The Regional Municipality of Durham

Planning & Economic Development Committee Agenda

Council Chambers
Regional Headquarters Building
605 Rossland Road East, Whitby

Tuesday, February 5, 2019 **9:30 AM**

1. Declarations of Interest

2. Adoption of Minutes

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3. Statutory Public Meetings

There are no statutory public meetings

4. Delegations

There are no delegations

5. Presentations

5.1 Brad Anderson, Principal Planner, re: Proposed Durham Region Broadband Strategy, “Connecting our Communities: A Broadband Strategy for Durham Region” (2019-P-3) [Item 6.2 A)]

5.2 Jonah Kelly, Principal Planner, re: Envision Durham – Public Engagement Launch (2019-P-4) [Item 6.2 B)]

5.3 Dimitri Pagratis, Project Planner, re: Region of Durham Draft Woodland Conservation and Management By-law (2019-P-5) [Item 6.2 C)]

6. Planning

6.1 Correspondence

6.2 Reports

A) Proposed Durham Region Broadband Strategy, “Connecting our Communities: A Broadband Strategy for Durham Region” (2019-P-3) 11 - 122

B) Envision Durham – Public Engagement Launch (2019-P-4) 123 - 143

C) Region of Durham Draft Woodland Conservation and Management By-law (2019-P-5) 144 - 166

7. Economic Development

7.1 Correspondence

7.2 Reports

There are no Economic Development Reports to consider

8. Advisory Committee Resolutions

There are no advisory committee resolutions to be considered

9. Confidential Matters

There are no confidential matters to be considered

10. Other Business

11. Date of Next Meeting

Tuesday, March 5, 2019 at 9:30 AM

12. Adjournment

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The Regional Municipality of Durham

MINUTES

PLANNING & ECONOMIC DEVELOPMENT COMMITTEE

Tuesday, January 8, 2019

A regular meeting of the Planning & Economic Development Committee was held on Tuesday, January 8, 2019 in the Lower Level Boardroom (LL-C), Regional Headquarters Building, 605 Rossland Road East, Whitby, Ontario at 9:30 AM

Present: Councillor Joe Neal, Vice-Chair
Councillor Bath-Hadden left the meeting at 12:03 PM due to municipal business
Councillor Highet
Councillor Kerr
Councillor Lee
Councillor Yamada attended the meeting at 10:30 AM
Regional Chair Henry

Also Present: Councillor Dies
Councillor Marimpietri attended the meeting at 9:40 AM
Councillor John Neal attended the meeting at 10:10 AM
Councillor Wotten left the meeting at 11:37 AM

Absent: Councillor Ryan, Chair

Staff Present: E. Baxter-Trahair, Chief Administrative Officer
B. Bridgeman, Commissioner of Planning and Economic Development
S. Gill, Director, Economic Development and Tourism
C. Goodchild, Manager, Policy Planning & Special Studies
G. Muller, Director of Planning
S. Munns, Director, Corporate Communications
B. Pickard, Manager, Tourism
N. Rutherford, Manager, Economic Development, Agriculture and Rural Affairs
K. Ryan, Senior Solicitor, Corporate Services – Legal Services
L. Trombino, Manager, Plan Implementation
S. Rashad, Systems Support Specialist, Corporate Services – IT
T. Fraser, Committee Clerk, Corporate Services – Legislative Services, attended for part of the meeting
C. Tennisco, Committee Clerk, Corporate Services – Legislative Services, attended for part of the meeting

Councillor Joe Neal, Vice-Chair, chaired the meeting in the absence of Councillor Ryan, Chair.

1. Declarations of Interest

There were no declarations of interest.

2. Adoption of Minutes

Moved by Regional Chair Henry, Seconded by Councillor Kerr,
(1) That the minutes of the regular Planning & Economic Development Committee meeting held on Tuesday, December 11, 2018, be adopted.

CARRIED

B. Bridgeman introduced Simon Gill as the new Director of Economic Development and Tourism. He advised that previously Simon was the Region's Manager of Investment Attraction.

3. Statutory Public Meetings

There were no statutory public meetings.

4. Delegations

4.1 Ms. Sherry Colbourne, President & CEO, Spark Centre, re: Durham Region Innovation District

Ms. Sherry Colbourne, President & CEO, Spark Centre, and Ms. Laura O'Blenis, President & CEO, Stiletto Consulting, provided a PowerPoint presentation regarding a proposed Durham Region Innovation District.

Ms. Colbourne provided a brief overview of the history of the project. She advised in early 2018 a decision was made to complete a feasibility study and Stiletto Consulting was hired.

Ms. O'Blenis advised that initially the concept was for an innovation hub and as they worked through the feasibility study it evolved into an innovation district. She explained that there is an opportunity for the innovation district to be a catalyst for re-imaging and re-branding the Durham Region as a leader in research, entrepreneurship and innovation for the eastern GTA Region.

Ms. O'Blenis noted that the Region is changing with the announcement of the GM Plant Closure and the Pickering Nuclear Plant de-commissioning. She stated that the shift in these areas presents an opportunity to re-train and redefine the workforce and the economic landscape in Durham Region.

Moved by Regional Chair Henry, Seconded by Councillor Lee,

(2) That the Rules of Procedure be suspended in order to give Ms. Colbourne and Ms. O'Blenis an additional 10 minutes to finish their delegation.

CARRIED on a 2/3rds Vote

Ms. O'Blenis provided an overview of the proposed innovation district and D-Hive Network. She explained that the district would be comprised of an innovation station and sector-focused accelerators. She spoke to the focus sectors, market validation and investments to date.

Ms. O'Blenis advised next steps include finalizing funding opportunities and start-up activities. She also advised interim funding of $325,000 is needed for phase one until December 31, 2019. She outlined the financial model for the first five years and she noted that 60% of their revenue will come from the rental of space in the central services location. She stated that the overall financial investment for the first five years includes $850,000 for core operational funding, $6 million in one-time seed investment for accelerator capital, and $18 million in one-time seed investment for the innovation station.

Ms. O'Blenis concluded by advising that the projected return on investment is approximately 400 net new employees located at the innovation station and a total annual economic impact of the innovation station only, in the range of $80 million per annum.

Ms. Colbourne and Ms. O'Blenis responded to questions.

5. Presentations

5.1 Mr. Erik Karvinen, Watson & Associates Economists Ltd., re: Durham Region Competitiveness Study (2019-EDT-1)

Mr. Karvinen, Manager, Watson & Associates Economists Ltd., provided a PowerPoint presentation regarding the Region of Durham Competitiveness Study.

Mr. Karvinen provided a brief overview of the Competitiveness Study's key deliverables. He advised that municipalities compete with one another for business attraction and retention, and that the nature of competition is evolving with the changing economic landscape. He stated that having a comprehensive understanding of Durham's competitive position compared to other communities in the surrounding market area is a fundamental aspect of economic development.

Mr. Karvinen provided an overview of municipal competitiveness factors; economic and employment trends in Durham and the Greater Toronto and Hamilton Area; comparative factors generally considered in location decisions; Durham's competitive advantages; Durham's competitive disadvantages; industry

sectors assessed; Durham's relative position in the Greater Golden Horseshoe; and findings of the cost competitiveness and financial feasibility analysis.

Mr. Karvinen also outlined the conclusions of the Competitiveness Study. He stated that in order to maintain and enhance its economic competitiveness, the Region must continue to be innovative and pro-active in its efforts to attract and market future development.

Mr. Karvinen responded to questions with respect to comparator municipalities used in the study; challenges related to major office development in Durham; Durham's transportation assets; labour force characteristics; industry sector competitiveness rankings; Durham's competitiveness; the employment growth rate by industry sector; utility cost comparisons; Durham's designated employment lands; transportation network challenges; the study's conclusions; and recommended next steps. Mr. Karvinen also responded to questions with respect to whether they have completed similar studies for other municipalities; and other comparators, such as the United States and Mexico.

Moved by Regional Chair Henry, Seconded by Councillor Lee,
(3) That the Committee recess for 10 minutes.
CARRIED

The Committee recessed at 11:37 AM and reconvened at 11:46 AM.

6. Planning

6.1 Correspondence

There were no communications to consider.

6.2 Reports

A) Application to Amend the Durham Regional Official Plan, submitted by Mike Kennedy, to permit the severance of a dwelling rendered surplus as a result of the consolidation of non-abutting farm parcels in the Township of Uxbridge, File OPA 2018-003 (2019-P-1)

Report #2019-P-1 from B. Bridgeman, Commissioner of Planning and Economic Development, was received.

Moved by Regional Chair Henry, Seconded by Councillor Lee,
(4) That we recommend to Council:

A) That Amendment #173 to the Durham Regional Official Plan, to permit the severance of a dwelling rendered surplus as a result of the consolidation of non-abutting farm parcels, be adopted as contained in Attachment #3 to Commissioner's Report #2019-P-1; and

B) That "Notice of Adoption" be sent to the applicant, the applicant's agent, the Township of Uxbridge, the Ministry of Municipal Affairs and Housing, and all other persons or public bodies who requested notification of this decision.

CARRIED

B) Award of RFP 592-2018, Pre-qualified consultant roster for the peer review of hydrogeological and water balance reports submitted in support of development applications (2019-P-2)

Report #2019-P-2 from B. Bridgeman, Commissioner of Planning and Economic Development, was received.

Moved by Regional Chair Henry, Seconded by Councillor Highet,

(5) That Report #2019-P-2 of the Commissioner of Planning and Economic Development be received for information.

CARRIED

7. Economic Development

7.1 Correspondence

There were no communications to consider.

7.2 Reports

A) Durham Region Competitiveness Study (2019-EDT-1)

Report #2019-EDT-1 from B. Bridgeman, Commissioner of Planning and Economic Development, was received.

Staff responded to questions with respect to next steps for Regional staff; and the City of Oshawa's efforts to secure the Canada Post building in Oshawa.

Discussion ensued with respect to the Durham Region Competitiveness Study and potential next steps.

Staff agreed to provide Councillor Joe Neal with the employment numbers used in Figure 3: Durham Region Competitive Share Growth Analysis Relative to the Greater Golden Horseshoe; and the terms of reference for the Competitiveness Study.

Moved by Regional Chair Henry, Seconded by Councillor Kerr,

(6) That Report #2019-EDT-1 of the Commissioner of Planning and Economic Development be received for information and that Regional staff continue to work on next steps.

CARRIED

B) Durham Region Idea Summit and D-Hive Tech Hub (2019-EDT-2)

Report #2019-EDT-2 from B. Bridgeman, Commissioner of Planning and Economic Development, was received.

Discussion ensued with respect to the process for moving forward with this project and it was suggested that this item be referred back to staff. It was requested that staff bring this matter back to the Committee at their first opportunity.

Moved by Regional Chair Henry, Seconded by Councillor Kerr,
(7) That Report #2019-EDT-2 of the Commissioner of Planning and Economic Development be referred back to staff.
CARRIED

C) Toronto Global Effectiveness Evaluation and Funding Renewal (2019-EDT-3)

Report #2019-EDT-3 from B. Bridgeman, Commissioner of Planning and Economic Development, was received.

It was the consensus of the Committee to invite Mr. Toby Lennox, Chief Executive Officer, Toronto Global, to appear before the Committee to respond to questions on this matter.

Regional staff and Mr. Lennox responded to questions with respect to Durham's return on investment from Toronto Global; prospective investments (leads) identified by Toronto Global; Durham's competitiveness; global and municipal competitors; targeted sectors; marketing of Durham's assets; potential challenges to attracting investment; and the proposed 5 year funding agreement.

It was requested that Mr. Lennox appear at the January 30, 2019 Regional Council meeting.

Moved by Councillor Kerr, Seconded by Regional Chair Henry,
(8) That we recommend to Council:

A) That Durham Region continue to partner with Toronto Global with respect to international investment attraction activities under a 5-year funding agreement, subject to satisfactory performance by Toronto Global and subject to funding being approved annually through the Region's annual Business Plans and Budget process;

B) That funding of Toronto Global for 2019, in the amount of $206,397, be approved through the 2019 Business Plans and Budget process;

C) That the Regional Chair and Regional Clerk be authorized to execute the appropriate funding agreement with Toronto Global upon budget approval; and

D) That a copy of Report #2019-EDT-3 be forwarded to Toronto Global, the Area Municipalities, and all members of the Durham Economic Development Partnership for information.

CARRIED AS AMENDED LATER IN THE MEETING ON A RECORDED VOTE
(See Following Motions)

Moved by Regional Chair Henry, Seconded by Councillor Yamada,

(9) That the main motion (8) of Councillor Kerr and Regional Chair Henry be amended by adding the following as a new Part E):

E) That Toronto Global report to the Durham Region Planning & Economic Development Committee once a year, or upon request, and to Regional Council upon request.

CARRIED

The main motion (8) of Councillor Kerr and Regional Chair Henry was then put to a vote and CARRIED AS AMENDED ON THE FOLLOWING RECORDED VOTE:

Yes	No
Regional Chair Henry	Councillor Lee
Councillor Highet	
Councillor Kerr	
Councillor Yamada	
Councillor Joe Neal, Vice-Chair	

Members Absent: Councillor Bath-Hadden
Councillor Ryan

Declarations of Interest: None

8. Advisory Committee Resolutions

There were no advisory committee resolutions to be considered.

9. Confidential Matters

There were no confidential matters to be considered.

10. Other Business

There was no other business to be considered.

11. Date of Next Meeting

The next regularly scheduled Planning & Economic Development Committee meeting will be held on Tuesday, February 5, 2019 at 9:30 AM in the Lower Level Boardroom (LL-C), Regional Headquarters Building, 605 Rossland Road East, Whitby.

12. Adjournment

Moved by Councillor Kerr, Seconded by Councillor Highet,
(10) That the meeting be adjourned.

CARRIED

The meeting adjourned at 1:25 PM

Respectfully submitted,

J.J. Neal, Vice-Chair

T. Fraser, Committee Clerk

If this information is required in an accessible format, please contact 1-800-372-1102 ext. 2564

The Regional Municipality of Durham Report

To:	Planning and Economic Development Committee
From:	Commissioner of Planning and Economic Development
Report:	#2019-P-3
Date:	February 5, 2019

Subject:

Proposed Durham Region Broadband Strategy, “Connecting our Communities: A Broadband Strategy for Durham Region”, File: D24-12

Recommendations:

That the Planning and Economic Development Committee recommends to Regional Council:

A) That Council recognize the importance of adequate broadband infrastructure for the wellbeing and economic competitiveness of the Region’s residents, businesses, and institutions;

B) That “Connecting our Communities: A Broadband Strategy for Durham Region”, dated February 5, 2019 (Attachment #1) be endorsed in principle, subject to any additional resources being contingent upon the approval of the 2019 budget and subsequent budget processes;

C) That the Regional Chair write to the Provincial Minister of Economic Development, Job Creation and Trade and local Ministers of Provincial Parliament requesting that the Province consider its own financial contribution in support of Internet service provider applications under the Canadian Radio-Television Commission’s Broadband Fund; and

D) That a copy of this report and the attached Broadband Strategy be forwarded to the Area Municipalities, Local Members of Parliament and local Members of Provincial

Parliament, the federal Minister of Innovation, Science and Economic Development, and shared electronically with stakeholders that participated over the course of the project.

Report:

1. Purpose

1.1 At the January 18, 2017 Regional Council Meeting, staff were directed to prepare a Regional Broadband Strategy. The purpose of this report is to present "Connecting our Communities: A Broadband Strategy for Durham Region" (Attachment #1).

2. Background

2.1 In March of 2017, an internal Steering Committee was established to oversee and provide guidance on the development of a Broadband Strategy. The Steering Committee included representation from the Works Department, Finance Department, Corporate Services Department, Planning and Economic Development Department, Office of the CAO, and Durham Region Transit.

2.2 On May 3, 2017, the Region released a Request for Proposal (RFP-1059-2017) to retain specialized consulting services. Actionable Intelligence Inc. was subsequently retained, and their work commenced in September of 2017.

2.3 The Broadband Strategy was completed over two phases. Phase One focused on gathering background information and undertaking stakeholder consultation. On May 2, 2018, staff presented Commissioner's Report #2017-INFO-55 and the Phase One Summary Report, prepared by Actionable Intelligence Inc. The Phase One Summary Report:

1. Identified the needs and trend of various broadband users within Durham Region;
2. Identified the preliminary connectivity targets, based on the needs of users (based on historical bandwidth demand and growth);
3. Described the general connectivity conditions across the Region;
4. Discussed technology options to achieve connectivity; and,
5. Identified the potential roles and projects the Region may undertake to achieve increased connectivity.

2.4 Phase Two focused on the preparation of the Broadband Strategy. In September of 2018, Actionable Intelligence submitted their Phase Two Report, which evaluated

the various roles the Region could take to support broadband and provided their advice on how to proceed. The Phase One and Two Reports guided the completion of "Connecting our Communities: A Broadband Strategy for Durham Region" (the "Strategy") which was prepared by Planning Division staff, in consultation with the Steering Committee and other stakeholders.

3. Overview of Connecting our Communities: A Broadband Strategy for Durham Region

3.1 A brief overview of the Strategy is provided below.

Introduction, Executive Summary, Action and Implementation Plan

3.2 The opening section introduces the Strategy and provides an executive summary of the purpose, vision, the known challenges, the scope of the Region's role, and the broadband priorities. The Region of Durham is not an Internet service provider (ISP). Recognizing this, the Strategy focuses the Region's efforts on supporting the expansion of broadband in cooperation with other levels of government, stakeholders and ISPs. Finally, the Action Plan is provided, which summarizes the individual actions, the broadband priorities they address, and their anticipated timeline and required resources.

3.3 Part 1: Local Context

3.4 Part 1 provides an overview of Durham Region's geographic context, profile, and key statistics. Relevant policies from other Regional documents that support the development of the Strategy, including the Durham Region Strategic Plan and the Economic Development Strategy and Action Plan, are referenced. Finally, a description of broadband and its importance is discussed.

Part 2: Strategy Development: Objectives and Process

3.5 Part 2 outlines the study objectives and the process used to develop the Strategy. It summarizes the project's phasing, stages of consultation, and the two supporting reports from Actionable Intelligence, which culminated in the preparation of the Strategy.

Part 3: Connectivity Guidelines and Current Conditions

3.6 Part 3 sets connectivity guidelines for Durham Region. The guidelines implement the Canadian Radio-Television Commission (CRTC) 2022 baseline target for Canadian households. Using industry standards and best practices, Actionable

Intelligence developed connectivity guidelines for residential and non-residential uses to the year 2034. Based on comments received from Lakeridge Health and Durham College, a category was added to reflect the unique broadband needs of large campus style institutions as well as specialized industries. The connectivity guidelines represent generalized predicted broadband needs, recognizing that some households, businesses and/or institutions may require higher or lower levels of broadband connectivity, based on individual operational needs.

3.7 A high-level review of Durham's current connectivity conditions is also provided. Urban residential areas are well served by multiple providers, with newer broadband technologies being deployed on an ongoing basis. Likewise, major institutional users reported they can access speeds that meet their needs. Some businesses reported service gaps and challenges due to broadband infrastructure being nearby but not necessarily connecting to/serving their property. Where gaps exist, significant capital costs may be required to extend broadband services from the nearest termination point to the building. In addition, much of Durham's rural areas are characterized by lower service speeds that do not meet the connectivity guidelines or CRTC baseline target, have limited service provider options, and are primarily reliant on wireless broadband technologies.

Part 4: Broadband Priorities

3.8 Part 4 identifies Durham's broadband priorities, which were formulated over the course of the project and based on comments and input received during the various stages of consultation. The broadband priorities are:

1. Creating an Environment of Coordination and Collaboration;
2. Addressing Service Gaps; and,
3. Supporting Improved Affordability.

Part 5: Actions

3.9 Part 5 describes ten actions (and related sub-actions) that will be undertaken to support the Region's broadband priorities, and which also generally support the deployment of broadband infrastructure. The ten actions are:

1. Leverage Regional Assets;
2. Develop Regional Policies and Processes to Support Broadband;
3. Assess Corporate Broadband and Smart City needs through the Region's Corporate Information Technology Strategy;

4. Support ISP Funding Applications that, where appropriate, advance the Region's connectivity guidelines;
5. Establish a Broadband Working Group;
6. Create and Maintain a Broadband Information Database;
7. Facilitate Communication, Collaboration and Cooperation;
8. Advocate and Educate on the importance of Broadband Infrastructure;
9. Develop a Durham Smart Cities Framework; and
10. Create a temporary (three-year) Broadband Coordinator position to help implement the actions.

4. Upcoming and Ongoing Broadband Initiatives

4.1 There are several broadband initiatives being undertaken by senior levels of government that are of interest to the Region of Durham. A review of recent announcements is provided below.

Canadian Radio-Television Commission Broadband Fund

4.2 On September 27, 2018, the CRTC issued Policy Decision 2018-377, providing preliminary details about its upcoming Broadband Fund. The CRTC Broadband Fund is intended to provide financial support to ISPs deploying broadband to underserved areas. The Policy Decision states that the call for applications will be issued in 2019, defines eligible applicants, eligible areas (with mapping to be provided in advance of proposal calls) and eligible projects. In addition, it was determined that financial support from other levels of government would be factored into the overall scoring of applications.

4.3 Given that the Region of Durham does not provide or have experience in providing Internet services to customers, the Region will not be eligible to make an application to the CRTC Broadband Fund on its own. However, the CRTC policy decision states that other levels of government (i.e. the Region) can strengthen applications made by eligible applicants (i.e. private sector ISPs) by providing consultation support, letters of support, and by providing a financial contribution. The CRTC will consider the degree of support by other levels of government during the application assessment stage of the process. Accordingly, as part of the proposed Strategy (Action 4), it is recommended that the Region be in a position to be "application ready" to support potential applications submitted by ISPs that also request Regional support. Submissions that include a request for a Regional financial contribution will be evaluated in accordance with the connectivity guidelines and reported on for Council's consideration for funding support. Subject to a favourable

review of such requests, Council may wish to consider providing financial support to strengthen applications submitted by ISPs to the CRTC Broadband Fund.

4.4 Currently, the CRTC has not provided any guidance on the minimum level of funding from other levels of government that would be considered appropriate and favorable during the application assessment stage. In addition, in the absence of detailed construction plans and a business case analysis, it is difficult to determine the overall potential cost of broadband projects to service Durham's eligible areas.

4.5 Staff have reviewed the information made available on applications that were granted funding under a similar program offered by the Federal Government known as "Connect to Innovate" (CTI). At the time of writing this report, 141 projects across Canada have been approved, totalling $464,530,000 in funding. Individual project funding ranges from as low as $14,000 to over $62,000,000. The mathematical average per project equates to $3,300,000. This does not represent the overall cost of the project, merely the amount being contributed by the Federal Government. Within Ontario, projects that have received funding have primarily been in Northern Ontario.

4.6 Staff will continue to inquire with CRTC staff on an appropriate contribution ratio. Further announcements from the CRTC on program details and the initial call for submissions will occur in 2019.

4.7 ISPs would be required to meet several minimum requirements to be considered for Regional funding support. In the case of multiple requests for Regional funding support, several criteria would be used to select preferred proposal(s). Sample minimum requirements and evaluation criteria for requests for Regional funding are provided in Attachment #3. These criteria will be further developed by staff upon the release of program details from the CRTC. Upon receipt of a request for Regional funding support, staff will expedite a review and assessment of the request, and report to Council with a recommendation.

Broadband as an Economic Development Priority in Canada and Ontario

4.8 On October 29, 2018, the federal, provincial and territorial ministers for innovation and economic development agreed to make broadband a priority. This decision included a commitment to develop a long-term strategy to improve access to high-speed Internet services for all Canadians. Access, collaboration and effective investments were established as principles to guide future broadband initiatives. This proposed Strategy aligns with these principles.

Upcoming Provincial Broadband and Cellular Strategy

4.9 On November 15, 2018, as part of the Ontario Economic Outlook and Fiscal Review, the Provincial Government committed to releasing a broadband and cellular strategy in early 2019. Details of the Ontario strategy are not yet known. Staff will continue to monitor, and where possible, provide input on this and other broadband initiatives being undertaken by senior levels of government as necessary.

5. Conclusions and Next Steps

5.1 The proposed Strategy outlines a role for the Region to support and facilitate the deployment of broadband infrastructure, without duplicating the responsibilities of senior levels of government, or competing with the private sector in the provision of services. The Strategy and its various Actions align with the Region's Strategic Plan and the Economic Development Strategy and Action Plan, and complement initiatives being undertaken by senior levels of government. It is recommended that Council endorse the Broadband Strategy in principle.

5.2 This Report has been prepared in consultation with the Works Department, Corporate Services Department, Finance Department, Office of the CAO, and Durham Region Transit.

5.3 A copy of this Report and its attachments will be electronically provided to all stakeholders (public utility corporations, post-secondary institutions, businesses and business organizations, ISPs, etc.) that participated in consultation.

6. Attachments

Attachment #1: Connecting our Communities: A Broadband Strategy for Durham Region, dated February 5, 2019

Attachment #2: Regional Municipality of Durham, Broadband Strategy, Phase Two Report, by Actionable Intelligence Inc., dated September, 2018

Attachment #3: Sample Requirements and Criteria for Regional Funding Support for Internet Service Provider applications to the CRTC Broadband Fund

Respectfully submitted,

Original signed by

Brian Bridgeman, MCIP, RPP
Commissioner of Planning and
Economic Development

Recommended for Presentation to Committee

Original signed by

Elaine C. Baxter-Trahair
Chief Administrative Officer

CONNECTING OUR COMMUNITIES

A BROADBAND STRATEGY FOR DURHAM REGION

February 5, 2019


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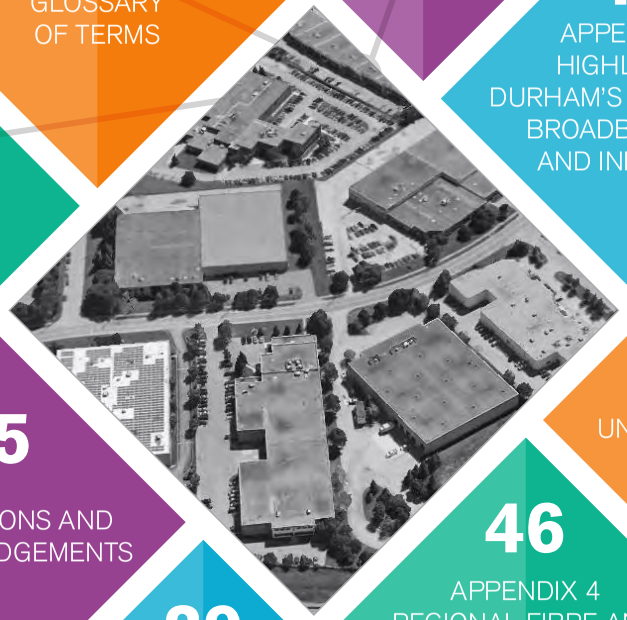

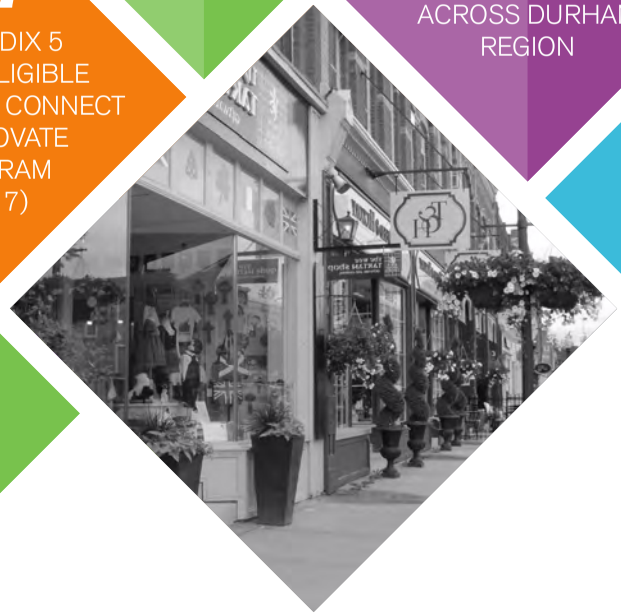

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A MESSAGE FROM
THE REGIONAL CHAIR & CEO, AND THE CHIEF ADMINISTRATIVE OFFICER

JOHN HENRY
Durham Regional Chair & CEO

ELAINE BAXTER-TRAHAIR
Chief Administrative Officer

Dear Friends,

It is our pleasure to share with you the Region of Durham's Broadband Strategy and Action Plan. This is our first step into strategic planning for a digitally connected regional community. As our society and economy increasingly rely on electronic and online interactions, the Region must be prepared for and embrace this evolution.

Fast, effective broadband infrastructure is now vital for the Region's success in delivering our services and interacting with residents. It is also an essential tool for citizens to participate in their community and for businesses to reach and respond to their customers. Reliable digital connectivity also is critical to support economic development and attract new investment to Durham.

All levels of government have a role to play in ensuring connectivity is in place to meet community needs. The Region can help to explore options and coordinate local efforts, but partnerships and collaboration will be essential to defining, developing and continuing to grow a broadband network to serve all of Durham.

This strategy positions us to work towards a connected Region.

Yours truly,

John Henry, Durham Regional Chair and CEO

Elaine Baxter-Trahair, Chief Administrative Officer

INTRODUCTION

On May 10, 2017, Regional Council endorsed the 2017-2021 Economic Development Strategy and Action Plan for Durham Region. The Plan provides a series of actions that are intended to advance the Region's economic position, while acknowledging the importance of partnerships among economic development stakeholders. It also recognizes the importance of broadband as an indispensable part of modern infrastructure in a world that is becoming increasingly connected through digital and online platforms, and identified the need for a Regional Broadband Strategy. Following the formation of a Departmental Steering Committee and the retention of Actionable Intelligence Incorporated in a consulting capacity, stakeholder consultation on a Broadband Strategy began in September 2017.

This Broadband Strategy was completed in two phases. The first phase focused on assessing the current trends of broadband use and identifying current connectivity conditions across the region. Across all broadband user groups-namely residents, businesses, governments and institutions-the demand for increased Internet connection speed and capacity is growing exponentially. Governments, for example, are beginning to explore smart cities solutions to collect data, enhance service delivery and improve decision-making. Based on trends in user needs and industry best practices for predicting future demand, connectivity guidelines for the region have been established.

Many parts of the region, particularly the urban residential areas, are benefiting from infrastructure upgrades by Internet service providers (ISPs). For many, levels of service are available that meet or exceed their needs, with service quality in Durham's lakeshore urban areas competitive with other areas of the Greater Toronto Area. However, there are service gaps in locations with low customer densities, particularly in Durham's rural areas. In addition, many businesses have identified the capital cost of upgrading and/or installing broadband infrastructure to their location as being cost prohibitive. This hinders their ability to take advantage of innovative Internet-based technologies, which can create a downstream impact on long-term business viability.

Addressing Durham's specific connectivity challenges requires a combined effort by many stakeholders. This includes the owners and operators of broadband infrastructure (ISPs), individual users (residents, businesses and institutions), as well as all levels of government. This Strategy and its actions acknowledge that the Region does not intend to occupy the ISP space in competition with the existing marketplace or duplicate the responsibilities of senior levels of government, but rather outlines the role that the Region should play as a supporter and facilitator of broadband infrastructure, with a focus on three priority areas: creating an environment of coordination and collaboration, addressing service gaps, and supporting improved affordability.

EXECUTIVE SUMMARY

VISION

Durham's residents, businesses, and institutions will have access to fast, reliable, and affordable broadband services so that they may fully participate, compete, and thrive in the 21st century.

PURPOSE

Council directed that a Broadband Strategy be undertaken to ensure the Region takes action to support broadband deployment, particularly to underserved areas. The objectives of this Strategy are summarized as follows:

- To understand the broadband needs of residents, businesses, and institutions;
- To highlight trends in broadband use;
- To identify projects and service options to improve broadband service delivery;
- To highlight the need for collaboration, while encouraging investments in connectivity;
- To signal the Region's intent of being "application ready" should ISP's approach the Region for funding support towards programs offered by senior levels of government;
- To establish connectivity guidelines to ensure the Region is forward-thinking and future focused, establishing a basis to evaluate applications that may be advanced by ISPs;

THE CHALLENGE

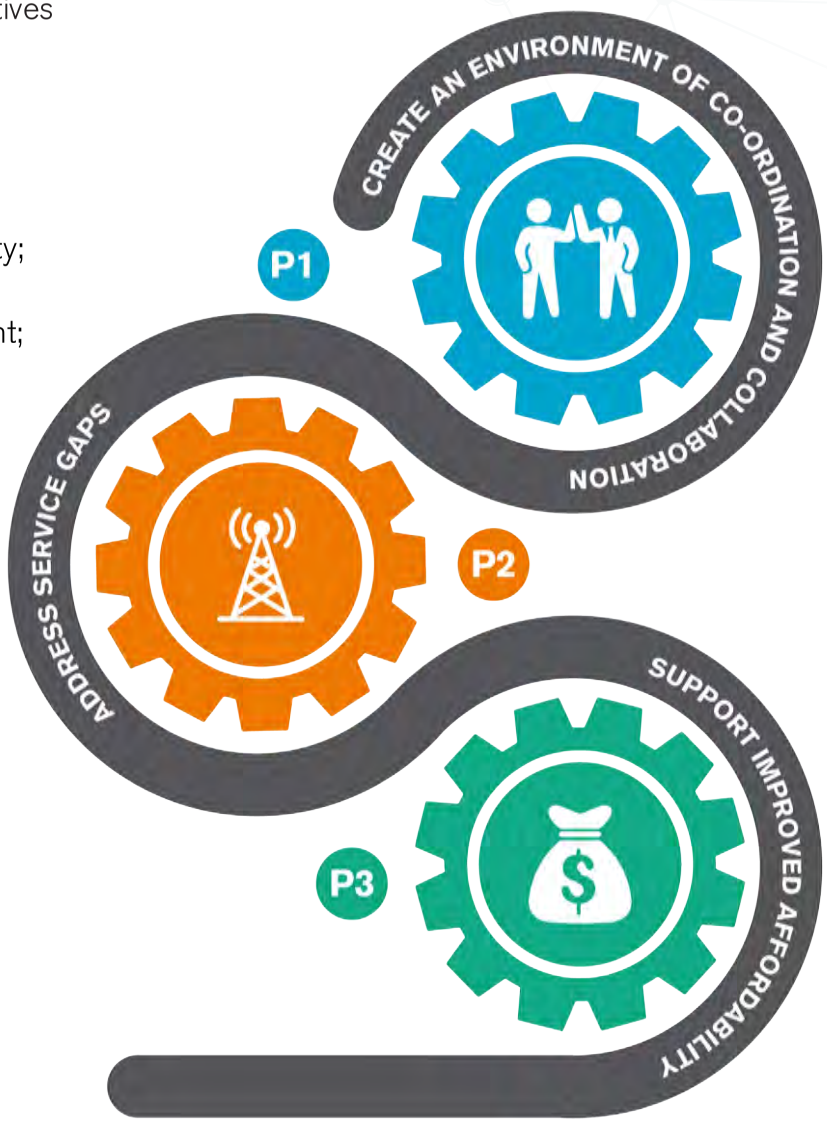
Broadband services are deployed based on market demand, and supported by business case analyses by ISPs. Therefore, areas with lower customer densities, like rural areas and employment areas, may have limited service options and service speeds, since there is not a sufficient cost-benefit motivation for ISPs to upgrade existing infrastructure.

THE REGION'S ROLE

The Region is not an Internet service provider. The Region's efforts should support the expansion of broadband, in cooperation with other levels of government, stakeholders and ISPs.

THE REGION'S

BROADBAND PRIORITIES



ACTION AND IMPLEMENTATION PLAN

The successful implementation of the Strategy relies on the joint effort of many stakeholders. The following table summarizes the recommended actions contained within this Strategy, along with key departments and external stakeholders.

Timeframe: Ongoing (currently underway), Immediate (1to 2 years), Future (3 to 5 years)

ACTION NUMBER	ACTION DETAILS	POTENTIAL IMPLEMENTATION PARTNERS	TIMEFRAME	PRIORITIES ADDRESSED	REQUIRED RESOURCES (HUMAN/FINANCIAL)
1, 7D	Conduct inventory and mapping of Regional assets where co-location of broadband infrastructure would be available/encouraged. Include local area municipal assets where available.	Regional Works, BWG*, Broadband Co-ordinator	Immediate	P1, P2	Medium
2A	Investigate the feasibility of a Dig Once Policy.	Regional Works, Legal, Finance, and Planning, Broadband Co-ordinator, BWG	Future	P1, P2, P3	High
2B	Review development approval processes and approval conditions to support deployment of broadband in new developments.	Regional and local area municipal Planning/Works, BWG, Legal	Immediate	P1, P2, P3	Low
2C	Develop Regional Official Plan policies that support broadband deployment. Include requirements (to the greatest extent possible) that new development make provision for broadband infrastructure (conduit at a minimum).	Regional Planning and Legal, BWG, Broadband Co-ordinator, Legal	Immediate	P2, P3	Low
2D	Support the Harmonization of Municipal Access Agreements across the Region and local area municipalities.	Regional Works, local area municipalities, BWG	Ongoing	P1	Low

*BWG: Broadband Working Group

ACTION NUMBER	ACTION DETAILS	POTENTIAL IMPLEMENTATION PARTNERS	TIMEFRAME	PRIORITIES ADDRESSED	REQUIRED RESOURCES (HUMAN/FINANCIAL)
3A	Assess the long-term broadband needs of Regional departments. Inventory facilities that will require capital broadband infrastructure upgrades. Include a preliminary assessment of the costs and benefits for using the Region's existing and planned broadband infrastructure to connect municipal facilities.	Regional IT and Finance, Broadband Co-ordinator, BWG	Future	P1	High
3B, 8E	Consider opportunities to aggregate service contracts.	Regional IT, local area municipalities, Broadband Co-ordinator	Future	P1, P3	Medium
3D	Undertake a feasibility study and business case analysis for a corporate municipal broadband network, including a report to Regional Council.	Regional Finance, Works, and IT, Broadband Co-ordinator, BWG	Future, pending other outcomes and funding	P1, P3	High
4	Support future funding applications.	Regional Council, Broadband Co-ordinator, BWG	Immediate and ongoing (support applications)	P1, P2, P3	Low to High
5	Identify a Broadband Co-ordinator.	Regional Senior Management	Immediate	P1	Medium
6	Form a Broadband Working Group (BWG).	Broadband Co-ordinator, local area municipalities, Regional departments	Immediate	P1	Medium

ACTION NUMBER	ACTION DETAILS	POTENTIAL IMPLEMENTATION PARTNERS	TIMEFRAME	PRIORITIES ADDRESSED	REQUIRED RESOURCES (HUMAN/FINANCIAL)
6	Establish a BWG workplan and subject areas.	BWG, Broadband Co-ordinator	Immediate	P1	Low
7A	Conduct service availability survey for business/employment locations.	Broadband Co-ordinator, Regional Economic Development, local area municipal Economic Development, BWG	Immediate	P1, P2	Medium
7B	Conduct updated Internet Speed Measurement Testing to assess connectivity conditions across the region.	Broadband Co-ordinator, BWG	Future (contingent on funding)	P1, P2	Medium
7C	Compile mapping of Regional and area municipal locations where broadband service improvements are, or will be, required.	Regional IT, BWG, Broadband Co-ordinator,	Immediate	P1	Low
8A, 8B, 8C	Develop a communication approach that provides regular updates/ meetings with Internet service providers to communicate growth areas, infrastructure planning, and utility projects, as well as providing information on broadband service needs and gaps.	BWG, Broadband Co-ordinator, Regional CAO's Office	Immediate	P1, P2	Medium

ACTION NUMBER	ACTION DETAILS	POTENTIAL IMPLEMENTATION PARTNERS	TIMEFRAME	PRIORITIES ADDRESSED	REQUIRED RESOURCES (HUMAN/FINANCIAL)
8D	Develop an approach to assist property owners in the coordination of cost sharing of capital costs to extend broadband infrastructure to their property.	Local area municipal Economic Development, Broadband Co-ordinator	Immediate	P1, P2, P3	Low
9A	Develop an advocacy approach to provincial and federal levels of government on the importance of the availability and affordability of adequate broadband services.	Regional CAO's Office, BWG, Broadband Co-ordinator	Immediate	P2, P3	Low
9B, 7E, 7F	Create and maintain a broadband specific web page on the Regional website, durham.ca.	BWG, Broadband Co-ordinator, Regional IT, and local area municipalities	Immediate	P1	Low
9C	Develop materials on the importance of broadband connectivity for the marketability of properties.	Regional Economic Development, Broadband Co-ordinator, BWG	Immediate	P1	Low
10	Develop a Durham Smart Cities Framework and manage resulting projects and intiatives.	Regional CAO's Office, Broadband Co-ordinator, BWG	Ongoing	P1, P2	Medium

PART 1

LOCAL CONTEXT

INTRODUCTION

Durham Region borders the County of Simcoe to the north, the City of Kawartha Lakes and Northumberland County to the east, and the Region of York and City of Toronto to the west. Durham Region is the eastern gateway to the Greater Toronto Area (GTA).

Starting from the Lake Ontario shoreline, the region continues north, crossing the agricultural and provincially protected lands of the Greenbelt and the Oak Ridges Moraine, to the southern shores of Lake Simcoe. As the largest geographic jurisdiction in the GTA, Durham Region covers a diverse landscape. This landscape includes large and small urban centres and rural settlements, as well as a vast rural area made of up pristine natural spaces and prime agricultural lands.

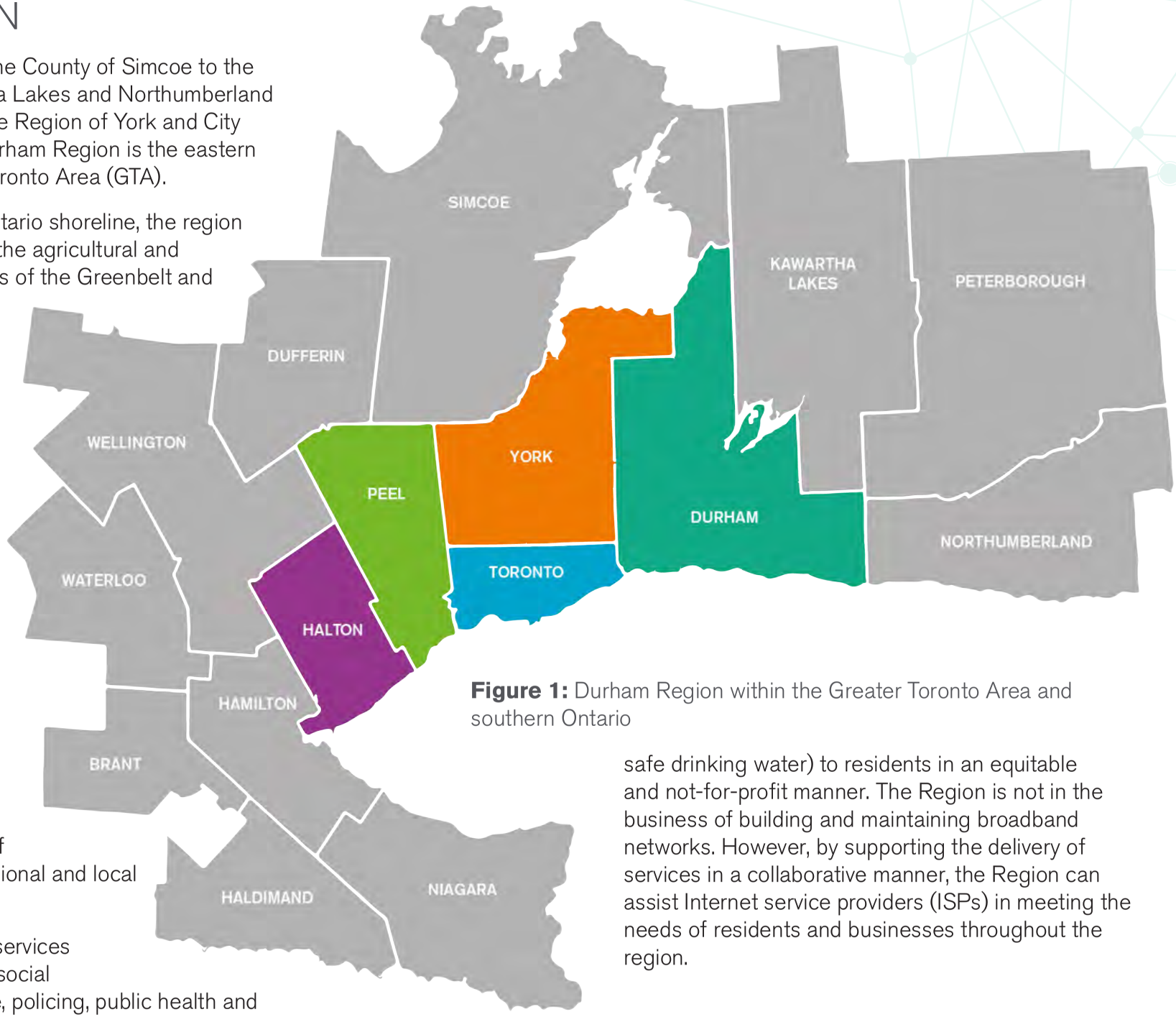


Figure 1: Durham Region within the Greater Toronto Area and southern Ontario

With few exceptions, regional governments in Ontario deliver provincially mandated programs and services. Legislation sets out the specific spheres of responsibility between regional and local area municipalities.

Durham Region provides services (including social housing, social assistance, long-term care, policing, public health and safe drinking water) to residents in an equitable and not-for-profit manner. The Region is not in the business of building and maintaining broadband networks. However, by supporting the delivery of services in a collaborative manner, the Region can assist Internet service providers (ISPs) in meeting the needs of residents and businesses throughout the region.

DURHAM REGION
PROFILE, STATISTICS, AND FACTS

Durham Region contains eight area municipalities, including the Town of Ajax, Township of Brock, Municipality of Clarington, City of Oshawa, City of Pickering, Township of Scugog, Township of Uxbridge, and the Town of Whitby.

Durham is a premiere destination to live, work and play. Ideally located within proximity to the economic centres of downtown Toronto and the Lester B. Pearson International Airport employment zone, access to and from the region is provided by Highway 401, the recently expanded 407, and all day GO Train service. The integrated transportation network is complemented by an executive airport in Oshawa, transcontinental and commuter rail lines, a federally designated airport site, and deep-sea ports. Currently home to over 685,500 residents, the Region's population is forecast to almost double to 1,190,000 residents by 2041.

DURHAM REGION PROFILE
KEY STATISTICS

Land area: **2,537 square kilometres**
Current population: **685,500** (as of May 31, 2018)
2041 population forecast: **1,190,000**
Total number of jobs: **196,713** (2017 Business Count)
2041 job forecast: **430,000**
Number of businesses: **12,364** (2017 Business Count)
Designated agricultural land: **110,100 hectares**
Employment land area: **8,337 hectares**

Sources: 2017 Durham Region Business Count, 2016 Census Data, 2014 Employment Land Inventory, 2017 Growth Plan (Schedule 3)

Table 1: Durham Region Selected Key Statistics

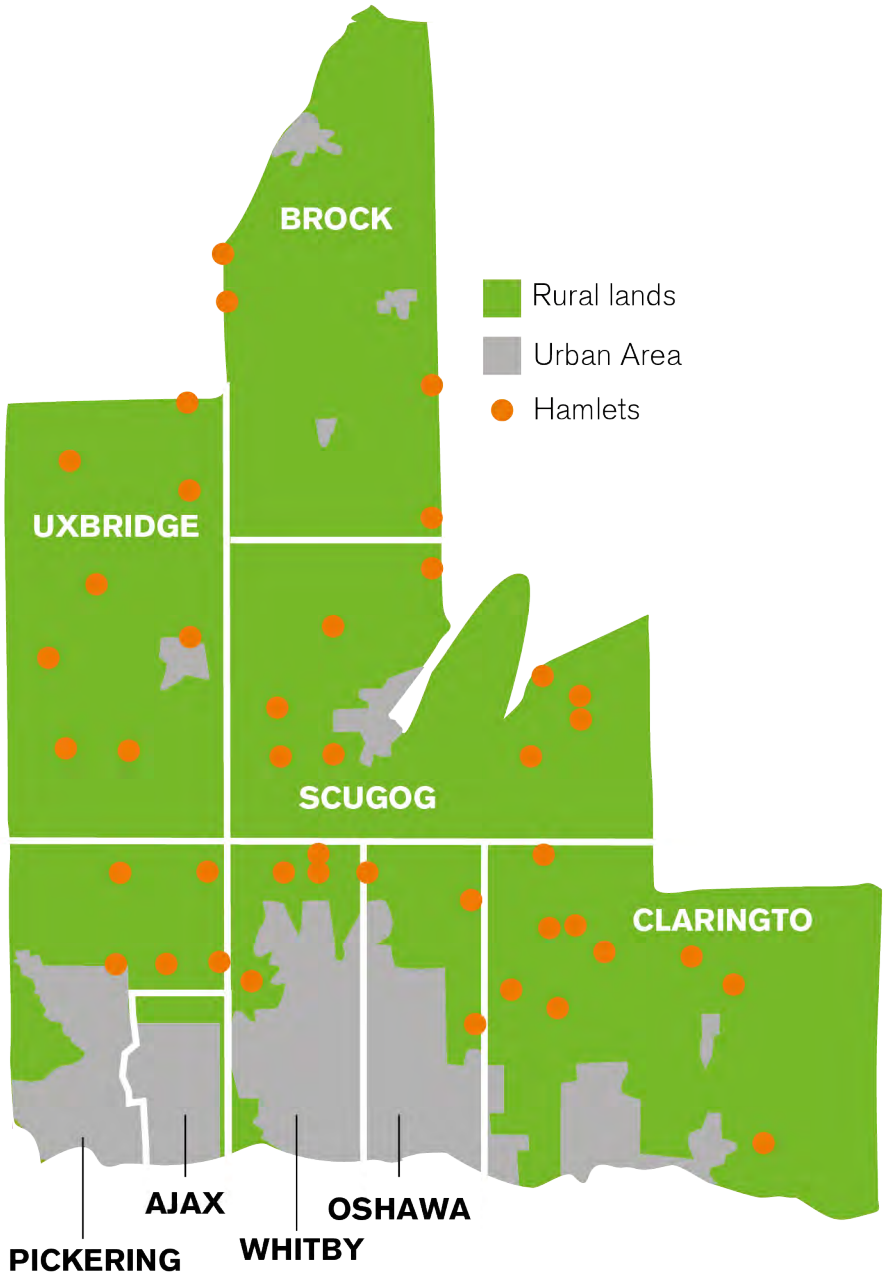


Figure 2: Durham Region's local area municipalities

COMMITTED TO ECONOMIC GROWTH

Durham Regional Council has articulated the importance of technological innovation as an economic driver through the following goals and objectives of the 2015-2018 Durham Region Strategic Plan:

- **A1** **Propel the business and investment climate forward in Durham Region to enable more local employment**
- **A2** **Diligently attract, retain and mentor the next generation of employees to build a skilled, engaged and diverse workforce.**
- **A3** **Promote and actively capitalize on opportunities to make Durham Region a premier destination that attracts and retains entrepreneurs, innovators, visitors and residents.**
- **A4** **Renew our commitment to enhance the economic viability of Durham's agricultural sector to advance sustainable and innovative agriculture production practices and promote food system security.**
- **A5** **Find new ways to work with our partners to revitalize and grow Durham Region's position as a renowned centre of technological excellence.**

The Economic Development Strategy and Action Plan sets a bold and ambitious vision that "Durham Region will become the most prosperous and innovative region in North America," and will be the "high-tech innovation eastern gateway along the 401 tech corridor". This vision will be achieved through the continued viability of the region's traditional industries, and attracting and retaining new and innovative businesses. A fundamental objective for the Region is to provide support to the Region's Key Economic Sectors and to create a climate that is open for business.

DURHAM'S KEY **ECONOMIC SECTORS**

- Agri-business
- Energy, Environment & Engineering
- Health Sciences
- Innovative Technology
- Manufacturing
- Tourism

The Region continues to support and enable more local employment through measures such as strategic investment in Regional infrastructure, by identifying and capitalizing on economic development opportunities, and by fostering a supportive development climate. In recent years, both residents and businesses have identified the availability of reliable and adequate broadband services as a challenge within certain areas of the region.

WHAT IS BROADBAND?

There is no one standard definition for "broadband". Simply put, broadband means Internet access that is always on, available at higher speeds than traditional dial up service, and capable of transmitting large amounts of data very quickly. There are several different forms of broadband Internet technologies, including telephone based Digital Subscriber Line (DSL), cable, wireless (fixed and satellite), and fibre-optic. Each of these technologies have different capabilities for maximum service speed (expressed in megabytes per second, or Mbps).

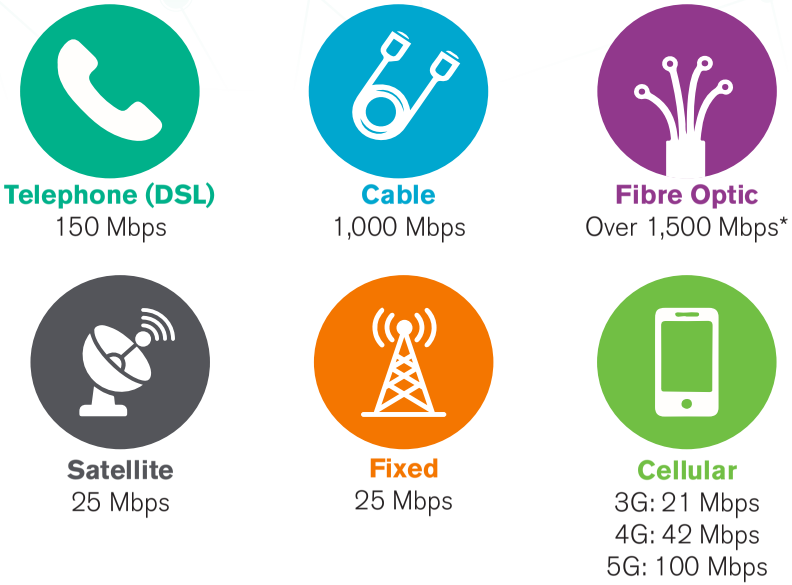


Figure 3: Broadband technology options and their highest service speeds

All of the above broadband technology options are currently being used in Durham Region. Telephone and cable lines, where they exist, are commonly used to deliver Internet services in established areas. In rural areas where there is no existing "wired" infrastructure, wireless broadband technology is common. For newer construction and areas with supportive customer densities, ISPs are installing fibre-optic service, which is currently the latest and fastest broadband technology, with service speeds increasing regularly.

Figure 4: Broadband enables connectivity of Global economies and societies

WHY BROADBAND IS IMPORTANT

Society, and the global economy, is increasingly digital and online. Government services, business functions and entertainment options have moved online at an increasing pace, continuing to change the way people work, play and communicate. The growing demand for fast service and constant connectivity highlights the need for fast, reliable, and affordable broadband service. Additional information on the drivers and trends in broadband use can be found in Appendix 1.

*Fibre optic service speed is limited by the electronics at either end of the line, as opposed to the fibre itself, which can theoretically transmit data at the speed of light.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PART 2

STRATEGY DEVELOPMENT
OBJECTIVES AND PROCESS

OBJECTIVES

Recognizing the importance of broadband for the Region's residents, businesses and institutions, the Broadband Strategy for Durham Region is intended to meet the following objectives:

- To understand the broadband needs of residents, businesses, and institutions;
- To highlight trends in broadband use;
- To identify projects and service options to improve broadband service delivery;
- To highlight the need for collaboration, while encouraging investments in connectivity;
- To signal the Region's intent of being "application ready" should ISP's approach the Region for funding support towards programs offered by senior levels of government;
- To establish connectivity guidelines to ensure the Region is forward-thinking and future focused, establishing a basis to evaluate applications that may be advanced by ISPs;

PROCESS OVERVIEW

The Strategy was completed over two phases, which included broad consultation and two supporting reports from the Region's retained consultant, Actionable Intelligence Incorporated. The process is summarized below and further described in Appendix 2.

Figure 5: Broadband Strategy Process Summary

PART 3

CONNECTIVITY GUIDELINES
AND CURRENT CONDITIONS

CONNECTIVITY GUIDELINES AND CURRENT CONDITIONS

In 2016, after an extensive review, the Canadian Radio-Television Commission (CRTC) established a baseline broadband service target that Canadians will require to participate in the digital economy. The target, which applies to residential users in both rural and urban areas, benchmarks download speeds of 50 Mbps and upload speeds of 10 Mbps (e.g. 50/10 Mbps), with unlimited usage capacity. To support the achievement of the target, the CRTC established a fund of $750 million over five years to support investment in broadband infrastructure.

For businesses, government agencies and institutions, broadband needs tend to be higher and generally increase with the size of the organization. Other factors, such as the number of computers or other connected devices, as well as the market sector and the services being provided, will greatly affect the broadband needs of any given organization. Given these variances, it is challenging to predict the needs of any single business or institution without undertaking more detailed analysis.

Based on the CRTC baseline target for residential uses and current industry standards for non-residential uses, connectivity guidelines have been developed by Actional Intelligence Inc. and augmented through stakeholder feedback. It is recognized that some households, organizations, and areas (such as innovation hubs) may require higher or lower levels of broadband connectivity, based on their individual needs. It is also recognized that Durham's area municipalities may wish to establish their own targets to address local priorities. Based on the existing needs and emerging trends, the following connectivity guidelines are provided:

CONNECTIVITY GUIDELINES

Residential/Standard Home Based Business Use
By 2022: 50/10 Mbps
2023-2028: 100/25 Mbps
2029-2034: 150/50 Mbps

Small Business
By 2022: 100/100 Mbps
2023-2028: 500/500 Mbps
2029-2034: 1000/1000 Mbps

Medium-large Businesses, Institutions, Government Agencies
By 2022: 1/1 Gbps
2023-2028: 10/10 Gbps
2029-2034: 50/50 Gbps

High-tech/Specialized Industries, Large Institutional Campuses (hospitals, post-secondary institutions)
By 2022: 10/10 Gbps
2023-2028: 25/25 Gbps
2029-2034: 100/100 Gbps

DURHAM'S CURRENT CONNECTIVITY CONDITIONS

The existing connectivity conditions in Durham Region reflect those of many other jurisdictions in Ontario and Canada. This includes a strong divide in service quality and service options between urban and rural areas. In addition, the affordability of broadband is an issue for certain businesses and residents.

There are numerous ISPs operating in Durham Region, including larger established providers, as well as smaller and more recently established companies. ISPs may specialize in certain geographic areas or with a particular broadband technology. Often, the level of service and number of available ISPs is correlated with the location of the customer.

Overall, Durham's current connectivity conditions can be summarized as follows:

URBAN AREAS

- High speeds, with multiple Internet service options.
- New broadband technologies, with competitive prices.
- New residential developments are well served.
- Major institutions (post secondary education, health care, government, etc.) are able to have their needs met.
- Some connectivity issues where population densities are lower.
- Services generally meet or exceed the current CRTC baseline target.

RURAL AREAS

- Lower speeds, limited Internet service options including fewer broadband technologies and limited Internet service providers.
- Generally higher prices.
- Prevalence of wireless broadband technology–and related issues of reliability due to line of sight obstructions.
- Available service generally does not meet the current CRTC baseline target.
- Service quality diminishes the further north one goes.

BUSINESS AND EMPLOYMENT AREAS

- Many employment areas and other business locations are not pre-serviced with adequate broadband infrastructure.
- Capital costs to install services can be prohibitive, especially for smaller businesses.
- Downtown areas with older legacy networks face challenges with costly retrofits.

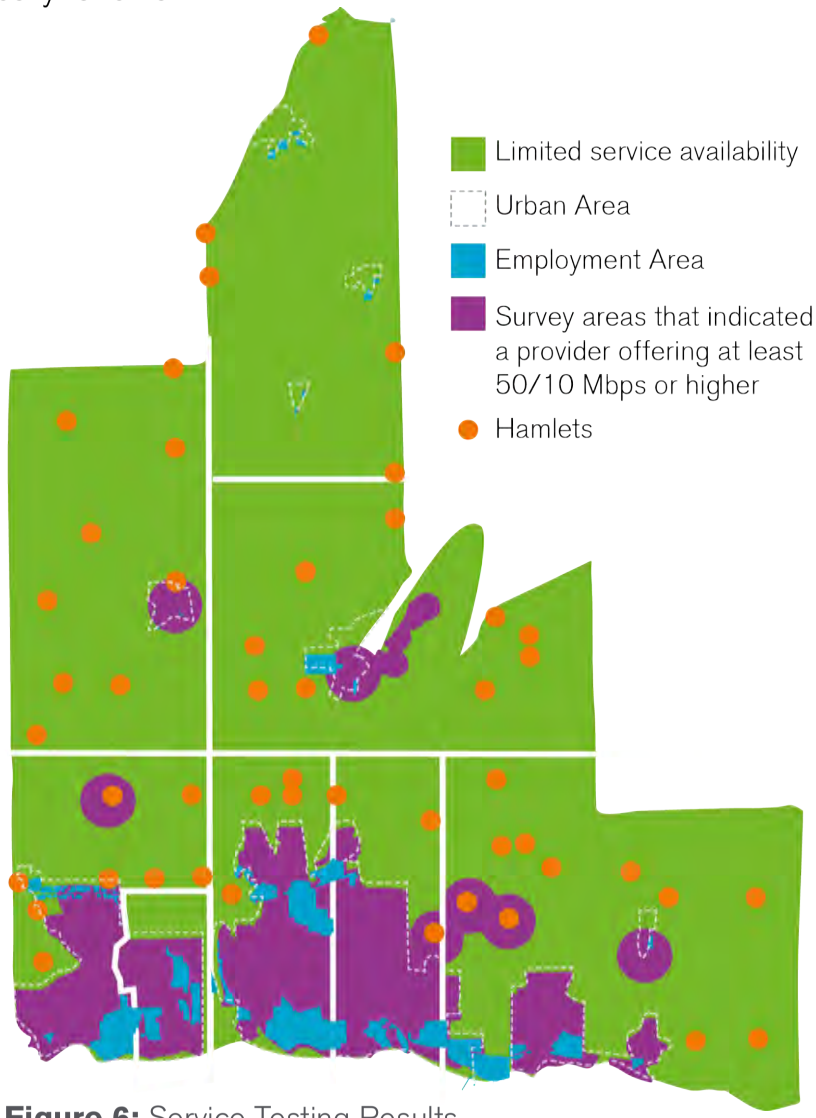
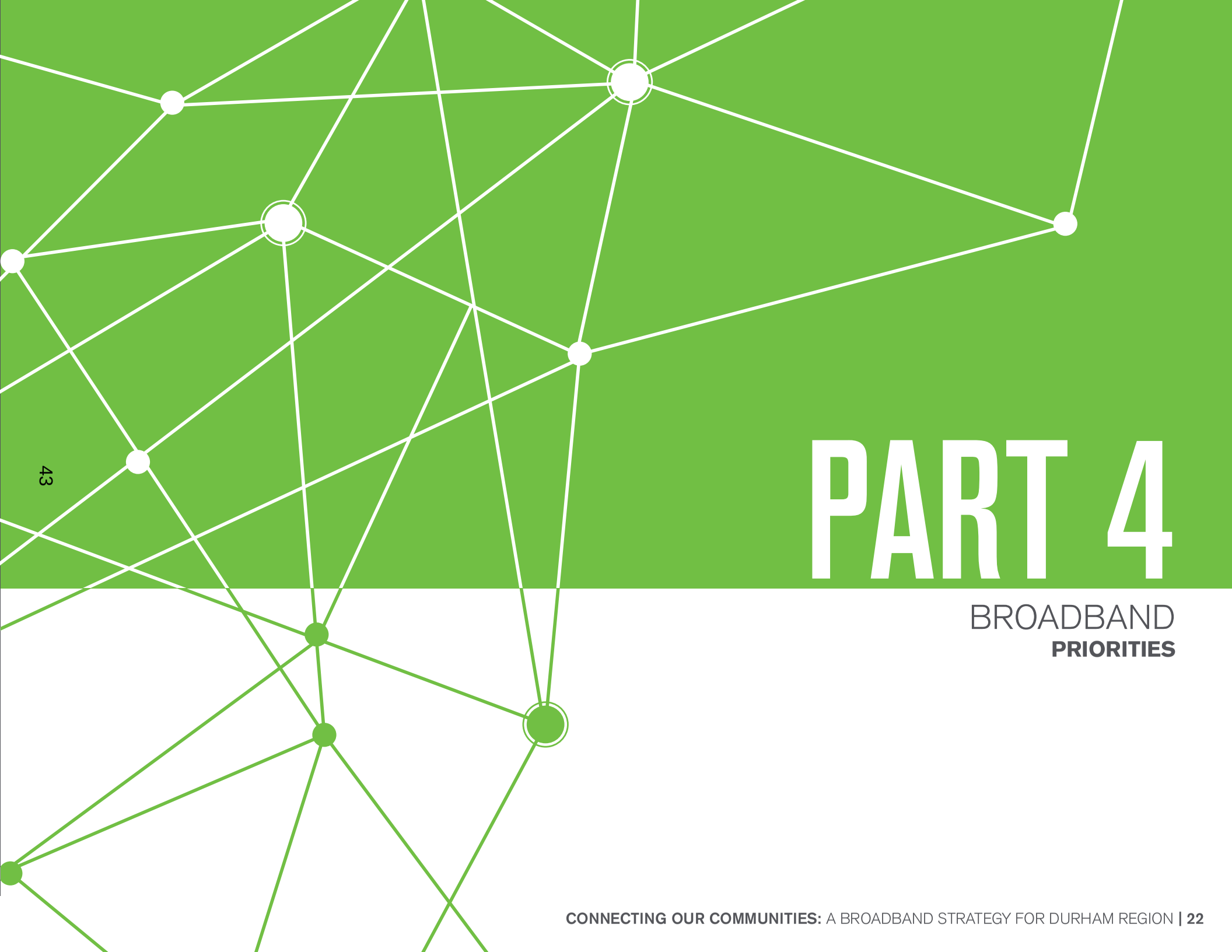


Figure 6: Service Testing Results


On the Lamb
Naturally
Wool Shop
&
Passionate Cook's
Essentials
Woods
Contemporary Clothing
The Passionate Cook
Hey Foodies
We have new products
CHEESE



PART 4

BROADBAND
PRIORITIES

BROADBAND PRIORITIES

Like many Canadian municipalities, Durham's connectivity is not equally shared.

In the Region's urban areas, ISPs are keeping pace by deploying the latest fibre-optic broadband technologies. Use of these technologies include ongoing programs to build fibre to the premises for close to 90,000 households in Oshawa and Clarington. At the same time, new advances in wireless mobile technologies (5G) are continuous. Many of the region's residents, businesses and institutions benefit from these improvements and can access the level of broadband service they require.

Service limitations continue to be a challenge within the Region's rural areas. This situation is problematic as technological advances will increasingly require superior Internet connections to access services and participate in modern society. Affordability will remain a challenge for lower-income households, as well as for businesses that must pay the capital cost to extend suitable services to their building.

Overall, there is a growing concern that broadband service availaiblity to parts of Durham that are lagging behind other jurisdictions in the Greater Toronto Area will fall further behind if their needs cannot be met.

These obstacles cannot be solved by any single organization or level of government. Instead, it will take a combined effort by many stakeholders and partners. Durham Region recognizes the importance of broadband connectivity and is committed to taking a proactive and supportive role in the delivery of broadband throughout the region, in partnership with other levels of government, ISPs, and other key stakeholders.

During all stages of consultation, stakeholders were asked to consider what role and actions the Region could undertake to assist with these obstacles. Although many ideas and opinions were shared, areas of consensus and agreement emerged. The following summarizes the Region's Broadband Priorities and the key messages and input that was received throughout the process.

PRIORITY 1

CREATING AN ENVIRONMENT OF CO-ORDINATION AND COLLABORATION

Highlights of what we heard:

- The Region should to take a leadership role in facilitating collaboration and co-ordination amongst the relevant stakeholders.
- There is a need for better information sharing amongst all stakeholders, including information from and to ISPs on service availability and known gaps.
- Partnerships are essential and should be a key component of the Region's Strategy.
- It should be recognized that the area municipalities have different challenges and priorities. The Region should provide support for local initiatives where possible.
- The Region should facilitate regular communication between ISPs, residents and businesses.

> **"Regional government should work with higher levels of government and the major carriers to bring broadband to any areas that require it."**

> **"The Region should start the process of getting all levels of government involved."**

ADDRESSING SERVICE GAPS

PRIORITY 2

Highlights of what we heard:

- The Region should prioritize efforts to improve connectivity in underserved areas, as opposed to further investment in areas that are already served and meet the CRTC target.
- There needs to be a balance for addressing both urban and rural service gaps.
- The Region should focus efforts on areas of market failure and support the provision of services to these areas.
- Municipal facilities in rural areas are facing challenges. The Region should partner with other nearby government facilities (e.g. area municipal facilities) to share the cost of upgrading broadband services to these locations.
- It is critical that downtown and employment areas have access to adequate broadband services.
- Many rural businesses including agriculture, are incorporating advanced technology and require broadband services.
- The Region should leverage existing assets to support the deployment of broadband infrastructure by ISPs.

> **"Our current broadband capacity is a major deterrent to business development in our areas."**

> **"The Regional government should at least take a strong advocacy role in pressing for uniformly high quality service across the region."**

Consultation through recent Region-led studies, including the Brock Tourism Business Retention and Expansion Project (2017) and the Region-wide Local Food Business Retention and Expansion Project (2018), indicated that many businesses and organizations see limited Internet speed and access as barriers to doing business in Durham. Further, broadband connectivity in rural areas has been noted as being a critical element that should be addressed as part of the Region's Climate Change Adaptation Strategy for the Agricultural Sector to ensure that emergency alerting (around matters such as extreme weather) reach the agricultural community. Broadband connectivity is also required to enable the necessary agricultural technologies that will support the adaptive capacity of this important economic sector in Durham.

SUPPORTING IMPROVED AFFORDABILITY

PRIORITY 3

Highlights of what we heard:

- Affordability is a serious issue for businesses as well as households that cannot afford service.
- There is an opportunity to reduce government service costs through collaboration and combining service contracts. Further exploration and analysis of this option should be conducted.
- There should be consideration of Durham's priority neighbourhoods and broadband availability. Priority Health Neighbourhoods should be a focus for improved affordability and enhanced connectivity.
- The Region should advocate to the federal and provincial governments to recognize broadband as an essential service and to ensure there is a competitive market and affordable services for all income levels.

> **"I'm not sure that the cost to upgrade connectivity is a regional issue, however, putting pressure on the broadband suppliers to help correct the problem would certainly help"**

> **"Broadband is expensive. The Region should work with the province to identify areas of service need, particularly in rural areas. The Region could be a driver to negotiate broad-based broadband prices. The Region could be a leader in assisting municipalities to install fibre"**

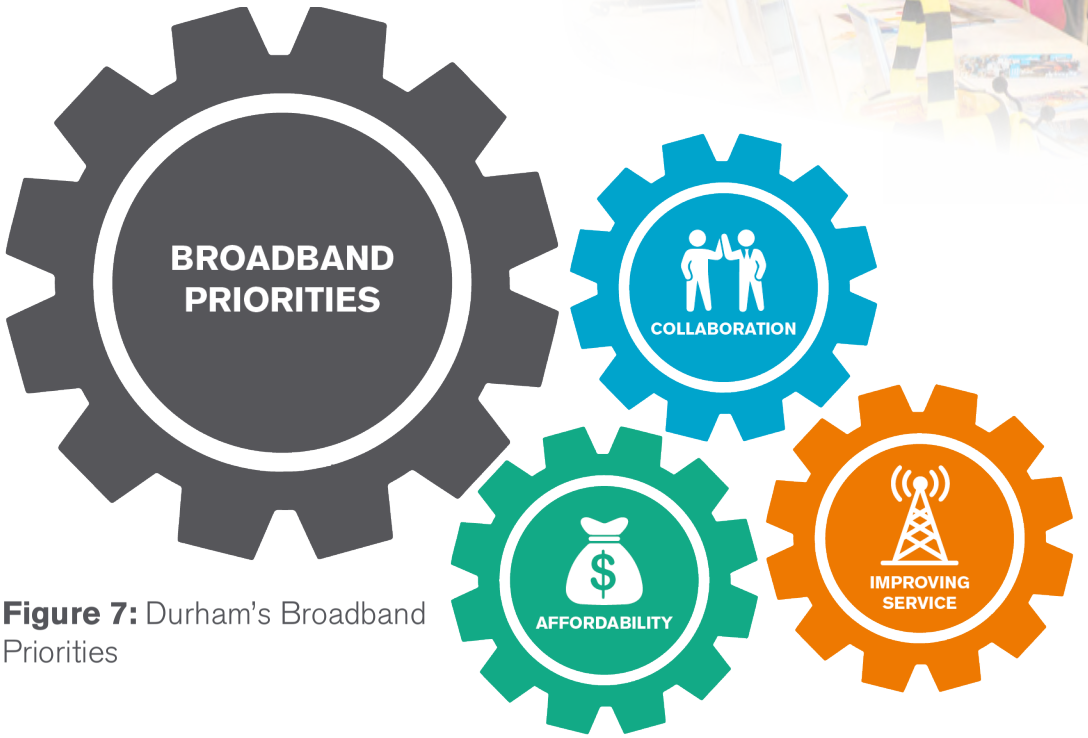
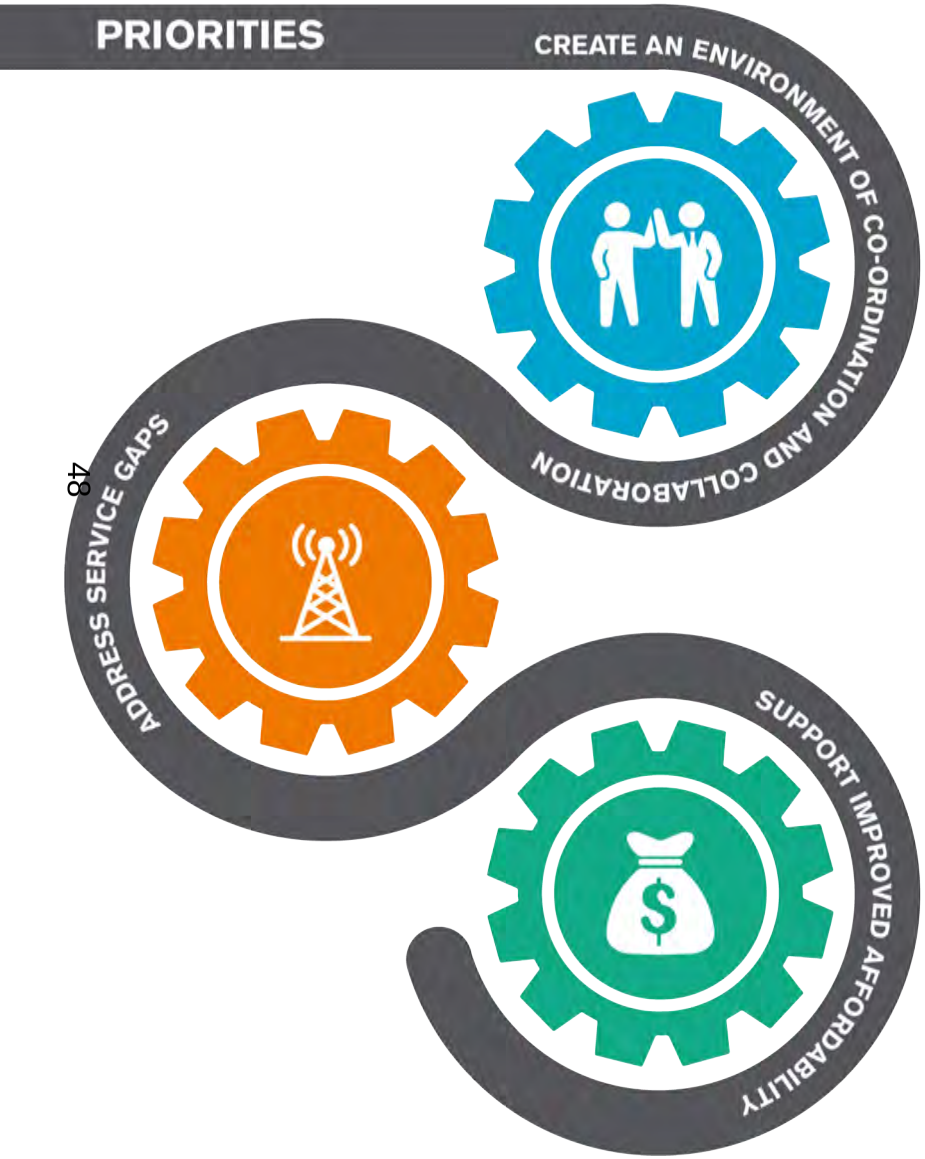


Figure 7: Durham's Broadband Priorities

PART 5

ACTIONS

The following actions will help support the achievement of the Region's connectivity guidelines and work towards addressing the Region's broadband priorities:



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ACTION 1

LEVERAGE REGIONAL ASSETS

The Region can support the delivery of broadband services by permitting ISPs to co-locate on Regional facilities and equipment. This can include water towers, communications towers, rooftops, utility poles and other vertical infrastructure. As new technology is developed and deployed, there will be a growing desire to access existing Regional assets.

The Region currently permits telecommunications equipment to be located on Regional property, where appropriate, and has set standard fees. Promoting co-location of ISP equipment on Regional assets is a good opportunity to improve service options/enhancement, and spur service deployment to underserviced northern and rural areas. It could also reduce the need for additional freestanding towers to be erected.

To further encourage the use of Regional infrastructure as a means of supporting the deployment of broadband services, the Region will produce an inventory of Regionally-owned sites that are suitable and available for co-location/lease by ISPs.

Figure 8: Inventory of Regional assets suitable and available for co-location

ACTION 2

DEVELOP REGIONAL POLICIES AND PROCESSES TO SUPPORT BROADBAND

Regional policies and processes can affect the extent and speed of broadband deployment by ISPs. Accordingly, review of the following policies and processes will be undertaken to support broadband network expansion:

A INVESTIGATE THE FEASIBILITY OF "DIG ONCE" POLICY

Often the highest cost associated with underground fibre deployment is the expense of digging up and restoring municipal rights-of-way. This can account for between 60 and 80 percent of the overall cost.

The purpose of a "Dig Once" Policy is to reduce the cost of broadband deployment by providing for the placement of conduit (the plastic pipe that houses fibre-optic cable) during road construction projects, when there is easy access to the utility trench. This allows for conduit to be placed while minimizing the need and expense of excavation and restoration. At the desired time, the fibre-optic cable can then be pulled through the conduit without the need for expensive excavation.

There are varying approaches and degrees of effort to implementing Dig Once policy. A Dig Once policy may focus on developing a formal process to advise ISPs of construction activities. This option provides ISPs with the opportunity for the cost-efficient placement of their own conduit while the trench is open. However, this approach also requires a high degree of alignment between municipal and ISP staff, as well as project plans and budgets, which may not always be possible.

Another Dig Once option is for municipal government to place its own conduit during municipal construction projects. In this approach, the municipality would retain ownership of the conduit which can then be used for its own corporate purposes or as an asset that is leased for use by ISPs.

The Region of Durham currently implements Dig Once for Regional road projects. On a case-by-case basis, the Region evaluates where future fibre-optic cable may be needed for Regional transportation purposes, and places conduit during road construction and reconstruction. This conduit is reserved for future use by the Region of Durham.

Durham's local area municipalities are also developing and implementing their own Dig Once policies. To varying degrees, the City of Pickering, Town of Whitby, and Township of Scugog have implemented projects using a Dig Once approach, while other municipalities are exploring the idea.

During consultation on the development of this strategy, a desire was expressed for the Region to work with the local area municipalities to explore the concept of a consistent, region-wide Dig Once approach that includes the potential for open access to Regional conduit.

The Region will undertake an analysis of its current Dig Once practice and investigate potential

Figure 9: Municipal construction projects may lend themselves to the deployment of conduit through a Dig Once policy

changes. As part of this exercise, the following will be considered:

- The experience and success of Dig Once policies in other jurisdictions.
- Whether there is a desire or market interest for ISP access to municipally owned conduit.
- That a technical standard be developed for the location and specifications of conduit within road rights-of-way that is consistent across the region and area municipalities.
- That any potential security and access issues related to sharing infrastructure can be addressed, including necessary legal and administrative agreements.
- That the condition and age of conduit be tracked as part of the Region's asset management system.
- That the placement of conduit be prioritized to those areas where current services do not meet the Region's connectivity guidelines and where demand for improvement is most pronounced.
- That the costs of installation and anticipated return on investment be evaluated.
- The relevance of Dig Once given the increase in the use of "trenchless" technologies such as directional drilling.
- That Dig Once can be used in a manner that will not create complications of added cost due to the placement of conduit next to other infrastructure.
- An analysis of the likely number of Dig Once projects that could occur, given that Dig Once depends upon access to the utility trench, which is not typical for many construction projects.

B DEVELOPMENT APPROVALS PROCESS

Similar to the benefits of the Dig Once approach, requirements for broadband infrastructure to be included as part of new development ensures that future occupants will not be faced with costly and disruptive retrofits at a later date. There is an opportunity through the development approvals process to mandate new development to make provision for broadband infrastructure.

To maximize competition and service options for future residents and businesses, all ISPs should be given the opportunity to install broadband infrastructure within new developments. The Region, in co-operation with local area municipalities, will consider the use of conditions within subdivision agreements that affords all CRTC registered telecommunications service providers the opportunity to locate infrastructure in proposed municipal rights-of-way.

To enshrine these requirements, updates to the Regional Official Plan will also be required.

C PLANNING POLICY

As part of the Municipal Comprehensive Review of the Regional Official Plan, policies will be considered to support broadband infrastructure. This will include the encouragement of co-location of broadband infrastructure with existing telecommunication facilities wherever possible as well as policies that support broadband infrastructure (conduit at a minimum) as part of new development applications.

D PERMITTING PROCESS

The process to obtain consent and permits to occupy municipal rights-of-way can vary between municipalities and can be difficult to navigate, particularly for new ISPs looking to deploy broadband networks. To streamline this process and clarify the standard requirements and conditions, the Region has developed a standardized Municipal Access Agreement (MAA). ISPs must enter into a MAA in order for the Region to authorize new installations within its rights-of-way.

To create a predictable and uniform approvals environment, Durham's area municipalities may wish to adopt a similar standardized MAA, leading to a harmonized approvals process across the region. To support this initiative, the Region will make its standardized MAA template available and share the experience in developing the template in an effort to ease area municipal implementation of this tool.

ACTION 3

ASSESS CORPORATE BROADBAND AND SMART CITY NEEDS THROUGH THE REGION'S CORPORATE INFORMATION TECHNOLOGY STRATEGY

A corporate Information Technology (IT) Strategy is under development which will assess the current and future broadband needs of the Region's departments and facilities. Through the development of the IT Strategy, the following matters should be considered:

A. A comprehensive assessment of each department's (including various facilities) current and planned future broadband needs, smart city/IoT solutions, existing service costs, and current ISP agreements.

B. An investigation of the opportunity to aggregate broadband service contracts, including the potential for aggregation with area municipalities (e.g joint purchasing) to improve cost effectiveness.

C. Consideration of the benefits to adjacent properties when evaluating capital broadband infrastructure upgrades to Regional facilities (e.g. the Region's facility acting as anchor tenant).

D. A preliminary assessment of the costs and benefits for using the Region's existing and planned broadband infrastructure to connect municipal facilities. Pending the results of this assessment, a fulsome business case assessment may be required.

As noted, the Region owns and operates a fibre network. This network has been designed and constructed to support traffic management (traffic signals and live video monitoring) and is currently used exclusively for this purpose.

The Region's existing and planned fibre assets could become the foundation for a broader corporate fibre network. There is an opportunity to expand the network to connect Regional corporate facilities and assets, as well as the potential to provide connectivity to other users, should the need arise.

There may be a net benefit for providing connectivity to Regional facilities, as opposed to purchasing services from an ISP. However, the capital and operating costs associated with establishing a municipal network, as well as service level obligations and liabilities, would need to be evaluated through a detailed business case.

Staff will report to Council following the completion of the IT Strategy, with a recommendation on whether or not to proceed with a feasibility study/business case analysis for developing a corporate fibre network.

ACTION 4

SUPPORT FUNDING APPLICATIONS

The Region supports the continuous deployment of broadband infrastructure within its jurisdiction. In the past, this has included co-ordinating applications for funding programs offered by the Province of Ontario and more recently, as a supporter of ISP applications under the Connect to Innovate (CTI) program.

The CRTC has established a $750 million fund, spread out over five years to support the achievement of its 50/10 Mbps service target. On September 27, 2018, the CRTC issued Policy Decision 2018-377 which provides preliminary details on the Broadband Fund, including the following:

- The request for proposals will be issued in 2019. It will be at the CRTC's discretion whether or not to issue more than one request for proposals.
- The funding will be rolled out over five years.
- Applicants must have experience deploying, owning and operating broadband infrastructure for a minimum of three years.
- The CRTC will identify eligible areas.
- Despite the CRTC's definition of basic service being 50/10 Mbps, applications that meet 25/10 Mbps with the ability to scale up to 50/10 Mbps overtime are eligible under the program.

- Applicants will be required to demonstrate that the project is not viable without CRTC funding.
- Application scoring will include consideration of funding from other levels of government and the degree of community consultation that has taken place.

The Region will continue to provide support to ISPs that are working to address broadband service gaps in Durham. To strengthen ISP applications to the CRTC Broadband Fund, the Region will provide letters of support and assist with community consultation, where requested and where appropriate. In addition, the Region will investigate Regional financial contribution towards ISP applications to the CRTC Broadband Fund.

Requests by ISPs for Regional funding support of their applications under the CRTC Broadband fund will be evaluated against the Connectivity Guidelines as well as additional criteria that will be established.

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ACTION 5

IDENTIFY AN INTERNAL STAFF LEAD/CHAMPION (BROADBAND COORDINATOR)

During consultation, stakeholders noted the importance of a designated and centralized position responsible for regional broadband initiatives. It was envisioned that establishing a "Broadband Co-ordinator" would create a sense of ownership and responsibility for implementing the actions within the strategy as well as building up expertise and creating and maintaining relationships with the relevant stakeholders.

Dedicated staff time and resources will be required to implement the actions contained in this strategy and related smart cities initiatives. This includes co-ordinating and administering the formation and ongoing activities of a Broadband Working Group, ongoing communication with Regional departments, local area municipalities, and other stakeholders, the development of supportive policies and practices, and the consolidation of information and data to support broadband initiatives.

Drawing on the resources of other departments, the Broadband Working Group, and expertise from the local area municipalities, the Broadband Co-ordinator will weave the various components together and advance the overall objectives of the Broadband Strategy. In order to meet these needs, provision will be made through the 2019 budget process for a temporary full-time position, which will be assigned to the appropriate department by the Chief Administrative Officer.

ACTION 6

ESTABLISH A BROADBAND WORKING GROUP (BWG)

Establishing a Broadband Working Group (BWG) will create an important resource for implementing the Broadband Strategy. The BWG should be comprised of local area municipal and Regional staff, to provide an opportunity for information sharing, problem solving, collaboration, and providing input and insight on the development of policies, practices, and initiatives that support broadband deployment and the implementation of this Strategy. Recognizing that the Region and local area municipalities are undertaking broadband initiatives at varying scales with different priorities, the BWG would provide a venue for establishing and strengthening partnerships and undertaking broadband related projects where priorities and interests align. The BWG should consider opportunities that allow for broader participation by stakeholders, such as ISPs, the business community, health care, and post-secondary education, where appropriate.

It is anticipated that the BWG would address various topics and contribute towards the development of broadband supportive corporate policies where appropriate.

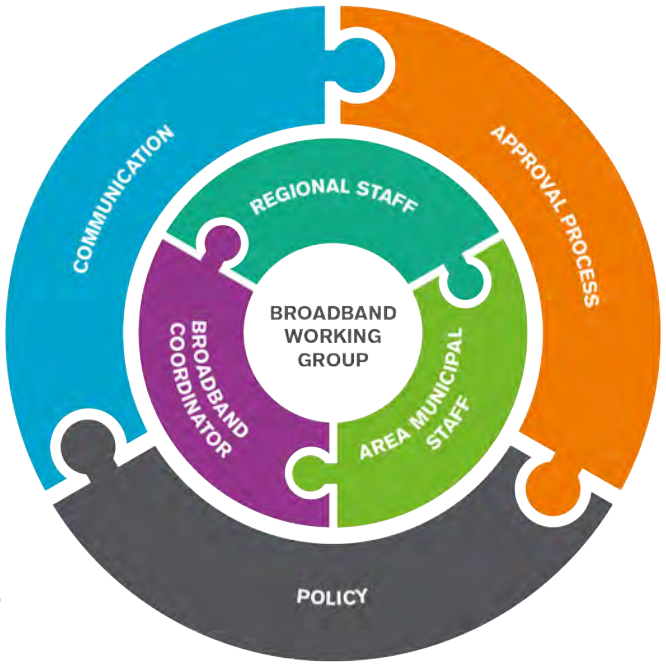


Figure 10: Conceptual organization of the Broadband Working Group

ACTION 7

CREATE AND MAINTAIN A BROADBAND INFORMATION DATABASE

Accurate and robust information is an important aspect of any decision-making process. Continuing to build and maintain a broadband information database has been identified as a valuable resource to inform future initiatives. To enable consistent monitoring of the Region's connectivity conditions and to build knowledge that may be useful to the Region, area municipalities, ISPs, local businesses, and other stakeholders, the following actions will be undertaken:

- **A** Conduct a survey of the business community to further determine employment and business areas where service is lacking.
- **B** Conduct updated Internet speed measurement testing to assess connectivity conditions across the region.
- **C** Compile mapping of Regional and local area municipal facility locations where broadband service improvements are, or will be, required.
- **D** Compile mapping of Regional and local area municipal assets where the co-location of broadband infrastructure would be available/encouraged.
- **E** Compile a list of Internet service providers within the Region and their service boundaries (where available), to inform residents and business owners of the full range of service providers in their area.
- **F** Compile and maintain a list of known programs and initiatives in support of broadband.

Where appropriate, the above noted information, as well as relevant contact information, the Region's Municipal Access Agreement template, and answers to frequently asked questions will be made available on the Region of Durham website, durham.ca.

ACTION 8

FACILITATE COMMUNICATION, COLLABORATION, AND COOPERATION

The Region, through the activities of the BWG and Broadband Co-ordinator, will take a leadership role in creating an environment of communication, cooperation and collaboration. Sharing information and communicating regularly is essential for conveying needs and developing effective and efficient solutions.

The following initiatives will be undertaken:

- **A** Holding regular meetings with ISPs to communicate growth areas, capital infrastructure planning, and service needs.
- **B** Increased communication on utility projects, allowing opportunities for the efficient placement of broadband conduit.
- **C** Maintaining ongoing communication with ISPs and businesses/economic development offices/chambers of commerce to understand broadband needs and service gaps.
- **D** Assisting with the coordination of cost sharing among property owners for the extension of broadband services to underserved areas, particularly for employment/business locations and rural area residents and businesses.
- **E** Include broadband as a regular topic for Regional and area municipal information technology manager meetings. Investigate the feasibility of aggregating Internet service requirements of the Region and local area municipalities to negotiate better service contracts and prices.

ACTION 9

ADVOCATE AND EDUCATE ON THE IMPORTANCE OF BROADBAND INFRASTRUCTURE

Education and advocacy offers the opportunity to promote the importance and value of broadband infrastructure, ensure Regional broadband needs are conveyed, and share information with key stakeholders. The following target groups will be engaged in the following manner:

A ENGAGE PROVINCIAL AND FEDERAL LEVELS OF GOVERNMENT

The federal and provincial ministers for innovation and economic development have recently agreed to the principles of a Canadian Broadband Strategy of Access, Collaboration, and Effective Investments. This Regional Broadband Strategy and actions generally align with the principles and directions from upper levels of government.

A communication strategy will be developed to advocate Regional needs to the provincial and federal levels of government and relevant associations (Federation of Canadian Municipalities and Association of Municipalities Ontario). Key messaging will be on the importance of broadband infrastructure to the success and prosperity of Durham Region residents and businesses. Also included will be the value of funding programs that support and spur infrastructure upgrades where known service gaps exist, and supporting research and investment in technologies that can provide cost-effective broadband solutions for rural areas. Upper levels of government should also consider making available their assets where co-location can and should occur.

In addition, the Region will advocate the importance of affordable broadband services to households of all income levels and encourage the creation of programs that provide service options to low-income households, such as the Connected for Success program offered by Rogers™, which provides a low-cost service option for those living in rent-subsidized, non-profit housing.

B CREATE A REGIONAL WEB PRESENCE

A broadband specific webpage will be developed that provides broadband information to the business community and general public. This includes developing a list of ISPs within the region and their service boundaries (where available), to inform residents and business owners of the full range of service providers in their area. In addition, a frequently asked questions document related to the importance of broadband and general availability within the region will be made available.

C ENGAGE PROPERTY OWNERS/MANAGERS ABOUT THE IMPORTANCE OF BROADBAND CONNECTIVITY

Material on the importance of broadband infrastructure for the marketability of properties to prospective clients will be created. Evidence will be complied of lost prospective tenants due to limited broadband connectivity, as well as success stories of broadband infrastructure investments that resulted in the attraction of new businesses. A separate strategy will be developed to communicate this information to property owners and property managers.

ACTION 10

DEVELOP A DURHAM SMART CITIES FRAMEWORK

A Durham Smart Cities Framework would outline the objectives, approach and anticipated results of Durham enhancing its intelligent community status, enabling the Region to take advantage of funding and partnership opportunities as they arise. The framework would be used to explain how various smart elements fit together, identify potential partnerships and resources, and communicate Durham's smart cities vision. It would also provide a set of criteria to ensure that any potential projects align with Regional priorities under the Strategic Plan and involve the public in decisions about where to focus our collective energy to develop as an intelligent community. Once the draft framework is complete, a council report will be prepared for consideration.

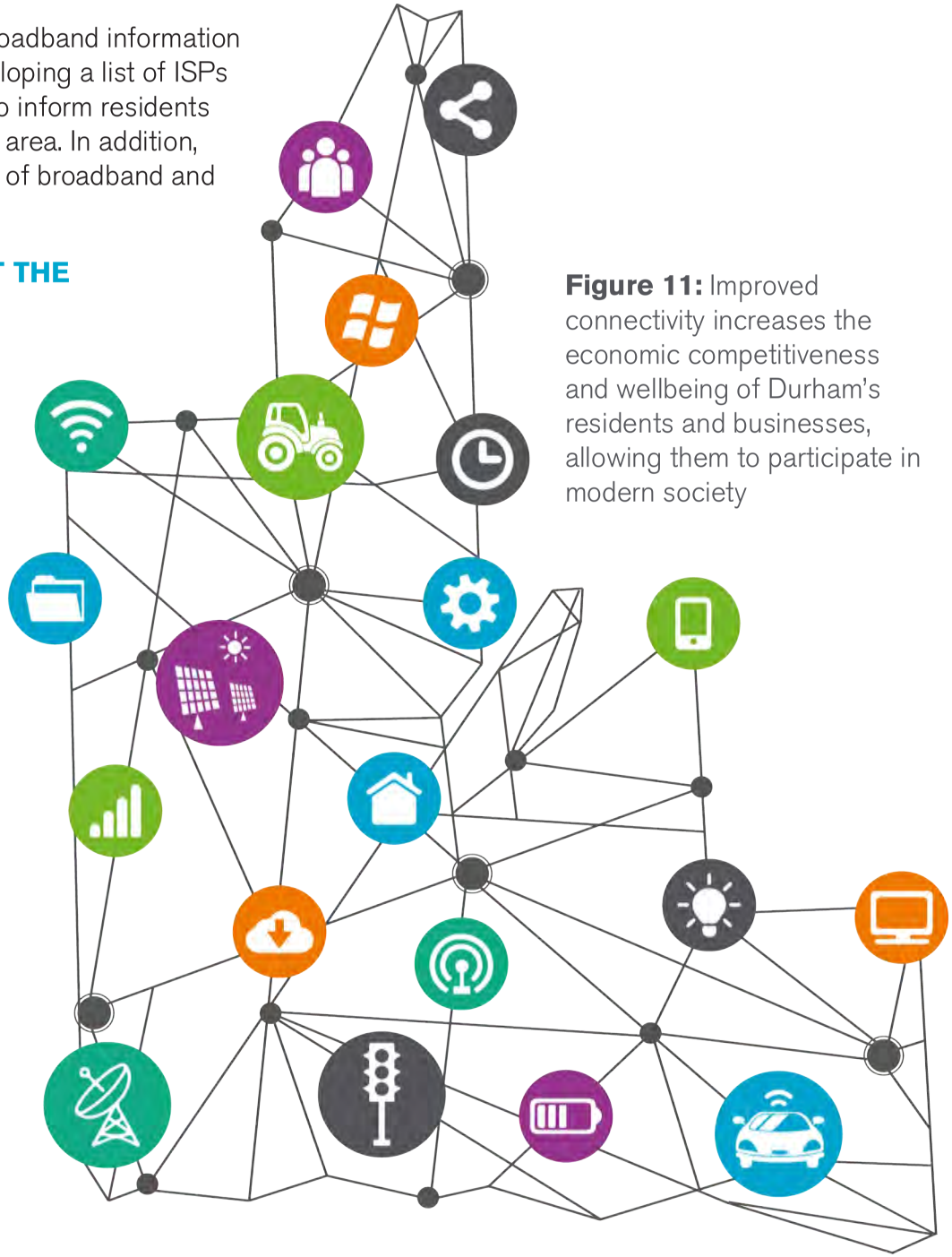


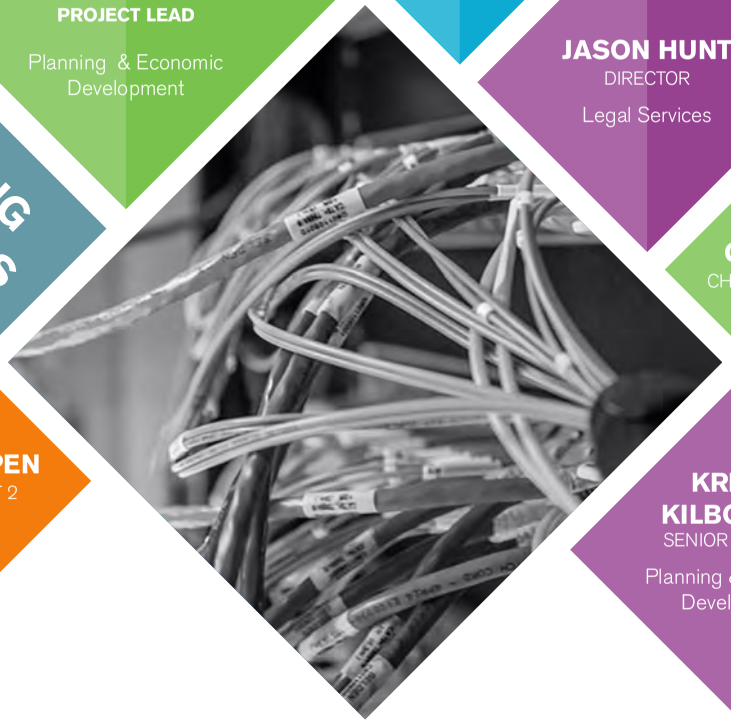
Figure 11: Improved connectivity increases the economic competitiveness and wellbeing of Durham's residents and businesses, allowing them to participate in modern society

CONCLUSIONS AND

ACKNOWLEDGEMENTS

The Region of Durham recognizes the importance of adequate Broadband infrastructure for the wellbeing and economic competitiveness of the Region's residents, businesses, and institutions. Through the implementation of this Strategy and its Actions, the Region will position itself as a supporter and facilitator of increased connectivity. Staff will continue to report to Council on the implementation of this strategy on an annual basis, or as major milestones are completed.

This work would not have been possible without the leadership of Regional Council, who have directed and supported the development of this Strategy. The Region would like to provide a special thanks to all who participated in stakeholder consultation and contributed towards the creation of this Strategy.



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GLOSSARY OF TERMS

Bandwidth: in computer networks, bandwidth is used to describe the rate of data that can be carried from one point to another in a given period of time.

Broadband: generally refers to Internet service that is always on and available at higher speeds than traditional dial-up Internet services. There are several forms of broadband Internet service including Digital Subscriber Line, Cable, Satellite and Fibre-optic.

Dark Fibre: refers to fibre optic infrastructure (cable) that has been installed but is not currently in use.

Download and upload speed: download speed is the rate at which data is transferred from the Internet to the user's device. Upload speed is the rate at which data is transferred from the user's device to the Internet. Download speeds are typically higher than upload speeds, as most users download more data than they upload. A common measurement of download and upload speeds is megabits per second (Mbps).

Fibre-optic: A flexible hair-thin glass or plastic strand that can transmit large amounts of data at high transfer rates as pulses or waves of light.

Gigabits per second (Gbps): a measurement of Internet speed. 1 Gbps is equivalent to 1,000 Mbps or one billion bits per second (bits are the smallest unit of digital information).

Internet service provider (ISP): a company that provides users (individuals or businesses) with access (a connection) to the Internet and related services.

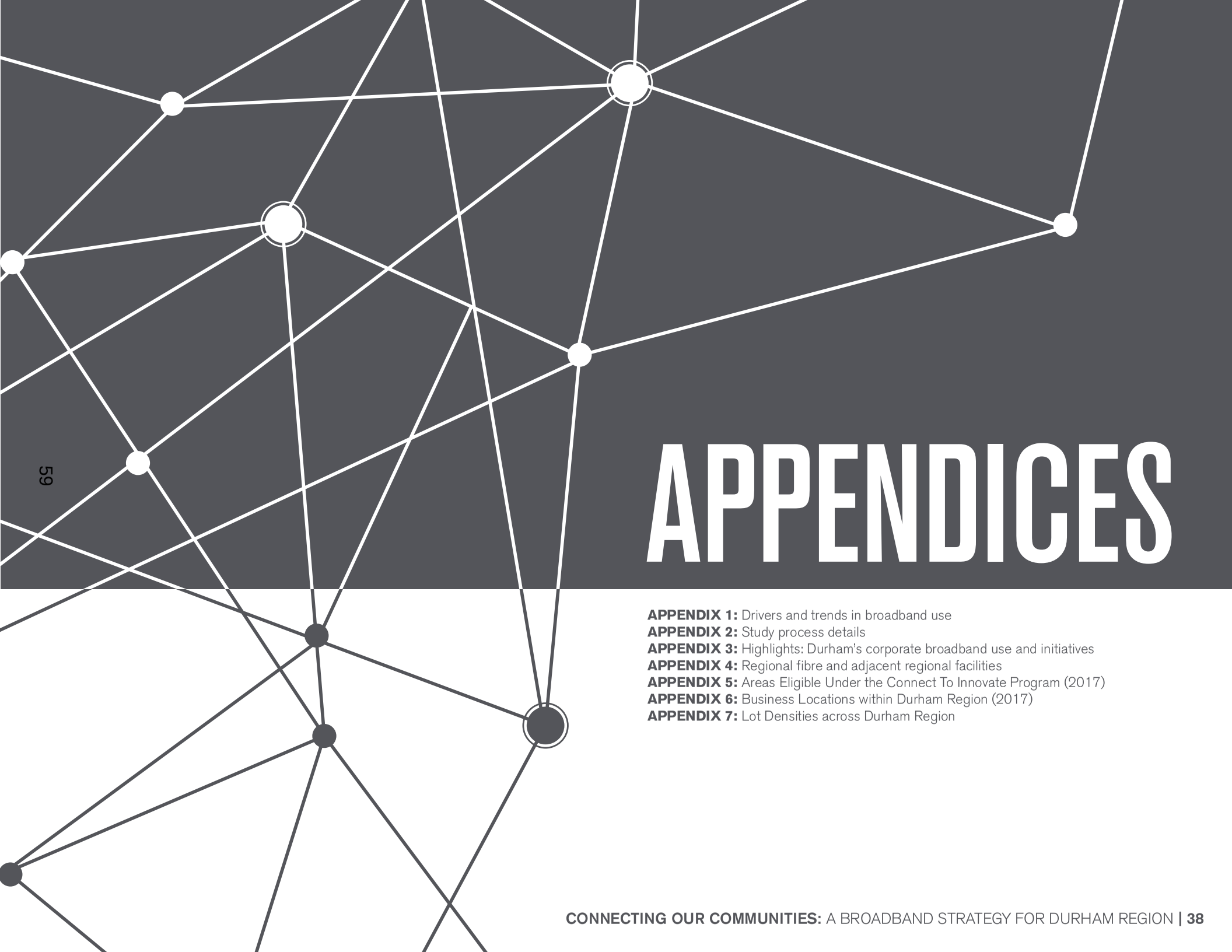
Last mile: refers to the technology and process of connecting the end customers (home or business) to the first network interface point.

Lit Fibre: refers to active fibre optic cable with attached electronics that is capable of transmitting data.

Long Term Evolution (LTE): in telecommunications, Long-Term Evolution (LTE) is a standard for high-speed wireless communication for mobile devices and data terminals.

Megabits per second (Mbps): a common measurement of Internet speed. One Mbps is equivalent to the transfer of one million bits of data per second (bits are the smallest unit of digital information.

Wi-Fi: an abbreviation for wireless fidelity, meaning you can access or connect to a network using radio waves, without needing to use a wired connection.



APPENDICES

APPENDIX 1: Drivers and trends in broadband use
APPENDIX 2: Study process details
APPENDIX 3: Highlights: Durham's corporate broadband use and initiatives
APPENDIX 4: Regional fibre and adjacent regional facilities
APPENDIX 5: Areas Eligible Under the Connect To Innovate Program (2017)
APPENDIX 6: Business Locations within Durham Region (2017)
APPENDIX 7: Lot Densities across Durham Region

DRIVERS OF BROADBAND USE

Broadband needs are increasing across all sectors, with three major trends driving demand.

VIDEO

Across all sectors, video is the largest component of bandwidth use. Video use is commonly associated with communications and entertainment but is also used for educational and instructional services, health care services, conferencing, training and security/ surveillance. Streaming and/or video downloads consume a particularly large quantity of bandwidth. For the residential market, online video accounts for 83 percent[1] of bandwidth use within an average month.

Figure 12: Durham Region uses broadband to live stream council meetings

[1]Canadian Radio-television and Telecommunications Commission (2017). Annual Monitoring Report. Retrieved from: https://crtc.gc.ca/eng/publications/reports/policymonitoring/2017/cmr.htm

THE INTERNET OF THINGS (IoT) AND SMART CITIES

The Internet of Things (IoT) is a general term used to describe a broad range of devices that are manufactured with embedded electronics, software and sensors. Once connected to a network, IoT applications can continuously monitor and automate equipment and devices. IoT technology is becoming widespread and popular and is now commonly found in homes (thermostats, lighting), used as wearables (smart watches, health devices), for government (lighting, water/waste water monitoring, parking lot use), and business uses.

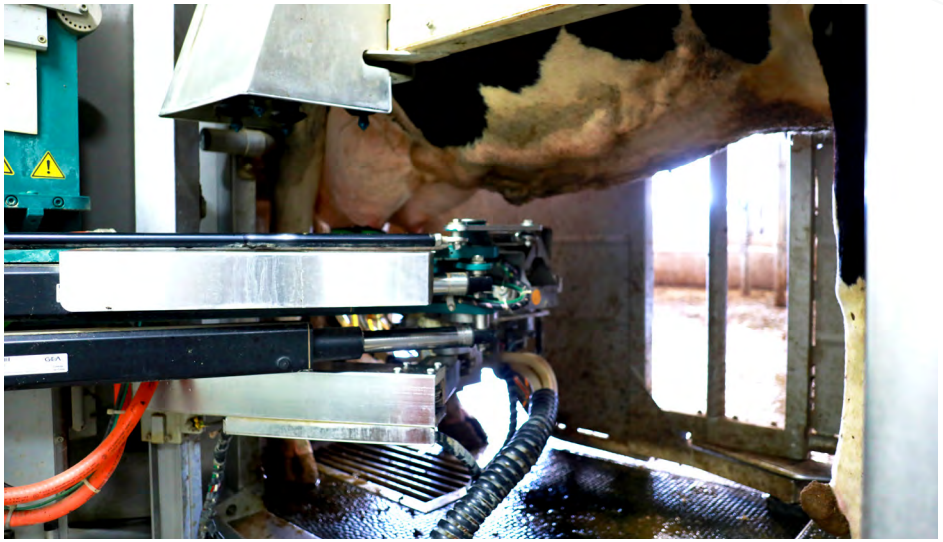


Figure 13: Automated dairy equipment

Smart cities (or, intelligent cities, are they increasingly known) use this broadband enabled technology to collect and analyze data, and to connect with citizens and run government operations more efficiently. At the regional level, sensors may be used to monitor traffic and transportation systems, water and waste management, law enforcement applications, information systems and community services. Like many municipalities, Durham is turning its attention to how technology may be used to manage challenges such as urban population growth, aging populations, environmental sustainability, and pressures on public finances.

CLOUD COMPUTING

Cloud computing is the practice of relocating computer functions from personal computers to centralized servers. This method of computing allows for the storage and accessing of data and programs over the Internet, instead of a personal computer hard drive.

Cloud computing is becoming commonplace for both business and consumer uses. Microsoft Office 365 is an example of a cloud computing application. Office 365 consists of Office Online, Exchange Online, SharePoint Online, and OneDrive for Business. These online versions of Microsoft Office software enable access to web-based applications and Regional data via the Internet from any device, anywhere, at any time.

Other examples of cloud computing used by the Region include PointClickCare, a resident software used by the Region's long-term care facilities, as well as Remedy Force, a troubleshooting ticketing system used by Durham's Corporate IT Division.

Figure 14: Regional server rooms. Cloud computing allows for data and applications to be centrally located and accessed by multiple devices

MUNICIPAL GOVERNMENT TRENDS DRIVING BROADBAND USE

Regional and area municipal governments are evolving their business models to continually adopt information technology into their services and operations. There is an increasing reliance on broadband connectivity to improve efficiencies and enhance business operations such as e-government services to residents and businesses.

Listed below are examples of applications and services used and offered by municipal governments that are increasing the need for broadband connectivity:

- Transportation and traffic management including cameras, signals and connectivity for real time departure information at transit stops and stations.
- Applications that use large data sets, such as Geographic Information Systems (GIS).
- Smart City technology and applications.
- Web-based applications and cloud services.
- Field operations and access to data in the field.
- Security and surveillance.
- Online training.
- Video-conferencing and streaming.
- Communication: Websites and social media presence, citizen interaction (streaming of meetings, remote participation, Internet voting).
- Hosting and accessing open data.
- Electronic submission of documents, plans and reports.
- Self-service tools (online government services).
- Online recruiting.
- Electronic tendering, invoicing and payments.
- Technology in long-term care homes (e.g. bedside tablets).
- Public Wi-Fi at municipal sites.

TRENDS AT THE REGION OF DURHAM

Regional broadband demands are rapidly increasing, with Internet usage at Regional facilities increasing at over 40 percent per year for at least the past three years.

Demand for high-speed Internet connections at Regional facilities will continue to accelerate with higher resolution broadcasting and increased demand for shared occupancy on Regional networks. Currently, 60 percent of Regional facilities have access to fibre-optic connections. However, this number will continue to increase over the coming years.

TRENDS IN HEALTH CARE

Like other services, the health care system is moving online at an increasing pace, changing the way people access health care services. The health care system is implementing internet, mobile, and video technologies to improve patient outcomes and support patients at home and in their own communities. Lakeridge Health, the health and hospital network servicing Durham Region, is undertaking several initiatives that will place a greater emphasis and demand for increased broadband connectivity, including:

- A new shared Health Information System (HIS) across all hospitals in the Central East Local Health Integration Network (LHIN). The HIS will facilitate the sharing of health information (including data, high resolution images and video), requiring dependable high bandwidth broadband connectivity, with low latency and built in redundancy.
- Efforts to increase collaboration with primary care to provide eReferral and eConsultant services.
- Investigating virtual care, including eVisits and remote care management in patient homes. The implementation of virtual care requires affordable, high speed broadband access to all households.
- An increased focus on Clinical Decision Support, Precision Medicine, Predictive analytics, and Population Health, support by artificial intelligence and machine learning. The computing power needed to realize these ambitions make cloud computing necessary, which in turn requires greater broadband connectivity.

PHASE ONE

ASSESSING CURRENT CONDITIONS AND NEEDS

Phase One focused on understanding current conditions within the region and identifying the needs of businesses, residents, government agencies and institutions. In March 2017 an internal Steering Committee was formed to oversee the project. In August 2017, following a competitive bid process, Actionable Intelligence Incorporated was retained to assist in the development of the Strategy.

From September through December 2017, Actionable Intelligence conducted background research on broadband trends and undertook a gap analysis of Internet service availability in the region. In total the availability of Internet service was assessed at 600 properties.

Research from other sources was also considered, including information from Dr. Reza Rajabiun, which summarized connectivity in Durham based on Internet speed measurements. While service in the urban areas is as good or better as other areas in the Greater Toronto Area (GTA), these findings confirmed that connectivity in rural Durham is among the lowest levels in the GTA.

Consultation sessions were held with internal and external stakeholders, including regional staff, representatives from the local area municipalities, libraries, emergency services, post-secondary institutions, public utility corporations, and the business community. Over 100 individuals participated and a similar number of comment sheets were completed and submitted.

In February 2018, Actionable Intelligence completed its Phase One findings, outlining the results and potential roles the Region could undertake. The Phase One Summary Report was received for information by the Committee of the Whole with a presentation provided at the May 2, 2018 meeting.

PHASE TWO

IDENTIFYING ROLES AND ACTIONS FOR DURHAM REGION

Phase Two focused on evaluating and scoping the appropriate roles and actions for the Region to undertake. Again, interviews were conducted with area municipal staff based on the proposed connectivity targets and soliciting feedback on the most appropriate role for the Region.

Opinions from municipal staff were diverse. Some felt the Region's Broadband Strategy should be ambitious and visionary, and not necessarily grounded in "what can be done." Others felt it should be realistic and implementable. Similarly, there were varied options on the proposed connectivity targets, with some of the opinion that the targets were too low, and others of the opinion that they were too high and unachievable in the rural areas. Despite these differing opinions, there was unanimous agreement that the Region had a role to play in supporting broadband and there was generally a positive reception to the work completed to date.

In June 2018, the results of the area municipal interviews were presented to the Steering Committee. In addition, the Steering Committee evaluated the various roles the Region could undertake.

In September 2018, Actionable Intelligence completed its Phase Two Recommendation Report. The report, which considered the information collected in Phase One and the results of consultation and direction received during Phase Two, recommends that the Region pursue a role that supports and facilitates broadband network expansion, with a series of related action. This Broadband Strategy incorporates the advice of Actional Intelligence Incorporated.

In November 2018, a draft Regional Broadband Strategy was circulated to stakeholders for review and comment. Stakeholder comments were incorporated into the final version of the strategy.

HIGHLIGHTS:

DURHAM'S CORPORATE BROADBAND USE AND INITIATIVES

As one of the largest employers, landowners, and service providers in the region, the Regional Municipality of Durham is a major consumer of broadband services. Currently, regional assets located throughout the region are connected using a combination of ISP contracts, a regionally-owned fibre network (for traffic management purposes), and wireless/radio communications.

Although the Region's broad departmental and facility needs are currently being met, it is anticipated that evolving public and user expectations for greater government e-services, changing technology, and other potential service delivery enhancements will place greater demands on improved connectivity in the future.

REGIONAL INFORMATION TECHNOLOGY STRATEGY

The corporate Information Technology (IT) group is currently working on multi-year projects to build-out fibre and provide Wi-Fi to Regional offices, and expand the use of cellular (3G/LTE) for mobility and isolated sites.

Once fibre is built-out to Regional offices, higher speeds, faster response times, and better availability are possible. Although a minimum speed of 10 Mbps was established as the wide area network strategy in 2015, the speed of each site can be adjusted through an ISP to meet business requirements as they evolve and deliver additional services with minimum impact.

With Wi-Fi being installed at Regional offices, wireless devices (laptops, smartphones, and tablets) can be introduced. No longer constrained to using computers in certain physical locations, staff can use mobile devices allowing for increased efficiency, collaboration, and/or access to information.

As the importance and usage of the Internet is steadily increasing at the Region, the corporate IT group is also working on a multi-year project to establish a backup Internet connection for all Regional offices through the wide area network. For Regional Headquarters, a failover connection was implemented in 2015.

DURHAM REGION TRANSIT INITIATIVES

Several initiatives are currently underway and planned by Durham Region Transit (DRT) that will create an increased reliance on broadband connectivity.

CURRENTLY UNDERWAY

- Installation on all DRT buses of on-board camera systems that record and download video content upon return to the depot.
- Equipping all DRT buses with Intelligent Transportation System technologies including real time vehicle locator capabilities. This technology will improve predictive forecasts and performance monitoring.
- Testing of transit signal priority technologies to enable DRT buses to communicate with and prioritize traffic signal changes, allowing for improved transit reliability.
- In 2017, DRT launched the first version of On Demand service in the Townships of Brock, Scugog, and Uxbridge. DRT continues to monitor and assess opportunities for introducing additional On Demand service areas. Future versions of this service delivery model will rely on the use of online and smartphone apps for contacting and booking services.
- The Greater Toronto and Hamilton Area (GTHA) regional fare card (Presto) is the preferred payment method on DRT and its partner agencies. Loading of fare products onto cards and future mobile payment options requires a robust broadband network to support the distribution and payment throughout the region.

FUTURE INITIATIVES

- Solar powered real-time predictive bus departure at transit stops.
- Information screens indicating real-time predicted arrivals, local news, weather, location-based content and exclusive promotions.

- Wi-Fi for customers.
- Pilots to test the use of autonomous/electric shuttles to support first mile and last mile connections to regional and high frequency transit services. As automated technology testing and adoption advances, including expanded vehicle-to-vehicle and vehicle-to-infrastructure connectivity, additional capacity will be needed.

SMART CITIES INITIATIVES

Supporting the growth of a smart, inclusive and resilient community requires equitable access to digital infrastructure, as well as public input on where to deploy smart solutions. In September 2018, the Region hosted a smart cities forum to connect with the community on how the Region can use technology and innovative solutions to address economic, social and environmental challenges. Key questions that continue to be discussed include:

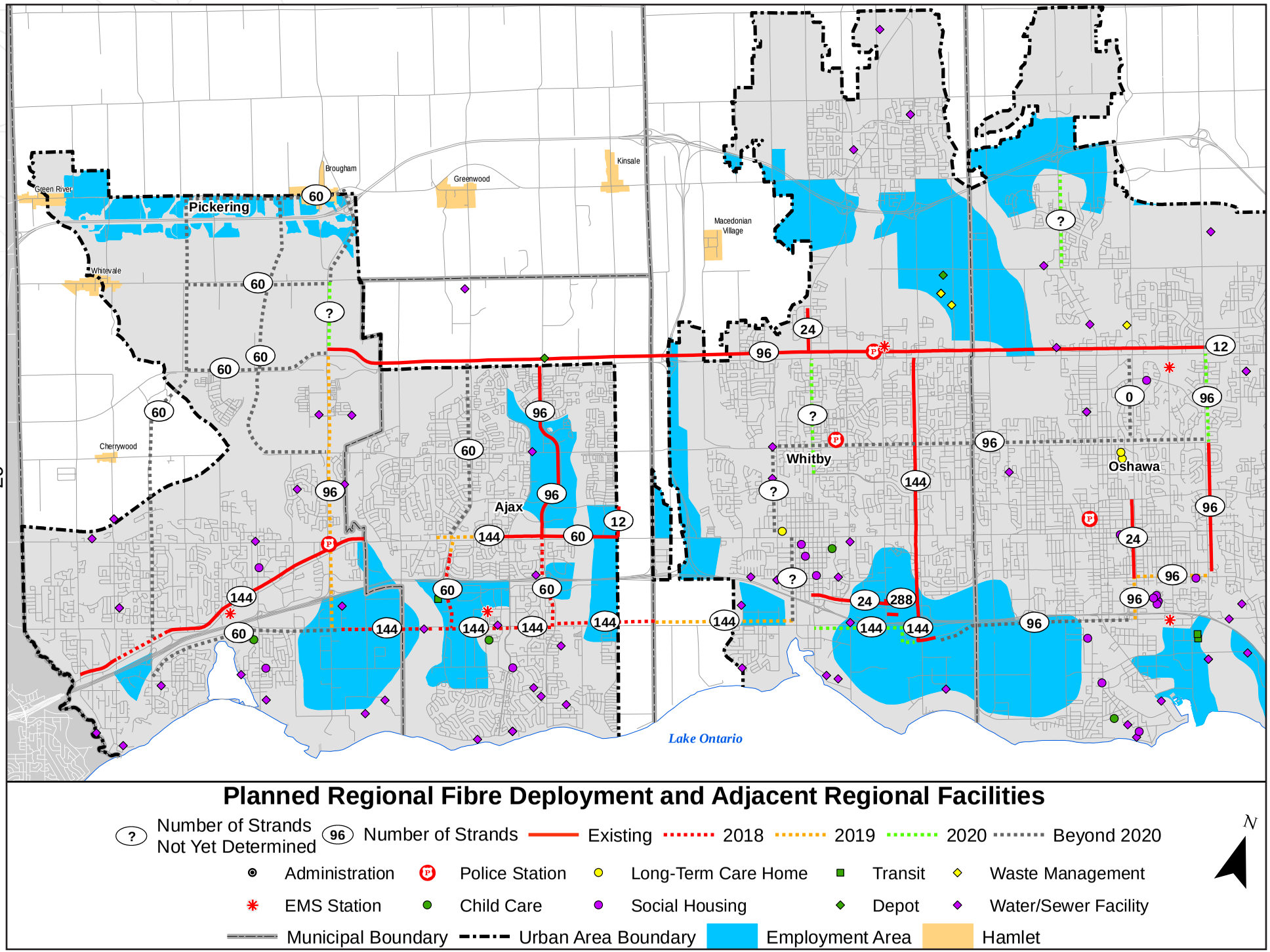
- What can we do to ensure Durham Region is a "smart" community?
- How can technology solutions create economic opportunities, improve sustainability and enhance the quality of life in Durham Region?
- How can we enhance our collaboration with traditional and non-traditional partners?
- How can we improve information sharing to empower residents?

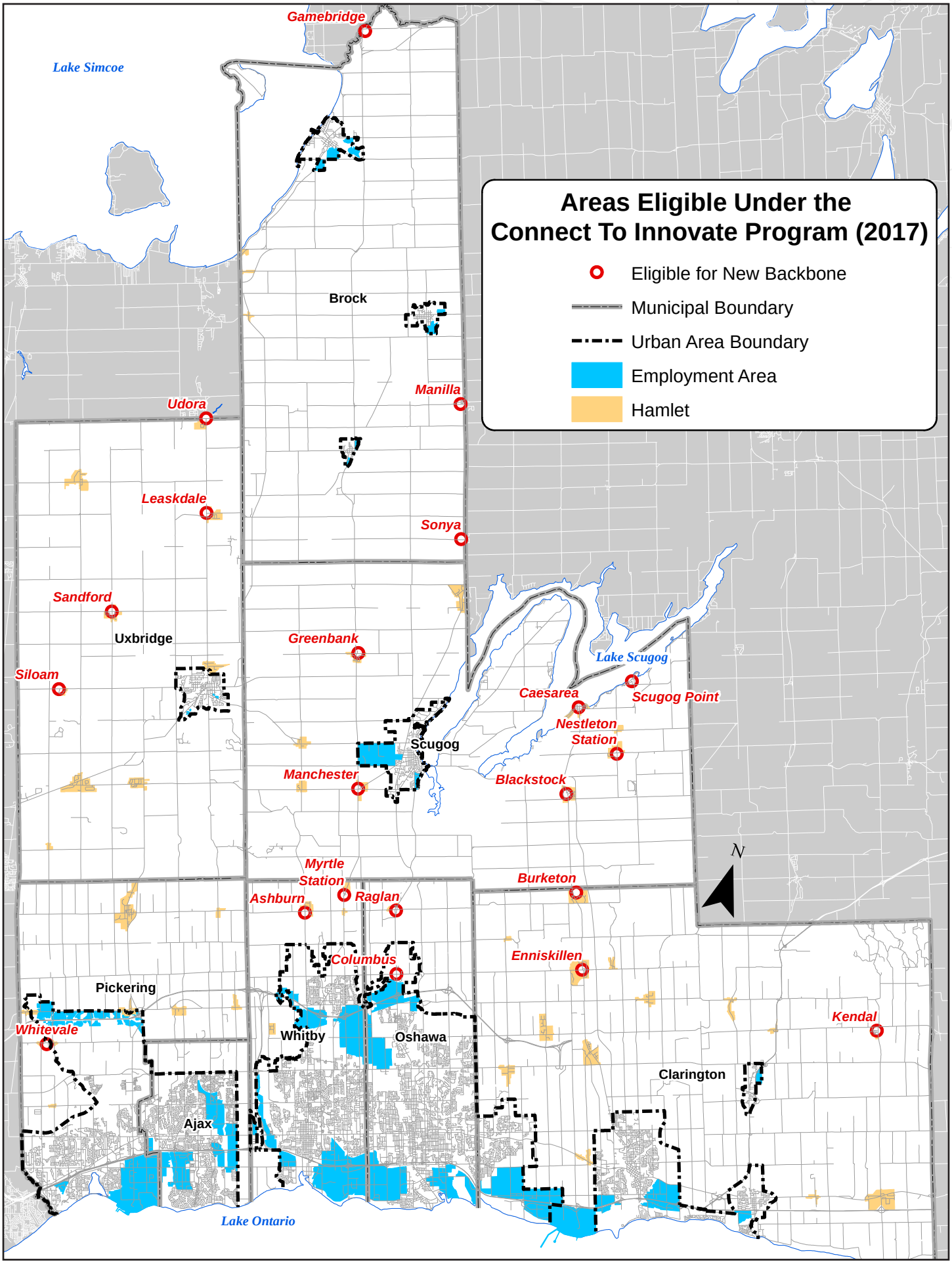
Next steps on the Region's smart cities journey align well with this broadband strategy, including the development of a Durham Smart Cities Framework to provide structure and direction to Regional projects. Such a framework would clarify the objectives, approach, and anticipated results of adopting the smart cities approach. A framework would help refine the purpose and direction of becoming an intelligent city, as opposed to recommending specific technology solutions.

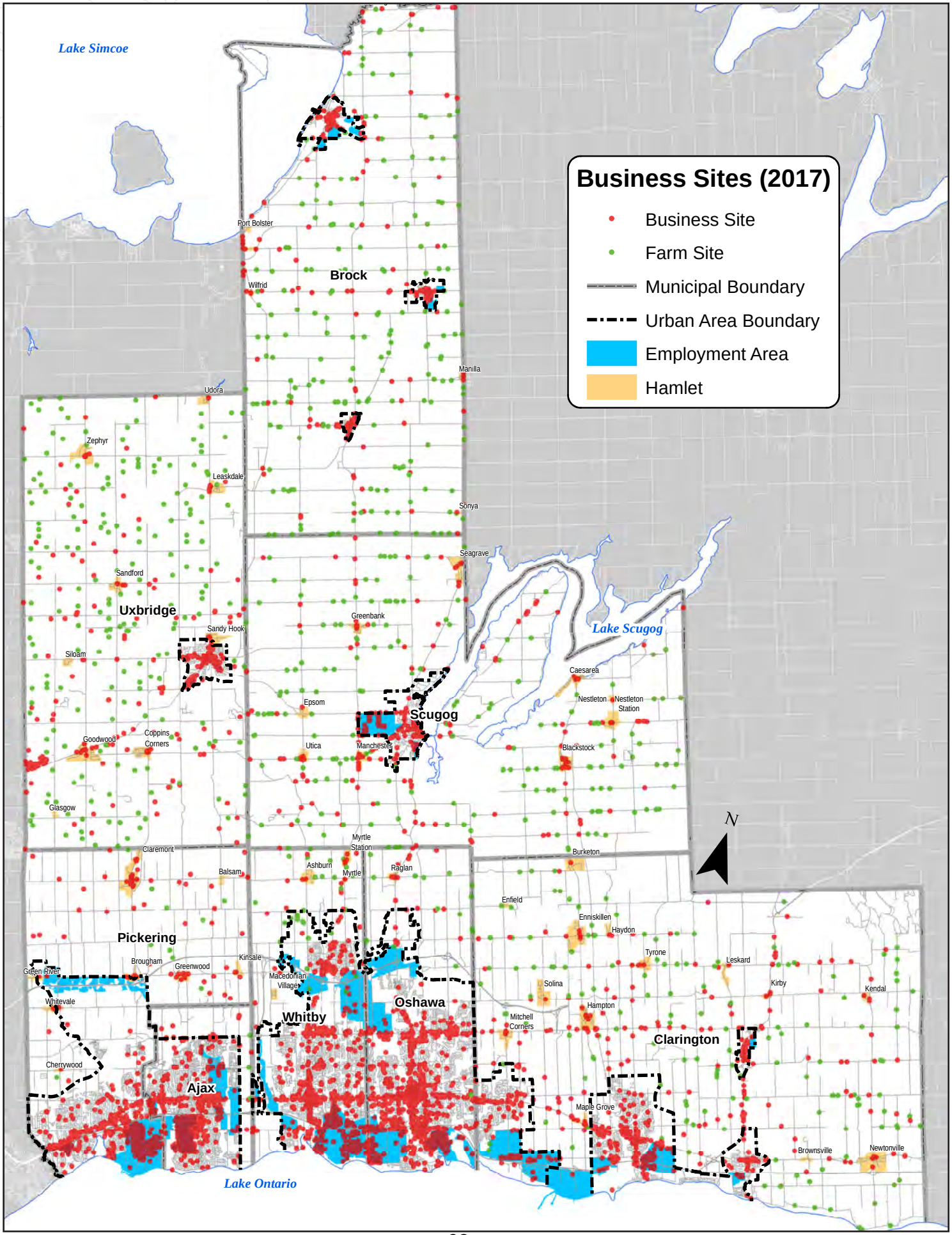
Initial projects undertaken within this framework could include:

- Holding community consultations focused on specific priority sectors including small business, energy, transportation, and public health.
- Proceeding with the development of short-term pilot projects and partnerships, including autonomous vehicle pilots through Durham Region Transit, partnerships with the Durham College AI Hub, and opportunities to undertake accelerated research projects; and
- Applying to the next wave of the federal Smart Cities Challenge, anticipated in Spring 2019.

The strongest smart city models focus on people. A framework would act as a guide to ensure that potential projects fit with the Region's strategic priorities and reflect public input.


Pickering
Ajax
Whitby
Oshawa
Brougham
Greenwood
Kinsale
Macedonian Village
Green River
Whitevale
Cherrywood
Lake Ontario
Planned Regional Fibre Deployment and Adjacent Regional Facilities
? Number of Strands Not Yet Determined
96 Number of Strands
Existing
2018
2019
2020
Beyond 2020
Administration
Police Station
Long-Term Care Home
Transit
Waste Management
EMS Station
Child Care
Social Housing
Depot
Water/Sewer Facility
Municipal Boundary
Urban Area Boundary
Employment Area
Hamlet
N


Areas Eligible Under the Connect To Innovate Program (2017)
Eligible for New Backbone
Municipal Boundary
Urban Area Boundary
Employment Area
Hamlet
Gamebridge
Lake Simcoe
Brock
Manilla
Udora
Leaskdale
Sonya
Sandford
Uxbridge
Greenbank
Lake Scugog
Siloam
Caesarea
Scugog Point
Nestleton Station
Scugog
Manchester
Blackstock
N
Myrtle Station
Burketon
Ashburn
Raglan
Columbus
Enniskillen
Pickering
Kendal
Whitevale
Whitby
Oshawa
Clarington
Ajax
Lake Ontario


Business Sites (2017)
Business Site
Farm Site
Municipal Boundary
Urban Area Boundary
Employment Area
Hamlet
Lake Simcoe
Lake Scugog
Lake Ontario
Port Bolster
Wilfrid
Brock
Manilla
Udora
Zephyr
Leaskdale
Sonya
Seagrave
Sandford
Uxbridge
Greenbank
Sandy Hook
Siloam
Epsom
Scugog
Utica
Manchester
Goodwood
Coppins Corners
Glasgow
Caesarea
Nestleton
Nestleton Station
Blackstock
Myrtle Station
Claremont
Ashburn
Myrtle
Raglan
Balsam
Burketon
Enfield
Enniskillen
Haydon
Tyrone
Leskard
Kirby
Kendal
Solina
Hampton
Mitchell Corners
Clarington
Pickering
Brougham
Greenwood
Kinsale
Green River
Whitevale
Macedonian Village
Oshawa
Whitby
Cherrywood
Ajax
Maple Grove
Brownsville
Newtonville
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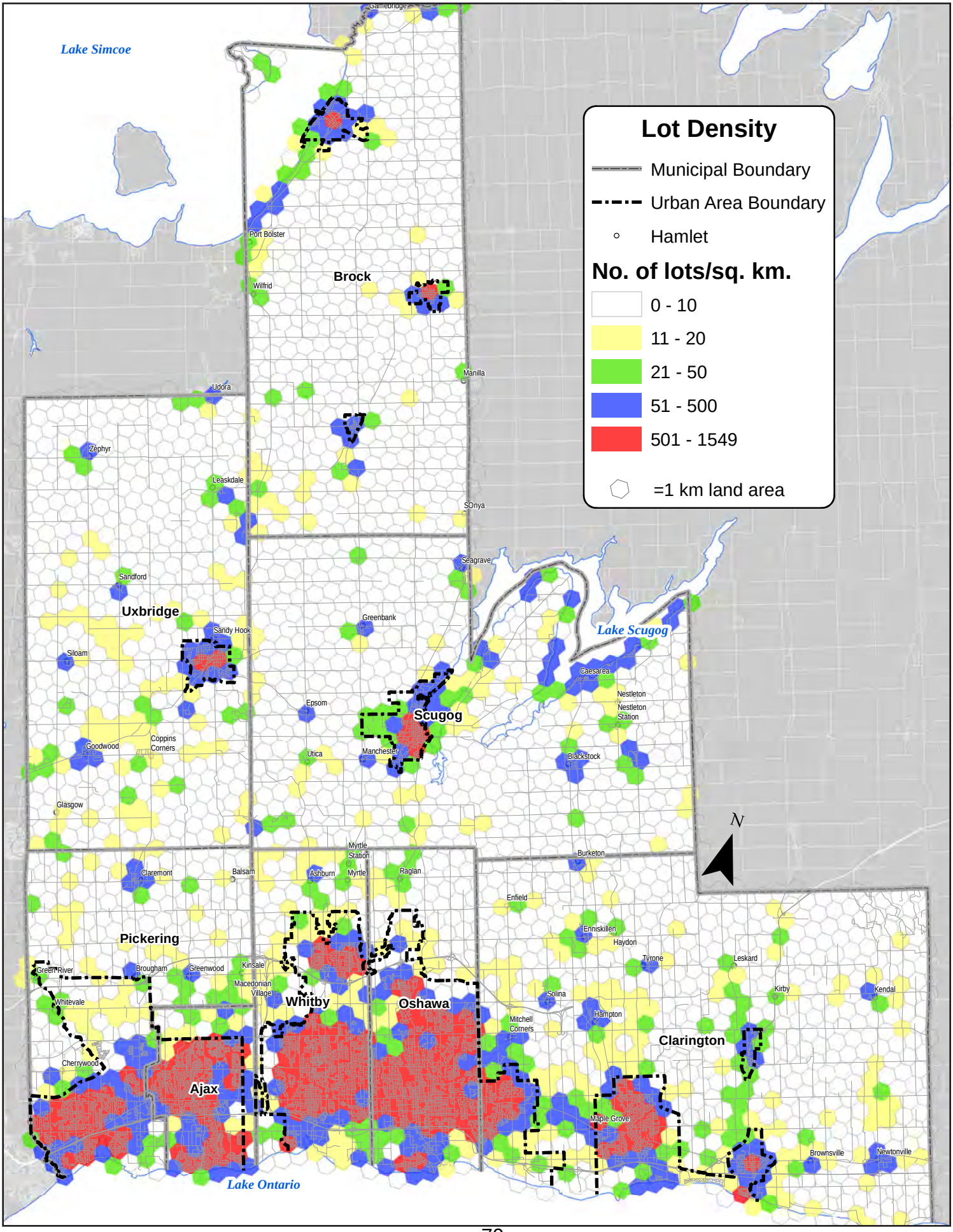
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Leskard
Pickering
Green River
Brougham
Greenwood
Kinsale
Macedonian Village
Whitby
Oshawa
Solina
Kirby
Kendal
Whitevale
Hampton
Mitchell Corners
Clarington
Cherrywood
Ajax
Maple Grove
Brownsville
Newtonville
Lake Ontario
Lot Density
Municipal Boundary
Urban Area Boundary
Hamlet
No. of lots/sq. km.
0 - 10
11 - 20
21 - 50
51 - 500
501 - 1549
=1 km land area

Regional Municipality of Durham
Broadband Strategy, Phase Two Report
September 2018

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1. Executive Summary

Over the 21st Century, the reliance on broadband Internet access has increased dramatically in Canada and throughout the world. Consultations with government and business indicated that the trend toward growing data requirements exists across all sectors and geographic areas of Durham Region. The ever-increasing demand for data is driving the need for network connectivity to homes, businesses, government facilities and institutions. Broadband networks and services are widely available in urban areas, but rural areas are underserved. The Region undertook the development of this Broadband Strategy to understand the needs of the Region and its citizens. Through the analysis it is apparent there are different issues across the Region and different solutions may be needed to overcome these.

In Phase 1, service availability across the Region was assessed; and the needs and interests of stakeholders, as well as desired upgrades in broadband service were identified. Connectivity targets were established and three potential roles the Region could undertake to support broadband enhancements were identified. Information and recommended strategies developed through this undertaking will support improved service coverage, quality and affordability. The creation of an environment of coordination and collaboration will contribute to the project's success. A fulsome document was produced incorporating these activities and results.

In Phase 2, the findings of Phase 1 are analyzed and integrated into the Durham Region Broadband Strategy reviewing three potential roles for the region to take to help facilitate the extension of broadband networks. The three potential roles for the Region of Durham discussed in this Report are: Limited, Supportive and Direct. Recommendations are provided on how the Region should proceed.

The Limited Role is not recommended, as it does not contribute sufficiently to improved broadband service in the Region.

It is recommended that the first step for the Region is to pursue opportunities to enhance broadband coverage through the Supportive Role. Undertaking this role will see the Region support Internet Service Providers (ISPs)/industry in delivering better Internet service to underserved areas across the Region. A primary focus is on fostering collaboration between the Region, area municipalities, economic development organizations and ISPs. Knowledge and data acquired through implementation of this role will build capacity for the Region as it plans for its data needs and negotiates with ISPs for service. As part of the Supportive Role, it is recommended that the Region form a Broadband Advisory Working Group and designate a Broadband Coordinator position to coordinate the implementation of the Broadband Strategy.

Consultations in Phase 1 indicated that there is potential interest in the Region undertaking a more Direct Role, typically meaning a direct financial investment such as building a network. However, pursuing the full Direct Role requires further analysis including the development of a business case. By undertaking the Supportive Role, it is expected that the Region will build capacity for potential expansion of regional fibre services in the future. A decision on adopting a Direct Role will be dependent on the work undertaken by the Broadband Coordinator and the decisions and

recommendations made by a Broadband Advisory Working Group. The following is a summary of recommendations:

Recommendation	Goals
Pursue Supportive Role	Support ISPs in expanding broadband service in Durham Region through collaboration, coordination and information sharing between the Region, area municipalities and ISPs.
Form a Broadband Advisory Working Group	To provide informed advice/recommendations that will contribute to expanding broadband in Durham Region.
Create a Broadband Coordinator Position	To ensure maximum success of broadband projects by guiding and working with municipal economic development offices on coordination and implementation of these projects.
Lobby Provincial and Federal governments for additional broadband funding for underserved areas	To influence funding decisions that will support expanded broadband service.
Step toward Direct Role - Develop a business case to evaluate deployment of a Regional fibre network - note this is incremental to the activities described in the Supportive Role and would occur in the future.	To determine whether expanded Regional fibre network will be of net benefit to the Region.

2. Introduction

The Region of Durham has commissioned the development of a Broadband Strategy in response to a growing need for connectivity. Broadband is an important service of the 21st century and has been recognized by all levels of government as essential to economic development, education, healthcare and the delivery of many other vital services. Durham Region recognizes this and in 2017 launched an initiative to develop a Broadband Strategy.

The following objectives were established to guide the project:

- Identify broadband needs of government entities, businesses and residents and ensure there is affordable, equitable connectivity throughout the region.
- Identify the broadband infrastructure required to ensure businesses, students and all residents in Durham can remain competitive and grow in an increasingly connected world.
- Identify the types of projects that are of interest to the private and public sectors. Include justification for investments in broadband infrastructure that improves service delivery and enhances the Region's economic competitiveness.
- Foster a culture of collaboration among Regional, area municipal, and private sector broadband initiatives.
- Identify current trends and future scenarios of connectivity in order to ensure the Region is future-focused.
- Develop a business model that emphasizes a collaborative approach to encouraging private and public investments in connectivity.
- Consolidate information and data to ensure the Region and area municipalities are 'application ready' for funding opportunities similar to the Government of Canada's Connect to Innovate program.

One stimulus for the Region to pursue this initiative was recognizing that broadband services were not even throughout the area and to develop a position to be application ready for program opportunities.

The Government of Canada has stated that broadband is a vital service and has offered several programs to assist in network deployment over the last 10 years. Throughout this period, the standard minimum service levels that users should have access to was defined by the government to be 5Mbps/1Mbps[1]. The government programs provided money to select ISPs to extend and enhance their networks to meet these targets.

In December 2016, the CRTC established targets for speeds of 50 Mbps /10 Mbps as a universal service objective[2]. It is important to note that while this is the objective, it is not a mandate or demand that providers offer this service everywhere. While the CRTC and the Federal government worked to establish a $750M fund to assist this target, no program terms have been announced and no money has been deployed. It is important

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[1] Service speed is always defined as download speed/upload speed, recognizing they are not equal.

[2] https://crtc.gc.ca/eng/publications/reports/rp161221/rp161221.htm

to note that this fund is not intended to reach a target of 100% of Canadians, rather something closer to 95%. This is a recognition that serving the last 5% of the population to the same target is exceedingly difficult and expensive to reach.

The Region recognized the changing landscape, some of the disparities and issues associated with Broadband service delivery and set their goals to better assess the situation and focus on opportunities to influence change. In addition, there was an interest to focus the outcomes on actions that can be undertaken by the Region to stimulate the industry to deliver better broadband service. The table below highlights the identified objectives relate to all the work (Phase 1 and 2) completed in this project.

Objective	Strategy
Identify Broadband Needs	Connectivity Targets Defined
Identify Infrastructure	Focus of strategy is on infrastructure that can achieve the Connectivity targets
Projects of Interest to ISPs & government	Private sector prefers grants to help overcome costs issues – Governments like to ensure sustainability is achievable
Foster Collaboration	Consultations created a first step & recommendations build & identify new opportunities
Identify Trends	Phase 1 document highlighted many trends related to services/applications and the growing bandwidth demand
Business Model encouraging private and public investments	Recommendations include opportunities for both sides to stimulate and influence services deployment
Prepare Region to be "application ready"	Gap analysis & fostering relationships with providers is the first step to preparing for Government funding programs

Table 1 – Objectives Delivered

One of key elements to future proofing and having infrastructure that can support future services is the deployment of more fibre networks. Fibre is a technology that can support increasing bandwidth/speed by changing electronics connected to the fibre but not the fibre itself. The fibre is like a road connection to end points and the electronics determine how fast the cars can flow on the road.

However, deploying fibre, especially to rural areas is very costly. This undertaking is similar to the building of the first phone and cable networks – it needs to keep advancing and reaching out to the smaller areas to have an impact. Fibre cable itself can be considered a 50-year investment, while the electronics that increase speed would have shorter lifecycles.

While the recommended actions do not indicate a direct investment into fibre the underlying essence of many of the recommended activities is to ensure that the private sector can be stimulated to invest through a number of different activities.

Another aspect of the strategy is to create a Broadband Coordinator position. This position would be one that is focused on implementing the recommended steps and gathering more data that can be useful in efforts such as collaborating with private sector and lobbying higher levels of government for more funding opportunities.

The recommended lobbying efforts are specific to engaging with Federal and Provincial government ministries to identify the needs of Durham Region. While the needs are not unique, funding has often focused on more rural areas and leaving the difficult to serve areas of Durham Region unable to reach the same speed targets as other jurisdictions. This effort should be focused on identifying that all hard to serve areas are in need and ones that are closer to city centers (GTA/Toronto) are not being addressed because they are near the city.

The strategy report provides a plan for the Region to move forward and develop opportunities to enhance broadband services across the area.

Three roles for the Region were identified during the development of the Broadband Strategy. The roles are:

- Limited Role
- Supportive Role
- Direct Role

Each role is described in the document however, the recommended role at this time is for the Region to pursue a Supportive Role.

3. Future of Connectivity

Throughout the past decade the reliance on broadband has increased dramatically in Canada. Business systems have evolved from software being delivered on a disc/CD to being accessed online through "the cloud". In addition, cameras and displays (TV monitors) have become less costly and more commonly deployed. Devices to monitor everything from temperature, to weather conditions, to movement have become smaller, less expensive and in many cases connected. Video is very widely used and distributed for entertainment and business applications.

The constantly increasing demand for data is driving the need for high levels of bandwidth and network connectivity. In addition, the expectation of mobile devices everywhere, all the time, means that users expect Internet service to be fast and widely available.

In the first phase of this strategy development, stakeholder consultations were held with municipal staff, Regional staff from multiple departments and other institutional organizations and members of the business community, in order to gather information about current broadband service availability and future needs. Often these needs are based on software and applications used in business operations. Internet service providers were also asked for input. Some provided information and some declined to participate.

A set of speed and network capacity targets was established for Durham Region based on information collected through consultations in Phase 1 and secondary research. It is important to note the targets like the current CRTC's target of 50/10 Mbps are set approximately once a decade and are often "catching up" to what users actually need and/or want. In the last decade the CRTC has had two different speed targets, the Federal Communications Commission of the United States has had three.

While current targets are valuable, it is hard to build a network that has longevity and evolvable components without planning for the future. Thus, the recommended targets are laid out in spans of five years, where each step considers future needs.

The following connectivity targets are recommended:

Timeframe	Residential	Micro & Small Business	Medium & Large Business, Institutional[3], Government and Post-Secondary Institutions
Current - 2022	50/10 Mbps	Up to 100/100 Mbps	Up to 1 /1 Gbps[4]
2023-2028	100/25 Mbps	Up to 500/500 Mbps	Up to 10 /10 Gbps
2029- 2034	150/50 Mbps	Up to 1 / 1 Gbps	Up to 50/50 Gbps

Table 2: Recommended Connectivity Targets

Phase 2 consultations with area municipalities regarding these speed targets indicated that some believed they were too aggressive while others believed they were not ambitious enough. The development of these targets included understanding current government direction and expectations on ISPs service offerings. These targets are based in part on the current and forecasted availability of technology and the user adoption rates – note that technology takes many years to go from laboratory to cost effective, mass market services. The targets laid out in this document reflect what is achievable with anticipated technology evolution rates and what users are expected to be willing to pay for. History indicates that higher speeds are often available several years before the mass market is willing to adopt them due to pricing (i.e. service is available but users perceive it to be too costly). Further description of these targets is in the Phase 1 document.

The Current-2022 residential target is the current speed objective set by the CRTC. Documented trends indicate that speed requirements grow over time, and this target must also grow over time to meet the changing user expectations (which are often driven by devices and software that is used on devices). Some Provincial ministries are also prioritizing, the deployment and enhancement of broadband, particularly in rural areas, specifically the Ministry of Education[5]. None of the announced funding in 2017 was directed toward schools in the area of Durham Region.

A random survey of addresses in the Region indicated that many urban areas have services that meet or exceed the target set by the CRTC. However, in rural areas services rarely meet the CRTC targets and are minimal in some areas.

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[3] Institutional users include Libraries, Post-Secondary Campuses, Health Care Facilities

[4] A common measurement for download and upload speed is megabytes per second (Mbps). Higher speeds may be expressed as gigabytes per second (Gbps). 1 gigabyte is equal to 1,000 megabytes.

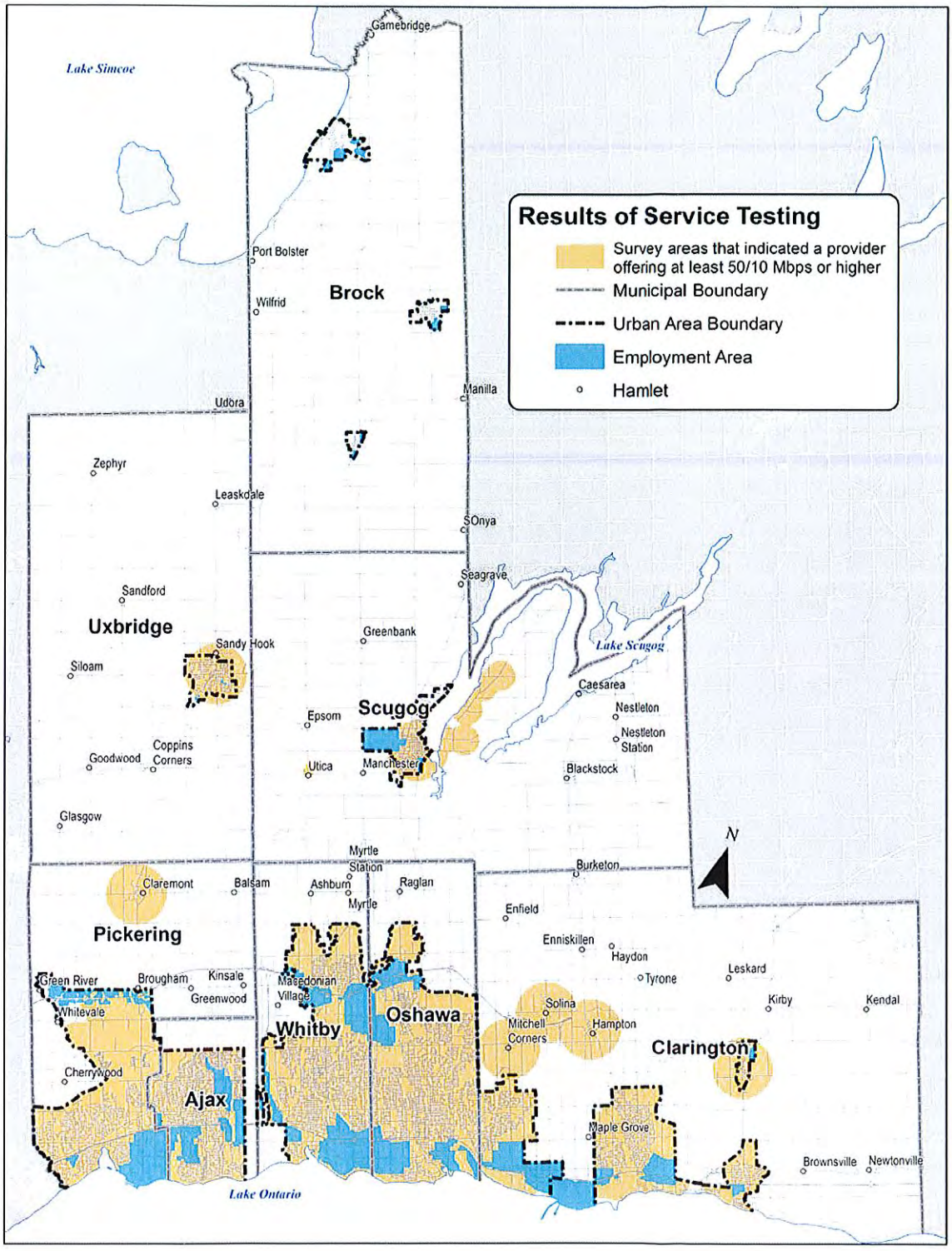
[5] https://news.ontario.ca/edu/en/2017/05/connecting-students-across-ontario-with-faster-internet.html

The survey considered individual addresses (an equal number per area Municipality) and used the address to identify services available from major providers. This information was tabulated and provided to the Region.

Regional GIS specialists then plotted the results and then created boundaries around each area based on these results. Because networks do not serve individual homes and based on how technology operates the buffers were created to capture an area that is served based on this information.

Map 1 below depicts these general service areas, it is not a guarantee service offering from all or 1 specific provider. The map reflects areas that are for the majority receiving at a minimum 50/10 Mbps service and those that are not. The areas in yellow have service for most of the houses and the areas that are white do not. This map illustrates that many of the urban areas have 50/10 Mbps service in most of their residential areas. As described it is apparent that many rural areas, and smaller communities are not receiving the standard service. These are the areas that are generally more rural.

Although the survey focused primarily on residential properties, Phase 1 consultation also identified several industrial/employment areas that do not have the standard 50/10 Mbps service. It should be noted however, that businesses are expected to pay for their access connection and this is often a deterrent to buying faster/higher bandwidth services.



Map 1 – Summary of Speed Survey

It is common in many areas across Ontario and Canada that rural areas have services lower than urban and do not meet this speed objective. The high capital cost to serve rural areas (because new network technology must be deployed close to the homes) versus the recognized revenue does not create a reasonable business case for providers. This issue of insufficient revenue to cover capital and operating costs is deemed as market failure. Rural areas, due to their vast geographies and low customer densities, are often served by wireless technologies at lower bandwidths[6] that may also be hindered by line of sight obstructions.

In some cases, businesses, even in or near-urban areas, are faced with the high up-front capital costs associated with installing fibre-optic Internet services to their building, a common issue expressed through consultation within employment areas and older downtown areas. It is clear in Map 1 that the densest most urban areas met the current residential speed objective. While some of the communities in rural areas also tested for good speeds it is evident that much of the rural part of Durham is white, which is underserved.

More information on this activity is available in the Phase 1 document.

4. Broadband Strategy Options

Research and stakeholder consultation in Phase 1 of the Broadband Strategy Development identified three potential roles the Region of Durham could undertake. The table below provides a summary of the ideas captured during the consultations. This is not an analyzed set of data but rather the direct input from stakeholders. The options range from a very limited role to one that is considered to be direct stimulus to the marketplace.

Analysis of implementation decisions is included in subsequent sections. It is important to recognize that the analysis focusses on elements that are considered achievable and from studying many other jurisdictions and secondary research. The potential roles discussed in subsequent sections have been developed recognizing unique factors for Durham, including substantial urban/rural divide in geography, terrain issues impacting services, population growth dynamics, anticipated development and current state of networks in the area.

Limited Roles	Supportive Roles	Direct Roles
• The Region should not have a significant role in deploying broadband infrastructure. • Government money should not be spent	• Municipal governments should coordinate and cooperate to negotiate with ISPs for better broadband pricing, based on their combined service volume. • Municipal governments should support and expedite the deployment of broadband by	• Municipal governments should make a financial commitment to support rural ISPs. • Municipal government should provide funding support to ISPs to close

[6] Bandwidth refers to the amount of data transmitted in a unit of time (megabits in one second).

Limited Roles	Supportive Roles	Direct Roles
to support private enterprise. • Decisions on how and where to expand broadband services should be made by the ISPs. • Region could support general directions of AMO, FCM or the like in terms of asking Federal or Provincial government to take more action	ISPs through policy (including Dig Once), streamlined permitting and access to planning information on where new development is likely to occur. • Municipal governments should play a role in lobbying and advocating for ISPs to spur broadband deployment in Durham Region • Municipal governments should support applications by ISPs for provincial or federal grant applications to help private industry meet broadband needs. • Municipal governments should lobby the provincial and federal government to assist in the provision of broadband. • Municipal governments should play a coordinating role, including the facilitation of communications and discussion between ISPs and the broader community on broadband needs and gaps. • The Region should consider retaining resources to oversee and work with municipal economic development offices for the coordination and support of broadband projects.	gaps. • The Region should deploy and operate a network to primarily serve municipal needs (regional and/or area municipal) with potential for access by ISPs in order to enable broader connectivity and subsidize connectivity. • Regional government should run fibre to all homes and businesses in order to ensure affordable connectivity. • The Region should make its existing broadband infrastructure available for shared use by other levels of government and private sector ISPs. • Municipal government should act as an anchor tenant, purchasing service to their facilities in strategic locations, thereby spurring the deployment of infrastructure to these locations. Negotiated agreements should ensure that nearby businesses and residents are able to connect to the upgraded service.

Table 3 – Summary of Different Roles identified in Phase 1

4.1. Limited Role

Under a Limited Role option for the Region, the provision of broadband service is left to the private sector to decide based on their business case analysis and opportunity. Under this scenario, market forces will continue to determine where and when

broadband infrastructure upgrades and improved service offerings occur. The private sector will focus investment where they determine they can garner sufficient revenue to cover the capital and operational costs required. Internet service providers have deployed broadband service in many parts of Durham Region and will continue to do so.

As an example of ongoing investments made by providers, Bell announced in April and May 2018 that they would deploy fibre to the premise throughout areas of Oshawa and Clarington. This is demonstrative that private sector will deploy enhanced networks when they are prepared to invest. While details are not public, the business case for making the decision to invest in these locations would weigh their revenue forecast against the capital and operational costs associated with these deployments. It is likely that other service providers will make similar investments in expanding broadband service, particularly in the more densely populated areas of the Region, including the Lake Ontario shoreline.

Moving forward, rural and less dense areas are likely to remain underserved in terms of speeds/services. This reflects historical trends where many rural areas have remained underserved until either government funding programs helped stimulate progress or other actions enabled upgrades. For example, historically some school board contracts have helped advance rural Internet speeds in the last two decades.

Technical solutions increase available speeds on different types of network every few years. However, investments will still take longer in less densely populated areas. This is an economic issue: revenue generated in low density areas is often not sufficient to cover the cost of deploying and operating advanced fibre networks.

In addition, funding programs, such as the Connect to Innovate program or the planned program by the CRTC to assist underserved areas in achieving the baseline service target, may spur Internet service providers to make investments in these areas, assuming they are successful and awarded funding.

Pursing a Limited Role would mean that the Region would take no proactive action to make broadband more widely available or to have underserved areas addressed directly by providers. Under the Limited Role, the Region would make no concerted effort, nor direct specific resources or leadership towards supporting the private sector to provide broadband service across the entire Region.

4.2. Supportive Role

The Supportive Role focusses on providing facilitation, communication, information collection and sharing and policy development that will support expansion of broadband services within the Region. The intent of this role is to develop skills and understanding in order to support the deployment and expansion of broadband networks and services. This role anticipates the Region will be working with private sector to help identify areas of need, help identify opportunities to have areas served, understand issues and concerns of private sector, and develop better collaboration between the public and private sectors.

Under this approach, the Region would strive to maximize its positive impact on broadband deployment, but would not necessarily have to make significant investments of resources and funding. This would include a strong focus on creating a culture of information sharing with Internet service providers, supporting and potentially coordinating future funding applications, and establishing policies to support broadband deployment. In addition, this role would include advocating to Provincial and Federal governments to ensure that they are working to ensure that all geographic areas have access to the defined speed targets set out by the CRTC for businesses and citizens. These aspects are discussed in the sections below.

4.2.1. Regional Broadband Advisory Working Group

Establishing a Broadband Advisory Working Group is an important first step towards implementing this Broadband Strategy. It is recommended that the Broadband Advisory Working Group be a staff group within the office of the CAO or an area that is responsible for strategic initiatives. It is recommended that the working group include a representative from each area municipality and representation from each Regional department. It would be the objective of the Broadband Advisory Working Group to ensure that the directions from Council related to broadband strategy and priorities are enacted. The Working Group should report to Council at least annually.

The Working Group should provide support and direction to the Broadband Coordinator (described in 4.2.2). It should provide direction and input towards the development of policies, practices and initiatives that support broadband deployment within the Region of Durham. It would be expected that the Working Group cooperate with other advisory groups, the Durham Agricultural Advisory Committee, for example, where mandates would be mutually supportive. In the case of the Durham Agricultural Advisory Committee, it may be advisable to leverage this committee to advise on agricultural business needs and rural broadband deployment, to help further the rural connectivity priority.

It is important that members of the Broadband Advisory Working Group have or develop knowledge of how broadband infrastructure supports internal departments, Regional service delivery, area municipality concerns, as well as how residents and businesses can receive improved connectivity. This does not mean that industry or technical knowledge is required but rather knowledge of how their department or organization uses broadband networks and services, and which areas are underserved. In addition, this group could provide direction and initiative on how to ensure underserved areas are addressed by the private sector.

4.2.2. Regional Broadband Coordinator Role

The Broadband Coordinator Role is recommended as a staff role within the Office of the CAO, assigned to implementing the Broadband Strategy. It is recommended that the position be in this department as the function is expected to be strategic as well as requiring the ability to work across and with all departments. Typically, if the role resides in a single department, the other departments work independently on their own initiatives. This can be counterproductive in helping to ensure broadband reaches underserved areas effectively.

Responsibilities of the Broadband Coordinator would include policy development and implementation of operational undertakings in support of Broadband deployment and expansion. In addition, the Coordinator should help focus and direct advocacy through knowledge of available funding, past programs, research on other jurisdictions. The Broadband Coordinator should work closely with the Broadband Advisory Working Group.

An important outcome of establishing a Broadband Coordinator is creating a centralized, Regional contact for broadband issues and initiatives.

The Broadband Coordinator should build relationships with Internet service providers, other levels of government as well as the business community in order to ensure that Regional policies and processes support broadband. Activities should include:

- Facilitate communication between Region, departments, area municipalities and ISPs
- Work with economic development organizations and businesses to identify service gaps, issues and opportunities
- Create and maintain a broadband information database
- Review and recommend Regional policy that supports broadband
- Leverage Regional processes to support investment in broadband
- Ensure development approval processes support broadband
- Support service provider co-location on Regional infrastructure
- Lobby Federal and Provincial governments for continue program funding for broadband, specifically to all underserved areas

Facilitate Communication between the Region, Area Municipalities, and ISPs

The Regional Broadband Coordinator will work with Regional departments to understand their current and planned connectivity needs and service levels. It is important for all departments to participate and start considering not only how they currently use communications technology but how their needs will evolve over the next 5 years. This includes considering how technology can change how business is conducted and how a specific department or branch provides services. These new ideas may drive the need for better connectivity to facilities and locations than may currently exist.

In addition, the Coordinator should work with area municipalities to understand connectivity requirements and support local broadband priorities. This can help in other areas such as aggregating information to develop an anchor tenant strategy.

The Coordinator must also work to strengthen relationships between ISPs and area municipalities to foster a two-way communication path, predominately related to users' needs and service coverage. It is evident from consultations that some information about demand for improved services is not reaching the necessary contacts within ISPs. In addition, it is recognized that more regular and coordinated information delivery to ISPs regarding municipal government needs, plans, and community needs can be

helpful with ISP planning and investment decisions. If all other conditions are equal, ISPs will deploy where demand for service is known to be high.

It is recommended that the Coordinator convene semi-annual meetings open to ISPs in order to share information that can impact the deployment of broadband service within the Region. The coordinator should maintain regular communication with ISPs on the following, to help ensure that the Region is better served:

- Development activity and trends (including major land use planning studies and projects underway)
- The Region's capital plans and projects
- Underserved Areas – Ensure service providers are reminded of underserved areas and consider options for closing service gaps.
- Development Plans – Actively promote opportunities for ISPs to serve new residential and non-residential developments.
- Opportunities to collaborate on funding applications - These opportunities are most likely to be available for service to lower density rural areas.

By developing a Region-wide view of broadband service coverage, service level targets and needs of users and businesses, the Broadband Coordinator will develop a thorough knowledge of the broadband services situation throughout the Region and can contribute to helping facilitate better broadband services.

Work with Economic Development Organizations and Businesses

The Broadband Coordinator will facilitate regular communication between economic development organizations and businesses to identify broadband service gaps, service preferences, issues and opportunities. The Broadband Coordinator can help the economic development organizations facilitate combining of business service requirements within a geographic area and liaison with service providers to help enhance delivery of broadband services. Improving service in underserved areas, particularly employment areas, downtowns, and in rural areas, should be a priority. Areas of activity could include:

- Support businesses in aggregating service requirements for better access to service
- Support education of business operators on the value of broadband[7] - Provide material, provide seminars, support seminars provided by ISPs
- Coordination of information sessions by ISPs for business customers. Topics could include:
    - Broadband service options and costs
    - Broadband technology options

[7] A resource such as the EORN eBusiness Toolkit can be helpful https://www.edco.on.ca/resources/Documents/EORN_eBusinessToolKit2016_Web%20FINAL.pdf

The Broadband Coordinator can help businesses better understand the ISP issues and constraints while at the same time offering ISPs direct interface to potential customers.

This type of support can be effective in rural residential communities as well as urban communities. As an example, Ballantrae, in York Region, had negotiations with Vianet that resulted in service being provisioned to an area that would otherwise have remained underserved. Negotiations between residential customers and Vianet resulted in a residential fibre to the home deployment where subscribers paid $2,500 per house for fibre extension.

Lobbying of other levels of government for funding

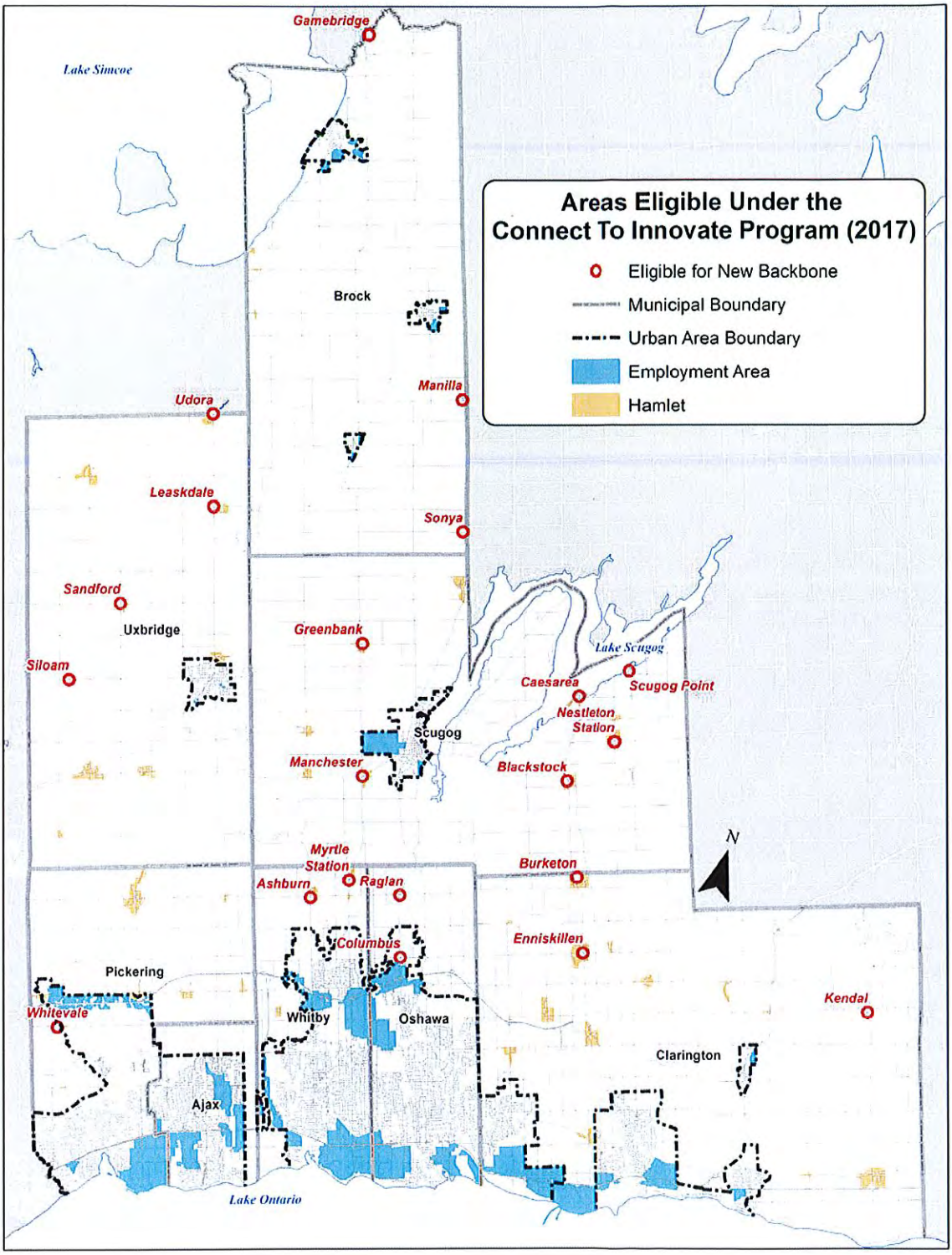
The Region should engage in lobbying activity to highlight the significant issues and barriers to accessing broadband service and request that federal and provincial government provide funding to help providers meet the goals outlined by the government.

Funding Programs

Both the Federal and Ontario Provincial government have had programs in the last decade to fund broadband expansion. The typical program offers money to ISPs – in all cases the recipient must own and operate the network. This limits the municipal government role if they do not own a network.

Broadband programs have been implemented, including Rural Connections (Ontario), Connecting Canadians (Federal) and Connect to Innovate (Federal). Other programs such as Infrastructure Canada 2014 and the New Building Canada Plan have broadband as an eligible category.

It is worth noting that the Connect to Innovate program was only $500 million and the intake of requests was over $4 billion. This highlights the magnitude of the issue in Canada. The fund is almost exhausted and entire areas have not been funded despite having locations that were identified as eligible. Durham Region had 21 locations (refer to Map 2) identified as eligible and at least four applications for all or some of those were submitted. By September 2018, no funds were extended to providers serving the area.



Map 2 – Connect to Innovate Community Eligibility

Each of these government funding programs has had their own criteria and speed benchmarks and their impact has been substantial. In all cases they have provided funding to providers to expand or deploy networks. The programs tend to focus on initial capital investment funding to deploy capital and then evaluate a providers' ability to operate and maintain based on a submitted business case.

The issue for some rural areas is that funding of initial capital may not be sufficient to enable the provider to operate and maintain the network over time. The main issue is the economic factors of revenue versus overall costs. If there are not enough potential customers then there will be no sufficient sustainable business case.

In December 2016, the CRTC announced a fund of $750 million to help ISPs expand or build networks to reach the new targets of 50/10 Mbps. To date, no specifics or mechanisms to access funding have been announced. There is concern that with the significant demand on the Connect to Innovate fund that this new funding will also fall short leaving many communities behind. In addition, it is almost two years since the announcement and funding does not even appear ready to flow, which reduces the time to be able to deploy, for typical programs.

Lobbying effort could focus on asking for more information and to be included in consultations. The organization tasked with defining the program did do some consultation but to date no municipalities have identified they were involved in that consultation.

Lobbying effort

It is recommended that the focus of the lobbying effort be directed toward demonstrating the continued urban rural divide in access to broadband service. The effort should highlight the issue of economics and market failure that plagues the industry in some areas. Solutions could include government re-structuring of funding programs or to have them develop programs that focus on specific technology development that is suited to deal with rural issues (often along with lower density there are terrain and topology challenges). This divide, which seems to exist despite programs and funding, demonstrates that the historical approach on its own does not drive long term sustainability for rural areas and the evolution intensity of broadband networks.

In addition, it is recommended that the lobbying also ask for a focus on affordability. During consultation it was indicated that many find pricing well beyond the reach of the average residence, business, and in some cases municipal government. Government has been hesitant to pursue affordability as a specific issue as it is related to the business case – overall technology, network and operational costs. This however, is a major stumbling block to success. High prices lower adoption, prevent users from connecting and that in turn just forces providers to keep investing in competitive areas and ignore rural.

Opportunities such as leveraging all levels of government facilities as anchor tenants to help increase network and potentially influence affordability for the residential and business users should be pursued.

It is recommended that the Coordinator gather more information related to the challenges of providers and users. Based on that information, and using general business case knowledge, an appropriate information package or strategy could be created to engage government.

Broadband Conduit Policy

It is recommended that the Region investigate the feasibility of implementing a broadband conduit policy to support deployment of fibre. Conduit policy can include Dig Once Policy and Abandoned Fibre and Conduit policy.

The House of Commons Standing Committee on Industry, Science and Technology - Broadband Connectivity in Rural Canada Brief recommends Dig Once as a means of creating community broadband capacity[8]. Dig Once policy specifies requirements for placing conduit during construction projects involving public right of way. Installing conduit during the initial construction phase allows for fibre to be deployed through the conduit at a later time. This can significantly reduce the cost to deploy fibre, as an estimated 60% to 80% of the capital cost of building a network is in opening a trench and burying the conduit that will house the fibre cable[9]. Savings from Dig Once are greater in urban areas where construction costs are highest. In these areas, requirements for building around existing utilities and opening and restoring roads and sidewalks are most onerous. By reducing the need for future excavation, the policy minimizes disruption to a community. Dig Once policy also specifies requirements for maintaining data on conduit location, capacity and usage and ownership of abandoned conduit and fibre.

There is a cost to implementing Dig Once, specifically the costs of designing, installing and managing conduit infrastructure. These costs can be measured against the anticipated future cost of returning to the same stretch of road and installing conduit at a later time, if and when it is required. The difference may lie in that Dig Once can be a cost the municipality incurs while in other scenarios the cost could be borne by the Internet service providers. However, the municipality may be able to lease conduit to the provider as a revenue opportunity, creating cost recovery (of the conduit not the entire costs of project) and eliminating the necessity to allow them to disrupt the roads for construction. They may also be able to enter into resource sharing agreements, whereby they allow service provider access to right of way or conduit in exchange for the use of fibre optic service[10]. This allows ISPs to deploy networks quickly, with shorter time to revenue generation and at reduced cost.

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[8] https://www.ourcommons.ca/Content/Committee/421/INDU/Brief/BR9272661/br-external/VanHorneInstitute-e.pdf

[9] https://www.otelco.com/dig-once/

https://potsandpansbyccg.com/2018/03/22/dig-once-rules-coming/, March 22, 2018

http://geekswf.org/wp-content/uploads/2016/11/DigOnce_Model-Law.pdf, 2016 NeoConnect, Policies and Ordinances That Facilitate Broadband Deployment, http://neoconnect.us/wp-content/uploads/2016/08/Policies-and-Ordinances-that-are-Broadband-Friendly.pdf

[10] Dig Once Policies and Best Practices, Kelli Hughes

Dig Once Policy in Other Communities

The City of Pickering has proposed an official plan amendment to "require the inclusion of conduit for fibre-optic cable in all public rights-of-way, through new development, redevelopment, road construction and reconstruction."[11] Pickering has recommended "that Council direct appropriate City staff to communicate and collaborate with their counterparts at the Region of Durham and at the other area municipalities, to encourage the other municipalities within Durham Region to adopt policies similar to the Pickering's Dig Once Standard, so that the infrastructure necessary to accommodate a region-wide broadband system can be built over time".[12]

In the City of Montreal, the Commission of Electrical Services of Montreal (CESM) plans, designs, builds, maintains and manages a conduit network. The CESM has coordinated with the city for over 105 years to encourage and coordinate burial of cabled networks[13]. They offer a reliable, secure underground and above ground network.

The Region of York, Ontario[14], Surrey, British Columbia[15] and Canmore, British Columbia[16] have recommended evaluation of Dig Once policies in their Broadband Strategic Plans.

In the United Stated, the Broadband Conduit Deployment Act of 2018, commonly referred to as 'Dig Once', mandates the inclusion of broadband conduit during the construction of any road receiving federal funding. The conduit must accommodate multiple providers. This practice will eliminate the need to dig up recently-paved roads to expand broadband infrastructure, significantly reducing the cost of increasing Internet access to underserved communities across the country.[17]

In Canada, there is no federal Dig Once policy related to federal funding projects.

Further detail on Dig Once policies are included in Appendix 1.

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[11] City of Pickering, Information Report to Planning and Development Committee, Jan 8, 2018, https://www.pickering.ca/en/city-hall/resources/devapp/OPA-17-003/Info-Report-for-City-Website.pdf

[12] https://www.durham.ca/en/regional-government/resources/Documents/Council/CIP/012017.pdf

[13] http://villeintelligente.montreal.ca/sites/villeintelligente.montreal.ca/files/icf-top7-montreal-visit-report.pdf, P.7

[14] http://www.york.ca/wps/wcm/connect/yorkpublic/3995a98f-d1f8-4fe1-b553-ce2651c89f2d/may+1+broadband+ex.pdf?MOD=AJPERES

[15] https://www.surrey.ca/files/SmartSurreyBroadbandStrategy.pdf

[16] https://canmore.ca/documents/guiding-documents/2357-broadband-strategic-plan

[17] https://eshoo.house.gov/issues/telecommunications/eshoo-and-mckinley-introduce-dig-once-legislation-to-reduce-cost-of-expanding-broadband/

Leverage Regional Processes to Support Investment in Broadband

Leveraging Regional processes can support the private sector in deploying broadband services in the Region. Examples of areas to consider include:

- Municipal access agreements (MAA)
- Development approval processes.

The municipal access agreement process can have significant impact on broadband deployment. Prior to obtaining Municipal Consent or permits for network construction, an ISP must secure an MAA. The Region has a MAA which follows the model developed in consultation with CRTC. This was developed over a 5-year period and involved the Region's Legal, Financial, and Works departments. This legal agreement indicates terms and conditions for use of the Right of Way and must be signed by utilities wanting access to the Region's corridor.

Under MAA, a provider must file their plan of work and receive a permit. This process may lend itself to a position where the Region's team is aware of different activities going in the same corridor and may be able to ensure that some coordination can occur. The MAA can provide terms for developing a co-ordination committee and can request that work be coordinated among different parties. This can help lessen disruptions and restorations.

ISPs must sign the Region's MAA for the Region to authorize new installations. Each request is reviewed considering the Region's capital plan and transportation plan. The Region has provided the MAA to some of the area municipalities wishing to use the Region's MAA as a template. This is an area where there maybe opportunity for collaboration with the area Municipalities. Adopting the same MAA framework would lessen confusion and issues that providers may have between different levels of government.

The Region should ensure development approval processes support broadband deployment in new developments. In high density areas, multiple ISPs may want to deploy infrastructure and service. In low density areas, where there is less revenue potential and the cost to deploy service is greater, this may be more challenging. The following initiatives can help ensure maximum support for broadband deployment:

- Ensure that Regional policies are supportive of broadband. This could include policy for increased connectivity, reference to Regional connectivity guidelines, encouragement of co-location of broadband infrastructure with existing telecommunication facilities wherever possible, and a requirement broadband infrastructure (conduit at a minimum) is included in new residential, commercial, industrial and institutional development areas[18].
- Educate developers on the value of working with ISPs to ensure that broadband service will be available to occupants. Lack of broadband service availability could impact the value of their properties and/or products.

[18] Linden Homes, UK, https://www.ofcom.org.uk/__data/assets/pdf_file/0024/62475/linden_homes_annex.pdf

- Work with the Legal and Planning Departments to investigate the development of standard language for a potential condition of approval requiring the provision of fibre (and/or conduit) for new development within the urban area and work with area municipalities to include connectivity considerations within the development approval process[19].
- Require subdivision agreements that ensure all CRTC registered telecommunications service providers are given an opportunity to locate infrastructure in proposed municipal rights of way, as appropriate [20]

Support Internet Service Provider Co-location on Regional Infrastructure

The Region can support private delivery of broadband services by allowing service providers to co-locate equipment on regional infrastructure, a practice that is already allowed. Service providers can place wireless antennae on water towers, communications towers, lamp posts, rooftops, street lights and other vertical infrastructure. The Federal tower guideline mandates providers to consider tower infrastructure already in place as an antenna location. However, costs for mobility towers tend to be prohibitive for smaller ISPs and often they are refused based on the identification of space for future needs. In some rural areas, farmers and providers reach agreements for the use of grain silos for tower placement. In some cases this is helpful but location and height are key for optimal service performance and not all rural farm properties can deliver the best location for the tower.

New technology requires that antennas be physically closer to customer equipment and thus will require access to more infrastructure. Leasing space from the municipality on public infrastructure could be more cost effective and faster for the service provider than building new structures.

Security issues have prevented co-location in some instances historically. General security concerns such as physical access to public buildings/property as well as potential data security (dependent on access and location) will need to be assessed. It is recommended that for this option the Coordinator work with stakeholders to outline a plan and ensure that adequate consultation is undertaken relative to these potential concerns and possible mitigation strategies.

Techniques such as proper data security and providing policy and security to limit physical access should be explored to allay security concerns.

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[19] https://www.pickering.ca/en/city-hall/resources/devapp/OPA-17-003/Info-Report-for-City-Website.pdf, http://www.york.ca/wps/wcm/connect/yorkpublic/3995a98f-d1f8-4fe1-b553-ce2651c89f2d/may+1+broadband+ex.pdf?MOD=AJPERES

[20] Council of The Regional Municipality of York at its meeting held on May 19, 2016, adopted a clause in support of policy language in area municipal subdivision agreements that ensures all Canadian Radio-television and Telecommunications Commission (CRTC) registered telecommunications service providers are given an opportunity to locate their infrastructure within proposed municipal rights-of-way, as appropriate. https://www.york.ca/wps/wcm/connect/yorkpublic/ac47b9a8-52ee-425c-95dc-88d51623626b/may+12+proposed+ex.%20pdf?MOD=AJPERES

The Region currently permits telecommunications equipment to be located on Regional property and Council has approved standard fees[21]. This includes both locating a tower on property as well as locating antennas on Regional Property.

Co-location of ISP equipment on Regional Infrastructure may be an opportunity to improve service options, in particular for northern and rural areas. Identifying Regionally-owned sites within northern urban settlement areas, hamlets, and other areas and sharing with wireless ISPs may create opportunities for network expansion. The addition of extra antennas may extend current coverage zones or alternatively add new coverage areas. There is no guarantee that by identifying the space that an ISP will use the space.

Consider the creation of a Broadband Information Database

The Region can consider the creation of a broadband database indicating levels of services in different areas across the Region. While consultation indicated some interest in this information, collecting it is a significant undertaking and it can be difficult to maintain. Providers upgrade and enhance their networks and services regularly. This can make the data stale or inaccurate and can become an area of criticism.

While such database/mapping activities can be helpful in identifying underserved areas for a particular timeframe which can help with lobbying efforts, they can rapidly become outdated.

Thus, it is recommended that an assessment of effort versus benefit be investigated by the Coordinator. This should involve working with stakeholders in the Region as well as area municipalities to identify what the objective of the exercise is. For instance, in late 2017 this project undertook a survey and created Map 1 presented earlier. It shows areas that have access to the current standard and those that do not. The intention was to assess how much and where the Region's businesses and citizens may access those services. Clearly this indicates that rural areas have less opportunity for the standard service levels and that the more rural (lower house density) are the areas that may only have access to services via wireless infrastructures. It is possible that by the end of 2018 and 2019, investments by internet service providers and technology advancements could change the service levels. This map would then be dated and perhaps may not serve a purpose to illustrate that significant divide.

An activity with the stakeholders would be to identify the objective of the mapping – is it to offer the public information? Is it to provide the Regional departments with the information? Is it to undertake lobbying to other levels of government? Once the objective is determined, then it can provide direction on how often the map may have to be refreshed. Gathering the data can be time consuming (often done with surveys as providers are hesitant to answer the questions). This could be an opportunity for the Coordinator to request a summer student each year to complete the processes and update the information.

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[21] https://www.durham.ca/en/doing-business/applications-licences-and-permits.aspx).

If it is decided to pursue some type of database/mapping then the following data should be included:

- Frequently asked questions and answers related to broadband availability in the Region of Durham
- A comprehensive list of Internet service providers offering service in Durham Region and their operating jurisdictions
- Service coverage and speed by geographic area
- Known programs and initiatives in support of broadband
- Regional and municipal locations (facilities) and their service levels.

Maintaining an annual view of service levels and availability (i.e. coverage) is also helpful. This provides valuable information on where service offerings are being expanded. This information can also be useful in discussions with ISPs about options for service expansion in underserved areas. Lastly, this information could become very valuable in supporting applications for funding (even if ISPs are applying without Regional funding support). Maintaining an accurate database of service availability by geographic area, perhaps in the form of a coverage map, is a time-consuming endeavor, as service offerings change regularly.

Summary of Broadband Priorities

Below is a proposed prioritization of projects the Region should undertake in their supportive role to help further the deployment and enhancement of high-speed Internet across all areas of the Region as well as in identified priority areas. It is recommended that the Broadband Coordinator, in consultation with the Broadband Advisory Working Group, be responsible for coordinating the implementation of the various projects, in collaboration with the identified implementing partners. Additional stakeholders may be engaged where appropriate.

It is recommended that Council pass a resolution to support broadband network expansion and the implementation of the strategy. The resolution should include the importance of broadband to the future of the Region relative to its operations and the services it provides to its constituents. A similar resolution was adopted by the City of Pickering[22], with the intent of fostering an environment that is supportive of broadband initiatives. York Region included this type of statement in their economic action plan. Specifically, the statement recommends support for the York Region Broadband Strategy document[23]. These formal statements provide context and support for broadbands initiatives and a focus for the work that is to be completed.

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[22] https://corporate.pickering.ca/weblink/DocView.aspx?id=155562&searchid=73647ffe-ed49-4d40-8b54-0b5c4188903c&dbid=1

[23] http://www.york.ca/wps/wcm/connect/yorkpublic/3995a98f-d1f8-4fe1-b553-ce2651c89f2d/may+1+broadband+ex.pdf?MOD=AJPERES

Project	High Level Description	Implementing Partners	Priority Level
Council Resolutions Supporting Broadband	*Form Broadband Advisory Working Group* *Establish Broadband Coordinator role* *Adopt a resolution supporting broadband*	*Regional Senior Management Team*	*High* *High* *Medium*
Facilitate Communication between the Region, area municipalities and ISPs	*Region /ISP* *Economic Development Organizations /ISP* *Develop Broadband Information Database*	*Regional Economic Development and area municipal Staff*	*Medium* *High* *Low*
Lobbying of Federal and Provincial government for Funding	*Demonstrate the ongoing dilemma of rural areas being consistently underserved and request more funding and affordability policies for broadband*	*Regional CAO's Office, Area Municipalities*	*High*
Policy	*Dig Once policy supporting fibre conduit in road construction* *Official Plan Policies*	*Regional Works, Regional Planning*	*High* *Medium*
Leverage Regional Processes to Support Broadband	*Harmonize MAAs across the area Municipalities with the Region's* *Development of Approval Processes that encourage deployment of broadband in new developments*	*Area Municipalities, Regional Works* *Regional Planning, Regional Works, Area Municipalities*	*Low* *Medium*

Table 4 – Summary of Recommendations for Supportive Role

4.3. Direct Role

The Direct Role would see the Region play a substantial role in determining where and when broadband deployment takes place. This role positions the Region to be directing or fostering the deployment of the networks, through financial participation.

The Region can provide direct support for fibre networks through:

- Providing funding to the private sector to support service in underserved areas
- Acting as an anchor tenant enabling service providers to offer service to customers along the fibre route
- Deploying regional fibre to service regional facilities or more broadly

One of the reasons for municipalities to consider any telecommunications infrastructure investment is for future Smart City/Community initiatives. The future envisions a dramatic increase in the utilization of sensors and data transit. While antennas will be largely deployed to assist they cannot do the job alone, fibre will be required to connect aggregated signals and move the data between locations. While municipalities have not traditionally had a role in telecommunications, that has changed in the last two decades. Many municipalities that tired from waiting for service or having to pay significant fees to get connectivity have invested in their own networks or formed corporations to take on the responsibility.

A prime example of government building a network was the Alberta Supernet. While there was a partnership struck with the private sector, the Province paid for the infrastructure and ensured it reached most of the rural communities to bridge the urban/rural digital divide.

4.3.1. Provide funding to Private Sector

As new federal and provincial broadband funding programs are announced, the Region should investigate the opportunity to extend broadband networks, especially to under-serviced areas. As most programs require recipients to be network operators to qualify for funding, the Region should collaborate with providers to support their applications. Support can be through monetary contributions or indirect, non-financial contributions. The Region can offer assistance with municipal access agreements and municipal consents to ensure that they are addressed expediently and efficiently. In addition, support can consist of options like permitting the use of un-opened road allowances for tower or other asset locations.

Questions that should be considered when considering funding:

- Are areas of the Region eligible for federal or provincial funding?
- Is an ISP required as the primary applicant?
- Does an applicant want municipal funding? Will local government funding strengthen the overall viability of the application? Is there direct benefit from contributing municipal funding?

- Applicants must meet specific eligibility criteria specified by the funder. Funding is directed to areas that are underserved or not served (the program defines the bandwidth or speed criteria for eligibility).

Support could include the Region assisting providers in engaging communities and citizens to help identify areas of need, potential customers, and other aspects that may be included in the application process.

4.3.2. Anchor Tenant

Many regional and area municipal sites have large data requirements and most will have increasing demand over the next ten years. When these requirements are aggregated across multiple sites and served by a single service provider, they provide buying power for regional and municipal government and may justify construction of new fibre to meet those needs. In this situation, the municipality can become anchor tenants for Internet Service Provider's services, helping them to fund new infrastructure.

Through consultation, it was discovered that Regional and area municipal facilities are currently served by multiple Internet service providers. Even a single municipality may use different providers and have different contracts across geographic and operational areas. There is potential to consolidate these service agreements into larger and potentially longer-term service contracts with a single service provider (or two service providers for redundancy). This would create increased buying power and could result in reduced costs.

Through the Broadband Strategy development, 72 service connections for regional facilities were identified. Of these only 2 connections were 500 Mbps, and would require fibre connectivity. Fifty-three of the locations (74%) did not have services above 10 Mbps. The Broadband Coordinator should work with the IT team and their strategy development activities to identify future needs of service connections. It is likely that in the next few years the locations will need more speed.

The following additional steps should be undertaken by the Region to explore service aggregation:

- Consider the need to serve all locations with fibre over a specified time frame and when ready to tender indicate those times
- Indicate a preference that if facilities are placed to service government, that providers will look to serve and accommodate other customers along the route (businesses and residents).
- Consider strategic location of new municipal facilities to help the deployment of broadband in area
- Consider strategic location of new municipal facilities to help the deployment of broadband in areas of high need/priority

Engaging in multi-year contracts with anchor tenants can help an ISP ensure that the capital cost of deploying new network infrastructure will be partially or fully recovered. The deployment of services to anchor tenants may create opportunities to improve services to business and residential customers along the route or in close proximity to the route, that would not otherwise be considered for service by the ISP.

Anchor tenant pricing works best when many locations are served by a single ISP. One option to increase the number of locations to attract providers, is for the Region to partner with the area municipalities and add their locations as well.

An opportunity to explore is the development of a list of businesses in the vicinity of the government facilities that are being tendered, that are interested in connectivity. The Coordinator could be directed to gather this information and make it available to all bidders to consider when they look at servicing government. The intention is not to bind but rather identify that there are other potential clients which can impact the providers' business case and potentially alter their pricing.

The anchor tenant philosophy has existed in the telecom market for decades. Government contracts are some of the most sought after by the providers. However, adding the requirement that carriers service the surrounding area is a newer concept. This concept increases costs for providers and this is why we recommend considering options that help make the business case and potential revenue projections stronger.

4.3.3. Deploy Regional Fibre Network

Under this option, the Region would deploy its own fibre-optic network and serve its own connectivity needs. The Region trades off the costs of paying a provider for services over time, for a near term investment in a fibre network and ongoing operating and maintenance costs.

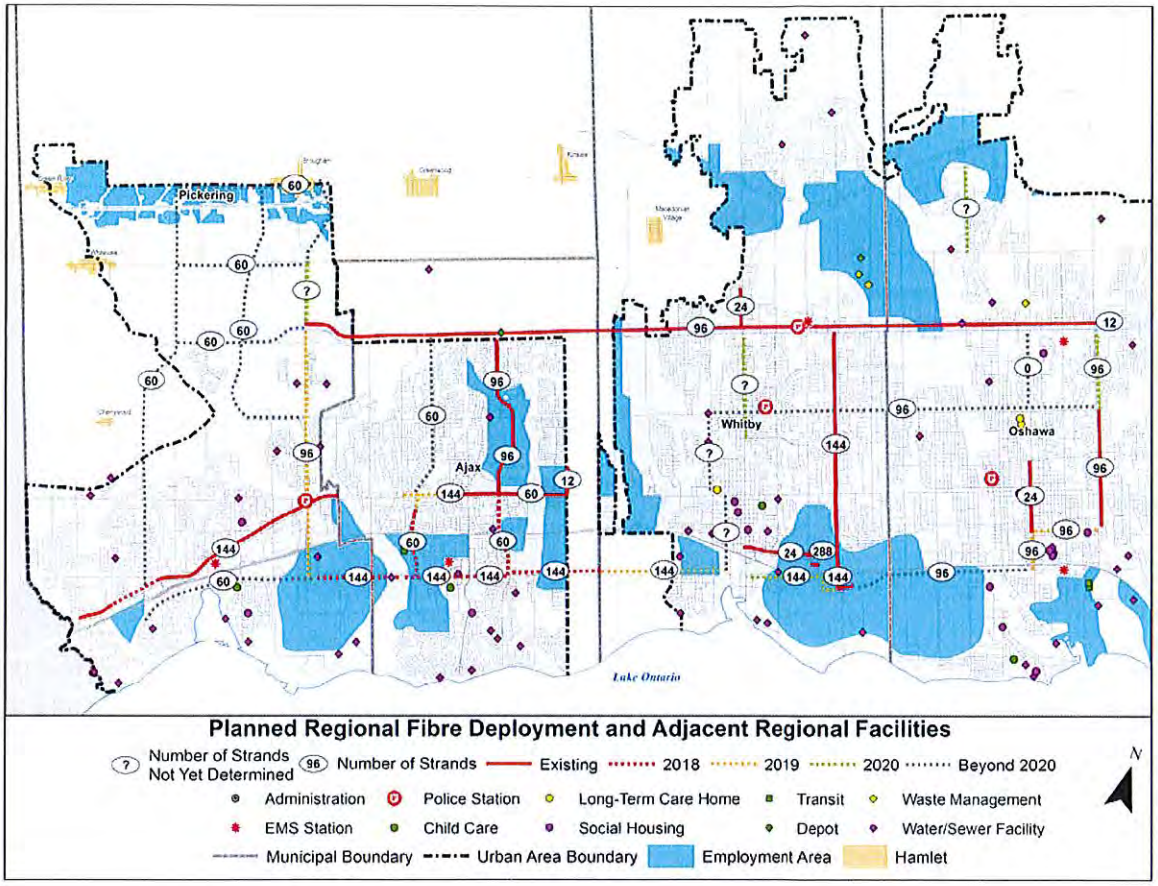
There are several factors that should be considered before the Region undertakes deployment of a fibre network. The overall decision to build a network needs the foundation of a business case and detailed objectives. Owning a network enables the Region to have control over expansion of network capacity to meet their growing data communication needs as time progresses. When working with a carrier, the costs of adding speed and capacity can significantly alter the pricing and fees paid.

When an ISP is engaged to provide services, a service level agreement requires them to maintain the network infrastructure and honor the terms of the service agreement. They are responsible for modernization of their network on an ongoing basis. When the Region places a fibre network and provides services to themselves or other customers, they become responsible for the ongoing maintenance costs as that should be considered before the Region undertakes deployment of a fibre network. If there are sites that Internet service providers will not serve, the Region can decide as to whether to serve these sites with their own fibre network. The Region will also have control over expansion of network capacity to meet their growing data communication needs.

The Regional Works Department (Transportation and Field Services) has deployed fibre to connect some traffic signals and cameras. Fibre provides an enhanced ability to control the traffic signals and paying a service provider for such a service can be costly.

This fibre could form the foundation of a network for the Region. Map 3 indicates where the fibre is and also Regional facility locations. Analysis indicates that 17 locations are within 500 metres from the fibre backbone. These locations would be the fastest to connect given their proximity to the fibre. The other locations are farther and more analysis is required to assess the costs of reaching those buildings.

Note, that while there is the ability to connect to the fibre, equipment would have to be purchased to make the connection function. Because the Region does not operate their own network this would result in additional costs and the need to have some staff to maintain those connections. The costs would depend on type of equipment, speeds selected and other factors.



Map 3 – Existing Regional Fibre and Locations

Should the Region decide to evaluate a decision to deploy a fibre network, a business case analysis should be undertaken. This could be done by the Broadband Advisory Working Group with the Broadband Coordinator and possibly consultants. An outline of an appropriate business case analysis is presented in Appendix 3. The two scenarios, "build a network" and "buy services" should be evaluated over the life of the network. This will require predictions on future data communications requirements and connectivity costs beyond what is known today or expected for the next 5 years.

Today, the Region and Durham Regional Police Service pay private sector ISPs for the provisions of broadband services. An evaluation in part would consider whether investing in a fibre network instead would be a better value for money. It is not a simple evaluation. Future considerations and estimates on service costs will be required as well as capital costing estimates. Service provider contracts must remain in place until

the network is functional. This implies large negative cash flows in the first year or two, before any savings occur. In Phase 1, the document outlined many government applications and services that may require broadband connections in future even if they do not use them currently. This has a big impact on the costing of what services may be required in the future. Thus, it is feasible that the total cost will increase and perhaps even could double within a 20-year span. This should be estimated as part of the business case analysis.

In addition, the Region can engage the area municipalities to gauge their interest in participation in such an undertaking. If they are interested in having their own municipality considered then they can contribute and participate in the business case evaluation.

It is recommended that the Region consider developing the business case if there is serious interest in building their own fibre network. The business case will help determine whether building and operating a fibre network is financially advantageous compared to paying for ISP services.

Examples of Municipal Owned Networks

Several Ontario municipalities have built networks and then sold them; in other areas networks have been established and are still owned and operated by the municipality. The following three areas currently own municipal fibre networks:

- City of Stratford
- Regional Municipality of Peel
- Regional Municipality of York

Each of these areas has undertaken a different approach to establishing a network that serves their connectivity needs. Some also sell fibre connectivity to non-government entities.

The City of Stratford started placing fibre to service some of their own facilities in the 1990s. They deployed the fibre and operated the connections through their electric utility. Then in 2010, the hydro utility company established an ISP and sold fibre based service to non-governmental entities. The network has approximately 70+ km of fibre-optic connectivity and many customers. Note, this is a different model as it is operated and owned by the hydro company which is owned by the Municipality. This ownership structure has some unique opportunities as well as requirements. In order for the Region to proceed in a similar manner, they would have to work with the local utilities.

In 1996, Peel undertook an effort with several municipal partners to build a network to service municipalities, hydro utilities, schools and hospitals (MUSH). In this arrangement each area municipality owns its own infrastructure and there is some shared infrastructure. The other entities, ('MUSH') pay user/member fees to have dark fibre connected to their facilities. Dark fibre means that there is no ongoing service offering (i.e. Mbps/Gbps) but rather a path for the organization to send their own data across using their own electronics.

In this example, each partner paid for the capital and pays for ongoing maintenance and upkeep of the capital. There are shared costs that they may be required to contribute to. The member fees help to defer the shared costs.

In 2002 York Region started their fibre network with a simple premise, connect two buildings across a parking lot, all on regionally-owned land to reduce a connection cost to outside providers. This started a cascade of investments and connections that slowly built over time until approximately 2013. Around 2014 the investments began to grow and the Region completed a Broadband Strategy. In 2015, Council created an Advisory Task Force consisting of Councilors to review broadband activities and set some goals. One of the objectives of that Task Force was to assess whether it was feasible to turn the internal York Telecom Network into a separate entity and determine what that entities mandate would be.

In 2017, Regional Council decided to establish a Municipal Services Corporation to push forward their agenda for the York Telecom Network (YTN). The mandate of the corporation is to service regional needs, support area municipal needs for connectivity and to foster economic development by providing fibre access to Internet service providers to help provide services to underserved areas.

By 2017, YTN had deployed approximately 200km of fibre in areas around the region connecting a portion of their facilities. The fibre is used to connect traffic signals, environmental locations, administrative buildings and transit locations. The new corporation continues to assess the needs and create plans to deploy the network.

Each of these examples is further detailed in Appendix 4. Durham Region will need to consider a model which works best for their needs, whether they will work with partners and what outcomes are desired.

4.4. RECOMMENDATIONS

Though three possible roles for the Region were identified through the Phase 1 analysis, the Supporting Role is recommended as the best approach for the Region at this time.

Based on the consultations and analysis, the Limited Role is insufficient to meet the objectives of the Region. The Region commissioned this study to identify opportunities to help advance broadband networks across the Region. The Limited Role as defined, is effectively one where the Region does not undertake specific actions but rather lets the private sector continue with network deployment on their own. Taking on this role would not help the Region meet its goals.

The Direct Role is also not recommended at this time. This role could help the Region achieve its goals, but it requires analysis and direction from the Region that has not been completed. This direction would require synergizing the Broadband Strategy with elements of the IT strategy (which was being worked on concurrently) and developing a fulsome assessment of owning fibre. Since there are multiple potential models for fibre ownership and deployment, this option requires more investigation. In addition, it would be advised that this effort not be pursued unless Council indicate they want this in-depth assessment.

It is recommended that Durham Region initiate the Supportive Role and start to develop knowledge and collect data related to broadband within the Region. Based on the consultations with stakeholders and the research performed, it is believed that this role will best meet the Region's goals for developing better broadband services.

Undertaking this role will see the Region support ISP/industry in delivering better Internet service to underserved areas across the Region. The focus is on collaboration between the Region, area municipalities, economic development organizations and ISPs. Knowledge and data acquired through implementation of this role will build capacity for the Region as it plans for its data needs and negotiates with ISPs for service over the years. As part of the Supportive Role, it is recommended that the Region form a Broadband Advisory Working Group and designate a Broadband Coordinator position to coordinate the implementation of the Broadband Strategy.

Once a Coordinator is established and some initial steps are completed it is possible that the Region may want the Coordinator to undertake further evaluation of options to move the Region toward a Direct Role. This will have to be considered based on the progress and assessing the status of the market and private providers as well as goals of the Region as it develops overtime.

5. Appendix 1– Dig Once

Dig Once Policy

A dig once policy requires that fibre conduit, plastic pipe that houses fiber-optic communications cable, be installed when roadways are dug up for construction.

By coordinating with other municipal projects, such as road construction, water/wastewater systems, sidewalk improvement, establishment of trails and street light deployment, conduit can be placed in the trench when other work is being done. Conduit policies maximize the opportunity for fibre installation, while minimizing cost, community disruption and damage to existing infrastructure. Having easily available conduit, as well as accessible information on its location and capacity, can significantly reduce the high cost of deploying fibre-optic cable infrastructure by eliminating the need to dig up city streets. It is a cost-effective approach to establishing an environment that fosters faster network deployment to reach end users.

One complexity of Dig Once is that it is done only while other activities are underway. Hence, it can create a patchwork of disconnected sections over a period of time. However, since the conduit can be useful for decades it still creates opportunity for the future. If the Region decides to deploy fibre for their own purposes, dig once can provide conduits for that purpose.

An important element of a dig once policy is active notification to service providers of planned work that advises them of the option to place their own conduit while the road work is underway. While this is a standard occurrence in road operations it may not be for some of the other works.

Elements of Dig Once Policies

There are many possible forms of dig once policies, but they often have the following elements[24]:

- Criteria for installation of conduit with fibre and/or spare conduit on behalf of Regional, other levels of government or other entities, in road construction or other infrastructure projects. This could be in all regional roads or in roads that meet specified criteria. Criteria can be fairly broad, for example, when both financially feasible and consistent with the Region's long-term goals, or much more specific.
- Allowance for cost sharing such that the allocated cost of placing the conduit is limited to the incremental cost of placing the conduit. This could be developed through a working group that includes private sector providers.
- A notice period informing all entities when the trench will be open and available for placement of their conduit and/or fibre facilities.

Development of a Dig Once Policy

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[24] NeoConnect Policies and Ordinances That Facilitate Broadband Deployment, http://neoconnect.us/wp-content/uploads/2016/08/Policies-and-Ordinances-that-are-Broadband-Friendly.pdf

The Durham Broadband Advisory Working Group could work to develop Conduit Policy that meets the needs of the Region and implementation processes to support it. The following are Conduit Policy elements for consideration by Durham Region's Advisory Working Group. Once a Conduit Policy is established, development of a process or toolkit to guide conduit policy will support implementation of the policy. Elements could include:

a) Establish prioritization guidelines for dig once opportunities. Prioritize the construction opportunities for fibre infrastructure placement by creating a set of criteria that support the goals of the strategy. Conduit could be placed along all Regional roads, or "high priority" Regional roads.

b) Develop fiber infrastructure planning maps to identify conduit routes that maximize potential benefits. Identify routes for municipal fibre and routes where third party fibre is desired.

c) Track conduit in an asset management system. This data should be shared by regional and area municipal governments.

d) Establish technical specifications for conduit infrastructure. Ensure that these are reasonable. For example, some municipalities require up to 6 feet of depth. Though this is reasonable for some utilities, it is unnecessary for fibre and adds unnecessary cost.

e) Specify a notice period for informing all stakeholders when the trench will be open and available for placement of their conduit and/or fibre facilities. Durham Region already provides public access to planning information as to when roads will be under construction and allows service providers to place conduit and fibre in them. This notification should be provided directly to service providers.

f) When the fibre is installed by a private entity, the municipality may request installation of additional conduit to be owned by the municipality (This is done in Boston Mass. Cost of extra conduit is born by the lead company on the build.)[25].

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[25] Kelli Hughes, State of California, Dig Once Whitepaper, Policies and Best Practices, www.dot.ca.gov/hq/tpp/offices/omsp/system_planning/.../DigOnceWhitePaper.docx

g) Establish a moratorium on excavating a repaved street. San Francisco has used a 5-year period[26]. This could motivate providers to deploy when a road is open but could also preclude deployment of desirable services at a later date. The Region could specify that if a service provider wants to deploy fibre within the moratorium period, they may lease conduit from the Region. Service providers are limited by their ability to access capital funds and deploy networks. Access to existing conduit can help with this.

Abandoned Fibre and Conduit Policy

Abandoned fibre and conduit policy specifies that ownership of abandoned fibre and conduit reverts to the municipality. This policy must specify a period of time after which conduit is not claimed, and a notification process before ownership reverts to the Region.

[26] San Francisco Connectivity Plan, June 1, 2017
http://tech.sfgov.org/sites/default/files/Document/SFDT%20CONNECTIVITY%20PLAN.PDF

6. Appendix 2 – Sample of Last Mile Connections Grant

In March 2015 the City of London, Ontario, in conjunction with the London Economic Development Corporation, Downtown London, and MainStreet London, initiated the Last Mile Fibre Optic Connection Grant (Last Mile) program[27]. The two-year pilot program focused on providing financial assistance for the provision of high capacity fibre optic broadband service to property owners and multi-year tenants in designated areas of the Downtown Community Improvement Project Area. This incentive program provided up to 50% of the eligible costs to a maximum of $20,000 to fund the installation of infrastructure to enable services. The program was funded by the London Economic Development Corporation (LEDC) ($100,000), MainStreet London (a non-profit organization, not governed by the Municipal Act) ($100,000) and the City of London ($20,000), for a total of $220,000. At the end of the program in April 2017 only $7,628 had been dispersed. The conclusion may be that the program was not successful as only a portion of available funds were allocated, however, the City met its objective of making fibre services more affordable and available in the designated area.

The Last Mile program allowed the City and its program partners to demonstrate commitment to growing their business community and to provide a tool for developing the city as an incubator for entrepreneurship. Although there were not high levels of participation in the Last Mile program, the pilot did provide a mechanism to address the need for fibre-optic service in the Downtown. The 2-year pilot process allowed opportunities for business and property owners to identify specific needs in the community. The initiation of the program facilitated discussions between multiple service providers, businesses and the collaborative partnership. This led to some businesses being able to have providers commit to providing infrastructure and services without the need to utilize the funding.

In the end, the program partners deemed the last mile program to have been successful, as it filled a gap in fibre-optic services and was able to stimulate private investment. Soon after the program initiation, the private sector, specifically Start Communications, committed to meeting the needs of business owners for affordable installation of fibre optic connections. Since the company made the commitment to use their own funds (through revenues collected) there was little need to draw on the program funds.

NOTE –The funds that were dispersed did not come directly from the City to private sector, rather through the partners and the collaborative effort.

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[27] http://www.downtownlondon.ca/userfiles/Last%20mile%20fibre%20optic%20connection%20grant_fact%20sheet-final-2.pdf https://www.london.ca/newsroom/Documents/Fibre%20Optic%20grant%20program.PDF

7. Appendix 3 - Business Case Outline

7.1. Introduction

A business case is used to identify and analyze options and develop recommendations for a proposed investment [28]. The business case creates the foundation for decision making to guide capital investments.

The decision to develop and maintain a fibre network for the use of Durham Region and possibly the area municipalities, requires a thorough analysis. A business case will be used to evaluate financial and non-financial components of fibre network deployment decision.

Scope

The scope of the business case should first be established. It is important to identify the problems to be solved with Regional fibre. The Region should identify the sites that require connectivity by Regional fibre. Though the expected useful life of fibre can be up to 50 years, fibre is typically depreciated over 20 years. This is a reasonable period for the business case. This also aligns with a 20-year capital planning horizon. As government, the time horizon of the investment analysis will not necessarily be the same as that for a private corporation that is responsible to the shareholder over the short term.

The analysis should include:

- a qualitative benefits analysis – soft or social benefits that are not directly monetary.
- a financial analysis - net present value analysis of the total cost of operation of the fibre network, compared to the base case.
- a risk analysis.

7.2. Viable Options

The first step is to identify sites that will require fibre connectivity over the 20-year period. Not all sites may require fibre immediately but it is likely most will require fibre connectivity over a 10-15-year timeframe. In the analysis, it is necessary to forecast future service requirements to create the best analysis possible. Since a fibre network is a long-term investment, a fair comparison requires making some predictions about changes in services and costs that would be incurred if the Region were to continue using a service provider.

These scenarios form the basis for a model for comparing potential options. It is necessary to consider that some locations will come online at later points in time. It is also possible that some sites may not be considered for Regional fibre.

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[28] Business Case Guide, Treasury Board of Canada, http://www.tbs-sct.gc.ca/emf-cag/business-rentabilisation/bcg-gar/bcg-gar-eng.pdf

Carrier Service (Base Case)

The base case is the current scenario – ISP service to all sites that are under consideration to be served with Regional fibre and existing Regional fibre services to some Regional sites. In the base case, current ISP pricing and expected price changes over time will be used. If the Region is seriously considering the strategy of aggregating demand for Internet service and negotiating better volume pricing through aggregated service contracts, this pricing should be used in the analysis of this option.

Regional Fibre Network

Under this option the Region deploys and operates regional fibre to serve the identified Regional sites. The analysis will include capital investment as well as ongoing operational costs. To get required data, it may be necessary to engage a consultant or other municipalities that have deployed networks. Under the regional fibre scenario, the cost of ISP service to Regional sites while the network is under construction, must be included.

Regional Fibre Network with Service Offered to Area Municipalities

If the Region considers offering fibre services to area municipalities, a third scenario should be modelled. This scenario would examine the incremental impact (expense and revenue) associated with serving the anticipated sites. Area municipalities would be charged fees for service to their sites. It is necessary to consider what those fees might be. As the Region does not currently serve area municipal sites, the current carrier cost to do this is not relevant. The financial analysis would only look at the impact on the Region.

Qualitative Benefits Analysis

Strategic Analysis

This section focuses on developing strategy related to the intended business. It should focus on the following:

- Business needs and benefits
- What is driving the need to change service to the identified sites
- How can the Region benefit from owning and operating a fibre network?

The intention of this section is to define the direction for the business and to outline the desired goals and objectives for the business.

Political

Political implications of investment in a regional fibre network should be analyzed. There could be political factors that will impact the investment decision. These should be identified and taken into consideration in making the decision to invest.

- Is there Council support for a regional fibre network?
- Can this support be developed? What needs to be completed to create support?

- What are the concerns and issues?
- Would a fibre network impact other proposed projects?

Economic - Sources of Funding

All potential sources of funding available to Region should be identified. The analysis should review current funding programs from federal and provincial governments and should attempt to identify new programs that may be under development. The analysis should include the Region's plans to address the necessary capital requirements through debt as well as ongoing requirements to support the business over the timeframe of the analysis.

- What funding options are available?
    - Regional, Provincial, Federal
- Debt capacity

Technological

This section focuses on describing the technology that would be used to meet the objectives of the business case. Since the intent is to build a fibre optic network there is not a requirement for a technology evaluation (i.e. no need to assess whether fibre is the desired technology). It is necessary to look at all the components of network – electronics and fibre cable.

- Fibre cable is a long-term investment – a life cycle of 50 years can be considered
- Electronics have an approximate life cycle of 7 years. Replacement should be modelled.

Legal/Regulatory

Legal and regulatory issues should be assessed. The regulatory requirements should be presented to ensure all restrictions and requirements that may be imposed on the business have been considered. Legal issues or requirements are more likely to arise around contracts and agreements. Discussions with other municipal fibre entities may be helpful.

- Does the Region need non-dominant status to serve its own sites?
- What types of agreements may be required? Is an MAA necessary if the Region owns the asset? What types of contracts may be necessary – i.e. maintenance?

Human Resource Capacity [29]

Another area of consideration is the human resource capacity to run a fibre company. This is not a standard component of operation for a municipal government, but there may be some existing resources in the corporation who have management experience or skills that could be applicable Others can be hired. The business case should assess the type and number of resources that will be required and the associated costs.

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[29] http://www.tbs-sct.gc.ca/emf-cag/business-rentabilisation/bcg-gar/bcg-gar-eng.pdf

- The table below indicates the questions that need to be asked and the outcomes that should be described in the business case document.

Question	Outcomes
Where will the fibre network fit within the Region's governance and oversight structure?	Describes the governance and oversight structure for the network.
How will the network be managed and reviewed throughout its life cycle?	Describes the project management strategy for the network.
How will the business outcomes be realized?	Describes the outcome management strategy for the network.
How will the business risks be mitigated and managed?	Describes the risk management strategy for the network.
How will change and growth be managed and implemented?	Describes the change management strategy for the network.
How will performance be measured?	Describes the performance measurement strategy for the network.

7.3. Financial Analysis

The financial analysis of a decision to deploy a network should include a net present value (NPV) analysis of the viable options: Carrier Services (the base case), the Regional Fibre Network and the Regional Fibre Network with Services Offered to Area Municipalities. These scenarios have been described in Section 7.3.

The financial analysis will be a cost benefit analysis comparing the cost of deploying and operating a network to the cost of buying services from service providers over a specified period. A fibre network is not a net new cost, but rather a substitution of a capital investment in a fibre network for an existing operational cost to purchase service from ISPs, It is normally assumed that fees for communication services decline over time.

The financial analysis should project the costs associated with each scenario. The NPV analysis is the present value of cash inflows less the present value of cash outflows

over the period of the analysis.[30] The discount rate used should be the standard rate used by the Region in evaluating investment opportunities, normally their cost of capital. An inflation factor can be applied to expenses, however, only if inflation is not accounted for in the discount rate[31].

NPV Input/Viable Option	Base Case	Regional Fibre	Regional Fibre +Service to area municipalities
Cash inflows	• None	• Savings from discontinued carrier service charges	• Revenue - Service charges to area municipalities for service to their locations (Typically, fee per new location served, Fee per Km)
Cash outflows - Initial investment	• Capital cost of new connections where payment is required to the ISP	• Capital cost of fibre installation • Project management and administration costs for fibre installation	• Capital cost of fibre to area municipality sites • Projected incremental management and administration cost for managing these installations
Cash outflows - Ongoing	• Monthly service fees to ISPs • Operating cost for existing regional fibre. (These costs may change as a larger Regional fibre system is implemented.)	• Network operations and maintenance • Administration and governance	• Incremental operating and maintenance costs for area municipal sites • Incremental administration and maintenance

Typically, if the NPV is positive, the project is acceptable on financial grounds. In the case of government however, payback and profit are not necessarily required in the same time frames or parameters as in the private sector. The Region will consider the investment not just from a pure monetary perspective but will also consider the qualitative benefits.

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[30] https://www.investopedia.com/terms/n/npv.asp

[31] A good explanation of accounting for inflation in NPV analysis is presented in the Kaplan Financial Knowledge Bank.
http://kfknowledgebank.kaplan.co.uk/KFKB/Wiki%20Pages/NPV%20with%20Inflation.aspx

7.4. Notes on Calculating the cash flows associated with Regional Fibre

Cash inflows– The Region must decide what area municipal facilities it would serve and the rate at which it will charge these facilities for service.

While it is reasonable to assume that carrier charges decline over time for a service it may also be necessary to assume that locations may want higher bandwidth services as time passes. There is no doubt that more data will be required in the future and some locations may need more bandwidth than others. For instance, a manned location may need a 10 Gbps while a location with facilities (IoT) may only need much lower bandwidth connection. Thus, it is necessary to consider how the fees may evolve over time.

Cash outflows – Initial

Capital cost of regional fibre:

- Cost of fibre in aerial and buried installations
- Cost of electronics and network management systems
- Cost of operation, administration and project management -

Cash outflows – ongoing

These functions will require staffing. It is advisable to research what governments with similar networks require. The operating cost will depend on the model of network selected. Typical responsibilities include:

- Operating and maintenance - asset tracking, network monitoring and maintenance
- Network management – strategy, capital management
- Administrative costs for the fibre network, including accounting

7.5. Risk Analysis

Risk identification – need to identify all risks that may impact the progress

- Risks of paying service providers
- Risks of deploying fibre

Risk assessment

- What is the likelihood that a risk may occur
- What is the impact if the risk occurs

Risk response

- Define a mitigation for each risk
- Assess its potential impact – i.e. does mitigation totally eliminate risk or minimize it?

Monitoring and evaluation

- Risk mitigation plan
- Timing – how often
- Who is assessing and reviewing

7.6. The Decision

The Region must evaluate the results of the full business case analysis, including the qualitative benefits analysis, the financial analysis and the risk analysis. The information developed through this fulsome analysis can provide the Region with perspective on the investment of a fibre network.

Evaluation Criteria	Description	Does analysis support the deployment of a fibre network
Qualitative Benefits	Major Benefits Major Drawbacks	
Financial	Initial cost Annual Operating Cost NPV	
Risk Analysis		Does the risk Assessment provide a level of confidence that all risks will be adequately mitigated?

8. Appendix 4- Other Regional Networks

Stratford Rhyzome Network

The Rhyzome Network is a municipal network that serves Stratford, Ontario. It has enabled extensive high-quality broadband service throughout the city as well as free public wireless Internet (Wi-Fi).

The network was launched in 1992 by the city-owned electric utility, Festival Hydro, as a backhaul for Stratford's utility data and to service large commercial operations in the with fibre connections. In 2010, Stratford established an ISP, Rhyzome Networks, with the primary focus of providing business connectivity. The network was expanded to 70 km of optical fibre. At the same time the City deployed a Wi-Fi network that offered free public service and home-based Internet for a fee. The fee services are offered by partner ISPs, who use the infrastructure, but manage the service delivery function themselves.

Stratford has 100% broadband coverage via Wi-Fi. Furthermore, between Rhyzome's fibre and that of the other telecommunications service providers, an estimated 90-95% of businesses and homes are "passed" by fibre.

Network Description	Fibre-Optic and Wi-Fi networks serving Stratford and six rural communities in southwest Ontario: St. Marys, Brussels, Dashwood, Hensall, Seaforth and Zurich. The fibre network consists of 50 km grid of optical fibre. The Wi-Fi network consists of nodes mounted on utility poles throughout the city and backhauled over the fibre network.
Network Cost	Festival Hydro invested $1.2M to deploy the first 40 km of fibre.
Network Ownership	After the initial $1.2M investment in the network by Festival Hydro, the network was established as a separate entity, owned by Rhyzome. Rhyzome Networks is fully owned by the City of Stratford.
Governance	Rhyzome Networks owns and operates fibre-optic and Wi-Fi data networks. Building the wireless network was a joint effort between Rhyzome and Festival Hydro

Customers	• Festival Hydro uses the Wi-Fi network to collect hourly time-of-use data from 18,000 residential and commercial electricity meters. • Municipal mobile workforce • Healthcare • Education • Industrial/ Commercial • ISP (Rhyzome wholesales connectivity)
Data Services	Dark Fibre, wholesale fibre connectivity, Rhyzome is exploring future opportunities related to data storage and cloud computing services.

Peel Public Section Network (PSN)

The PSN is a shared municipal fibre network. Its role is to enhance the ability of the public sector to meet the needs of residents of the Peel Region by providing municipal government access to the fibre network in support of other municipal programs.[32]

Network Description	Established in 1996, the PSN is an integrated fibre-optic network providing municipalities, hospitals and educational institutions in the Peel Region with access to high speed telecommunications service. PSN consists of 801 kilometers of primarily 96 - strand fibre and 684 connected facilities, with the majority of the network being aerial construction (i.e. fibre strung on hydro poles).
Network Ownership	4 Partners: Region of Peel, City of Brampton, City of Mississauga, Town of Caledon[33]
Network Cost and Financing	Each partner makes the capital investment in their geography of the network and retains ownership of that segment. A business case showed a 6-year payback period, with savings in telecom costs and avoidance of future infrastructure investment, offsetting initial capital cost.

[32] KPMG, Sharing Municipal Services in Ontario, 2013, http://ryersontownship.ca/wp-content/uploads/2016/09/Shared_service_case_studies.pdfa

[33] Region of Peel, Public Sector Network update and budget, April 17, 2017, http://www.peelregion.ca/council/agendas/2017/2017-04-27-rc-agenda.pdf

Governance	Partner responsibilities: • Own and maintain what they build • Contribute staff resources • Pay share of common costs • Comply with common design, construction, operation and maintenance standards • Grant access to all other partners and subscribers
Customers	Partners and subscribers (Credit Valley Hospital, William Osler Health Centre, Trillium Health Centre, Sheridan College, University of Toronto, Mississauga Campus). Customers are all public-sector organizations.
Data Services	PSN provides dark fibre and does not offer data services.

York Telecom Network (YTN)

York Region started building their fibre network in 2002 as a means to link two municipal buildings. Today the network has grown to over 200 km of fibre infrastructure. Over this time, the network has grown to connect other municipal assets (such as traffic lights) as well as facilities. The network also offers connectivity to its MUSH partners.

In 2017, after a thorough review, Council approved the creation of a separate corporation to operate and maintain the network. Part of the mandate is to allow leasing of excess dark fibre capacity to MUSH and ISPs who may want access.

Network Description	A 200 Km fibre network connecting municipal infrastructure such as traffic signals and municipal facilities.
Network Cost	$16 M
Network Ownership	The Region owns the network and the company has an Irrevocable Right of Use to the fibres and operates the services.
Governance	As a municipal services corporation, the new entity has a Board of Directors that is made up of Council members. The Board reports to Council, given that the Region is the sole shareholder.
Customers	MUSH and Private sector ISPs.

Data Services	Dark Fibre only. No data services are provided.

Sample Requirements and Initial Criteria for Regional Funding Support

Subject to Council Approval, the Region may provide a contribution to support applications made by Internet service providers to the Canadian Radio-Television Commission (CRTC) Broadband Fund. The following minimum requirements must be met:

Documentation that demonstrates:

- The application applies to areas and projects that are eligible under the CRTC Broadband Fund.
- The applicant meets the definition of eligible applicant under the CRTC Broadband Fund.
- The project will provide services at the minimum service speed defined by the CRTC Broadband Fund (basic service is defined as 50/10 mbps).
- The project would not be viable in the absence of CRTC and Regional funding support (business case or equivalent must be provided).
- The financial stability and viability of applicant and the project has been demonstrated.

If multiple requests for Regional funding support are received, the following factors, as detailed in the applicant's submission, will be considered to select preferred projects for funding support:

- The project will meet or exceed the Region's Connectivity Guidelines.
- The project maximizes the number of underserved properties that will benefit.
- The application will provide upgraded services across multiple Area Municipal boundaries within the Region.
- Evidence of how the project will provide service upgrades to underserved institutions and/or business/employment (such as agriculture, rural industry, etc.) uses.
- The project achieves the goals and objectives of the Regional Broadband Strategy and/or other economic/social objectives of the Region.

Applicants will be required to enter into an Agreement with the Region. The Agreement will include details that demonstrate compliance with the above noted criteria and a requirement for the applicant to commit to reporting to the Region on the status of the project. Other standards and conditions will apply

If this information is required in an accessible format, please contact 1-800-372-1102 ext. 2564

The Regional Municipality of Durham Report

To:	Planning and Economic Development Committee
From:	Commissioner of Planning and Economic Development
Report:	#2019-P-4
Date:	February 5, 2019

Subject:

Envision Durham – Public Engagement Launch, File D12-01

Recommendation:

That the Planning and Economic Development Committee recommends to Regional Council:

A) That a copy of Report #2019-P-4 be received for information; and

B) That a copy of Report #2019-P-4 be forwarded to Durham's area municipalities, conservation authorities and the Ministry of Municipal Affairs and Housing.

Report:

1. Purpose

1.1 The purpose of this report is to launch the public engagement program for Envision Durham, the Municipal Comprehensive Review (MCR) of the Regional Official Plan (ROP). The program is designed to engage area municipal staff and Councils, residents, businesses, and other members of the public.

1.2 A robust and comprehensive community engagement program is integral to the Envision Durham initiative. The goal of this program is to inform audiences about the Region's MCR and to encourage participation throughout the process.

1.3 Although this approach will satisfy and exceed legislative consultation requirements, it is intended to educate and engage participants on Regional land use planning and development issues, including planning for intensification, accommodating a

variety of housing types, transit supportive development, protection of the environment and the rural area. This process will form the basis for a vision for Durham to 2041 (and beyond).

2. Background

2.1 On May 2, 2018, Regional Council authorized staff to proceed with Envision Durham, as detailed in Commissioner's Report #2018-COW-93 (refer to Attachment #1). Envision Durham represents a comprehensive review of the ROP, addressing a variety of strategic land use planning and development matters, including:

a. Achieving conformity with the updated Provincial Plans and policies, including population and employment forecasts to 2041;
b. Incorporating sustainability and climate change provisions;
c. Implementing key policy directions of the Region's Transportation Master Plan, 2017;
d. Supporting rural communities, including an examination of agricultural land permissions;
e. Enabling the provision of affordable housing by incorporating planning policy recommendations from At Home in Durham, the Region's Housing Plan; and
f. Including policies and initiatives to further shape orderly growth and development in the Region.

2.2 Background technical work, including data collection and study preparation, was initiated in 2018. Studies and data analysis are underway and will result in the release of Discussion Papers in 2019 to help inform and solicit public and stakeholder feedback. Consulting services will also be required for studies to address Growth Plan conformity. Reporting on policy proposals is anticipated in 2020 and, following additional consultation and feedback, a draft ROP is expected to be presented to Council in 2021. This schedule has been developed to achieve the Provincial July 1, 2022 conformity target, after which the Region will need to submit the Council-adopted ROP to the Province for approval.

2.3 Envision Durham relies upon early, extensive and meaningful consultation. To date, Planning staff have hosted meetings with Provincial staff; Durham Region and area municipal Planning Commissioners/Directors; Regional staff from other internal departments; as well as initiated on-going working groups with area municipal and Conservation Authority staff. This engagement will continue throughout the Envision Durham process.

3. Public Engagement Program

3.1 Effective public consultation is critical to good land use planning. Envision Durham is based on community engagement process that gathers broad input to help shape the future vision for Durham Region.

3.2 A framework for managing engagement and communication with a wide variety of audiences is part of a Communications Plan that was prepared with the Corporate Communications Office. The Communications Plan includes strategies to reach internal and external audiences, approaches for implementation, and methods for tracking.

3.3 Public engagement will take place in four stages timed with project deliverables (refer to Attachment #2), as follows:

a. Stage 1 – Discover
b. Stage 2 – Discuss
c. Stage 3 – Direct
d. Stage 4 – Draft

Each stage provides an opportunity to reach stakeholders, and to re-engage interested parties.

3.4 Envision Durham will include an enhanced online presence, anchored by the project website (durham.ca/EnvisionDurham). The website will host project information, including: surveys and various methods to provide input; contact information; frequently asked questions (FAQ); links to meeting dates; staff reports; technical studies; discussion papers; and proposed policy directions once developed.

3.5 In addition, each of the four stages will be promoted by way of:

a. News releases and public service announcements;
b. Social media platforms, including Facebook, Twitter and LinkedIn;
c. Email notifications;
d. Publications in internal and external newsletters; and
e. Materials published online.

3.6 The engagement program will take a “go to them” approach, where Regional staff will host “pop-up” kiosks in various locations to encourage broad participation.

3.7 The following describes each stage and the proposed engagement method, including approaches, tools and broad timing.

Stage 1 – Discover (Q1–Q2 2019)

3.8 In the initial stage, the Envision Durham project and its scope will be introduced. Material to be provided in this stage includes:

a. This report on the public engagement launch;
b. A new project website, that will include a Public Opinion Survey, and an introductory video;
c. An email campaign will also be launched to advise known stakeholders;
d. In addition, there will be broad distribution of print materials, i.e. posters and postcards promoting Envision Durham within Regional Headquarters, area municipal Town Halls, libraries and community centres, etc.;
e. Staff also plan to host "pop-up" kiosks in various locations, such as the above noted facilities, as well as shopping centres, seniors' centres and housing facilities, etc.;
f. Presentations will also be provided to Regional Advisory Committees, including but not limited to:

- Durham Agricultural Advisory Committee (DAAC);
- Durham Environmental Advisory Committee (DEAC);
- Durham Active Transportation Committee (DATC); and
- Durham Regional Roundtable on Climate Change (DRRCC).

g. Engage Indigenous communities with treaty rights and historical territory and interest in Durham Region.

Stage 2 – Discuss (Q2–Q4 2019)

3.9 During this stage, participants will be asked to provide input on various "themes". This includes:

a. Requesting input on future Discussion Papers on the following themes:

- Agriculture and Rural System;
- Climate Change and Sustainability;
- Growth Management, including but not limited to reports on:
  - Current state of the regional structure;
  - Land Needs Assessment (LNA) and related technical studies, i.e. Employment Strategy, Intensification Strategy, Designated Greenfield Area Density Analysis, etc. (anticipated 2019-2020); and
  - Additional feasibility studies, if required based on the results of the

LNA (anticipated 2020-2021).

- Environment and Greenlands System;
- Transportation System; and
- Housing.

b. The results from the Public Opinion Survey provided in Stage 1 will also be shared;
c. Outreach to targeted stakeholder groups will be timed with the release of each theme-based Discussion Paper; and
d. In addition, community events and additional “pop-up” kiosks will be provided, as appropriate.

Stage 3 – Direct (2020)

3.10 During this stage, interested parties will have the opportunity to provide feedback on proposed policy directions. Highlights specific to this stage include:

a. Reporting on the results of Stage 2, i.e. Discussion Paper responses;
b. Release of the theme-based Policy Directions Reports;
c. Solicit input on proposed directions and/or policy changes;
d. Outreach to targeted stakeholder groups timed with the release of each theme-based Policy Directions Report;
e. Statutory notice and hosting of Special Meeting of Council as a public forum to discuss the results of the proposed Policy Directions; and
f. Submit proposed draft ROP policies to the Minister of Municipal Affairs and Housing at least 90 days before posting a notice of public meeting to discuss the draft ROP (statutory requirement).

Stage 4 – Draft (2021–2022)

3.11 During this final stage, the public will be invited to comment on the draft ROP. Highlights include:

a. Releasing the draft ROP for comment, based on the results of the public engagement;
b. Statutory notice and hosting Public Open Houses to discuss the draft ROP and to seek authorization to initiate Public Information Centres;
c. Hosting Public Information Centres in each of the eight area municipalities; and
d. Providing statutory notice and hosting of the Public Open House and decision

meetings on the recommended ROP. Following Regional Council's adoption of the recommended ROP, a notice of adoption will be issued and the final ROP must be submitted to the Province for Approval (statutory requirement).

3.12 Throughout Envision Durham, Regional staff will report regularly to Committee on key milestones and the overall progress of the project.

4. Conclusion

4.1 Envision Durham is a key strategic opportunity to plan for fundamental change, by replacing the current ROP and establishing a progressive and forward-looking planning vision for the Region to 2041. Public input, by way of outreach and communication, is integral to this process.

4.2 Through an engaging consultation program, as outlined in this report, public and stakeholder feedback will enable the Region to update existing ROP policies and initiatives, review relevant emerging land use planning and development issues, and help execute the Region's Provincial Plan conformity exercise. This consultation program is designed to meet and exceed the statutory consultation requirements of the Planning Act.

4.3 This report was prepared in consultation with Corporate Services – Legal Services and the Corporate Communications Office.

4.4 It is recommended that a copy of this report be forwarded to Durham's area municipalities, conservation authorities and the Ministry of Municipal Affairs and Housing for their information.

5. Attachments

Attachment #1: "Envision Durham". The Municipal Comprehensive Review of the Durham Regional Official Plan – Commissioner's Report #2018-COW-93 (May 2, 2018)

Attachment #2: Schematic Timeline – MCR and Public Engagement Program

Respectfully submitted,

Original signed by

Brian Bridgeman, MCIP, RPP
Commissioner of Planning and
Economic Development

Recommended for Presentation to Committee

Original signed by

Elaine C. Baxter-Trahair
Chief Administrative Officer

If this information is required in an accessible format, please contact 1-800-372-1102 ext. 2564

The Regional Municipality of Durham Report

To:	Committee of the Whole
From:	Commissioner of Planning and Economic Development
Report:	#2018-COW-93
Date:	May 2, 2018

Subject:

"Envision Durham". The Municipal Comprehensive Review of the Durham Regional Official Plan, File D12-01

Recommendations:

That the Committee of the Whole recommends to Regional Council:

A) That authorization to proceed with the Municipal Comprehensive Review of the Durham Regional Official Plan, outlined in Report #2018-COW-93, be provided; and

B) That a copy of Report #2018-COW-93 be forwarded to Durham's area municipalities, conservation authorities and the Ministry of Municipal Affairs

Report:

1. Purpose

1.1 The purpose of this report is to introduce Council to the proposed Municipal Comprehensive Review (MCR) of the Regional Official Plan (ROP), and to request authorization to proceed. "Envision Durham, 2041 – Our Region. Our Plan. Our Future" (or "Envision Durham") is a key strategic opportunity to plan for fundamental change, by replacing the current ROP and establishing a progressive and forward-looking planning vision for the Region to 2041.

1.2 The ROP is Council's core planning document that guides Regional decision-making on long term growth and development. The ROP provides policies to ensure an improved quality of life and secure the health, safety, convenience and well-being of the present and future residents of the Region. It establishes the Region's goals and

directions for land use planning and development based on a well-defined structure of urban areas and rural settlements, a system of connected environmental features, extensive and productive agricultural areas, a variety of major open spaces and a comprehensive, integrated and multi-modal transportation network. The document includes policies that support a growing and diversifying Regional economy, intensification based on an urban structure of vibrant centres and corridors, and seeks to protect and enhance important natural heritage features.

1.3 The Region is entering a period of significant growth and change. By 2041, the Region is forecast to accommodate a population of 1.19 million residents, and 430,000 jobs. This represents nearly a doubling of the Region's 2016 population of nearly 650,000, and a more than doubling of the Region's nearly 196,700 jobs. In addition, there will be:

- an increasing need to accommodate an aging population;
- a heightened expectation to address climate change;
- a growing demand to improve mobility options;
- a focus on intensification within existing communities;
- a need for measures to improve the viability of rural settlements;
- planning approaches that further support the agricultural sector; and,
- a need to further facilitate the development of high quality job opportunities through various measures across the Region.

2. Background

2.1 Durham has a long history of sound land use planning. The Region's first ROP was adopted by Regional Council in July 1976, and approved by the Province in March 1978. The original ROP was replaced in June 1991, and subsequently approved by the Province in November 1993. The basic framework of the ROP has not changed in 25 years.

2.2 The last MCR culminated in Regional Official Plan Amendments #114 (ROPA 114) and #128 (ROPA 128), which implemented the Greenbelt Plan, 2005 and the Growth Plan, 2006 respectively, amongst other key policy initiatives. ROPA 114 was adopted by Regional Council in November 2006. The majority of ROPA 114 was approved by the Ontario Municipal Board (OMB) in June 2008. ROPA 128 was adopted by Regional Council in June 2009, and was subsequently approved by the OMB in January 2013.

2.3 Under the Planning Act, there is a legislative requirement to review the existing ROP

every five years (i.e. in 2018).

2.4 On July 1, 2016, Bill 73, the Smart Growth for Our Communities Act, 2015, came into force and effect. Key changes to the Planning Act which will have an impact on the conduct of the MCR include:

- New official plans must be reviewed and revised, as necessary, within 10 years of coming into effect;
- A new two-year prohibition on applications seeking an amendment to a new official plan, from the date that any part of the new plan coming into effect. Exceptions to this two-year prohibition period will be permitted only by Council resolution;
- Requirement for official plans to contain policies related to the built environment;
- Appeals of official plans/OPAs that implement certain provincially-approved matters are not allowed, including for the following matters:
  - Boundary of a vulnerable area as defined in Clean Water Act, 2006;
  - Boundary of Lake Simcoe watershed;
  - Boundary of the Greenbelt Area, Protected Countryside or a specialty crop area as designated by the Greenbelt Plan;
  - Boundary of the Oak Ridges Moraine Conservation Plan Area;
  - Forecasted population and employment growth in accordance with the Growth Plan for the Greater Golden Horseshoe;
  - Forecasted population and employment growth in lower-tier official plan in accordance with an allocation in the upper-tier municipality's official plan that has been approved by the Minister;
  - Boundary of an area of settlement in lower-tier official plan to reflect the boundary set out in the upper-tier municipality's official plan that has been approved by the Minister;
- Removal of the ability to appeal second unit policies at time of an Official Plan update; and
- Removal of the ability for an appellant to appeal an entire Official Plan.

2.5 On December 12, 2017, Bill 139, the Building Better Communities and Conserving Watersheds Act, 2017, came into force and effect. Bill 139 changed the provincial land use planning appeals system through, amongst other matters: establishing a new two-stage appeals process for Official Plans and amendments; creating a new Local Planning Appeals Tribunal (LPAT) and new statutory rules for the conduct of hearings; sheltering municipally initiated Official Plans and Amendments that require

the Minister's approval.

2.6 Since the approval of ROPA 128, there have also been a number of significant Provincial policy initiatives that will directly affect the MCR exercise, including:

- An updated Provincial Policy Statement, 2014 (PPS);
- The enactment of Amendment #2 to the Growth Plan, 2006 which provided population and employment forecasts to 2041;
- Significant amendments to the Planning Act through Bill 73 and Bill 139;
- New Source Water Protection Plans; and
- The completion of the coordinated Provincial review and updating of Ontario's Provincial Plans:
  - Growth Plan for the Greater Golden Horseshoe, 2017 (Growth Plan);
  - Greenbelt Plan, 2017; and
  - Oak Ridges Moraine Conservation Plan, 2017 (ORMCP).

2.7 The completion of various provincial mapping amendments, including changes to the Agricultural System mapping*,* Natural Heritage System mapping and changes to the Greenbelt Plan boundaries that will need to be incorporated through this process into the ROP.

2.8 The Planning Act requires the Region to undertake a Provincial Plan conformity exercise to amend the ROP to ensure that it:

- Conforms with Provincial Plans or does not conflict with them;
- Has regard to matters of Provincial interest; and
- Is consistent with Provincial Policy Statements.

This MCR will constitute a Provincial Plan conformity exercise and five-year review of the ROP, satisfying these legislative requirements.

2.9 The Minister of Municipal Affairs is the approval authority for the MCR. Once a draft of the ROP is completed, the Province requires that it be forwarded to the Province not less than 90 days prior to Notice being given for the statutory public meeting. Once a new ROP is adopted by Council, the Province will have 210 days to render its decision.

3. Components of Envision Durham

3.1 Envision Durham will represent a comprehensive review of the ROP, addressing a variety of strategic land use planning and development matters, including:

- Achieving conformity with the updated Provincial Plans and policies, including:
  - Allocation of the Region's population and employment forecasts to each area municipality to 2041;
  - A Regional urban land budget in accordance with the standardized Land Needs Methodology;
  - Planning that achieves the prescribed increased density requirements within Strategic Growth Areas, including Urban Growth Centres and Major Transit Station Areas;
  - Planning for employment growth within community areas and employment areas to the Growth Plan horizon;
  - Planning that achieves the prescribed higher Designated Greenfield Area density targets;
- Responding to climate change and incorporating sustainability provisions;
- Implementing key policy directions of the Transportation Master Plan 2017, including policies supporting transit supportive development and active transportation;
- Supporting rural communities, including an examination of agricultural land use permissions;
- Policies to further support the provision of affordable housing, including various planning policy recommendations from At Home in Durham, the Region's Housing Plan; and
- Addressing other ROP policies and initiatives to shape orderly growth and development in the Region, including an examination of relevant existing and emerging land use planning and development issues.

Provincial Studies and Guidance Documents

3.2 In order to demonstrate conformity with provincial policies, the Growth Plan requires upper- and single-tier municipalities to undertake background studies through the MCR process. The MCR must therefore include the following major studies and strategies:

- Urban Land Needs Assessment;
- Intensification Strategy;
- Employment Strategy; and
- Housing Strategy.

Existing Watershed Plans may also need to be updated.

3.3 The Province has produced a suite of draft guidance documents to assist municipalities with meeting Provincial requirements. The following guidance documents have been released for public review and comment:

- Land Needs Assessment methodology;
- Low Impact Development stormwater management;
- Community emissions reduction planning;
- Watershed Planning in Ontario;
- Natural Heritage System implementation;
- Agricultural System implementation;
- Agricultural Impact Assessment;
- Application of the Intensification and Density Targets; and
- The MCR Process.

Of these support materials, only guidance on the implementation of the Natural Heritage System and Agricultural System have been finalized at this time.

3.4 The draft technical guidance on the application of the intensification and density targets is intended to support municipalities with the implementation of the new targets for planning under the Growth Plan, including:

- Planning for increased intensification of 50 per cent of all residential development occurring annually within the designated built boundary, until 2031; increasing to 60 per cent post 2031;
- Planning for increased density in the Designated Greenfield Area (i.e. urban lands outside of the built boundary) of 60 residents and jobs per hectare, until 2031; increasing to 80 residents and jobs combined per hectare for any new lands designated in the ROP after July 1, 2017;
- Planning for increased densities in Employment Areas, to be determined through a Regional Employment Strategy, in consultation with the area municipalities;
- Planning for an Urban Growth Centre density of 200 residents and jobs combined per hectare, for each of Downtown Oshawa and Pickering City Centre; and
- Planning for Major Transit Station Area (MTSA) densities of 150 residents and jobs combined per hectare along priority transit corridors, e.g. existing GO Train station areas in Pickering, Ajax, Whitby and Oshawa.

3.5 The draft technical guidance on the MCR process is intended to support municipalities with implementing the policies of the Growth Plan through a MCR. It

provides some guidance on some of the more iterative components of the Growth Plan conformity, such as the sequencing of analysis related to the land needs assessment, and allocating updated forecasts and establishing targets for lower-tier municipalities.

3.6 The information, technical criteria, and approaches presented in both draft guidance documents support, and in many cases reiterate, the Growth Plan policies as they exist. The documentation serves to confirm the work planning for the MCR that is already underway, and in this regard Regional staff are informed by these additional guidance materials, but do not have any specific comments on these documents.

Regional Initiatives

3.7 There are numerous Regional strategies and plans that have been endorsed by Council since the last ROP. These strategies and plans will help to inform the MCR, and are expected to contribute to the development of supportive planning policies. These strategies and plans include:

- Durham Region Strategic Plan 2015-2019;
- Durham Community Climate Change Local Action Plan (2012);
- Durham Community Climate Adaptation Plan (2016);
- At Home in Durham, Durham Region Housing Plan 2014-2024;
- The Affordable and Seniors' Housing Task Force (2017);
- Health Neighbourhoods initiative (updated July 2016);
- Transportation Master Plan (2017);
- Economic Development Strategy and Action Plan 2017-2021;
- Development Charge Background Study and By-law (2018); and
- Water and Wastewater Master Planning (ongoing).

The MCR process will seek to incorporate the relevant policies and directions from these documents from the standpoint of Regional land use planning and development policy.

4. Initial Preparation

4.1 In preparation for the MCR, the Planning Division held an internal staff workshop in November 2017 to highlight potential themes, issues and approaches for the MCR. A project framework was subsequently developed based on the following themes:

- Agriculture/Rural System;

- Environment/Greenlands System;
- Climate Change/Healthy Neighbourhoods;
- Transportation System;
- Housing;
- Growth Management; and
- Communication and Outreach.

Initial Stakeholder Engagement

4.2 Envision Durham will rely upon early, extensive and meaningful consultation with both internal and external stakeholders. The following describes the initial discussions that have taken place in preparation for the MCR. It also highlights the need to ensure that an engaging public and stakeholder consultation process takes place through this MCR process.

4.3 The Region hosted a workshop in January 2018 with the Durham Region and area municipal Planning Commissioners/Directors to begin the conversation. The workshop identified some high level issues that may be anticipated in each of the area municipalities, and articulated the desire for early and frequent consultation. As a result of this workshop, the group committed to meet regularly; and that an area municipal working group be established as an early component of the MCR work program.

4.4 Since January 2018, Planning staff met with Regional staff from other internal departments to provide an introduction to the scope of the MCR. The purpose of these meetings was to seek opportunities for alignment with other related corporate plans and initiatives, and to highlight potential issues.

4.5 Since this project will deal with the Regional implementation of updated Provincial Plans and policies, the Region will require timely and meaningful input from the Province at key points in the review process. In this regard, Regional Planning staff met with Provincial staff in March 2018 with regard to their participation in the MCR, and to confirm their commitment to timely and continuous involvement and feedback.

4.6 These discussions have served to build enthusiasm for the project, and identify alignments with other complementary Regional initiatives anticipated over the timeframe of the MCR process.

5. Engaging Consultation Process

5.1 A coordinated approach consisting of early and regular consultation with the area

municipalities will be integral to planning for Growth Plan conformity. For example, population and employment growth forecasts and allocations, identifying Strategic Growth Areas, delineating Major Transit Station Areas, and input into the Employment Strategy will be needed.

5.2 A robust and comprehensive community consultation program will be integral to this MCR process, and the use of digital engagement tools, including a project website, social media and surveys, and attendance at in-person community events will form part of the MCR engagement strategy.

5.3 The following groups are among those who will be consulted as part of the planned outreach program:

- Area municipal staff;
- Provincial staff;
- Conservation Authorities;
- Staff from other Regional departments;
- Area municipal councils;
- Public;
- Regional Advisory Committees, including but not limited to the Durham Agricultural Advisory Committee (DAAC), Environmental Advisory Committee (DEAC), Active Transportation Committee (DATC), and Regional Roundtable on Climate Change (DRRCC);
- School boards;
- First Nations and Metis;
- Durham Economic Development Partnership, Business Advisory Council Durham (BACD), Spark Centre, etc.;
- Stakeholders, i.e. landowners, Building Industry and Land Development Association (BILD), and others as required; and
- Business community, i.e. local Boards of Trade and Chambers of Commerce.

5.4 Where appropriate, relevant portions of the MCR public consultation program may be coordinated with other anticipated corporate public consultation initiatives, including future updates to the Water and Wastewater Master Plan, Housing Plan, and the Corporate Strategic Plan.

6. Timing for Envision Durham

Legislated Timeframe

6.1 The Places to Grow Act, 2005 indicates that official plans must be amended to conform to an applicable growth plan (in this case, the Growth Plan for the Greater Golden Horseshoe, 2017) within three years of the effective date. The Act also provides that the Minister of Municipal Affairs can establish an alternative timeframe for conformity.

6.2 To coordinate the timeframe for municipal implementation of the Growth Plan, 2017 with legislated timeframes for implementation of the updated Greenbelt Plan (2017) and ORMCP (2017), the Minister has established July 1, 2022 as the alternative date for upper and single-tier official plans to be brought into conformity with the Growth Plan.

6.3 Lower-tier official plans will rely on the direction provided through upper-tier official plans. As a result, the Minister established an alternative date for lower-tier municipal conformity to be within one year of the applicable upper-tier official plan taking effect (i.e. July 1, 2023).

Targeted Timelines

6.4 In order to meet the legislated timeframes, it is recommended that Council authorize the commencement the Regional MCR process at this time. Due to the scope of work, the MCR process is anticipated to be completed by early 2022 (refer to Attachment 1 for a schematic timeline of the MCR).

6.5 Background technical work, including initial data collection and study preparation, is underway. Consulting assignments, studies and data analysis will take place over the next two years (2018 – 2019) that will result in the release of Discussion Papers to help inform and solicit public and stakeholder feedback.

6.6 Reporting on policy proposals is anticipated by 2020 and, following additional consultations and feedback, a draft ROP is expected to be presented to Council by early 2021. Council adoption and Provincial approval would follow, in advance of the July 2022 conformity target.

6.7 The MCR will result in a new ROP with a planning horizon to 2041. A “repeal and replace” approach is planned, given the age of the existing plan, the scope of the update and the suite of policy matters that must be examined. By taking this approach, the Planning Act would not require another statutory review until 10 years after the new ROP comes into effect (i.e. by 2032).

7. Consulting Services and Budgetary Considerations

7.1 The majority of the work required to complete the MCR will be undertaken by Regional staff. However, due to the scope of work required for this exercise, consulting services will also be required for specific components including facilitation and online presence services; growth management related studies required to satisfy increased intensification and greenfield density requirements; an employment strategy; and related elements visualization and case studies to demonstrate optimization of the urban land supply.

7.2 Through previous Business Planning and Budget processes, funding has been set aside for commencement of the MCR. At present, there is approximately $500,000 in non-departmental funds available. Additional costs associated with the MCR exercise will be included in future Business Planning and Budget processes.

7.3 Any contracts for consultant services will follow the Consultant, Professional and Architectural Services Consulting Procedure, and be the subject of future reports, as required.

8. Conclusion and Next Steps

8.1 Initiating “Envision Durham, 2041” will begin the MCR process to replace the existing ROP with a progressive and forward-looking planning vision for the Region to 2041.

8.2 The MCR process will update existing ROP policies and initiatives, review relevant emerging land use planning and development issues, and will constitute the Region’s Provincial Plan conformity exercise. The Region is expected to review and update the ROP to conform to the amended Provincial Plans by July 2022.

8.3 It is recommended that authorization to proceed with the MCR be provided. A copy of this report will also be forwarded to Durham’s area municipalities, conservation authorities and the Ministry of Municipal Affairs for their information.

9. Attachments

Attachment #1: Schematic Timeline

Respectfully submitted,

Original signed by

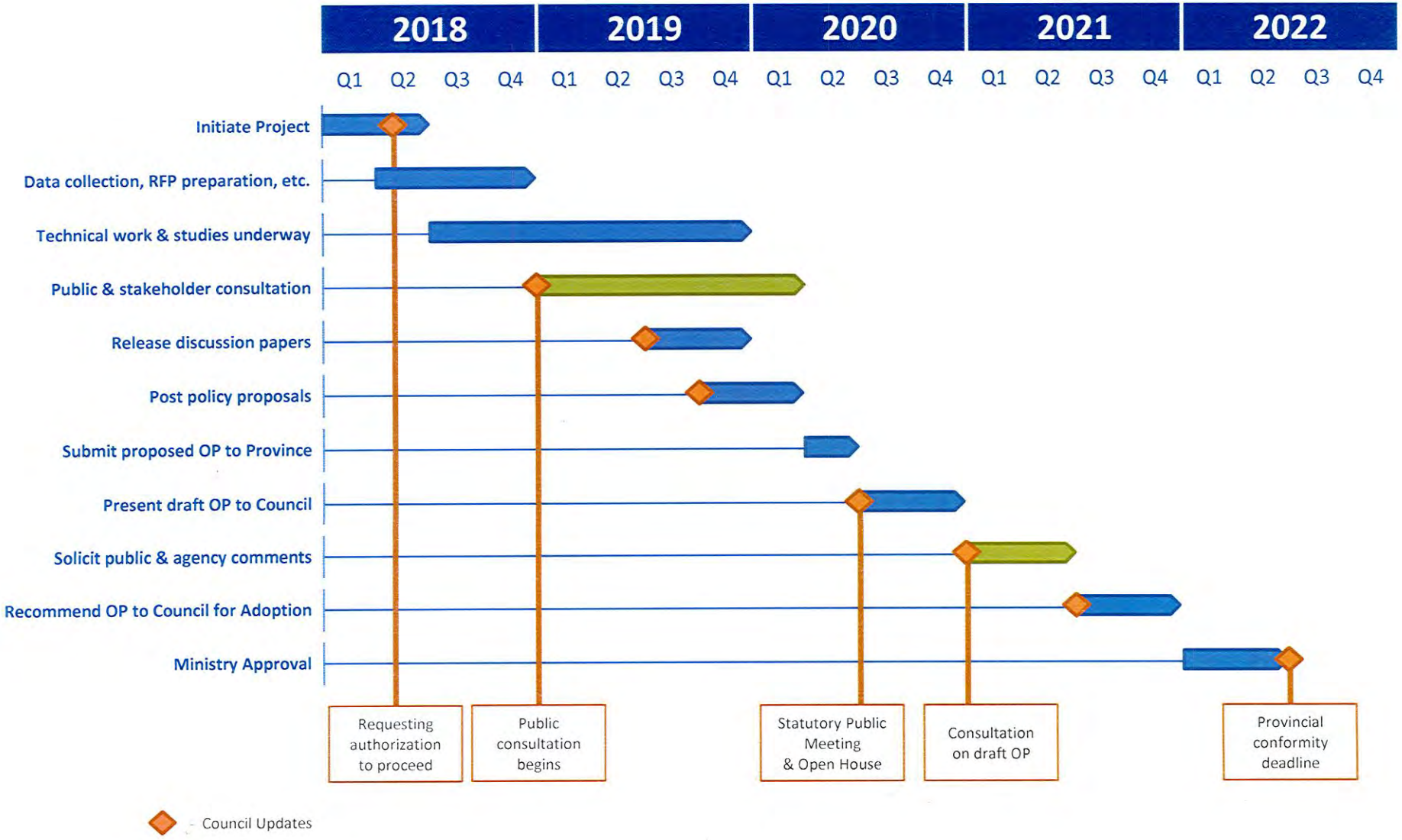
B.E. Bridgeman, MCIP, RPP
Commissioner of Planning and
Economic Development

Recommended for Presentation to Committee

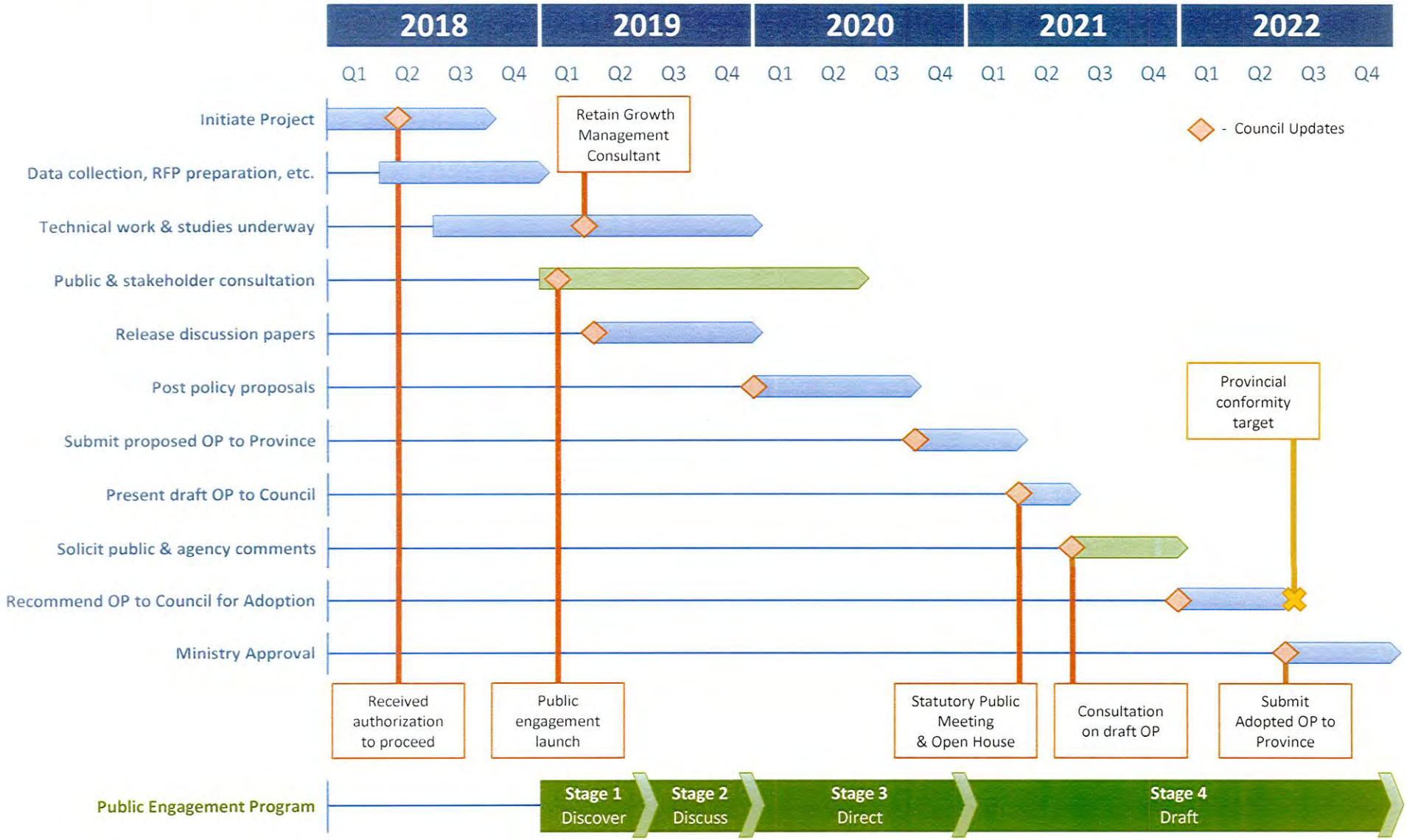
Original signed by

G.H. Cubitt, MSW
Chief Administrative Officer

Envision Durham - MCR Timeline



Envision Durham – Updated MCR Timeline



If this information is required in an accessible format, please contact 1-800-372-1102 ext. 2564

The Regional Municipality of Durham Report

To:	Planning and Economic Development Committee
From:	Commissioner of Planning and Economic Development
Report:	#2019-P-5
Date:	February 5, 2019

Subject:

Region of Durham Draft Woodland Conservation and Management By-law, File: E01-00

Recommendations:

That the Planning and Economic Development Committee recommends to Regional Council:

A) That Regional staff be authorized to circulate the Draft Region of Durham Woodland Conservation and Management By-law to Regional Stakeholders, including: the Ministry of Natural Resources and Forestry (MNRF); the Region's Conservation Authorities; area municipal staff and by-law enforcement officers; the Durham Environmental Advisory Committee (DEAC); the Durham Agricultural Advisory Committee (DAAC); and local forest practitioners; and

B) That Regional staff report back to Planning and Economic Development Committee with a recommended Regional Woodland Conservation and Management By-law for its consideration.

Report:

1. Purpose and Background

1.1 Under the Municipal Act, an upper-tier municipality may prohibit or regulate the destruction or injury of trees in woodlands designated in a by-law, having regard for good forestry practices, and by regulating the removal of trees in woodlands of one hectare or more in size. Tree removal in any woodland under one hectare is regulated by the local area municipalities.

1.2 The Region's current by-law (referred to as "the Tree By-law") was last amended on June 27, 2012 following a comprehensive review which occurs every five years.

1.3 This latest 5 year review has identified the need for a number of changes, based on input from a variety of stakeholders including: the Durham Agricultural Advisory Committee (DAAC); the Durham Environmental Advisory Committee (DEAC); the Ministry of Natural Resources and Forestry (MNRF); the Region's Conservation Authorities; local area municipal staff and by-law enforcement officers; and local forest practitioners.

1.4 Dominant themes raised by stakeholders included: tree cutting permissions for farmers; tree preservation and replanting; enforcement; illegal clear cutting; cumulative removal; legislative and policy conflicts; and the application of the by-law.

2. Proposed Draft Amendments

2.1 A proposed draft by-law has been prepared based on stakeholder feedback, research findings, staff's experience pertaining to enforcement, and opportunities for streamlining (see Attachment #1).

2.2 To be consistent with Provincial policies and to conform to provincial plans and regulations, the definition for "Sensitive Natural Areas" has been revised in the proposed draft By-law to reflect the terminology within the Greenbelt Plan, the Growth Plan for the Greater Golden Horseshoe, the Regional Official Plan and the area municipal Official Plans. It also reflects Provincial regulations regarding the protection of endangered species and species at risk, and references to nesting migratory birds and bats.

The scope of analysis and screening for identifying and protecting key natural heritage and hydrological features, and other important species through a "Forest Management Prescription" for a Good Forestry Practices (GFP) application, or through an Environmental Impact Study, or an Environmental Report for a Clear Cutting permit application, has also been addressed.

2.3 The current by-law does not distinguish between settlement areas and rural areas for the purposes of Clear Cutting. Within settlement areas, (such as Urban Areas and Hamlets) this lack of distinction can lead to unintended outcomes of placing environmental features at risk for removal ahead of a more fulsome examination of the appropriateness of the request through a Planning Act process (e.g. subdivision, secondary plan). The draft by-law would require that clear cutting not

be permitted within settlement area boundaries outside of the statutory development review process.

2.4 The draft by-law would deal with the cumulative impact of woodlands removal by clearly defining and prohibiting the activity. At this time, the Tree By-law only requires that cumulative removal be taken into consideration with respect to the need for minor or major clear cutting.

2.5 The draft by-law includes definitions for a “Forest Management Prescription” and “Environmental Report” and prescribes information that would be required with the submission of applications. This would include identifying areas of disturbance, examining associated impacts, stating the proposed method of removal, identifying Sensitive Natural Areas, and including measures for their protection.

2.6 The draft by-law includes measures that would require the mitigation of direct and indirect effects of injuring or destroying trees in all woodlands, and not just those woodlands identified as “Sensitive Natural Areas”. This is proposed as a broad measure to better protect natural features and wildlife habitat.

2.7 The draft by-law requires that all GFP and Clear Cutting applications be circulated to all applicable Conservation Authorities, consistent with current practice. The proposed draft by-law requires that these applications be circulated to the local area municipalities, and to notify them once a permit has been issued. This would give the area municipalities the opportunity to confirm compliance with their respective By-laws.

2.8 The draft by-law would require that applicants notify the Region and the applicable area municipality prior to tree removal commencing, to improve responsiveness to potential public inquiries.

2.9 Updated fees and fines have also been proposed. To encourage public compliance with the By-law, the fee for the most common type of application, (the Good Forestry Practices Permit) is proposed to remain unchanged at the nominal amount of $50. The fee for clear cutting applications, which are far more infrequent (ie. 1-2% of all applications), but require more time to review and process are proposed to increase: $500 for a minor clear cutting permit (i.e. to clear cut an area between 0.25 and 2.5 acres); $1,000 for a major clear cutting application (i.e. to clear cut an area greater than 2.5 acres and where Regional Council approval is required). In keeping with existing practice, bona fide farmers are proposed to be exempt from paying any application fees. Staff will be recommending that the fines for removing

trees without a permit be updated as a way to deter potential by-law violations. Increases in fine amounts have not been undertaken since the inception of the By-law in 2008. Given that fines are governed by the Province, the Region would require approval from the Senior Justice of the Province of Ontario of Part 1 offences relevant to the by-law.

2.10 Various definitions have been included or updated with terminology to provide clear and consistent interpretation of terms throughout the by-law, (e.g.: Bona Fide Farmer, Clear Cut/Clear Cutting, Cumulative Removal, Destruction, Environmental Report, Fence Row, Normal Farm Practices, Personal Use, Farm Related Use, etc.).

3. Next Steps

3.1 Following Council's consideration of this report, staff will circulate the draft by-law and will meet with affected stakeholders for their comments. Upon receipt of these finalized comments, a proposed by-law will then be provided for Committee's consideration. It is anticipated that the new Woodland Conservation and Management By-law could come into effect on July 1, 2019.

3.2 Once the By-law is passed, education and information updates will be shared with the public, agencies, and other stakeholders. This could include an updated information pamphlet and webpage. Staff will also explore opportunities for combined communications through other sources, such as through Regional newsletters and social media.

3.3 Monitoring of tree cutting applications will continue to occur as part of the Planning Division's Annual Activity Information Report to Planning and Economic Development Committee.

4. Conclusion

4.1 Regional staff's analysis and consultation to date has revealed that changes to the Region's existing Tree By-law are warranted.

4.2 It is recommended that the Ministry of Natural Resources and Forestry (MNRF); the Region's Conservation Authorities; area municipal staff and by-law enforcement officers; the Durham Environmental Advisory Committee (DEAC); the Durham Agricultural Advisory Committee (DAAC); and local forest practitioners be provided a copy of this report and the Draft Woodland Conservation and Management By-law.

4.3 A final draft by-law and report will be presented to Planning and Economic Development Committee at a future date once the Region's formal consultation process is complete.

4.4 The proposed draft by-law was prepared in consultation with Corporate Services-Legal Services staff.

5. Attachments

Attachment #1: Proposed Draft Regional Woodland Conservation and Management By-law

Respectfully submitted,

Original signed by

Brian Bridgeman, MCIP, RPP
Commissioner of Planning and
Economic Development

Recommended for Presentation to Committee

Original signed by

Elaine C. Baxter-Trahair
Chief Administrative Officer

Attachment #1

By-law Number **-2019

of The Regional Municipality of Durham

Being a by-law to prohibit or regulate the Destruction or Injury of Trees in Woodlands in the Regional Municipality of Durham.

Whereas the Municipal Act, Section 135(2), provides upper tier municipalities with the authority to prohibit or regulate the Destruction or Injury of Trees in Woodlands.

Whereas the Council of the Regional Municipality of Durham deems it desirable to enact a Regional Woodland Conservation and Management By-Law for the purposes of:

- conserving and improving the Woodlands in the Region through Good Forestry Practices;
- promoting Good Forestry Practices that sustain healthy Woodlands and related natural habitats and environments;
- helping to achieve the objectives of the Durham Regional Official Plan to ensure the long-term health and productivity of Woodlands;
- promoting the conservation of biological diversity, including rare natural features and species;
- minimizing the Destruction or Injury of Trees in Woodlands;
- regulating and controlling the removal and protection of Trees in Woodlands;
- minimizing and guarding against conditions which may result in Injury;
- protecting, promoting and enhancing the aesthetic value of Woodlands; and
- contributing to ecosystem health, human health, recreation, enjoyment and quality of life through the maintenance of Woodland cover.

NOW, THEREFORE, the Council of the Regional Municipality of Durham hereby enacts as follows:

1. DEFINITIONS

1.1 In this By-law:

a) "Agricultural Operation" means the commercial production of crops or raising of livestock, and includes cultivation, seeding, and harvesting;

b) "Area Municipality" means any one of the area municipalities within the Regional Municipality of Durham, namely the Town of Ajax, the Township of Brock, the Municipality of Clarington, the City of Oshawa, the City of Pickering, the Township of Scugog, the Township of Uxbridge or the Town of Whitby;

c) "Bona Fide Farmer" means a Person who has a current and valid farm registration number under the Farm Registration and Farm Organizations Funding Act, 1993, S.O. 1993, c.21, as amended;

d) "Building Permit" means a building permit issued by an Area Municipality under the Building Code Act, 1992, S.O. 1992, c.23, as amended;

e) "Business Day" means any day falling on or between Monday and Friday of each week but does not include a statutory holiday;

f) “Certified Tree Marker” means a Person currently certified to mark Trees through the Ministry of Natural Resources Certified Tree Marker Program;

g) "Clear Cut/Clear Cutting" means the Destruction of all Trees within all or a portion of a Woodland, where the area to be cut exceeds 0.1 hectare.

h) “Commenting Agency” means any Conservation Authority, provincial Ministry, area municipality, utility, or agency as decided by the Region within it’s jurisdiction;

i) "Commissioner" means the Commissioner of Planning and Economic Development of the Regional Municipality of Durham or designate;

j) “Cumulative Removal” means the incremental or continuous removal of Trees in a Woodland since July 1, 2008, with or without a Permit;

k) "DBH" or "Diameter at Breast Height" means the diameter of the stem of a Tree measured at a point that is 1.37 metres above the ground;

l) “Destruction” means the clearing, and/or removal of Trees in all or part of a Woodland;

m) “Environmental Report” means an Environmental Impact Study, or a scoped Environmental Impact Study under the Durham Regional Official Plan, a natural heritage evaluation under the Oak Ridges Moraine Conservation Plan, or other report required by the Region, Area Municipality, or consulting agency that analyzes the natural environment and makes recommendations regarding mitigation of impacts from Tree removal.

n) "Fence Row" means a narrow linear strip of Trees less than 1 hectare in size that defines a laneway or boundary between fields or properties;

o) “Forest Management Prescription” means the site specific operational plan prepared and signed by, or under the direction of and signed by, a Qualified OPFA Member that describes existing Woodland conditions, Woodland management objectives and the proposed methods for harvesting a Woodland;

p) "Good Forestry Practices" means the proper implementation of harvest, renewal and maintenance activities known to be appropriate for the Woodland and environmental conditions under which they are being applied and that minimize detriments to Woodland values, including: significant ecosystems; important fish and wildlife habitat; soil and water quality and quantity; forest productivity and health and the aesthetic and recreational opportunities of the landscape;

q) "Injury" means lasting damage to a Tree which may include, but is not limited to:

i) broken branches in the crown of any Tree;

ii) the breaking off or splitting of the stem of any Tree;

iii) the noticeable leaning of any Tree;

iv) the splitting of, removal of, or damage to the bark of any Tree; or

v) damage to the root structure of any Tree;

r) "Multiple Offence" means an offence in respect to two or more acts or omissions each of which separately constitutes an offence and is a contravention of this By-law;

s) “Normal Farm Practices” means part of an Agricultural Operation, which retains existing Woodland cover, and includes activities such as:

i) the removal of Trees for Personal Use;

ii) Farm-Related Uses such as fence posts and rails; or

iii) the removal of Fence Rows where required.

Normal Farm Practices does not include Clear Cutting.

t) "Officer" means an individual appointed by Regional Council for the administration and enforcement of this By-law;

u) "Owner" means any Person or Persons who is the registered owner on title to the land;

v) "Permit" means the written authorization from the Officer or the Commissioner issued under Section 5 or 6 of this By-law;

w) "Person" or "Persons" means any individual or individuals, of any corporation or corporations, their respective heirs, executors, administrators or other duly appointed representatives;

x) "Personal Use" means the use of Trees by a Bona Fide Farmer for home heating or other home related uses, but does not include Clear Cutting;

y) "Farm Related Use" means the use of Trees by a Bona Fide Farmer for farm related activity such as the heating of an accessory barn, post and rail fencing, farm construction on-site, but does not include Clear Cutting;

z) "Region" means the Regional Municipality of Durham;

aa) "Regional Council" means the Council of the Regional Municipality of Durham;

bb) "Qualified OPFA Member" means a Registered Professional Forester or Associate Member of the Ontario Professional Foresters Association under the *Professional Foresters Act*, S.0. 2000, c. 18, as amended, to practice professional forestry, unless a suspension, term, condition or limitation of certification applies which would restrict the Member from carrying out responsibilities under this By-law;

cc) "Sensitive Natural Area" means:

i) a Provincially or Regionally designated or identified Significant Wetland;

ii) land that is designated or identified as a Key Natural Heritage and Hydrological Feature in either the Oak Ridges Moraine Conservation Plan, Greenbelt Plan, and Growth Plan for the Greater Golden Horseshoe, Durham Regional Official Plan, or an area municipal Official Plan;

iii) land that is 30 metres from the water's edge of a locally, Regionally, or Provincially Significant Wetland, lake, river, stream or intermittent stream;

iv) a Provincial or Regional Life Science Area or Area of Natural and Scientific Interest identified by the *Ministry of Natural Resources Act, 1982,* as amended; or

v) an area of endangered species or species at risk, or any area containing nesting migratory birds or bats.

dd) "Tree" or "Trees" means any living species of woody perennial plant in a

Woodland, including its root system, which has reached or can reach a height of at least 4.5 meters at physiological maturity;

ee) "Woodland" or "Woodlands" means an area of land one hectare in size or greater on one or more properties with a minimum density of:

i) 1,000 Trees, of any size, per hectare;

ii) 750 Trees, measuring over five (5) centimetres at DBH, per hectare;

iii) 500 Trees, measuring over twelve (12) centimetres, at DBH, per hectare; or

iv) 250 Trees, measuring over twenty (20) centimetres, at DBH, per hectare.

For the purposes of this By-law, “Woodland” or “Woodlands” does not include:

i) a cultivated fruit or nut orchard;

ii) a plantation established for the purpose of producing Christmas Trees and which is being actively managed and harvested for the purposes for which it was planted, except that this does not refer to plantations that have ceased being managed or harvested for their intended purpose for a period of 15 years or more;

iii) a bona fide Tree nursery that is being actively managed and harvested for the purposes for which it was planted;

iv) a Fence Row; or

v) land previously cleared and used for agricultural purposes, which has become overgrown with young (less than 15 years old) and early successional Tree species common on disturbed fields (e.g. Sumac, Hawthorn, Apple, Scots Pine, Poplar, White Birch, Ash) and which is intended to be used again as part of an Agricultural Operation.

2. APPLICATION OF THE BY-LAW

2.1 This By-law shall apply to all Woodlands and Sensitive Natural Areas.

2.2 Cumulative Removal is prohibited except as otherwise explicitly permitted by this By-law.

2.3 Applicants are encouraged to consult with the Officer prior to the submission of any Permit application.

3. GENERAL PROHIBITIONS

3.1 No Person shall through their own action or through any other Person, cause Injury or Destruction to any Tree located in a Woodland, unless:

a) such Injury or Destruction is permitted under Section 4 of this By-law; and

b) Such Person is in possession of a valid Good Forest Practice Permit issued under Section 5 of this By-law or a Clear Cutting Permit issued under Section 6 of this By-law, and pursuant to any applicable terms or conditions.

3.2 No Person shall through their own action or through any other Person:

a) Contravene any term or condition of a Permit issued under this By-law or cause or permit the contravention of any term or condition of a Permit issued under this By-law;

b) Fail to comply with an Order issued under Section 7 of this By-law; or

c) Remove or deface any Order that has been posted pursuant to Section 7 of this By- law.

4. EXEMPTIONS

4.1 This By-law, shall not apply to:

a) Any activity or matter undertaken by an Area Municipality or the Region;

b) Any activity undertaken by a Conservation Authority on land owned or managed by such Authority;

c) Any activity or matter undertaken under a licence issued under the *Crown Forest Sustainability Act*, 1994, S.O. 1994, c.25, as amended.

d) Any activity undertaken by a Person licensed under the *Surveyors Act*, R.S.O. 1990, c. s.29, as amended, to engage in the practice of cadastral surveying or his or her agent, while making a survey.

e) Any activity imposed after December 31, 2002:

i) as part of a Tree Preservation Plan required as a condition of approval of a plan of subdivision that received draft approval under Section 51 of the *Planning Act*, R.S.O. 1990, c. P. 13.;

ii) as part of a Tree Preservation Plan required as a condition of

a consent approved under Section 53 of the *Planning Act*, R.S.O, 1990, c.P.13;

iii) as a requirement of a Tree Preservation Plan approved and included in a site plan agreement under Section 41 of the *Planning Act*, R.S.O, 1990.c.P. 13, or a development agreement between an Owner and the applicable Area Municipality or the Region; or

iv) as a condition of a Community Planning Permit authorized by regulation made under Section 70.2 of the *Planning Act*, R.S.O, 1990, c.P. 13, or as a requirement of an agreement entered into under such regulation.

f) Any activity by a transmitter or distributor, for the purpose of constructing and maintaining a transmission system or a distribution system defined in the *Electricity Act*, S.O. 1998, c.15, as amended.

g) Any activity undertaken on land described in a license for a pit or quarry or a Permit for a wayside pit or wayside quarry issued under the *Aggregate Resources Act*, R.S.O. 1990, c. A.8, as amended.

h) Any activity that is required in order to erect any building, structure or thing, including yard areas, in respect of which a Building Permit has been issued, provided that no Tree is removed that is located more than 15 metres from the outer edge of the building, structure or things and that only those Trees necessary to accommodate the building, structure or thing, including yard areas, are removed.

i) Any activity that is required in order to install and provide utilities to the construction or use of a building, structure or thing, including the installation of a primary septic bed, in respect of which a Building Permit has been issued.

j) Any activity that is required in order to install, provide or maintain a single lane driveway for vehicular access to a building, structure or thing in respect of which a Building Permit has been issued.

k) Any activity required for the purpose of a licensed waste disposal site that has been approved, where applicable, under the *Environmental Protection Act*, R.S.O. 1990, c. E.19, as amended; the *Ontario Water Resources Act*, R.S.O. 1990, c. 0.40, as amended; the *Environmental Assessment Act*, R.S.O. 1990, c. E.18, as amended; and the *Planning Act*, R.S.O., 1990, c. P.13.

l) Any activity for the construction of drainage works authorized under the *Drainage Act*, R.S.O., 1990, c. D.17, as amended.

m) Any forestry management activity which, in the opinion of a qualified OPFA member:

i) results in the removal of one or more Trees which are dead; or are significantly diseased; or

ii) results in the removal of one or more Trees which pose a hazard to human safety or property.

n) Any Normal Farm Practice as part of an Agricultural Operation.

5. GOOD FORESTRY PRACTICE PERMITS

5.1 Any Person who intends to Cause Injury or Destruction to one or more Trees in a Woodland, in a manner that does not constitute Clear Cutting, shall first complete and submit to the Region, an application for a Good Forestry Practice Permit. Such an application will be circulated to the Area Municipality, Conservation Authority and/or consulting agencies for comment and/or information purposes at the Region's discretion. The Officer may, at their sole discretion, waive the requirement for a Good Forestry Practice Permit where the Tree removal being proposed involves a small number of Trees and the impact of the removal is deemed to be negligible or imperceptible to the integrity of the overall Woodland.

5.2 Each Good Forestry Practice Permit application must be accompanied by the following:

a) a copy of the completed application form signed by the Owner;

b) the required fee;

c) such additional information as the Officer may require;

d) for applications which propose to cause Injury or Destruction to more than 50 Trees, a Forest Management Prescription is required;

e) for applications which propose to cause Injury or Destruction to 50 Trees or less, a plan showing the location of the Trees to be affected, together with a description of how Good Forestry Practices are to be followed should the application be approved. A Forest Management Prescription may be required at the discretion of the Officer; and

f) if the area to which the application applies contains a Sensitive Natural Area, a Forest Management Prescription shall be submitted, regardless of the number of Trees to be injured, destroyed or removed.

5.3 A Forest Management Prescription shall include:

a) a detailed map of the property, the Woodland and the area of proposed Tree removal (tree marking must be completed by a Certified Tree Marker);

b) a description of the existing forest conditions;

c) the forest management objectives for an area;

d) prescribed methods for harvesting the existing forest stand;

e) a series of treatments that will be carried out to establish a free-growing stand in manner that accommodates other resource values as identified;

f) identification of any Sensitive Natural Area and the environmental protection measures necessary to protect the Sensitive Natural Area feature;

5.4 Upon review and consideration of the application, an Officer may issue a Good Forestry Practice Permit to permit the Injury, Destruction or removal of Trees in a Woodland*.* The Permit will be circulated to any other such Person or agency as the Region and/or Officer deems appropriate.

5.5 The Officer may impose conditions on the Permit that relate to, but are not restricted to:

a) the location, number, size and type of Trees that are proposed to be the subject of Injury or Destruction;

b) the manner and timeframe within which the affected Trees are proposed to be the subject of Injury or Destruction;

c) the marking, with paint or other material, of the Trees that are proposed to be the subject of Injury or Destruction;

d) the qualifications of the Persons authorized to cause Injury or Destruction in accordance with the Permit;

e) the measures to be implemented to mitigate the direct and indirect effects of Injury or Destruction of Trees on a Woodland or Sensitive Natural Area;

f) a requirement that the Owner notify the Region and the Area Municipality at least one business day prior to Tree removal being scheduled to commence; and

g) such additional information as may be required by the Commissioner or Officer in respect to such Permit.

5.6 Prior to any Injury, or Destruction of any Tree pursuant to the Permit, a copy of the Permit shall be posted and displayed in a prominent location as identified on a map filed with the permit application, to the satisfaction of the Officer.

5.7 For any Good Forestry Practice Permit there is to be no direct and indirect effects on a Woodland, and Sensitive Natural Area.

5.8 A Good Forestry Practice Permit shall be in effect for a period of two years or at the discretion of the Officer or the Commissioner and is not transferable. If the activity for which the Permit was issued has not taken place within the time frame of the permit, such Permit shall lapse and shall be of no effect.

5.9 Prior to the expiry of the Permit, the Owner may request in writing, that the Permit be renewed. Such renewals may, at the discretion of the officer or the Commissioner requests shall not be unreasonably denied. Permits may be renewed one time only for an additional period of not more than one year.

5.10 Where a Good Forestry Practice Permit application has been denied, the Officer will notify the applicant in writing by registered mail within 10 Business Days of the decision and shall provide reasons for the denial.

6. CLEAR CUTTING PERMITS

6.1 Clear Cutting is prohibited except in accordance with the following:

a) Every Person who intends to Clear Cut shall first complete and submit to the Region, an application for Clear Cutting Permit;

b) Clear Cutting activity shall not commence prior to the Person receiving written approval from the Commissioner;

c) Approval shall only be granted following circulation to the applicable Area Municipality and any Commenting Agency for comment;

d) Only a Bona Fide Farmer that owns the subject lands may be permitted to Clear Cut within an Urban Area Boundary or within a Rural Settlement Area;

e) Any application for Clear Cutting of 1 hectare or less is subject to the approval and any condition(s) of the Commissioner;

f) Any application for Clear Cutting greater than 1 hectare is subject to the approval of Regional Council;

g) Clear Cutting shall be permitted only where there is no direct or indirect effect on a Woodland or a Sensitive Natural Area.

6.2 A Clear Cutting Permit application shall not be approved unless accompanied by the following:

a) a copy of the completed application form signed by a Qualified OPFA Member and the Owner;

b) the required fee;

c) a plan or drawing having sufficient detail to clearly show the number, location, species, and approximate age of the Trees to be Clear Cut;

d) the rationale for the proposed Clear Cutting;

e) a map depicting proposed location that the permit will be posted;

f) such additional information as the Commissioner may require; and

g) where any portion of the Woodland to which the application applies contains a Sensitive Natural Area, the application shall be accompanied by an Environmental Report.

h) At the discretion of the Commissioner, a public meeting may be required for an application less than 1 hectare in area, if Cumulative Removal and the area of Clear Cutting exceeds 1 hectare.

6.3 Any required Environmental Report shall be prepared by a qualified natural heritage expert/ qualified person which, at a minimum, shall include:

a) a baseline inventory of environmental features and functions;

b) the location, area and approximate number of Trees proposed to be Clear Cut;

c) an assessment of the potential impacts of the proposed Clear Cutting on the long-term health and ecological integrity of the Sensitive Natural Area;

d) an examination of historical records to identify whether Tree removal had occurred since December 31, 2002, for the purposes of determining Cumulative Removal;

e) an evaluation of the potential impact of the proposed Clear Cutting

within the context of Provincial, Regional, and Area Municipal policy;

f) recommendations that support the long term protection of environmental features and functions as may be necessary to protect the subject Sensitive Natural Area;

g) a description of Woodland proposed to be preserved;

h) any recommended mitigation measures to address impacts of the proposed Clear Cutting on environmental features and functions.

6.4 The Commissioner may impose any such condition on a Clear Cutting Permit as the Commissioner deems appropriate, and may include:

a) the location, area of land and number of Trees permitted to be Clear Cut;

b) the manner and timeframe within which the Trees are permitted to be Clear Cut;

c) the marking with paint or other material, the location of the Trees permitted to be Clear Cut;

d) the qualifications of the Persons authorized to Clear Cut the Trees;

e) any measure to be implemented to mitigate the direct and indirect effects of the Clear Cutting on a Woodland or Sensitive Natural Area;

f) the re-planting of Trees;

g) a requirement that any Clear Cutting for farm purposes must be put into agricultural use within a specified time period (e.g. 3 years);

h) a requirement that the Owner notify the Region and Area Municipality within one business day of Tree removal being scheduled to commence;

i) a requirement to provide any additional information as may be required before the Permit becomes effective;

j) a requirement to implement any recommendations included within an Environmental Report, to the satisfaction of the Region;

k) a requirement to implement any condition of a Municipality or Commenting Agency as may be applicable;

l) a requirement to post a copy of the Permit in a prominent location as identified on a map as part of the Permit application, to the satisfaction

of the Officer. The posted Permit is to remain on display until the work for which the Permit was issued has been completed.

m) A time limitation period of up to one year which is not transferable. If any Clear Cutting for which the Permit was issued has not taken place within the one-year period, the Permit shall lapse and shall be of no effect. Notwithstanding the above, and only prior to the expiry of the Permit, the Person may request in writing that the Permit be renewed for a period of up to one additional year from the date of the original Permit. Permits may only be renewed one time only.

6.5 Where a Clear Cutting Permit application has been denied, the Commissioner shall notify the applicant in writing by registered mail within 10 Business Days of the decision, and shall provide reasons for the denial.

6.6 Any application that proposes to Clear Cut an area greater than 1 hectare in size shall be subject to the approval of Regional Council, in accordance with the following:

a) Regional Council shall have regard to any delegation heard at a public meeting;

b) Within 10 days of receipt of such application, the Commissioner or his designate shall send by regular mail or by personal delivery, written notice of the public meeting to the applicant, to all assessed Owners of each parcel of land that abuts the subject property from which Trees are proposed to be Clear Cut, and to any other such Person or agency as the Commissioner deems appropriate;

c) At least 20 days prior to the public meeting, the applicant shall erect a public notice sign at a location and on the form approved by the Commissioner;

d) Upon review and consideration of the application, and at least 20 days prior to the public meeting, the Commissioner shall prepare a report which shall make a recommendation on the application, the reasons for the recommendation, and any conditions that may be recommended to be applied, if any;

e) At the public meeting, the applicant and any interested Person shall be afforded an opportunity to address the Committee. Any public meeting shall be subject to the Region’s Procedural By-law.

f) Where Council directs the Commissioner not to issue a Clear Cutting Permit, the applicant will be notified in writing by registered mail within 10 Business Days following the Council meeting, and such notice shall provide reasons for the denial.

6.7 The Clear Cutting Permit will be circulated to any other such Person or agency as the Region deems appropriate.

7. ENFORCEMENT

7.1 An Officer, or any person authorized by an Officer, may at all reasonable times enter upon and inspect any land and Woodland for the purposes of enforcing this By-law, determining compliance with this By-law, determining compliance with terms and conditions of a Permit issued under this By- law, or laying charges under this By-law.

7.2 Where an Officer has determined that a contravention of this By-law has occurred, the Officer may make an Order requiring any Person who contravened this By-law to remedy such contraventions. The Order shall set out:

a) the municipal address or the legal description of the land;

b) reasonable particulars of the contravention; and

c) the period within which there must be compliance with the Order.

7.3 Where an Officer has determined that a contravention of this By-law has occurred, the Officer may make an Order requiring the Person who contravened this By-law or who caused or permitted the Injury or Destruction of Trees in contravention of this By-law, to remedy such contraventions, which may include one or more measures to rehabilitate the land or Woodland, the plant or replant Trees or other measures to the satisfaction of the Commissioner. The Order shall set out:

a) the municipal address or the legal description of the land;

b) the particulars of the contravention;

c) the work to be done and the period within which there must be compliance with the Order; and

d) Should the work not be done in compliance with the Order, the Region may have the work done at the expense of the Owner.

7.4 No Person shall hinder or obstruct, or attempt to hinder or obstruct, any Person including an Officer or Commissioner who is exercising a power or performing a duty under this By-law.

8. PENALTY

8.1 Any Person who contravenes any provision of this By-law is guilty of an offence and upon conviction is liable to a fine of not less than $500 and not more than

$100,000.

8.2 Despite subsection 8.1, the Region designates that the Destruction of each Tree is one offence in a series of Multiple Offences. In the case of Multiple Offence, a Person found guilty of contraventions of this By-law constituting a Multiple Offence is liable upon conviction, for each offence included in the Multiple Offence, for minimum fine of $500 and a maximum fine not exceeding $10,000; however, despite Section 8.1, the total of all fines for each included offence is not limited to $100,000.

8.3 If a Person is convicted of an offence for contravening this By-law the Court in which the conviction has been entered, and any Court of competent jurisdiction thereafter, may order the Person to rehabilitate the land or to plant or replant Trees or provide such other remedy in such a manner and within such period as the Court considers appropriate.

8.4 Part 1 *Provincial Offences Act* offences and fines may apply to specific contraventions of the By-law as indicated in “Schedule B” to the By-law.

9. ADMINISTRATION

9.1 Schedule "A" shall form part of this By-law.

9.2 If any section or part of this By-law is found by any court of competent jurisdiction to be illegal or beyond the power of Regional Council to enact, such section or part shall be deemed to be severable and all other sections or parts of this By-law shall be deemed to be separate and independent therefrom and to be enacted as such.

9.3 The short title of this By-law is the "Regional Woodland Conservation and Management By-law".

9.4 An Owner of a property shall be presumed to have injured or destroyed or caused or permitted to be injured or destroyed a Tree growing in a Woodland, or contravened or cause or permitted the contravention of the terms or conditions of a Permit issued under this By-law, as the case may be, which presumption may be rebutted by evidence to the contrary on a balance on probabilities.

9.5 By-law 27-2008 of the Regional Municipality of Durham and any amendments thereto, are hereby repealed.

9.6 Despite subsection 9.5, By-law 27-2008 shall continue to apply to:

a) proceedings in respect of offences that occurred before its repeal; and,

b) Permits in compliance with By-law 27-2008, which were made prior to its repeal.

This By-law Read and Passed on the -----th day of ----------, 2019.

J. Henry, Regional Chair and CEO

R. Walton, Regional Clerk

SCHEDULE A

FEES

1.	Application for Good Forestry Practices Permit	$50.00
2.	Application for a Clear Cutting Permit (Between 0.1 Ha and 1 Ha)	$500.00
3.	Application for Clear Cutting Permit (Greater than 1Ha)	$1000.00 **Excluding Advertising Costs of a Public Meeting**

Permit fees are waived for Bona Fide Farmers.

SCHEDULE B

Part 1 Provincial Offences Act…