor Witteveen = 6

Based on the results of the vote, Ms. Lotimer announced that Councillor Witteveen had received the majority of the votes and would be the Chair of the Agricultural Policy and Action Committee for a two-year term (2019-2020).

3.4 Call for Nominations for Committee Vice-Chair

Kelly Lotimer, Legislative Coordinator, called for nominations for the position of Vice-Chair of the Agricultural Policy and Action Committee, for a two year term (2019 - 2020).

Moved by K. Wiens
Seconded by G. Janes

That Bill Schenck, **BE NOMINATED** for the position of Vice-Chair of the Agricultural Policy and Action Committee, for a two year term (2019 - 2020)

3.5 Motion to Close the Nominations for Committee Vice-Chair

Kelly Lotimer, Legislative Coordinator, called a second and third time for nominations for the position of Vice-Chair of the Agricultural Policy and Action Committee. There being no further nominations it was:

Moved by J. Schonberger
Seconded by Councillor Easton

That the nominations for the position of Vice-Chair of the Agricultural Policy and Action Committee for a two year term (2019 - 2020), **BE CLOSED.**

Carried

3.6 Voting for the Position of Committee Vice-Chair

There being only one nominee for the position, Ms. Lotimer announced that Bill Schenck would be the Vice-Chair of the Agricultural Policy and Action Committee for a two year term (2019 - 2020).

At this point in the meeting, Councillor Witteveen assumed the chair.

4. **PRESENTATIONS**

4.1 Natural Environment Work Program - New Regional Official Plan

Sean Norman, Senior Planner, provided information respecting the Natural Environment Work Program - New Regional Official Plan. Topics of the presentation included:

- New Regional Official Plan
- Natural Environment Planning
- Scope for Natural Environment Work Program
- Key Issues to be Addressed
- Official Plan Policies
- Upcoming Consultation and Engagement

Moved by K. Wiens
Seconded by A. Vaughn

That staff **BE DIRECTED** to invite a representative from the Ontario Phragmites Working Group to make a presentation at the Agricultural Policy and Action Committee meeting being held on Friday, April 26, 2019.

Carried

5. **DELEGATIONS**

There were no delegations.

6. **ITEMS FOR CONSIDERATION**

6.1 **APAC-C 01-2019**

Agricultural Policy and Action Committee 2019 Meeting Schedule

Moved by Councillor Steele

Seconded by Councillor Disero

That Correspondence Item APAC-C 01-2019, dated February 22, 2019, respecting the 2019 APAC Meeting Schedule, **BE RECEIVED** and the following recommendation **BE APPROVED**:

That the Agricultural Policy and Action Committee meetings be held on the following dates:

April 26, September 17 and November 29, 2019.

Carried

7. **CONSENT ITEMS FOR INFORMATION**

7.1 **APAC-C 03-2019**

Irrigation Working Group Update

Sarah Marshall, Manager, Ontario Tender Fruit Growers, provided an update from the Irrigation Working Group.

Moved by Councillor Disero

Seconded by Councillor Easton

That this Committee **RECOMMENDS** to the Planning and Economic Development Committee:

1. That Correspondence Item APAC-C 03-2019, respecting an Irrigation Working Group Update, **BE RECEIVED** for information; and
2. That Regional Council **ENDORSE** the formation of a volunteer Niagara Water Resource Board.

Carried

7.2 APAC-C 02-2019

Agricultural Policy and Action Committee Representation for the Niagara North Federation of Agriculture

Moved by Councillor Butters
Seconded by Councillor Steele

That Correspondence Item APAC-C 02-2019, respecting the Agricultural Policy and Action Committee Representation for the Niagara North Federation of Agriculture, **BE RECEIVED** for information.

Carried

7. **CONSENT ITEMS FOR INFORMATION**

Moved by J. Schonberger
Seconded by G. Janes

That the following items **BE RECEIVED** for information:

APAC-C 1 -2018
Agricultural Policy and Action Committee Minutes
January 26, 2018

APAC-C 2-2018
Agricultural Policy and Action Committee Minutes
April 20, 2018

Carried

8. **OTHER BUSINESS**

8.1 Agricultural Policy and Action Committee Meetings

Gracia Janes, Committee member, enquired about increasing the number of Agricultural Policy and Action Committee meetings per year. Chair Witteveen advised of his ability to call additional committee meetings when necessary.

8.2 Representation from Cannabis Industry on the Agricultural Policy and Action Committee

Kai Wiens, Committee member, enquired as to whether or not the Agricultural Policy and Action Committee members would entertain the addition of a representative from the Cannabis Industry.

Moved by J. Schonberger
Seconded by Councillor Butters

That staff **BE DIRECTED** to invite a representative from the Cannabis Industry to make a presentation at the Agricultural Policy and Action Committee meeting being held on Friday, April 26, 2019.

Carried

8.3 Emily 911 Project

Arden Vaughn, Committee member, provided information on the Emily 911 project.

Moved by A. Vaughn
Seconded by C. Mullet Koop

That the Agricultural Policy and Action Committee **ENDORSE** the Emily 911 Project.

Carried

8.4 Niagara North Federation of Agriculture Bus Tour

Arden Vaughn, Committee member, advised committee members of the Niagara North Federation of Agricultural Bus Tour taking place on June 20, 2019. More information regarding this tour will be provided at an upcoming Agricultural Policy and Action Committee meeting.

8.5 Agriculture Asset Management

Councillor Witteveen, Committee Chair, requested that staff provide information respecting the agricultural asset management work that was done through the Greater Golden Horseshoe Food and Farming Alliance.

8.6 Long Term Strategies

Councillor Witteveen, Committee Chair, requested that staff provide information highlighting the findings and extracts for the agricultural component of the long term strategies report completed by Brock University and Niagara Region.

9. **NEXT MEETING**

The next meeting will be held on Friday, April 26, 2019, at 9:00 a.m. in Committee Room 4.

10. **ADJOURNMENT**

The meeting adjourned at 11:16 a.m.

Councillor Witteveen
Committee Chair

Kelly Lotimer
Legislative Coordinator

Ann-Marie Norio
Regional Clerk

MEMORANDUM

APAC-C 4-2019

Subject: Motion from the Planning and Economic Development Standing Committee meeting of Wednesday, April 17, 2019, regarding Regulations, Policies and Enforcement of Cannabis and Greenhouse Industry

Date: April 26, 2019

To: Agricultural Action and Policy Committee

From: Kelly Lotimer, Legislative Coordinator

For your information, the following motion was passed at the Planning and Economic Development Committee, at its April 17, 2019 meeting:

7.3 Roundtable/Forum for Cannabis and Greenhouse Industry

Moved by Councillor Huson

Seconded by Councillor Butters:

That staff **BE DIRECTED** to prepare a proposal and budget for a facilitated Regional roundtable/forum to discuss regulations, policies and enforcement pertaining to the cannabis production and greenhouse industry which would include Ministry of Municipal Affairs, Ministry of Health, Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) and Local Area Municipalities.

Carried

This motion will be considered at the Regional Council meeting being held on April 25, 2019.

Respectfully submitted and signed by

Kelly Lotimer
Legislative Coordinator